भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

दिनांक: 15, अप्रैल 2025

सेवा में/To,
एनआरपीसी एवं टीसीसी के सभी सदस्य एवं विशेष आमंत्रित (संलग्न सूचीनुसार)
Members of NRPC & TCC & Special Invitees (As per List)

विषय: तकनीकी समन्वय समिति (टीसीसी) की 53 वीं और उत्तर क्षेत्रीय विद्युत समिति की 78 वीं बैठक का कार्यवृत।

Subject: MoM of 53rd Technical Co-ordination Committee (TCC) & 78th Northern Regional Power Committee (NRPC) –reg.

महोदय/महोदया,

तकनीकी समन्वयन समिति (टीसीसी) की 53 वीं बैठक दिनाँक 16.03.2025 एवं उत्तर क्षेत्रीय विद्युत समिति की 78 वीं बैठक दिनांक 17.03.2025 को कोच्चि, केरल में आयोजित की गयी थी। बैठक का कार्यवृत संलग्न है। यहउ.क्षे.वि.स. की वेबसाइट (http://164.100.60.165/) पर भी उपलब्ध है।

53rd meeting of Technical Co-ordination Committee (TCC) was held on 16.03.2025 and 78th meeting of Northern Regional Power Committee (NRPC) was held on 17.03.2025 at Kochi, Kerala. MoM of the same is attached herewith. The same is also available on NRPC Sectt. Website (http://164.100.60.165/).

भवदीय
Yours faithfully

Signed by Vijay Kumar Singh
Date: 15-04-2025 14:25:21

(वी.के. सिंह)
(V.K. Singh)
सदस्य सचिव
Member Secretary

प्रतिलिपि:

1. Shri H. Rajesh Prasad, IAS, Chairperson, NRPC and Principal Secretary to Government, Power Development Department, J&K. (Email: jkpdd9@gmail.com)
2. Shri Rajiv Sood, Ex. Chairperson, NRPC and MD, HPPTCL (md.tcl@hpmail.in)

सत्यमेव जयते

उत्तर क्षेत्रीय विद्युत समिति

NORTHERN REGIONAL POWER COMMITTEE

Minutes of

The 53rd meeting of Technical Coordination Committee &

The 78th meeting of

Northern Regional Power Committee

Date: 16th & 17th March 2025

Venue: Kochi, Kerala

Contents

MINUTES

OF

53rd MEETING OF TECHNICAL COORDINATION SUB-COMMITTEE

&

78th MEETING OF NORTHERN REGIONAL POWER COMMITTEE

Proceedings of 53rd TCC Meeting

1. CGM, POWERGRID NR-1 along with team of POWERGRID NR-1 welcomed all delegates and wished to have a convenient atmosphere for discussion at Kochi. TCC meeting provides crucial platform for arriving us at solutions in the power sector

on a mutual agreement basis. He wished that meeting will come out with a very fruitful recommendation.

2. Executive Director, POWERGRID NR-3 welcomed all the guests and wished to have fruitful discussion. These meeting bring expertise and brightest mind to a common platform for maintaining healthy power system. On the behalf of PGCIL, he expressed thanks for giving opportunity to host the meeting.

3. Executive Director, NRLDC welcomed all guest and thanked all grid operators for their continuous support in integrated grid operation. He also asked the same support in future. He stressed that peak demand is likely to be increased in the upcoming summer. Therefore, collaborative approach will be helpful for uninterrupted grid operation. Lastly, he thanked POWERGRID for extending such warm hospitality.

4. Member Secretary, NRPC welcomed all the participants and thanked POWERGRID for hosting this meeting and for conducive environment for healthy discussion. Brief of his opening remarks is as under;

As we stand at the cusp of transformative changes in India's energy landscape, the Northern Region has emerged as a crucial hub for power generation, transmission, and distribution, catering to the needs of millions of people across multiple states. This region accounts for a substantial share of the country’s total installed power capacity, encompassing thermal, hydro, nuclear, and renewable energy sources. With rapid urbanization & industrialization, the demand for power has been on a steady rise. Peak power demand in the region has touched new highs and ensuring uninterrupted supply remains a key challenge.

India is the world's 3rd largest consumer of electricity with having 47.10% of non-fossil fuel power capacity installed as of December 2024 (217.62 GW out of 462 GW). As per IRENA, India is globally at 4th position in Wind Power Capacity & 5th in Solar Power Capacity. The Government of India has committed for a goal of 500 GW renewable energy capacity by 2030. We have witnessed an expansion in renewable energy capacity, with solar and wind power, now constituting more than 35% of our total installed power capacity. Solar power alone has seen a tremendous increase of over 35 times since 2014, now at around 97.86 GW from 2.82 GW, while wind

energy has reached approximately 48.16 GW.

NRPC Secretariat has been discharging its duties despite less manpower. There are lot of additional work have been added in the IEGC 2023. NRPC has been playing instrumental role in making consensus on issues varying from outage approval, LGBR, protection issues to PSDF grant.

Today, we are having several important issues as agenda raging from ADD-CAP proposals to communication projects. CTU has brought transmission scheme also in this meeting.

As eagerly awaited by utilities, CEA vide letter dated 03.03.2025 has issued the Guidelines for the Usage and Sharing of Fiber Cores of Optical Ground Wire (OPGW)/UGFO for Power System Applications. All of us should go through this for its salient directions for sharing of fiber, intimation to RPC, and fiber requirement for differential protection etc.

There is urgent need for skilled manpower in SLDCs, as per GOI guidelines on workforce adequacy, and there is need of establishing Security Operation Centres (SOC).

Hydropower Development in NR while addressing community concerns and strengthening Transmission & Distribution Networks to reduce AT&C losses along with improvement of DISCOM financial health are prime concerns in NR.

Further, he thanked TCC Chairperson for kind support throughout this year. He informed that from April, 2025, J&K shall be chairing this Forum.

5. Chairperson, TCC welcomed all the participants to the 53rd meeting of the Technical Coordination Committee of Northern Region at Kochi.

He expressed great honor and a deep sense of responsibility for standing as the Chairperson of the Technical Coordination Committee of the Northern Regional Power Committee. He extended his warm greetings to all officials and expressed his sincere gratitude for your continued dedication to the critical work we do in the energy sector.

Further, he added that as we convene today, we are reminded of the importance of the energy infrastructure that powers our region and drives the growth and development of our communities. The Northern region, with its diverse and vibrant population, requires not only consistent and reliable energy supply but also the ongoing improvements to our transmission, distribution, and grid systems that can meet the growing demands of both urban and rural areas.

The challenges in our energy sector are vast. From ensuring grid reliability to integrating renewable energy sources, to addressing the rising demand for electricity across industries and households — these are issues we cannot afford to overlook. However, I firmly believe that through collaboration, innovation, and sound technical strategies, we have the opportunity to create a more resilient, efficient, and sustainable power network for the Northern region.

As the members of the Technical Coordination Committee, our roles are vital in ensuring the smooth functioning of the power systems, maintaining the technical standards, and addressing any issues that arise in a timely and effective manner. Together, we must focus on optimizing the performance of our existing infrastructure while planning and implementing future upgrades that will continue to support our region’s growth for years to come.

The key objectives are improving grid stability, ensuring system security, and facilitating the integration of renewable energy sources. The increasing penetration of renewable energy is an opportunity and a challenge. We must leverage advanced grid technologies such as smart grids, energy storage, and demand-side management to ensure that renewable power is effectively integrated into the regional grid without compromising the stability of the system.

Additionally, one of the biggest challenges is maintaining effective coordination between all stakeholders in the power sector — be it state utilities, transmission companies, distribution companies, or regulatory bodies. We must ensure that information flows seamlessly so

that we are all aligned in our vision for a reliable and efficient power network. It is through continued dialogue, regular reviews, and transparent communication that we will continue to improve.

As the TCC members, it is our responsibility to provide expert technical support, identify critical issues, and work towards practical solutions that are in line with the broader goals of the NRPC. It is also our responsibility to look ahead and anticipate the needs of the future. The world's energy is rapidly evolving, and we must remain agile, constantly adapting to new technologies and methodologies that will help us stay ahead of the curve.

In closing, he expressed his heartfelt thanks to all the members of the Technical Coordination Committee for their hard works, dedication, and expertise. Together, we are creating a robust and sustainable power network that will continue to drive the growth and prosperity of the Northern region. He also extended his appreciation to all the stakeholders and participants who support us in achieving our collective goals.

He wished to move forward with a renewed sense of purpose, knowing that the work going to do here will not only impact today but will lay the foundation for a stronger and more resilient energy for future generations.

He thanked all for kind attention, and looked forward to continued cooperation and success. At the end, he thanked POWERGRID for hosting this meeting and all for participating.

6. Thereafter, agenda for the 53rd TCC Meeting were presented & deliberated. The list of participants is attached as **Annexure-P.**

Proceedings of 78th NRPC Meeting

1. POWERGRID representative welcomed all the delegates and expressed its sincere gratitude to NRPC for providing an excellent opportunity for hosting this edition of NRPC meeting.

   He appreciated that NRPC is having great role here for effective condition in setting out the issues and doing the same in excellent manner. Subsequently, he on behalf of POWERGRID wished great stay.

2. Member Secretary, NRPC thanked POWERGRID management and the whole team for making all these arrangements for hosting 78th NRPC meeting. He highlighted the

detailed discussion held in 53rd TCC meeting and reached to the conclusion for most of the matters.

He also highlighted, the works completed in NRPC premises. He stressed that summer is approaching therefore, all the overhauling and maintenance work may be planned and executed well before. He requested all utilities to be ready for meeting the higher level of peak demand. He highlighted that in today's meeting, NRPC Secretariat agenda are going to be discussed related to NRPC office and building. He apprised that all civil and electrical works earlier approved by Forum and awarded to CPWD has already been completed. NRPC is great platform to arrive on conclusion with consensus in benefit of power system as whole. Lastly, he again thanked POWERGRID for splendid arrangements.

3. Chairperson, NRPC & MD, HPPTCL thanked POWERGRID for hosting NRPC meeting. He conveyed that it is actually a great platform for knowledge sharing and learning from each other.

   He expressed an honor and a privilege to stand as the Chairperson of the Northern Regional Power Committee (NRPC). He extended his heartfelt gratitude to each member for their dedication and commitment to our shared vision of a reliable, resilient, and sustainable power system in the Northern region.

   He stressed that all consumer of country should get reliable power at affordable cost. For reliable supply, works have been done and are in continuation. However, he raised concern for affordable power to consumer. He added that Himachal has been providing RE power in form of Hydro but relaxations are not as much as in case of Solar developers. He expressed that there is need to have certain amendments in policies so that Hydro Rich states may also have relaxations and reduce the burden on Himachal DISCOM & consequently on consumers.

   He highlighted that infrastructure has been developed at very faster rate in power sector leading to increase in transmission charges. therefore, he urged for some soft funding for states so that Intra state transmission charges may not escalate as ISTS transmission charges are escalating. This needs to be reviewed.

He focused that generator who is likely to get commissioned in nearby future but its transmission infrastructure has not been even awarded. This may be considered and forced by CEA to get things done in timely manner for transmission lines. Such issues must be properly addressed in order to avoid unnecessary delay.

He expressed his gratitude to the members of the Northern Regional Power Committee for tireless efforts, expertise, and dedication to the mission. He also thanked stakeholders, partners, and the people of the Northern region for their continued trust and support. He wished that all of us together will continue to advance the cause of energy security, sustainability, and accessibility for all.

Lastly, he said that 78th NRPC is last meeting as Chairperson as J&K shall take over this responsibility from April 2025. He thanked to all members for their support throughout the year.

4. Thereafter, agenda for the 78th NRPC Meeting were presented & deliberated. The list of participants is attached as **Annexure-Q.**

Agenda for TCC meeting

A.1 Approval of MoM of the 52nd TCC & 77th NRPC meeting

A.1.1 EE (O), NRPC apprised that the minutes of the 52nd TCC & 77th NRPC meeting (held on 27-28.12.2024) were issued vide letter dtd. 07.01.2025. No comment has been received as of now.

Decision of Forum:

TCC and NRPC members confirmed the MoM as issued**.**

A.2 Status of action taken on decisions of 52nd TCC & 77th NRPC meeting (agenda by NRPC Secretariat)

TCC Deliberation

A.2.1 EE(O), NRPC conveyed that the agenda has been taken to track the status of action taken as per decision of last meeting. Accordingly, issues may be resolved at the earliest.

A.2.2 Concerned utilities were asked about the status of action taken and Forum noted the submissions.

NRPC Deliberation

A.2.3 Forum noted the action taken status reported by concerned utilities and requested utilities to expedite the actions.

A.2.4 Concerned utilities submitted the status of action taken and the same has been complied as **Annexure- I**.

Decision of Forum

Forum directed concerned utilities to expedite the pending works.

A.3 Approval of costs under the Add Cap (tariff block 2024-29) for implementing the Process Bus in equipment that has not yet completed its 25-year useful life at Ballabgarh, Mandola, Hissar, Meerut & Prayagraj (Allahabad) substations of POWERGRID (agenda by POWERGRID)

TCC Deliberation

A.3.1 EE (O), NRPC apprised that the Ballabgarh, Mandola, Hissar, Meerut & Prayagraj (Allahabad) transmission substations were commissioned in the year 1990, 1992, 1994, 2003 and 2001 respectively. These substations are among the oldest conventional substations in the NR-1 region. Over the years, as per operational requirements, they have undergone expansions, including bay additions, LILO (Line-In Line-Out) modifications, and the commissioning of various transmission equipment under different projects.

A.3.2 Further, CGM, POWERGRID NR-1 briefed that mostly substations have completed over 25 years of operation, most of the equipment has completed its expected operational life, however, certain other equipment is yet to complete its full lifecycle of 25 years.

A.3.3 As these substations are very old, the condition of the cables has deteriorated significantly and needs replacement. Since these are conventional type substations, therefore there are lots of cables and replacement of these old ageing cables are

very difficult and time consuming, therefore, upgrading these substations to process bus system is prudent to extend operation life of these substations and to address the ageing cable issue effectively and efficiently. Process bus technology is aligned with the latest advancement in substation automation and it provides better and more sustainable solutions with minimum cable requirement. Further, POWREGRID has added that these substations are highly critical and play a vital role in feeding the NCR (National Capital Region), making their modernization a top priority.

A.3.4 He also added that petition for the implementation of process bus technology and equipment replacement of mentioned substations has been filed with the Central Electricity Regulatory Commission (CERC) under Additional Capitalization (ADD-CAP) for the tariff period 2024-29 for project which already completed 25 years of useful life.

A.3.5 The total financial implication for the complete upgradation of Hisar, Ballabhgarh, Meerut, Mandola and Prayagraj substations is approx. INR 158.37 Cr. Out of this, INR 38.94 Cr (**Annexure-II**) pertains to those components that have not yet completed their useful life of 25 years, therefore, the petition for this amount has not been filed by the company. Further, INR 6.32 Cr pertains to other utilities at these stations. However, the partial implementation of the process bus system poses several challenges as described below:

i. **Availability of Station Data to RLDC** -Availability of Station Data to RLDC from Single Port of each Gateway otherwise two different RTUs/SAS Gateways shall require to be maintained, which is not as per Standard Architecture of RLDC.

ii. **Monitoring & Control at RTAMC/NTAMC** – Managing the complete station from Remote Transmission Asset Management Centre (RTAMC) / National Transmission Asset Management Centre (NTAMC) with two different gateways is complex and may require additional modifications for seamless integration.

iii. **Busbar Protection & Future Extensions** – A process bus-based Busbar Protection system is more beneficial for future substation expansions. However, its implementation requires the inclusion of Merging Units for all bays, including those

that have not yet completed their useful life. This creates integration challenges and necessitates additional investments for compatibility with existing infrastructure.

iv. **Hybrid System Complexity –** A mix of conventional and process bus components leads to intricate configurations, requiring additional interfaces and protocols.

v. **Interoperability Concerns –** Mixing legacy protection schemes with IEC 61850-based process bus devices may create compatibility problems.

vi. **Higher Cost in the Long Run –** A phased approach may increase the overall cost due to additional adaptation equipment and engineering efforts.

vii. **Testing and Maintenance Difficulties –** Partial implementation requires extra testing efforts to ensure seamless integration with systems.

A.3.6 Therefore, he submitted that given these challenges and proper monitoring of above critical substations and proposed to implement the process bus in one go rather than partially at substations.

A.3.7 In view of the above, comprehensive upgradation of entire substation is crucial for ensuring the better implementation of the process bus system, addressing integration challenges, reducing technical constraints such as monitoring & control complexities, RLDC data availability issues, and Busbar Protection implementation. A comprehensive upgrade will also enhance operational efficiency, long-term reliability, and future scalability of the substations.

A.3.8 Therefore, POWERGRID requested for approval of approx. INR 38.94 crore under Additional Capitalization (ADD-CAP) for the tariff period 2024-29 for the inclusion of process bus implementation of additional bays at Ballabgarh, Mandola, Hissar, Meerut & Prayagraj (Allahabad) substations of POWERGRID which have not completed the useful life.

A.3.9 MS, NRPC asked about the other sites where this technology has been implemented. POWERRGRID representative replied that in Malerkotla, Kanpur, Navsari it has been implemented.

A.3.10 During discussion, MS, WRPC was of view that any decision taken in a region will be reflected in other region also. Therefore, it is better to have a discussion in NPC meeting to arrive at common approach to approve the proposals. MS, NERPC suggested to discuss about the Process Bus Technology first in other RPCs also.

A.3.11 MS, NRPC mentioned that the cost of ADD CAP is going to be shared by states. He asked the views of state members on the same.

A.3.12 RVPN representative asked the details of item for this process bus technology in order to have an idea of cost. POWERGROD representative told RVPN to visit Malerkotla Substation of POWERGRID NR-2.

A.3.13 NRLDC representative stated that data availability at NRLDC should not get hindered. Further, it was mentioned that proposal from POWERGRID is good, but it should be discussed in Protection subcommittee and Test meeting subgroups of NRPC first to discuss benefits of process bus technology with all stakeholders.

A.3.14 ED, POWERGRID NR-3 highlighted that POWERGRID is going to improve the technology and this should be started from any region.

A.3.15 PTCUL representative stated that on the basis of technology advancement and previous experience, this proposal of POWERGRID should be allowed under ADDCAP.

A.3.16 UPPTCL representative supported the views of MS, WRPC and conveyed that a common policy may be framed in NPC meeting. HVPN agreed with UPPTCL and proposed for wider deliberation.

A.3.17 Director, UPPTCL asked the POWERGRID to include the depreciated cost of equipment which have not completed the useful life.

A.3.18 ED, POWERGRID NR-3 replied that cable will be replaced majorly. Although, to recover the depreciated cost of these cable and equipment if tendering is done then life will be completed of these equipment by that time.

A.3.19 MS, NRPC mentioned that we must timely adopt latest available technologies and new technology for process bus as proposed by Powergrid should be adopted. However, considering the views of all members, the agenda of POWERGRID may be firstly deliberated in the Sub-Committee of NRPC. The agenda may further be discussed in the upcoming NPC meeting.

A.3.20 EE (C), NRPC suggested POWERGRID to share the details of BOQ of equipment that are going to be covered in the INR 38.94 crore project. Useful life and depreciated value may also be shared with the agenda during discussion in the Sub-Committee meeting.

A.3.21 MS, NRPC advised that POWERGRID may submit the agenda related to the Process Bus Technology in the NPC meeting comprehensively covering the all regions.

NRPC Deliberation

A.3.22 Forum was in consonance of the deliberation held in TCC meeting.

Decision of Forum

Forum decided that agenda may firstly be deliberated from technical perspective in the upcoming TeST meeting and thereafter shall be taken up in the next NPC meeting for cost recovery mode for implementation of Process Bus in equipment that has not yet completed its 25-year useful life.

A.4 Frequent switching of BR/LR & Transmission line for voltage control (agenda by POWERGRID)

TCC Deliberation

A.4.1 EE (O), NRPC apprised that the Northern Grid experiences significant voltage fluctuations due to the large-scale integration of renewable energy (RE), particularly in Rajasthan, which has the highest installed RE capacity. To maintain grid voltage within permissible limits, there is a high frequency of switching operations involving Bus Reactors (BR), Line Reactors (LR), and Transmission Lines.

A.4.2 POWERGRID representative informed that in 2024, 765kV 240 MVAR Bus Reactor-1 at Khetri substation was opened 359 times, translating to 1,436 switching

operations (each switching involves four breaker operations in view of Dia Closure requirement to maintain reliability). Such frequent operations significantly reduce the lifecycle of breakers and other systems.

A.4.3 Gas-Insulated Switchgear (GIS)-based elements also experience frequent switching which is detrimental to the health of GIS and many failures have been noticed in GIS due to switching. Any rectification in GIS systems take significant time.

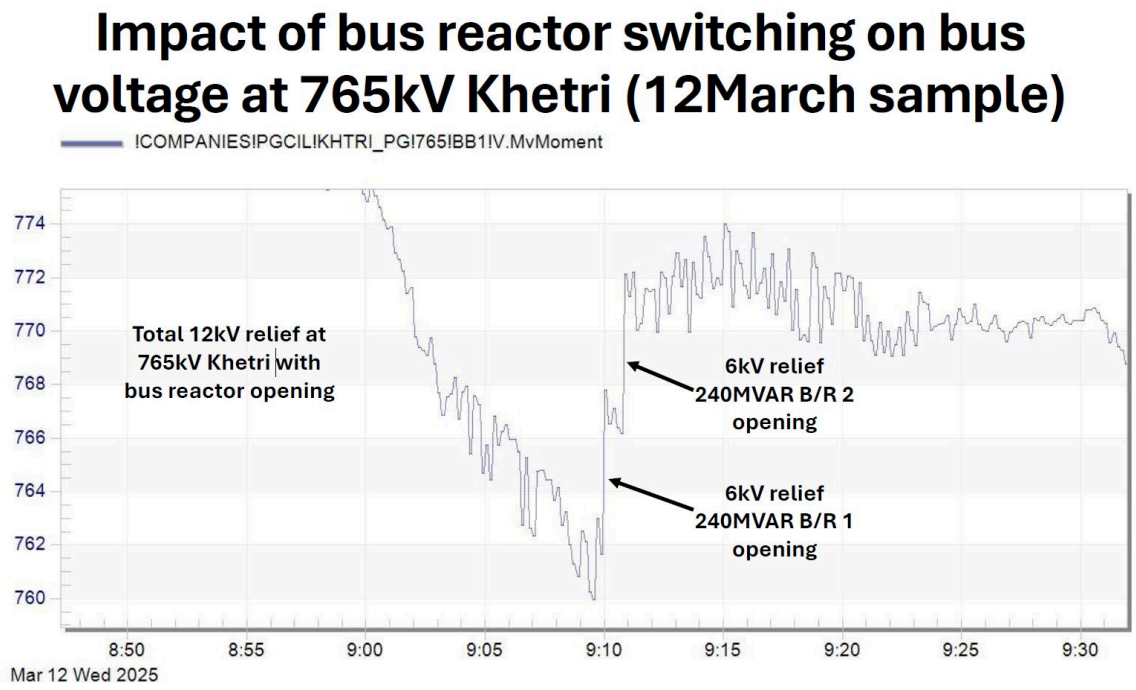
A.4.4 On February 20, 2025, within a span of just 10 minutes (09:36 hrs to 09:46 hrs), 12 reactor opening codes were issued. The concern regarding frequent switching has also been raised previously vide letter dated 13.01.2023 (copy enclosed at **Annexure-III**).

A.4.5 Considering the above, POWERGRID requested to optimize the switching operations of transmission elements to ensure the long-term health and reliability of grid assets, minimize the risk of unwanted outages due to excessive wear and tear.

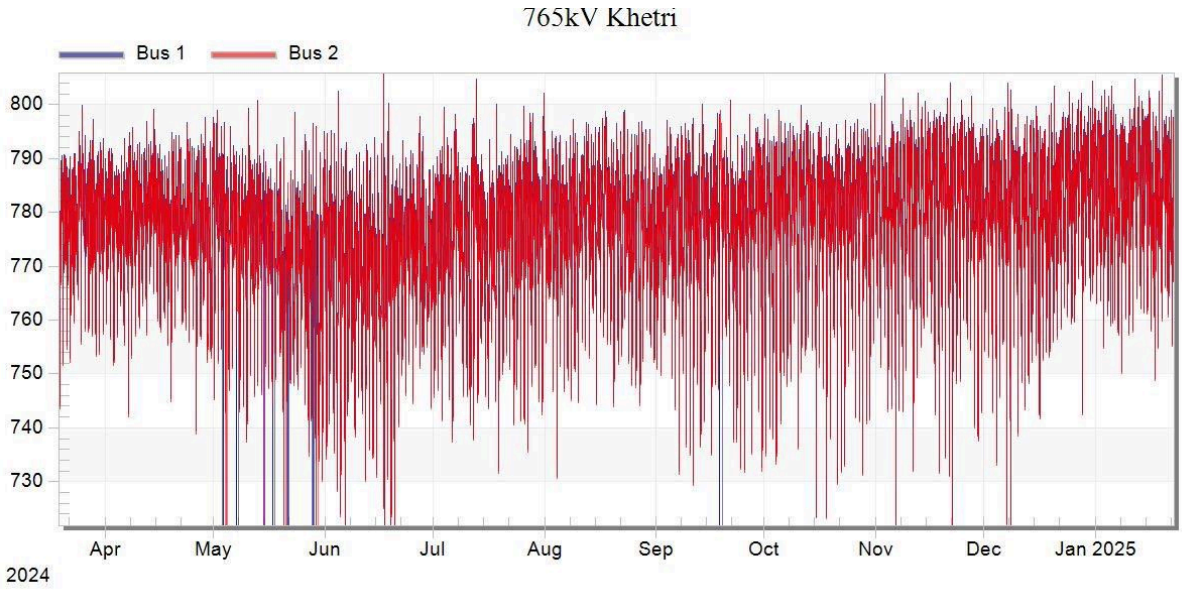
A.4.6 NRLDC representative stated that earlier requirement for switching IN or OUT of Bus Reactor was there on seasonal basis considering low or high demand period. However, considering a significant amount of Solar generation located in one pocket (around 18GW ISTS connected Solar Generation & 24GW total renewable generation in Western Rajasthan) there is a requirement of switching IN and OUT on daily basis for Voltage control. It was explained that solar generation ramps up in the morning at the rate around 5-6GW per hour and voltage profile dips suddenly along with increase in line flows for evacuation of power and accordingly for voltage control Bus Reactors are required to be taken out within a short of time. Similarly, during evening hours, solar generation ramps down at the rate of around 5-6 GW per hour and to arrest voltage rise on this account, Bus Reactors are required to be taken in service in a timely manner. Further, NRLDC representative mentioned that there is a huge MVAR support requirement for improving Voltage profile and around 5500MVAr support is being obtained through switching off of bus reactors along with around 3000-3500MVAr support from RE generators.

The same was explained by showing voltage profile at 765kV Khetri Subtation for a typical day and also voltage profile of the S/Stn. from April 2024 to January 2025.

Impact of bus reactor switching on bus voltage at 765kV Khetri (12th March sample) was also presented in the meeting by NRLDC:



Further, voltage profile of 765kV Khetri over the year was also presented in the meeting:



This concern from Transmission Service Provider side was highlighted in 27CMETS held on 10.01.2024 with CEA and CTUIL. During the meeting, CEA-PSPA I mentioned that reactor switching is a general operational requirement and should be carried out as per grid requirement.

A.4.7 ED, POWERGRID NR-3 highlighted that considering the current scenario of switching operation of reactor at Khetri Substation, the total recommended switching operations will be done within span of 5 years. There may be chances to replace the equipment due to stress and aging which will create financial burden.

A.4.8 Therefore, he conveyed that NRLDC may consider to adopt alternate solution. Separate lines may be judiciously explored and allowed for switching operation accordingly. This will help in increment of useful life of Substation equipment. System studies may be done and requirement of STATCOM/Bus Reactor may be assessed to maintain voltage profile and meet reactive power requirement.

A.4.9 ED, NRLDC mentioned that all the operation are being done based on grid requirement.

A.4.10 GM, POWERGRID NR-3 highlighted that there are chances of insulation failure in case of frequent switching operations.

A.4.11 ED, POWERGRID NR-3 requested NRLDC for switching operation to be done in staggered manner. Circuit -1 & 2 of any transmission line may be opened alternatively. The theft cases may be reduced by switching operation of the alternate circuits. Switching of GIS equipment may be avoided.

A.4.12 NRLDC representative mentioned that there are different over voltage protection settings in both the circuits. The circuit which has higher settings is generally avoided for opening.

A.4.13 CTUIL representative mentioned that due to change in RE generation with time in a day, there are changes in Power flow and voltage level. As per CERC 4th amendment, ESS may be implemented after RE plant which will supply power in

night and voltage fluctuation will reduce. She added that STATCOM of 3000MVAr has huge cost. Therefore, HVDC is being planned for RE evacuation. Although, RE developers has concerned regarding connectivity because lead time of HVDC is more.

A.4.14 MS, NRPC stated that NRLDC may optimize the switching operation and go in staggered manner.

NRPC Deliberation

A.4.15 Forum agreed upon the deliberation held in TCC meeting.

Decision of Forum

Forum advised NRLDC to optimize the no. of switching operation of BR/LR and Transmission lines based on available possibility including special attention to GIS substations considering grid operational requirement. NRLDC may carry out the switching operation of transmission lines in staggered manner.

A.5 Replacement and Lifecycle Considerations for Numerical Protection and control IEDs (Agenda by POWERGRID)

TCC Deliberation

A.5.1 EE (O), NRPC apprised that Numerical microprocessor-based protection and control IEDs are installed at all the substations of POWERGRID. These numerical IEDs have a lifespan of eight to ten years, after which most OEMs declare them obsolete. In some cases, due to advancements in semiconductor technology, chip fabrication, and the development in software and firmware, OEM declared the end of life & obsolete in less than eight years.

A.5.2 Once the end of life is declared, managing spares for these IEDs becomes challenging. Additionally, limited-service support from OEMs leads to significantly higher spare costs and longer lead times. This situation makes the system more vulnerable and unsuitable from a grid stability and reliability standpoint. It has also been observed that the cost of a spare unit for obsolete IEDs is often higher than the cost of new, latest IEDs.

A.5.3 Given these factors, POWERGRID has submitted that the useful life of numerical protection and control IEDs should be considered ten years. Replacing any numerical protection and control IED after ten years of useful life may be considered for approval under ADD CAP.

A.5.4 Further, it was apprised that as per Tariff Regulation, the useful life of the substation is 25 years wherein these numerical protection and control IEDs are installed.

A.5.5 However, POWERGRID representative mentioned that software upgradation has been coming at fast rate. Therefore, earlier installed equipment does not support new software.

A.5.6 NRLDC representative stated that useful life for numerical relays as per CERC tariff regulations, is specifically not given. It is given as 25 years for substation whereas only as 7 years for IT system, SCADA and communication systems.

A.5.7 Further, it was gathered that useful life of electronic item should not be more than 10 years.

A.5.8 MS, NRPC conveyed that POWERGRID may approach CERC for prior-approval of replacement of any numerical protection and control IED after ten-year period for consideration in under ADD CAP.

A.5.9 Forum technically agreed with the proposal of POWERGRID that useful life of numerical protection and control IED should be ten years. However, before replacing any numerical protection and control IED, POWERGRID may approach Hon'ble Commission for approval of replacement of any numerical protection and control IED beyond the ten-year period under ADD CAP.

NRPC Deliberation

A.5.10 Forum was in consonance of the deliberation held in TCC meeting.

Decision of Forum

Forum agreed with the proposal of POWERGRID that useful life of numerical protection and control IED should be ten years. However, its useful life is defined

under Tariff regulations as '25 years' under 'AC and DC sub-station' category. POWERGRID may approach Hon'ble Commission for prior-approval of replacement of any numerical protection and control IED after ten-year period for consideration in under ADD CAP.

A.6 Replacement of SCADA at various substations of POWERGRID, NR-1 under ADD-CAP (agenda by POWERGRID)

TCC Deliberation

A.6.1 EE (O), NRPC apprised that the SCADA systems at various substations of POWERGRID, NR-1, are over 7 years old and have reached the end of their useful life. Furthermore, these SCADA systems are experiencing numerous issues and require upgrade to ensure smooth operation and monitoring of the substations. The details of the substations where the SCADA systems are over 07 years old and need replacement, along with the problems in these systems, are provided in the following table.

Sr. No.	Name of Substation	Details of SCADA System	Issues
1	400/220kV Dehradun Substation	GE make, Windows-7 OS	No support of windows-7 OS, frequent freezing of data, frequent communication breakdown, GW crashing, HW & SW not compatible with latest IEDs, not cyber-secure
2	400/220kV Baghpat Substation	Siemens make, Windows-7 OS	No support of windows-7 OS, GW crashing, Local HMI crashing, HW & SW not compatible with latest IEDs, not cyber-secure
3	400/220kV Maharanibagh Substation	Hitachi make, Windows-7 OS	No support of windows-7 OS, GW crashing, frequent command failure from remote, not cyber-secure

4	400/220kV Dwarka Substation	NR make, Windows-7 OS for SAS and LINUX for GW	No support of windows-7 OS, no support of NR, not cyber-secure
5	400/220kV Tughlaqabad Substation	NR make, Windows-7 OS for SAS and LINUX for GW	No support of windows-7 OS, no support of NR, not cyber-secure
6	400/220kV Sonipat Substation	GE make, Windows-7 OS	No support of windows-7 OS, GW crashing, not cyber-secure

A.6.2 In view of the facts mentioned above, POWERGRID has submitted for information to members that the replacement of the SCADA system at these substations is going to be done under ADD-CAP.

A.6.3 Forum noted the same.

A.6.4 EE (C), NRPC asked POWERGRID to take care of reporting to Main and Backup RLDC requirement of NRLDC as discussed in various TeST meetings of NRPC. The same may be discussed by POWERGRID with NRLDC team.

NRPC Deliberation

A.6.5 NRPC Forum also noted the information.

Decision of Forum

Forum noted the information that the replacement of the SCADA system at above-mentioned substations is going to be done by POWERGRID under ADD-CAP.

A.7 Installation of CSD in 400KV Kalaamb-Wangtoo and 400KV Kalaamb-Sorang lines to control switching surges (agenda by Powergrid Kala Amb Transmission Limited)

TCC Deliberation

A.7.1 EE (O), NRPC apprised that agenda regarding installation of CSDs in 400KV Kalaamb-Wangtoo and 400KV Kalaamb-Sorang lines to control switching surges was deliberated in 224th OCC meeting held in Oct'2024. As per the

recommendations of OCC forum, a Joint meeting was held on 11.12.24 among CTUIL, CEA, Grid-India, POWERGRID & HPPTCL and requirement for installation of 05 Nos CSD relays (04 Number at POWERGRID Kalaamb and 01 number at Sorang) was agreed.

A.7.2 Subsequently, above agenda was deliberated in 227th OCC meeting held in Dec'2024 & OCC Forum approved the installation of 05 numbers CSD i.e. 04 Number at Kalaamb (Both main and Tie CBs at Kalaamb) and 01 Number at Sorang end. As per HPPTCL, CSD relay is already installed at Wangtoo end.

A.7.3 Further, Kalaamb being a TBCB Project and additional requirement which was not envisaged earlier, POWERGRID was asked to submit an agenda in upcoming NRPC meeting. Extracts of minutes of 227th OCC meeting is attached as **Annexure-IV**.

A.7.4 POWERGRID has submitted that the approx. financial implication for installation of 05 nos. CSD shall be INR 2.0 Cr (1.60 Cr for Kalaamb and 0.4 Cr for Sorang).

A.7.5 In view of the above, POWERGRID sought the approval for the installation of 05 nos. CSD in 400KV Kalaamb-Wangtoo and 400KV Kalaamb-Sorang lines by PKATL (TBCB SPV) under RTM mode of recovery, may also be finalized.

A.7.6 CTUIL representative mentioned that the above project may be awarded under RTM to same subsidiary. They can go to CERC without requirement of licensee to recover the cost in one go.

NRPC Deliberation

A.7.7 Forum was in consonance of the deliberation held in the TCC meeting.

Decision of Forum

In line with technical concurrence in the OCC, Forum approved the installation of 05 nos. CSD in 400KV Kalaamb-Wangtoo and 400KV Kalaamb-Sorang lines by PKATL under RTM mode of SPV.

A.8 URTDSM (Unified Real Time Dynamic State Measurement) Phase-I Cyber Security Issues (agenda by POWERGRID)

TCC Deliberation

A.8.1 POWERGRID representative apprised that the URTDSM Phase 1 System was made operational from year 2018-19 onwards. The Contract was awarded in 2014. The AMC of URTDSM phase 1 system is available till Jan 2027. The various systems (IT hardware/Software) were procured in 2015-16 and are about 10 years old and most items have reached technical obsolescence.

A.8.2 The URTDSM phase-II project for replacement of these items is still under DPR stage and will take at least 3 years for implementation. Hence the URTDSM phase 1 system are to be kept functional and secure till Jan 2027 and beyond.

A.8.3 Also, CEA cyber security regulations require certain changes in the URTDSM phase 1 system architecture, which necessitates addition of few cyber security components. Also, the Auditors of cyber security have raised NCs (Non-Conformity) for this deviation. The following are the three measures proposed to resolve these issues.

I) Virtual patching for Servers with Windows 2012 R2 Operating system

a. Support from Microsoft for Windows2012 R2 Operating system has expired on 10th October-2023:
b. M/s GE informed that Win OS (Servers) upgrade is not feasible under current circumstances owing to following reasons:
    i. Some of the current applications will not be supported on new operating systems as GE WAMS application Roadmap is heading for different application suite i.e. GridOS WAMS.
    ii. Associated applications of 3rd party tools will also not be supported on new operating systems.
c. In view of above, a system upgrade on existing infra is not feasible in current set-up.

POWERGRID explored the following alternative of Virtual patching to ensure the security of existing Windows Server until Phase-II systems which are in place:

- URTDSM WAMS System is being maintained air-gapped with perimeter protection at Firewall level and available updated Anti-virus patches for system robustness and security.
- Additionally, at HIPS level, option for Virtual patching shall take care of the obsolete Windows Server 2012 OS. Virtual patching protects operating systems and third-party applications from known vulnerabilities and protects legacy systems and end-of-life software that no longer receive updates, ensuring ongoing security and helping organizations meet compliance requirements.
- POWERGRID discussed with the OEM M/s TrendMicro and obtained budgetary quote. The OEM quoted approximately Rs. 1.50 Crores for all 500+ Servers installed in URTDSM System pan India (approximately Rs 30,000/- per Sever for 3 years license support)
- The solution is under PoC in one of the RLDCs. The cost at each control centre is **Rs.4.05 lakhs excluding GST.**

Members may deliberate and concur the proposed solution of virtual patching to address the obsolete Windows Server 2012 OS issue. Upon concurrence from the RPC, licenses from the OEM shall be procured on Cost sharing basis.

II) <u>PMU Data Streaming through Firewall:</u>

a. There is an observation in Cyber Security Audit to stream the data from PMU to PDC through a Firewall.

b. Also, CEA Cyber Security guidelines 2021 stipulates creating of electronic security perimeter (ESP). This necessitates the requirement of streaming PMU data through firewalls at all control centres.

c. The same requirement was not envisaged in the URTDSM Phase-1 system design. Hence, M/s GE was asked to submit the techno-commercial offer for the segregation.

d. Based on the discussions in SCADA Work Group meeting in some RPCs, it was proposed to use the existing internal firewalls only (by configuring separate VLAN) for PMU data streaming instead of purchasing a new firewall. This solution also needs procurement of an additional 2 LAN switches.

e. Accordingly, based on the quotation given by GE, the cost of the solution for each Control centre is **Rs. 15.35 Lakhs excluding GST** (Services for configuring internal firewall and supply of 2 new LAN switches).

Members may deliberate and concur the above proposal to address the requirement of PMU data streaming through firewall.

III) <u>Retention of logs up to 6 months:</u>

a. There is an observation in Cyber Security Audit to retain security event logs for 6 months (180 days).
b. CEA Cyber Security Guidelines 2021 stipulates System logs need to be maintained for at least 6 months.
c. In URTDSM Phase-1 log retention was envisaged for only 1 month.
d. In view of above, POWERGRID obtained the techno-commercial offer from M/s GE which proposed 6TB additional storage requirement at each LDC to meet the log retention for 6 months.
e. The cost quoted by M/s GE for each Control Centre is **Rs. 19.35 Lakhs excluding GST**.
f. Members may deliberate and concur the proposal to procure the additional storage for Syslogs.

Summary of POWEGRID Agenda for URTDSM Phase-I AMC Issues:

S No	**Description of the Issue being faced in URTDSM Phase-I AMC**	**Solution Proposed by POWERGRID**	**Tentative Cost in Rs. Lakhs excluding GST**	**Remarks**
1.	**Windows 2012 R2 OS Obsolescence:** Support from	To procure Virtual patching solution (Software License) from	**4.05 per LDC**	Budgetary quote from TrendMicro

	Microsoft for Windows2012 R2 Operating system has expired for different Server applications in the URTDSM system. Microsoft declared End-of-Support for the Win2012 R2 OS and system upgrade on existing IT infra is not feasible.	the present anti-virus OEM M/s TrendMicro (the solution protects the system from known vulnerable systems and legacy systems from any remote code execution attacks. POWERGRID budgetary of Rs. 1.5 Crores (approx.) for 3 year license support.		
2.	**PMU Data Streaming through Internal Firewall**: As per feedback from Cyber Security audits conducted on URTDSM system and also as per CEA Cyber Security Guidelines 2021, PMU data is to be streamed through firewall at all control centers.	To stream PMU data through the internal firewall which needs following to be procured: a) 2 LAN switches (Harware) b) Configuration of Internal Firewall (Services)	**15.35 Lakhs per LDC**	Budgetary quote from M/s GE
3.	**Retention of Logs up to 6 months:** As per feedback from Cyber Security audits conducted on URTDSM system and also as per CEA Cyber Security Guidelines 2021, security event logs are to be stored for at least 6 months (existing system has provision for only 1 month logs storage)	To procure additional storage of 6TB (Hardware) for each control center to cater to the need of log retention for 6 months. Techno commercial proposal obtained from GE.	**19.35 Lakhs per LDC**	Budgetary quote from M/s GE

A.8.4 POWERGRID has submitted that total Cost for NR: **Rs. 3.87 Crores for NRLDC and 9 SLDCs of NR.**

A.8.5 POWERGRID requested Forum to concur the above three proposals for immediate augmentation of the system considering the Cyber Security issues.

A.8.6 Upon concurrence of RPC for implementation of the URTDSM Phase-1 cyber security augmentation, process for award of this work shall be initiated by POWERGRID.

A.8.7 The cost of this work shall be recovered through tariff in addition to the ongoing tariff portion on RTM basis (cost sharing) as per CERC Regulations.

A.8.8 **Status of approval in other RPCs as submitted by POWERGRID:**

POWERGRID took up the above three proposals for addressing the Cyber Security requirements for the existing URTDSM Phase-I system on Cost sharing basis in following RPCs/OCCs:

a. 52nd ERPC meeting held on 05.09.2024 - Approved
b. 51st WRPC meeting held on 11.01.2025 – Approved
c. 54th SRPC Communication meeting of on 21.01.2025 – Agreed for Point (1) and (2). To be taken up to SRPC board.
d. 28th NERPC & TCC on 20.02.2025 - the matter could not be deliberated.

A.8.9 CGM, NRLDC stated that cyber security is major concern and therefore requirement should be met definitely. However, a prior discussion needs to be done in Sub-Committee meeting.

A.8.10 MS, NERPC conveyed that the similar agenda was listed for prior discussion in communication meeting.

A.8.11 Forum was of view that agenda may firstly be discussed in TeST meeting and thereafter the agenda may be brought by POWERGRID for approval in NRPC meeting.

NRPC Deliberation

A.8.12 Forum noted the discussion held in the TCC meeting and recommended to deliberate the agenda first in TeST meeting.

A.8.13 POWERGRID requested to include this project under NRULDC as cost of the project is not much. MS, NRPC suggested POWERGRID to submit the agenda with all these details and requirements in upcoming TeST meeting.

Decision of Forum

Forum referred the agenda for discussion in the upcoming TeST Sub-Committee meeting. Accordingly, POWERGRID may submit the agenda.

A.9 Implementation of Travelling Wave Fault Locator (TWFL) in Critical 400kV lines under Additional Capitalisation for tariff block 2024-29 (agenda by POWERGRID)

TCC Deliberation

A.9.1 EE (O), NRPC apprised that in POWERGRID, Travelling Wave Fault Locators (TWFL) devices have been installed in 765kV and Inter-regional lines. These devices detect fault location with greater accuracy within limit of one tower span or 0.5 km distance. The technique used by TWFL is not affected by transpositions, mutual coupling of parallel lines or changes in line construction. It generates high quality result for all types of faults, including high resistance ground faults and open circuits. Therefore, implementation of TWFL in lines will help in locating the faults accurately in case of line faults and in turn will result in quick restoration, lower outage, and better reliability of system.

A.9.2 POWERGRID representative informed that following cases of recent past are being tabulated towards our experience of receiving more accurate fault distance in case of tripping of lines in which TWFLs are installed.

Sr no	Element	Fault date	Fault location by Distance relay (kM)	Fault location by TWFL (kM)	Actual fault finding (kM)	Remark
1	765KV AGRA-FATEHPUR-I	20.11.2024	27.9	29.2	29.6	Fault detection by TWFL found in accuracy of +/-
2	765KV AGRA-FATEHPUR-II	28.12.2024	89.6	95.05	95	
3	765KV LUCKNOW-	03.01.2025	156.7	153.5	153.9	

	BALIA					0.5kM
4	765KV ORAI-ALIGARH-I	19.06.2024	235.7	268.77	268.3	
5	765KV ORAI-ALIGARH-II	05.09.2024	22.7	24.2	24.6	

A.9.3 In view of above, as per experience of Implementation of TWFL in 765kV & Inter-regional lines, to improve system reliability, travelling wave Fault locators are required to be implemented in various 400kV Lines of POWERGRID which are critical in nature. Based on various parameter like line length, line terrain, power flow capacity, generator connectivity, tripping frequencies, Age etc., 50nos of 400kV lines are being proposed for implementation TWFL with estimated cost of **Rs 12.86 Cr**. List of lines with project details attached as **Annexure-V.**

A.9.4 POWERGRID requested for expenditure approval of above, for implementation of TWFL in 50 nos. Critical 400kV lines, under Additional capitalization (Add-cap) for Tariff Block 2024-29 in the respective project/scheme.

A.9.5 MS, NRPC asked POWERGRID about the cost recovery mechanism for the installed TWFL on these 765kV lines. POWERGRID representative replied that the same was booked under RTM at that time. As of now, POWERGRID is looking for implementation of the same in 400kV lines in order to reduce the outage time by receiving the fault location more accurate.

A.9.6 MS, NRPC conveyed that all transmission utilities and STUs may explore the TWFL technology for their assets. It will be helpful for grid reliability and reduce the maintenance time and manpower effort.

A.9.7 NRLDC representative stated that the proposal may be discussed in protection subcommittee meeting first. It was mentioned that a report on utility of TWFL may be shared by POWERGRID similar to that for Kala Amb CSD. It was also highlighted that list attached as annexure includes only POWERGRID NR-3 lines.

A.9.8 MS, NRPC mentioned that early fault detection and removal will be helpful not only for POWERGRID but also grid as whole because system availability and reliability will increase.

A.9.9 MS, NRPC asked the views of states.

A.9.10 CE, UPSLDC highlighted that the TWFL technology will lead to increase the Transmission System Availability of asset of POWERGRID. Then why it has been proposed by POWERGRID under ADDCAP.

A.9.11 ED, POWERGRID NR-3 mentioned that each activity of modification, upgradation, advancement, renovation will help to increase the availability. He stressed that most of expenditure under O&M covers the manpower and consumable item cost. For any system improvement action, POWERGRID needs to do under ADDCAP with approval of NRPC Forum.

A.9.12 EE (C), NRPC added that with implementation of TWFL, POWERGRID is improving the maintenance of the transmission lines and system. Therefore, any expenditure on this should be part of O&M. HVPN was also of the same view.

A.9.13 GM, POWERGRID NR-3, conveyed that any action for system improvement always increases the grid reliability.

A.9.14 MS, NRPC mentioned that these TWFL implementation will improve the maintenance practice. He highlighted that technical advancements should always be appreciated. TCC, Chairperson was also of the same view.

A.9.15 Subsequently, it was agreed that POWERGRID may be allowed to book expenditure for implementation of TWFL in 50 nos. Critical 400kV lines, under Additional capitalization. However, POWERGRID has to approach the CERC for final decision to recover the cost under ADDCAP. Based on that actual cost recovery will be done by POWERGRID.

A.9.16 Lastly, Forum directed UPPTCL, NTPC, other concern utilities and states to extend help to POWERGRID during implementation of TWFL at their end.

NRPC Deliberation

A.9.17 Forum noted the discussion held in the TCC meeting and concurred the same.

Decision of Forum

Forum accorded approval for the proposal of POWERGRID for expenditure for implementation of TWFL in 50 nos. Critical 400kV lines, under Additional capitalization (Add-cap) for Tariff Block 2024-29.

A.10 Construction of additional colony quarters at Sohawal and Shahjahanpur Substations (agenda by POWERGRID)

TCC Deliberation

A.10.1 EE (O), NRPC apprised that initially, the construction of colony at Sohawal and Shahjahanpur Substations were not constructed due to implementation of National Transmission Asset Management Centre (NTAMC) inter-alia for remote operation of substation and establishment of Maintenance Service Hub (MSH) concept. However, considering the challenges faced in maintenance through MSH, it was felt appropriate to follow the earlier concept of substation maintenance by placing maintenance staff at the substation and that for operation purpose, to place some operation staff in substation so that any contingency can be met immediately to avert any major breakdown. Accordingly, residential quarters for Operation & Maintenance staff at Sohawal and Shahjahanpur Substations were constructed at later stage and approval was given in 72nd NRPC meeting for construction of colony at these Substations after cut-off date of the respective schemes.

A.10.2 However, off-late, additional manpower for Transmission Line maintenance were also posted at Sohawal and Shahjahanpur as other Line groups were located far away resulting in longer transit time during routine & breakdown maintenance. Therefore, construction of additional quarters is required at Sohawal & Shahjahanpur S/S. Presently, employees are staying far away from these Substations resulting in longer commuting time leading to delayed response time in contingent situations under odd hours, which is not desirable.

A.10.3 In view of above, POWERGRID has proposed that additional quarters may be constructed at Sohawal and Shahjahanpur Substations. To optimise the construction cost and minimum land utilisation, it is proposed to construct additional quarters on the existing single storey buildings. Accordingly, extension of additional feasible quarters is proposed below:

a. Sohawal : C-Type-02 Nos., B2 Type-02 Nos.
b. Shahjahanpur : C-Type-02 Nos., B2 Type-02 Nos.

A.10.4 Preliminary cost for Construction of additional quarters over the existing quarters at above locations is as follows:

a. Sohawal : INR 1,57,26,216.
b. Shahjahanpur : INR 1,57,26,216

Total	: INR 3,14,52,432
Say	**: INR 3.15 Crores**

Cost has been calculated based on CPWD issued Plinth Area Rates (PAR) 2023 (cost indexing done up to 01.04.2024 as per CPWD circular dated 11.09.2024)

A.10.5 POWERGRID submitted the proposal for consideration of preliminary estimated cost of INR 3.15 crores (excluding GST) under ADD CAP 24-29 towards construction of additional quarters on the existing quarters at Sohawal and Shahjahanpur Substations under NR-III.

A.10.6 Forum accorded approval to the proposal of POWERGRID.

NRPC Deliberation

A.10.7 Forum concurred the deliberation held in the TCC meeting and gave consent on POWERGRID proposal.

Decision of Forum:

Forum accorded approval for construction of additional quarters on the existing quarters at Sohawal and Shahjahanpur S/s with preliminary estimated cost of INR 3.15 crores (excluding GST) under ADD CAP 24-29.

A.11 Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-5 :6 GW) [Barmer Complex] Barmer-II : 6GW (Solar) (agenda by CTUIL)

TCC Deliberation

A.11.1 CTUIL representative apprised that after deliberations, transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-5 :6 GW) [Barmer Complex] Barmer-II : 6GW (Solar) was agreed in the 36th CMETS-NR meeting held on 15.01.25 and 35th CMETS-WR meeting held on 30.01.25.

A.11.2 Further, CTUIL representative briefed the detailed scheme (attached as **Annexure-VI** of agenda) for the above transmission system.

A.11.3 He added that as per discussion held in 25th NCT meeting on 28.11.24, both VSC & LCC technology are being considered in the present proposal and will be discussed along with comparative analysis in NCT meeting for finalization of the scheme.

A.11.4 Dy. COO, CTUIL mentioned that in the CMETS meeting, CTUIL had proposed for LCC scheme however Grid-India suggested to go with VSC technology.

A.11.5 She added that implementation timeframe for LCC technology is less than VSC and cost is approximately 11,000 Cr. higher with VSC technology as compare to LCC.

A.11.6 MS, WRPC stated that WR constituents agreed for LCC technology during discussion held in last WRPC meeting.

A.11.7 MS, NRPC asked the views of NR constituents regarding the technology to be adopted for the scheme.

A.11.8 CTUIL proposed to adopt the LCC technology due to lesser implementation timeframe, less cost, possibility of overload capability, slightly higher efficiency in steady state operation.

A.11.9 NRLDC representative stated that generation evacuation has been planned through HVDC. Various advantages of VSC based HVDC over LCC based HVDC were highlighted in the meeting from NRLDC side:

- VSC HVDC is more effective under low SCR condition as SCR is falling below 2, when HVDC capability is also considered for SC MVA calculation.
- less commutation failure probability
- Capable of providing black start service
- Less harmonic injection, lower filter requirement
- Superior fault ride-through capability
- Can provide grid-forming services, voltage regulation, and frequency support
- One LCC HVDC (Bhadla3-Fatehpur) is under implementation, having one VSC HVDC would help to harness advantages of both configurations.
- There have been issues of continuous oscillations in the grid when SCR falls below 4 at major RE pooling stations such as Fatehgarh-II.

A.11.10 Finally, Forum agreed the proposal of CTUIL for transmission scheme for evacuation of power from Rajasthan REZ Ph-IV (Part-5 :6 GW) [Barmer Complex] Barmer-II : 6GW (Solar). Forum also noted the preference of CTUIL for LCC technology due to lesser implementation timeframe, less cost, possibility of overload capability, slightly higher efficiency in steady state operation. The advantage of VSC technology, though it is considerably costlier option, as suggested by NRLDC was also discussed.

A.11.11 Forum agreed that the decision on selection of technology between VSC and LCC will be taken in the NCT meeting.

NRPC Deliberation

A.11.12 Forum concurred the discussion held in the TCC meeting and approved the proposal of CTUIL regarding transmission lines scheme on technical ground.

Decision of Forum

Forum accorded approval to the proposal of CTUIL regarding transmission scheme for evacuation of power from Rajasthan REZ Ph-IV (Part-5 :6 GW) [Barmer Complex] Barmer-II : 6GW (Solar). Further, the technology to be adopted for HVDC system (VSC or LCC based) may be deliberated and decided in the NCT meeting.

A.12 Certification for Non-ISTS Lines carrying inter-state power as specified under Regulation 93 under CERC (Terms & conditions of Tariff) Regulation 2024 (agenda by JSW) & Consideration of Naitwar Mori HEP (60 MW) Transmission system as deemed ISTS scheme (agenda by SJVN)

TCC Deliberation

A.12.1 JSW vide letter dated 07.03.2025 submitted that JSW Energy (Kutehr) Ltd. is in final stage of construction of Kutehr HEP 240 MW in the Chamba District of Himachal Pradesh. COD of the project is expected very shortly around 1st week of May'2025.

A.12.2 HPPTCL has developed 400 kV D/C transmission line from Lahal pooling substation to 400 kV Rajera substation of Power Grid Corporation of India Limited for evacuation of power from hydro-electric projects in the Ravi basin.

A.12.3 Kutehr HEP shall be connected with the network of the Himachal Pradesh Power Transmission Corporation Limited (HPPTCL) through LILO from 400 KV double Circuit Transmission Line Lahal to Rejera at Tower No.8 to Pot Head Yard for evacuation of power. This D/c line is already carrying ISTS power of GMR Bajoli Holi HEP. Further, Kutehr HEP has signed PPA with Haryana State, and this will ultimately form an ISTS power flow on the same line.

A.12.4 Further, JSW vide letter dated 07.03.2025 enclosing a copy of HPPTCL letter dated 02.07.2024 (attached at **Annexure-VII)** regarding recommendation as a part of the Inter State Transmission System in line with the Regulation 93 under CERC (Terms & conditions of Tariff) Regulation 2024 for certification of following transmission assets:

I. 400kV D/C Lahal-Chemra Transmission Line

II. 400/220/33kV GIS Substation (400/220kV 2x315 MVA+220/33kV 50/63 MVA) at Lahal alongwith 220kV Lahal-Budhil S/c Transmission Line in District Chamba, Himachal Pradesh.

III. 220kV D/c Bajoli Holi-Lahal Transmission line.

A.12.5 HPPTCL requested that CEA may initiate the process for certification of the subject assets in accordance with Regulation 93 under CERC (Terms & conditions of Tariff) Regulation 2024.

A.12.6 Further, SJVN representative apprised that its agenda is in reference to the SJVN letter dtd. 01.10.24 to CEA for consideration of transmission system for evacuation of power from Naitwar Mori HEP (60 MW) through LILO of Sawra Kuddu HEP - Hatkoti 220 kV D/C line of HPPTCL under ISTS scheme. The methodology for certification of non ISTS lines as ISTS as per relevant provisions of CERC Tariff Regulations, 2024 is under process at CEA.

A.12.7 In this regard, brief details of transmission system for NMHEP are as under:

Previous History:

1.0 As per the directions of the Commission in order dated 15.3.2017 in Petition No. 80/TT/2016, a committee was constituted on issues involved in Uttarakhand Integrated Transmission Project (UITP). The said Committee has submitted the report to the Commission, wherein transmission system in Yamuna Basin of Uttarakhand was deliberated in length. As per the Committee report, 220kV D/C Twin Zebra Mori - Dehradun (Vyasi) Transmission Line (116 km approx) for Power evacuation from hydro projects viz Naitwar Mori(60MW), ArokotTuni (72 MW), HanolTuni (45 MW), Mori Hanol (63 MW) and Jakhol Sankari(44 MW) along with Mori substation was to be implemented by PTCUL under UITP scheme approved by CERC as deemed ISTS scheme.

2.0 In consideration of NMHEP application for Connectivity and Long Term Access, CTU vide letter dated 16.10.2017 and its revisions dtd. 20.12.2018 & 17.01.2019 issued the grant of Connectivity for NMHEP, as per the following transmission system:

a) *Naitwar Mori HEP - #Location of Mori 220/132kV (PTCUL) substation 220 kV D/c (to be implemented by applicant along 220 kV bays at generating end).*

b) *#Location of Mori 220/132 kV(PTCUL) – Dehradun 220 kV D/c (to be implemented by PTCUL)*

#Mori 220/132 kV substation is not required in the time frame of connectivity of Naitwar Mori HEP.

3.0 Tripartite Transmission Agreement & Tripartite LTA Agreement was signed by SJVN with CTU on 16.01.19 and due to the non-presence of PTCUL's representative the same was not signed by PTCUL. Further, PTCUL filed the petition to CERC on 15.03.2019 with a prayer that

- CTU may be directed to issue the revised intimations for grant of connectivity incorporating the complete associated transmission system as the transmission system required for Connectivity,
- Generators, may be directed to execute supplementary Implementation Agreement with PTCUL and

- Generators and CTU may be directed to enter into tripartite LTA agreements, including all elements of associated transmission system with PTCUL in accordance with CERC Regulations.

4.0 The Tripartite LTA Agreement was signed among SJVN, PGCIL & PTCUL on 31.01.2020 and Implementation Agreement was signed between SJVN & PTCUL on 16.03.2020. SJVN has made all out efforts with PTCUL to commence the activities of construction of Transmission line for evacuation of power from NMHEP. Further, PTCUL proposed the interim arrangement through Mori Vyasi Line in August, 2020 for which SJVN also gave its consent. PTCUL vide letter dated 28/29.12.2020, requested CEA to take over the construction of the transmission line from Mori to Dehradun in Central Sector, as their Board of Directors have agreed in principal for handing over of 220 kV D/c Mori-Dehradun line to Central Sector (CEA, CTU).

5.0 Keeping in view of the criticality for evacuation of power from NMHEP, a joint meeting was convened among CEA, CTU, PTCUL, HPPTCL & SJVN on 14.01.2021 to discuss the alternate scheme / Associated Transmission System through nearest HPPTCL 220 kV network at Sawara Kuddu/ Hatkoti in Himachal Pradesh. In the meeting, SJVN indicated that the completion of Mori – Dehradun 220 kV D/c line would not be possible in matching time frame of Natwar Mori HEP, therefore, they came out with an alternative arrangement for evacuation of power from Natwar Mori in consultation with HPPTCL. The proposal involves construction of following transmission line under ISTS-

LILO of one circuit of the existing 220 kV Snail – Hatkoti line of HPPTCL at Naitwar Mori switchyard.

Present Status:

6.0 Further during 3rd NRPC (TP) Meeting held on 19.02.2021, transmission system from NMHEP was deliberated and following was agreed:

- SJVN to construct 220 kV Naitwar Mori to Hatkoti/Snail PS D/c line and the 220 kV Pooling Station near Snail S/S as a dedicated system.
- Creation of 220kV Pooling station near Snail with LILO of both circuits of Snail –Hatkoti 220kV D/c line, 6 nos. of 220kV line bays, 50 MVAR bus reactor along with reactor bay.
- CTU to revoke connectivity granted for Naitwar Mori hydro project (60 MW) and SJVN to apply for connectivity to HPPTCL.
- CTU to revise the LTA granted for Naitwar Mori hydro project (60 MW)

7.0 In accordance with aforesaid arrangements, SJVN submitted the application for grant of Connectivity and LTA to HPPTCL on 05.04.2021 and 03.08.21. Accordingly, HPPTCL vide letters dated 19.06.2021 and 16.03.22 issued the grant of Connectivity and LTA for NMHEP.

8.0 A Joint meeting among SJVN, HPPTCL, CTU and CEA was held on 09.09.21, wherein after deliberations, following was agreed:

Evacuation of power from Naitwar Mori HEP (60 MW) through LILO of one ckt of Sawra Kuddu HEP - Hatkoti 220 kV D/C line at Naitwar Mori HEP. This interim arrangement would be for four years and accordingly the construction of Snail switching station may be deferred at present.

The interim arrangement for single circuit LILO has been approved in the 4th NRPCTP meeting held on 5th & 12th October, 2021.

9.0 The Connection Agreement and LTA agreement has also been signed between SJVN & HPPTCL on 01.06.2022 for NMHEP. Further, SJVN has filed an application for Grant of LTA for NMHEP to CTUIL. CTUIL vide letter dated 30.09.2022 issued the grant of LTA for NMHEP.

10.0 As the commissioning of NMHEP was delayed due to various factor including Covid-19 breakout, SJVN requested CTUIL and HPPTCL for the revision of LTA effective date, however it was informed that the extension / revision of LTA dates cannot be accepted and LTA shall be made effective from start date i.e.

30.09.2022 as per the LTA grant and M/s SJVN shall be liable to bear all commercial and operational liabilities corresponding to the quantum of LTA made effective w.e.f. date of effectiveness of LTA.

Accordingly, SJVN has made payments of transmission charges to CTUIL at the rate of 10% of transmission charge per MW for the State where such generating station is located till the commissioning of the NMHEP on 04.12.2023.

11.0 Further, as per LTA dated 01.06.2022 signed between SJVN and HPPTCL, SJVN is liable for payment of Long-Term Transmission Charges for the power of NMHPS evacuated through HPPTCL transmission assets namely 220 kV D/C Snail-Hatkoti Transmission Line, 220 kV Switching Station Hatkoti, 220 kV D/C (twin moose) Hatkoti-Gumma Transmission Line, 220/400 kV, 2×315 MVA Substation at Gumma with LILO of both circuits of 400 kV Jhakri-Abdullapur Transmission line. As per capital cost and ARR for FY 2023-24 claimed by HPPTCL in the petition filed for recovery of expenditure with Hon'ble HPERC, share of claimed ARR to be borne by SJVN is Rs. 21.81 Crore approximately. The implication of transmission charges of HPPTCL network would be approximately Rs. 0.90/ kWh which is impacting the overall tariff of NMHEP.

A.12.8 Accordingly, SJVN representative submitted that power evacuation system for NMHEP is being discussed with PTCUL from 2006 onwards and CERC was also agreed for implementation of transmission system for NMHEP by PTCUL under UITP scheme as deemed ISTS scheme. At the last moment during December, 2020, PTCUL has denied for implementation for the same and SJVN has no other option but to alternative arrangement for evacuation of power from Natwar Mori in consultation with HPPTCL in matching time frame of NMHEP. In the aforesaid scenario, in-spite of doing all efforts, NMHEP is bearing all the transmission system related expenses in terms of construction of dedicated transmission line as well as Intra state Transmission charges, wherein there is no fault of NMHEP.

A.12.9 The relevant provisions of CERC (Terms and Conditions of Tariff) Regulations, 2024 are as under:

Regulation 93(Approval Process of Non-ISTS Lines carrying Inter-State Power):

Existing intra-state transmission lines other than Natural ISTS lines, as certified by CEA based on the recommendations of the STU and RPC, shall be considered as ISTS systems.

Provided that these transmission lines are being used for evacuation and transfer of inter-state power on a regular basis as identified by CTU in consultation with the concerned RPC and RLDC;

Provided further that such transmission system is under operation and appropriate metering system is in place to record flow of power;

Provided further that a proper mechanism is in place for the maintenance of such a transmission system after its COD;

Provided that such lines have not been developed for the sole purpose of the beneficiary(ies) of a single State.

(1) Existing Intra State lines which were planned as ISTS System shall also be considered as ISTS lines;

Provided that such lines have not been developed for the sole purpose of the beneficiary(ies) of a single State;

Provided further that such transmission system is under operation and appropriate metering system is in place to record flow of power;

Provided further that a proper mechanism is in place for the maintenance of such a transmission system after its COD.

(2) CTU, in consultation with RLDC, shall identify all such non-ISTS lines which are utilized for ISTS power transfer after ascertaining that such nature of flow of power has become permanent.

A.12.10 SJVN in the joint meeting convened among CEA, CTU, PTCUL, HPPTCL & SJVN on 14.01.2021, wherein ***LILO of one circuit of the existing 220 kV Snail – Hatkoti line of HPPTCL at Naitwar Mori switchyard*** has already been proposed under ISTS. Power generated from NMHEP is being sold in Power Exchange except free power portion. As per the agreement, 12 % free power generated from the project is being given to GoUK. In the past, Power was sold under short term through bilateral arrangement to Kerala State Electricity Board.

A.12.11 In consideration of above as well as provisions of prevailing CERC Tariff Regulations, following transmission system was proposed under ISTS scheme:

- 220 kV Naitwar Mori to Hatkoti/Snail PS D/c line.
- 220kV Pooling station near Snail with LILO of both circuits of Snail – Hatkoti 220kV D/c line, 6 nos. of 220kV line bays, 50 MVAR bus reactor along with reactor bay.
- 220 kV D/C Snail-Hatkoti Transmission Line
- 220 kV Switching Station Hatkoti
- 220 kV D/C (twin moose) Hatkoti-Gumma Transmission Line.
- 220/400 kV, 2×315 MVA Substation at Gumma with LILO of both circuits of 400 kV Jhakri-Abdullapur Transmission line.

A.12.12 After consideration of aforesaid transmission system under deemed ISTS scheme, it would be beneficial for other projects in Yamuna Basin of Uttarakhand.

A.12.13 In view of above, he requested to consider Power Evacuation System for NMHPS, as proposed above under ISTS scheme.

A.12.14 Therefore, he submitted that CEA may be requested to finalize and adopt the methodology for certification of non ISTS lines as ISTS as per provisions of Regulation

93 of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 at the earliest.

A.12.15 MS, NRPC mentioned that similar agenda also received from HPPTCL and listed as Agenda No 19 and suggested that both agenda may be discussed together. Forum referred to discuss these agenda items of JSW and SJVN along with agenda item 19.

A.13 Presentation on Monetization of Transmission Assets- Capital recycling of robust Grid (agenda by CEA)

TCC Deliberation

A.13.1 MS, NRPC apprised that E&C Wing, CEA vide letter dated 24.02.2025 (enclosed as **Annexure-VIII)** has mentioned that Guiding Principles for Monetization of Transmission Assets in the Public Sector through Acquire Own Maintain Transfer (AOMT) based Public Private Partnership model issued by the Ministry of Power on 3 October, 2022.

A.13.2 Monetization of assets unlocks their value, eliminates their holding cost and enables scarce public funds to be deployed to new projects, thus fast-tracking new infrastructure creation. India has developed a solid track record of attracting institutional investment in infrastructure assets utilizing innovative structures such as Infrastructure Investment Trusts (InvlTs) and PPP based models [Toll Operate Transfer (TOT), Operation, Management and Development Agreement (OMDA) etc.] to monetize assets such as toll roads, transmission assets, pipelines and telecom.

A.13.3 A one day "Workshop on Monetization of Transmission Assets" was organised by Central Electricity Authority in collaboration with PFCCL, PGInvIT and NIIF on 06.12.2024 at NRPC Conference Room, Katwaria Sarai, New Delhi-110016. The workshop was a huge success and was attended by senior level participants from more than 20 State/UTs and representatives of Central Ministries/Departments. The workshop focused on key strategies for unlocking value in brownfield transmission assets. E&C wing, CEA has shared the outcome document highlighting the focus area of discussion and way forward (**Annexure-IX)**

A.13.4 Due to urgency, concerned representative from the CEA could not attend the meeting. Therefore, in order to take forward the engagement with the states, a presentation will be delivered in the next TCC & NRPC meeting.

NRPC Deliberation

A.13.5 Forum noted the discussion held in the TCC meeting.

Decision of Forum

Agenda will be taken in next NRPC meeting by E&C, wing of CEA

A.14 Recovery of Relinquishment Charges as per the direction of CERC in order dated 08.03.2019 (agenda by NRPC Secretariat)

TCC Deliberation

A.14.1 EE (O), NRPC apprised that a letter dated 15.01.2025 (enclosed as **Annexure-X**) has been received from Chairperson, SRPC on the subject above citing below points-

a. CERC Order dated 08.03.2019 in Petition No. 92/MP/2015, directed CTU to assess the stranded transmission capacity and calculate the charges payable towards relinquishment and the relinquishment charges paid by LTA customers shall be used for reducing transmission charges payable by other long term and medium term customers in the year in which such compensation is due in the ratio of transmission charges payable for the year by such long term customers and medium term customers. Accordingly, the relinquishment charges had been computed by CTUIL and uploaded on its website (Before the CERC Order, many IPPs/generators had relinquishment the LTA and the charges were being recovered from the beneficiaries).

b. It is noted that some of the generators filed appeal in APTEL against the recovery. Insolvency proceedings (CIRPL) of some generators, among the above generators have been completed. Insolvency proceedings of some generators are currently underway. CTUIL informed that APTEL stayed

raising of invoices against generators who are not under insolvency proceedings.

c. The current litigations led to delays the recovery of charges and have impacted the beneficiaries across regions. CTUIL has been actively pursuing the vacation of APTEL stay order and requested the support of all stakeholders, including DISCOMs through representation in the APTEL case.

A.14.2 In light of the discussions and recommendations of SRPC members in the meeting held on 18.11.2024, it was requested that each RPC may actively participate in the matter and the following suggestions were forwarded for further needful:

a. **Representation:** Encourage all DISCOMs in the Region to actively participate in the Judicial proceedings. This collective action can emphasize the liabilities of beneficiaries and the financial impact on the pool.
b. **Expert Legal Consultation:** Obtain and share expert legal opinions on the judicial relinquishment charge recovery to strengthen the case, across platforms.
c. **Awareness and Preparedness:** CTUIL has assured the sharing of hearing schedules and the list of appeals with constituents. It is Suggested that this practice be adopted by all RPCs to ensure better preparedness for court proceedings.
d. **Coordination across RPCs:** Propose regular communication among RPCs to exchange updates and formulate a unified approach to address the matter of recovery of relinquishment charges and stayed order/legal issues effectively.

A.14.3 It is felt that by collectively engaging in this matter, the resolution of the challenges can be expedited and ensure equitable recovery, as early as possible, that would be protect the interest of all the stakeholders.

A.14.4 It was requested that each RPC may deliberate on the above points and initiate suitable actions.

A.14.5 CTUIL representative mentioned that hearing for recovery of charges of constituents are going on. CTUIL will share the litigation details of court cases related to Recovery of Relinquishment Charges.

A.14.6 She added that in Northern region, approx. 84 Cr has already been disbursed to all DICs in proportion. Major portion was of UP, Delhi, Rajasthan, Haryana and Punjab.

A.14.7 Amount, which is under litigation, have also been paid to Southern region states on their request with undertaking that they will have to return the paid amount with interest if APTEL reverses the decision.

A.14.8 Other states in line with SR states may come forward and implead to support jointly. Details related to petitions may be shared by CTUIL to all other states.

A.14.9 MS, NRPC requested all NR states to support and try to get the recovery of Relinquishment Charges. He stated that all other RPCs may also participate similarly.

NRPC Deliberation

A.14.10 Forum was in consonance of deliberation held in the TCC meeting.

A.14.11 CTUIL representative conveyed that Northern region has highest share in the amount that will be relinquished. Forum requested all states to look into the matter.

A.14.12 MS, NRPC requested CTUIL to share the litigation details of court cases related to Recovery of Relinquishment Charges with NRPC Secretariat and all states as well.

***Decision of Forum*:**

Forum suggested that all NR states to come forward and implead in the various petition in APTEL for Recovery of Relinquishment Charges. CTUIL will share the APTEL proceeding details with DISCOMs and NRPC Secretariat so that DISCOMs may actively contribute in the proceedings.

A.15 Submission of DPR for the work Establishment of Security Operation Centre (SOC) at HPSLDC Shimla (agenda by HPSLDC)

TCC Deliberation

A.15.1 EE (O), NRPC apprised that HPSLDC vide letter dated 04.02.2025 submitted the detailed project report **(Annexure-XI)** for the work Establishment of Security Operation Centre (SOC) at HPSLDC Shimla.

A.15.2 MD, HPSLDC informed that HPSLDC has already submitted the DPR to HPERC for approval of Establishment of Security Operation Centre (SOC) at HPSLDC Shimla in line with CEA guidelines. He added that cost has been kept as per direction of NLDC. NLDC has capped the amount for establishment of SOC to 11.93 Cr.

A.15.3 EE (C), NRPC mentioned that during the PSDF cost appraisal committee meeting, the cost and scope of SOC project of all states were discussed and benchmark cost has been decided to funded under PSDF. Any cost beyond 11.93 Cr. will have to be borne by concerned state itself.

A.15.4 In earlier meeting, HPSLDC presented the cost approx. 26 Cr. Now the DPR proposal has been submitted by HPSLDC after revision following PSDF guidelines.

A.15.5 MD, HPSLDC added that cost of current proposal has been curtailed to 11.93 Cr.

A.15.6 MS, NRPC stated that PSDF committee will further examine the proposal before granting the fund.

A.15.7 Members agreed to accord approval for proposal of HPSLDC and recommended to get approval of NRPC Forum regarding PSDF funding for establishment of Security Operation Centre (SOC) at HPSLDC Shimla.

NRPC Deliberation

A.15.8 Forum concurred the deliberation held in the TCC meeting and accorded approval for PSDF for establishment of Security Operation Centre (SOC) at HPSLDC Shimla.

Decision of Forum

Forum recommended for PSDF funding for establishment of Security Operation Centre (SOC) at HPSLDC Shimla.

A.16 Reconstitution of National Committee on Transmission (NCT) (agenda by NRPC Secretariat)

TCC Deliberation

A.16.1 EE (O), NRPC apprised that MoP vide order No. 15/3/2018-Trans-Part (5) dated 18.02.2025 (**Annexure-XII**) has reconstituted the existing National Committee on Transmission (NCT) wherein all five Regional Power Committee have been included as member of the NCT.

A.16.2 Accordingly, Forum was requested to decide on representation from NRPC in NCT meeting.

A.16.3 MS, NRPC was of view that cost of schemes which are discussed in NCT meetings are generally to be borne by states. It is better to discuss with all states along with NRPC constituents to nominate the representation from NRPC.

A.16.4 MS, WRPC conveyed that in line with SRPC decision, WRPC has decided to nominate the chairperson, TCC in NCT. In absence of chairperson, TCC, Member Secretary will attend the meeting.

A.16.5 MS, NERPC stated that NERPC is going to take the same view in line with WRPC/SRPC.

A.16.6 Accordingly, Forum nominated Chairperson, TCC as representative from NRPC in NCT meeting. However, in absence of Chairperson, TCC, Member Secretary would be alternate member.

A.16.7 MS, NRPC stated that a formal letter will also be sent to CEA regarding the nominated member for representation from NRPC in NCT meeting.

NRPC Deliberation

A.16.8 Forum was in line with TCC discussion.

A.16.9 Chairperson, NRPC & MD, HPPTCL opined that Head of State TRANSCO may be nominated for NCT meeting whose agenda is listed. He also suggested that if listed agenda items pertaining more than one state then a pre meeting may be held by Chairperson, TCC with the concerned state TRANSCOs. ED, POWERGRID NR-3 was also of the same view.

Decision of Forum

Forum nominated Chairperson, TCC as representative from NRPC in NCT meeting. However, in absence of Chairperson, TCC, Member Secretary would be alternate member. A pre meeting may be held by Chairperson, TCC with head of states having agenda in the NCT meeting.

A.17 Training on Electrical Protection of Power System for officials of NRPC Constituents (agenda by NRPC Secretariat)

TCC Deliberation

A.17.1 EE (O), NRPC apprised the agenda was discussed in 52nd TCC & 77th NRPC meeting held during 27-28 Dec 2024, wherein forum approved for training on electrical protection of power system.

A.17.2 Further, the agenda was discussed in 57th PSC meeting held on 20.02.2025 wherein utilities given suggestions for designing course of training.

A.17.3 Accordingly, NRPC Secretariat has planned a 5-day residential training program for approx. 135 nos. of officers covering following topic:

A. Brief theory on protection of following topic:

i. Protection of Transmission Lines and Cables including compensated lines

ii. Generator and Generator Transformer Protection including Protection of RE plants (Solar/Wind/Hydro)

iii. Protection of Power Transformers & Shunt Reactor

iv. Protection of Busbar & Local Breaker Backup Protection

v. Protection of Facts (FSC/TCSC/SVC/STATCOM)

vi. Protection of HVDC Systems

B. Calculation of settings for above sr. no. i to vi with examples.

C. Protection Co-ordination.

D. Hands on for seeding settings in relay. Downloading of DR/EL from relay.

E. Fault analysis using DR/EL.

F. Communication (PLCC) for protection

G. Relay testing

A.17.4 PGCIL vide letter dated 19.02.2025 (**Annexure-XIII**) has submitted offer for above training.

A.17.5 Program Fee (Excluding GST):

a. Program fees for one batch (for a batch size up to 25 participants): INR 10,00,000/-
b. Per participant program fee for additional participants above 25: INR 40,000/-

A.17.6 He added that as training cost shall be 54.00 Lac (excl GST) for 135 participants, approval of forum is required as per SOP wherein expenses above 25 Lac shall be done with approval of NRPC Forum.

A.17.7 MS, NRPC reiterated that cost of this training will be borne by NRPC fund. There will be no extra burden on constituents. Nominations of officials will be sought from the members. He requested members to send the officials from protection domain exclusively.

NRPC Deliberation

A.17.8 Forum agreed with deliberations of TCC and approved the proposal of training program.

Decision of Forum

Forum approved the proposal of training program for 135 participants to be conducted through POWERGRID at offered cost of Rs 54.00 Lac (excl GST)*.*

A.18 Guidelines for the Usage and Sharing of Fiber Cores of Optical Ground Wire (OPGW)/UGFO for Power System Applications (agenda by NRPC Secretariat)

TCC Deliberation

A.18.1 EE (C), NRPC apprised that PCD, division, CEA vide letter dated 03.03.2025 has issued the Guidelines for the Usage and Sharing of Fiber Cores of Optical Ground Wire (OPGW)/UGFO for Power System Applications.

A.18.2 The same is enclosed as **Annexure-XIV** for information.

A.18.3 MS, NRPC stressed that based on these issued guideline, utilities may go forward keeping in mind that grid operation is topmost priority. Thereafter commercial utilization may be considered.

A.18.4 EE (C), NRPC briefed that based on requirement on particular fibers, certain nos. of cores need to be spared. There is provision that termination clauses (18 months) are to be included during agreement for fiber sharing on lease basis in new agreement.

A.18.5 MS, NRPC requested all utilities to go through issued guidelines and take necessary action for compliance.

NRPC Deliberation

A.18.6 Forum noted and directed utilities for compliance of CEA guideline.

Decision of Forum

Forum was apprised about the provisions of guidelines and sensitized utilities to comply the guidelines.

A.19 Methodology for declaration of Intrastate Transmission lines as ISTS under Regulation 93 of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 (agenda by HPPTCL)

TCC Deliberation

A.19.1 EE (O), NRPC apprised that CERC has notified Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 on 15th March, 2024. As per the regulation 93 of instant regulations following provision has been kept for Approval Process of Non-ISTS Lines carrying Inter-State Power-

"Existing intra-state transmission lines other than Natural ISTS lines, as certified by CEA based on the recommendations of the STU and RPC, shall be considered as ISTS systems.

Provided that these transmission lines are being used for evacuation and transfer of inter-state power on a regular basis as identified by CTU in consultation with the concerned RPC and RLDC;

Provided further that such transmission system is under operation and appropriate metering system is in place to record flow of power;

Provided further that a proper mechanism is in place for the maintenance of such a transmission system after its COD;

Provided that such lines have not been developed for the sole purpose of the beneficiary(ies) of a single State.

……."

A.19.2 Keeping in line with the provisions of the Hon'ble CERC (Terms and Conditions of Tariff) Regulations, 2024 regulation 93, proposal for certification of Intrastate assets as ISTS were submitted to NRPC and a meeting was held on 03.05.2024 to discuss the nature of lines as dedicated/ ISTS/Not ISTS status. After deliberations in the meeting following was agreed (MoM attached as **Annexure-XV**) –

"Under clause 93 of Tariff Regulation-2024, CEA has to certify the ISTS status for intra-state transmission lines based on recommendations of the STU and RPC. Therefore, CEA may devise a uniform philosophy for the same along with definition of various related terms mentioned in the clause"

A.19.3 In continuation to above decision HPPTCL representative submitted following Transmission schemes for declaration as ISTS to CEA vide letter dated- 02.07.2024 (**Annexure-XV**) and 13.08.2024 (**Annexure-XV**). The Transmission system submitted for certification as ISTS areas follows-

1. 400/220/66 kV GIS Substation at Wangtoo
2. 400/220/33 kV Lahal Substation, 400 kV D/C Lahal - Chamera line and 220 kV D/C Bajoli Holi Lahal line.

A.19.4 HPPTCL representative highlighted that the methodology for certification is yet to be framed even after lapse of one year from the effectiveness of CERC regulations. The delay in framing of methodology is affecting the cashflow of utilities/HPPTCL as the recovery is stayed on account of lack of decision on nature of lines/Substations. The state regulator while deciding the petitions of assets has directed HPPTCL to get the assets included in ISTS pool as the assets have beneficiaries outside the state and are carrying ISTS power. Petitions have been also filed with Hon'ble CERC as per directions of Hon'ble HPERC.

A.19.5 He requested that the Forum should pass a resolution to request CEA to expedite the framing CEA of methodology at the earliest so that transmission assets can be made part of regional pool and recovery of investment made can be ensured.

A.19.6 Accordingly, HPPTCL submitted that CEA may be requested to finalize and adopt the methodology for certification of non ISTS lines as ISTS as per provisions of regulation 93 of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 at the earliest please without any further delays.

A.19.7 JSW representative stressed that JSW Energy (Kutehr) Ltd. is in final stage of construction of Kutehr HEP 240 MW in the Chamba District of Himachal Pradesh. COD of the project is expected around 1st week of May'2025.

A.19.8 Further, he added that Kutehr HEP shall be connected with the network of HPPTCL through LILO from 400 KV double Circuit Transmission Line Lahal to Rejera. This D/c line is already carrying ISTS power of GMR Bajoli Holi HEP. Further, Kutehr

HEP has signed PPA with Haryana State, and this will ultimately form an ISTS power flow on the same line.

A.19.9 SJVN representative requested for consideration of Naitwar Mori HEP (60 MW) Transmission system as deemed ISTS scheme as subnitted in agenda no. A.12.

A.19.10 Therefore, HPPTCL, JSW & SJVN requested to finalize and adopt the methodology for certification of non ISTS lines as ISTS.

A.19.11 MS, NRPC mentioned that a letter has already been sent to Chairperson, CEA and added that methodology for certification of non ISTS lines as ISTS as per provisions of regulation 93 of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 is under process and expected to be finalized soon by CEA.

A.19.12 SE (O), NRPC informed that procedure for certification of non ISTS lines as ISTS as per provisions of regulation 93 of CERC (Terms and Conditions of Tariff) Regulations, 2024 is pending in NPC, CEA. It is yet to be decided that either CTUIL or NRLDC will do the load flow studies.

A.19.13 MS, NRPC conveyed that as requested by MD, HPPTCL, NRPC Secretariat will again take up the matter with CEA to expedite the formulation of guidelines.

NRPC Deliberation

A.19.14 Forum was in consonance with the deliberation held in the TCC meeting.

A.19.15 Chairperson, NRPC & MD, HPPTCL highlighted that recovery of 500 Cr. Capex is pending because methodology has not been finalized by CEA. This is very hard situation for small STU who has not got the recovery for such huge investment. A formal request may be sent by NRPC Secretariate to CEA to expedite the finalization of methodology at the earliest.

Decision of Forum

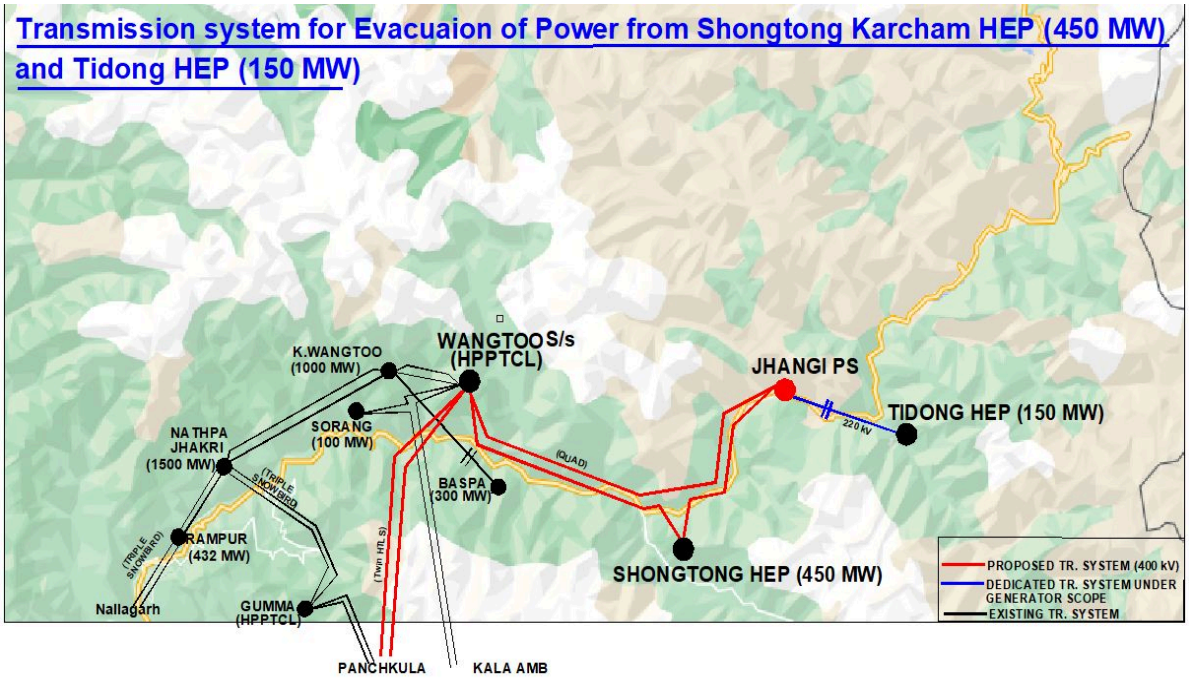
Forum asked NRPC Secretariat to take up with CEA to expedite the finalization of guidelines for approval process of existing intra-state transmission lines carrying inter-state power.

A.20 Implementation of Transmission System for Shongtong- Karcham HEP (450 MW) (agenda by HPPTCL)

TCC Deliberation

A.20.1 HPPTCL representative apprised that the evacuation arrangement for Shongtong and Tidong HEP has been finalized and notified by the Ministry of Power, GoI in April 2023**.** The details for evacuation arrangement is Common Transmission System for Shongtong HEP (450 MW) and Tidong HEP (150 MW) is attached as **Annexure-XVI.**

A.20.2 The SLD for the proposed evacuation arrangement through TBCB mode is as follows:



A.20.3 HPPTCL has mentioned that RECPDCL was appointed as BPC for the execution of above Transmission system under TBCB. As of now the bids called under TBCB mode by RECPDCL for execution of above transmission system have been recommended for cancellation due to the high price discovered over and above the estimated price. Given the timeframe of **July 2026** for execution of above system with only 15 months remaining as per earlier agreed timelines under ISTS is not feasible.

A.20.4 HPPCL vide their letter dated-05.12.2024 **(in Annexure-XVI)** has informed HPPTCL that they are expecting a mismatch between the Scheduled Generation of Project

(Shongtong HEP) and the proposed Transmission system under ISTS as they envisage completion of Project **in November, 2026.** HPPTCL accordingly took up the matter with CEA **(in Annexure-XVI)** to ensure that any possible mismatch between Generation and Evacuation system could be avoided. HPPTCL proposed the following two options under ISTS to ensure completion of Transmission system matching with November 2026 timeline of Shongtong HEP-

i) Construction of S/C LILO of 400 kV D/C Baspa - Karcham Wangtoo line at Shongtong HEP under Regulated Tariff Mechanism by PGCIL which will later on become part of final plan approved by CTUIL.

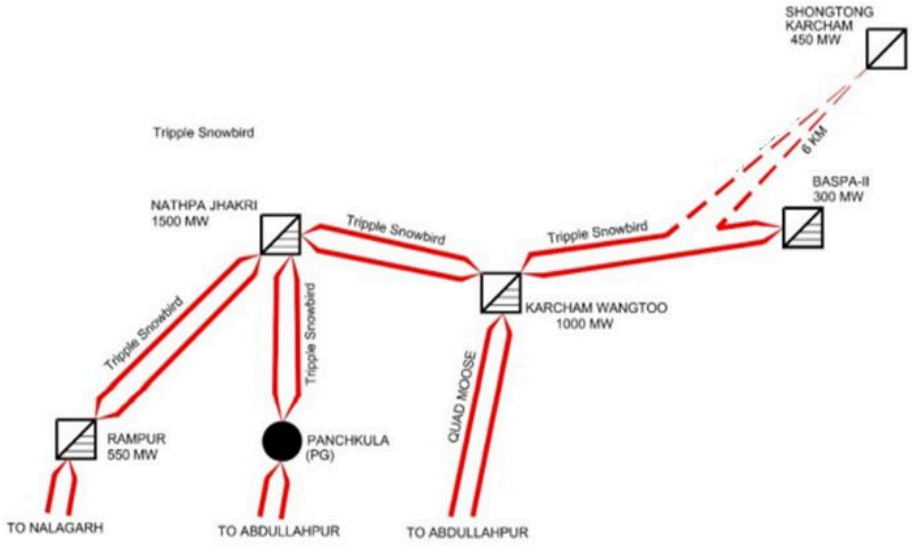
ii) HPPTCL has given willingness to construct the Interim arrangement in case it is declared as deemed ISTS.

A.20.5 HPPTCL also highlighted the fact that the development of HEPs other than Shongtong and Tidong in Upper Satluj basin will take considerable time, therefore considering the availability of various corridors downstream to Karcham Wangtoo HEP, the construction of additional 400 kV D/C Twin HTLS line from Wangtoo to Panchkula be dropped till development of additional generation in upper Satluj Basin. The projects like Jangi Thopan, Khab and Solar Projects envisaged in upper Satluj Basin shall take significant time to kick off and HPPTCL shall inform the CTUIL 3 to 4 years in advance so that downstream system can be developed matching their timeframe.

A.20.6 The uprating of terminal equipment needs to be done on priority as per recommendation of meeting held under chairmanship of Member Secretary NRPC subsequent to discussions held in 51st Protection Sub Committee (MOM of meeting attached in **Annexure XVI).**

"It was agreed that PowerGrid and the Generators in this complex shall provide their study/inputs for upgradation of terminal equipment at various substations to remove constraints for evacuation of power from Himachal Pradesh. NRLDC shall study the inputs in consultation with CTU and matter for upgradation of terminal equipment shall be discussed further in OCC meetings."

A.20.7 As such requirement of new 400 kV D/C Twin HTLS corridor from Wangtoo to Panchkula needs to be reconsidered.



Interim Arrangement

A.20.8 CEA upon receipt of HPPTCL request had conducted a meeting on 30.01.2025 of all stakeholders (MoM of the meeting attached in **Annexure XVI**) wherein following was agreed-

(i) HPPTCL is requested to take the matter in the coming meeting of NRPC for consultation with all the stakeholders.
(ii) Decision on the interim arrangement would be taken based on the timeline of commissioning of the planned transmission scheme and the timeline of commissioning of Shongtong Karcham HEP.

A.20.9 HPPTCL placed the issue as agenda in 228th OCC meeting of NRPC held on 14.02.2025 wherein HPPCL again confirmed their scheduled commissioning of Shongtong HEP by November 2026.

A.20.10 Further, NRPC has also provided its comments on the proposal to CEA wherein it has been agreed in principle that interim arrangement if required needs to be constructed to ensure constraint free evacuation of power from Shongtong HEP.

A.20.11 HPPTCL submitted that a team of officers from CEA were requested to visit and assess the progress of Shongtong HEP for the requirement of interim evacuation arrangement and the report was to be submitted by 7th March 2025. Correspondence received from NRPC is attached in **Annexure-XVI.**

A.20.12 In view of the above, HPPTCL put up the agenda for approval of following by the Forum-

i) Since timeframe of only 20 months is left for commissioning of Shongtong HEP, S/C LILO of 400 kV D/C Baspa to Karcham Wangtoo line at Shongtong HEP be approved for execution matching with timeline of Shongtong HEP i.e. November 2026 as an interim arrangement.

ii) Approval for execution of element in Sr. No. 1 under RTM by PGCIL to ensure timely execution of project.

iii) Reassessment of requirement of 400 kV D/C twin HTLS line from Wangtoo to Panchkula in view of availability of capacity in existing 400 kV corridors after uprating of terminal equipment.

iv) Implementation of balance scheme on priority under TBCB.

A.20.13 SE (O), NRPC stated that as per available information from CEA, commissioning of Shongtong Karcham HEP may slip to September, 2028.

A.20.14 JSW representative mentioned that there is cable with 700MW capacity in the existing 400kV Baspa-Wangtoo line to carry out the Baspa Power (330MW). He mentioned that during a meeting in 2020 in CEA, it was finalized that if shongtong is going to be commissioned then there needs to be an SPS.

A.20.15 JSW representative was of view that based on experience, commissioning of Shongtong HEP will be possible after 2028.

A.20.16 NRLDC representative stated that comments from NRLDC side were already provided in meeting held on 30.01.2025 & also during 228th OCC meeting held on 14.02.2025. Same comments were reiterated from NRLDC side.

A.20.17 HPPTCL representative stated that as per agreed SPS, there will be backing down of one unit of Shongtong for interim part. Further, he added that for Complex SPS, there is N-1-1 contingency which may be revaluated by NRLDC with upcoming system.

A.20.18 JSW representative submitted that there is need to have coordination between existing SPS and SPS that is going to be introduced.

A.20.19 NRLDC representative stated that in case Shongtong and Tidong generation is to be evacuated before commissioning of 400kV Wangtoo – Panchkula D/c line, switchgear replacement for Jhakri – Panchkula section and Rampur – Nallagarh section may be carried out as it may even lead to SPS requirement under N-1 contingency.

A.20.20 SJVN representative raised concern that in absence of commissioning of 400kV Wangtoo – Panchkula D/c line, Shongtong and Tidong generation will be evacuated through existing lines along with Nathpa Jakhari, Rampur HPS, Karcham wangtoo. He informed that already SPS operates every year in Nalagarh line. Further, by the commissioning of S/C LILO of 400 kV D/C Baspa to Karcham Wangtoo line at Shongtong HEP will always create problem. Regarding uprating of the terminal equipment at NJHPS, SJVN representative highlighted that current CT ratio is 2000/1 which has now been obsolete and it is not possible to change the system. All switchyard will have to be taken under shutdown which is not feasible for SJVN.

A.20.21 This was also discussed in 228th OCC meeting wherein NRLDC submitted that for replacement of terminal equipment, prolonged shutdown may be required which needs discussion beforehand to take judicious call as most substations in the complex are GIS substations.

A.20.22 MS, NRPC informed that in previous 28th NCT meeting held on 06.03.2025 this agenda was also discussed. During the discussion, it was decided that transmission

scheme is to be constructed as per original scope under TBCB. LILO of 400 kV D/C Baspa to Karcham Wangtoo line at Shongtong HEP may be constructed by HPPTCL.

A.20.23 In this case, JSW representative requested that their generation should not be affected. MS, NRPC stated that backing down of JSW power plant will not be done. Backing down of Shongtong Karcham will be done as discussed in 28th NCT meeting. Review of SPS may be done based on requirement.

A.20.24 SJVN representative also requested that there should not be any backing down of NJHPS and RHPS. He requested to arrange the review of SPS.

A.20.25 CGM, NRLDC stated that with the proposed arrangement, power of Shontong HEP would then be evacuated through 400KV Karcham-Wangtoo KalaAmb-Abdullapur section which has been implemented under ISTS. As it would increase power flow on the ISTS network, so the proposed interim arrangement must first be discussed in the CMETS meeting.

A.20.26 Finally, it was decided that in line with discussion held in the 28th NCT meeting, it was agreed that the transmission scheme would be implemented under TBCB as per original scope of work. However, S/C LILO of 400 kV D/C Baspa to Karcham Wangtoo line at Shongtong HEP may be done by HPPTCL since HPPCL is confirming generation of Shongtong HEP by November, 2026. Cost for the common portion which can be utilized later in final arrangement will be recovered under original cost of work.

NRPC Deliberation

A.20.27 Forum was in consonance with the deliberation held in the TCC meeting.

A.20.28 Chairperson, NRPC and MD, HPPTCL stressed that in line with TCC decision, interim arrangement is to be implemented by HPPTCL which is part of the original scope of work. Then S/C LILO of 400 kV D/C Baspa to Karcham Wangtoo line at Shongtong HEP should be declared as deemed ISTS.

A.20.29 Therefore, he requested Forum to recommend the S/C LILO of 400 kV D/C Baspa to Karcham Wangtoo line at Shongtong HEP as deemed ISTS.

A.20.30 MS, NRPC was of view that Forum may recommend the S/C LILO of 400 kV D/C Baspa to Karcham Wangtoo line at Shongtong HEP.

A.20.31 The minutes of the 28th NCT meeting has been issued vide letter dated 21.03.2025 as below-

NCT decided that the interim arrangement (LILO (with quad conductor) of one ckt. of 400 kV Karcham Wangtoo – Baspa D/c line at generation switchyard of Shongtong HEP) to be implemented by the State (HPPTCL). The cost for the common portion which can be utilized later in final arrangement will be communicated by HPPTCL to CEA/CTUIL within 10 days. The bidding to continue as per original scope, however, the cost for the common portion should be included in the RfP. HPPTCL would recover the same from the successful bidder.

Decision of Forum

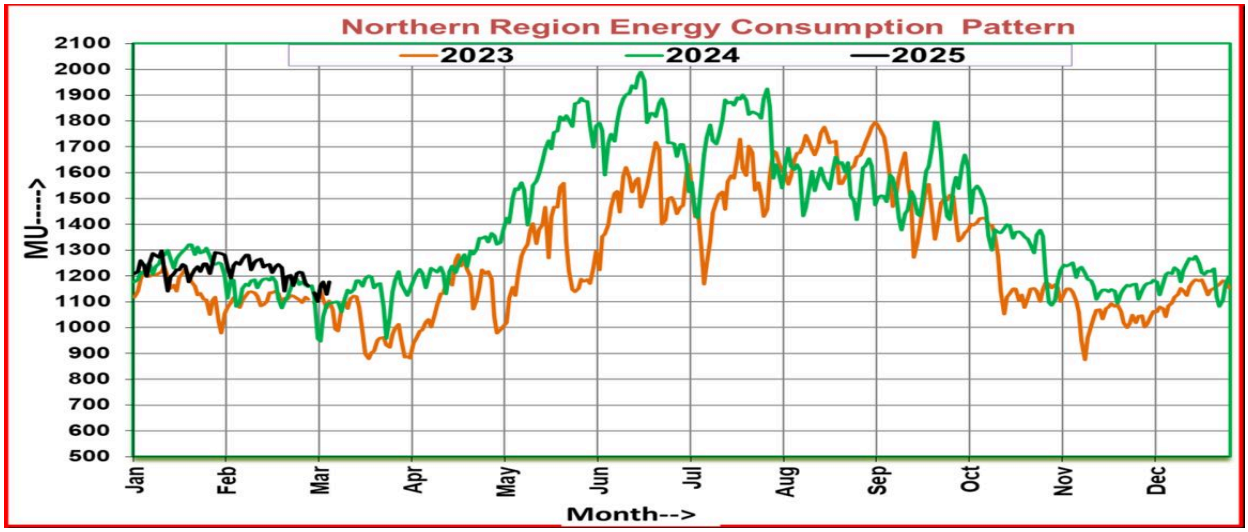
Forum decided that the transmission scheme would be implemented under TBCB as per original scope of work. However, S/C LILO of 400 kV D/C Baspa to Karcham Wangtoo line at Shongtong HEP may be done by HPPTCL since HPPCL is confirming generation of Shongtong HEP by November, 2026. The cost for the common portion which can be utilized later in final arrangement will be recovered under original cost of work. Based on request of HPPTCL, Forum also agreed that S/C LILO of 400 kV D/C Baspa to Karcham Wangtoo line at Shongtong HEP may be considered as deemed ISTS.

A.21 Actions for improvement in grid operation (State wise) (agenda by NRLDC)

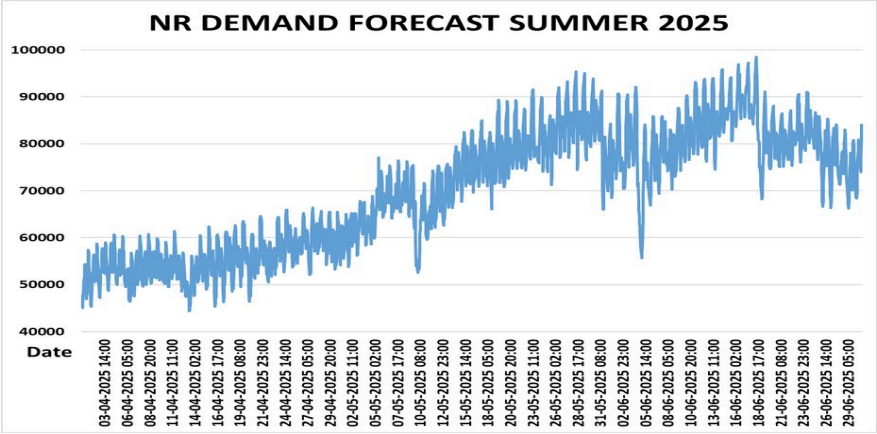
TCC Deliberation

A.21.1 NRLDC representative apprised that most of the NR states especially those lying in plain areas such as UP, Rajasthan, Punjab, Haryana, Delhi, Chandigarh U/T record their maximum demand met and maximum energy consumption during summer/monsoon months every year. With the increase in temperature and humidity, demand of Northern Region starts increasing. There has been continuous

growth over the years. Last year in 2024, average Northern region energy consumption was higher by 12%, 30%, 24% & 16% in April, May, June & July respectively compared to previous year 2023. This year also it is expected that maximum demand met and energy consumption of Northern region and NR states will break many previous records.



A.21.2 In 2024, Northern Regional Maximum demand of 91,234 MW was met on 19.06.2024 at 14:37 Hrs. As per the year-ahead forecast done by NRLDC team, following is likely to be the demand scenario during summer 2025:



Month	Max. forecasted demand during solar hours (06-18 hrs) (MW)	Max. forecasted demand during non-solar hours (18-06 hrs) (MW)
April	63125	66430
May	95429	89394
June	98512	90504

A.21.3 It is to be noted that as per information available with NRLDC, LGBR for F.Y. 2025-26 is still under finalisation by CEA/NRPC.

A.21.4 Some of the key actions that were agreed in past OCC meetings for ensuring safe and secure grid operation during summer months were reiterated in the meeting. It was requested that all concerned may be advised to adhere to these measures for safe and secure grid operation:

- Resource Adequacy guidelines issued by the CEA outline the roles and responsibilities of all stakeholders and provide a framework for RA planning in India. This matter was also discussed during the 52nd NRPC TCC meeting under Agenda Item A.12 to sensitize stakeholders on the importance of RA activities as per the approved CEA guidelines and IEGC provisions to enhance grid reliability. Concerned officers may be advised to ensure carry out all activities related to resource adequacy guidelines as per IEGC 2023.
- With reference to the Clause 31(2) of Central Electricity Regulatory Commission-IEGC Regulations, 2023 and the Operating Procedure of NRLDC prepared in accordance with the same, each SLDC has to furnish the demand estimation for day ahead, week ahead, month ahead (with time block wise granularity) and demand estimation for year ahead (with hour granularity). The sub-clause 31(2)(h) of IEGC-2023 states the following timeline for the submission of demand estimate data to RLDC.

Type of Demand Estimation	**Timeline**
Daily	10:00 hours of previous day
Weekly	First working day of previous week
Monthly	Fifth day of previous month
Yearly	30th September of previous year

- All SLDCs need to take actions at their end for timely submission of demand forecasting and resource adequacy data on day-ahead, week-ahead, month ahead and year ahead basis. It is also requested to ensure that actions are being taken at SLDC end to ensure compliance of listed clauses of IEGC 2023 as **Annexure-XVII.** The status of submission of data by states is being discussed in monthly OCC meetings. The recent RA data submission status by NR states which was also discussed in meeting taken by CERC was attached as **Annexure-XVIII**.

- Apart from GNA/Market arrangements based on forecast, other short term arrangements should also be planned for real time imbalances. For example, ensuring adequate margin while scheduling own thermal generation, units on bar, maintenance of reserves, technical minimum operation of thermal units in case of load crash, tie up with neighbor states or hydro rich states and utilization of real-time market etc. to bridge the load-generation gap in real time.

- Regular monitoring of weather websites for weather forecast information and planning load generation balance accordingly. In case of forecasted thunderstorm or wind storm, generation may be timely backed down so as to avoid any under drawl, high frequency operation of the grid and wastage of precious fuel.

- As per CERC (Ancillary Services) Regulation, 2022 and "Detailed Procedure for Assessment of Quantum of Secondary & Tertiary Reserve Capacity, along with Information Exchange and Timelines", NLDC is mandated to assess the quantum of secondary and tertiary reserves on year-ahead basis, to be maintained at the inter-state and intra-state levels. Accordingly, quantum of secondary and tertiary up and down reserves to be maintained at ISGS and intrastate levels has been already published on 25th January 2025, and it is available at: https://posoco.in/en/download/reserves-requirement-of-sras-and-tras-for-2025-26/?wpdmdl=60648. As per IEGC 2023 clauses, each state control area needs to ensure the availability of the quantum of secondary/ tertiary reserve at the State control area with due regard to the quantum as published by NLDC. The status is to be furnished to the concerned RLDC and NLDC two days before the day of scheduling.

- In view of high/increasing demand & transmission constraints (if any) in importing the power or in case of any contingency in the system, states to maximize their internal generation to avoid low frequency/low voltage operation or other related issues.

- SLDCs to arrange for display window at their control centers so that system operators readily know quantum of reserve available and hence better real-time actions can be taken.

- Some states continue to connect/ disconnect large quantum of load at hourly boundaries resulting in frequency spikes and instantaneous over voltages. Such actions to be avoided.

- States to take actions to ensure backing down of thermal generation as per latest regulations issued by CEA regarding thermal plants flexible operation. Non-action by intrastate generators leads to under drawl from grid in case of thunderstorms/ load crash. Intrastate generators in UP state are already backing down to 55% as per requirement. It becomes all the more important for RE rich state such as Rajasthan were thermal generators under RVUNL (except Supercritical units) are not backing down below 72% of their MCR.

- Utilities to update & share coal stock position of thermal plants at least a week in advance as agreed earlier in TCC/NRPC meeting, especially in case of anticipation of low coal stock.

- Take all necessary precautions to avoid any issues arising due to low voltages during summer months.

- All state control area/Users shall ensure that their protection and defense system are in working conditions and settings are as per the recommendations of NRPC. It was also suggested to carry out mock testing exercise of important SPS in Northern region including under state control area.

- All utilities to ensure the telemetry of all analog & digital points of all stations at respective control centers.

A.21.5 NRLDC representative highlighted that May-Sep. are high demand months in NR. Last year, NR met a maximum demand of 91.3 GW on 19.06.2024.

A.21.6 As per year-ahead demand forecast for 2025-26, a maximum demand of 95.4 GW in May 2025 and 98.5 GW in June 2025 are foreseen. Also, it will be a big challenge to meet demand close to 90 GW during evening hours.

A.21.7 It was mentioned from NRLDC side that special thrust is being given on generation resource adequacy planning by CEA, MOP, CERC, and NLDC. Guidelines were also issued by CEA which were discussed in detail in the last TCC/NRPC meeting. It was also mentioned that to improve participation from SLDCs, workshops were also conducted for SLDCs under the FOLD subgroup.

A.21.8 CERC issued order 9/SM/2024 dated 07.10.2024 related to resource adequacy at the load dispatch level. Subsequently, a meeting of all NR SLDCs, NRLDC, and NRPC with CERC was held on 14.02.2025 regarding resource adequacy measures at the SLDC end.

A.21.9 During the meeting on 14.02.2025 and also as per MOM issued on 05.03.2025, CERC asked states not to rely on RTM/DAM and to ensure reserves as notified by NLDC. Further, short-term arrangements should be made well in advance by all states. It was highlighted from NRLDC side that in recent few days, Punjab & J&K are purchasing heavily from RTM.

A.21.10 CERC pointed out in the meeting held on 14.02.2025 that many intrastate thermal generators are not backing down to the technical minimum of 55%. It was discussed in the meeting with CERC that CERC may take up the matter from their side at the Forum of Regulators.

A.21.11 NRLDC representative highlighted that following intrastate thermal generators in Rajasthan are not backing down to technical minimum of 55% of their MCR:

S. No.	Name of Intra-state Thermal Generating Station	Installed Capacity (MW)	Minimum Turndown level (in %)	Capacity which can be backed down to 55 % (in MW)

1	STPS, Suratgarh	1500	72%	
2	SSCTPS, Suratgarh	1320	55%	1320
3	KTPS, Kota	1240	72%	
4	KaTPP, Jhalawar	1200	55%	1200
5	CTPP, Chhabra	1000	72%	
6	CSCTPP, Chhabra	1320	55%	1320
7	DCCPP, Dholpur	330	72%	
8	RGTPP, Ramgarh	270	72%	
9	ADANI (EX BUS CAPACITY)	1200	55%	1200
10	RAJWEST	1080	72%	
11	BTPP	250	55%	250
TOTAL		10711		5290

A.21.12 Rajasthan SLDC representative stated that they will be providing schedules to all intrastate thermal generators to the technical minimum level of 55% w.e.f. 01.04.2025. In case a generator has any reservations, they would be asked to approach SERC.

A.21.13 It was further discussed that in Punjab state, out of 5070.45 MW installed capacity, capacity of 1909.05 MW cannot achieve MTL of 55% due to some technical issues.

A.21.14 Punjab representative informed that intrastate thermal generators at Ropar, Lehra Mohabbat, and Goindwal are not backing down to 55%. The matter was taken up with respective generators, however, it emerged that only Goindwal plant could reach MTL of 55% with certain modifications.

A.21.15 NRLDC representative highlighted that Panipat Thermal generators are also not backing down to level of 55% of their MCR.

A.21.16 Haryana SLDC representative informed that Panipat Thermal generators have been granted exemption from HERC regarding MTL level.

A.21.17 NRLDC representative expressed concern that MTL of Shravanti and Gamma Infra gas units are limited to only 85% due to PPA issue as mentioned by SLDC Uttarakhand.

A.21.18 TCC forum expressed concern on the same.

A.21.19 Uttarakhand SLDC representative informed that the matter was also discussed in their Grid Coordination Committee meeting recently, and they have taken up the matter with UERC. It was also highlighted that generators have verbally agreed that technically further below level of operation from 85 % is also possible, however, they are seeking suitable compensation for the same as it was not mentioned at the time of PPA.

A.21.20 TCC forum asked all SLDCs to take up the matter with the respective SERC to ensure that maximum intrastate generators are backing down to the MTL of 55%.

A.21.21 During the high demand season, the transmission system also remains heavily loaded. Transmission constraints observed in the grid during high demand period are regularly being highlighted in OCC meetings. Same is also being submitted to CTUIL and CEA through quarterly operational feedback.

A.21.22 Even after several follow-ups, it is observed that progress of several transmission elements is not up to the mark and expeditious actions from transmission utilities are required so that minimal issues are observed at transmission level during the high demand season.

A.21.23 State-wise anticipated issues and measures required thereof are listed below. Concerned transmission utilities were requested to provide update and ensure that these transmission elements are possibly commissioned before the high demand season.

Punjab:

- NRLDC representative requested for expeditious commissioning of 2nd 400/220kV ICT at Dhanansu Substation. Timeline of March 2025 was provided in the meeting by PSTCL.
- NRLDC requested PSTCL to study requirement of ICT capacity augmentation at 400/220kV Ludhiana(PG) and take it up timely.
- POWERGRID was asked to expedite commissioning of 400/220kV 500MVA Nallagarh ICT-4. POWERGRID representative informed that 500MVA NallagarhICT-4 is planned for commissioning by Sep 2025, however they would try and commission it by June 2025.
- NRLDC representative further asked PSPCL to take up the matter with Talwandi Saboo thermal generating units for minimizing outages of (intrastate) thereby reducing dependency on power import from ISTS.

Haryana:

- NRLDC requested HVPNL to plan to mitigate severe N-1 non-compliance issue at 400/220kV Deepalpur and Panipat(BBMB) during summer 2025. SPS is implemented at Deepalpur, but no SPS at Panipat(BBMB).
- It was highlighted that capacity augmentation at Panipat(BBMB) was also not planned (drawl by both Delhi and Haryana). BBMB was asked to provide latest status. BBMB representative informed that proposal for ICT capacity augmentation at Panipat was agreed in BBMB power subcommittee meeting, wherein HVPNL was asked to take up the agenda in CMETS meeting for ICT capacity augmentation at 400/220kV Panipat(BBMB).
- NRLDC representative requested for expeditious commissioning of 765/400kV 4th ICT at Bhiwani(PG) by POWERGRID. 765/400kV Bhiwani ICTs is getting overloaded with flow from 765kV side to 400kV side during high solar hours and from 400kV side to 765kV side during load-crash in Haryana. POWERGRID representative stated that new 765/400kV ICT at Bhiwani(PG) is expected by the end of 2025.
- It was discussed that reconductoring of 220kV Hisar (PG) - Hisar (IA) needs to be expedited by POWERGRID as it was agreed in 20CMETS of NR held on 30.06.2023. Timeline of 15.04.2025 was provided by POWERGRID for the

same. NRLDC and HVPN requested POWERGRID to ensure that work is completed by end of April 2025 so that shutdown is easily facilitated.

A.21.24 NRLDC representative further requested HVPN regarding:

- Action plan for N-1 non-compliance being observed in real-time at 765/400kV Bhiwani, 400/220kV Panipat (BBMB), Kabulpur, Hisar ICTs by Haryana SLDC.
- SPS implementation till ICT capacity augmentation.
- Measures required for minimizing MVAR drawl from ISTS to avoid low voltages.

A.21.25 HVPNL representatives agreed to provide inputs on the same in upcoming OCC meeting.

Rajasthan:

NRLDC representative highlighted major concern areas in Rajasthan state control area:

Constrained location	Status as available with NRLDC
N-1 contingency of 3*315=945 MVA ICT at Bhiwadi(PG)	Additional 500MVA ICT approved in 29 CMETS on 17.05.2024
N-1 contingency of 2*315+500=1130 MVA ICT at Bassi(PG)	Additional 500MVA ICT has been approved. Same is anticipated by 14.12.2025.
N-1 contingency of 315+500=815 MVA ICT at Neemrana(PG)	Additional 500MVA ICT has been approved in 36 NR CMETS held on 15.01.2025.
N-1 contingency of 2*500=1000 MVA ICT at Jaipur South(PG)	Additional 500MVA ICT has been approved in 36 NR CMETS held on 15.01.2025.
N-1 contingency of 2*315+500=1130 MVA ICT at Sikar(PG)	ICT Augmentation may be taken up in discussion with CTUIL/RVPNL.
N-1 contingency of 3*315=945 MVA ICT at Kankroli(PG)	ICT-4 has been approved and is expected to be commissioned by 22.09.2025.
N-1 contingency of 2*315=630 MVA ICT at Kotputli(PG)	Augmentation by 400/220 kV 500 MVA (3rd) ICT at Kotputli (PG) is expected by 31.12.2025
N-1 contingency of 2*315=630 MVA	As per latest status shared by Rajasthan SLDC

ICT at Deedwana(RVPN)	order for 10 no. ICT has been placed recently. First ICT is expected at Jaisalmer-II in Apr'25. All others expected by Sep'25. SPS has been implemented as temporary measure for some of the stations such as Chittorgarh (RVPN), Ajmer (RVPN), Merta (RVPN), Bikaner (RVPN), Jodhpur (RVPN), Suratgarh(RVPN), Ratangarh(RVPN)
N-1 contingency of 3*250+315=1065 MVA ICT at Heerapura(RVPN)	
N-1 contingency of 3*315 =945 MVA ICT at Chittorgarh (RVPN)	
N-1 contingency of 2*315 =630 MVA ICT at Ajmer (RVPN)	
N-1 contingency of 2*315 =630 MVA ICT at Merta (RVPN)	
N-1 contingency of 2*315 =630 MVA ICT at Bikaner (RVPN)	
N-1 contingency of 2*315 =630 MVA ICT at Jodhpur (RVPN)	
N-1 contingency of 2*315=630 MVA ICT at Suratgarh(RVPN)	
N-1 contingency of 3*315=945 MVA ICT at Ratangarh(RVPN)	
N-1 contingency of 1*500+1*315 =815 MVA ICT at Bhilwara (RVPN)	

A.21.26 It was also highlighted from NRLDC side that there is critical operation of Rajasthan grid and measures are required from RVPN side on:

- High MVAr drawal observed by intra-state network of Rajasthan at number of substations and poor power factor at various 400/220kV substations such as Bikaner, Kankani, Barmer, Jodhpur, Merta etc. (power factor of 0.55 observed at 400/220kV Bikaner during solar hours)
- Augmentation of intrastate transmission network for relieving the constraints (power flow and voltage) and improving reliability. Necessary strengthening to relieve 220 kV Bassi (PG)-Sikar (RRVPN), 220 kV Kankroli (PG)-Kankroli(RRVPN), Kankroli (PG)-Amberi (RRVPN), Sikar (PG)-Dhod(RRVPN), Bhiwadi (PG)-Khuskhera (RRVPN) etc. may be planned and implemented on priority.

- Possibility of some load management from daytime to evening/night time till all transmission constraints are mitigated.
- Voltages at all RE stations & nearby substations such as Akal, Ramgarh, Jaisalmer, Bhadla(RJ), Bikaner(RJ), Jodhpur, Kankani, Heerapura, Bhinmal, Merta etc. are low and fluctuating. Severe low voltages in Hindaun & Alwar area
- Expeditious commissioning of 400/220kV Dholpur S/s approved by CEA-PSPA I on 27.01.2023.
- Upgradation of terminal equipment at 07 no. intrastate substations could be carried out so as to make them commensurate with the line capacity for 400kV Bhadla-Bikaner D/C, 400kV Jaisalmer-Kankani S/C, 400kV Akal-Kankani S/C, 400kV Akal-Jaisalmer S/C, 400kV Suratgarh SCTPS-Babai D/C (upcoming line)
- Persistent issue of high loading of 400kV Bhadla(RJ)-Bikaner(RJ) D/C (loading restriction due to poor condition of line)
- Possibility of planning future transmission lines to connect RE pooling stations to load centres in Rajasthan may be explored.

A.21.27 During TCC meeting, RVPN representative intimated that:

- Out of the under implementation of additional capacity at 11 substations, ICTs have been commissioned at 2 no. 400/220 kV substations.
- ICT augmentation at other substations is expected by Sep 2025.
- NIT floated for upgradation of terminal equipment for 400 kV Bhadla-Bikaner D/C and 400 kV Jaisalmer-Kankani S/C.
- 4-month timeline (date of July 2025) was provided by RVPN for improvement of the condition of 400kV Bhadla(RJ)-Bikaner(RJ) D/C line.

A.21.28 NRLDC asked RVPN to take up equipment upgradation for other 4 intrastate lines, which are not having terminal equipment of commensurate ratings. RVPN representative agreed for the same.

A.21.29 CTUIL was asked to take up ICT capacity augmentation at 400/220 kV Sikar (PG) in CMETS. CTUIL representative agreed for the same.

A.21.30 TCC asked RVPN to ensure that measures are taken at their end so that above highlighted issues are resolved at the earliest.

Uttar Pradesh:

- New ICT/ Capacity augmentation to be planned by UPPTCL for 400/220kV Obra. SPS has been implemented by UPPTCL. Capacity augmentation has been requested on previous many occasions.
- POWERGRID representative informed that:
  - 500 MVA ICT at Allahabad (PG) is expected before summer 2025.
  - Agra (PG) and Lucknow (PG) ICTs are not expected before summer 2025 as they were recently awarded.

A.21.31 TCC forum asked UPSLDC and NRLDC to assess the loading scenario of 400/220 kV Obra-B ICTS for summer 2025, given the recent commissioning of 400 kV Sahupuri S/S.

Delhi:

NRLDC representative highlighted hat:

- After bus -split due to high fault level at Bawana, 2*315 MVA ICTs are N-1 non-compliant. Approved ICT augmentation capacity to be expedited. One ICT being augmented by POWERGRID may be commissioned before summer 2025.
- Expeditious commissioning of 400/220kV Gopalpur and Tikri Khurd by DTL is required.
- As discussed in OCC meeting, DTL needs to identify feeders for SPS at POWERGRID substations such as 400/220kV Mandola, Maharanibagh and 765/400kV Jhatikara so as to enable POWERGRID to commission SPS at these substations before summer 2025. SPS were implemented at 400/220kV Mandola and 400/220kV Maharanibagh several years ago, to be made functional upon confirmation from DTL.

TCC Forum asked:

- DTL/Delhi SLDC to identify feeders (preferably at 220 kV level) for SPS implementation at 765/400 kV Jhatikara, 400/220 kV Mandola, and 400/220 kV Maharanibagh before the next OCC meeting.
- POWERGRID to implement SPS within one month of feeder identification.

Uttarakhand:

- Although, SPS is implemented at 400/220kV Kashipur, additional ICT to be commissioned as per anticipated load growth and to improve reliability. TCC expressed concern on the non-progress of ICT bid award by PTCUL. PTCUL representative informed that 2 bids were received for new ICT at 400/220kV Kashipur ICT which is to be opened next week
- NRLDC representative expressed concern that severe low voltages were observed in PTCUL grid due to high demand and less intrastate hydro generation last year. Expeditious commissioning of capacitor banks (approved by NRPC forum) by UPCL is necessary to avoid low voltages during summer 2025.
- Uttarakhand SLDC representative informed that 190MVAr Capacitors approved by NRPC forum are expected to be commissioned by UPCL before April 2025.

Himachal Pradesh:

- POWERGRID to expedite commissioning of 400/220kV 500MVA Nallagarh ICT-4. POWERGRID representative informed that 500MVA NallagarhICT-4 is planned for commissioning by Sep 2025, however they would try and commission it by June 2025.

J&K and Ladakh U/T (constraints observed during winter):

NRLDC representative stated that the issues were discussed in detail in separate meeting at Jammu with J&K officials, NRPC sect and NRLDC on 06.02.2025. During the meeting, following major points emerged considering winter scenario:

- Voltages in Kashmir valley at the distribution level are very low (33 kV bus voltages reaching 21.5 kV & 11 kV bus voltages reaching 7.3 kV).
- Voltages in the 132 kV network in Lower Jhelum were below 100 kV in winter.

- No capacitors are available in Kashmir DISCOM.
- JKPTCL was requested to provide an additional busbar arrangement at old substations having a single bus arrangement. In case of space constraint, the bus sectionalizer option may be explored to avoid the possibility of a complete station outage.
- MD JKPTCL informed that, based on the guidelines received from MoP, a proposal was sent to the administration department for ensuring sufficient manpower at SLDC.
- POWERGRID representative informed that civil works for Ladakh SLDC would be completed by summer 2025, and by summer 2026, all infrastructure would be completed, and the SLDC would be functional.
- A committee was proposed to be set up to further investigate the matter, as per the directions of the NRPC forum, as Baglihar HEP is running at flat generation without any flexibility.
- Baglihar HEP and their OEM were invited for the NRPC meeting. However, representatives from Baglihar HEP and their OEM were not present in TCC/ NRPC meeting.

A.21.32 In view of above transmission constraints for all states, TCC agreed that:

- All SLDCs to take actions such that loading of ICTs and lines in their control area are below their N-1 contingency limits.
- While requisitioning power from various sources, states should take care to limit their scheduled drawl as well as actual drawl in real time within the Available Transfer Capability (ATC) limits assessed by SLDC and NRLDC.
- SLDCs also need to ensure that their drawl from grid remains within these limits during real-time operation. In the past, it has been observed that some states have drawn power beyond their ATC limits as assessed by SLDCs and NRLDC.
- Further, all SLDCs need to make sure that loading of 220kV and below voltage level intrastate lines remain within safe limits during the high demand season.

A.21.33 Further, all SLDCs were requested to share their ATC/TTC assessment for summer 2025 at the earliest with NRLDC. Further, it may be noted that CERC vide their order

dated 29.09.2023 has granted approval of "'Detailed Procedure for Allocation of Transmission Corridor for Scheduling of General Network Access and Temporary General Network Access under Central Electricity Regulatory Commission (Connectivity and General Network Access to the inter-State Transmission System) Regulations, 2022" which requires SLDCs to submit network data as well as PSSE basecases on M-12, M-6, M-1 basis. The monitoring of submission of these data by SLDCs is being done in OCC meetings on monthly basis where response of some of the states needs improvement.

A.21.34 Forum advised all concerned to expedite commissioning of transmission elements to enhance ATC/TTC limit of each state and resolve low voltage issues.

NRPC Deliberation

A.21.35 Forum noted the deliberation held in the TCC meeting.

Decision of Forum

Forum advised all concerned to expedite commissioning of transmission elements to enhance ATC/TTC limit of each state and resolve low voltage issues. Further, SLDCs were advised to take actions as per provisions of IEGC 2023 and Resource Adequacy guidelines issued by the CEA to ensure that power is made to all NR consumers 24X7 during the upcoming high demand season.

A.22 Shifting of NTPC Rihand stage-III generating station to northern region based on requirement during high demand season (agenda by NRLDC)

TCC Deliberation

A.22.1 NRLDC representative highlighted that the agenda for opening of 400kV Singrauli-Anpara line and shifting of Rihand Stage-III generating units to Northern region was discussed in 50th TCC & 74th NRPC meetings held in Raipur on 28.06.2024 & 29.06.2024 respectively. In the meeting, UP SLDC and UPRVUN expressed concern regarding possibility of major grid event in case of multiple element outage (N-2/N-3) in UP Control area. Further, NTPC expressed concern on healthiness of bus coupler at Rihand and also stated it would increase stress on Stage-1 & 2 switchyard equipments. Accordingly, forum decided that joint meeting would be convened with

participants from NRPC, WRPC, CEA-PSPA I, CTUIL, NRLDC, WRLDC, NLDC, NTPC, POWERGRID, UP SLDC, UPPTCL, UPRVUN and Lanco Anpara.

A.22.2 After detailed deliberations in meeting on 09.07.2024 (MoM enclosed as **Annexure-XIX**), all members agreed that:

1. Following works are in pipeline which are expected to be completed by 31st July 2024 and would facilitate opening of 400kV Singrauli-Anpara line as per decision of 1 NRPCTP and shifting of Rihand-III to NR for enhancement of WR-NR transfer capability:

- Testing of equipments of bus coupler bay connecting Rihand-II and Rihand-III by NTPC
- SPS implementation at 400/220kV Allahabad(PG) by POWERGRID
- SPS implementation in Anpara complex by UPPTCL
- Commissioning of one 765/400kV ICT at Obra C

2. As it has been observed that there has been significant delay w.r.t commitments made for some of the works at s.no.1, opening of 400kV Singrauli-Anpara line to control fault levels and shifting of Rihand-III to NR for enhancement of WR-NR transfer capability would be implemented as temporary measure in first week of August without further deliberations.

3. Above rearrangement of Rihand-III would be reversed to original configuration (Rihand-III back to WR) in October 2024. 400kV Singrauli-Anpara would continue to be kept opened as it is being opened to control fault levels in the complex.

4. Protection settings/CEA safety clearances to be coordinated before first time charging of the proposed rearrangement.

5. SOP to be prepared by NRLDC/NLDC for shifting of Rihand-III generation to NR

6. SOP/ready reckoner to be prepared by NRLDC and UP SLDC for switching operation of 400kV Singrauli-Anpara as per requirement.

A.22.3 Subsequently, all required SOPs were prepared and shared with all concerned. After review of SOPs, 400kV Singrauli-Anpara line was opened on 06.08.2024 to control fault levels in the complex as agreed in 1st Meeting of NRPCTP held on 24.01.2020.

A.22.4 After keeping the line under observation for one week and completion of works as agreed in meeting held on 09.07.2024, shifting of Rihand-III from WR to NR was carried out on 14.08.2024 with coordination with all stakeholders.

A.22.5 Rihand-III generation was evacuated through Northern region from 14.08.2024 to Oct 2024. Thereafter, when demand of Northern region reduced and shutdown of HVDC Rihand-Dadri was to be provided Rihand-III generation was shifted back to Western region on 04.11.2024.

A.22.6 Shifting of Rihand-III generation to Northern region reduced loading of 765kV Vindhaychal-Varanasi D/C, due to which NR was able to import higher power from WR without major constraint. ATC/TTC limits on WR-NR corridor and NR import were increased after shifting exercise which facilitated NR states to import higher power during summer months.

Sl No	Corridor	Time Period	TTC with Rihand-III in NR (MW)	TTC with Rihand-III in WR (MW)	Increase in TTC due to shifting of Rihand from WR to NR (MW)
1	NR Import	00-09	28400	25700	2700
		09-15	20650	20250	400
		15-16	21750	21750	0
		16-24	28400	25700	2700
2	WR->NR	00-09	24800	22350	2450
		09-15	19450	19050	400
		15-16	20550	20550	0
		16-24	24800	22350	2450

A.22.7 It was specifically highlighted from NRLDC side that number of meetings had to be convened last year to converge on the issue:

- 14.06.2024 between NRLDC, NLDC, UP SLDC, UPPTCL, UPRVUN, NTPC

- 220 OCC meeting held on 19.06.2024
- 50th TCC 74th NRPC meeting held on 28.06.2024 & 29.06.2024
- Joint meeting with participants from NRPC, WRPC, CEA-PSPA I, CTUIL, NRLDC, WRLDC, NLDC, NTPC, POWERGRID, UP SLDC, UPPTCL, UPRVUN and Lanco Anpara held on 09.07.2024.

A.22.8 TCC Forum discussed that as similar demand and line loading pattern is expected when NR imports high power from WR during summer 2025 & summer 2026 months, that there may be requirement of such changeovers for next 2-3 high demand seasons till approved transmission system of establishment of 765/400kV Prayagraj and 765/400kV Robertsganj is implemented.

A.22.9 No reservations were expressed from any members on the above agenda and shifting of Rihand-III to NR based on requirement was approved.

NRPC Deliberation

A.22.10 Forum noted the deliberation held in the TCC meeting.

Decision of Forum:

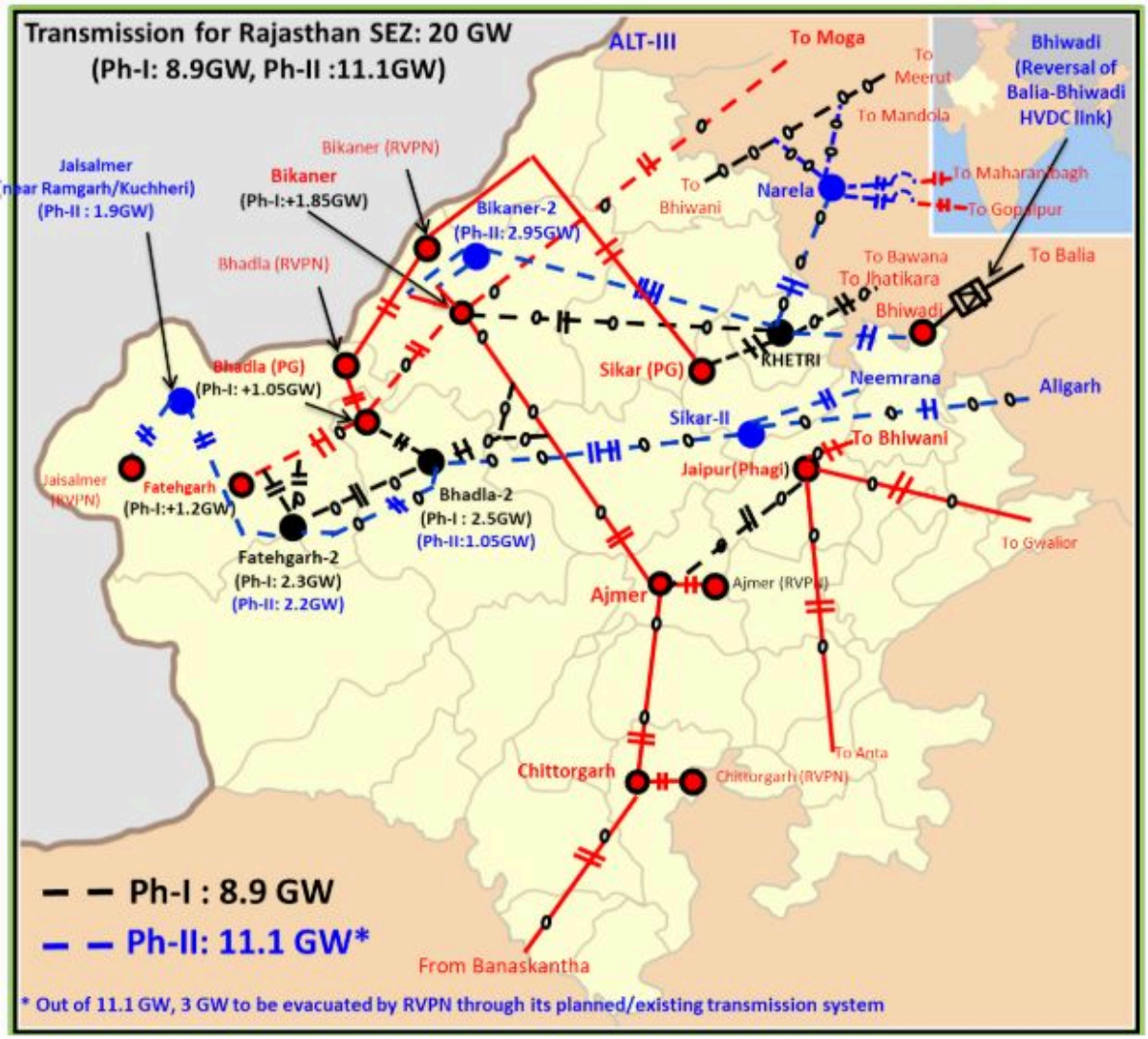
Forum granted approval for shifting of Rihand-III to NR during summer/monsoon 2025 & 2026 based on requirement in Northern region upon discussion in OCC forum/separate meeting by NRPC one week before schedule of exercise so that in case of requirement, the exercise is carried out swiftly for the benefit of NR states.

A.23 Expediting transmission system related to evacuation of RE power in Western Rajasthan (agenda by NRLDC)

TCC Deliberation

A.23.1 NRLDC representative apprised that in line with Govt. of India targets for renewable energy integration, majority of the RE power at ISTS level is being commissioned in Western Rajasthan area. A total of 18.3 GW of ISTS connected RE generation in Rajasthan is being scheduled out of which ~4.5GW is being scheduled under T-GNA. Also, in the remaining portion of the current financial year (2024-25), approx. 1500 MW additional RE is proposed to be integrated progressively in the Rajasthan RE complex. The agenda related to delay in planned RE evacuation transmission

system and possibility of stranding of RE generation have been discussed in past TCC/NRPC meetings also.



A.23.2 In the current scenario, the following constraints are being observed during peak solar generation hours:

- N-1 non-compliance of the 765/400kV Jhatikara ICTs (both sections), also highlighted by GRID-INDIA during the Sec(P) meeting on 25.10.2024, held to discuss Delhi's transmission plan for 2027-28.
- N-1 non-compliance of the 765/400kV Bhiwani ICTs (2 ICT section).
- N-1 non-compliance of the 765/400kV Moga ICTs.
- N-1 contingency of the 765kV Bara-Mainpuri Circuit 2 will result in the overloading of the 765kV Aligarh-Greater Noida line.
- Loading of 765kV Bhadla2-Ajmer ckts crossing 2300MW.

- Loading crossing 750MW each cktfor 400kV Bhadla(RJ)-Bikaner(RJ) D/C
- N-1 non-compliance of the 400kV Jhatikara-Mundka D/C line.
- N-1 non-compliance of the 400kV Jhatikara-Dwarka and 400kV Jhatikara-Bamnauli lines.
- Low voltages and possibility of voltage oscillations in case of high wind generation, due to drawl of reactive power by intrastate wind generators.

A.23.3 These issues have been regularly communicated in the quarterly operational feedback provided to the CEA/CTUIL.

A.23.4 Further, shutdowns of major 765kV lines such as 765kV Bikaner-Moga D/C for NHAI related works are to be facilitated in the RE complex, which can lead to curtailment of huge quantum of RE power. To facilitate these shutdowns and integrate maximum possible RE power in upcoming months, it is requested that the remaining transmission infrastructure under Phase-II is expeditiously commissioned, including:

- 765kV Khetri-Narela D/C lines
- 765/400kV Narela Substation with the LILO of the 765kV Meerut-Bhiwani line at Narela.
- 400kV D/C lines connecting the 400kV Narela Substation to the 400kV Gopalpur and 400kV Maharani Bagh substations.

A.23.5 During 52nd TCC and 77th NRPC meeting, POWERGRID representative informed the forum that the 765/400kV Narela Substation is nearing completion; however, severe ROW issues around the substation are causing delays. These issues are being actively addressed in coordination with the Government of Delhi. It was also mentioned that 400kV Narela–Maharanibagh D/C line and the LILO of the 765kV Meerut–Bhiwani line at Narela are scheduled for completion by March 2025. TCC/NRPC Forum requested POWERGRID to expedite the commissioning of the elements of Phase-II with special focus on commissioning of 765/400kV Narela S/S and associated network for ensuring smooth evacuation of RE power from Rajasthan RE complex.

A.23.6 During 53rd TCC meeting, NRLDC representative stated that presently no application for first time charging of transmission system for Narela have been received at NRLDC. However, continuous applications are being received from RE generators which are requesting for power evacuation under T-GNA. In this regard, it is to be noted that any further NOC at Fatehgarh-II, Bhadla-II, Fatehgarh-I and Fatehgarh-III will cause the depletion of SCR in the RE Pooling S/s and may cause the aggravation of voltage oscillation issues which were seen earlier in the system. Further, it may lead to angular separation instability under N-1 contingency and compromise the stability of the system. Hence, no further RE generation can be accommodated during Solar peak hrs. (i.e 10:30hrs-14:30hrs). Curtailment of 107MW RE power (Adani Green Energy 25 connected at Bhadla-2) is being done as on 14.03.2025 for 10:30-14:30 hrs.

A.23.7 To facilitate RE capacity integration till 31st March'2025, upcoming RE generation may be allowed for FTC, trial-run and COD on rotational basis subject to availability of margin in real-time to facilitate maximum RE integration in this financial year.

A.23.8 CGM NR-1 POWERGRID highlighted severe ROW constraints in line in Delhi portion and mentioned that the issues are being discussed at Ministerial level. Firm timeline for Narela transmission system could not be provided.

A.23.9 Forum agreed that to facilitate RE capacity integration till 31st March'2025, upcoming RE generation may be allowed for FTC, trial-run and COD on rotational basis subject to availability of margin in real-time to facilitate maximum RE integration in this financial year.

NRPC Deliberation

A.23.10 Forum noted the deliberation held in the TCC meeting.

Decision of Forum

Forum directed POWERGRID to commission pending transmission elements related to RE evacuation on priority. Further, Forum agreed that to facilitate RE capacity integration till 31st March'2025, upcoming RE generation may be allowed for FTC, trial-run and COD on rotational basis subject to availability of margin in real-time to facilitate maximum RE integration in this financial year.

A.24 Reactive power injection/drawl from Low Voltage side to High Voltage side by state transmission network (agenda by NRLDC)

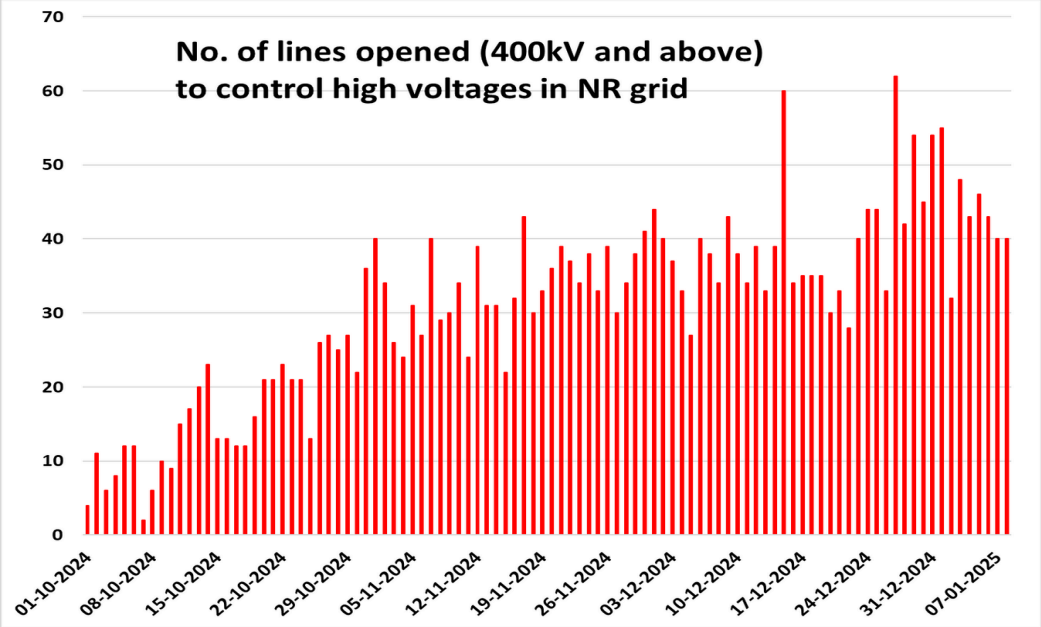
TCC Deliberation

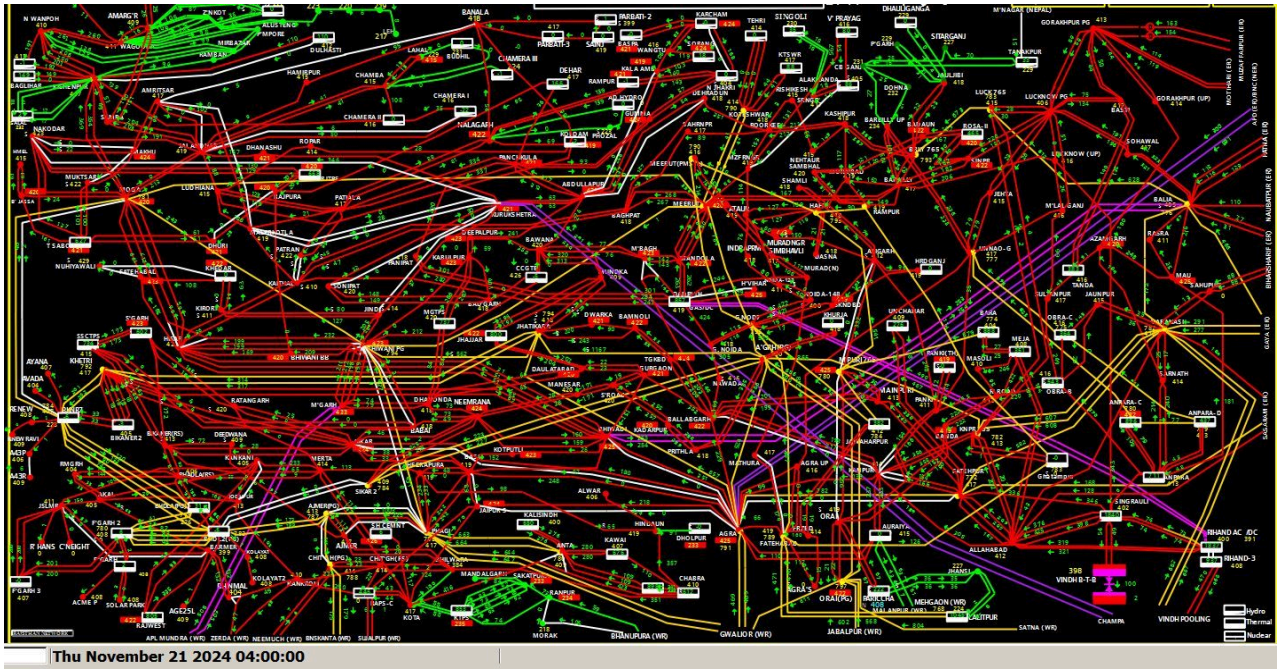
A.24.1 NRLDC representative apprised that Northern Region experiences severe high voltage issues during the winter months, primarily due to lower demand, which results in a lightly loaded transmission system. A number of measures are already being taken to control high voltages in the grid such as:

- Ensuring to switch off capacitors & switch on reactors.
- Ensuring healthiness of all commissioned reactors in the system
- Monitoring of reactive power through SCADA displays.
- Reactive power support (absorption) by generating stations as per the capability curve.
- Synchronous condenser operation especially of hydro units during night hours for dynamic voltage support.
- ICT Tap Optimization at 400kV & above is carried out by NRLDC.
- Utilisation of line reactors as bus reactor in case of opening of EHVAC transmission lines.
- Opening of EHV lines based on expected voltage reduction and also considering security & reliability of system

A.24.2 Switching of bus reactors, line reactors are done as frequently as twice in a day at same location. For instance, during peak hours, voltages being on lower side, reactors are switched off while during off peak hours, reactors are brought into relieve high voltages. Capacitors switching is done primarily at lower voltage levels. The dynamic reactive power resources like generators, SVC, STATCOM keep on changing the VAr value as per system requirement or system operator's instructions. Tap optimization is being done mainly on seasonal basis. Manual opening of high voltage line is also carried out as a last resort to alleviate alarming high voltages in the system.

A.24.3 Even after taking all measures, it is being seen that large number of EHVAC transmission lines have to be opened to control high voltages in the grid. Number of transmission lines (400kV & above) opened to control high voltage from Oct-Jan months as well as snapshot of high voltages in grid is shown below:





A.24.4 Such opening of transmission lines always increases risk of system insecurity as transmission system gets weak due to opening of transmission lines and also susceptibility of tripping of lines especially during foggy weather. As such there seems to be requirement for planning of additional reactive compensation in the grid to control high voltages at both interstate as well as intrastate level.

A.24.5 In addition to this during summer months, reactive power requirement by load also increases due to increased cooling and pumping requirement. Before summer months, all measures are being taken to avoid low voltage issues which are also discussed in OCC meetings. Due to lack of sufficient compensation at distribution and transmission level, huge reactive power is being drawn from ISTS network. Due to this high reactive power requirement during day-time and high loading of existing transmission lines from RE complex, low voltages are seen in the grid during afternoon time. Sample snapshot of low voltage observed in the grid during summer 2024 is shown below:

A.24.6 As per IEGC 2023 clause 39.(1):

" *All users shall endeavor to maintain the voltage at the interconnection point in the range specified in the Grid Code*."

As per CEA manual on transmission planning criteria 2023,

"5.4.2.1 Reactive Compensation shall be provided as far as possible in the low voltage systems with a view to meet the reactive power requirements of load close to the load points, thereby avoiding the need for VAr transfer from high voltage system to the low voltage system. "

"5.4.2.2 It shall be the responsibility of the respective utility to bring the load power factor as close to unity as possible by providing shunt capacitors at appropriate places in their system."

"5.4.2.3 Reactive power flow through 400/220 kV or 400/132 kV or 220/132(or 66) kV or 220/33kV ICTs, shall be minimal. Wherever voltage on HV side of such an ICT is less than 0.975 pu no reactive power shall flow down through the ICT. Similarly, wherever voltage on HV side of the ICT is more than 1.025 pu no reactive power shall flow up through the ICT. These criteria shall apply under the N-0 conditions. It shall be responsibility of respective STU to plan suitable reactive compensation in their network including at 220 kV and 132 kV levels connected to ISTS, in order to fulfil this provision."

A.24.7 To discourage VAr drawls by regional entities, VAr exchanges with ISTS are priced as follows:

(a) The regional entity pays for VAr drawl when voltage is below 97%

(b) The regional entity gets paid for VAr return when voltage is below 97%.

(c) The regional entity gets paid for VAr drawl when voltage is above103%.

(d) The regional entity pays for VAr return when voltage is above 103%.

Where all voltage measurements are at the interface point with ISTS.

A.24.8 The reactive energy charges payable by NR utilities for a week (17/06/2024 To 23/06/2024) during summer as per NRPC issued accounts is shown below:

Utilities	Amount Payable
RAJASTHAN	33.37780
PUNJAB	20.69300
HIMACHAL PRADESH	11.31120
UTTAR PRADESH	9.33470
HARYANA	6.27615
UTTARAKHAND	5.22045

Amount payable is in lakhs

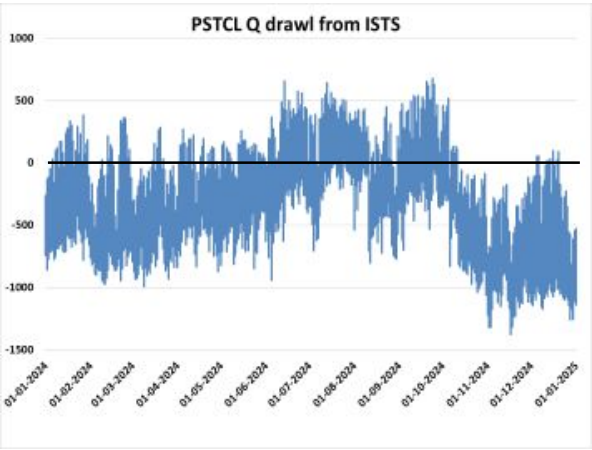
A.24.9 This point was also highlighted from NRLDC side in 226 OCC meeting, wherein following was discussed:

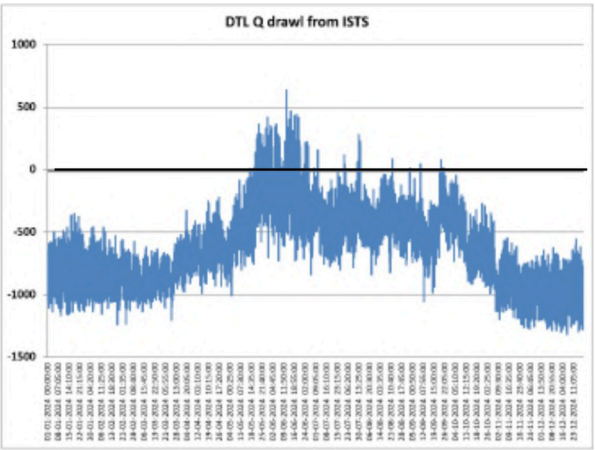
CTUIL representative stated that in NR, around 60-80% reactive compensation has been provided at ISTS level. Reactive compensation planning and implementation at intrastate level needs to be expedited to cater low/high voltage scenarios.

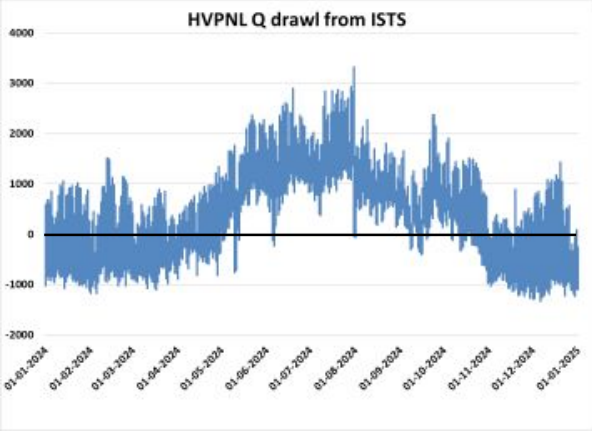
OCC asked all SLDCS to analyse reactive power change with ISTS grid and accordingly plan reactive power devices at intrastate level. This would also help to minimize opening/closing of EHVAC lines in winter months.

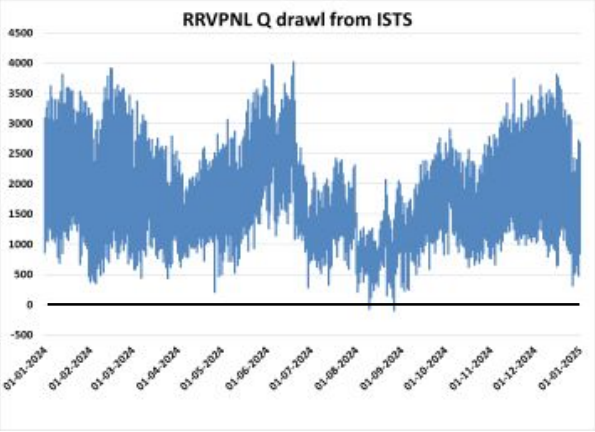
A.24.10 Subsequently, in 227th OCC meeting, NRLDC representative shared the analysis of reactive power flow of all states of NR for last year i.e. 2024. The SCADA points which are used to calculate MW drawl of state from ISTS have been used to calculate the MVAr drawl by state from ISTS.

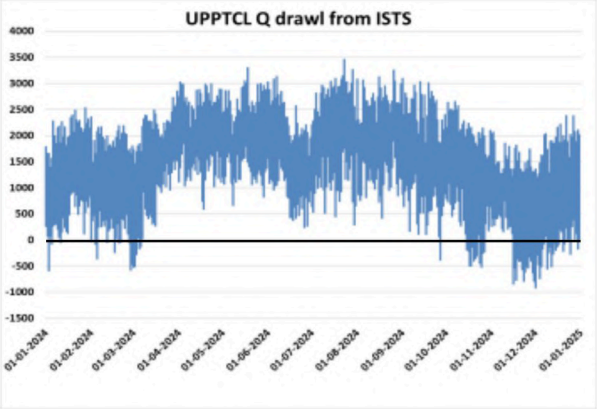
Following is the result of such analysis:

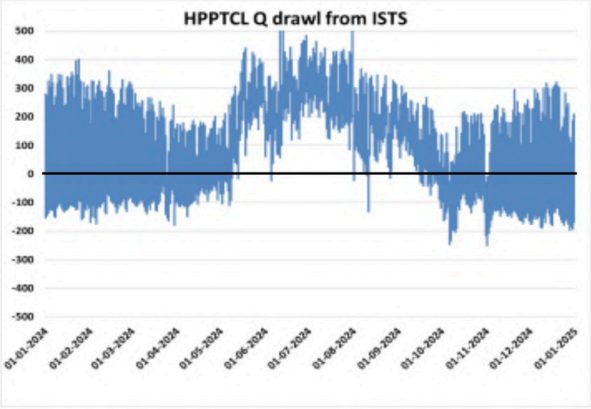


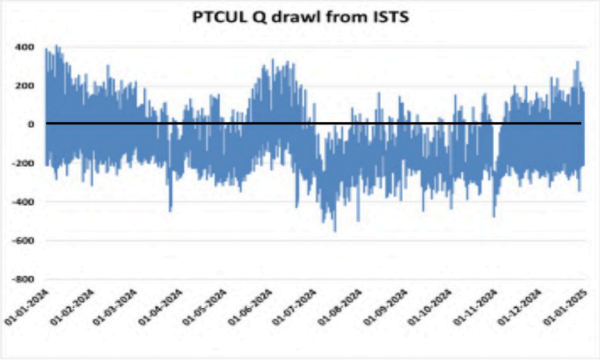








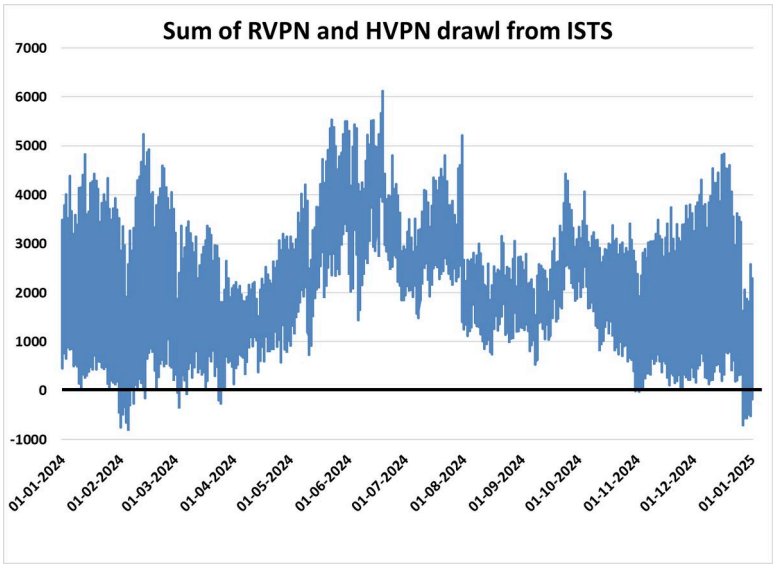




A.24.11 During discussions held in 227 & 228 OCC meetings, NRLDC expressed severe concern on high reactive power drawl by HVPNL, RRVPNL, HPPPTCL and suggested to take up for capacitor installation in expeditious manner. NRLDC representative provided further information in the meeting:

State	MVAr Variations (drawl from ISTS)	Proposed solutions in intrastate
Punjab	-1300 to 600	Bus reactors required
Delhi	-1200 to 500	Bus reactors & STATCOM required
Haryana	-1000 to 3000	STATCOM & capacitors required (URGENT)
Rajasthan	0 to 4000	Capacitor requirement (VERY URGENT)
UP	-500 to 3000	Capacitor requirement
Uttarakhand	-500 to 400	STATCOM required
HP	-200 to 400	Capacitor requirement (URGENT)

Total MVAR drawl by Rajasthan and Haryana from ISTS is shown below:



A.24.12 NRLDC representative highlighted that IEGC clauses and CEA manual on transmission planning criteria already mandate STUs/DISCOMs to plan for reactive power management at local level.

A.24.13 During summer 2024, it was observed that there were low voltages during the day time especially in Rajasthan, Haryana and Delhi area. It was requested that Rajasthan and Haryana take up the matter with their respective DISCOMs to ensure healthiness of capacitor banks and install additional capacitor banks as per requirement so that MVAR drawl from ISTS network is avoided.

A.24.14 Further, it was discussed that Committee under the Chairmanship of Member (GO&D), CEA with members from CEA, IIT-Delhi, NRPC, NLDC, NRLDC, POWERGRID, SLDC Delhi & DISCOMs. Had also provided certain recommendations based on analysis of 16.5GW load loss event that took place on 17th June 2024. The recommendations were also discussed in 75th NRPC Meeting held on 28 August 2024 wherein forum acknowledged the sensitivity of event and directed the concerned to take appropriate actions based on the recommendations of Committee

A.24.15 Committee recommended the following remedial measures for avoiding the recurrence of such grid event:

- Reactive Power Management (Dynamic/Static) by STU and DISCOMs: It was discussed that agenda was already discussed in last 2 OCC meetings, however, it was seen that no inputs were received from STUs

- Planning for dynamic reactive power sources near load centers based on load composition: Agenda already discussed in last 2 OCC meetings, however, it was seen that no inputs were received from STUs

A.24.16 NRLDC representative also highlighted that a report was provided by CPRI based on work awarded by NRPC forum to assess capacitor requirement. Studies were done in the report based on 2019-2020 data and still it is being seen that capacitor commissioning has not progressed as was required at intrastate level.

A.24.17 TCC Forum directed all SLDCs/STUs to analyse nodewise reactive power injection/absorption from ISTS and accordingly, take necessary measures in coordination with DISCOMs so that reactive power exchange from ISTS network is minimal. Further, to avoid low voltages during summer/monsoon season 2025, it was advised that all STUs and DISCOMs ensure availability of maximum capacitor banks.

NRPC Deliberation

A.24.18 Forum noted the deliberation held in the TCC meeting.

Decision of Forum

Forum directed all SLDCs/STUs to analyse nodewise reactive power injection/absorption from ISTS and accordingly, take necessary measures in coordination with DISCOMs so that reactive power exchange from ISTS network is minimal. Further, to avoid low voltages during summer/monsoon season 2025, it was advised that all STUs and DISCOMs ensure availability of maximum capacitor banks.

A.25 Delay in action taken by Nodal officers to resolve the meter related issues (agenda by NRLDC)

TCC Deliberation

A.25.1 NRLDC representative apprised that as per IEGC Clause 49(12)(f): *"RLDC shall, based on the IEM readings, compute time-block-wise actual net injection and drawl of regional entities and cross-border entities within their control area: Provided that*

the computations performed by RLDCs shall be accessible to all regional entities and cross-border entities for a period of fifteen (15) days for checking and verification."

A.25.2 As per IEGC Clause 49(12)(h): *RLDC shall forward the IEM readings and the implemented schedule to the concerned RPC on a weekly basis by each Thursday for the preceding seven days period ending on the preceding Sunday mid-night, to enable the latter to prepare and issue the various accounts such as Deviation Settlement Mechanism (DSM), reactive charges, congestion charges, ancillary services, SCED, heat rate compensation charges, and regional transmission deviation in accordance with relevant regulations and Annexure 7 of these regulations.*

A.25.3 NRLDC is processing the meter data weekly and share the processed data with NRPC. It is pertinent to mention here that during the weekly accounting and metering process following discrepancies are commonly observed:

- Delay in weekly meter data submission
- Discrepancy in meter reading
- Polarity issue
- Time drift in meters
- Timely replacement of faulty meters

A.25.4 In this regard, NRLDC is continuously following up with the constituents through weekly letters, telephonic and e-mail conversations.

A.25.5 NRLDC has already raised these issues in 211th OCC, 212th OCC, 67th NRPC, 47th Commercial Sub-committee meeting, 50th commercial sub-committee meeting and latest 51th commercial sub-committee. Due to delay in resolution of these issues, results in delay in processing and submission of SEM data.

A.25.6 For resolution of aforesaid issues, it was decided in 46th CSC meeting (held on 28th November 2022) that 2 Nodal officers from each entity/SLDC would be nominated for coordination with NRLDC.

A.25.7 Further, as per clause 49(12(e)) of IEGC 2023, "Entities in whose premises the IEMs are *installed shall be responsible for (i) monitoring the healthiness of the CT and PT inputs to the meters, (ii) taking weekly meter readings for the seven day period ending on the preceding Sunday 2400 hrs and transmitting them to the RLDC by*

Tuesday noon, in case such readings have not been transmitted through automatic remote meter reading (AMR) facility (iii) monitoring and ensuring that the time drift of IEM is within the limits as specified in CEA Metering Regulations 2006 and (iv) promptly intimating the changes in CT and PT ratio to RLDC."

A.25.8 However, it has been observed that Special Energy Meter (SEM) data from various locations has not been received in time as per IEGC clause. Further, checking of the healthiness of DCD/Cables, functioning of data dumping software, time drift in meters, discrepancy in meter reading due loose connections or due to change in CT/PT ratio, change in polarity and replacement of faulty meters is not being monitored periodically by Nodal officers.

A.25.9 Communication is being forwarded to all constituents vide weekly NRLDC letter regarding delay in receipt of SEM data along with the list of sites/locations from where data have not been sent by Tuesday noon. It has been observed that some of the sites are not sending the SEM data to NRLDC every week. A list of meter discrepancy like time drift, polarity issue and faulty meters is being forwarded to all the responsible entities, but the response/action from most of the constituents is not appropriate, for example in some of the cases meter time drift increases from several minutes to several hours without any actions from the utility. Apart from it, due to lack of co-ordination of nodal officers of respective entities with CTU/PGCIL, faulty meters are not being replaced timely.

A.25.10 Regularly, a list of meter discrepancies is forwarded to all entities, including issues like time drift, meters not reporting to NRLDC, faulty meters, etc., urging prompt action by the nodal officers/entities. However, to date, NRLDC has not received any updates from the entities. Despite being a regular agenda item in the Commercial Sub-committee and other meetings, no improvements have been observed.

A.25.11 NRLDC would like to remind all entities and nodal officers about the importance of promptly addressing and resolving these issues to ensure accurate metering and accounting.

A.25.12 At present also lots of discrepancy observed in meter data, constituent wise details of number of meters having discrepancy are tabulated below:

Entities	No. of Meters having discrepancies		Entities	No. of Meters having discrepancies
POWERGRID	46		DELHI	7
UTTAR PRADESH	40		NTPC	5
BBMB	27		UTTARAKHAND	3
HARYANA	13		CHANDIGARH	2
PUNJAB	13		INDIGRID	2
RAJASTHAN	12		NHPC	2
HIMACHAL PRADESH	11		RAILWAYS	2
JAMMU & KASHMIR	10		AVAADA	1

A.25.13 Detailed meter discrepancy list is attached as **Annexure-XX**.

A.25.14 Entities/nodal officers were requested to review the list and provide an action taken report.

A.25.15 Forum acknowledged NRLDC's concerns regarding metering issues and emphasized the need for all stakeholders to ensure prompt resolution of meter discrepancies in compliance with IEGC regulations.

NRPC Deliberation

A.25.16 Forum noted the deliberation held in the TCC meeting.

Decision of Forum

Forum acknowledged NRLDC's concerns regarding metering issues and emphasized the need for all stakeholders to ensure prompt resolution of meter discrepancies in compliance with IEGC regulations.

A.26 Non-Payment of Legacy Due (agenda by NRLDC)

TCC Deliberation

A.26.1 NRLDC representative apprised that Hon'ble CERC has approved "Detailed Procedure for recovery of charges in case of deficit in the Deviation and Ancillary Service Pool Account" (effective from 15.10.2024) for recovering the deficit in the

pool for the period prior to 16.09.24 (Legacy dues). In line with the approved procedure, NLDC had published statement namely "Net Deviation & Ancillary Services Pool Account Deficit Recovery Statement for period prior 16.09.2024 (Legacy Dues)" dated 11.11.2024, specifying the All-India deficit of Deviation and Ancillary Services Pool Accounts and per instalment amount to be paid by the drawee DICs.

A.26.2 According to the approved procedure, total deficit would be recovered in 20 instalments and out of these 20 instalments,15th instalment is under collection. Consolidated status of legacy due recovery is tabulated below:

Sr. No.	DIC	Total Pending Due (20 Instalments)	Amount per Instalment	Amount to be recovered till 20-02-2025 (14th Instalments)	No. of Instalments paid till date (out of 14)	Total Amount Recovered so far	Amount Pending
1	UP	2,68,53,67,413	13,42,68,371	1,87,97,57,194	**0**	-	187,97,57,194
2	Haryana	1,67,16,28,418	8,35,81,421	1,17,01,39,894	14	1,17,01,39,894	-
3	Rajasthan	1,47,34,79,616	7,36,73,981	1,03,14,35,734	14	1,03,14,35,734	-
4	Punjab	1,46,82,60,314	7,34,13,016	1,02,77,82,224	14	1,02,77,82,224	-
5	Delhi	1,29,40,23,118	6,47,01,156	90,58,16,184	14	90,58,16,184	-
6	J&K	54,99,80,111	2,74,99,006	38,49,86,084	**0**	-	38,49,86,084
7	Uttrakhand	39,14,40,897	1,95,72,045	27,40,08,630	14	27,40,08,630	-
8	Himachal Pradesh	27,14,44,395	1,35,72,220	19,00,11,080	14	19,00,11,080	-
9	Chandigarh	8,51,95,453	42,59,773	5,96,36,822	**5**	2,12,98,865	3,83,37,957
10	Railway	4,55,69,616	22,78,481	3,18,98,734	14	3,18,98,734	-
11	POWER GRID HVDC	22,15,628	1,10,781	15,50,934	14	15,50,934	-
12	NFL	5,32,116	26,606	3,72,484	14	3,72,484	-
Total		**9,93,91,37,095**	**49,69,56,857**	**6,95,73,95,998**		**4,65,43,14,763**	**230,30,81,235**

A.26.3 From the above table it is observed that Uttar Pradesh and Jammu & Kashmir have not paid any instalments. Chandigarh paid total 5 instalments out of 14. In this regard, NRLDC has already written letters to Uttar Pradesh, J&K and Chandigarh. Copy of all these communications is attached as **Annexure-XXI**.

A.26.4 As per the procedure, if payments by the drawee DICs are delayed beyond ten (10) days from the instalment due date, the drawee DICs shall be liable to pay simple interest @ 0.04% for each day of delay from the 11th day onwards, and the interest statement for the same will be published by respective RPCs.

A.26.5 NRLDC representative requested Uttar Pradesh, J&K and Chandigarh to kindly expedite the payment of legacy dues.

A.26.6 UPSLDC informed that they are approaching SERC on this matter and will take further actions accordingly.

A.26.7 TCC Forum asked UP, J&K and Chandigarh to clear the pending dues at the earliest.

NRPC Deliberation

A.26.8 Forum noted the deliberation held in the TCC meeting.

Decision of Forum

Forum asked UP, J&K and Chandigarh to clear the pending dues at the earliest.

A.27 Non-Payment of Pool Deficit Recovery charges against NLDC statement dated 13/01/2025 (agenda by NRLDC)

TCC Deliberation

A.27.1 NRLDC representative apprised that Hon'ble CERC has approved "Detailed Procedure for recovery of charges in case of deficit in the Deviation and Ancillary Service Pool Account" (effective from 15.10.2024) for recovering the deficit in the

pool from 16.09.24 onwards till 31.03.2026. According to the procedure, NLDC shall publish the deficit recovery statement of Net shortfall Recovery only when the cumulative shortfall amount exceeds Rs. 100(Hundred) crores in the assessment period.

A.27.2 In line with the approved procedure, NLDC had published first statement (Bill-01) namely “Net Deviation & Ancillary Services Pool Account, Pool Deficit Recovery Statement dated 13.01.2025 for the duration of 16.09.2024 to 22.12.2024. NRLDC has already communicated to all the DICs and according to the procedure payment to be done within 10 days otherwise there is simple interest liability of 0.04% per day. DIC wise details of the payment status are tabulated below:

Sr. No.	**DIC**	**Pool Deficit Recovery for period 16.09.2024 to 22.12.2024**	**Amount Collected**	**Amount Pending**
		Bill-01 dated 13/01/2025		
1	UP	17,83,89,832	-	17,83,89,832
2	Haryana	10,80,12,969	10,80,12,969	-
3	Rajasthan	8,73,40,336	8,73,40,336	-
4	Punjab	10,02,86,228	10,02,86,228	-
5	Delhi	8,28,27,277	8,28,27,277	-
6	J&K	2,92,27,885	-	2,92,27,885
7	Uttrakhand	2,26,53,683	2,26,53,683	-
8	Himachal Pradesh	1,30,37,356	1,30,37,356	-
9	Chandigarh	53,59,428	-	53,59,428
10	Railway	28,09,384	-	28,09,384
11	POWERGRID HVDC	1,42,669	1,42,669	-
12	NFL	33,916	33,916	-
Total		**63,01,20,963**	**41,43,34,434**	**21,57,86,529**

A.27.3 According to the table, payments are yet to be received from Uttar Pradesh, J&K, Chandigarh and Railways. Uttar Pradesh is the major defaulters as it contributing almost 28% of the total recovery charges.

A.27.4 Forum asked UP, J&K and Chandigarh to clear the pending dues at the earliest. NRLDC to take up payment from Railways separately.

NRPC Deliberation

A.27.5 Forum noted the deliberation held in the TCC meeting.

Decision of Forum

Forum asked UP, J&K and Chandigarh to clear the pending dues at the earliest. NRLDC to take up payment from Railways separately.

A.28 Non-Payment of Deviation & Reactive Energy Charges by J&K (agenda by NRLDC)

TCC Deliberation

A.28.1 NRLDC representative apprised that NRLDC is operating and maintaining the "Northern Region Pool Account" for deviation charges, Reactive Energy Charges and Congestion Charges in accordance with provisions under various CERC Regulations. As per Regulations the payment to the statutory pool account have high priority and the concerned utilities are required to pay the indicated amounts within 10 days of issue of weekly energy account by NRPC secretariat. In this regard, the payment of deviation charges and Reactive energy charges of J&K is long pending. Last payment received from JKPCL in the pool account was on 09.02.2024. Total outstanding dues of J&K are as follows:

- DSM Charges: ₹ 116,69,20,375
- Reactive Energy Charges: ₹ 31,49,360

A.28.2 It is to be noted that Non-receipt of payment from J&K leads to non-payment to the receivable entities of Northern Region.

A.28.3 In this regard, NRLDC has already sent various communications to J&K. This agenda was also raised in Special meeting with J&K on 06 Feb 2025 but there is no update about the payment.

A.28.4 J&K representative informed that all efforts are being made to clear the dues.

A.28.5 Forum observed that due to non-payment by J&K, NRLDC is not able to clear dues of utilities that are Receivable from Pool. Forum expressed serious concern on the issue and requested J&K to clear all the pending dues at the earliest.

NRPC Deliberation

A.28.6 Forum noted the deliberation held in the TCC meeting.

Decision of Forum

Forum requested J&K to clear all the pending dues at the earliest.

A.29 Non-payment of Deviation Charges and Non-submission of Bank Account Details by Chandigarh (agenda by NRLDC)

TCC Deliberation

A.29.1 NRLDC representative apprised that NRLDC is operating and maintaining the "Northern Region Pool Account" for deviation charges, Reactive Energy Charges and Congestion Charges in accordance with provisions under various CERC Regulations. As per Regulations the payment to the statutory pool account have high priority and the concerned utilities are required to pay the indicated amounts within 10 days of issue of weekly energy account by NRPC secretariat.

A.29.2 Due payment of deviation charges for Chandigarh is ₹ 9,56,76,459. In this regard, NRLDC has already sent various communications to Chandigarh but there is no update about the payment.

A.29.3 Further, NRLDC via various communication was requested Chandigarh to submit bank accounts details of Chandigarh UT enabling us to set up electronic payments. The banks account details of Chandigarh UT is yet to be received. The NRLDC could not release a payment of 1.89 crore towards deviation charges/reactive energy charges to Chandigarh due to the lack of required bank account information.

A.29.4 It is once again requested that the bank account details of Chandigarh be provided as soon as possible, enabling us to set up electronic payments and facilitate timely disbursements from the pool accounts.

A.29.5 Apart from above there is one more development in Chandigarh, The Chief

Engineer, UT Chandigarh, communicated via letter dated 31/01/2025 regarding the transfer of Electricity Distribution and Retail Supply functions of the Electricity Wing of the Engineering Department of Chandigarh (EWEDC) to Chandigarh Power Distribution Limited (CPDL). CPDL is managed by Eminent Electricity Distribution Limited (Eminent), a subsidiary of CESC Limited. As per the transfer scheme, all existing Power Purchase Agreements, Power Supply Agreements, and Transmission Service Agreements have been assigned to CPDL, effective from 01.02.2025.

A.29.6 Given these developments, a physical meeting was convened with officials from CPDL on 14-02-2025 at NRLDC to discuss scheduling, commercial settlement, the organizational structure of CPDL, and other related matters. CPDL representative further confirmed that, as per the transfer scheme, it will manage all payments related to Pool Accounts i.e. deviation charges, reactive charges, congestion charges, including pool deficit recovery charges bills raised from 01.02.2025 onwards.

A.29.7 CPDL affirmed that it will settle bills raised from 01.02.2025 onwards, while bills for January 2025 (raised in February 2025) will also be paid by CPDL. Any outstanding payables or receivables prior to this period will be handled by EWEDC.

A.29.8 During the meeting, CPDL agreed to submit its bank account details, PAN, GST, and an authorization letter for receiving payments from the NR Pool Account. After receiving the details, NRLDC would add the bank account details and NR pool account payment would be settled directly with the CPDL till the formation of separate SLDC functionalities in Chandigarh.

A.29.9 It was also decided that if Chandigarh is not ready to share the bank account details with NRLDC, Deviation/ Reactive Charges of ₹1.89 Cr, receivable by UT Chandigarh, will be paid via cheque after settling all existing payables to the Pool.

A.29.10 Forum deliberated on the issue and agreed on the concerns of NRLDC. Further due to non-availability of representative from Chandigarh, Forum asked NRLDC to discuss the issue bilaterally with Chandigarh.

NRPC Deliberation

A.29.11 Forum noted the deliberation held in the TCC meeting.

Decision of Forum:

Forum asked NRLDC to discuss the issue bilaterally with Chandigarh.

A.30 Registration of first QCA in Northern Region (agenda by NRLDC)

TCC Deliberation

A.30.1 NRLDC representative apprised that India aims to achieve 500 gigawatts (GW) of installed renewable energy capacity by 2030, with a significant portion coming from solar, wind, hydro, and other renewable sources. This goal also aligns with India's target to meet 50% of its energy needs from renewable sources by 2030, helping the country transition away from fossil fuels and reduce carbon emissions.

A.30.2 To accommodate the multiple RE players and improve the operational and technical coordination along with commercial coordination with RLDC/ RPC, Qualified Coordinating Agency was introduced. This move was part of the broader efforts to integrate renewable energy sources into the national grid while maintaining grid reliability and efficiency.

A.30.3 For ISTS connected RE generation, QCA shall be registered with the concerned RLDC.

A.30.4 As per the IEGC Grid code, QCA registered with the concerned RLDC shall, on behalf of wind, solar or renewable hybrid generating stations or Energy Storage System shall:

(i) Coordinate and facilitate scheduling of power with the concerned RLDC; and;
(ii) Undertake commercial settlement of deviations with the concerned RLDC in accordance with the DSM Regulations.
(iii) Submit a copy of the consent to the concerned RLDC certifying that QCA shall undertake all operational and commercial responsibilities on behalf of generating stations as per the CERC Regulations.

A.30.5 In Northern Region, Following QCAs have been registered for different pooling stations.

Name of Pooling station	Name of QCA	Total No. of RE Plants at Pooling Station	Nos. of Plants under QCA	Total Installed Capacity (MW) at Pooling station	Capacity (MW) being handled by QCA	Date from which QCA effective
Fatehgarh-III (1st QCA of NR)	**M/s Manikaran Analytics Ltd.**	**5**	**4**	**1390**	**990**	**06.01.2025**
Bikaner-I	**M/s Emsys Energy Services Pvt. Ltd.**	**13**	**13**	**3575**	**3575**	**03.02.2025**
Bhadla-I	**M/s Emsys Energy Services Pvt. Ltd.**	**16**	**15**	**3280**	**3030**	**03.03.2025**
Fatehgarh-I	**M/s Manikaran Analytics Ltd.**	**6**	**5**	**2196**	**1900**	**10.03.2025**

A.30.6 NRLDC representative informed that Around 9GW of ISTS RE generation is now being managed through QCA in Northern region.

NRPC Deliberation

A.30.7 Forum noted the deliberation held in the TCC meeting.

Decision of Forum:

Forum noted the information.

A.31 Augmentation of 2 No. 100 MVA, 220/66kV transformers at 220kV Substation (BBMB) Jalandhar to 160 MVA (agenda by PSTCL)

TCC Deliberation

A.31.1 PSTCL representative apprised that there are currently 2 no. 220/66kV, 100 MVA power T/Fs (2 X 100 MVA, running in parallel) installed at the 220kV BBMB Jalandhar substation. Due to a significant increase in industrial load in the Focal Point, Tanda Road, and Industrial Estate areas of Jalandhar-areas primarily serviced by this substation-the loading on these transformers is anticipated to reach

196.331 MVA, which is 98.17% of their total capacity. Due to the increasing overloading at the 220kV BBMB Jalandhar substation, it is becoming difficult to provide new industrial connections. Therefore, it is essential to prioritize the augmentation of 2 no. 100 MVA, 220/66 kV transformers at 220 kV substation (BBMB) Jalandhar to 160 MVA.

A.31.2 The agenda was initially discussed in the meeting held on 02.08.2024 with BBMB chaired by Member (Power), BBMB, wherein BBMB agreed in principle to the proposal in the meeting and recommended that the agenda may be taken up in the upcoming CMETS meeting.

A.31.3 Subsequently, the agenda was put up for approval in the CMETS meeting. Therefore, the proposal was discussed as a table agenda in the 34th CMETS meeting on 20.09.2024 (minutes enclosed as **Annexure-XXII**). During the meeting, CMETS/CTU sought clarification regarding who will be responsible for bearing the cost of this augmentation work and who will own the 100 MVA transformers spared after the said augmentation.

A.31.4 Accordingly, CTU was informed on 14.11.2024 that PSTCL will provide 2 no. 160 MVA 220/66 kV transformers for the 220 kV Jalandhar (BBMB) substation, and PSTCL will also retain the dismantled 2 no. 100 MVA transformers. Additionally, PSTCL will provide the allied equipment required for augmentation.

A.31.5 Subsequently, via email dated 20.11.2024 (**Annexure-XXIII**), CTU requested PSTCL to take up the matter with CEA for approval due to the nature of the work being intra-state. Accordingly, CEA was requested to do the needful in this regard. Vide their letter dated 28.01.2025, CEA conveyed that the proposal is generally in order (**Annexure-XXIV**).

A.31.6 This agenda was discussed along with agenda A.32.

NRPC Deliberation

A.31.7 In line with TCC, the agenda was discussed along with agenda A.32

Decision of Forum:

Forum decided that a committee under chairmanship of SE (O), operation along with

members from CEA (PSPA), CTUIL, NRLDC, BBMB, PSTCL, Haryana may be constituted and committee will submit its recommendation in one month.

A.32 LILO of 220kV Jalandhar- Jamalpur line (D/C) at 220kV Goraya (agenda by PSTCL)

TCC Deliberation

A.32.1 PSTCL representative apprised that 220 kV substation Goraya is currently connected to 220 kV Jamsher and 220 kV Jadla by LILO of GGSSTP Ropar-Jamsher Circuit. Further, 220 kV Jamalpur, which is a very critical substation as it feeds power to industry in Ludhiana area, draws power mainly from Bhakhra and Ganguwal and supplies power to Dhandari Kalan-1 and Dhandari Kalan-2. These two stations (Dhandari Kalan-1 and Dhandari Kalan-2) take power from 400kV Ludhiana (PGCIL) also. This power drawl becomes even more prominent during non- paddy scenario since the load in Ludhiana area (being industrial load) invariably remains the same but the hydel generation availability in Punjab is reduced. Additionally, 220 kV substation Nurmehal is connected to 400 kV substation Nakodar in radial mode and there is an urgent need to connect 220 kV substation Nurmehal to another source to enhance reliability of the system for which new 220kV link between Nurmehal and Goraya has already been planned in the current MYT 2023-26. So, with the D/C connectivity of Goraya with Nurmehal and LILO of Jalandhar-Jamalpur line at Goraya, Jamalpur will gain an additional source of power from 400kV Nakodar substation via Nakodar-Nurmehal- Goraya route, thus enhancing the reliability of power supply. So, there is urgent need to cater the ever-growing upcoming load within the sources available with PSTCL as there are serious issues of ROW in Ludhiana city area.

A.32.2 So, proposal for LILO of 220 kV Jalandhar-Jamalpur line at 220 kV Goraya (which is presently bisecting the yard area of 220 kV Goraya) was discussed in a meeting held on 02.08.2024 with BBMB. BBMB agreed in-principle to the proposal in the meeting and recommended that the agenda may be taken up in the upcoming CMETS and NRPC meetings.

A.32.3 Subsequently, the agenda was sent to the CTU and NRPC for inclusion in their upcoming CMETS and NRPC/TCC meetings, respectively. However, it was conveyed telephonically by the CTU and the NRPC that the agenda does not need to be taken in the NRPC forum and that approval of only the CMETS forum will suffice. Accordingly, the agenda was included by CTU in the 34th CMETS meeting held on 20.09.2024. After deliberation in the meeting, the intra-state scheme of LILO of both circuits of 220 kV Jalandhar (BBMB)-Jamalpur (BBMB) D/C line at 220 kV Goraya was agreed to be implemented by PSTCL (minutes enclosed as **Annexure-XXII**).

A.32.4 The above two agendas were submitted once again to BBMB on 24.01.2025 for discussion in their 152nd Power Subcommittee meeting scheduled on 07.02.2025 for final approval, as all prerequisites set by BBMB regarding the above two agendas had been met.

A.32.5 However, in the 152nd BBMB Power Subcommittee meeting, HVPNL stated they need the load flow study data to decide the matter. In response, PSTCL clarified that the CEA/CMETS had technically approved the proposals already. However, at the request of HVPNL, PSTCL agreed to share the files with HVPNL and HVPNL assured that they would furnish their comments within 1 week. PSTCL shared the relevant PSSE data files with HVPNL on 10.02.2025.

A.32.6 Meanwhile, the minutes of the 152nd BBMB Power Subcommittee meeting were issued (**Annexure-XXV**), and the agenda items were, in principle, approved subject to adverse comments from HVPNL on the transmission system studies within one week.

A.32.7 Now, vide their email dated 25.02.2025, HVPNL has shared the amended PSSE files and conveyed their disagreement to the above agenda items, citing the following reasons:

a. In Base case, the load flow pattern observed is from 220 kV S/stn Sangrur to 220 kV S/stn Hisar BBMB. However, in case file, the load flow pattern is reversed i.e. from 220 kV S/stn Hisar BBMB to 220 kV S/stn Sangrur mainly through feeding source 400 kV S/stn Hisar PG.

b. There is an increase in power flow observed on 220 kV Hisar PG - IA Hisar D/C line in case file w.r.t Base case file i.e. 67 MVA.

c. There is an increase in power flow observed on 220 kV IA Hisar - Hisar BBMB D/C line in case file w.r.t Base Case file i.e. 44.2 MVA.

d. With outage of one ckt. Of 220 kV IA Hisar - Hisar BBMB D/C line in contingency 1.7, the loading observed on other ckt. Is approaching to rated capacity of the conductor.

e. The CEA has approved Re-Conductoring of 220 kV Hisar PG - IA Hisar D/C line with equivalent HTLS conductor vide letter dated 23.03.2023.

A.32.8 It is pertinent to mention that there are two amended PSSE files shared by HVPNL vide their email dated 25.02.2025 with one file for peak season and the other file for lean season scenario. The loadings on the above-mentioned transmission elements were again checked by PSTCL in the PSSE files shared by HVPNL, and the following power flows were observed (**Annexure-XXVI**).

Transmission element	Base Case (without LILO of 220 kV Jalandhar – Jamalpur at 220 kV Goraya)		With LILO of 220 kV Jalandhar – Jamalpur at 220 kV Goraya	
	Peak Season (MW)	Lean Season (MW)	Peak Season (MW)	Lean Season (MW)
220 kV Sangrur–220 kV Hisar BB line	27.3MW (Hisar-BB to Sangrur)	46.9MW (Sangrur to Hisar-BB)	27.4MW (Hisar-BB to Sangrur)	47.8MW (Sangrur to Hisar-BB)
220 kV Hisar PG–220 kV IA Hisar line	163.8MW X 2 (to IA–Hisar)	133.1MW X 2 (to IA–Hisar)	163.9MW X 2 (to IA–Hisar)	132.8MW X 2 (to IA–Hisar)
220 kV IA Hisar–220 kV Hisar BB line	111.2MW X 2 (to Hisar–BB)	89.5MW X 2 (to Hisar–BB)	111.2MW X 2 (to Hisar–BB)	88.9MW X 2 (to Hisar–BB)
220 kV IA Hisar–220 kV Hisar BB **(N–1 loading)**	209.4MW (to Hisar–BB)	168.5MW (to Hisar–BB)	209.5MW (to Hisar–BB)	167.3MW (to Hisar–BB)

A.32.9 PSTCL submitted that from the above, it is clear that there is no significant change in the magnitude or the direction of power flows of the elements mentioned above before and after the LILO of the 220 kV Jalandhar-Jamalpur line at 220 kV Goraya,

both during peak season and lean season. It is further clarified that the increase in power flow values indicated by HVPNL in their letter (i.e. 67 MVA, 44.2 MVA, etc.), in fact, relates to the variations in load patterns during peak and lean seasons and is independent of whether LILO of 220 kV Jalandhar-Jamalpur line at 220 kV Goraya is done or not. This demonstrates that HVPNL has erred in conducting the load flow studies.

A.32.10 Consequently, PSTCL sought the intervention of the NRPC so that technically accurate load flow studies pertaining to the aforementioned agenda items as have already been conducted and approved by CMETS/CEA may be prevailed upon. This intervention aims to address and overrule the unfounded dissent expressed by HVPNL regarding these agenda items and facilitate the approval of the aforementioned proposals for PSTCL in the interest of the Power system of Punjab.

A.32.11 MS, NRPC conveyed that Punjab and Haryana may sit together and do studies jointly for resolution of matter.

A.32.12 NRLDC representative stated that NRLDC had already given inputs on this agenda in CMETS meeting. Further, it was mentioned that studies done by NRLDC are aligned to studies of PSTCL. Therefore, there is no concern from NRLDC side.

A.32.13 HVPN representative raised concern that on 220kV Hisar -Sangrur line, power is flowing towards Punjab area and HVPN is being conveyed to implement SPS. He supplemented that increased load on Haryana Substation is going to create financial burden on Haryana by increasing PoC charges.

A.32.14 PSTCL representative requested that in this way for any interstate cases where overload arises in lean and peak period then it will not be possible for implementing interconnection. CEA has already given approval on submitted studies. This will enhance the reliability of interstate system.

A.32.15 CTUIL representative summarized that CTUIL has not observed appreciable variation in load flow during studies done for same scenario. However, if load flow is compared between peak and off peak season, there will be change definitely.

A.32.16 CTUIL representative mentioned that there is no OPGW on 220kV Jalandhar-Jamalpur line (D/C) which is proposed to be LiLoed at Jamalpur. This will create a hurdle in data communication.

A.32.17 With respect to above, PSTCL representative stated that 220 kV Jallandhar - Jamalpur (D/C) lines is provided with OPGW and shall be commissioned.

A.32.18 MS, NRPC suggested that a committee may be formed to have detailed studies. Committee under chairmanship of SE (O), operation along with members from CEA (PSPA), CTUIL, NRLDC, BBMB, PSTCL, Haryana may be constituted and committee will submit its recommendation in one month.

A.32.19 PSTCL representative added that both 100 MVA, 220/66kV transformers at 220kV Substation (BBMB) Jalandhar are approx. 99% loaded. There is dire need to prioritize the augmentation of 2 no. 100 MVA, 220/66 kV transformers at 220 kV substation (BBMB) Jalandhar to 160 MVA.

A.32.20 MS, NRPC conveyed that all these issues of PSTCL will also be addressed by the Committee going to be constituted.

NRPC Deliberation

A.32.21 Forum was in consonance of deliberation held in TCC meeting.

Decision of Forum:

Forum decided that a committee under chairmanship of SE (O), operation along with members from CEA (PSPA), CTUIL, NRLDC, BBMB, PSTCL, Haryana may be constituted and committee will submit its recommendation in one month.

A.33 Methodology for computation of Average Monthly Frequency Response Performance, Beta ‘β’ (Agenda by SJVN and NHPC)

TCC Deliberation

A.33.1 In the meeting, SJVN and NHPC representatives raised the issue as below:

I. The computation of the Average Monthly Frequency Response Performance, Beta 'β', plays a vital role in fairly assessing the readiness and performance of hydro generating stations in providing primary frequency response. NRPC, through their letter dated 04.02.2025, issued the Beta values for generating stations for the period from April 2024 to December 2024. Notably, the Beta value for November and December 2024 was assigned as zero (0) due to the absence of reportable events. This situation presents an opportunity to enhance the methodology to better reflect the consistent operational readiness of hydro generating stations.

II. The CERC (Terms and Conditions of Tariff) Regulations, 2024 establish the framework for computing and incentivizing Beta performance for Hydro Generator as below:

"Regulation 65: Computation and Payment of Capacity Charge and Energy Charge for Hydro Generating Stations:
(4) In addition to the Annual Fixed Charges (AFC) entitlement, a hydro generating station shall be allowed an incentive of up to 3% of the approved Capacity Charge for the year, billed monthly as:

Incentive = (3% x β x CCy) / 12

Where:
β = Average Monthly Frequency Response Performance, certified by Regional Power Committees (RPCs), computed as per the methodology approved by the Commission, ranging between 0 and 1.
CCy = Annual Capacity Charges.

Provided that the incentive is payable only if the Beta value exceeds 0.30."

III. On 23.10.2024, the Hon'ble CERC approved the methodology for Beta computation under Regulation 62(5) and 65(4) of the Tariff Regulations, 2024. The key provisions include:

"*Steps for Computation of Average Monthly Frequency Response Performance, Beta 'β':*

4.1. The National Load Despatch Centre (NLDC) shall notify reportable events as per CERC (Indian Electricity Grid Code) Regulations, 2023:
a) A reportable event involves a sudden loss of 1000 MW or more load/generation or a step change in frequency by 0.1 Hz.
b) Frequency data and event information will be gathered and analysed by NLDC and Regional Load Despatch Centres (RLDCs).

4.8. In the absence of any reportable event during the billing month, the Beta value for that month shall be zero (0)."

IV. The current methodology differs from the draft initially proposed by NLDC, which suggested using the median of the last ten reportable events when no event occurs.

V. The current practice of assigning a Beta value of zero (0) in the absence of reportable events may not fully capture the preparedness and availability of hydro generating stations. Hydro stations, particularly pondage-type plants, often operate primarily during peak hours and remain fully capable of providing frequency response even when no reportable event occurs. The following observations highlight the need for a more reflective approach:

- The current methodology assigns a Beta value of zero when no reportable event occurs, which may not fully reflect the station's readiness and operational capabilities.

- Hydro generating stations, especially pondage-type plants, operate mainly during peak hours and may not always have a schedule during reportable events. Despite this, they remain fully capable of providing primary frequency response.

- The restriction on higher scheduling imposed by IEGC 2023 limits the declared capacity of hydro stations to 100% of installed capacity, down from the earlier allowance of 110%. This has led to a consequential loss of capacity charges, which the Beta-based incentive mechanism aims to offset.

- There are two specific situations where the current methodology results in a Beta value of zero, even when the station is available and capable of providing primary support:
  a) When no reportable event occurs during the billing month.
  b) During lean inflow periods, pondage-type hydro stations operate for limited hours, increasing the probability of zero schedules during reportable events, resulting in a Beta value of zero.

- Using historical data is a widely accepted practice for performance measurement when current data is unavailable. Adopting the median of the last ten reportable events ensures a balanced and representative performance assessment.

VI. Suggested Modification to Beta Computation Methodology
To ensure a fairer and more accurate reflection of a station's readiness and operational performance, the following modification to Clause 4.8 of the approved methodology is proposed:

"*In case there is no reportable event or if the generating station's schedule is zero during a reportable event, the Average Monthly Frequency Response Performance, Beta 'β' (up to two decimal places) for that billing month shall be the median of the last ten (10) reportable events where the station had a generation schedule."*

This approach would maintain the integrity of the performance assessment process while ensuring that hydro stations are not unfairly disadvantaged due to the absence of reportable events beyond their control.

VII. Discussion in 51st Commercial Sub-Committee Meeting of NRPC held on 7th March, 2025:

- NHPC, SJVNL, and NTPC Ltd. suggested that Beta Computation Methodology should be modified as suggested above by SJVNL and NHPC,
- NRPC secretariat is of the view that Beta- a measure of Primary Frequency Response Performance- should be viewed in terms of delivery of response rather than mere availability to provide response and as such in case of no grid events in a month, Beta- as defined in detailed procedure by Hon'ble Commission -should be zero.
- PSPCL is of the opinion that providing primary response is a regulatory compliance. Where provisions of incentives have been introduced for providing frequency response, then the provision for equitable penalty for not meeting it must also be provided.
- Forum agreed to take up matter to NRPC meeting to record view of other member utilities, especially DISCOMs in order decide whether commission should be requested to make the proposed amendments.

A.33.2 EE (C), NRPC apprised that concern of NHPC and SJVN stems from the deviations in draft and finalized methodology.

A.33.3 As per draft methodology, median of the last ten reportable events is to be taken when no event occurs for Beta value. While in finalized methodology, a Beta value of zero (0) is to be taken in the absence of reportable events. Beta is directly linked to incentive for a Hydro plant.

A.33.4 EE (C), NRPC stated that the issue was discussed in the last Commercial Sub-Committee meeting wherein participation from the DISCOMs was less. Generators including NTPC are suggesting to modifying the finalized methodology for Beta computation. Further, He briefed the views of NRPC Secretariat and PSPCL as discussed in the 51st Commercial Sub-Committee Meeting held on 7th March, 2025.

A.33.5 NHPC representative submitted that Beta less than 0.3 is not being considered for incentive. He added that if there had been any other procedure in draft methodology rather than proposed methodology in draft, then Generators would have submitted comment on that. But, in finalized methodology, proposed draft version was not included.

A.33.6 Further, he stressed that if there is no event in the grid then it reflects that grid is operating well. Situation having no event in grid should not be cause for discouraging the Generators and requested that incentive should be provided for this scenario.

Therefore, he submitted that Forum may request to Honorable Commission that methodology of Beta computation to be reconsidered as mentioned in draft.

A.33.7 SJVN representative was also of same view of NHPC and submitted that Beta is Average Monthly Frequency Response Performance. However, if Beta is computed by having generator response against 1000MW event, then there will be problem.

A.33.8 EE (C), NRPC informed that event criteria has been considered based on following conditions-

a. there is demand increment or generation loss of 1000MW
b. Frequency gain/drop of .1Hz.

A.33.9 MS, NRPC was of view that SJVN, NHPC and other generators may approach to CERC. SJVN representative informed that they have already approached CERC.

NRPC Deliberation

A.33.10 Forum was in line with discussion held in TCC meeting.

Decision of Forum:

Forum noted the concerns of NHPC, SJVN, and NTPC for review of the methodology and also concerns of PSPCL of not having any equitable penalty along with incentive. However, since the methodology is already finalized and implemented, all concerned utilities may approach to CERC for amendment in methodology, if required.

A.34 Rectification of Electricity Bill of 75 MW Parasan Solar Power Project at Village-Parasan, Distt. - Jalaun, Uttar Pradesh from 22.10.2022 onwards (Agenda by SJVN)

TCC Deliberation

A.34.1 SJVN representative apprised that

i) 75 MW Parasan Solar Power Station at Village-Parasan, Uttar Pradesh is being implemented by SJVN Green Energy Limited (SGEL), a 100% (wholly) owned subsidiary of SJVN Limited, a Navratna CPSE under the administrative control of Ministry of Power, Government of India.

ii) DVVNL has raised around Rs. 8.67 crore import Energy bill including Late payment surcharge of Rs. 48.94 lakh for the period from 22.10.2022 till 31.12.2024. Total power export to UPPCL Discom at STU end From COD of the plant till 31.12.24 is approx. 300 MU. Total amount receivable against power exported to discom is 80.40 crore on applicable rate of Rs 2.68 Rs /kWh.

iii) Following discrepancies were observed in previous bills raised to Parasan Solar Power Project:

A) **<u>Late Payment Surcharge and Fixed Demand Charges</u>:**

UPERC vide order dtd. 10.10.2024 in truing up of tariff for FY 2022-23, APR for FY 2023-24 and approval of ARR and tariff for FY 2024-25, had approved the following tariff under various provisions:

Quote

7. SURCHARGE / PENALTY:

i DELAYED PAYMENT:

*If a consumer, having post-paid connections, fails to pay his electricity bill by the due date specified therein, a late payment surcharge shall be levied at 1.25% on the dues (**excluding late payment surcharge**) per month; up-to first three months of delay and subsequently at 2.00% on the dues (excluding late payment surcharge) per month of delay. Late payment surcharge shall be calculated proportionately for the number of days for which the payment is delayed beyond the due date specified in the bill and levied on the unpaid amount of the bill excluding delayed payment surcharge. Imposition of this surcharge is without prejudice to the right of the Licensee to disconnect the supply or take any other measure permissible under the law.*

*ii) **CHARGES FOR EXCEEDING CONTRACTED DEMAND:***

a) If the maximum load / demand in any month of a domestic consumer having TVM / TOD / Demand recording meter exceeds the contracted load / demand, then such excess load / demand shall be levied equal to 100% of the normal rate apart from the normal fixed / demand charge as per the maximum load / demand recorded by the meter.

b) If the maximum load / demand in any month, for the consumers of other category (except a) above having TVM / TOD / Demand recording meter exceeds the contracted load / demand, then such excess load / demand shall be levied equal to 200% of the normal rate apart from the normal fixed / demand charges (not minimum charge/ minimum amount/ bill payable) as per the maximum load / demand recorded by the meter.

Unquote:

Late Payment surcharge has not been calculated in Import Energy Bills in line with provisions of above UPERC order and DVVNL has levied LPS on LPS in various bills. **The same needs to corrected by DVVNL.**

Fixed Demand Charges have been calculated on actual demand in place of contract demand in all Energy bills. Thereafter, Penalty of 200 % is also imposed between difference of Actual and contract demand. Hence, there is 300 % demand charges including penalty has been charged in all bills for actual demand, which is contrary to aforesaid UPERC order. **The same needs to be rectified by calculating fixed demand charges only on contract demand in all Energy Bills raised to Parasan Solar Power Project since its Synchronization i.e. from 22.10.2022 onwards.**

For illustration example is given below:

Suppose Monthly Contract Demand = 250 kVA, Monthly Actual Demand = 1000 kVA, Rate of Demand Charges as per UPERC order= Rs 270/kVA			
Bills as raised by DVVNL since Synchronization of plants		Energy Bills to be raised as per UPERC order	Difference in Demand Charges
Fixed Demand Charges @270/kVA (Rs.)	270000	67500	202500
Penalty of 200 % on Excess Demand (Difference between Actual Demand-Contract Demand) (Rs.)	405000	405000	0
Total Demand Charges (Rs.)	675000	472500	202500

B) **<u>Energy Charges</u>:**

The Energy Charges (kVAh) bill is showing meter reading at Orai substation of the Licensee/STU and bill is high due to generation of capacitive reactive power (Meter is recording leading power factor kVAR as consumption), attributed to the light load in non-solar/night hours and long length of 18 KM of the transmission line. In the current scenario, line is generating reactive KVAR, which are being bills to Parasan Solar PP. The Energy Meter reading (kVAh) at Grid Sub-station end is 4 to 5 times higher in comparison to Parasan Solar PP end.

The relevant provisions of Central Electricity Authority (Installation and operation of Meters) Regulations, 2006 and its amendment issued from time to time are reproduced here as under:

Quote

Regulation 7(LOCATION OF METERS):

(1) Consumer meter. - (a) The consumer meter shall be installed by the licensee either at the consumer premises or outside the consumer premises:

Provided that where the licensee installs the consumer meter outside the premises of the consumer then the licensee on a request from consumer shall provide real time display unit at the premises of the consumer for his information to indicate the electricity consumed by the consumer:

Provided further that for the purpose of billing, the reading of consumer meter shall be taken into account.

i) The relevant provisions of PPA, as signed by both the parties, are reproduced here as under:

7.1.3 For installation of Meters, Meter testing, Meter Calibration ***and Meter reading and all matters incidental thereto, the Seller and the Procurer (s) shall follow and be bound by the Central Electricity Authority (Installation and Operation of Meter) Regulations, 2006 and the State Grid Code and ABT*** *as amended and revised from time to time.*

iii) The relevant provisions of UPERC (Captive and Renewable Energy Generating Plants) Regulations, 2019, effective from 01.04.2019 are reproduced here as under:

Clause 29 (Metering Arrangement)

The Captive Plants and Renewable Energy Generating Power Plants (except SHP and MSW plant) shall provide ABT compliance Special Energy Meters (SEM) at the point of injection and point of drawl and shall comply with all metering requirements as notified by the State Transmission Utility.

Provided that the point of injection and point of drawl for the purpose of recording and billing purposes shall be the substation of the Licensee/STU.

Provided also that metering at generator terminal shall be as per the guidelines issued by the Authority.

Unquote:

DVVNL in its letter has mentioned the aforesaid Clause 29 of UPERC (Captive and Renewable Energy Generating Plants) Regulations, 2019 is contrary to the Regulation 7 of CEA (Installation and operation of Meters) Regulations Amendment, 2019 related to Consumer Meter, wherein consumer meter shall be installed by the licensee either at the consumer premises or outside the consumer premises and for the purpose of billing, the reading of consumer meter shall be taken into account. Clause 29 of UPERC Regulations also speaks about Metering at generator terminal as per the guidelines issued by the Authority. Provisions is also mentioned in

PPA under clause 7.1.3, wherein for metering related matters Seller and Procurer shall follow the CEA Metering Regulations.

In consideration of above, Billing shall be taken at consumer end only. Hence, Metering for calculation of Energy charges (kVAh) should be taken at Parasan Solar Power Project end.

C) <u>Power Export to Discom</u>:

The relevant provisions of PPA are reproduced here as under:

Quote

7.1.1. ***As per the state metering code, the measurement of solar energy supplied by the generating stations within the state, meter shall be provided on each outgoing feeder at the power station designated as main meter for billing purpose.*** *Check Meter shall be provided along with main meter on each outgoing feeder. Meter shall also be provided on the other end of the 33 kV /132 kV feeder to serve as secondary back-up meter. Meters on each generator and auxiliary transformer shall work as back up meters. The consumption recorded by secondary back-up meter on 33kV/132 kV feeder to work out transmission losses as well as to monitor the correct functioning of both meters.*

Unquote**:**

As per the provision of PPA, measurement of solar energy supplied by the generating stations within the state, meter shall be provided on each outgoing feeder at the power station designated as main meter for billing purpose. However, main meter is being considered for exporting power to DVVNL for billing purpose at the substation of Licensee/STU. **The same needs to be corrected in terms of Provisions of PPA.**

In consideration of above, SJVN has requested to rectify Energy Import/Export billing of Parasan Solar Power Project since its Synchronization i.e. from 22.10.2022 onwards.

A.34.2 SJVN representative requested to arrange the special meeting with all concerned.

A.34.3 MS, NRPC agreed with the same and suggested to call other concerned organizations as well in the separate meeting.

<u>NRPC Deliberation</u>

A.34.4 Forum was in consonance of deliberation held in TCC meeting.

A.34.5 SE, UPSTU informed that Parasan Solar Power Project is joint venture of SJVN and LSPDCL having agreement with UPSTU. As per this agreement, power is to be sold

to at STU end with metering at STU end. For its auxiliary power consumption from DISCOM, they have different agreement with UPPCL with metering at SJVN end. Therefore, there are two different agreement which need to be treated differently.

A.34.6 Forum noted the above.

Decision of Forum:

Forum decided that separate meeting may be held with SJVN, UPPTCL, DVVNL, NRLDC and NRPC Secretariat.

A.35 Returning of spare 400/220 kV 315 MVA ICT provided to DTL and mechanism to devise rental charges for ICT provided on loan basis (agenda by POWERGRID)

TCC Deliberation

A.35.1 POWERGRID representative apprised that 04 nos. 400/220 kV 315 MVA ICTs has been provided to DTL by POWERGRID in last 05 years as per request of DTL for ensuring load management in National Capital Delhi. 03 out of 04 ICTs provided were POWERGRID assets and 01 no ICT is RPC spare to meet regional contingencies. All the ICTs provided to DTL were on non-chargeable basis in view of critical situation of maintaining uninterrupted power supply in National Capital Delhi.

A.35.2 In additional to DTL, ICTs has been provided to other Utilities on non-chargeable basis. The present details of ICTs provided to other utilities is as below:

S. No.	ICT provided to other Utilities	Diverted from	Diverted to	Date	Status
1	BHEL Make 315 MVA 400/220 KV ICT	Ludhiana (POWERGRID)	Mundka (DTL)	Apr-23	Not returned. No schedule for returning provided
2	BHEL Make 315 MVA 400/220 KV ICT	Ludhiana (POWERGRID)	Jodhpur GSS - Surpura (RVPNL)	Nov-23	Not returned. No schedule for returning provided

3	CGL Make 315 MVA 400/220 KV ICT	Mandola (POWERGRID)	Bawana (DTL)	Jan-22	Not returned. No schedule for returning provided
4	BHEL Make 315 MVA 400/220 KV ICT	Mandola (POWERGRID)	Tikrikalan (DTL)	Feb-20	Not returned. No schedule for returning provided
5	BHEL Make 315 MVA 400/220 KV ICT	Ballabgarh (POWERGRID)	Tikrikalan (DTL)	Mar-24	Not returned. No schedule for returning provided
6	Toshiba make 500 MVA 400/220 KV ICT	Panchkula (POWERGRID)	Nakodar (PSTCL)	May-23	Expected to be returned to POWERGRID by 30th April'25

A.35.3 Matter for returning ICTs provided to DTL has been taken up repeatedly however no firm schedule has been given by stating that ICT procurement is under progress and ICTs shall only be returned after finalisation of award and installation at sites.

A.35.4 CAG audit of POWERGRID Northern region for FY 2022-24 has been carried out wherein non recovery of rent from DTL in respect of diversion of ICT transformer has been pointed out and compliance for the same is sought from POWERGRID. The observation of CAG audit is attached as **Annexure-A. XXVII**)

A.35.5 In addition to above, at present no spare 400/220 kV 315 MVA spare ICT is available in POWERGRID Northern Region-1 to meet out contingencies.

A.35.6 Considering above situation, POWERGRID submitted that mechanism of rental recovery for ICTs provided on non-chargeable basis to utilities may be devised at the earliest in reference to discussion held in 77th NRPC meeting (in agenda A.22). Further schedule for returning of 04 nos. ICTs may be provided by DTL in view of non-availability of spare ICT in region and CAG audit observations.

A.35.7 RVPN representative ensured that new ICT would get commissioned by June, 2025.

A.35.8 CGM, NRLDC highlighted that there are issues of non-availability of spare ICTs for grid with this current practice of utilities. He also said that recovery of cost is being done from all states while ICT is provided on non-chargeable basis to a particular state.

A.35.9 POWERGRID representative raised concern that POWERGRID has to submit reply to CAG audit para for non-recovery of rent from DTL in respect of diversion of ICT.

A.35.10 MS, NRPC informed that agenda related to cold spare ICT was also discussed in the 28th NCT meeting held on 06.03.2025.

A.35.11 CTUIL representative added that cost recovery of spare ICTs procured by POWERGRID is done form Pool. Further, she suggested that If any ICT is given to particular state on loan basis up to certain decided period, then charges may be paid by that State to the Pool not directly to POWERGRID. She also mentioned that the same was also discussed in the 28th NCT meeting held on 06.03.2025 wherein POWERGRID proposed to procure some additional Spare ICTs.

A.35.12 ED, NRLDC raised concern that all spare ICTs may not be given to other utilities. Spares are planned as per Grid requirement which should necessarily be met.

A.35.13 Subsequently, it was gathered that detailed guideline is required to be framed covering rental recovery, period of rent, penalty clauses etc. keeping the grid contingency/requirement in mind.

A.35.14 Accordingly, Forum decided that agenda may be discussed in the next Commercial Sub-Committee meeting/special meeting for preparing draft mechanism to devise rental charges for ICT provided on loan basis.

A.35.15 Further, minutes of 28th NCT meeting were issued vide letter dated 21.03.2025 on the procurement of regional spares as below-

NCT decided that comprehensive proposals for all regions may be prepared for each region and deliberated in respective RPCs and thereafter in the National Power Committee (NPC). Further, NPC may formulate comprehensive guidelines for requirement and use of spares.

NRPC Deliberation

A.35.16 Forum was in consonance of the deliberation held in TCC meeting.

A.35.17 PSTCL representative informed that they have returned the POWERGRID ICT on 15.03.2025.

A.35.18 MS, NRPC suggested that after discussion in Commercial Sub-Committee meeting, the same be put up in NPC meeting for uniform mechanism.

Decision of Forum:

Forum decided that the agenda may be discussed in the next Commercial Sub-Committee meeting/special meeting for preparing draft mechanism to devise rental charges for ICT provided on loan basis.

A.36 OPGW installation on existing 400 kV Sikar (PG) – Agra (PG) D/c line (owned by PG) which is proposed to be LILOed at 400 kV GSS Kumher (RVPN) (agenda by CTUIL)

TCC Deliberation

A.36.1 EE (C), NRPC apprised that in the 36th Consultation Meeting for Evolving Transmission Schemes in Northern Region held on 15.01.2025 (MoM attached at **Annexure-A.XXVIII)** transmission scheme "*LILO of one circuit of 400kV Sikar – Agra D/c (Quad Moose) line at 400 kV GSS Kumher (6.5 ckm) along with 80 MVAR, 420 kV switchable line reactor at Kumher end of Sikar – Kumher 400 kV section*" was deliberated. In the scheme LILO of existing 400 kV Sikar-Agra D/c line is proposed at 400 kV GSS Kumher (RVPN).

A.36.2 As per the inputs received from POWERGRID, OPGW is not available on 400 kV Sikar-Agra D/c line.

A.36.3 To meet data, voice & protection requirements between Agra, Sikar & Kumher Substations, OPGW needs to be installed over the 400 kV Sikar-Agra D/c line (**386 Km**) which is proposed to be LILOed at 400 kV GSS Kumher (RVPN). Further as per CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022, "The primary path for tele-protection shall be on point-to-point Optical Ground Wire".

A.36.4 Subsequently CEA PCD division vide letter Ref. CEA-PS-17-24/1/2024-PCD Division dtd. 22.11.2024 informed that in line with letter addressed to MoP from DoT, Ministry of Communication CTU, POWERGRID, STUs and all TSPs are requested to incorporate at least 48 Fiber OPGW in place of 24 Fiber in all upcoming schemes for utilization of additional fibers for Telecom licensees on leasing basis. (Letter attached at **Annexure-A.XXIX**) based on this 48 Fiber OPGW has been proposed for this scheme.

A.36.5 CTUIL representative stated that scheme is to be taken up along with transmission scheme of RVPNL "*LILO of one circuit of 400kV Sikar – Agra D/c (Quad Moose) line at 400 kV GSS Kumher (6.5 ckm) along with 80 MVAR, 420 kV switchable line reactor at Kumher end of Sikar – Kumher 400 kV section*" in matching timeframe. Scheme attached as **Appendix-I.**

A.36.6 Scope of the scheme includes Supply and Installation of 48 Fiber OPGW on existing 400 kV Sikar (PG) – Agra (PG) D/c line (owned by PG) **(386 Km)** including Repeater which is proposed to be LILOed at 400 kV GSS Kumher (RVPN) including FOTE at Sikar S/s (PG) & Agra S/s (PG).

A.36.7 The estimated cost of the scheme is approx. **Rs. 26.49 Crs.** The Implementation time frame is **30 months from date of allocation** with best effort to match time frame with transmission scheme of "*LILO of one circuit of 400kV Sikar – Agra D/c (Quad Moose) line at 400 kV GSS Kumher (6.5 ckm) along with 80 MVAR, 420 kV switchable line reactor at Kumher end of Sikar – Kumher 400 kV section*".

A.36.8 He added that after Review in NRPC, the Scheme shall be put up in NCT for approval in RTM mode to POWERGRID.

A.36.9 Member secretary, NRPC enquired about the existing data, voice & protection provisions from Agra and Sikar S/s and that what are the planned similar provisions for Kumher S/s.

A.36.10 CTU representative replied that it is being met through other routes from their respective nodes. Now, to route the data of LiLO, there is need to OPGW on existing 400 kV Sikar (PG) – Agra (PG) D/c line (owned by PG)

A.36.11 RVPN representative apprised that same is being explored yet.

A.36.12 MS, NRPC was of view that agenda is required to be deliberated with concerned stakeholders in details. Therefore, the agenda was referred to discuss again in TeST/CPM meeting.

NRPC Deliberation

A.36.13 Forum was in line with the discussion held in TCC meeting.

Decision of Forum:

Forum referred the agenda for discussion in TeST meeting of NRPC/ Communication Planning Meeting of CTU for further deliberation. CTU may take-up this scheme directly in NCT post approval in TeST meeting of NRPC/ Communication Planning Meeting of CTU.

A.37 OPGW installation on existing 220 kV Chittorgarh (RVPN)-RAPP B (NPCIL) D/c Line (owned by PG) which is proposed to be LILOed at RVPNs 220 kV GSS Begun (Chittorgarh) (agenda by CTUIL)

TCC Deliberation

A.37.1. EE (C), NRPC apprised that in the 36th Consultation Meeting for Evolving Transmission Schemes in Northern Region held on 15.01.2025 (MoM attached at **Annexure-A.XXVIII**) transmission scheme "*LILO of 220 kV Chittorgarh-RAPP B D/c Lines at RVPNs proposed 220 kV GSS Begun(Chittorgarh)*" was deliberated. In the

scheme LILO of both circuits of 220 kV D/c Chittorgarh-RAPP-B lines has been proposed for creation of 220 kV GSS Begun (Chittorgarh).

A.37.2. CTUIL representative conveyed that as per the inputs received from POWERGRID, OPGW is not available on 220 kV Chittorgarh-RAPP B D/c Line.

A.37.3. To meet data, voice & protection requirements between Chittorgarh, RAPP-B & Begun Substations, OPGW needs to be installed over the 220 kV Chittorgarh-RAPP B D/c Line **(130 Km)** which is proposed to be LILOed at 220 kV GSS Begun (Chittorgarh). Further as per CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022, "The primary path for tele-protection shall be on point-to-point Optical Ground Wire".

A.37.4. Subsequently CEA PCD division vide letter Ref. CEA-PS-17-24/1/2024-PCD Division dtd. 22.11.2024 informed that in line with letter addressed to MoP from DoT, Ministry of Communication CTU, POWERGRID, STUs and all TSPs are requested to incorporate at least 48 Fiber OPGW in place of 24 Fiber in all upcoming schemes for utilization of additional fibers for Telecom licensees on leasing basis. (Letter attached at **Annexure-A.XXIX**) based on this 48 Fiber OPGW has been proposed for this scheme.

A.37.5. He added that this scheme shall be taken up along with transmission scheme of RVPNL "*LILO of 220 kV Chittorgarh-RAPP B D/c Lines at RVPNs proposed 220 kV GSS Begun (Chittorgarh)*" in matching timeframe. Scheme attached as **Appendix-II.**

A.37.6. The estimated cost of the scheme is approx. **Rs. 8.55 Crs.** The Implementation time frame is **24 months from date of allocation** with best effort to match time frame with transmission scheme of "*LILO of 220 kV Chittorgarh-RAPP B D/c Lines at RVPNs proposed 220 kV GSS Begun (Chittorgarh)*".

A.37.7. He added that after Review in NRPC, the Scheme shall be put up in NCT for approval in RTM mode to POWERGRID.

A.37.8. All members agreed to approve the proposal of CTUIL.

NRPC Deliberation

A.37.9. Forum was in line with the discussion held in TCC meeting.

A.37.10. POWERGRID representative informed that by this scheme, there will be redundancy for both RAPP-B and Chittorgarh. Therefore, the scheme may be considered for approval.

Decision of Forum:

Forum gave technical concurrence to the proposal of CTUIL for Supply and Installation of 48 Fiber OPGW on existing 220 kV Chittorgarh (RVPN)-RAPP B (NPCIL) D/c Line (owned by PG) (130 Km) which is proposed to be LILOed at RVPNs 220 kV GSS Begun (Chittorgarh) including FOTE at Chittorgarh S/s (RVPN) & RAPP B station (NPCIL).

A.38 Redundant communication for Saharanpur (PG) S/s (agenda by CTUIL)

TCC Deliberation

A.38.1 CTUIL representative apprised that Presently Saharanpur S/s (PG) is connected with ISTS network on radial and no redundant path is available.

A.38.2 Further, he added that redundant communication for Saharanpur S/s was deliberated in 2nd, 3rd & 4th CPM held on dtd 25.07.2022, 17.02.2023 & 25.07.2023 respectively. Later, this agenda was discussed in 23rd TeST Meeting, where it was decided that redundant communication for Saharanpur can be provided by sharing 3 pairs of fiber on the following UPPTCL links:

1. Sahararnpur (PG)- Deoband (UP)
2. Deoband (UP)- Saharanpur (UP)
3. Saharanpur (UP) -Nanauta (UP)
4. Nanauta (UP)-Shamli (UP)
5. Shamli (UP) -Muradnagar (UP)

A.38.3 In the 23rd TeST Meeting, NRPC suggested CTU to write a letter to UPPTCL for consent on fiber sharing on the above links, thereafter CTU has written a letter dtd 02.11.2023 to UPPTCL. (Letter attached at **Annexure-A.XXX**)

A.38.4 In the 24th TeST meeting held on 09.02.2024 this matter was again deliberated, and it was decided that two nos. of FOTE shall be required at Shamli and Muradnagar along with Fiber sharing on UPPTCL links.

A.38.5 This agenda was also deliberated in the 72nd NRPC held on 29-30 March'24 where Forum suggested that matter may be brought after formulation of fiber sharing policy by CEA for which a committee is formed.

A.38.6 In the 26th TeST Meeting of NRPC held on 19.11.2024, NRLDC put up this agenda again for deliberation. POWERGRID informed that redundant communication of Saharanpur S/s can be made by installing OPGW on the second peak of 400kV Saharanpur- Roorkee/Baghpat line. i.e., OPGW shall be laid from Saharanpur Gantry to LILO point (Tower no. 59) of 400kV Roorkee/Baghpat line. Total 15.8 Kms of OPGW shall be laid along with one (01) STM16 communication equipment at Saharanpur S/S, Forum agreed for the same.

A.38.7 For the formation of final scheme, CTU requested POWERGRID to provide complete connectivity details with schematic diagram so that scheme can be put up in the upcoming NRPC meeting for review. POWERGRID vide mail dtd. 28.02.2025 has provided their input regarding redundant connectivity of Saharanpur S/s (PG). Based on the input received and deliberations of the 26th TeST Meeting, scheme has been prepared by CTU which is attached as **Appendix-III.**

A.38.8 Scope of the scheme includes supply & installation of 48F OPGW (**15.8 Km**) from Saharanpur Gantry to LILO point (Tower no. 59) of 400kV Roorkee/Baghpat line along with one (01) STM16 communication equipment at Saharanpur S/s.

A.38.9 The estimated cost of the scheme is approx. **Rs. 1.33 Crs.** The Implementation time frame is **24 months from date of allocation.**

A.38.10 He conveyed that after Review in NRPC, the Scheme shall be put up in NCT for approval in RTM mode to POWERGRID.

A.38.11 Further CTUIL mentioned that "***Comprehensive Guidelines for the Usage and Sharing of Fiber Cores of Optical Ground Wire (OPGW) and Underground Fiber Optic (UGFO) Cables for Power System Applications" are published by***

CEA vide letter dtd. 03.03.2025 **(**attached as **Annexure-A.XXXI).** He requested that UPPTCL may now share the fiber infrastructure which shall obviate the said scheme.

A.38.12 UPPTCL representative agreed to share the fiber as per issued CEA guideline for the Usage and Sharing of Fiber Cores of Optical Ground Wire (OPGW) and Underground Fiber Optic (UGFO) Cables for Power System Applications.

A.38.13 EE (C), NRPC advised CTUIL to write letter to all concerned states considering newly issued guideline on OPGW fibre sharing and ask timeline regarding their approach to implement these guidelines for projects which require sharing of fibre.

A.38.14 MS, NRPC conveyed that CTUIL may also send the details of all such projects to NRPC Secretariat.

NRPC Deliberation

A.38.15 Forum was in line with the deliberation held in TCC meeting.

A.38.16 EE (C), NRPC suggested to have a workshop on the issued OPGW fiber sharing guidelines. Forum agreed for the same.

Decision of Forum:

UPPTCL agreed to share the fiber as per issued CEA guideline for the Usage and Sharing of Fiber Cores of Optical Ground Wire (OPGW) and Underground Fiber Optic (UGFO) Cables for Power System Applications. CTUIL will write a letter to UPPTCL for fiber sharing in this regard. Accordingly, the proposed scheme may be obviated.

A.39 Redundant communication for Manesar (PG) S/s (agenda by CTUIL)

TCC Deliberation

A.39.1 CTUIL representative apprised that this agenda was deliberated in 67th NRPC held on 30.06.2023 and later on sent for deliberation in 15th NCT Meeting by CTU but due to some observations of CEA PCD, agenda could not be deliberated in the NCT Meeting.

A.39.2 In the 8th NR CPM held on 03.02.2025, POWERGRID asked CTU regarding the agenda for redundant communication of Manesar (PG) S/s. CTU asked POWERGRID to provide the revised agenda so that it can be reviewed in the upcoming NRPC. CTUIL also stated that this agenda needs to put in NRPC along with the recommendation of CEA-PCD first. POWERGRID informed CTU that Issue of Manesar redundancy has been briefed to PCD and NRPC by POWERGRID, and consent will be shared before NRPC meeting as per agenda of CTU/POWERGRID.

A.39.3 POWERGRID vide mail dtd 28.02.2025 has provided their input regarding redundant connectivity of Manesar S/s (PG) which are mentioned below:

A.39.4 Existing fiber connectivity for Manesar s/s:

a. Manesar – Sohna – *Gurgaon* – *Ballabhgarh* - - - up to NRLDC
b. Manesar – Neemrana – *Bhiwadi* – *Ballabhgarh* - - - up to NRLDC

A.39.5 400kV D/C Manesar- Gurgaon line is LILOed at Sohna Sub-station and further proposed to be LILOed at Neemrana-II S/s under Rajasthan REZ Ph-IV (Part-B), which would be in opposite direction and would increase nos. of intermediate nodes on redundant path.

A.39.6 Gurgaon S/s is established with LILO of 400kV S/C Ballabhgarh – Bhiwadi line, therefore OPGW of Ballabhgarh-Gurgaon & Ballabhgarh - Bhiwadi link are running on common towers on route of approximately 12kms of from Ballabhgarh gantry to Tower No-30.

A.39.7 Recently in a tower sabotage case on 400kV S/C Ballabhgarh – Gurgaon line, OPGW of Ballabhgarh to Bhiwadi as well as that of Ballabgarh to Gurgaon link got damaged simultaneously because of common tower / route, which led to disruption of connectivity to Manesar and at the same time in-bound data from Rajasthan including the Solar pocket also got affected.

A.39.8 He mentioned that all the PMUs of POWERGRID are reporting at NTAMC Manesar and NTAMC WAMS system is connected with main NLDC as well as back-up NLDC, in case any of the RLDCs' WAMS system get down then NTAMC system would work as a back-up control centre for NLDC.

A.39.9 In view of the above, he proposed that redundant communication path for Manesar is very much required. Accordingly, an additional link may be created by laying OPGW on the following two nos. of POWERGRID lines to reach up to NRLDC/NLDC from Manesar.

a. 400kV Neemrana – Manesar line (on 2nd E/W peak) (from the crossing point of Neemrana – Manesar & Agra- Jhatikara line up to Manesar S/s (5 kms.)

b. 765kV Agra-Jhatikara line (from the crossing point of Neemrana – Manesar & Agra-Jhatikara line up to Jhatikara S/s (30 kms).

A.39.10 Based on the inputs received from POWERGRID, CTU has prepared a scheme which is attached as **Appendix-IV.**

A.39.11 Scope of the scheme includes supply and installation of OPGW 48F (35 Km) including SFPs from:

a. 400kV Neemrana – Manesar line (on 2nd E/W peak) (from the crossing point of Neemrana – Manesar & Agra- Jhatikara line up to Manesar S/s (**5 kms**.)

b. 765kV Agra-Jhatikara line (from the crossing point of Neemrana – Manesar & Agra-Jhatikara line up to Jhatikara S/s (**30 kms**).

(Figure attached as **Appendix -V**)

A.39.12 The estimated cost of the scheme is approx. **Rs. 2.30 Crs**. The Implementation time frame is **24 months from date of allocation.**

A.39.13 He conveyed that after Review in NRPC, the Scheme shall be put up in NCT for approval in RTM mode to POWERGRID.

A.39.14 EE (C), NRPC asked the CTUIL about the change in scope of scheme with respect to already approved in the 67th NRPC meeting.

A.39.15 CTUIL representative submitted that there is no change in scope of the scheme.

A.39.16 Accordingly, Forum was of view of that the agenda is not required to be discussed.

NRPC Deliberation

A.39.17 Forum was in consonance of deliberation held in TCC meeting.

Decision of Forum:

As informed by CTUIL, Scheme has already been approved by NRPC Forum in the 67th NRPC meeting. Since there is no change in the scope of scheme from the earlier approved one, agenda was not required to be deliberated.

A.40 Replacement of Coriant make FOTE at Alstung, Drass, Kargil, Khalsti, Leh S/s (agenda by CTUIL)

TCC Deliberation

A.40.1 CTUIL representative apprised that in the 26th TeST Meeting of NRPC, POWERGRID informed that six nos. of Coriant make FOTE installed at Alstung, Drass, Kargil, Khalsti, Leh & Kala-amb sub-stations. These sub-stations were originally under the ownership of J&K, later handed over to POWERGRID by the Ministry of Power (MoP). The cost recovery for these sub-stations is being handled under the RTM mode.

A.40.2 POWERGRID informed that the useful life of the FOTE equipment has nearly been completed, as per CERC's new tariff regulations (2024–29), which specify a lifespan of 7 years for these assets.

A.40.3 Due to difficulties in obtaining AMC services and spares for these aging equipment, replacement of these FOTE has become essential.

A.40.4 Following was concluded in the 26th TeST Meeting:

a. POWERGRID will provide CTUIL with detailed information on the RTM declaration, commissioning dates, and cost estimates for replacing the FOTE

equipment.

b. POWERGRID was advised to file a petition with CERC to seek approval for a revised tariff for the sub-stations under RTM mode, considering the completion of the FOTE's useful life.

c. Replacement of FOTE at Kala-Amb sub-station cannot be included under the useful life clause, as the sub-station falls under the TBCB mode.

A.40.5 This agenda was further discussed in the 8th NR CPM held on 03.02.2025 where *POWERGRID stated the equipment commissioning date is March 2019 and the commissioning date for S/s is 31.01.2019. POWERGRID also shared their concerns about difficulties in obtaining AMC services and spares for Coriant make FOTE equipment*.

A.40.6 POWERGRID to confirm about the CERC petition for revised tariff. Further, CTU requested POWERGRID to provide the details as deliberated in 26th TeST Meeting so that scheme can be prepared for the replacement of these Coriant make equipment.

A.40.7 POWERGRID vide mail dtd. 04.03.2025 & 06.03.2025 provided following inputs:

a. Date of Commissioning: 11th Jan 2019 (Letter attached as **Annexure-AA.XXXII**)

b. RTM Declaration of the Asset: 31st Oct 2019 (Letter attached as **Annexure-AA.XXXIII**)

c. Cost for supply and installation of STM-16 FOTE (5 No.): Rs 1.5 Crore

A.40.8 Based on the inputs received from POWERGRID, CTU has prepared a scheme and is attached as **Appendix-VI.**

A.40.9 Scope of the scheme includes supply and installation of STM-16 FOTE (5 No.) One no. each at the following location:

S. No.	Station	Date of Commissioning	No. of FOTE
1	Alstung S/s	Jan 2019	1
2	Drass S/s	Jan 2019	1
3	Kargil S/s	Jan 2019	1

4	Khalasti S/s	Jan 2019	1
5	Leh S/s	Jan 2019	1
Total FOTE Required			5

A.40.10 The estimated cost of the scheme is approx. **Rs. 1.5 Crs.** The Implementation time frame is **12 months from date of allocation.**

A.40.11 He conveyed that after Review in NRPC, the Scheme shall be put up in NCT for approval in RTM mode to POWERGRID.

A.40.12 Forum gave technical concurrence to the proposal of CTUIL.

NRPC Deliberation

A.40.13 In line with TCC Forum decision, NRPC Forum gave technical concurrence to the proposal of CTUIL.

Decision of Forum:

Forum gave technical concurrence to the proposal of CTUIL.

A.41 Fiber sharing on STU Links for redundant communication to ISTS Nodes (agenda by CTUIL)

TCC Deliberation

A.41.1 CTUIL representative apprised that agenda was discussed in the 23rd NRPC TeST Meeting where CTU was suggested to write letter to PTCUL, HPPTCL, JKPTCL & UPPTCL to get consent on 3 pairs of fiber sharing on STU fiber network to provide redundant communication to following STU nodes:

Narora (NPCIL), Saharanpur (PG), Pithoragarh (PG), Sitarganj (PG), Chamera-III (PG), Budhil (GreenCo), Alusteng (PG), Drass (PG), Kargil (PG), Khalasti (PG), Leh (PG)"

A.41.2 Letters written by CTU to PTCUL, HPPTCL, JKPTCL & UPPTCL are attached at **Annexure-AA.XXXIV.**

A.41.3 Further this agenda was deliberated in the 72nd NRPC held on 29-30 March'24 where forum suggested that matter may be brough after formulation of fiber sharing policy by CEA.

A.41.4 It is to mention that "**Comprehensive Guidelines for the Usage and Sharing of Fiber Cores of Optical Ground Wire (OPGW) and Underground Fiber Optic (UGFO) Cables for Power System Applications" are published by CEA vide letter dtd. 03.03.2025** (attached as **Annexure-AA.XXXI**).

A.41.5 State utility wise link details where fibre sharing is required are given below:

UPPTCL:

A. Links/Paths where fiber Sharing is required for NAPP (NPCIL):

1. Simbhavali (UP) - Shatabdi Nagar (UP)
2. Shatabdi Nagar (UP) - Modipuram (UP)-having ISTS FOTE

B. Links/Paths where fibre Sharing is required for Saharanpur (PG):

1. Sahararnpur (PG)- Deoband (UP)
2. Deoband (UP)- Saharanpur (UP)
3. Saharanpur (UP) -Nanauta (UP)
4. Nanauta (UP)-Shamli (UP)
5. Shamli (UP) -Muradnagar (UP)-having ISTS FOTE

PTCUL:

A. Links/Paths where fiber Sharing is required for Pithoragarh (PG):

1. Pithoragarh (PG) – Pithoragarh (PTCUL)
2. Pithoragarh (PTCUL) – Almora (PTCUL)
3. Almora (PTCUL) -Bhawoli (PTCUL)
4. Bhawoli (PTCUL) -Haldwani (PTCUL)
5. Haldwani (220kV) (PTCUL) Kamalwaganj (PTCUL)
6. 220kV Kamalwaganj (PTCUL) - Pantnagar (PTCUL)
7. Pantnagar (400kV) (PTCUL) Kashipur (PTCUL)

B. Links/Paths where fibre Sharing is required for Sitarganj (PG):

1. Sitarganj(PG) - Sitarganj(PTCUL)
2. Sitarganj(PTCUL) - Kiccha(PTCUL)
3. Kiccha(PTCUL) - Rudrapur(PTCUL)
4. Rudrapur (PTCUL) - Pantnagar (PTCUL)
5. Pantnagar (PTCUL) – Kashipur (PTCUL)

JKPTCL:

Links/Paths where fiber Sharing is required for Alusteng(PG), Drass(PG), Kargil(PG), Khalasti(PG), Leh(PG):

1. Alusteng (PG) - Zainakote (JKPTCL)
2. Zainakote (JKPTCL) - Wagoora (PG)

A.41.6 Forum requested CTUIL to write to all concerned STUs for fiber sharing considering newly issued Fiber sharing guideline.

NRPC Deliberation

Forum was in line with the discussion held in TCC meeting.

Decision of Forum:

In light of recently issued CEA guidelines on fiber sharing, CTU to write again to all concerned STUs for fiber sharing.

A.42 Arranging reduction in the prices quoted by M/s Siemens for AMC of SCADA/EMS system w.e.f. 01.04.2025 to 31.03.2026 (agenda by RVPN)

TCC Deliberation

A.42.1 RVPN representative apprised that the AMC of SCADA/EMS system installed by M/s Siemens under ULDC-II was carried out w.e.f. 01.04.2016 at a total cost of Rs. 78,45,221 -/ for 7 years including 1-year warranty period i.e. Rs. 11,07,556.5/-per annum. This AMC expired on 31.03.2023. However, due to delay in implementation of ULDC-III, the AMC of existing system of Siemens was further extended for two

more years from 01.04.2023 to 31.03.2025 at a total cost of Rs.22,15, 113/-i.e. Rs. 11,07,556.5/- per annum.

A.42.2 Meanwhile the Notice of Award for NR ULDC-III SCADA/EMS Project has been placed on M/s GE T&D India Ltd on 12.07.2024 by PGCIL, New Delhi and implementation work of this Project is to be completed within 18 months i.e by Feb 2026. As the AMC of SCADA/EMS system installed under ULDC-II is going to expire on 31.03.2025, further extension of AMC is required for at least 1year.

A.42.3 Accordingly, AMC proposal was sought from M/s Siemens and the same was submitted by M/s Siemens for extension of AMC for further 1 year, at a cost of Rs.3,26,62,321/-(enclosed at **Annexure-XXXV**). As the rates offered was very high i.e. approximately 30 times higher than the existing AMC rates therefore an online meeting was held on 17.01.2025 for negotiation on the high prices between NR State Constituents, NRLDC POWERGRID and M/s Siemens.

A.42.4 During the meeting, M/s Siemens was asked to provide justification of the rates and to reduce the rates. It was suggested by RVPNL that the AMC proposal be split into two parts one for manpower cost and in the second part rates of then equipment/items likely to be replaced may be quoted. In case of replacement of the faulty equipment, the cost can be charged at the rates quoted by M/s Siemens. UPSLDC and HPSLDC also shared the same opinion. Further, HPSLDC requested M/s Siemens to submit items wise prices instead of lot. RVPN submitted its suggestion vide letter dated 09.01.2025 (**Annexure-XXXV**).

A.42.5 On this Siemens vide its email dated 19.01.2025 (Copy enclosed at **Annexure-XXXV)** replied that the IT hardware has already reached its End of Service Life, Spares are not available with OEM. Third parties may still support for hardware maintenance. Third party will need a commitment of definite numbers of hardware and duration. They will source it from international market as well.

A.42.6 Now M/s Siemens has revised its proposal vide email dated 08.01.2025 (**Annexure-XXXV**) for extension of AMC for further 1year and the revised rates for AMC of SCADA/EMS system is Rs.3,00,49,408/-i.e. approximately 8% less as compared to its earlier proposal but approximately 30 times higher than the existing AMC rates.

A.42.7 Accordingly, RVPN representative submitted that rates offered by M/s Siemens are extraordinarily high and it would be very difficult to arrange approval from management. Therefore, matter may be discussed for reduction in the AMC rates to a reasonable level.

A.42.8 ED, POWERGRID NR-3 was of view that RVPN may sit with OEM and negotiate accordingly.

A.42.9 MS, NRPC conveyed that issue will be taken up separately.

NRPC Deliberation

A.42.10 Chairperson, NRPC & MD, HPPTCL also noted the concern of RVPN and supported that these issues have been prevailing in Himachal also. Some OEMs are quoting the rates on very higher side. Forum needs to have a discussion with the OEM and try to get reduced the cost.

A.42.11 Members were of view that the issue may be deliberated in a separate TeST meeting before 31st March 2025.

Decision of Forum:

Forum noted the information provided by RVPN and decided to have a separate meeting with concerned OEM and states in March, 2025.

A.43 Payments of bills raised/being raised by SJVN limited to PSPCL during the period of FY 2019-24 and FY 2024-29 (PSPCL memo No 270 dated 10/3/2025) (agenda by SJVN)

TCC Deliberation

A.43.1 SJVN representative apprised that SJVN is supplying power from its hydro plants viz NJHPS & RHPS to PSPCL as per Power Purchase Agreement signed with them and allocation order issued by MOP, GoI. Tariff of NJHPS & RHPS is being determined by CERC as per Tariff Regulation applicable for the control period.

A.43.2 PSPCL through their memo no. 270 dated 10/03/2025 has intimated that payment of bills raised by SJVNL during the period FY 2019-24 is being paid ***"UNDER PROTESTS"*** and subject to the outcome of writ petition (Civil) No. 15927 of 2023.

A.43.3 Further, PSPCL has also intimated through this letter/ memo that bills raised by SJVNL for the period 2024-29 is also **"UNDER PROTEST"** and subject to outcome of Writ petition (Civil) no 1446 of 2025.

A.43.4 Further, SJVN representative submitted that PSPCL has never intimated to SJVN that they have made payment for the period 2019-24 and for the period 2024-29 under protest before their letter dated 10/03/2025. The payment made by PSPCL before 10/03/2025 has been considered by SJVN as normal due payments without considering any implication under protest as claimed by PSPCL.

A.43.5 He also stated that PSPCL has only made NHPC party in their writ petition no 15927 of 2023 and SJVNL is not the defendant in the instant case.

A.43.6 In order to continuation of power by SJVN from its power station NHHPS and RHPS, PSPCL may be advised to refrain from conditional making any conditional payments as SJVN being a public sector undertaking is being governed by the rules and regulation issued by CERC and MOP, GOI from time to time.

A.43.7 SJVN representative raised concern that SJVN is not able to book its revenue due to this issue.

A.43.8 Forum was of view that PSPCL and SJVN may discuss mutually and resolve.

NRPC Deliberation

Forum was in consonance with the deliberation held in the TCC meeting.

Decision of Forum:

Forum decided that PSPCL and SJVN may take up the matter mutually and resolve.

Agenda for NRPC Meeting

B.1 **Approval of decisions of TCC meeting held on 16.03.2025**

Deliberation has already been added along with deliberation of agenda of TCC meeting.

B.2 **Internal Audit of NRPC Fund for FY 2023-24 (agenda by NRPC Secretariat)**

B.2.1 EE (O), NRPC apprised that Internal Audit of NRPC Fund for FY 2023-24 was conducted. The audit report is attached as **Annexure-B.I**.

B.2.2 MS, NRPC conveyed that there is no major observations and NRPC Secretariat has taken compliance measures of audit observations.

Decision of Forum:

Forum took a note of internal audit report of NRPC Fund for FY 2023-24

B.3 **Revision of guest house charges (agenda by NRPC Secretariat)**

B.3.1 EE (O), NRPC apprised that in 48th meeting of NRPC, rates for guest house of NRPC was approved by Forum as under:

Guest Room Type	**Guest House Usage Charge (Rs.)**			
	NRPC Member Organization		**Others**	
	Official Visit	**Private Visit**	**Official Visit**	**Private Visit**
Executive	330	630	630	930
VIP	900	1800	1800	2700

B.3.2 Further, MS, NRPC mentioned that it has been experienced that 02 VIP Room is generally not occupied due to higher rate and it is felt that same need to be rationalized. It has been noted that SRPC, recently revised the guest house charges (w.e.f. 01.01.2025) as given in table below

Guest Room Type	**Guest House Usage Charge (Rs.)**			
	CEA staff & constituents		**Others**	
	Official Visit	**Private Visit**	**Official Visit**	**Private Visit**

Executive	100	200	200	300
VIP	300	400	400	600

B.3.3 Considering the location of NRPC Guest House in Delhi and high demand for the same, it was proposed to revise the guest house rates w.e.f.01.04.2025 as below:

Guest Room Type	**Guest House Usage Charge (Rs.)**			
	NRPC Member Organization		**Others**	
	Official Visit	**Private Visit**	**Official Visit**	**Private Visit**
Executive	300	600	600	800
VIP	800	1000	1000	1200

B.3.4 Forum agreed with above proposal of NRPC Secretariat.

Decision of Forum:

Forum gave consent for changing guest house rates as mentioned below w.e.f. 01.04.2025:

Guest Room Type	**Guest House Usage Charge (Rs.)**			
	NRPC Member Organization		**Others**	
	Official Visit	**Private Visit**	**Official Visit**	**Private Visit**
Executive	300	600	600	800
VIP	800	1000	1000	1200

B.4 **Annual Membership of NRPC for FY 2025-26 (Agenda by NRPC Secretariat)**

B.4.1 EE (O), NRPC apprised that as per MoP gazette resolution F. No. 23/21/2021-R&R dtd. 03.12.2021, membership of NRPC is decided.

B.4.2 Accordingly, list of members for FY 2025-26 is proposed as **Annexure-B.II.** Changes are proposed in rotational members only.

B.4.3 Decision may be taken on membership of private DISCOMs. Currently, all DISCOMs in Northern Region are considered in one basket and member is selected bases on alphabetical rotation in Northern Region. However, considering increasing number of private DISCOMs, forum may decide on membership of private DISCOM by alphabetical rotation in particular state.

B.4.4 MS, NRPC stated that more private DISCOMs are adding up. Accordingly, it may be thought of to have membership of private DISCOM by alphabetical rotation in particular state. Based on Forum recommendation, CEA will write to MoP for inclusion in Gazette resolution.

B.4.5 Further, as per MoP gazette notification dated 03.12.2021, from each of the States in the region, the State Generating Company, State Transmission Utility (STU), State Load Despatch Centre (SLDC), one of the State owned distribution companies as nominated by the State Government and one distribution company by alphabetical rotation out of the private distribution companies functioning in the region, shall be member.

B.4.6 Further, as per MoP gazette notification dated 03.12.2021, A representative each of every Nodal Agency appointed by the Government of India for coordinating cross-border power transactions with the countries having electrical inter-connection with the region shall be member. Accordingly, it was discussed that NVVN and PTC India Limited may be nominated as permanent member in this category.

B.4.7 However, as per MoP gazette notification dated 03.12.2021, One member representing the electricity traders in the region by alphabetical rotation, which have trading volume of more than 500 million units during the previous financial year, shall be member. Accordingly, it was mentioned that CEA is likely to nominate the PTC India Limited as Member for Northern Region.

B.4.8 In view of above, it was decided that NVVN may be nominated in cross border power transactions category & PTC India Limited maybe nominated in electricity trader category for this financial year 2025-26.

B.4.9 Further, it was decided that Subsidiary of Transition Cleantech Services Private Limited may be nominated as IPP having less than 1000 MW installed capacity (alphabetical rotational basis in place of Tata Power Renewable).

B.4.10 NPCL will be replaced by Tata Power Delhi Distribution Limited as private DISCOM on rotational basis.

B.4.11 Accordingly, finalized list of members for FY 2025-26 is attached as **Annexure-B.II (a).**

Decision of Forum:

Forum approved the list of members for FY 2025-26 attached as ***Annexure-B.II (a).***

B.5 **Replacement of Fire Alarm System and Renovation & upgradation of existing Fire Fighting System at NRPC, New Delhi (agenda by NRPC Secretariat)**

B.5.1 EE (O), NRPC apprised that the existing Fire Alarm and Fire Fighting Systems at NRPC has been in use for several decades. The AMC for Fire Alarm and Fire Fighting Systems expired on 31-08-2023. Concerns were arisen regarding availability of spare parts for the existing system, which were encountered during the previous AMC. Recognizing the essential role played by system and the risks associated with outdated or obsolete equipment, NRPC secretariat sought assistance from CPWD in conducting a thorough assessment and providing an estimated cost for a new Fire Alarm and Fire Fighting Systems installation along with AMC for five years vide letter dated 19-10-2023. (enclosed in **Annexure-B.III**)

B.5.2 CPWD vide their letter dated 03/01/2024 (enclosed in **Annexure-B.III**) advised to consult Fire Safety Officer regarding the current scenario of Fire Alarm and Fire Fighting Systems of NRPC office building. NRPC vide letter dated 12-02-2024 (enclosed in **Annexure-B.III**) requested local Fire Safety Officer for site survey of existing firefighting & fire alarm system.

B.5.3 Delhi Fire Service officer vide their letter dated 11-03-2024 (enclosed in **Annexure-B.III**) advised NRPC to maintain the installed firefighting arrangement in the building in a good working condition at all the time as seen during inspection.

B.5.4 Accordingly, NRPC vide letter dated 13-11-2024 (enclosed in **Annexure-B.III**) informed CPWD that to maintain the Fire Alarm and Fire Fighting Systems in good working condition at all time, renovation and modernization of existing Fire-Fighting system, Fire-Alarm system for NRPC Office & Fire extinguishers for NRPC office premises and residential quarters may be provisioned based on actual requirements and request CPWD a detailed cost estimate for the AMC for 5 (Five) years towards maintenance of above firefighting system installed in NRPC Office Building in good working condition.

B.5.5 CPWD vide their letter dated 28-11-2024 provided Preliminary Estimate of Rs.52,71,420/- (Preliminary Estimate along with letter is enclosed in **Annexure-B.III**) for Replacement of Fire Alarm System and Renovation & upgradation of existing Fire Fighting System at NRPC, New Delhi.

B.5.6 Proposed Works are as below:

I. Provision for replacement of fire alarm system.
II. Provision for PA system.
III. Provision for upgradation of firefighting system.
IV. Provision for comprehensive maintenance of fire alarm, firefighting & PA system for 5 years.

B.5.7 The preliminary cost estimate for the project, as submitted to NRPC is Rs. 52,71,420/- including material, labor, and contingency expenses.

B.5.8 Proposed works are to be executed by CPWD and major expenditure for above works are likely to be incurred in next FY i.e., 2025-26 considering the time taken by CPWD for invitation of tenders and award of works.

B.5.9 Approval of NRPC Forum was requested to proceed with the process for awarding the contract to CPWD to execute the proposed works and allocate the necessary expenses from NRPC Fund.

B.5.10 MS, NRPC conveyed that the proposed cost is preliminary cost estimate submitted by CPWD. Payment will be made on basis of actual cost which usually comes lesser than this estimated cost.

Decision of Forum:

Forum gave approval to proceed with the process for awarding the contract to CPWD to execute the proposed works and allocate the necessary expenses from NRPC Fund

B.6 Hiring of Manpower under Manpower Outsourcing Contract-Fixed Wages through GeM Portal (agenda by NRPC Secretariat)

B.6.1 EE (O), NRPC apprised that currently, there are two contracts for Manpower Outsource Services- Fixed Remuneration awarded through GeM Portal are in force. The contracts are as under:

1. Hiring of Personnel Assistant and Accounts Assistant through GeM Contract No: GEMC-511687770071538 dated 11-03-24 awarded to Spacex Manpower Services Private Limited at contract value Rs 11,33,000/- for period 14-03-2024 to 13-03-2025. (Contract copy attached as **Annexure-B.IV**)
2. Hiring of 02 nos Office Assistants through GeM Contract No: GEMC-511687746337586 dated 19-07-24 awarded to FOCUS EXECUTIVE SEARCH at contract value Rs 8,77,320/-for period 01-08-2024 to 31-07-2025. (Contract Copy attached as **Annexure-B.V**)

B.6.2 Contract GEMC-511687770071538 service end date is 13-03-2025. As such, multiple contracts of same category 'Manpower Outsource Services- Fixed Remuneration' are in force. It is felt more prudent that a single contract may be made for 'Manpower Outsource Services- Fixed Remuneration'. Accordingly Contract GEMC-511687770071538 services end date was extended from 13-03-2025 to 31-07-2025 on the same terms & conditions, so as to coincide with service end date of contract GEMC-511687746337586 (extension acceptance copy enclosed as

Annexure-B.VI). Therefore, a single new contract shall be awarded through GeM Portal for 'Manpower Outsource Services- Fixed Remuneration' from 01-08-2025.

B.6.3 Further additional requirement of 2 nos. of office assistant was felt considering the various data-intensive works in various circles in NRPC. In addition to already existing 4 nos. of manpower in fixed wages contract, the additional requirement is 02 No. of Office Assistants.

Outsource Manpower Services Requirement:

Profile	**Requirement (nos.)**	**Proposed Emolument (in Rs)**
Accounts Assistant	1	50000
Personal Assistant	1	35000
Office Assistant (Admin)	1	30000
Office Assistant (Services)	1	30000
Office Assistant ***[In place of DEO]***	1	30000
Office Assistant ***[In place of DEO]***	1	30000

B.6.4 Further, he added that the requirement of 2 nos. of Data Entry Operator (DEO) in Minimum Wages Contract shall be relinquished after addition of 2 nos. of Office Assistants. Office Assistant education requirement shall be Graduate from recognized university and proficient in Computer and MS office Software. With above proposal, there shall not be net increase in existing contractual manpower in NRPC Secretariate.

Decision of Forum:

Forum approved the proposal for hiring of 02 No. of additional Graduate level person as Office Assistant in NRPC Secretariat and floating of bid on GeM portal for hiring of overall 6 nos. manpower as per above mentioned table for one year from 01-08-2025 through Manpower Outsource Services- Fixed remuneration contract for smooth functioning of NRPC Secretariat

B.7 **Hiring of Manpower in NRPC secretariat through GeM Portal under Manpower Outsourcing Services - Minimum Wages Contract for various categories (agenda by NRPC Secretariat)**

B.7.1 EE (O), NRPC apprised that at present, 18 nos. of manpower under various categories are employed in NRPC secretariat which are hired through GeM contract GEMC-511687739668308 dated 29-07-2025 for Manpower Outsourcing Services - Minimum wages at a cost of Rs. 68,48,595.47/- for one year (11-08-2024 to 10-08-2025)

B.7.2 Current GeM contract GEMC-511687739668308 for Manpower outsourcing services- Minimum wages shall expire on 10.08.2025 and therefore fresh bid for Manpower Outsourcing Services - Minimum Wages Contract needs to be floated on GeM Portal for continuing the above services requirement in NRPC Office/Colony Complex.

B.7.3 The requirement of 2 nos. of Data Entry Operator in Minimum Wages Contract is being relinquished after addition of 2 nos. of Office Assistants under Manpower Outsourcing Services- Fixed Remuneration contract.

B.7.4 Accordingly, manpower requirement is tabulated as under-

S. no.	Category	Nos of Manpower (nos.)	Skill Level
1	Sweeper	6	Unskilled
2	Mali/Gardner	1	Semi-skilled
3	Watch & Ward	4	Skilled
4	Electrician	1	Skilled
5	Cook	1	Skilled
6	Canteen Helper	1	Unskilled
7	Plumber	1	Skilled
8	Carpenter	1	Skilled
	Total	16	

B.7.5 Following was proposed by NRPC Secretariat;

(i) It was proposed that fresh bid may be floated through Gem portal considering total manpower requirement of 16 nos. as given in Table above for one year to ensure continuity of above services in the NRPC Secretariat.

(ii) While preparing the fresh bid latest minimum wage as notified by Chief Labour Commissioner, M/o Labour & Employment, GOI shall be considered.

(iii) Tentative, financial implication shall be about Rs 60 lakhs (approx..).

Decision of Forum:

Form approved the above proposals so that manpower is placed before expiring of present Contract to maintain continuity of the above services requirement in NRPC Office/Colony Complex.

B.8 **Reconciliation of the expenditure with NRLDC, which had been incurred against various repair and maintenance works carried out by NRPC through CPWD in 2019-20 (agenda by NRPC Secretariat)**

B.8.1 EE (O), NRPC apprised that NRLDC vide their letter dated 13-06-2024 (**Annexure-B.VII)** informed that some works which were completed in 2019-20 by CPWD had not been financially closed and requires financial closure. Sharing of cost was agreed by NRLDC and NRPC in the ratio of 50:50 between NRPC and NRLDC for works done in NRPC complex and accordingly NRLDC had provided 50% of the share of cost estimate in advance to CPWD. The works mentioned in the letter are as under:

i. AMC of Civil and Electrical works in NRPC Residential complex (by CPWD civil div.)
ii. Rain Water Harvesting at NRPC Office Complex (by CPWD civil div.)
iii. Replacement of Ceiling fans in NRPC Residential Complex (by CPWD Elec. div.)

B.8.2 The same was pursued with CPWD Civil and Electrical divisions for details of the works. As per information received from CPWD, a joint expenditure statement has been prepared between NRLDC and NRPC for reconciliation of the expenditure

incurred against various repair and maintenance works carried out by NRPC through CPWD in 2019-20. (Joint statement attached at **Annexure-B.VIII**)

B.8.3 The details of reconciliation are as under in tabular form:

Expenditure Statement of CPWD Works during 2019-20									
S.no.	**Name of Work**	**Estimated Cost**	**Actual Expenditure**	**NRPC/ NRLDC Share**	**NRLDC Paid**	**NRPC Paid**	**Total amount paid to CPWD**	**Excess Payment by NRLDC**	**Balance payment to CPWD**
1	**A/R & M/O NRPC Residential qtrs. during 2019-20**	5827100	4771756	2385878	2913550	1745464	5403214	527672	
2	**Construction of Rain Water Harvesting system & artificial well to ground water at NRPC**	1488400	952005	476003	744200			268198	
3	**Replacement of Ceiling fans in NRPC Residential Complex**	322134	322134	161067	161067	161067	322134	0	
	Total	7637634	6045895	3022948	3818817	1906531	5725348	795870	320547

B.8.4 As per the table above, it is noted that NRLDC had made excess payment of Rs. 7,95,870/- above their 50:50 % sharing liability. Accordingly, payment of Rs. 7,95,870 shall be made to NRLDC by NRPC. Also, there is balance payment of Rs. 3,20,547/-, which shall be made to CPWD by NRPC. Accordingly, accounts shall be

settled and long pending financial closure shall be achieved for works done by CPWD in 2019-20.

Decision of Forum:

Forum gave consent to make payment of Rs. 7,95,870 to NRLDC and payment of Rs. 3,20,547 to CPWD.

B.9 **Status of Expenditure incurred during Quarter-3 (as on 31.12.2024) of FY 2024-25 from NRPC Fund (agenda by NRPC Secretariat)**

B.9.1 EE (O), NRPC apprised that as per the Standard Operating Procedure (SOP) for budgeting and expenditure of RPCs in pursuance to the MoP letter dated 23.02.2006, NRPC has finalized its annual Internal Budget for FY 2024-25 and got it approved by Forum in 72nd NRPC meeting held on 30.03.2024. In line with the budget finalized, status of actual expenditure incurred (INR 1,81,91,118) during Quarter-1 of FY 2024-25 was apprised in 75th NRPC meeting held on 28.08.2024 and status of actual expenditure incurred (INR 1,54,03,071) during Quarter-2 of FY 2024-25 was apprised in 76th NRPC meeting held on 25.10.2024.

B.9.2 Further, Status of actual expenditure incurred during **Quarter-3** of **FY 2024-25** (All figures in Rs.) is as follows:

Account Head	**Budget Estimate for FY 2024-25**	**Remarks/ Booking of Expenditure during Q3/FY 2024-25**	**Total Expenditure during Q3/FY 2024 25**
Salary	1,97,00,000	Salary bills	76,52,682
Rewards	1,00,000	Bonus for Group-C Employees	
Allowances	1,53,00,000	HRA, DA etc.	
LTC	5,00,000	LTC	
Medical Treatment	10,00,000	Cost of Medical Treatments	1,46,884
Training	5,00,000	Training Expenses of NRPC Officials	1,40,536

DTE	15,00,000	Domestic tour expense	2,49,465
OE	1,00,00,000	Office expenditure-Recurring expenses of salary of contractual staff, AMC and other bills.	42,96,108
RRT	4,00,000	Rent rate and Taxes-Onetime expense of property tax.	0
Digital Equipment	5,00,000	Digital equipment (cartridges, Hard Disks, pen drive etc.)	2,88,075
Repair and Maintenance	1,50,00,000	ARMO, Civil & Electrical works in NRPC Complex through CPWD, AMC of IT Maintenance.	0
Other Revenue Exp.	7,00,000	Hospitality and other similar bills (Mobile, Newspaper Bills etc.)	81,240
Machinery and Equipment	15,00,000	Machinery and equipment like lift etc.	16,98,299
IT & Computer Applications etc	3,00,000	Cyber Security and Hybrid VC projects and other related works.	0
Furniture and fixtures	15,00,000		0
Total	**6,85,00,000**		**1,45,53,289**

B.9.3 He conveyed that total Expenditure incurred up to Quarter 3 of FY 2024-25 is Rs. 4,81,47,478.

Decision of Forum:

Forum noted the information.

B.10 **Actual Expenditure During FY 2024-25 & Annual Budget of NRPC Secretariat for FY 2025-26 (agenda by NRPC Secretariat)**

B.10.1 EE (O), NRPC apprised that Central Electricity Authority, Ministry of Power had issued the Standard Operating Procedure (SOP) for budgeting and expenditure of RPCs in pursuance to the MoP letter dated 23.02.2006 in which it was directed that activities of RPCs will be fully financed by constituent members. SOP was deliberated and adopted in the 66th NRPC meeting held on 30.05.2023.

B.10.2 As per the SOP, RPCs shall finalize their annual Internal Budget and get its approval in committee meeting. Accordingly, the budget for the Financial Year 2025-26 for the NRPC secretariat has been prepared. Budget contains total expenditure for FY 2024-25 (Actual up to 31.01.2025 and anticipated expenditure up to 31st March 2025) and Estimated Expenditure for FY 2025-26, as per the details given below:

Account Head	**Actual Budget for FY 2024-25**	**Total Expenditure FY 2024-25 up to 31.01.2025**	**Anticipated Expenditure FY 2024-25 up to 31.03.2025**
Salary	1,97,00,000	1,49,22,492	1,62,33,063
Rewards (Bonus for Group-C Employees)	1,00,000	55,264	55,264
Allowances (HRA, DA etc)	1,53,00,000	1,10,52,552	1,20,53,741
LTC	5,00,000	4,92,244	5,22,244
Medical Treatment	10,00,000	11,23,962	12,23,962
Training	5,00,000	4,11,756	4,11,756
DTE	15,00,000	13,12,681	15,12,681
OE (Office expenditure- Recurring expenses of salary of contractual staff, AMC and other bills)	1,00,00,000	1,29,54,196	1,59,54,196
RRT (Rent rate and Taxes Onetime	4,00,000	1,70,534	1,70,534

expense of property tax)			
Digital Equipment	5,00,000	11,91,503	12,91,503
Repair and Maintenance (Civil & Electrical works in NRPC Complex through CPWD)	1,50,00,000	25,53,291	55,53,291
Other Revenue Exp. (Hospitality and other similar bills (Mobile, Newspaper Bills etc.)	7,00,000	3,85,371	4,85,371
Machinery and Equipment	15,00,000	34,11,082	34,11,082
IT & Computer Applications etc.	3,00,000	0	1,00,000
Furniture and fixtures	15,00,000	0	25,00,000
NRPC Reimbursement FY 2023-24 (Salary and allowances expenses from 01/01/2024 to 29/02/2024 NRPC Reimbursement FY 2023-24)		43,73,128	43,73,128
Total	**6,85,00,000**	**5,44,10,056**	**6,58,51,816**

Account Head	**Remarks/ Booking of Expenditure during FY 2025-26**	**BE FY 2025-26**
Salary	Salary bills	1,90,00,000
Rewards	Bonus for Group-C Employees	1,00,000

Allowances	HRA, DA etc.	1,53,00,000
LTC	LTC estimate	5,00,000
Medical Treatment	Cost of Medical Treatments	10,00,000
Training	Training Expenses of NRPC Officials	5,00,000
DTE	Domestic tour.	15,00,000
OE	Office expenditure- Recurring expenses of salary of contractual staff, AMC and other bills.	2,00,00,000
RRT	Rent rate and Taxes	2,00,000
Digital Equipment	Digital equipment (cartridges, Hard Disks, pen drive etc.)	5,00,000
Repair and Maintenance	Civil & Electrical works in NRPC Complex through CPWD.	1,50,00,000
Other Revenue Exp.	Hospitality and other similar bills (Mobile, Newspaper Bills etc)	5,00,000
IT & Computer Applications etc.	Website Development Through NICSI	38,00,000
Furniture and fixtures		5,00,000
NPC Meeting		30,00,000
Protection Expert Group Training	Training on electrical protection of power system for NRPC constituents	63,72,000
Total		**8,77,72,000**

B.10.3 The budgetary estimate will be divided equally among the paying members of NRPC.

Decision of Forum:

Forum noted the actual expenditure for FY 2024-25 and approved budget provision for FY 2025-26.

B.11 **Contribution towards NRPC Fund for the year 2025-26 by the Constituents (agenda by NRPC Secretariat)**

B.11.1 EE (O), NRPC apprised that RPCs are fully financed by the constituent members as per Ministry of Power, Govt. of India letter dated 23.02.2006 and SOP issued by CEA dated 01.05.2023. Therefore, constituent members are required to pay annual contribution as decided in NRPC meetings from time to time. Annual contribution is decided on the basis of estimated expenditure of next financial year and balance amount in the NRPC fund (if any).

B.11.2 As per SOP issued by CEA vide letter dated 01.05.2023, all expenditures other than salary shall be met from RPC fund. Expenditure of Salary head shall be met from budget provided by CEA and will get reimbursed from RPC fund to CEA on quarterly basis. Therefore, all the expenditure of RPCs including salary is met from RPC Fund.

B.11.3 Annual Budget of NRPC Secretariat for FY 2025-26 has been estimated as Rs 8.78 crores as elaborated in Agenda Item above, in accordance with expenditure planned for FY 2025-26 pertaining to employee compensation, Office Expenses, Maintenance of NRPC office and colony, AMCs for various services etc.

B.11.4 Considering the likely payments of various pending bills during March,25 and reimbursements of Rs 2.89 crores to PAO, CEA towards salary bills for the months of March 2024 to February 2025, it is estimated that an amount of approx. Rs 1.8 crores shall remain balance in the NRPC Account. Therefore, actual amount required to be contributed by the NRPC members shall be only Rs 6.98 crores (8.78-1.8) during FY 2025-26. Considering 49 members (who pays contribution out of total 61 members) of NRPC, contribution amount per member works out to Rs 14.25 lakhs.

B.11.5 It was proposed that an amount of Rs 14 lakhs may be contributed by each member of NRPC for FY 2025-26.

B.11.6 MS, NRPC mentioned that interest on saving/FD amount during the Financial Year of the order of Rs 15-20 lakhs also credited in NRPC Fund account on the Membership contribution. Actual project cost of CPWD projects usually comes lesser than estimated cost. Therefore, an amount of Rs 14 lakhs may be contributed as Membership contribution instead of 14.25 lakhs as worked out above.

B.11.7 The above contribution amount of Rs 14 lakhs may be deposited in NRPC account by (30.06.2025), meanwhile day to day expenditure/payments of various OE/recurring expenses, monthly electricity bills etc. shall be met from the available fund in NRPC account. Forum may decide penalty percentage for delay beyond 30.06.2025.

B.11.8 In view of above, following proposal was put up for the approval:

i. Membership contribution for the year 2025-26 is proposed to be Rs.14 lakh per member.

ii. It is also proposed that members may complete above reimbursement in NRPC fund by 30.06.2025.

iii. NRPC Secretariat shall issue demand letters by 10.04.2025 with last date of payment as 30.06.2025.

iv. Member may decide suitable penal interest per month on late payment from 1st July, 2025 onwards.

Decision of forum:

After deliberation,

i. Forum approved that Membership contribution for the year 2025-26 to be Rs.14 lakh per member.

ii. Forum approved that members may complete above reimbursement in NRPC fund by 30.06.2025.

iii. NRPC Secretariat shall issue demand letters by 10.04.2025 with last date of payment as 30.06.2025.

iv. Forum decided 1% interest rate per month on late payment from 1st July, 2025 onwards.

B.12 **Late Payment Charges for the FY 2024-25 by Constituent Members (agenda by NRPC Secretariat)**

B.12.1 EE (O), NRPC apprised that Demand Letter for contribution towards NRPC fund for the year 2024-25 was sent on 10.04.2024 to all the constituent members. It was mentioned that beyond 30th June, 1 % simple interest shall be levied. Accordingly, NRPC Secretariat has received contributions from organisations.

a) Further, he mentioned that payment has been received from all 44 constituent members. It is also mentioned that UT of Ladakh, Talwandi Sabo Power Ltd. and UT of Chandigarh paid the contribution amount, but have not paid the interest amount

for late payment. Interest amount of Rs 96,000, Rs 24,000 and Rs 12,000 is pending from UT of Ladakh, TSPL and UT of Chandigarh respectively.

B.12.2 Details of outstanding contribution along with interest is as below:

S. No.	Name of Constituent	Period (FY)	Contribution amount (Rs)	Penalty (Rs)	Total Outstanding amount (Rs)
1	UT of Ladakh	2024-25	0	96,000	96,000
2	Talwandi Sabo Power Ltd.	2024-25	0	24,000	24,000
3	UT of Chandigarh	2024-25	0	12,000	12,000
				Total	Rs 1,32,000

B.12.3 Further, Talwandi Sabo Power Ltd vide Letter No TSPL/NRPC/AK/DEC-24/154 requested for waiver the late payment penalty citing that it has regularly contributed to NRPC fund in the past. Other Members also requested telephonically to waive off the above interest as demanded amount already deposited, citing that it will invite audit observations.

B.12.4 ED, POWERGRID NR-3 suggested that interest may be waived off to these concerned members subject to condition that UT of Ladakh, Chandigarh and Talwandi Sabo Power Limited pay membership contribution for FY 25-26 by 30.06.2025.

B.12.5 Forum agreed with the same and gave consent to waive off the interest subject to mentioned condition. This decision is applicable for one time only.

Decision of forum:

Forum gave consent for one time waiver of the above interest for FY 2024-25, subject to the conditions that these utilities shall pay contribution for FY 2025-26 by due date.

B.13 **Oscilloquartz - IRNSS/NavIC and Cybersecurity for Power Grids (agenda by Oscilloquartz)**

B.13.1 Oscilloquartz representative delivered a presentation on the subject Mitigating GNSS Cyber threats and enhancing time synchronization security in power grids.

B.13.2 He mentioned that as Powergrids rely heavily on GNSS-based timing, vulnerabilities like jamming, spoofing, and cyber threats pose serious risks to stability and reliability

B.13.3 The presentation overview was as below:

- A detailed discussion on GNSS vulnerabilities and their potential impact on power grid synchronization.
- Strategies to enhance resilience through multi-source timing solutions and GNSS cybersecurity measures.

B.13.4 Objective:

- Enabling a secure and resilient time synchronization for Power Grid which is national critical infrastructure.
- Alignment with the Government of India's initiative on? One Nation One Time?

B.13.5 The delivered presentation is attached as **Annexure-B.IX.**

Decision of forum:

Forum noted the sensitivity highlighted by M/s Oscilloquartz regarding one Nation one Time and agreed that any directions in this regard by MoP/CEA/CERC shall be adopted.

B.14 **Hosting of next physical TCC & NRPC meeting (agenda by NRPC Secretariat)**

B.14.1 EE (O), NRPC apprised that in 69th NRPC meeting held on 27.09.2023, a meeting plan/ roster for FY 2024-25 was finalized by forum for conducting physical meetings by utilities.

B.14.2 In continuation of that, meeting plan for FY 2025-26 was proposed as below:

S.N	Month	Host	Mode
1	Apr-2025	NRPC Secretariat	VC
2	May-2025	NRPC Secretariat	VC

3	June-2025	THDC	Physical
4	Jul-2025	NRPC Secretariat	VC
5	Aug-2025	NRPC Secretariat	VC
6	Sep-2025	NPCIL	Physical
7	Oct-2025	NRPC Secretariat	VC
8	Nov-2025	NRPC Secretariat	VC
9	Dec-2025	MEIL Anpara Energy Limited/Prayagraj Power Generation Co. Ltd	Physical
10	Jan-2026	NRPC Secretariat	VC
11	Feb-2026	NRPC Secretariat	VC
12	Mar-2026	JKPDD	Physical

B.14.3 THDC representative submitted that they are willing to host the NRPC meeting in September, 2025.

B.14.4 As per proposed roaster, NPCIL is also ready to host the NRPC meeting in September, 2025.

B.14.5 Accordingly, it was decided that NPCIL may host the physical NRPC meeting in September, 2025 and THDC may host in December, 2025. MEIL Anpara Energy Ltd and Prayagraj Power Generation Co. Ltd (PPGCL) may host the NRPC meeting jointly in June, 2025. JKPDD may host the physical NRPC meeting in March, 2026.

Decision of forum:

Forum approved the meeting plan for FY 2025-26 as below-

S.N	***Month***	***Host***	***Mode***
1	*Apr-2025*	*NRPC Secretariat*	*VC*
2	*May-2025*	*NRPC Secretariat*	*VC*
3	*June-2025*	*MEIL Anpara Energy Limited & Prayagraj Power Generation Co. Ltd (Jointly)*	*Physical*

4	*Jul-2025*	*NRPC Secretariat*	*VC*
5	*Aug-2025*	*NRPC Secretariat*	*VC*
6	*Sep-2025*	*NPCIL*	*Physical*
7	*Oct-2025*	*NRPC Secretariat*	*VC*
8	*Nov-2025*	*NRPC Secretariat*	*VC*
9	*Dec-2025*	*THDC*	*Physical*
10	*Jan-2026*	*NRPC Secretariat*	*VC*
11	*Feb-2026*	*NRPC Secretariat*	*VC*
12	*Mar-2026*	*JKPDD*	*Physical*

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NRPC Members for FY 2024-25

S. No.	NRPC Member	Category	Nominated/ Notified/Delegated Member	E-mail
1	Member (GO&D), CEA	Member (Grid Operation & Distribution), Central Electricity Authority (CEA)	Member (GO&D), CEA	member.god@cea.nic.in
2	Member (PS), CEA	Nodal Agency appointed by the Government of India for coordinating cross-border power transactions	Member (PS), CEA	memberpscea@nic.in
3	CTUIL	Central Transmission Utility	Chief Operating Officer	pcgarg@powergrid.in
4	PGCIL	Central Government owned Transmission Company	Director (Operations)	tyagir@powergrid.in
5	NLDC	National Load Despatch Centre	Director (System Operation)	rk.porwal@grid-india.in
6	NRLDC	Northern Regional Load Despatch Centre	Executive Director	mkagarwal@grid-india.in
7	NTPC	Central Generating Company	Director (Finance)	jaikumar@ntpc.co.in
8	BBMB		Chairman	cman@bbmb.nic.in
9	THDC		CGM (EM-Design)	rrsemwal@thdc.co.in
10	SJVN		CMD	sectt.cmd@sjvn.nic.in
11	NHPC		Director (Technical)	rajkumar0610.rkc@gmail.com
12	NPCIL		Director (Finance)	df@npcil.co.in
13	Delhi SLDC	State Load Despatch Centre	General Manager	gmsldc@delhisldc.org
14	Haryana SLDC		Chief Engineer (SO&C)	cesocomml@hvpn.org.in
15	Rajasthan SLDC		Chief Engineer (LD)	ce.ld@rvpn.co.in
16	Uttar Pradesh SLDC		Director	directorsldc@upsldc.org
17	Uttarakhand SLDC		Chief Engineer	anupam_singh@ptcul.org
18	Punjab SLDC		Chief Engineer	ce-sldc@punjabsldc.org
19	Himachal Pradesh SLDC		Managing Director	mdhpsldc@gmail.com
20	DTL	State Transmission Utility	CMD	cmd@dtl.gov.in
21	HVPNL		Managing Director	md@hvpn.org.in
22	RRVPNL		CMD	cmd.rvpn@rvpn.co.in
23	UPPTCL		Managing Director	md@upptcl.org
24	PTCUL		Managing Director	md@ptcul.org
25	PSTCL		CMD	cmd@pstcl.org
26	HPPTCL		Managing Director	md.tcl@hpmail.in
27	IPGCL	State Generating Company	Managing Director	md.ipgpp@nic.in
28	HPGCL		Managing Director	md@hpgcl.org.in
29	RRVUNL		CMD	cmd@rrvun.com
30	UPRVUNL		Director (Technical)	director.technical@uprvunl.org
31	UJVNL		Managing Director	mdujvnl@ujvnl.com
32	HPPCL		Managing Director	md@hppcl.in
33	PSPCL	State Generating Company & State owned Distribution Company	CMD	cmd-pspcl@pspcl.in
34	UHBVN	State owned Distribution Company (alphabetical rotaional basis/nominated by state govt.)	Managing Director	md@uhbvn.org.in
35	Jodhpur Vidyut Vitran Nigam Ltd.		Managing Director	md.jdvvnl@rajasthan.gov.in
36	Paschimanchal Vidyut Vitaran Nigam Ltd.		Managing Director	md@pvvnl.org
37	UPCL		Managing Director	md@upcl.org
38	HPSEB		Managing Director	md@hpseb.in
39	Prayagraj Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity	Head (Commercial & Regulatory)	sanjay.bhargava@tatapower.com
40	Aravali Power Company Pvt. Ltd		CEO	brahmajig@ntpc.co.in
41	Apraava Energy Private Limited		CEO	niraj.gupta@apraava.com
42	Talwandi Sabo Power Ltd.		COO	Vibhav.Agarwal@vedanta.co.in
43	Nabha Power Limited		CEO	sk.narang@larsentoubro.com
44	MEIL Anpara Energy Ltd		COO & WTD, Executive Director	anandkumar.singh@meilanparapower.com arun.tholia@meilanparapower.com
45	Rosa Power Supply Company Ltd		Station Director	Hirday.tomar@relianceada.com
46	Lalitpur Power Generation Company Ltd		Managing Director	vksbankoti@bajajenergy.com
47	MEJA Urja Nigam Ltd.		CEO	hopmeja@ntpc.co.in
48	Adani Power Rajasthan Limited		Head, Thermal, O&M	Kanti.Biswas@adani.com
49	JSW Energy Ltd. (KWHEP)		Head Regulatory & Power Sales	jyotiprakash.panda@jsw.in
50	TATA POWER RENEWABLE	IPP having less than 1000 MW installed capacity (alphabetical rotaional basis)	Zonal Head	dhmahabale@tatapower.com
51	UT of J&K	From each of the Union Territories in the region, a representative nominated by the administration of the Union Territory concerned out of the entities engaged in generation/ transmission/ distribution of electricity in the Union Territory.	Chief Engineer, JKSPDCL/JKPDD	cejkpcl2@gmail.com/sojpdd@gmail.com
52	UT of Ladakh		Chief Engineer, LPDD	cepdladakh@gmail.com
53	UT of Chandigarh		Executive Engineer, EWEDC	elop2-chd@nic.in
54	NPCL	Private Distribution Company in region (alphabetical rotaional basis)	Head-Commercial	ssrivastava@noidapower.com
55	Fatehgarh Bhadla Transmission Limited	Private transmission licensee (nominated by cetral govt.)	AVP-O&M	nitesh.ranjan@adani.com
56	NTPC Vidyut Vyapar Nigam Ltd.	Electricity Trader (nominated by central govt.)	CEO	ceonvvn@ntpc.co.in
57	ReNew Power Private Limited	RE Generating Company having more than 1000 MW installed capacity	CEO	sumant@renew.com
58	NTPC Green Energy Limited		CEO	rajivgupta@ntpc.co.in
59	Azure Power India Pvt. Limited		CEO	sunil.gupta@azurepower.com
60	Avaada Energy Private Limited		CEO	kishor.nair@avaada.com
61	Adani Green Energy Limited		COO	chaitanya.sahoo@adani.com

List of addressee (via mail)

TCC Members for FY 2024-25

S. No.	TCC Member	Category	Nominated/ Notified/Delegated Member	E-mail
1	Director (Operation), HPSEBL	Chairperson, TCC		manojupretisolan@gmail.com
2	Member (GO&D), CEA	Member (Grid Operation & Distribution), Central Electricity Authority (CEA)	Chief engineer(GM Division)	cegm-cea@gov.in
3	Member (PS), CEA	Nodal Agency appointed by the Government of India for coordinating cross-border power transactions	Chief Engineer, PSPA-I Division	i.sharan@nic.in
4	CTUIL	Central Transmission Utility	Dy Chief Operating Officer	ashok@powergrid.in
5	PGCIL	Central Government owned Transmission Company	ED, NR-I	aloksharma99@powergrid.in
6	NLDC	National Load Despatch Centre	Head of NLDC	susha@grid-india.in
7	NRLDC	Northern Regional Load Despatch Centre	Executive Director	mkagarwal@grid-india.in
8	NTPC	Central Generating Company	Regional ED, NR	rednr@ntpc.co.in
9	BBMB		Member (Power)	mp@bbmb.nic.in
10	THDC		GM (EMD)	neerajverma@thdc.co.in
11	SJVN		Director (Projects)	de.sectt@sjvn.nic.in
12	NHPC		ED (O&M)	hod-om-co@nhpc.nic.in
13	NPCIL		Outstanding Scientist & ED (commercial)	nrchoudhary@npcil.co.in
14	Delhi SLDC	State Load Despatch Centre		nomination awaited
15	Haryana SLDC		Chief Engineer/SO & Comml.	cesocomml@hvpn.org.in
16	Rajasthan SLDC			nomination awaited
17	Uttar Pradesh SLDC		Chief Engineer (PSO)/Chief Engineer (C&S)	cepso@upsldc.org
18	Uttarakhand SLDC			nomination awaited
19	Punjab SLDC		Chief Engineer	ce-sldc@pstcl.org
20	Himachal Pradesh SLDC			nomination awaited
21	DTL	State Transmission Utility	Director (Operation)	dir.opr@dtl.gov.in
22	HVPNL		Director (Projects)	directorprojects@hvpn.org.in
23	RRVPNL		Chief Engineer (PP&D)	ce.ppm@rvpn.co.in
24	UPPTCL		Director (Planning & Commercial)	director_comm@upptcl.org
25	PTCUL		Chief Engineer	ce_oandmk@ptcul.org
26	PSTCL		Director / Technical	dir-tech@pstcl.org
27	HPPTCL		GM (C&D)	gmcd.tcl@hpmail.in
28	IPGCL	State Generating Company	Director(Tech.)	corporate.ppcl@gmail.com
29	HPGCL		Director/Technical	dirtech@hpgcl.org.in
30	RRVUNL		Dy. Chief Engineer	dyce.elect.katpp@rrvun.com
31	UPRVUNL		Director (Technical)	director.technical@uprvunl.org
32	UJVNL		General Manager	kkjaiswal99@gmail.com
33	HPPCL		Director (Electrical) General Manager(Electrical)	dir_elect@hppcl.in gm_elect@hppcl.in
34	PSPCL	State Generating Company & State owned Distribution Company		nomination awaited
35	UHBVN	State owned Distribution Company (alphabetical rotaional basis/nominated by state govt.)		nomination awaited
36	Jodhpur Vidyut Vitran Nigam Ltd.			nomination awaited
37	Paschimanchal Vidyut Vitaran Nigam Ltd.			nomination awaited
38	UPCL		Director (P)	dpupcl29@gmail.com
39	HPSEB			nomination awaited
40	Prayagraj Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity	Head – Commercial & Regulatory	Sanjay.bhargava@tatapower.com
41	Aravali Power Company Pvt. Ltd		CEO	brahmajig@ntpc.co.in
42	Apraava Energy Private Limited			nomination awaited
43	Talwandi Sabo Power Ltd.		Dy. Head O&M	ravinder.thakur@vedanta.co.in
44	Nabha Power Limited			nomination awaited
45	MEIL Anpara Energy Ltd		COO & WTD, Executive Director	anandkumar.singh@meilanparapower.com arun.tholia@meilanparapower.com
46	Rosa Power Supply Company Ltd		VP-Technical Services	Niranjan.Jena@relianceada.com
47	Lalitpur Power Generation Company Ltd		GM Electrical	aupadhyay.ltp@lpgcl.com
48	MEJA Urja Nigam Ltd.		GM (O&M)	piyushkumar@ntpc.co.in
49	Adani Power Rajasthan Limited		AVP	Manoj.taunk@adani.com
50	JSW Energy Ltd. (KWHEP)		Head of Plant	kaushik.maulik@jsw.in
51	TATA POWER RENEWABLE	IPP having less than 1000 MW installed capacity (alphabetical rotaional basis)		nomination awaited
52	UT of J&K	From each of the Union Territories in the region, a representative nominated by the administration of the Union Territory concerned out of the entities engaged in generation/ transmission/ distribution of electricity in the Union Territory.		nomination awaited
53	UT of Ladakh			nomination awaited
54	UT of Chandigarh			nomination awaited
55	NPCL	Private Distribution Company in region (alphabetical rotaional basis)		nomination awaited
56	Fatehgarh Transmission Limited	Private transmission licensee (nominated by cetral govt.)		nomination awaited
57	NTPC Vidyut Vyapar Nigam Ltd.	Electricity Trader (nominated by central govt.)		nomination awaited
58	ReNew Power Private Limited	RE Generating Company having more than 1000 MW installed capacity		nomination awaited
59	NTPC Green Energy Limited			nomination awaited
60	Azure Power India Pvt. Limited			nomination awaited
61	Avaada Energy Private Limited			nomination awaited
62	Adani Green Energy Limited			nomination awaited

Special Invitees:

1. Chairman, NERPC & Hon'ble Dy. Chief Minister & In-Charge of Power, Govt. of Arunachal Pradesh, Itanagar-791111 [E-mail: Prasantaphukan28@gmail.com]
2. Shri Gaurav Gupta, Chairperson, SRPC & Managing Director, Karnataka Power Corporation Limited & ACS Energy Department GoK, 240, 2nd floor Vikasa Soudha, Bengaluru, Karnataka-560001 [Email:prs.energy@gmail.com; acs@karnataka.gov.in]
3. Chairman, ERPC, Principal Chief Engineer-cum-Secretary, Energy & Power Department, Govt. of Sikkim, Kazi Road, Gangtok – 737101, Sikkim [E-mail: secypower.sikkim@gmail.com]
4. Dr Rohit Yadav, Chairman CSPTCL & Chairman, WRPC, Office of Chairman, Vidyut Seva Bhavan, Danganiya, Raipur 492 013 (C.G.) [Email: chairmancspc@gmail.com]
5. Smt. Rishika Saran, Member Secretary, NPC, Sewa Bhawan, R. K. Puram, New Delhi-66 [Email-cenpc-cea@gov.in]
6. Shri Deepak Kumar, Member Secretary, WRPC, Plot No- F-3, MIDC Area, Marol, Opp. SEEPZ, Central Road, Andheri (East), Mumbai-40093. [email: ms- wrpc@nic.in]
7. Shri Asit Singh, Member Secretary, SRPC, No.29, Race Course Cross Road, Bengaluru-560009. [Email: mssrpc-ka@nic.in]
8. Shri N.S. Mondal, Member Secretary, ERPC,14,Golf Club Road, ERPC Building, Tollygunje,Kolkata-700033.[Email: mserpc-power@nic.in]
9. Shri K B Jagtap, Member Secretary, NERPC, NERPC Complex, Dong Parmaw, Lapalang, Shillong-793006. [Email: ms-nerpc@gov.in]
10. Shri Brieflee Lyngkhoi, Chief Engineer, GM Division, CEA, Sewa Bhawan, R. K. Puram, New Delhi-66 [Email: cegm-cea@gov.in]

Attendance 53rd TCC Meeting of NRPC On 16.03.2025

S. No.	Name	Designation	Organization	E-mail
1	V.K. Singh	MS, NRPC	NRPC	vksinghcea@gmail.com
2	Pushpa Rani Rao	PSO	NRPC	pushprrao@gmail.com
3	D.K. Meena	SE	NRPC	seo-nrpc@nic.in
4	Praveen Jangra	EE	NRPC	praveen.cea@gov.in
5	Vipul Kumar	EE	NRPC	vipul.cea@gov.in
6	Lokesh Agarwal	AEE	NRPC	lokesh.cea@gov.in
7	Omkishor	EE	NRPC	omkishor.sahu@gov.in
8	Ravi Kant	EE	NRPC	ravikant.cea@gov.in
9	Priyanka Patel	Manager	NRPC	priyankapatel@powergrid.in
10	Manoj Upreti	Chairperson, TCC	HPSEBL	
11	Deepak Kumar	WRPC	Member	deepak.kr76@nic.in
12	G.S. Budiyal	Director (Operation)	PTCUL	director.op@ptcul.org
13	H S Hyanki	CE (T&C)	PTCUL	hitendra0107@gmail.com
14	Brij Lal Thakur	MD	HPSLDC	mdhpsldc@gmail.com
15	K.B. Jagtap	MS	NERPC	kb.jagtap@gov.in
16	Sanjay Bhargava	Head- C&R	PPGCL- Tata Power	sanjay.bhargava@tatapower.com
17	Manish Athaiya	SE (SSDA-SLDC)	Rajasthan SLDC	athaiya.manish@rvpn.co.in
18	Illa Chandra	CE(C&P) & C&R	PTCUL	ce_candp@ptcul.org
19	A J Siddiqui	CE POWER SYSTEM OPERATION	UP SLDC	cepso@upsldc.org
20	S.K. Das	Director (P&C)	UPPTCL	director_comm@upptcl.org
21	Er. Sanjeev Sood	Engineer in Chief (TS)	PSTCL	ce-tl@pstcl.org.
22	Er. Bhupinder Jit Singh	Chief Engineer (PPR)	PSPCL	ce-ppr@pspcl.in
23	Narendra Ojha	Lead - BD	AGEL	narendran.ojha@adani.com
24	Suresh Chand Meena	Director (Operation)	Rajasthan STU	dir.oper@rvpn.co.in
25	P S Das	Senior GM	CTUIL	psdas@powergrid.in
26	Rajeev Agarwal	DGM	SJVN	rajeev.sjvni@gmail.com
27	Nihar Raj	Head O&M	Adani Transmission FBTL	nihar.raj@adani.com
28	Manoj Kumar Agarwal	Executive Director	NRLDC	mkagarwal@grid-india.in
29	Sheikh Shadruddin	CGM (Market Operation)	NRLDC	sheikhshadruddin@grid-india.in
30	Gaurav Malviya	Manager	NRLDC	gauravmalviya@grid-india.in
31	Er. Harmanjeet Singh	DM, Planning	HPPTCL	sahotaharman94@gmail.com
32	P K Jha	GM	JSW HYDRO	pk.jha@jsw.in
33	Y K Dixit	Executive Director	POWERGRID NR3	ykdixit@powergrid.in
34	Gunjan Agarwal	GM	POWERGRID NR3	gunjan.agrawal@powergrid.in
35	Mridul Shukla	Sr. Manager (Commercial)	NPCIL	mridulshukla@npcil.co.in
36	Surendra K Mishra	GM	NHPC Limited	surendramishra@nhpc.nic.in
37	Arun Tholia	Executive Director	MEIL Anpara Energy	arun.tholia@meilanparapower.com
38	Rajeev Kumar Tayal	Chief Engineer	SLDC, Haryana	rajeevtayal1967@gmail.com
39	Ravi Kant Kalsotra	SE	JKPTCL Jammu	ravikantkalsotra1@gmail.com
40	Shailendra Singh Panwar	DGM	THDCIL	singhpanwar@thdc.co.in
41	R R Semwal	CGM	THDCIL	rrsemwal@thdc.co.in
42	Anshul Garg	Vice President	Adani Power	anshul.garg@adani.com
43	Amit Ahuja	Director (Technical)	IPGCL-PPCL	amitahuja9@yahoo.com
44	R K Yadav	General Manager (Technical)	IPGCL-PPCL	rajendra805@gmail.com
45	Rajneesh Katoch	Sr. Manager	HPPCL	rajneeshhppcl@gmail.com
46	Nitin Garg	GM (Corp. Plng.), HPPCL Shimla	HPPCL	gm_planning@hppcl.in
47	Ajay Sharma	Spl. Deputy	BBMB	apneey@bbmb.nic.in
48	Doman Yadav	ED (GA & C)	POWERGRID	dyadav@powergrid.in
49	Awanish Kumar	Chief Manager (GA & C)	POWERGRID (GA & C)	awanish.kumar@powergrid.in
50	Jitender Malwtia	AGM Commerical	NTPC	jitendramalwtia@ntpc.co.in
51	Narendra Meena	DGM	POWERGRID	nkmeena@powergrid.in
52	Kumar Gautam	DGM	POWERGRID NR1	kumar.gautam@powergrid.in
53	Somara Lakra	Chief GM	NRLDC	somara.lakra@grid-india.in
54	Sudhir Jain	CE (LD)	RVPN/SLDC	Jain.sudhir@rvpn.co.in
55	Kamal Patidar	SE (SOLD)	RVPN/SLDC	se.sold@rvpn.co.in
56	Satyendra Kumar	SE (TP & PSS)	UPPTCL	setppss@upptcl.org
57	Prashant Jain	AGM	APCPL	prashantjain@ntpc.co.in
58	Mrs. Manju Gupta	Dy. COO	CTUIL	manju@powergrid.in
59	Sandeep Kumawat	DGM	CTUIL	sandeepk@powergrid.in
60	Sanjay Mathur	SE (Automation)	RVPN / STU	mathur.sanjay@rvpn.co.in
61	Kuleshwar Sahu	CGM - Asset Management	POWERGRID / NR-I	kuleshwar@powergrid.in
62	Jai Ram	XEN/SLDC/Op	SLDC, Haryana	xensldcop@hvon.org.in
63	Amit Kumar Singh	SE	SLDC Uttarakhand	se_sldc@ptcul.org
64	Pankaj Saxena	SE	UPPTCL	smart.saxena@gmail.com
65	Anish Garg	GM	SLDC Delhi	garganish@gmail.com
66	K K Jaiswal	GM (Comm)	UJVN	ujvnlcom@gmail.com
67	Choudhary Nitin R.	Outstanding Scientist & ED (C)	NPCIL	nrchoudhary@npcil.co.in
68	Er. Jagjeet Singh	Member (Power)	BBMB	mp@bbmb.nic.in
69	Ruchi Sharma	Director (Power Regulation)	BBMB	dirp@bbmb.nic.in
70	Ashok Kumar	HOD / General Manager (Commercial)	SJVN Limited	ashok179@hotmail.com
71	Abhishek Kukreja	Lead O & M	FBTL	abhishek.kukreja@adani.com
72	Suneel Kumar	Executive Engineer	UPRVUNL	suneelppmm@gmail.com
73	Sunit Kumar	AGM	NTPC	snitkumar@ntpc.co.in
74	Shafat Ahmed Wani	Sr. GM I/C AM	POWERGRID / NR-II	ahmed.shafat@powergrid.in
75	Rakesh Gupta	Chief Manager	POWERGRID / NR-II	rakeshgupta@powergrid.in
76	H S Kaushal	Sr. GM	CTUIL	hsk@powergrid.in
77	Er. Sandeep Kumar	Addl. SE	PSPCL	pc-pspcl@pspcl.in

Attendance 78th NRPC Meeting of NRPC On 17.03.2025				
S. No.	**Name**	**Designation**	**Organization**	**E-mail**
1	Mr. Rajiv Sood	Chairperson, NRPC and Managing Director	Chairperson, NRPC & MD, HPPTCL	rajivsoodhp@gamil.com
2	V.K. Singh	MS, NRPC	NRPC	vksinghcea@gmail.com
3	Pushpa Rani Rao	PSO	NRPC	pushprrao@gmail.com
4	D.K. Meena	SE	NRPC	seo-nrpc@nic.in
5	Praveen Jangra	EE	NRPC	praveen.cea@gov.in
6	Vipul Kumar	EE	NRPC	vipul.cea@gov.in
7	Lokesh Agarwal	AEE	NRPC	lokesh.cea@gov.in
8	Omkishor	EE	NRPC	omkishor.sahu@gov.in
9	Ravi Kant	EE	NRPC	ravikant.cea@gov.in
10	Priyanka Patel	Manager	NRPC	priyankapatel@powergrid.in
11	Manoj Upreti	Chairperson, TCC	HPSEBL	
12	Deepak Kumar	WRPC	Member	deepak.kr76@nic.in
13	G.S. Budiyal	Director (Operation)	PTCUL	director.op@ptcul.org
14	H S Hyanki	CE (T&C)	PTCUL	hitendra0107@gmail.com
15	Brij Lal Thakur	MD	HPSLDC	mdhpsldc@gmail.com
16	K.B. Jagtap	MS	NERPC	kb.jagtap@gov.in
17	Sanjay Bhargava	Head- C&R	PPGCL- Tata Power	sanjay.bhargava@tatapower.com
18	Manish Athaiya	SE (SSDA-SLDC)	Rajasthan SLDC	athaiya.manish@rvpn.co.in
19	Illa Chandra	CE(C&P) & C&R	PTCUL	ce_candp@ptcul.org
20	A J Siddiqui	CE POWER SYSTEM OPERATION	UP SLDC	cepso@upsldc.org
21	S.K. Das	Director (P&C)	UPPTCL	director_comm@upptcl.org
22	Er. Sanjeev Sood	Engineer in Chief (TS)	PSTCL	ce-tl@pstcl.org.
23	Er. Bhupinder Jit Singh	Chief Engineer (PPR)	PSPCL	ce-ppr@pspcl.in
24	Narendra Ojha	Lead - BD	AGEL	narendran.ojha@adani.com
25	Suresh Chand Meena	Director (Operation)	Rajasthan STU	dir.oper@rvpn.co.in
26	P S Das	Senior GM	CTUIL	psdas@powergrid.in
27	Rajeev Agarwal	DGM	SJVN	rajeev.sjvn@gmail.com
28	Nihar Raj	Head O&M	Adani Transmission FBTL	nihar.raj@adani.com
29	Manoj Kumar Agarwal	Executive Director	NRLDC	mkagarwal@grid-india.in
30	Sheikh Shadruddin	CGM (Market Operation)	NRLDC	sheikhshadruddin@grid-india.in
31	Gaurav Malviya	Manager	NRLDC	gauravmalviya@grid-india.in
32	Er. Harmanjeet Singh	DM, Planning	HPPTCL	sahotaharman94@gmail.com
33	P K Jha	GM	JSW HYDRO	pk.jha@jsw.in
34	Y K Dixit	Executive Director	POWERGRID NR3	ykdixit@powergrid.in
35	Gunjan Agarwal	GM	POWERGRID NR3	gunjan.agrawal@powergrid.in
36	Mridul Shukla	Sr. Manager (Commercial)	NPCIL	mridulshukla@npcil.co.in
37	Surendra K Mishra	GM	NHPC Limited	surendramishra@nhpc.nic.in
38	Arun Tholia	Executive Director	MEIL Anpara Energy	arun.tholia@meilanparapower.com
39	Rajeev Kumar Tayal	Chief Engineer	SLDC, Haryana	rajeevtayal1967@gmail.com
40	Ravi Kant Kalsotra	SE	JKPTCL Jammu	ravikantkalsotra1@gmail.com
41	Shailendra Singh Panwar	DGM	THDCIL	singhpanwar@thdc.co.in
42	R R Semwal	CGM	THDCIL	rrsemwal@thdc.co.in
43	Anshul Garg	Vice President	Adani Power	anshul.garg@adani.com
44	Amit Ahuja	Director (Technical)	IPGCL-PPCL	amitahuja9@yahoo.com
45	R K Yadav	General Manager (Technical)	IPGCL-PPCL	rajendra805@gmail.com
46	Rajneesh Katoch	Sr. Manager	HPPCL	rajneeshhppcl@gmail.com
47	Nitin Garg	GM (Corp. Plng.), HPPCL Shimla	HPPCL	gm_planning@hppcl.in
48	Ajay Sharma	Spl. Deputy	BBMB	apneey@bbmb.nic.in
49	D. Yadav	ED (GA & C)	POWERGRID	dyadav@powergrid.in
50	Awanish Kumar	Chief Manager (GA & C)	POWERGRID (GA & C)	awanish.kumar@powergrid.in
51	Jitender Malwtia	AGM Commerical	NTPC	jitendramalwtia@ntpc.co.in
52	Anil Kumar Reddy	Vice President APAE	Oscilloquartz	anil.reddy@adlvan.com
53	Somara Lakra	Chief GM	NRLDC	somara.lakra@grid-india.in
54	Sudhir Jain	CE (LD)	RVPN/SLDC	Jain.sudhir@rvpn.co.in
55	Kamal Patidar	SE (SOLD)	RVPN/SLDC	se.sold@rvpn.co.in
56	Satyendra Kumar	SE (TP & PSS)	UPPTCL	setppss@upptcl.org
57	Prashant Jain	AGM	APCPL	prashantjain@ntpc.co.in
58	Mrs. Manju Gupta	Dy. COO	CTUIL	manju@powergrid.in
59	Sandeep Kumawat	DGM	CTUIL	sandeepk@powergrid.in
60	Sanjay Mathur	SE (Automation)	RVPN / STU	mathur.sanjay@rvpn.co.in
61	Kuleshwar Sahu	CGM - Asset Management	POWERGRID / NR-I	kuleshwar@powergrid.in
62	Jai Ram	XEN/SLDC/Op	SLDC, Haryana	xensldcop@hvon.org.in
63	Amit Kumar Singh	SE	SLDC Uttarakhand	se_sldc@ptcul.org
64	Pankaj Saxena	SE	UPPTCL	smart.saxena@gmail.com
65	Anish Garg	GM	SLDC Delhi	garganish@gmail.com
66	K K Jaiswal	GM (Comm)	UJVN	ujvnlcom@gmail.com
67	Choudhary Nitin R.	Outstanding Scientist & ED (C)	NPCIL	nrchoudhary@npcil.co.in
68	Er. Jagjeet Singh	Member (Power)	BBMB	mp@bbmb.nic.in
69	Ruchi Sharma	Director (Power Regulation)	BBMB	dirp@bbmb.nic.in
70	Ashok Kumar	HOD / General Manager (Commercial)	SJVN Limited	ashok179@hotmail.com
71	Abhishek Kukreja	Lead O & M	FBTL	abhishek.kukreja@adani.com
72	Suneel Kumar	Executive Engineer (TO)	UPRVUNL	suneelppmm@gmail.com
73	Sunit Kumar	AGM	NTPC	snitkumar@ntpc.co.in
74	Shafat Ahmed Wani	Sr. GM I/C AM	POWERGRID / NR-II	ahmed.shafat@powergrid.in
75	Rakesh Gupta	Chief Manager	POWERGRID / NR-II	rakeshgupta@powergrid.in
76	H S Kaushal	Sr. GM	CTUIL	hsk@powergrid.in

Status of action taken on decision 52nd TCC & 77th NRPC meeting

S.N.	Agenda	Decision of 52nd TCC & 76th NRPC	Status of action taken
A.14	Low voltage related issues in J&K control area (agenda by NRLDC)	The forum concurred with the decision made during the TCC meeting to hold a physical meeting with representatives from Jammu & Kashmir and the concerned utilities such as POWERGRID, NHPC, NRPC, NRLDC given the prolonged nonrepresentation of J&K officials in NRPC meetings.	This matter was discussed with J&K in a special physical meeting conducted on 06.02.2025. In the 53rd TCC & 78th NRPC meeting, J&K representative informed that they are going to install capacitor bank at 33kV level to improve the voltage profile.
A.17	J&K Telemetry Issues (agenda by NRLDC)	The forum concurred with the decision made during the TCC meeting to hold a physical meeting with representatives from Jammu & Kashmir and the concerned utilities. The meeting will also include members from NRPC and NRLDC, given the prolonged non-representation of J&K officials in NRPC meetings.	This matter was discussed with J&K in a special physical meeting conducted on 06.02.2025. In the 53rd TCC & 78th NRPC meeting, POWERGRID representative requested J&K to release fund for already supplied RTUs so that links may be established. MS, NRPC requested J&K to expedite. J&K

			representative ensured to resolve the matter.
A.27	Unified Accounting Software (UAS) for RPCs (agenda by NRPC Secretariat)	Forum accorded approval for submission of DPR by MS, NRPC to PSDF Secretariat for grant. Possibility of extending the software to willing SLDCs on incremental basis may be explored and added in scope after discussion with vendors. Considering useful life of IT systems defined in CERC Tariff Regulations 2024, upgradation work may be planned right after completion of 1+4 years C-AMC.	DPR has been submitted to PSDF on 31.01.2025.
A.28	Capacity Building/ Study Tour Programme for Northern Regional Constituents through PSDF Fund (Agenda by NRPC Secretariat)	Forum authorized MS, NRPC for submission of DPR for PSDF grant.	DPR vide letter dated 28.01.2025 has already been submitted to PSDF Secretariat. During 53rd TCC & 78th NRPC meeting, it was decided that based on observations raised by PSDF, Secretariat in the meeting held on

			07.03.2025, NRPC Secretariat will respond to the observations.
A.29	Centralized Database for Protection Settings in Northern Region to be implemented under PSDF (agenda by NRPC Secretariat)	Forum authorized the MS, NRPC for applying PSDF grant and complete necessary formalities to get the project implemented.	POWERGRID has submitted cost estimate. MS, NRPC has requested POWERGRID vide letter dated 30.01.2025 to exempt consultancy charges (15%) added by POWERGRID in cost estimate. POWERGRID vide letter dated 07.03.2025 has submitted to consider consultancy/overhead charges @ 15% for implementation. In the 53rd TCC & 78th NRPC meeting, MS, NRPC informed that consultancy charges are not covered under PSDF funding as discussed in the PSDF, Secretariat meeting held on 07.03.2025.

			Accordingly, TCC Forum asked POWERGRID to review the percentage of consultancy charges going to be levied by them. Based on that, the finalized consultancy charges will be shared by the constituents of NRPC Forum. Accordingly, agenda will be taken for that cost sharing by NRPC constituents.
A.32	Training on electrical protection of power system for NRPC constituents (agenda by NRPC Secretariat)	Forum approved the above proposal and recommended to facilitate the training	Cost Estimate has been received from POWERGRID. Agenda was discussed in the 53rd TCC & 78th NRPC meeting.

Annexure-II

Hissar	ADD-CAP (2024-2029)				EQUIPMENT NOT YET COMPLETED 25 YEARS			Other utility		
	Project	Supply	Service	F&I	Supply	Service	F&I	Supply	Service	F&I
	MBTL	16,31,63,205	2,42,08,066	4,94,460	9,08,00,000	49,00,000	58,000	0	0	0
	NAJH	1,30,60,000	7,00,000	10,000						
TOTAL (EXCLUDING OF GST)		**20,16,35,731**			**9,57,58,000**			**0**		
TOTAL Including GST		**23,78,39,360**			**11,29,84,000**			**0**		
Ballabgarh	**ADD-CAP (2024-2029)**				**Under O&M**			**Other utility (DTL)**		
	Project	**Supply**	**Service**	**F&I**	**Supply**	**Service**	**F&I**	**Supply**	**Service**	**F&I**
	RHTS	15,70,31,271	66,50,000	5,11,960	5,24,40,000	38,40,000	54,000	1,74,40,000	13,20,000	14,000
	NRSS-32	2,01,50,000	15,00,000	19,500						
TOTAL Excluding GST		**18,58,62,731**			**5,63,34,000**			**1,87,74,000**		
TOTAL Including GST		**21,92,22,360**			**6,64,64,400**			**2,21,50,800**		
Mandola	**ADD-CAP (2024-2029)**				**Under O&M**			**Other utility (DTL)**		
	Project	**Supply**	**Service**	**F&I**	**Supply**	**Service**	**F&I**	**Supply**	**Service**	**F&I**
	RHTL	9,66,31,271	25,70,000	4,54,460	4,23,20,000	24,70,000	31,500	2,63,52,051	13,00,000	1,22,240
	Tehri TS	1,92,40,000	16,20,000	23,000						
	NRSS-32	3,36,00,000	21,00,000	29,000						
TOTAL (EXCLUDING OF GST)		**15,62,67,731**			**4,48,21,500**			**2,77,74,291**		
TOTAL Including GST		**18,43,04,760**			**5,28,83,700**			**3,27,51,660**		
Meerut	**ADD-CAP (2024-2029)**				**Under O&M**			**Other utility (UPPCL)**		
	Project	**Supply**	**Service**	**F&I**	**Supply**	**Service**	**F&I**	**Supply**	**Service**	**F&I**
	Tehri TS	14,62,41,271	57,20,000	4,92,960	5,56,40,000	35,80,000	40,500	67,20,000	3,50,000	3,000
TOTAL Excluding GST		**15,24,54,231**			**5,92,60,500**			**70,73,000**		
TOTAL Including GST		**17,98,07,260**			**6,99,20,100**			**83,45,600**		

Prayagraj (Allahabad)	ADD-CAP (2024-2029)				Under O&M			Other utility (UPPCL)		
	Project	**Supply**	**Service**	**F&I**	**Supply**	**Service**	**F&I**	**Supply**	**Service**	**F&I**
		23,74,44,097	2,45,26,103	6,78,510	6,57,93,001	80,34,081	71,925	0	0	0
TOTAL Excluding GST		**26,26,48,710**			**7,38,99,007**			**0**		
TOTAL Including GST		**30,98,03,346**			**8,71,87,882**			**0**		

ADD CAP ESTIMATED COST INCLUDING GST	**1,13,09,77,085**
EQUIPMENT NOT YET COMPLETED 25 YEARS	**38,94,40,082**
OTHER UTILITY	**6,32,48,060**
TOTAL COST	**1,58,36,65,228**

Annexure-III

पावरग्रिड
POWERGRID

पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)

Ref:- N1/AM/

Date:- 13th January'2023

Member Secretary (NRPC),
18-A, Shaheed Jeet Singh Sansanwal Marg,
Katwaria Sarai, New Delhi - 110016

Subject:- **Frequent switching of transmission line to control system voltage- Reg.**

Sir,

Enclosed herewith please find letter dt. 04/01/2023 from ED(AM), CC, wherein concern expressed regarding frequent opening of transmission lines and switching of reactors (line reactor as bus reactor).

These frequent switching of transmission lines and reactors on regular basis at high voltage condition is unnecessarily stressing the switchyard equipments, which may result in failure of reactors and circuit breakers.

The subject matter may kindly be included as additional agenda point in forthcoming 203rd OCC meeting for discussion / deliberation w.r.t. suitable corrective action.

Thanking your with reagrds,

13/01/2023

(A. K. Behera)
Chief GM(AM), NR1

Copy :-

i) **Executive Director (NRLDC)**
Grid Controller of India Limited
18-A, Shaheed Jeet Singh Sansanwal Marg,
Katwaria Sarai, New Delhi - 110016

Copy for kind information please :-

i) ED, NR1
ii) ED(AM), CC

पावरग्रिड
POWERGRID

पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)

Ref. : C/NTAMC/2023/2415

Date: 04.01.2023

To,

COO,
CTU India Ltd

Dear Sir,

Sub: Frequent switching of transmission lines to control system voltages-Reg.

This is in continuation to our previous communication dated 7th February 2022 on above mentioned subject. In this regard it is to inform that, a total of 42 transmission lines were opened in Northern Region for controlling system voltages in the month of December-2022. Some of these lines were opened up to 27 times (i.e. equivalent to 54 operations of CB connected to that line). The details of such switching (cumulative total=553) in the month of December-2022 is enclosed.

It is reiterated that the frequent switching of transmission lines for voltage control affect the transmission assets, especially GIS, where several equipment failed during switching operation and its impact has been already highlighted in RPC/RLDCs in various meetings.

In view of above, it is requested that matter may please be taken up for suitable corrective measures for long term mitigation of the over voltage in the Grid

(ए.पी. गंगाधरन)
कार्यपालक निदेशक
(ए.एम, एन.टी.ए.एम.सी & सेफ्टी)

Enclosed:
1) Abstract of line outages on voltage regulation for December-2022,
2) Equipment failure during switching of lines on voltage regulation- FY. 2022-23.

Copy for kind information to:
1) ED, NRLDC.
2) Member Secretary, NRPC.

केन्द्रीय कार्यालय : 'सौदामिनी', प्लॉट नं. 2, सेक्टर 29, गुड़गांव-122001 (हरियाणा) दूरभाष : 0124-2571700 - 719
Corporate Office : 'SAUDAMINI', Plot No. 2, Sector 29, Gurgaon-122001 (Haryana) Tel : 0124-2571700 - 719
पंजीकृत कार्यालय बी-9, कुतब इंस्टीट्यूशनल एरिया, कटवारिया सराय, नई दिल्ली 110016 दूरभाष. 011-26560112, 26560121, 26564892 सी.आई.एन. : L40101DL1989GOI038121
Regd.Office : B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi -110016 Tel. : 011-26560112, 26560121, 26564892 CIN : L40101DL1989GOI038121
Website : www.powergridindia.com

ABSTRACT OF LINE OUTAGES ON VOLTAGE REGULATION FOR (DECEMBER-2022)

NORTHERN REGION

S. No.	Line	No of outages
	765kV Lines	
1	Bhiwani-Phagi(RRVPNL)-2	17
2	Orai-Aligarh-1	17
3	Meerut-Moga	17
4	Ajmer-Bhadla2-1	16
5	Bikaner-Moga-2	16
6	Bikaner-Moga-1	15
7	Fatehpur-Agra-2	15
8	Orai-Aligarh-2	15
9	Fatehpur-Agra-1	14
10	Ajmer-Bhadla2-2	14
11	Bhiwani-Phagi(RRVPNL)-1	13
12	Jhatikara-Khetri(TBCB)-1	12
13	Bhiwani-Meerut	6
14	Chittorgarh-Ajmer-1	4
	Total	191
	400kV Lines	
1	Kurukshetra-Nakodar(PSTCL)	27
2	Banala-Amritsar-1	26
3	Abdullapur-Depalpur(HVPNL)	25
4	Ratangarh(RRVPNL)-Sikar-1	19
5	Kurukshetra-Jalandhar	18
6	Agra-Jaipur South-1	17
7	Agra-Sikar-1	16
8	Kurukshetra-Jind-1	15
9	Dehradun-Abdullapur-2	15
10	Kala Amb-Abdullapur-1(LILO)	15
11	Agra-Sikar-2	14
12	Agra-Jaipur South-2	14
13	Kurukshetra-Sonipat-1	14
14	Chamera1(NHPC)-Jallandhar-2	14
15	Kurukshetra-Jind-2	13
16	Agra-Bhiwadi-1	13
17	Kurukshetra-Sonipat-2	12
18	Dehradun-Abdullapur-1	12
19	Chamera1(NHPC)-Jallandhar-1	11
20	Ratangarh(RRVPNL)-Sikar-2	9
21	Chamba-Jallandhar-1	9
22	Chamba-Jallandhar-2	6
23	Kanpur-Ballabhgarh-3	6
24	Meerut-Mandola-1	5
25	Bareily-Meerut-1(LILO)	5

26	Nathpajhakri(SJVNL)-Panchkula-1	4
27	Kaithal-Dadri(NTPC)	4
28	Auraiya(NTPC)-Agra-1	4
Total		362
TOTAL = 553		

Annexure-IV

सत्यमेव जयते

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

विषय: उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 227 वीं बैठक का कार्यवृत |

Subject: Minutes of the 227th OCC meeting of NRPC.

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 227 वीं बैठक दिनांक 17.01.2025 को आयोजित की गयी थी। उक्त बैठक का कार्यवृत्त उत्तर क्षेत्रीय विद्युत समिति की वेबसाइट http://164.100.60.165 पर उपलब्ध है। यदि कार्यवृत पर कोई टिप्पणी हो तो कार्यवृत जारी करने के एक सप्ताह के अन्दर इस कार्यालय को भेजें |

The 227th meeting of the Operation Co-ordination Sub-Committee (OCC) of NRPC was held on 17.01.2025. The Minutes of this meeting has been uploaded on the NRPC website http://164.100.60.165. Any comments on the minutes may kindly be submitted within a week of issuance of the minutes.

संलग्नक:यथोपरि।

Signed by Dharmendra Kumar Meena
Date: 07-02-2025 17:12:50

(डी. के. मीना)
निदेशक (प्रचालन)

सेवा में,

उ.क्षे.वि.स. के प्रचालन समन्वय उप-समिति के सभी सदस्य

Forum suggested NHPC to a send formal communication with request from their side to CERC and NLDC and inform the matter to MoP/CEA. In case matter does not get resolved through communication, NHPC may need to file petition in CERC regarding the matter.

A.13. Installation of CSD in 400KV Kalaamb Wangtoo and 400KV Kalaamb Sorang to control switching surges (Agenda by CTU)

A.13.1. CTU representative apprised forum that a Joint study meeting was held on 11.12.24 among CTUIL, CEA, Grid-India, POWERGRID & HPPTCL to deliberate on feasibility of reactor shifting at the Karcham end to either Wangtoo or Sorang S/s on 400KV Kalaamb - Wangtoo and 400KV Kalaamb-Sorang line.

A.13.2. In the meeting HPPTCL stated that space is not available for installation of line reactor at Wangtoo (HPPTCL) S/s end for 400 kV Wangtoo (HPPTCL) -Kala Amb (PG) line, same was also confirmed by HPPTCL by mail dated 12.12.2024.

A.13.3. In the meeting HPPTCL also confirmed that CSD already installed at Wangtoo end for 400 Wangtoo-Kala Amb line & 400kV Wangtoo-Sorang line. Powergrid also confirmed that CSD (taken on loan basis) already installed at Kala Amb end for 400 Wangtoo-Kala Amb line. Power Grid also raised requirement of CSD at both end for 400kV Kala Amb-Sorang line. HPPTCL also requested for Installation of CSD at Kala Amb end for avoiding GIS failure due to switching over voltages.

A.13.4. In the meeting, Grid-India agreed for requirement of CSD devices however they have opined number of CSD requirement may be discussed in upcoming OCC meetings. Grid India & CTU also requested, POWERGRID to explore the possibility of breaker installation to make line reactor installed at Karcham end of 400kV Karcham-Wangtoo line as a bus reactor.

A.13.5. Subsequently, POWERGRID vide mail 06.01.25 informed that as presented in the meeting, purpose of CSD is to control switching surges during charging of the line. At 400kV Kalaamb, S/s one and half breaker scheme arrangement is in service and at Sorang S/s (M/s Greenco) and Wangtoo (HPPTCL) S/s, Double Bus arrangement is in service and depending upon Grid conditions, line can be charged from any end and also from any of the main as well as Tie CBs at Kalaamb. In view of above, it is for system stability to install CSD in above Line CBs at Kalaamb, wangtoo and Sorang to avoid switching surges during line charging for smooth GRID operation. As CSD is already installed at Wangtoo HPPTCL, at present, total CSD requirement is 05 number i.e. 04 Number at Kalaamb (Both main and Tie CBs at Kalaamb) and 01 Number at Sorang. POWERGRID further requested that as Kalaamb is implemented as a TBCB project, installation of CSD may please be approved under ADD CAP.

A.13.6. OCC forum technically agreed for installation of 05 numbers CSD i.e. 04 Number at Kalaamb (Both main and Tie CBs at Kalaamb) and 01 Number at Sorang. Further, Powergrid was asked to submit an agenda in upcoming NRPC meeting for capitalisation under ADD CAP.

A.13.7. Powergrid intimated that expected timeline for installation of CSD would be around eight months.

Decision of OCC Forum:

Forum approved the installation of 05 numbers CSD i.e. 04 Number at Kalaamb (Both main and Tie CBs at Kalaamb) and 01 Number at Sorang. Powergrid was asked to submit an agenda in upcoming NRPC meeting for capitalisation under ADD CAP.

A.14. SPS arrangement for load shedding at 400/220 kV Mandola & Maharani Bagh Substation in view of N-1 criteria violation (Agenda by POWERGRID NR-1)

A.14.1. Powergrid NR-1 informed that the additional ICTs at Mandola & Maharani Bagh has been agreed in CMETS meeting however considering the increased load projections in 2025-26 summers, implementation of SPS at Mandola & Maharani Bagh SS may be deliberated.

A.14.2. NRLDC representative mentioned that, according to the data available in the NRLDC SPS document, there are existing SPS systems at both 400kV Mandola and 400kV Maharanibagh.

A.14.3. The logic behind these SPS, which were approved in 2010 and are included in the NRLDC SPS document, was also presented during the meeting.

- 400kV Mandola ICTs:

Transformer Details: - 4 x 315 MVA = 1260 MVA (4*500MVA)

1. **Case-1:** Loading on the ICT is more than 85 % and no. of ICTs operating in parallel is 4 and 1 out of these 4 ICT trips.

   Action: Shed load in one of the identified groups

2. **Case-2:** Loading on the ICT is more than 75 % and no. of ICTs operating in parallel is 3 and 1 out of these 3 ICT trips

   Action: Shed load in one of the identified groups

3. **Case-3:** Loading on the ICT is more than 55 % and no. of ICTs operating in parallel is 2 and 1 out of these 2 ICT trips.

   Action: Shed load in one of the identified groups

Feeder details for tripping during SPS operation
a) 220kV Mandola-Gopalpur
b) 220kV Mandola-Narela ckt-1&2

Annexure-I

Sl.No.	Name of Line	Project/Scheme	Estimated Cost (in lacs)
1	400KV Gorakhpur-Motihari-I	BARH TRANSMISSION SYSTEM	64.49
2	400KV Gorakhpur-Motihari-II	BARH TRANSMISSION SYSTEM	
3	400KV Allahabad-Kanpur(GIS)-I	Common scheme for 765 kV Pooling Stations and Network for NR	26.68
4	400KV Allahabad-Kanpur(GIS)-II	Common scheme for 765 kV Pooling Stations and Network for NR	
5	400KV Ballia-Sohawal-I	DVC Methon Project	95.64
6	400KV Ballia-Sohawal-II	DVC Methon Project	
7	400KV Varanasi-Sarnath-I	DVC Methon Project	
8	400KV Varanasi-Sarnath-II	DVC Methon Project	
9	400KV Fatehpur-MAINPURI-I	NORTHERN REGION SYSTEM STRENGTHENING SCHEME - II	91.37
10	400KV Fatehpur-MAINPURI-II	NORTHERN REGION SYSTEM STRENGTHENING SCHEME - II	
11	400KV Mainpuri-Ballabgarh-I	NORTHERN REGION SYSTEM STRENGTHENING SCHEME - II	
12	400KV Mainpuri-Ballabgarh-II	NORTHERN REGION SYSTEM STRENGTHENING SCHEME - II	
13	400KV Agra-Ballabgarh	NR SS -9	335.97
14	400KV Agra-Bassi	NR SS -9	
15	400KV Agra-Jaipur(S)-I	NR SS -9	
16	400KV Agra-Jaipur(S)-II	NR SS -9	
17	400KV Agra-Sikar-I	NR SS -9	
18	400KV Agra-Sikar-II	NR SS -9	
19	400KV Allahabad-Fatehpur-I	NR SS -9	
20	400KV Allahabad-Fatehpur-II	NR SS -9	
21	400KV Allahabad-Fatehpur-III	NR SS -9	
22	400KV Kanpur-Ballabgarh-I	NR SS -9	
23	400KV Kanpur-Ballabgarh-II	NR SS -9	
24	400KV Kanpur-Ballabgarh-III	NR SS -9	
25	400KV Bareilly-Kashipur-I	NRSS XX1	107.53
26	400KV Bareilly-Kashipur-II	NRSS XX1	
27	400KV Bareilly-Moradabad-I	NRSS XX1	
28	400KV Allahabad-Sasaram-II	NRSS XXVIII	47.41
29	400KV Varanasi-Sasaram	NRSS XXVIII	
30	400KV Kanpur(GIS)-Lucknow(765kV)-I	NRSS XXXII	30.95
31	400KV Kanpur(GIS)-Lucknow(765kV)-II	NRSS XXXII	
32	400KV Lucknow-Basti-I	NRSS-X	48.50
33	400KV Lucknow-Basti-II	NRSS-X	
34	400KV Bareilly-Shahjahanpur-I	NRTSS	93.54
35	400KV Bareilly-Shahjahanpur-II	NRTSS	
36	400KV Lucknow-Sohawal-I	NRTSS	
37	400KV Lucknow-Sohawal-II	NRTSS	
38	400KV Allahabad-Rihand-I	Rihand Transmission System	78.20
39	400KV Allahabad-Rihand-II	Rihand Transmission System	
40	400KV Bareilly-Lucknow(UP)	RIHAND TRANSMISSION SYSTEM	
41	400KV Allahabad-Kanpur-II	SINGRAULI TRANSMISSION SYSTEM	217.37
42	400KV Allahabad-Singrauli-I	Singrauli Transmission System	
43	400KV Allahabad-Singrauli-II	Singrauli Transmission System	
44	400KV Allahabad-Singrauli-III	Singrauli Transmission System	
45	400KV Fatehpur-Singrauli	Singrauli Transmission System	
46	400KV Singrauli-Lucknow(UP)	Singrauli Transmission System	
47	400KV Fatehpur-Panki-I	SINGRAULI TRANSMISSION SYSTEM & NRSS XXXII	
48	400KV Fatehpur-Panki-II	SINGRAULI TRANSMISSION SYSTEM & NRSS XXXII	
49	400KV Agra-Auraiya-I	Transmission System associated with Auraiya Gas Power Project	48.07
50	400KV Agra-Auraiya-II	Transmission System associated with Auraiya Gas Power Project	
		Total (in lacs)	1285.73

Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-5 :6 GW) [Barmer Complex] Barmer-II : 6GW (Solar)

S. No.	Items	Details
1.	**Name of Scheme**	**Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-5 :6 GW) [Barmer Complex] Barmer-II : 6GW (Solar)**
2.	**Scope of the scheme**	Details of Transmission scheme (for VSC and LCC alternatives) are enclosed in ***Annexure-I***
3.	**Depiction of the scheme on Transmission Grid Map**	Attached at **Exhibit-I**
4.	**Upstream/downstream system associated with the scheme**	765/400/220kV Fatehgarh-IV PS (Sec-2) PS and Barmer-I PS are under implementation as part of Rajasthan REZ Ph-IV (Part-2 :5.5GW) scheme. 765/400/220kV Fatehgarh-IV PS(Sec-2) is being interconnected to Sirohi S/s (Under implementation), Beawar S/s (Under implementation) and Fatehgarh-III PS (Sec-2) (Under Implementation) at 765kV level and Bhinmal(PG) & Barmer-I PS (Under Implementation) at 400kV level. 765/400/220kV Barmer-I PS is being interconnected to Sirohi PS (Under Implementation) & Merta-II PS (Under Implementation) at 765kV level and Fatehgarh-III PS (Sec-2) PS & Fatehgarh-IV PS(Sec-2) PS (Under Implementation) at 400kV level. South Kalamb S/s establishment with 2x1500 MVA, 765/400 kV ICTs with 2x330 MVAR, 765 kV bus reactor and 2x125 MVAR, 420 kV bus reactor alongwith LILO of Pune-III – Boisar-II 765 kV D/c line (Under bidding). Further, another network expansion scheme which includes Creation of New 765kV & 400kV Bus Sections-II & III through sectionalisation along with ICT augmentation (3x1500MVA, 765/400kV ICTs) at Bus Section -III at both 765kV & 400kV levels alongwith downstream 400kV lines at bus section-III from South Kallamb S/s with implementation timeframe of 24 months from effective date is required for dispersal of power from subject HVDC towards load centres in Maharashtra. (Under Approval)
5.	**Objective / Justification**	1. The present scheme comprises Transmission scheme for evacuation of power as part of Rajasthan REZ Ph-IV (Part-5 : 6GW) (Barmer Complex) 2. In the 36th CMETS-NR meeting held on 15.01.2025 It was deliberated that considering application received at Barmer-II PS, transmission scheme is evolved for as part of Rajasthan REZ Ph-IV (Part-5 : 6GW) (Barmer Complex) 3. As part of Renewable Energy Zones (REZs) identified by MNRE/SECI with a total capacity of 75 GW REZs in Rajasthan, evacuation system for 13GW was planned at Fatehgarh (5GW) & Barmer (8GW) complex. Transmission scheme for Rajasthan REZ Ph-IV (Part-2:5.5GW) (Jaisalmer/Barmer Complex) was approved in 14th NCT

S. No.	Items	Details
		meeting for injection at Fatehgarh-IV PS (4GW) & Barmer-I PS (1.5GW) in Rajasthan and also under implementation. 4. Further, for evacuation of power beyond 5.5GW from Fatehgarh-IV PS/Barmer-I PS, transmission system for 3.5GW was approved in 19th NCT meeting, thus making the total approved capacity of 9GW (5.5GW+3.5GW)) at Fatehgarh/Barmer complex. 5. In the joint study meeting held on 28.12.23 & 09.01.24, CTU stated that as per committee report Barmer-II PS was planned for 6GW RE potential (2GW BESS capacity) with 4GW evacuation capacity. In 27th CMETS-NR meeting held on 10.01.24, SECI informed that at present there is no clear visibility for RE projects with BESS before 2027 as award process will take time (1-2 years). In view of that 7.5 GW RE potential (solar) remains untapped due to non-materialisation of BESS capacity (Fatehgarh- IV:4GW+Barmer-I: 1.5GW+Barmer-II: 2GW). Accordingly, it was suggested that 2 GW additional RE potential may be considered for planning of transmission scheme from Barmer- II PS. 6. At present connectivity of about 6GW capacity is already granted at Barmer-II PS. Beyond that about 6 GW connectivity applications are granted/agreed for grant/received at Barmer-III PS. **7.** Based on earlier Grid India observation and recent planned scheme in other regions, studies files were modified for 2030 time frame. For evacuation of 6GW capacity from Barmer-II PS, HVDC system from Barmer-II PS is being planned comprises establishment of Barmer-II PS and HVDC line from Barmer-II PS to Western region (near South of Kalamb) as well as EHVAC system for injection of power at Barmer-II PS and onwards dispersal of power in Western region. Studies were carried out in 2030 time frame for solar maximized scenario and shared on 22.11.24 with all constituents. Grid-India vide mail dated 11.12.24 provided their observation on All India files as well as on proposed transmission scheme which were deliberated in detail in 36th CMETS-NR meeting. 8. As per discussion held in 25th NCT meeting on 28.11.24, both VSC & LCC technology are considered in the present proposal and to be discussed along with comparative analysis in NCT meeting. A comparative analysis of VSC and LCC technology (incl. Grid-India inputs) are enclosed in **Annexure-II.** 9. Grid-India in the 36th CMETS-NR meeting further reiterated that SCR of Barmer-II is on lower side even with considering 2 nos. of Syncon units. CTU stated that SCR of Barmer-II PS is about 3 which is under most pessimistic scenario with calculation methodology suggested by Grid-India, however in actual the SCR would be much higher. Additional as per our understanding and discussion with OEMs in earlier HVDC packages, minimum SCR requirement for HVDC operation for VSC technology is >1 whereas for LCC technology is > 2.5. The SCR of 400kv Barmer-II PS will further improve with future interconnection planned for Barmer-III PS (HVDC) with Barmer-II PS in next 5-6 months.

S. No.	Items	Details
		10. Grid-India vide mail 22.01.25 as well as in the meeting highlighted the following advantages of VSC based HVDC: ➢ Strong AC systems may not be required as there are no issues of commutation failures and the HVDC operates effectively in weak or even "islanded" grids. ➢ Capable of providing black start services: One LCC HVDC (Bhadla3-Fatehpur) is under implementation, having one VSC HVDC would help to harness advantages of both configurations. ➢ Minimal harmonics due to PWM-based control. Smaller filters required. ➢ Superior fault ride-through capability ➢ Can provide grid-forming services, voltage regulation, and frequency support i.e. ability to maintain appropriate system parameters in different renewable generation scenarios 11. Grid-India further stated in their comments that technically VSC based HVDC is a better alternative than LCC based HVDC keeping in view the low system strength at Barmer-II (SCR < 2.0 without SynCons and ~2.5 with SynCons) and the reactive power and oscillations issues already being faced in the complex. Grid-India further emphasized on control interaction studies, POD studies and filter arrangement modelling. 12. Grid-India stated that space for Syn Con and STATCOMs to be kept at Barmer-II PS as part of future scope so that in case, LCC HVDC is approved and any operational issues are faced in future, additional syncon or STATCOM can be provided for system strengthening. CEA agreed on the proposed scheme for taken up in NCT meeting with both configurations (LCC/VSC). In the CMETS-NR It was deliberated that the final decision regarding implementation of HVDC as LCC or VSC would be taken in NCT meeting. 13. Transmission scheme for evacuation of power as part of Rajasthan REZ Ph-IV (Part-5 : 6GW) (Barmer Complex) was also deliberated and agreed in 35th CMETS-WR meeting held on 30.01.2025 (MOM awaited.) 14. Considering above deliberations and receipt of connectivity application in Barmer complex, Transmission scheme for evacuation of power as part of Rajasthan REZ Ph-IV (Part-5 : 6GW) (Barmer Complex) was agreed in 36th CMETS-NR & 35th CMETS-WR meeting.
6.	**Estimated Cost**	**A. For LCC technology: Rs 26,500 Cr** **B. For VSC technology: Rs 38,000 Cr**
7.	**Need of phasing, if any**	Not Applicable
8.	**Implementation timeframe**	54 months from allocation of project (Pole-1: 48 months, Pole-2: 54 months)

S. No.	Items	Details
9.	**System Study for evolution of the proposal**	Studies discussed and agreed in following meeting • 36th CMETS-NR meeting held on 15.01.25 (MOM attached in **Annexure-III**) • 35th CMETS-WR meeting held on 30.01.25 (MOM awaited**)** Load flow results is attached at **Exhibit-II**

Exhibit-I

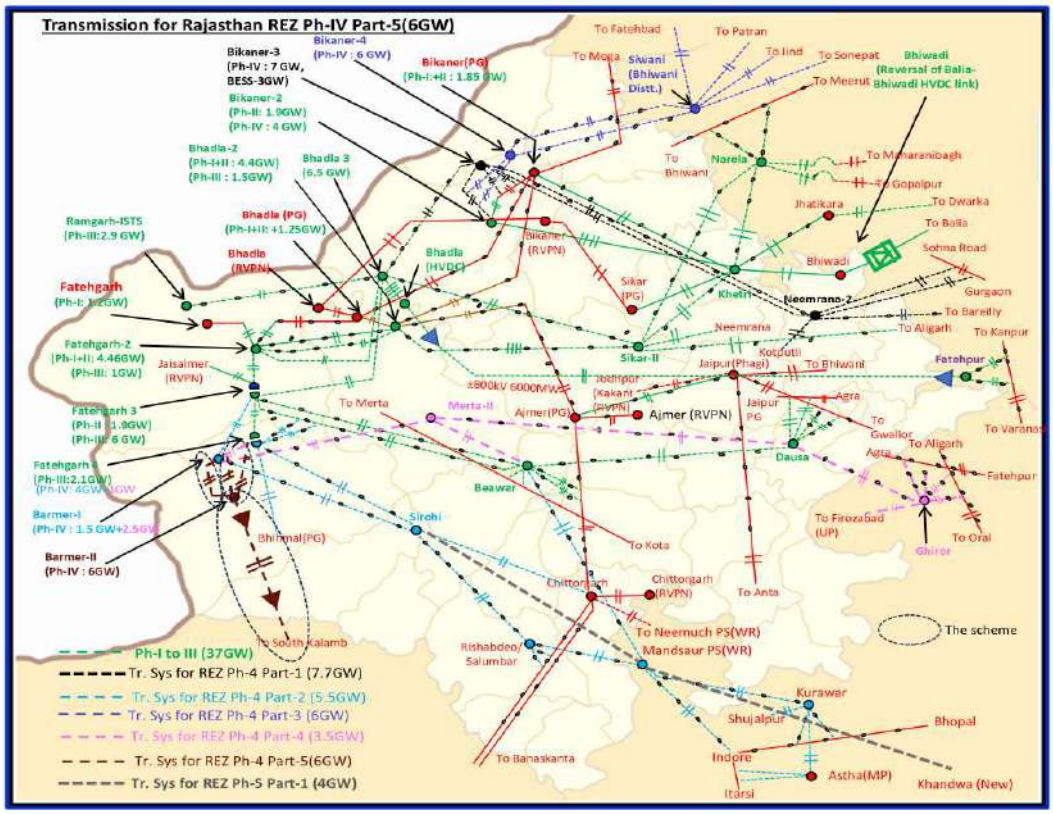


Fig : 1.Transmission system for evacuation of power as part of Rajasthan REZ Ph-IV (Part-5 : 6GW) (Barmer Complex)

Annexure-I

Proposed Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-5 :6 GW) [Barmer Complex] Barmer-II : 6GW (Solar)

A. Alternative-1 : LCC Configuration

Sl. No.	Description of Transmission Element	Scope of work (Type of Substation/Conductor capacity/km/no. of bays etc.)
1	Establishment of 400/220kV, 6x500MVA S/s at suitable location near Barmer (Barmer-II Substation) along with 2x125 MVAr bus reactor **Future provisions (excl. scope of present scheme):** ➢ 400 kV line bays along with switchable line reactor – 6 ➢ 400 kV line bays –4 nos. ➢ 400 kV Bus Reactor along with bays: 1 no. ➢ 400/220 kV ICT along with bays-4 Nos. ➢ 400 kV Sectionalization bays: 2 sets ➢ 220 kV line bays for connectivity of RE Applications -5 Nos. ➢ 220kV Sectionalization bay: 2 sets ➢ 220 kV BC (2 Nos.) & TBC (2 Nos.) ➢ 2 nos. of Syncon units at 400kV level along with 2 nos. of 400kV bays ➢ STATCOM (2x±300 MVAr, 4x125 MVAr MSC, 2x125 MVAr MSR) along with 400 kV bays (2 Nos.)	Barmer-II PS - AIS • 400/220 kV 500 MVA ICTs- 6 nos. • 400 kV ICT bays- 6 no. • 220 kV ICT bays- 6 no. • 125 MVAr Bus Reactor-2 nos. • 400 kV Bus reactor bays- 2 no. • 400kv line bays– 4 nos. (for RE interconnection) • 220KV line bays – 7 nos. (for RE connectivity) • 220kV Sectionalization bay: 1 set • 220 kV BC (2 Nos.) & TBC (2 Nos.)
2	LILO of both ckts of 400kV Fatehgarh-IV PS - Barmer-I PS at Barmer-II PS	Line Length ~ 20 km (LILO length ~ 20 km) • 400 kV line bays-4 nos. (at Barmer-II PS end)
3	400kV Barmer-II PS - Barmer-I PS D/c line (Quad)	Line Length – (~30 km) • 400 kV line bays at Barmer-II PS – 2 nos. • 400 kV line bays at Barmer-I PS S/s – 2 nos.
4	Establishment of 2 nos. 3000 MW (Bipole configuration), ± 800 kV Barmer-II (HVDC) [LCC] terminal station (2x1500 MW) at a suitable location near Barmer-II substation	HVDC terminal station (± 800 kV, 3000 MW (Bipole configuration)- 2nos.) ➢ 400/33 kV, 2x50 MVA transformers for exclusively supplying auxiliary power to HVDC terminal. ➢ 400kV bus sectionaliser -2 nos. (1 Set) at Barmer-II (HVDC) station
5	Establishment of 2 nos. 3000 MW (Bipole configuration), ± 800kV South Kalamb S/s (HVDC) [LCC] terminal station (2x1500 MW) at a suitable location near South of Kalamb	HVDC terminal station (± 800 kV, 3000 MW (Bipole configuration)- 2nos.) ➢ 400kV bus sectionaliser -2 nos. (1 Set) at South Kallamb (HVDC) station

Sl. No.	Description of Transmission Element	Scope of work (Type of Substation/Conductor capacity/km/no. of bays etc.)
6	±800 kV HVDC Bipole line (Hexa lapwing) between Barmer-II (HVDC) & South Kalamb (HVDC) (with parallel Dedicated Metallic Return) (capable to evacuate 6000MW) (1100kms) [with 100% reactive power capability]	Line Length – (~1100 km)
7	Augmentation of South Kalamb S/s# by 4x1500MVA, 765/400kV ICTs (3 on 400kV & 765kV Section-II & 1 No. on 400kV & 765kV Section-I) along with 2x330 MVAR, 765 kV bus reactor & 2x125 MVAR, 420 kV bus reactor on Section-II which will be established under a different network expansion scheme in WR as per details given below * (2x1500 MW HVDC Bipole-I to be terminated on 400 kV Sec-I & 2x1500 MW HVDC Bipole-II to be terminated on 400 kV Sec-II of South Kalamb S/s & both 765kV & 400kV bus sectionalizers to be kept normally closed)	• 765/400 kV 1500 MVA ICTs- 4 nos. • 765 kV ICT bays- 4 no. • 400 kV ICT bays- 4 no • 330 MVAr Bus Reactor-2 nos. (at bus section-II) • 765 kV Bus reactor bays- 2 nos. (at bus section-II) • 125 MVAr Bus Reactor-2 nos. (at bus section-II) • 400 kV Bus reactor bays- 2 nos. (at bus section-II)
8	2 nos. of Syncon units at 400kV level of Barmer-II PS (1 no. of SynCon unit comprises dynamic support of +300MVAr/-150MVAr (Minimum) & Short circuit contribution at PCC of 1200MVA (Minimum) **** Value of inertia constant (H) shall be provided in RfP document.***	• Syncon units – 2 nos. • 400kv line bays – 2nos.

#South Kalamb S/s establishment with 2x1500 MVA, 765/400 kV ICTs with 2x330 MVAR, 765 kV bus reactor and 2x125 MVAR, 420 kV bus reactor alongwith LILO of Pune-III – Boisar-II 765 kV D/c line (presently under bidding stage).

**** Network Expansion Scheme: Creation of New 765kV & 400kV Bus Sections-II & III through 765 kV Sectionalization bay: 2 sets & 400 kV Sectionalization bay: 2 sets alongwith 2x330 MVAR, 765 kV bus reactor & 2x125 MVAR, 420 kV bus reactor on Section-III is being proposed along with ICT augmentation (3x1500MVA, 765/400kV ICTs) at Bus Section -III at both 765kV & 400kV levels alongwith downstream 400kV lines at bus section-III from South Kalamb S/s with implementation timeframe of 24 months from effective date. [400kV Sectionaliser between Sections-I & II to be kept normally closed & between sections-II & III to be normally open. Further, 765kV sectionaliser between Sections-I & II & between II & III shall be kept normally closed. The 400kV sectionalisers can be closed under contingency conditions.].***

B. Alternative-2: VSC Configuration

Sl. No.	Description of Transmission Element	Scope of work (Type of Substation/Conductor capacity/km/no. of bays etc.)
1	Establishment of 400/220kV, 6x500MVA S/s at suitable location near Barmer (Barmer-II Substation) along with 2x125 MVAr bus reactor **<u>Future provisions (excl. scope of present scheme):</u>** ➢ 400 kV line bays along with switchable line reactor –6 ➢ 400 kV line bays –4 nos. ➢ 400 kV Bus Reactor along with bays: 1 no. ➢ 400/220 kV ICT along with bays-4 Nos. ➢ 400 kV Sectionalization bays: 2 sets ➢ 220 kV line bays for connectivity of RE Applications -5 Nos. ➢ 220kV Sectionalization bay: 2 sets ➢ 220 kV BC (2 Nos.) & TBC (2 Nos.) ➢ 2 nos. of Syncon units* at 400kV level along with 2 nos. of 400kV bays ➢ STATCOM (2x+300 MVAr, 4x125 MVAr MSC, 2x125 MVAr MSR) along with 400 kV bays (2 Nos.) ***1 no. of SynCon unit comprises dynamic support of +300MVAr/-150MVAr (Minimum) & Short circuit contribution at PCC of 1200MVA (Minimum). Value of inertia constant (H) shall be provided in RfP document***	Barmer-II PS - AIS • 400/220 kV 500 MVA ICTs- 6 nos. • 400 kV ICT bays- 6 no. • 220 kV ICT bays- 6 no. • 125 MVAr Bus Reactor-2 nos. • 400 kV Bus reactor bays- 2 no. • 400kv line bays– 4 nos. (for RE interconnection) • 220KV line bays – 7 nos. (for RE connectivity) • 220kV Sectionalization bay: 1 set • 220 kV BC (2 Nos.) & TBC (2 Nos.)
2	LILO of both ckts of 400kV Fatehgarh-IV PS - Barmer-I PS at Barmer-II PS	Line Length ~ 20 km (LILO length ~ 20 km) • 400 kV line bays-4 nos. (at Barmer-II PS end)
3	Establishment of 2 nos. 3000 MW (Double Bipole configuration), ±600kV Barmer-II (HVDC) [VSC] terminal station (2x1500 MW) at a suitable location near Barmer-II substation	HVDC terminal station (± 600 kV, 3000 MW (Double Bipole configuration)- 2nos.) ➢ 400/33 kV, 2x50 MVA transformers for exclusively supplying auxiliary power to HVDC terminal. ➢ 400kV bus sectionaliser -2 nos. (1 Set) at Barmer-II (HVDC) station
4	Establishment of 2 nos. 3000 MW (Double Bipole configuration), ± 600kV South Kalamb S/s (HVDC) [VSC] terminal station (2x1500 MW) at a suitable location near South of Kalamb	HVDC terminal station (± 600 kV, 3000 MW (Double Bipole configuration)- 2nos.)
5	±600 kV HVDC Double Bipole line (2xD/c) (Quad Lapwing on same tower) between Barmer-II (HVDC) & South Kalamb (HVDC) (with parallel Dedicated Metallic Return) (capable to evacuate 6000MW) (1100kms) [with 100% reactive power capability]	Line Length – (~1100 km)

Sl. No.	Description of Transmission Element	Scope of work (Type of Substation/Conductor capacity/km/no. of bays etc.)
6	Augmentation of South Kalamb S/s# by 4x1500MVA, 765/400kV ICTs (3 on 400kV & 765kV Section-II & 1 No. on 400kV & 765kV Section-I) along with 2x330 MVAR, 765 kV bus reactor & 2x125 MVAR, 420 kV bus reactor on Section-II which will be established under a different network expansion scheme in WR as per details given below* (2x1500 MW HVDC Bipole-I to be terminated on 400 kV Sec-I & 2x1500 MW HVDC Bipole-II to be terminated on 400 kV Sec-II of South Kalamb S/s & both 765kV & 400kV bus sectionalizers to be kept normally closed)	• 765/400 kV 1500 MVA ICTs- 4 nos. • 765 kV ICT bays- 4 no. • 400 kV ICT bays- 4 no • 330 MVAr Bus Reactor-2 nos. (at bus section-II) • 765 kV Bus reactor bays- 2 nos. (at bus section-II) • 125 MVAr Bus Reactor-2 nos. (at bus section-II) • 400 kV Bus reactor bays- 2 nos. (at bus section-II)

#South Kalamb S/s establishment with 2x1500 MVA, 765/400 kV ICTs with 2x330 MVAR, 765 kV bus reactor and 2x125 MVAR, 420 kV bus reactor alongwith LILO of Pune-III – Boisar-II 765 kV D/c line is presently under bidding stage).

**** Network Expansion Scheme: Creation of New 765kV & 400kV Bus Sections-II & III through 765 kV Sectionalization bay: 2 sets & 400 kV Sectionalization bay: 2 sets alongwith 2x330 MVAR, 765 kV bus reactor & 2x125 MVAR, 420 kV bus reactor on Section-III is being proposed along with ICT augmentation (3x1500MVA, 765/400kV ICTs) at Bus Section -III at both 765kV & 400kV levels alongwith downstream 400kV lines at bus section-III from South Kalamb S/s with implementation timeframe of 24 months from effective date. [400kV Sectionaliser between Sections-I & II to be kept normally closed & between sections-II & III to be normally open. Further, 765kV sectionaliser between Sections-I & II & between II & III shall be kept normally closed. The 400kV sectionalisers can be closed under contingency conditions.]***

Annexure -II

Feature	LCC-HVDC	VSC-HVDC
Important parameters for technology adoption		
Reactive Power Requirements	Requires substantial reactive power compensation (e.g., Filter Banks, SVC, STATCOM, SynCons). The maximum reactive power required will be almost 60% of rated power	Capable of independent reactive power control. Generally, no external compensation needed. (with inbuilt STATCOM mode of operation)
Grid Strength Dependency	Strong AC systems at both rectifier and inverter end are necessary for commutation. May fail in weak grids (SCR > 2.5)	Strong AC systems are not necessary since there are no issues of commutation failures. Operates effectively in weak or even "islanded" grids.
Network restart time during DC line faults	Less (depend on de-ionization time) in milli-secs (<500 ms)	>1 sec (1.5 secs in case of HVDC Pugalur – Trichur for Line to Ground faults); highly dependent on AC side circuit breaker opening/reclosing. DC line Fault recovery time in VSC is of about ~1.5 to 1.8 Sec (for 1100 km)
Efficiency/Losses	Slightly higher efficiency in steady-state operation. Lower line and converter losses	Lower efficiency due to switching losses in IGBTs. Line losses are about 25-30% higher in VSC (for1000km)
Cost	Lower initial cost for converters, but higher for filters and compensators.	Higher initial cost for converters, lower for ancillary components.
Other technological Differences	**LCC-HVDC**	**VSC-HVDC**
Converter Technology	Uses semiconductors which are capable of withstanding voltage in both direction (Thyristor-based)	Uses semiconductors which are capable of blocking unidirectional voltage only (IGBT with antiparallel diodes or similar switching devices)
Direction of Current and power	Current flow is allowed in single direction. Power direction is changed by changing the voltage polarity.	Current flow can be bidirectional. Power direction is changed by changing the direction of current flow.
Switching Philosophy	Turned on by firing pulses but turn off with assistance of line voltage	Turned on and turn off can be controlled by firing pulses.
Power transfer capability	Thyristors have huge current carrying capability, huge amount of power transfer is possible using LCC technology	IGBTs have lesser current carrying capability and hence the power flow capable is limited.
Source	LCC appears like a current source to AC system (Inductive energy storage)	VSC appears like a voltage source to AC system (Capacitive energy storage)
Black Start Capability	Not suitable for black start without additional support.	Capable of providing black start services.
Area	The AC and DC yard of LCC are spread over a large area.	Area requirement is much lesser for the same power flow since there are no AC and DC filters

Harmonics	Harmonics are quite high. Harmonics are present both on the AC as well as DC side.; requires large filters.	Minimal harmonics due to PWM-based control. Smaller filters required.
Transformer size	Converter transformers are used which are heavier, bulkier and costlier.	Normal AC transformers could be used as there is no DC stress and harmonics in the secondary
Power Reversal	Possible. Requires changing DC polarity for power reversal.	Possible (seamless). Achieved by changing current direction without altering DC polarity.
Fault Ride-Through	Limited ability to ride through grid faults. May trip under disturbances.	Superior fault ride-through capability.
Overload Capability	Possible (usually 10-20% for short durations).	Not available as standard, may be full converter rating (depends on standard rating vs extra overload expected)
Converter Footprint	Large, due to filters, reactive power compensators, and transformers.	Compact, as filters and external compensators are minimized.
Grid Support Functions	Limited (e.g., no independent voltage control).	Can provide grid-forming services, voltage regulation, and frequency support. ability to maintain appropriate system parameters in different renewable generation scenarios
Bidirectional Power Flow	Achieved but with slower transition.	Seamless bidirectional power flow

सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड
(पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड के स्वामित्व में)
(भारत सरकार का उद्यम)
CENTRAL TRANSMISSION UTILITY OF INDIA LTD.
(A wholly owned subsidiary of Power Grid Corporation of India Limited)
(A Government of India Enterprise)

Ref: CTU/N/00/CMETS_NR/36 **Date:** 24-02-2025

As per distribution list

Subject: 36th Consultation Meeting for Evolving Transmission Schemes in Northern Region-Minutes of Meeting

Dear Sir/Ma'am,

Please find enclosed the minutes of the 36th Consultation Meeting for Evolving Transmission Schemes in Northern Region held on 15th January 2025 (Wednesday) through virtual mode.

The minutes are also available at CTU website (www.ctuil.in)

Thanking you,

Yours faithfully,

(Partha Sarathi Das)
Sr. General Manager (CTU)

response has been received till date. The bidders had not shown any interest in the above project due to a very challenging terrain as well as non-standard rating of transformer. Bidders had shown their apprehension for supply of transformer rating of 3x105MVA single phase units (315MVA) at higher altitude and it is learnt from their pre-bid meetings that supply of this type of transformer itself will take 21 months and further require considerable time for execution.

Considering the above challenges POWERGRID requested CTUIL to consider revising schedule with a fresh schedule project to 30 months from revised CTUIL OM. In view of the above developments, JKPTCL may review its requirement and completion schedule.

JKPTCL stated that Mirbazar capacity augmentation (475VA to 630MVA) will likely to come up by Mar'26. In addition Salal S/s is being implemented in TBCB with commissioning schedule of Mar'27, however ICT augmentation may be required by Mar'26 and POWERGRID can avail that time for ICT augmentation.

POWERGRID stated that they would require at least 30 months (24 months for supply and 6 months for execution) from revised OM date. CTU enquired about present bid status of augmentation of ICT. POWERGRID stated that present bid will be annulled and now in new bid, transformer supply and execution packages kept separately. CTU stated that with present bid status, it is envisaged that ICT would not be available before Aug'27. JKPTCL stated that with increased load of Mirbazar S/s, New Wanpoh ICTs may cater the load, however with their proposed Salal S/s, ICT augmentation is required with best effort schedule of Mar'27. CEA requested POWERGRID to expedite the implementation for reliable dispersal of power in J&K.

CTU stated that recently lot of developments & infrastructure activities were carried out in J&K and with above developments in roads, tunnels, bridges, there may be feasibility of transportation of 315MVA unit rather than 105MVA (Single phase) unit.

POWERGRID stated that Mar'27 implementation schedule is not feasible due to 3 months non working period in winters and therefore it is suggested that Jun'27 schedule may be kept for ICT augmentation. POWERGRID emphasized that single phase configuration may be considered at present as no three phase transformer yet transported through new infrastructure. CTU stated that there is issue in supply and delivery of single phase 105MVA units due to non standard size, therefore to expedite the implementation possibility of 315MVA transformer transportation on new infrastructure (tunnel/road/bridges) may be explored by POWERGRID and informed it within 1 month.

JKPTCL stated that they also faced issue of 3 months non working season in winters and therefore based on tendering issues in 105MVA unit as well as POWERGRID request for extension of commissioning of ICT augmentation, Jun'27 schedule may be kept for ICT augmentation.

G9. Transmission scheme for evacuation of power as part of Rajasthan REZ Ph-IV (Part-5 : 6GW) (Barmer Complex)

It was stated that Renewable Energy Zones (REZs) were identified by MNRE/SECI with a total capacity of 181.5 GW for likely benefits by the year 2030 in eight states, which includes 75GW REZ potential in Rajasthan comprising of 15 GW Wind and 60 GW Solar. In this

regard a Committee on Transmission Planning for RE was constituted by MOP for planning of the requisite Inter State Transmission System required for the targeted RE capacity by 2030 for which a Comprehensive transmission plan for evacuation of 75GW RE potential from Rajasthan evolved.

Details of schemes approved/Under Planning scheme as part of above is as under:

S.No	Transmission Scheme	RE Potential	Status
A	**Under Bidding/ Approved**		
1	Rajasthan REZ Ph-IV (Part-1 :7.7GW) (Bikaner Complex)	14 GW (Solar 14GW, BESS:6GW) Bikaner-II : 3.7GW Bikaner-III: 4GW	Under Implementation
2	Rajasthan REZ Ph-IV (Part-2 :5.5GW) (Jaisalmer/Barmer Complex)	5.5GW (Solar) Fatehgarh-IV: 4 GW Barmer-I: 1.5 GW	Under Implementation
3	Rajasthan REZ Ph-IV (Part-3 :6GW) (Bikaner Complex)	6 GW (Solar) Bikaner-IV:6GW	Under Implementation
4	Rajasthan REZ Ph-IV (Part-4 :3.5GW) (Jaisalmer/Barmer Complex)	3.5 GW (Solar) Fatehgarh-IV: 1 GW Barmer-I: 2.5 GW	Under Implementation
5	Rajasthan REZ Ph-V (Part-1: 4GW) (Sirohi/Nagaur Complex)	4 GW (Solar) Sirohi: 2 GW Nagaur: 2 GW	Under Bidding
B	**Planned/Under Planning**		
1	**Rajasthan REZ Ph-IV (Part-5 : 6GW) (Barmer Complex)**	**6 GW (Solar)** **Barmer-II : 6GW**	**Timeframe : 2029 (HVDC)**
2	Rajasthan REZ Ph-IV (Part-6 : 6GW) (Bikaner Complex)	6 GW (Solar) Bikaner-V: 6 GW	Timeframe : 2030 (HVDC)
3	Rajasthan REZ Ph-V (Part-7 : 6GW) (Bhadla Complex)	6 GW (Solar) Bhadla-IV: 6 GW	

4	Rajasthan REZ Ph-V (Part-2 : 6GW) (Ramgarh Complex)	6 GW (Solar) Ramgarh-II: 6 GW	

A Joint study meeting was held on 09.05.24 with stakeholders in NR to deliberate & finalize the Transmission system for evacuation of power from Rajasthan REZ Ph-V (Part-1 :4 GW) [Sirohi/Nagaur] Complex, Transmission scheme for Rajasthan REZ Ph-IV (Part-5 : 6GW) (Barmer Complex) & Rajasthan REZ Ph-IV (Part-6 : 6GW) (Bhadla/Bikaner Complex).

In the above Joint study meeting, Grid-India observations on proposed transmission schemes as well as on All India Study files (2027 & 2029 time frame) were deliberated and same was also communicated by Grid-India vide their mail dated 09.05.24. It was decided in the meeting that comprehensive schemes discussed may be segregated in two phases (Phase-1: Transmission scheme for Rajasthan REZ Ph-V (Part-1: 4GW) (Sirohi/Nagaur Complex) & Phase-2: Transmission scheme for Rajasthan REZ Ph-IV (Part-5 : 6GW) (Barmer Complex) & Rajasthan REZ Ph-IV (Part-6 : 6GW) (Bikaner Complex). Accordingly, Transmission scheme for Rajasthan REZ Ph-V (Part-1: 4GW) (Sirohi/Nagaur Complex) was agreed in 30th CMETS-NR meeting held on 18.06.24.

Considering application received at Barmer-II PS, transmission scheme is evolved for as part of Rajasthan REZ Ph-IV (Part-5 : 6GW) (Barmer Complex) and being discussed in present meeting.

Transmission scheme for Rajasthan REZ Ph-IV (Part-5 : 6GW) (Barmer Complex)

As part of Renewable Energy Zones (REZs) identified by MNRE/SECI with a total capacity of 75 GW REZs in Rajasthan, evacuation system for 13GW was planned at Fatehgarh (5GW) & Barmer (8GW) complex. Transmission scheme for Rajasthan REZ Ph-IV (Part-2:5.5GW) (Jaisalmer/Barmer Complex) was approved in 14th NCT meeting for injection at Fatehgarh-IV PS (4GW) & Barmer-I PS (1.5GW) in Rajasthan and also under implementation

For evacuation of power beyond 5.5GW from Fatehgarh-IV PS/Barmer-I PS, hybrid transmission system (EHVAC(3.5GW)+HVDC(6GW)) from Fatehgarh/Barmer complex was planned. EHVAC evacuation system comprises 3.5 GW capacity transmission system from Fatehgarh-IV/Barmer-I (thus making total planned capacity of 9GW (5.5GW+3.5GW)) was approved in 19th NCT meeting

In the joint study meeting held on 28.12.23 & 09.01.24, CTU stated that as per committee report Barmer-II PS was planned for 6GW RE potential (2GW BESS capacity) with 4GW evacuation capacity. In 27th CMETS-NR meeting held on 10.01.24, SECI informed that at present there is no clear visibility for RE projects with BESS before 2027 as award process will take time (1-2 years). In view of that 7.5 GW RE potential (solar) remains untapped due to non-materialisation of BESS capacity (Fatehgarh- IV:4GW+Barmer-I : 1.5GW+Barmer-II: 2GW). Accordingly, it was suggested that 2 GW additional RE potential may be considered for planning of transmission scheme from Barmer- II

PS. SECI informed that they will provide their inputs on enhancement of potential at Barmer- II PS (4GW to 6GW) in consultation with MNRE and RE developers. SECI may update on the same.

At present connectivity of about 6GW capacity is already granted at Barmer-II PS. Beyond that about 1.5 GW connectivity applications are granted and 2.7GW application received for connectivity at Barmer-III PS .

Based on earlier Grid India observation and recent planned scheme in other regions, studies files were modified for 2030 time frame. For evacuation of 6GW capacity from Barmer-II PS, HVDC system from Barmer-II PS is being planned comprises establishment of Barmer-II PS and HVDC line from Barmer-II PS to Western region (near South of Kalamb) as well as EHVAC system for injection of power at Barmer-II PS and onwards dispersal of power in Western region. Studies were carried out in 2030 time frame in for solar maximized scenario and shared on 22.11.24 with all constituents. Grid-India vide mail dated 11.12.24 provided their observation on All India files as well as on proposed transmission scheme (copy of Grid-India observations is enclosed in **Annexure-B1**). The main observation of Grid-India is as under :

- SCR & inertia requirement at Barmer-I PS
- Comparison of VSC and LCC technology
- Justification of termination of HVDC at South Kalamb
- Congestion in WR & SR-WR
- Inputs on load generation balance

Reply of Grid-India observations for Rajasthan REZ Ph-IV (Part-5 : 6GW) (Barmer Complex) is enclosed in **Annexure-B2.** As per discussion held in 25th NCT meeting on 28.11.24, both VSC & LCC technology are considered in the present proposal and to be discussed along with comparative analysis in NCT meeting. A comparative analysis of VSC and LCC technology (incl. Grid-India inputs) are as under:

Feature	LCC-HVDC	VSC-HVDC
Important parameters for technology adoption		
Reactive Power Requirements	Requires substantial reactive power compensation (e.g., Filter Banks, SVC, STATCOM, SynCons). The maximum reactive power required will be almost 60% of rated power	Capable of independent reactive power control. Generally, no external compensation needed. (with inbuilt STATCOM mode of operation)
Grid Strength Dependency	Strong AC systems at both rectifier and inverter end are necessary for commutation. may fail in weak grids (SCR > 2.5)	Strong AC systems are not necessary since there are no issues of commutation failures.

		Operates effectively in weak or even "islanded" grids.
Network restart time during DC line faults	Less (depend on de-ionization time) in milli-secs (<500 ms)	>1 sec (1.5 secs in case of HVDC Pugalur – Trichur for Line to Ground faults); highly dependent on AC side circuit breaker opening/reclosing. DC line Fault recovery time in VSC is of about ~1.5 to 1.8 Sec (for 1100 km)
Efficiency/Losses	Slightly higher efficiency in steady-state operation. Lower line and converter losses	Lower efficiency due to switching losses in IGBTs. Line losses are about 25-30% higher in VSC (for1000km)
Cost	Lower initial cost for converters, but higher for filters and compensators. Overall initial cost is lower in LCC technology.	Higher initial cost for converters, lower for ancillary components. Overall initial cost is higher in VSC technology.
Other technological Differences	**LCC-HVDC**	**VSC-HVDC**
Converter Technology	Uses semiconductors which are capable of withstanding voltage in both direction (Thyristor-based)	Uses semiconductors which are capable of blocking unidirectional voltage only (IGBT with antiparallel diodes or similar switching devices)
Direction of Current and power	Current flow is allowed in single direction. Power direction is changed by changing the voltage polarity.	Current flow can be bidirectional. Power direction is changed by changing the direction of current flow.
Switching Philosophy	Turned on by firing pulses but turn off with assistance of line voltage	Turned on and turn off can be controlled by firing pulses.
Power transfer capability	Thyristors have huge current carrying capability, huge amount of power transfer is possible using LCC technology	IGBTs have lesser current carrying capability and hence the power flow capable is limited.
Source	LCC appears like a current source to AC system (Inductive energy storage)	VSC appears like a voltage source to AC system (Capacitive energy storage)
Black Start Capability	Not suitable for black start without additional support.	Capable of providing black start services.

Area	The AC and DC yard of LCC are spread over a large area.	Area requirement is much lesser for the same power flow since there are no AC and DC filters
Harmonics	Harmonics are quite high. Harmonics are present both on the AC as well as DC side.; requires large filters.	Minimal harmonics due to PWM-based control. Smaller filters required.
Transformer size	Converter transformers are used which are heavier, bulkier and costlier.	Normal AC transformers could be used as there is no DC stress and harmonics in the secondary
Power Reversal	Possible. Requires changing DC polarity for power reversal.	Possible (seamless). Achieved by changing current direction without altering DC polarity.
Fault Ride-Through	Limited ability to ride through grid faults. May trip under disturbances.	Superior fault ride-through capability.
Overload Capability	Possible (usually 10-20% for short durations).	Not available as standard, may be full converter rating (depends on standard rating vs extra overload expected)
Converter Footprint	Large, due to filters, reactive power compensators, and transformers.	Compact, as filters and external compensators are minimized.
Grid Support Functions	Limited (e.g., no independent voltage control).	Can provide grid-forming services, voltage regulation, and frequency support. ability to maintain appropriate system parameters in different renewable generation scenarios
Bidirectional Power Flow	Achieved but with slower transition.	Seamless bidirectional power flow

Details of HVDC VSC configuration (Double Bipole with parallel DMR/ Parallel Bipole with parallel DMR) is enclosed in **Annexure B3**.

Grid-India in the meeting further reiterated that SCR of Barmer-II is on lower side even with considering 2 nos. of Syncon units. CTU stated that SCR of Barmer-II PS is about 3 which is under most pessimistic scenario with calculation methodology suggested by Grid-India, however in actual the SCR would be much higher. Additional as per our understanding and discussion with OEMs in earlier HVDC packages, minimum SCR requirement for HVDC operation for VSC technology is >1 whereas for LCC technology is > 2.5. The SCR of

400kv Barmer-II PS will further improve with future interconnection planned for Barmer-III PS (HVDC) with Barmer-II PS in next 5-6 months.

Grid-India vide mail 22.01.25 as well as in the meeting highlighted the following advantages of VSC based HVDC.

- Strong AC systems may not be required as there are no issues of commutation failures and the HVDC operates effectively in weak or even "islanded" grids.
- Capable of providing black start services: One LCC HVDC (Bhadla3-Fatehpur) is under implementation, having one VSC HVDC would help to harness advantages of both configurations
- Minimal harmonics due to PWM-based control. Smaller filters required.
- Superior fault ride-through capability
- Can provide grid-forming services, voltage regulation, and frequency support i.e. ability to maintain appropriate system parameters in different renewable generation scenarios

Grid-India in the comments received on 22.01.25 (**copy enclosed in Annexure B4**) further emphasized that technically VSC based HVDC is a better alternative than LCC based HVDC keeping in view the low system strength at Barmer-II (SCR < 2.0 without SynCons and ~2.5 with SynCons) and the reactive power and oscillations issues already being faced in the complex. Grid -India further emphasized on control interaction studies, POD studies and filter arrangement modelling. Reply of Grid-India observations for Rajasthan REZ Ph-IV (Part-5 : 6GW) (Barmer Complex) is already enclosed in **Annexure-B2.**

Grid-India in the meeting stated that they do not have any major observation on revised cases, however there are minor observations on LGB which they will communicate in meanwhile time. Grid-India emphasis that space for STATCOMs & additional Syn Cons and to be kept at Barmer-II PS as part of future scope so that in case, LCC HVDC is approved and any operational issues are faced in future, additional syncon or STATCOM can be provided for system strengthening. CEA agreed on the proposed scheme for taken up in NCT meeting with both configurations (LCC/VSC). No other comments were received from stakeholders in the meeting. It was deliberated that the final decision regarding implementation of HVDC as LCC or VSC would be taken in NCT meeting.

Considering grant of connectivity to new RE generators/applicants in Barmer complex, following transmission scheme is agreed for evacuation of power from Rajasthan REZ Ph-IV (Part-5 : 6GW)

Proposed Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-5 :6 GW) [Barmer Complex] Barmer-II : 6GW (Solar)

A. Alternative-1 : LCC Configuration

Sl. No.	Description of Transmission Element	Scope of work (Type of Substation/Conductor capacity/km/no. of bays etc.)
1	Establishment of 400/220kV, 6x500MVA S/s at suitable location near Barmer (Barmer-II Substation) along with 2x125 MVAr bus reactor **Future provisions (excl. scope of present scheme):** ➢ 400 kV line bays along with switchable line reactor –6 ➢ 400 kV line bays –4 nos. ➢ 400 kV Bus Reactor along with bays: 1 no. ➢ 400/220 kV ICT along with bays-4 Nos. ➢ 400 kV Sectionalization bays: 2 sets ➢ 220 kV line bays for connectivity of RE Applications -5 Nos. ➢ 220kV Sectionalization bay: 2 sets ➢ 220 kV BC (2 Nos.) & TBC (2 Nos.) ➢ 2 nos. of Syncon units at 400kV level along with 2 nos. of 400kV bays ➢ STATCOM (2x±300 MVAr, 4x125 MVAr MSC, 2x125 MVAr MSR) along with 400 kV bays (2 Nos.)	Barmer-II PS - AIS • 400/220 kV 500 MVA ICTs- 6 nos. • 400 kV ICT bays- 6 no. • 220 kV ICT bays- 6 no. • 125 MVAr Bus Reactor-2 nos. • 400 kV Bus reactor bays- 2 no. • 400kv line bays– 4 nos. (for RE interconnection) • 220KV line bays – 7 nos. (for RE connectivity) • 220kV Sectionalization bay: 1 set • 220 kV BC (2 Nos.) & TBC (2 Nos.)
2	LILO of both ckts of 400kV Fatehgarh-IV PS - Barmer-I PS at Barmer-II PS	Line Length ~ 20 km (LILO length ~ 20 km) • 400 kV line bays-4 nos. (at Barmer-II PS end)
3	400kV Barmer-II PS - Barmer-I PS D/c line (Quad)	Line Length – (~30 km) • 400 kV line bays at Barmer-II PS – 2 nos. • 400 kV line bays at Barmer-I PS S/s – 2 nos.
4	Establishment of 2 nos. 3000 MW (Bipole configuration), ± 800 kV Barmer-II (HVDC) [LCC] terminal station (2x1500 MW) at a suitable location near Barmer-II substation	HVDC terminal station (± 800 kV, 3000 MW (Bipole configuration)- 2nos.) ➢ 400/33 kV, 2x50 MVA transformers for exclusively supplying auxiliary power to HVDC terminal. ➢ 400kV bus sectionaliser -2 nos. (1 Set) at Barmer-II (HVDC) station

Sl. No.	Description of Transmission Element	Scope of work (Type of Substation/Conductor capacity/km/no. of bays etc.)
5	Establishment of 2 nos. 3000 MW (Bipole configuration), ± 800kV South Kalamb S/s (HVDC) [LCC] terminal station (2x1500 MW) at a suitable location near South of Kalamb	HVDC terminal station (± 800 kV, 3000 MW (Bipole configuration)- 2nos.) ➢ 400kV bus sectionaliser -2 nos. (1 Set) at South Kallamb (HVDC) station
6	±800 kV HVDC Bipole line (Hexa lapwing) between Barmer-II (HVDC) & South Kalamb (HVDC) (with parallel Dedicated Metallic Return) (capable to evacuate 6000MW) (1100kms) [with 100% reactive power capability]	Line Length – (~1100 km)
7	Augmentation of South Kalamb S/s# by 4x1500MVA, 765/400kV ICTs (3 on 400kV & 765kV Section-II & 1 No. on 400kV & 765kV Section-I) alongwith 2x330 MVAR, 765 kV bus reactor & 2x125 MVAR, 420 kV bus reactor on Section-II which will be established under a different network expansion scheme in WR as per details given below. * (2x1500 MW HVDC Bipole-I to be terminated on 400 kV Sec-I & 2x1500 MW HVDC Bipole-II to be terminated on 400 kV Sec-II of South Kallamb S/s & both 765kV & 400kV bus sectionalizers to be kept normally closed)	• 765/400 kV 1500 MVA ICTs- 4 nos. • 765 kV ICT bays- 4 no. • 400 kV ICT bays- 4 no • 330 MVAr Bus Reactor-2 nos. (at bus section-II) • 765 kV Bus reactor bays- 2 nos. (at bus section-II) • 125 MVAr Bus Reactor-2 nos. (at bus section-II) • 400 kV Bus reactor bays- 2 nos. (at bus section-II)
8	2 nos. of Syncon units at 400kV level of Barmer-II PS (1 no. of SynCon unit comprises dynamic support of +300MVAr/-150MVAr (Minimum) & Short circuit contribution at PCC of 1200MVA (Minimum) ** Value of inertia constat (H) shall be provided in RfP document.*	• Syncon units – 2 nos. • 400kv line bays – 2nos.

#South Kalamb S/s establishment with 2x1500 MVA, 765/400 kV ICTs with 2x330 MVAR, 765 kV bus reactor and 2x125 MVAR, 420 kV bus reactor alongwith LILO of Pune-III – Boisar-II 765 kV D/c line (presently under bidding stage).

**** Network Expansion Scheme: Creation of New 765kV & 400kV Bus Sections-II & III through 765 kV Sectionalization bay: 2 sets & 400 kV Sectionalization bay: 2 sets alongwith 2x330 MVAR, 765 kV bus reactor & 2x125 MVAR, 420 kV bus reactor on Section-III is being proposed along with ICT augmentation (3x1500MVA, 765/400kV ICTs) at Bus Section -III at both 765kV & 400kV levels alongwith downstream 400kV lines at bus section-III from South Kallamb S/s with implementation timeframe of 24 months from effective date. [400kV Sectionaliser between Sections-I & II to be kept normally closed & between sections-II & III to be normally open. Further, 765kV sectionaliser between***

Sections-I & II & between II & III shall be kept normally closed. The 400kV sectionalisers can be closed under contingency conditions. Further, all space provisions as per RfP document of South Kalamb S/s shall be kept while implementing this scheme].

B. Alternative-2: VSC Configuration

Sl. No.	Description of Transmission Element	Scope of work (Type of Substation/Conductor capacity/km/no. of bays etc.)
1	Establishment of 400/220kV, 6x500MVA S/s at suitable location near Barmer (Barmer-II Substation) along with 2x125 MVAr bus reactor **<u>Future provisions (excl. scope of present scheme):</u>** ➢ 400 kV line bays along with switchable line reactor –6 ➢ 400 kV line bays –4 nos. ➢ 400 kV Bus Reactor along with bays: 1 no. ➢ 400/220 kV ICT along with bays-4 Nos. ➢ 400 kV Sectionalization bays: 2 sets ➢ 220 kV line bays for connectivity of RE Applications -5 Nos. ➢ 220kV Sectionalization bay: 2 sets ➢ 220 kV BC (2 Nos.) & TBC (2 Nos.) ➢ 2 nos. of Syncon units at 400kV level along with 2 nos. of 400kV bays ➢ STATCOM (2x+300 MVAr, 4x125 MVAr MSC, 2x125 MVAr MSR) along with 400 kV bays (2 Nos.) ***(1 no. of SynCon unit comprises dynamic support of +300MVAr/-150MVAr (Minimum) & Short circuit contribution at PCC of 1200MVA (Minimum). Value of inertia constat (H) shall be provided in RfP document).***	Barmer-II PS - AIS • 400/220 kV 500 MVA ICTs- 6 nos. • 400 kV ICT bays- 6 no. • 220 kV ICT bays- 6 no. • 125 MVAr Bus Reactor-2 nos. • 400 kV Bus reactor bays- 2 no. • 400kv line bays– 4 nos. (for RE interconnection) • 220KV line bays – 7 nos. (for RE connectivity) • 220kV Sectionalization bay: 1 set • 220 kV BC (2 Nos.) & TBC (2 Nos.)
2	LILO of both ckts of 400kV Fatehgarh-IV PS - Barmer-I PS at Barmer-II PS	Line Length ~ 20 km (LILO length ~ 20 km) • 400 kV line bays-4 nos. (at Barmer-II PS end)
3	Establishment of 2 nos. 3000 MW (Double Bipole configuration), ±600kV Barmer-II (HVDC) [VSC] terminal station (2x1500 MW) at a suitable location near Barmer-II substation	HVDC terminal station (± 600 kV, 3000 MW (Double Bipole configuration)- 2nos.)

Sl. No.	Description of Transmission Element	Scope of work (Type of Substation/Conductor capacity/km/no. of bays etc.)
		➢ 400/33 kV, 2x50 MVA transformers for exclusively supplying auxiliary power to HVDC terminal. ➢ 400kV bus sectionaliser -2 nos. (1 Set) at Barmer-II (HVDC) station
4	Establishment of 2 nos. 3000 MW (Double Bipole configuration), ± 600kV South Kalamb S/s (HVDC) [VSC] terminal station (2x1500 MW) at a suitable location near South of Kalamb	HVDC terminal station (± 600 kV, 3000 MW (Double Bipole configuration)- 2nos.)
5	±600 kV HVDC Double Bipole line (2xD/c) (Quad Lapwing on same tower) between Barmer-II (HVDC) & South Kalamb (HVDC) (with parallel Dedicated Metallic Return) (capable to evacuate 6000MW) (1100kms) [with 100% reactive power capability]	Line Length – (~1100 km)
6	Augmentation of South Kalamb S/s# by 4x1500MVA, 765/400kV ICTs (3 on 400kV & 765kV Section-II & 1 No. on 400kV & 765kV Section-I) alongwith 2x330 MVAR, 765 kV bus reactor & 2x125 MVAR, 420 kV bus reactor on Section-II which will be established under a different network expansion scheme in WR as per details given below. * (2x1500 MW HVDC Bipole-I to be terminated on 400 kV Sec-I & 2x1500 MW HVDC Bipole-II to be terminated on 400 kV Sec-II of South Kallamb S/s & both 765kV & 400kV bus sectionalizers to be kept normally closed)	• 765/400 kV 1500 MVA ICTs- 4 nos. • 765 kV ICT bays- 4 no. • 400 kV ICT bays- 4 no • 330 MVAr Bus Reactor-2 nos. (at bus section-II) • 765 kV Bus reactor bays- 2 nos. (at bus section-II) • 125 MVAr Bus Reactor-2 nos. (at bus section-II) • 400 kV Bus reactor bays- 2 nos. (at bus section-II)

#South Kalamb S/s establishment with 2x1500 MVA, 765/400 kV ICTs with 2x330 MVAR, 765 kV bus reactor and 2x125 MVAR, 420 kV bus reactor alongwith LILO of Pune-III – Boisar-II 765 kV D/c line is presently under bidding stage).

**** Network Expansion Scheme: Creation of New 765kV & 400kV Bus Sections-II & III through 765 kV Sectionalization bay: 2 sets & 400 kV Sectionalization bay: 2 sets alongwith 2x330 MVAR, 765 kV bus reactor & 2x125 MVAR, 420 kV bus reactor on Section-III is being proposed along with ICT augmentation (3x1500MVA, 765/400kV ICTs) at Bus Section -III at both 765kV & 400kV levels alongwith downstream 400kV lines at bus section-III from South Kallamb S/s with implementation timeframe of 24 months from effective date. [400kV Sectionaliser between Sections-I & II to be kept normally closed & between sections-II & III to be normally open. Further, 765kV sectionaliser between***

Sections-I & II & between II & III shall be kept normally closed. The 400kV sectionalisers can be closed under contingency conditions. Further, all space provisions as per RfP document of South Kalamb S/s shall be kept while implementing this scheme.]

G10. Power flow congestion to Delhi Ring Main unit through 400 kV Switchyard at 765/400KV Jhatikra substation

It was stated that Power flow congestion to Delhi Ring Main unit through 400 kV Switchyard at 765/400KV Jhatikra substation was deliberated in 224th OCC meeting held on 18.10.24. In the meeting, POWERGRID stated that 400 kV Bus at Jhatikra is sectionalised in 02 sections (Section-1 feeds load to Bamnauli/Dwarka S/s through 765/400 kV ICT-1&2, whereas Section-II feeds loads to Mundka S/s through 765/400 kV ICT-3&4)

POWERGRID further stated that maximum load recorded through both the sections in 2024 Summer peak is ~ 2500 MW (~ 4000 Amp). In case of breakdown of any tie bay across 400 kV switchyard, the power flow through remaining tie bay in section is 4000 Amps which is much higher than bay equipment rating of (3150 Amp). In order to overcome the situation, following three options were deliberated to relieve the congestion:

- Option 1:- Upgradation of rating of switchyard equipment of 400 kV tie bay at Jhatikra from 3150 to 4000 Amp.
- Option 2:- Provision of additional bus coupler in both sections of 400 kV buses to share the load in case of tie bay contingency.
- Option 3:-Considering time duration in implementation of above proposed solutions, direct coupling arrangement of 400 kV buses may be allowed from April-Oct'25 to cater smooth power transition to Delhi.

In the meeting, it was concluded that CTU to carry out detailed study in consultation with NRLDC on load congestion relieving measures at Jhatikara S/s including provision for upcoming ICTs at Jhatikra S/S and Narela S/s and submit the report to OCC forum.

Subsequently, in 225th OCC meeting held on 12.11.24, CTU informed that 765/400kV Jhatikra S/s has two separate 400 kV sections with two 1500 MVA ICTs in each section. If these sections are connected through sectionalizer, the loading relief observed (100-150MW) on each ICT) in the event of a contingency. CTU has requested Powergrid to confirm the availability of space for the bus sectionalizer and bay upgradation works. CTU has also asked NRLDC to provide the loading patterns for both the Jhatikra-Bamnauli and Jhatikra-Mundaka sections.

To resolve above issue, a meeting was held on 04.12.24 with POWERGRID officials for preliminary discussion on feasibility of various options to relieve congestion at Jhatikra S/s in short term as well as long term. Further a joint meeting was held on 11.12.2024 among CTUIL, NRPC, CEA, Grid-India & POWERGRID to deliberate on above congestion issues.

In the meeting POWERGRID stated that the primary issue is the heavy loading on the tie bays due to radial power feeding to Delhi. In the event of an outage of any line or one of the tie bays in either section, the load on the remaining tie bay in that section exceeds the

Grid-India Inputs on Rajasthan REZ Ph-IV (Part-5 :6 GW) Barmer-II : 6GW (Solar) scheme

Proposed Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-5 :6 GW) [Barmer Complex] Barmer-II: 6GW (Solar):

- LILO of both ckts of 400kV Fatehgarh-IV PS - Barmer-I PS at Barmer-II PS (~20km)
- Establishment of 2 nos. 3000 MW, ± 600 kV Barmer-II (HVDC) [VSC] terminal station (2x1500 MW) at a suitable location near Barmer-II substation
- 400/33 kV, 2x50 MVA transformers for exclusively supplying auxiliary power to HVDC terminal.
- 400kV bus sectionaliser -2 nos. (1 Set) at Barmer-II (HVDC) station
- Establishment of 2 nos. 3000 MW, ± 600kV South Kalamb S/s (HVDC) [VSC] terminal station (2x1500 MW) at a suitable location near South of Kalamb
- Establishment 2x1500MVA, 765/400kV Substation near South of Kalamb with 2x330 MVAR, 765 kV bus reactor and 2x125 MVAR, 420 kV bus reactor
- LILO of Pune-III – Boisar-II 765kV D/c line at South Kalamb with associated bays at South Kalamb S/s
- Installation of 1x240 MVAr switchable line reactor on each ckt at South Kalamb end of Boisar-II – South Kalamb 765 kV D/c line (formed after above LILO)
- ±600 kV HVDC Bipole line between Barmer-II (HVDC) & South Kalamb (HVDC) (with Dedicated Metallic Return) (capable to evacuate 6000MW) (1100 kms)

Grid-India Inputs:

1. In the scheme, the evacuation of 6000 MW is proposed from VSC HVDC link from Barmer-II (new) substation to South Kalamb (Murbad).

   It is mention here that Barmer-II is a new substation which will be connected only to 400 kV Fatehgarh-IV PS and Barmer-I PS via LILO of 400kV Fatehgarh-IV PS - Barmer-I PS D/C. This connectivity means that Barmer-II would be a radial/hanging station with low system strength.

   Fault level at Barmer-II:

S. No.	Cases	Fault level (MVA) – 220 kV	Fault level (MVA) – 400 kV
1.	Without considering the contribution of RE getting connected	10788	23409
2.	Considering the contribution of RE getting connected	13560	29058

   - *Installed capacity considered at 220 kV level:* ***2000 MW***
   - *Installed capacity considered at 400 kV level:* ***4000 MW***
   - *SCR at 220 kV level – (10788/2000):* ***5.394***
   - *SCR at 400 kV level – (23409/12000):* ***1.95 (HVDC capacity of 6000 MW also included)***

Grid-India Inputs on Rajasthan REZ Ph-IV (Part-5 :6 GW) Barmer-II : 6GW (Solar) scheme

Considering that Barmer-II would be a radial station with low system strength, evacuating 6000 MW capacity via HVDC from this substation may not be ideal. The inertia of the system around Barmer-II station is also expected to be very low, AC system feeding to HVDC from such weak network may witness stability related issues. The suitable alternatives to add fault level as well as inertia like SynCon may be considered in such pockets. It is proposed that RE capacity may be **pooled to a nearby station** which has adequate interconnection (and hence system strength) such as **Chittorgarh (SCMVA at 400 kV - ~34000 MVA in current time-frame).** The HVDC may then be planned from such station to a suitable location.

2. Comparison of VSC and LCC based HVDC

Feature	LCC-HVDC	VSC-HVDC
Converter Technology	Thyristor-based	IGBT-based (or similar switching devices)
Reactive Power Requirements	Requires substantial reactive power compensation (e.g., Filter Banks, SVC, STATCOM, SynCons).	Capable of independent reactive power control. Generally, no external compensation needed.
Grid Strength Dependency	Requires a strong AC grid for commutation. May fail in weak grids. (SCR > 3)	Operates effectively in weak or even "islanded" grids.
Black Start Capability	Not suitable for black start without additional support.	Capable of providing black start services.
Harmonics	Produces significant harmonics; requires large filters.	Minimal harmonics due to PWM-based control. Smaller filters required.
Power Reversal	Possible. Requires changing DC polarity for power reversal.	Possible (seamless). Achieved by changing current direction without altering DC polarity.
Fault Ride-Through	Limited ability to ride through grid faults. May trip under disturbances.	Superior fault ride-through capability.
Network restart time during DC line faults	Less (depend on de-ionization time) in milli-secs	>1 sec (1.5 secs in case of HVDC Pugalur – Trichur for Line to Ground faults); highly dependent on AC side circuit breaker opening/reclosing,
Overload Capability	Possible (usually 10-20% for short durations).	Not available as standard, may be full converter rating (depends on standard rating vs extra overload expected)
Converter Footprint	Large, due to filters, reactive power compensators, and transformers.	Compact, as filters and external compensators are minimized.
Grid Support Functions	Limited (e.g., no independent voltage control).	Can provide grid-forming services, voltage regulation, and frequency support.
Efficiency/Losses	Slightly higher efficiency in steady-state operation.	Lower efficiency due to switching losses in IGBTs.
Cost	Lower initial cost for converters, but higher for filters and compensators.	Higher initial cost for converters, lower for ancillary components.
Bidirectional Power Flow	Achieved but with slower transition.	Seamless bidirectional power flow

Both LCC and VSC based HVDCs have certain advantages and disadvantages. While LCC based HVDC is not suitable for low system strength pockets, the reliability of VSC HVDC during DC line fault always depends on switching of AC side CB and it is possible that high stress is experienced by equipment during DC line fault. Since the length of this HVDC link is expected to be around 1100 kM, the chances of DC line fault owing to higher exposure may be of high probability. The Technical requirement for HVDC shall clearly specify that HVDC shall be designed with redundancy so that system shall be able to operate under transient fault conditions. These aspects shall be taken in due consideration while specifying the technical specification of the HVDC in the RfP.

3. Other inputs on the proposed HVDC scheme are as under:

a) The rationale for terminating the HVDC in WR (Maharashtra) may be provided. Another HVDC from Khavda-V to Alephata (Maharashtra) is also terminating in the same area.

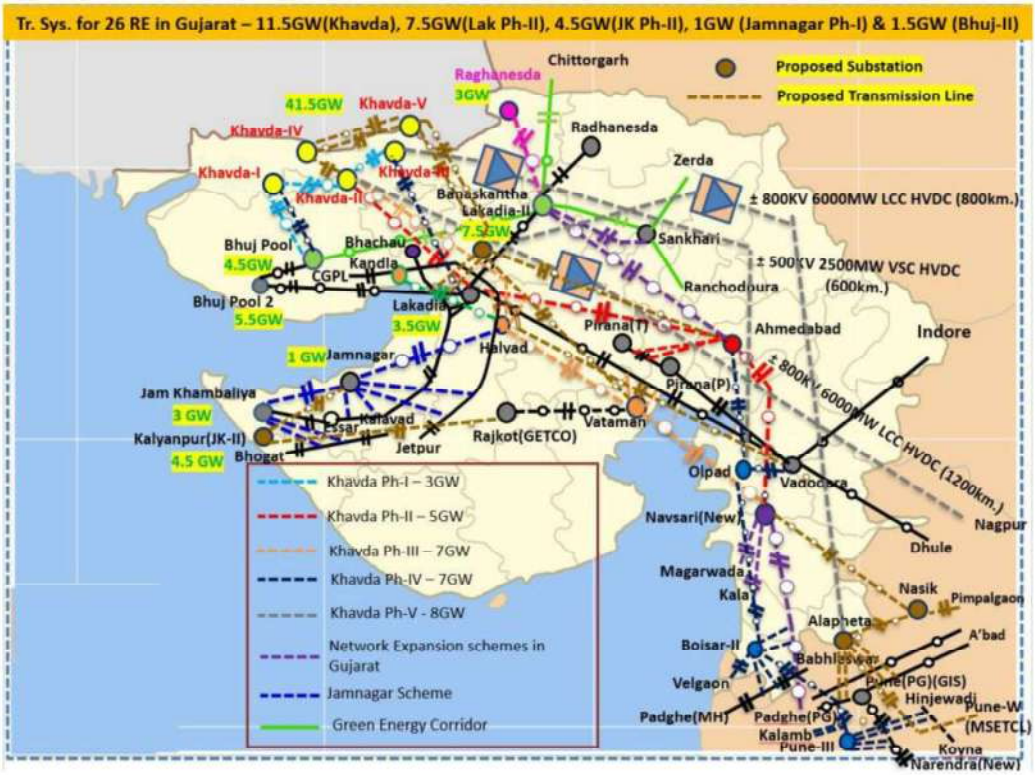
In the February solar case, the Southern Region is importing power. Even in the June solar case, which represents a peak SR export scenario, key SR-WR lines planned for evacuating RE from the Southern Region such as - 765 kV Narendra New–Pune–III D/C and 765 kV Raichur–Solapur D/C - are observed carrying power in the WR-to-SR direction. The all India level LGB may be reviewed.

Many 400 kV lines in Pune / Mumbai area are loaded beyond their permissible limits in the Sce-4 and Sce-7 cases e.g. 400 kV Kalwa- Estella S/C, 400 kV Pagdhe – Estella S/C, 400 kV Boisar-II - Pagdhe D/C etc.

Further, as highlighted in section on Load-Generation Balance below, the LGB of the case is subject to change with the proposed corrections which may lead to change in location of HVDC terminal.

b) Khavda (41.5 GW), Lakadia (3.5 GW & 7.5 GW), Raghanesda (3 GW), Bhuj (4.5 GW & 5.5 GW), Jamnagar (1 GW), Jam Khambaliya (3 GW & 4.5 GW) RE evacuation system is shown below

Grid-India Inputs on Rajasthan REZ Ph-IV (Part-5 :6 GW) Barmer-II : 6GW (Solar) scheme



As per above planning, most of the above RE generation will be consumed in Maharashtra (MMR & Pune) area. Two major HVDC (± 800 kV, 6000 MW LCC HVDC from Khavda-II to Nagpur and ± 800 kV 6000 MW LCC HVDC (or ± 600 kV VSC) from Lakadia-II to Alepheta) links from Khavda complex to Maharashtra system are already planned.

c) Terminating of HVDC at South Kalamb (Murbad) may be reviewed as already two HVDCs are terminating in Maharashtra and distance between Alephata to Kalamb is less than 50 km.

d) Number of new In-STS S/s (Dolvi, Kandalgaon, Estella, Velgaon, Ambernath, Theur, Padghe-Split, Kalwa Split, Estella Coromandel etc.) in MMR & Pune area is considered. Therefore, constraints faced in the Mumbai/Pune area are not reflected much in study cases. Timely commissioning of In-STS in the Mumbai/Pune area is very essential. Inordinate delays in commissioning of In-STS are generally observed. Hence, remedial measures need to be mentioned for delays in commissioning of In-STS.

e) Currently, constraints are being observed in Southern part of Maharashtra (Kolhapur/Karad area) during high injection from SR to WR. Another scenario (i.e. high injection from SR to WR along with low generation in Khavda/NR area) to be studied for assessing the transmission constraints and identification of remedial measures.

f) On the outage of a 3000/6000 MW poles of HVDC Barmer – II – South Kalamb, the loading of 765/400 kV ICTs and other elements nearby Barmer – I is seen to be nearing N-1 non-compliant. Accordingly, the solar developers coming up at Barmer-II may be advised now itself to commission their generation in synch with HVDC system.

g) As mentioned earlier, controller interaction studies may be carried out to identify the potential interaction issues in the complex or the same may be included in the project technical specifications with specific mention of involvement of CTUIL/GRID-INDIA in such studies with HVDC executing agency.

h) The feature of power oscillation damping is also important in case of HVDC and shall be suitably added in specifications. The provision of tuning of POD based on measurement data may also be specified.

i) As HVDC are planned for bulk evacuation of RE power, the outage of single or both poles of the HVDC may lead to curtailment in RE generation. This curtailment may be avoided/minimized by specifying the continuous and transient **ambient temperature-based overload capability** for the proposed HVDCs. Also, as VSC based HVDC is being proposed, it is understood that complete capacity in reverse direction is available.

j) Filter arrangement modelling at HVDC terminal (in case of LCC) at Barmer – II to be checked. Keeping in view the low SCR/fault level, as mentioned earlier by GRID-INDIA, the filter sizing shall be granular to avoid wide voltage variations during switching.

4. **Addition of BESS:** In the 500 GW RE Transmission Report by CEA, ~22.5 GW BESS was planned at different pooling stations in NR (Rajasthan). However, so far, the BESS capacity addition has not taken place as per the plan. Planning of the envisaged BESS capacity as a generation resource could help in optimizing the transmission being planned for RE evacuation in Rajasthan and will also provide necessary flexibility support during the non-solar hours.

5. **Planning of Bulk Loads in the Rajasthan RE complex:** It is suggested that CTUIL shall provide necessary recommendations to the MOP for planning of bulk loads such as electrolyzers, data centers etc. in the Rajasthan RE complex. This would help in local consumption of RE generation and would significantly reduce the requirement of transmission while also providing necessary damping (load side).

   A sample study with cost benefit analysis may be carried out by CTUIL in this regard for discussion at higher level.

Grid-India Inputs on Rajasthan REZ Ph-IV (Part-5 :6 GW) Barmer-II : 6GW (Solar) scheme

6. Inputs on Load Generation Balance:

In base cases shared, demand of Rajasthan considered in scenario-4: Jul month(31GW) seems to be on higher side. Similarly, in scenario-7: Feb month (35.4GW) seems to be on very higher side. Powerfactor of load also to be revised according to practical values to get correct picture of any low voltage scenario.

State		Scen7	Scen7 p.f.	Scen4	Scen4 p.f.
CHANDIGARH	P	353.2	0.95	411.6	0.96
	Q	112.7		120	
J&K	P	4193.4	0.99	2840.6	0.96
	Q	615.8		828.5	
HIMACHAL	P	2395.4	0.99	1780.1	0.96
	Q	399		519.2	
PUNJAB	P	12742.1	0.99	17627.8	0.96
	Q	1903.2		5138.9	
HARYANA	P	12981.3	0.99	16580.6	0.96
	Q	1930.6		4836	
DELHI	P	6045.8	0.98	9367.3	0.96
	Q	1118.8		2864.4	
RAJASTHAN	P	35442.5	0.99	31266.8	0.96
	Q	4427.2		8839.5	
UP	P	26303.5	0.99	31161.5	0.96
	Q	3833.8		9088.8	
LADAKH	P	40.1	0.99	27.3	0.96
	Q	5.9		8	
UTTARAKHAND	P	2581.5	0.98	2955	0.96
	Q	504		844.5	
NR	P	103078.7	0.99	114018.5	0.96
	Q	14851		33087.7	

Feb Solar (Scenario - 7)

S. No.	Region	Load (MW)	Gen. (MW)	IR Exchange (MW) #	20th EPS Peak Load in 2029-30 (MW)	Average Demand Met in Solar Hours in Feb 2024 (MW)*	Peak Demand met during Solar Hours, Feb 2024 (MW)
1	NR	103722	146006	42284	116745	54890	63791
2	WR	112173	137614	25441	107050	68960	74167
3	SR	104357	90900	-13457	97440	60929	65591
4	ER	41435	17785	-23650	45752	19429	22745
5	NER	2902	2025	-877	5835	2013	2209
6	All India	366648	396728	x	334811	206123	221989

Grid-India Inputs on Rajasthan REZ Ph-IV (Part-5 :6 GW) Barmer-II : 6GW (Solar) scheme

S. No.	State	Load (MW)	Gen (State+ Central) (MW)	20th EPS Peak Load in 2029-30 (MW)	Average Demand Met in Solar Hours in Feb 2024 (MW)	Peak Demand Met in Solar Hours, Feb 2024 (MW)
1	Rajasthan	35468	110783	25058	17000	18058
2	Gujarat	41433	71297	33964	19113	21258
3	Maharashtra	40627	30993	39891	27379	29821
4	MP	21288	23092	25596	14553	16885

***Peak solar considered from 10:30 Hrs to 15:30 Hrs, # Export is considered positive**

June Solar (Scenario - 4)

S. No.	Region	Load (MW)	Gen. (MW)	IR Exchange (MW) #	20th EPS Peak Load in 2029-30 (MW)	Average Demand Met in Solar Hours in June 2024 (MW)	Peak Demand met during Solar Hours, June 2024 (MW)
1	NR	114849	156993	42144	116745	80252	91040
2	WR	108797	130420	21623	107050	64167	74882
3	SR	98015	95583	-2432	97440	48363	58488
4	ER	47997	14483	-33514	45752	27672	31436
5	NER	3706	3377	-329	5835	2467	3023
6	All India	375349	406220	x	334811	222917	244540

S. No.	State	Load (MW)	Gen. (MW)	20th EPS Peak Load in 2029-30 (MW)	Average Demand Met in Solar Hours in Feb 2024 (MW)*	Peak Demand met in Feb 2024 (MW)
1	Rajasthan	31266	113355	25058	16199	18425
2	Gujarat	44908	76899	33964	21934	26054
3	Maharashtra	39589	29129	39891	23622	28715
4	MP	15757	18715	25596	11155	13828

***Peak solar considered from 10:30 Hrs to 15:30 Hrs, #Export is considered positive**

- In both February solar and June Solar case, the Southern Region is importing power. Even in the June solar case, which represents a peak SR export scenario, key SR-WR lines planned for evacuating RE from the Southern Region—such as the 765 kV Narendra New–Pune–III D/C and 765 kV Raichur–Solapur D/C—are observed carrying power in the WR-to-SR direction

- Dispatch of Thermal Plants:

  - The thermal generation of some of the plants i.e. APL/CGPL has been backed down to very low levels (~35%).
  - Pit head plant: Talcher backed down to ~35% level
  - Pit head plant: V'chal backed down to ~34% level
  - Pit head plant: Korba backed down to ~34% level

  The tech minimum level considered in the case may be mentioned, and the generators' dispatch should be considered per merit order.

- The demand in Rajasthan and Gujarat is seen to be on a higher end than the figures from EPS. The reason for the high demand may be mentioned.

Grid-India Inputs on Rajasthan REZ Ph-IV (Part-5 :6 GW) Barmer-II : 6GW (Solar) scheme

- Consideration of GH2 and other bulk consumer loads may be mentioned in the planning scheme itself, duly citing the uncertainty behind the assumptions and requirement of further transmission planning in case of delay/deferment of GH2/Bulk load projects.

  The production cost modelling studies duly factor in the RPO targets for each states, RE integration targets, flexibility requirements, merit order etc. Therefore, it is suggested that the study scenario may be finalized based on the output of the production cost modelling studies for the same timeframe. This LGB will itself indicate the paths/corridors along with the system augmentation is required.

7. Punjab internal generation considered in scenario-7 to be corrected:

Bus Number	Bus Name	Id	Area Num	Area Name	Zone Num	Zone Name	Code	VSched (pu)	In Service	PGen (MW)	PMax (MW)
132204	LEHRAMOHBT 220.00	T 1	13	PUNJAB	131	PB_STU	-2	1	1	52.5	210
132204	LEHRAMOHBT 220.00	T 2	13	PUNJAB	131	PB_STU	-2	1	1	52.5	210
132270	GOINDWALSB 220.00	T 1	13	PUNJAB	131	PB_STU	2	1	1	67.5	270
132270	GOINDWALSB 220.00	T 2	13	PUNJAB	131	PB_STU	2	1	1	67.5	270
132323	SPL_ROPAR 220.00	T 1	13	PUNJAB	131	PB_STU	2	1	1	52.5	210
132323	SPL_ROPAR 220.00	T 2	13	PUNJAB	131	PB_STU	2	1	1	52.5	210
132323	SPL_ROPAR 220.00	T 3	13	PUNJAB	131	PB_STU	2	1	1	52.5	210
134401	TALWNDISABO4 400.00	T 1	13	PUNJAB	131	PB_STU	2	1	1	165	660
134401	TALWNDISABO4 400.00	T 2	13	PUNJAB	131	PB_STU	2	1	1	165	660
134406	RAJPURA_TH4 400.00	T 1	13	PUNJAB	131	PB_STU	2	1	1	175	700
134406	RAJPURA_TH4 400.00	T 2	13	PUNJAB	131	PB_STU	2	1	1	175	700

8. **Dynamic Simulation Studies –** With more than 100 GW solar generation and two HVDC terminals in Rajasthan in close vicinity, it is important that stability aspects are also studied in detail at the planning stage. The generation is also getting evacuated through large EHV lines and hence, transient stability analysis also becomes important. Therefore, it is suggested that the results of the dynamic simulation studies may be shared.

9. Bara TPS generation model to be corrected, same is modelled at 400kV whereas it is existing at 765kV level.

Annexure B2

Reply of Grid-India inputs on Rajasthan REZ Ph-IV (Part-5 :6 GW) Barmer-II : 6GW (Solar) scheme

Grid-India Inputs:

1. In the scheme, the evacuation of 6000 MW is proposed from VSC HVDC link from Barmer-II (new) substation to South Kalamb (Murbad).

   It is mention here that Barmer-II is a new substation which will be connected only to 400 kV Fatehgarh-IV PS and Barmer-I PS via LILO of 400kV Fatehgarh-IV PS - Barmer-I PS D/C. This connectivity means that Barmer-II would be a radial/hanging station with low system strength.

   Fault level at Barmer-II:

S. No.	Cases	Fault level (MVA) – 220 kV	Fault level (MVA) – 400 kV
1.	Without considering the contribution of RE getting connected	10788	23409
2.	Considering the contribution of RE getting connected	13560	29058

   - *Installed capacity considered at 220 kV level:* ***2000 MW***
   - *Installed capacity considered at 400 kV level:* ***4000 MW***
   - *SCR at 220 kV level – (10788/2000):* ***5.394***
   - *SCR at 400 kV level – (23409/12000):* ***1.95 (HVDC capacity of 6000 MW also included)***

   Considering that Barmer-II would be a radial station with low system strength, evacuating 6000 MW capacity via HVDC from this substation may not be ideal. The inertia of the system around Barmer-II station is also expected to be very low, AC system feeding to HVDC from such weak network may witness stability related issues. The suitable alternatives to add fault level as well as inertia like SynCon may be considered in such pockets. It is proposed that RE capacity may be **pooled to a nearby station** which has adequate interconnection (and hence system strength) such as **Chittorgarh (SCMVA at 400 kV - ~34000 MVA in current time-frame).** The HVDC may then be planned from such station to a suitable location.

CTU Reply :

As per our understanding and discussion with OEMs in earlier HVDC packages, minimum SCR requirement for HVDC operation for VSC technology is >1 whereas for LCC technology is > 2.5.

Integration of RE power to other intermediate sub stations through EHVAC system i.e. Ajmer, Chittorgarh, Beawar, Rishabdeo etc. and its further evacuation through HVDC from intermediate substations is not feasible due to space constraint on above substations. SCR values of Barmer-II and South Kalaamb (Murbad) S/s is as below:

S. No.	Voltage level	Envisaged generation (MW)	Wo Considering additional Barmer-II-Barmer-I D/c line (present file)		With Considering additional Barmer-II-Barmer-I D/c line & Syncons (2 units*)	
			SCMVA (Considering no contribution from incident bus)	SCR	SCMVA (Considering no contribution from incident bus)	SCR
1.	Barmer-II (220kV)	2180	11510	5.27	12500	**5.75**
2.	Barmer-II (400kV)	(3812+2180) 5992	23290	3.88	29550	**4.95**
3	Murbad (400kV)	3000	26300 (13200)	8.7 (4.4)	26300 (13200)	**8.7 (4.4)**
3	Murbad Splt (400kV)	3000	13200	4.4	13200	**4.4**

1 no. of SynCon unit comprises dynamic support of +300MVAr/-150MVAr (Minimum) & Short circuit contribution at PCC of 1200MVA (Minimum) with Minimum H (natural) =4 s

From the table, it is envisaged that SCR at 400kV and 220kV level of Barmer-II PS is adequate for HVDC operation (LCC/VSC). The SCR of 400kv Barmer-II PS will further improve with future interconnection planned for Barmer-III PS (HVDC) with Barmer-II PS in next 2-3 months.

2 units of Syncons shall be considered with LCC technology alternative. Space provision of 2 units of SyCon shall be kept in VSC technology alternative as part of comprehensive scheme and taken up for implementation as per future requirement.

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Feature	LCC-HVDC	VSC-HVDC
Converter Technology	Thyristor-based	IGBT-based (or similar switching devices)
Reactive Power Requirements	Requires substantial reactive power compensation (e.g., Filter Banks, SVC, STATCOM, SynCons).	Capable of independent reactive power control. Generally, no external compensation needed.

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CTU Reply : Comments are noted as part of agenda.

3. Other inputs on the proposed HVDC scheme are as under:

a) The rationale for terminating the HVDC in WR (Maharashtra) may be provided. Another HVDC from Khavda-V to Alephata (Maharashtra) is also terminating in the same area.

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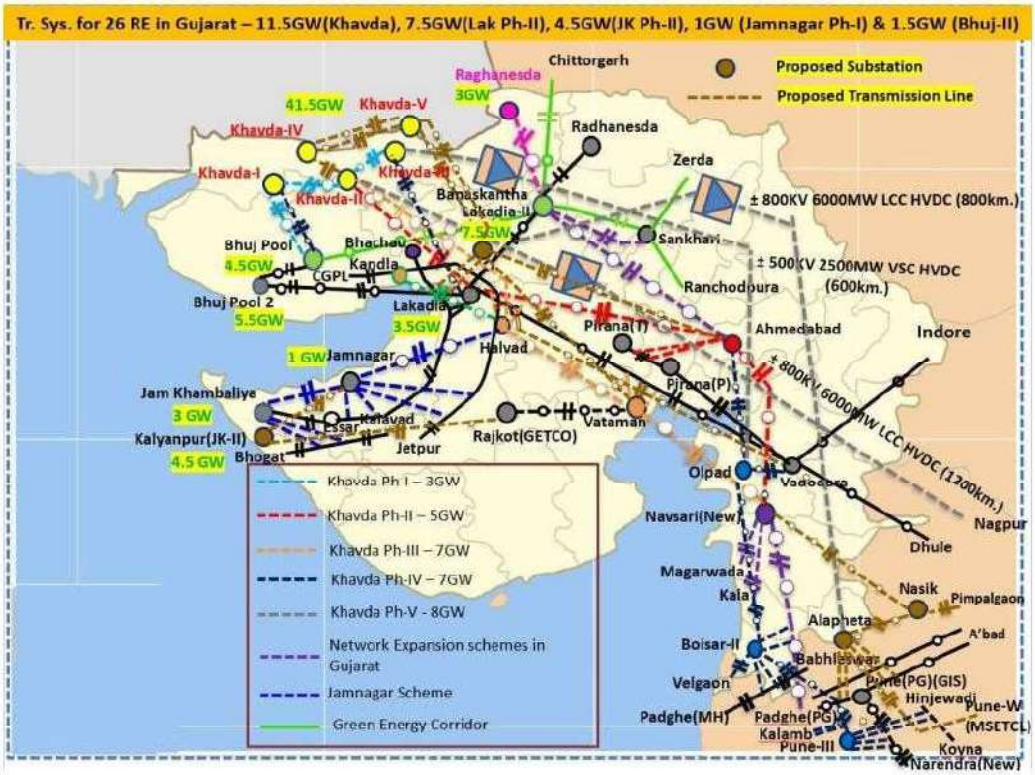
Many 400 kV lines in Pune / Mumbai area are loaded beyond their permissible limits in the Sce4 and Sce-7 cases e.g. 400 kV Kalwa- Estella S/C, 400 kV Pagdhe – Estella S/C, 400 kV BoisarII - Pagdhe D/C etc.

Further, as highlighted in section on Load-Generation Balance below, the LGB of the case is subject to change with the proposed corrections which may lead to change in location of HVDC terminal.

b) Khavda (41.5 GW), Lakadia (3.5 GW & 7.5 GW), Raghanesda (3 GW), Bhuj (4.5 GW & 5.5 GW), Jamnagar (1 GW), Jam Khambaliya (3 GW & 4.5 GW) RE evacuation system is shown below



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c) Terminating of HVDC at South Kalamb (Murbad) may be reviewed as already two HVDCs are terminating in Maharashtra and distance between Alephata to Kalamb is less than 50 km.

d) Number of new In-STS S/s (Dolvi, Kandalgaon, Estella, Velgaon, Ambernath, Theur, Padghe-Split, Kalwa Split, Estella Coromandel etc.) in MMR & Pune area is considered. Therefore, constraints faced in the Mumbai/Pune area are not reflected much in study cases. Timely commissioning of In-STS in the Mumbai/Pune area is very essential. Inordinate delays in commissioning of In-STS are generally observed. Hence, remedial measures need to be mentioned for delays in commissioning of In-STS.

e) Currently, constraints are being observed in Southern part of Maharashtra (Kolhapur/Karad area) during high injection from SR to WR. Another scenario (i.e. high injection from SR to WR along with low generation in Khavda/NR area) to be studied for assessing the transmission constraints and identification of remedial measures.

CTU Reply (a) to (e): The Lakadia-II – Alephata HVDC has been terminated at a point parallel to the EHVAC network which emanates from Khavda area and traverses from North Gujarat to load centres in Maharashtra (Boisar-II/ Nasik/ Alephata/ Pune(GIS) / Pune-III). The HVDC system emanates from Lakadia-II (Central Gujarat) and terminates at Alephata

(parallel to AC network) and is expected to maintain a balanced power flows on the AC lines along with controllability as per requirement. The other HVDC link from NR to South Kalamb has been planned to complement PSPs in Talegaon / Data centre & other load requirement in the Neral area.

4. Further, the present files have been prepared considering Max RE injection in Gujarat & Rajasthan (which are contiguous pockets) so as to simulate worst case scenario as far as immediate evacuation of power is concerned. In case the generation is backed down in these pockets, it would represent a better load flow case.

CTU Reply : Scenario-4 & 7 is prepared considering Rajasthan (100% solar dispatch) and Gujarat (80% solar dispatch). One additional sensitivity case considering Rajasthan (90% solar dispatch) and Gujarat (100% solar dispatch) is also prepared & shared with agenda

5. Nevertheless, SR export scenario has also been prepared in consultation with SR constituents and was studied in detail in presence of GRID-INDIA on 22.11.2024 for Bijapur evacuation studies at Bangalore. The proposed system was found adequate in that scenario as well.

CTU Reply : Noted.

6. Regarding constraints in Mumbai/MMR region, timely commissioning of In-STS in the Mumbai/Pune area is very essential. MSETCL is being continuously requested to adhere to agreed upon time-lines as per review meetings carried out by CEA as well as in various CMETS-WR meetings by CTU as well as GRID-INDIA.

a) On the outage of a 3000/6000 MW poles of HVDC Barmer – II – South Kalamb, the loading of 765/400 kV ICTs and other elements nearby Barmer – I is seen to be nearing N-1 noncompliant. Accordingly, the solar developers coming up at Barmer-II may be advised now itself to commission their generation in synch with HVDC system.

CTU Reply : No violation of N-1 compliance is observed in studies on the outage of 3000MW (one Bipole) of HVDC as per manual on transmission planning criteria 2023, however necessary augmentation works shall be taken up for implementation after detail deliberation with Grid-India/CEA/NRPC.

b) As mentioned earlier, controller interaction studies may be carried out to identify the potential interaction issues in the complex or the same may be included in the project technical specifications with specific mention of involvement of CTUIL/GRID-INDIA in such studies with HVDC executing agency.

CTU Reply : Noted. To be taken care during finalization of RfP.

c) The feature of power oscillation damping is also important in case of HVDC and shall be suitably added in specifications. The provision of tuning of POD based on measurement data may also be specified.

CTU Reply : Noted.

d) As HVDC are planned for bulk evacuation of RE power, the outage of single or both poles of the HVDC may lead to curtailment in RE generation. This curtailment may be avoided/minimized by specifying the continuous and transient **ambient temperature based overload capability** for the proposed HVDCs. Also, as VSC based HVDC is being proposed, it is understood that complete capacity in reverse direction is available.

CTU Reply : Noted. Matter shall be discussed during the meeting by our CTU-Engg Deptt. As per discussion in NCT meeting, both VSC & LCC technology are being discussed in present proposal. HVDC system shall be planned with 100% reverse power capability.

e) Filter arrangement modelling at HVDC terminal (in case of LCC) at Barmer – II to be checked. Keeping in view the low SCR/fault level, as mentioned earlier by GRID-INDIA, the filter sizing shall be granular to avoid wide voltage variations during switching.

CTU Reply : Noted. To be discussed with OEMs during finalization of RfP to explore the possibility.

7. **Addition of BESS:** In the 500 GW RE Transmission Report by CEA, ~22.5 GW BESS was planned at different pooling stations in NR (Rajasthan). However, so far, the BESS capacity addition has not taken place as per the plan. Planning of the envisaged BESS capacity as a generation resource could help in optimizing the transmission being planned for RE evacuation in Rajasthan and will also provide necessary flexibility support during the non-solar hours.

CTU Reply : Noted.

8. **Planning of Bulk Loads in the Rajasthan RE complex:** It is suggested that CTUIL shall provide necessary recommendations to the MOP for planning of bulk loads such as electrolyzers, data centers etc. in the Rajasthan RE complex. This would help in local consumption of RE generation and would significantly reduce the requirement of transmission while also providing necessary damping (load side).

A sample study with cost benefit analysis may be carried out by CTUIL in this regard for discussion at higher level.

CTU Reply : Noted.

9. **<u>Inputs on Load Generation Balance:</u>**

In base cases shared, demand of Rajasthan considered in scenario-4: Jul month(31GW) seems to be on higher side. Similarly, in scenario-7: Feb month (35.4GW) seems to be on very higher side. Power factor of load also to be revised according to practical values to get correct picture of any low voltage scenario.

State		Scen7	Scen7 p.f.	Scen4	Scen4 p.f.
Chandigarh	P	353.2	0.95	411.6	0.96
	Q	112.7		120	
J&k	P	4193.4	0.99	2840.6	0.96

State		Scen7	Scen7 p.f.	Scen4	Scen4 p.f.
	Q	615.8		828.5	
Himachal	P	2395.4	0.99	1780.1	0.96
	Q	399		519.2	
Punjab	P	12742.1	0.99	17627.8	0.96
	Q	1903.2		5138.9	
Haryana	P	12981.3	0.99	16580.6	0.96
	Q	1930.6		4836	
Delhi	P	6045.8	0.98	9367.3	0.96
	Q	1118.8		2864.4	
Rajasthan	P	35442.5	0.99	31266.8	0.96
	Q	4427.2		8839.5	
Up	P	26303.5	0.99	31161.5	0.96
	Q	3833.8		9088.8	
Ladakh	P	40.1	0.99	27.3	0.96
	Q	5.9		8	
Uttarakhand	P	2581.5	0.98	2955	0.96
	Q	504		844.5	
NR	P	103078.7	0.99	114018.5	0.96
	Q	14851		33087.7	

Feb Solar (Scenario - 7)

S. No.	Region	Load (MW)	Gen. (MW)	IR Exchange (MW) #	20th EPS Peak Load in 2029-30 (MW)	Average Demand Met in Solar Hours in Feb 2024 (MW)*	Peak Demand met during Solar Hours, Feb 2024 (MW)
1	NR	103722	146006	42284	116745	54890	63791
2	WR	112173	137614	25441	107050	68960	74167
3	SR	104357	90900	-13457	97440	60929	65591
4	ER	41435	17785	-23650	45752	19429	22745
5	NER	2902	2025	-877	5835	2013	2209
6	All India	366648	396728	x	334811	206123	221989

S. No.	State	Load (MW)	Gen (State+ Central) (MW)	20th EPS Peak Load in 2029-30 (MW)	Average Demand Met in Solar Hours in Feb 2024 (MW)	Peak Demand Met in Solar Hours, Feb 2024 (MW)
1	Rajasthan	35468	110783	25058	17000	18058
2	Gujarat	41433	71297	33964	19113	21258
3	Maharashtra	40627	30993	39891	27379	29821
4	MP	21288	23092	25596	14553	16885

***Peak solar considered from 10:30 Hrs to 15:30 Hrs, # Export is considered positive**

June Solar (Scenario - 4)

S. No.	Region	Load (MW)	Gen. (MW)	IR Exchange (MW) #	20th EPS Peak Load in 2029-30 (MW)	Average Demand Met in Solar Hours in June 2024 (MW)	Peak Demand met during Solar Hours, June 2024 (MW)
1	NR	114849	156993	42144	116745	80252	91040
2	WR	108797	130420	21623	107050	64167	74882
3	SR	98015	95583	-2432	97440	48363	58488
4	ER	47997	14483	-33514	45752	27672	31436
5	NER	3706	3377	-329	5835	2467	3023
6	All India	375349	406220	x	334811	222917	244540

S. No.	State	Load (MW)	Gen. (MW)	20th EPS Peak Load in 2029-30 (MW)	Average Demand Met in Solar Hours in Feb 2024 (MW)*	Peak Demand met in Feb 2024 (MW)
1	Rajasthan	31266	113355	25058	16199	18425
2	Gujarat	44908	76899	33964	21934	26054
3	Maharashtra	39589	29129	39891	23622	28715
4	MP	15757	18715	25596	11155	13828

***Peak solar considered from 10:30 Hrs to 15:30 Hrs, #Export is considered positive**

- In both February solar and June Solar case, the Southern Region is importing power. Even in the June solar case, which represents a peak SR export scenario, key SR-WR lines planned for evacuating RE from the Southern Region—such as the 765 kV Narendra New–Pune–III D/C and 765 kV Raichur– Solapur D/C—are observed carrying power in the WR-to-SR direction

- Dispatch of Thermal Plants:

  - The thermal generation of some of the plants i.e. APL/CGPL has been backed down to very low levels (~35%).
  - Pit head plant: Talcher backed down to ~35% level to Pit head plant: V'chal backed down to ~34% level
  - Pit head plant: Korba backed down to ~34% level

  The tech minimum level considered in the case may be mentioned, and the generators' dispatch should be considered per merit order.

CTU Reply : Files are modified to incorporate minimum 40% dispatch from thermal generating stations in WR as per merit order as well as load pf (0.95-0.97) in NR.

- The demand in Rajasthan and Gujarat is seen to be on a higher end than the figures from EPS. The reason for the high demand may be mentioned.

CTU Reply :

S.No	State	EPS demand (2030)-GW	Demand Considered in studies (GW)		
			Sc-4*	Sc-5	Sc-7*
1	Rajasthan	25.1	19.2	18	23.3
2	Gujarat	34	44.9	37.2	41.4

excl. 12GW lumped load at Ramgarh-II and Bhadla-IV for HVDC

CTU Reply – From the demand data, it is envisaged that demand in Rajasthan is in order. In Gujarat, about 60% of the projected Green Hydrogen Load by 2027-28 has been considered in studies [9250MW out of 15000MW (Kandla:3GW, MUL: 12GW)]. In case same does not materialize as planned, additional transmission system would be required. Further, other bulk consumer loads have also been considered in studies such as 3GW at Mundra(Navinal) S/s, 3.5GW at Jamnagar, etc.

- Consideration of GH2 and other bulk consumer loads may be mentioned in the planning scheme itself, duly citing the uncertainty behind the assumptions and requirement of further transmission planning in case of delay/deferment of GH2/Bulk load projects.

The production cost modelling studies duly factor in the RPO targets for each states, RE integration targets, flexibility requirements, merit order etc. Therefore, it is suggested that the study scenario may be finalized based on the output of the production cost modelling studies for the same timeframe. This LGB will itself indicate the paths/corridors along with the system augmentation is required.

CTU Reply – to be discussed in meeting

7. Punjab internal generation considered in scenario-7 to be corrected:

Bus Number	Bus Name	Id	PGen (MW)	PMax (MW)
132204	LEHRAMOHBT 220.00	T1	52.5	210
132204	LEHRAMOHBT 220.00	T2	52.5	210
132270	GOINDWALSB 220.00	T1	67.5	270
132270	GOINDWALSB 220.00	T2	67.5	270
132323	SPL_ROPAR 220.00	T1	52.5	210
132323	SPL_ROPAR 220.00	T2	52.5	210

132323	SPL_ROPAR 220.00	T3	52.5	210
134401	TALWNDISABO4 400.00	T1	165	660
134401	TALWNDISABO4 400.00	T2	165	660
134406	RAJPURA_TH4 400.00	T1	175	700
134406	RAJPURA_TH4 400.00	T2	175	700

CTU Reply : Corrected in Revised PSSE files (in Sc-7)

8. **Dynamic Simulation Studies –** With more than 100 GW solar generation and two HVDC terminals in Rajasthan in close vicinity, it is important that stability aspects are also studied in detail at the planning stage. The generation is also getting evacuated through large EHV lines and hence, transient stability analysis also becomes important. Therefore, it is suggested that the results of the dynamic simulation studies may be shared.

   CTU reply- In 30th CMETS-NR meeting, CTU requested that Grid-India may share present time frame converged dynamic file which will help to resolve convergence issues in dynamics file for 2027 timeframe w.r.t Generator models (conventional/RE) used by Grid-India. In the CMETS-NR meeting Grid-India stated that they are also facing convergence issues for present timeframe file and prepared dynamics file with some assumptions.

   It was agreed in the meeting that for preparation for planning stage dynamic file, CTU and Grid-India can work together to prepare load flow first w.r.t dynamics file and subsequent Dynamic data file (Dyr) shall be prepared with help of models available with Grid-India. CTU also stated that considering the severe convergence issues in dynamics file, it will be converged on truncated network specific to RE pockets in Rajasthan rather than to converge the file on All India level. In the meeting, NRLDC stated that for transient studies, truncated network modelling will be sufficient.

   Considering above, it is requested that a committee may be formed comprising members from CEA, CTUIL and Grid-India for preparation of planning horizon dynamics files.

9. Bara TPS generation model to be corrected, same is modelled at 400kV whereas it is existing at 765kV level.

   CTU Reply : Corrected in Revised PSSE files

Annexure-B3

HVDC VSC Configuration

- ***±600kV, 6 GW (Parallel Bipole with parallel DMR)***
- In this configuration, +ve Terminal of Pole-1 & 3 and -ve Terminal of Pole-2 & 4 shall be combined at the Gantry side and single +ve and -ve bundle conductor each shall be traversed on either side of the Tower along with parallel DMR.
- In this configuration, reliability of overall HVDC system shall be enhanced in comparison to Double Bipole with Parallel DMR configuration.
- Control & Protection design for co-ordinated control is complex and is offered only by one OEM (M/s SIEMENS) and is first of its kind in the world.

-

- ***600kV, 6 GW (Double Bipole with parallel DMR)***
- In this configuration, each Bipole shall have their independent bundle conductors on either side of the Tower along with parallel DMR.
- Control & Protection design for each Bipole control is simple and is offered by more than one OEM.

Note: DC line Fault recovery time in VSC is of about ~1.5 to 1.8 Sec

Proposed Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-5 :6 GW) [Barmer Complex] Barmer-II: 6GW (Solar)

1. Grid-India representative mentioned that Barmer-II is a new substation which will be connected only to 400 kV Fatehgarh-IV PS and Barmer-I PS via LILO of 400kV Fatehgarh-IV PS - Barmer-I PS D/C. This connectivity means that Barmer-II would be a radial/hanging station with low system strength.

Fault level at Barmer-II:

S. No.	Cases	Fault level (MVA) – 220 kV	Fault level (MVA) – 400 kV
1.	Base Case	11510	23410
2.	Base Case + SynCons (2 units) (+300/-150 MVAR each unit)	12500	25300

- *Installed capacity considered at 220 kV level:* ***2000 MW***
- *Installed capacity considered at 400 kV level:* ***4000 MW***
- *SCR at 220 kV level – (11510/2000):* ***5.755***
- *SCR at 400 kV level – (23409/12000):* ***1.95 (HVDC capacity of 6000 MW also included)***
- *SCR at 400 kV level after SynCons – (25300/12000):* ***2.10 (HVDC capacity of 6000 MW also included)***

Grid-India representative further highlighted the following advantages of VSC based HVDC.

- Strong AC systems may not be required as there are no issues of commutation failures and the HVDC operates effectively in weak or even "islanded" grids.
- **Capable of providing black start services:** One LCC HVDC (Bhadla3-Fatehpur) is under implementation, having one VSC HVDC would help to harness advantages of both configurations
- Minimal harmonics due to PWM-based control. Smaller filters required.
- Superior fault ride-through capability
- Can provide grid-forming services, voltage regulation, and frequency support i.e. ability to maintain appropriate system parameters in different renewable generation scenarios

It was agreed that technically VSC based HVDC is a better alternative than LCC based HVDC keeping in view the low system strength at Barmer-II (SCR < 2.0 without SynCons and ~2.5 with SynCons) and the reactive power and oscillations issues already being faced in the complex.

The final decision regarding implementation of HVDC as LCC or VSC may be taken in the NCT meeting.

2. Following other points were also highlighted by Grid-India:

a) Considering that Barmer-II would be a radial station with low system strength, evacuating 6000 MW capacity via HVDC from this substation may not be ideal. The inertia of the system around Barmer-II station is also expected to be very low, AC system feeding to HVDC from such weak network may witness stability related issues. It is proposed that RE capacity may be **pooled to a nearby station** which has adequate interconnection. The HVDC may then be planned from such station to a suitable location.

b) On the outage of a 3000/6000 MW poles of HVDC Barmer – II – South Kalamb, the loading of 765/400 kV ICTs and other elements nearby Barmer – I is seen to be nearing N-1 non-compliance limits. Accordingly, the solar developers coming up at Barmer-II may be advised now itself to commission their generation in synch with HVDC system.

c) Controller interaction studies may be carried out to identify the potential interaction issues in the complex or the same may be included in the project technical specifications with specific mention of involvement of CTUIL/GRID-INDIA in such studies with HVDC executing agency.

d) The feature of power oscillation damping is also important in case of HVDC and shall be suitably added in specifications. The provision of tuning of POD based on measurement data may also be specified.

e) As HVDCs are planned for bulk evacuation of RE power, the outage of single or both poles of the HVDC may lead to curtailment in RE generation. This curtailment may be avoided/minimized by specifying the continuous and transient **ambient temperature-based overload capability** for the proposed HVDC.

f) Filter arrangement modelling at HVDC terminal (in case of LCC) at Barmer – II to be checked. Keeping in view the low SCR/fault level, as mentioned earlier by GRID-INDIA, the filter sizing shall be granular to avoid wide voltage variations during switching.

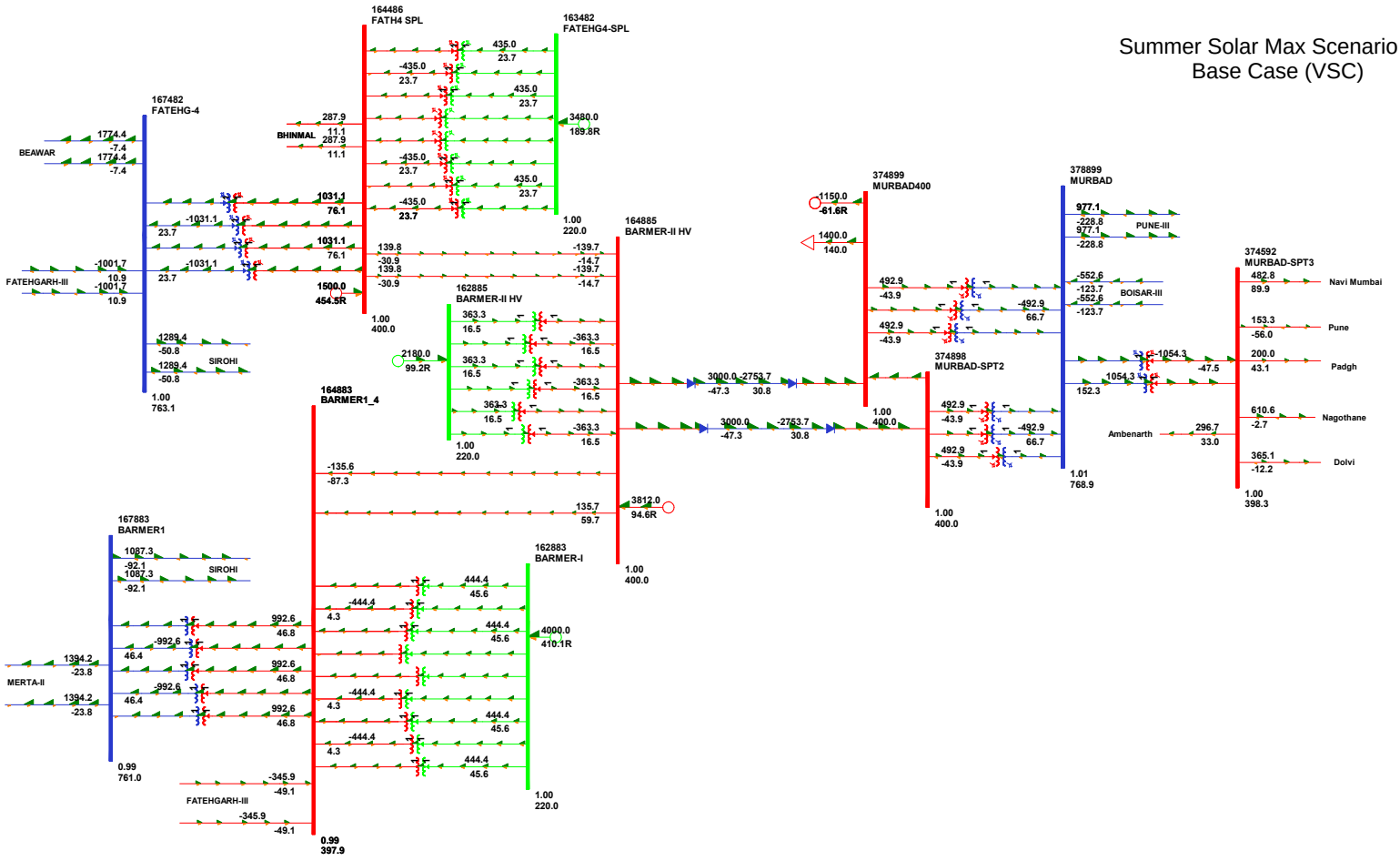
g) **Addition of BESS:** In the 500 GW RE Transmission Report by CEA, ~22.5 GW BESS was planned at different pooling stations in NR (Rajasthan). However, so far, the BESS capacity addition has not taken place as per the plan. Planning of the envisaged BESS capacity as a generation resource could help in optimizing the transmission being planned for RE evacuation in Rajasthan and will also provide necessary flexibility support during the non-solar hours.

h) **Planning of Bulk Loads in the Rajasthan RE complex:** It is suggested that CTUIL shall provide necessary recommendations to the MOP for planning of bulk loads such as electrolyzers, data centers etc. in the Rajasthan RE complex. This would help in local consumption of RE generation and would significantly reduce the requirement of transmission while also providing necessary damping (load side).

A sample study with cost benefit analysis may be carried out by CTUIL in this regard for discussion at higher level.

Exhibit-II

Transmission scheme for evacuation of power as part of Rajasthan REZ Ph-IV (Part-5 : 6GW) (Barmer Complex)



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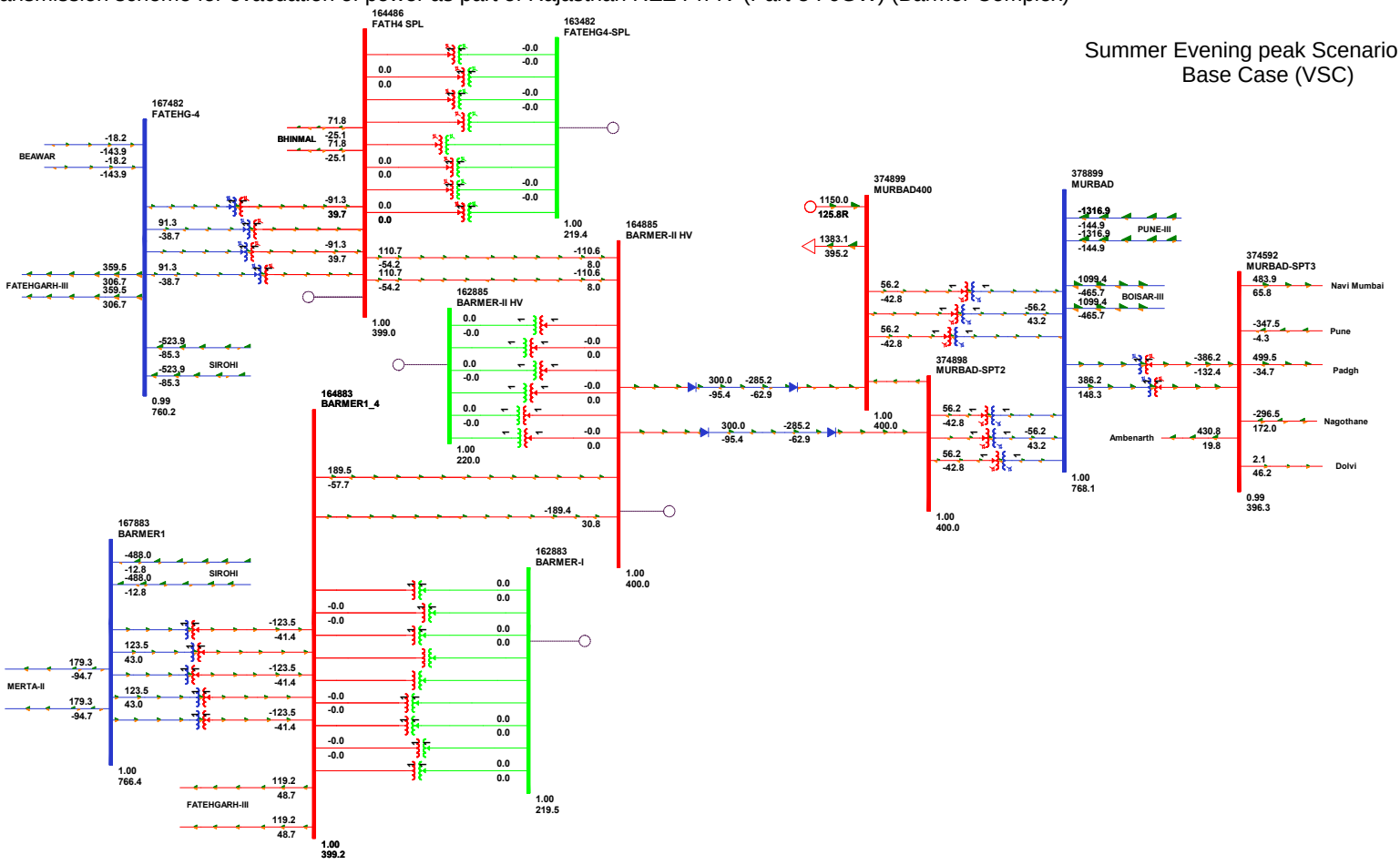

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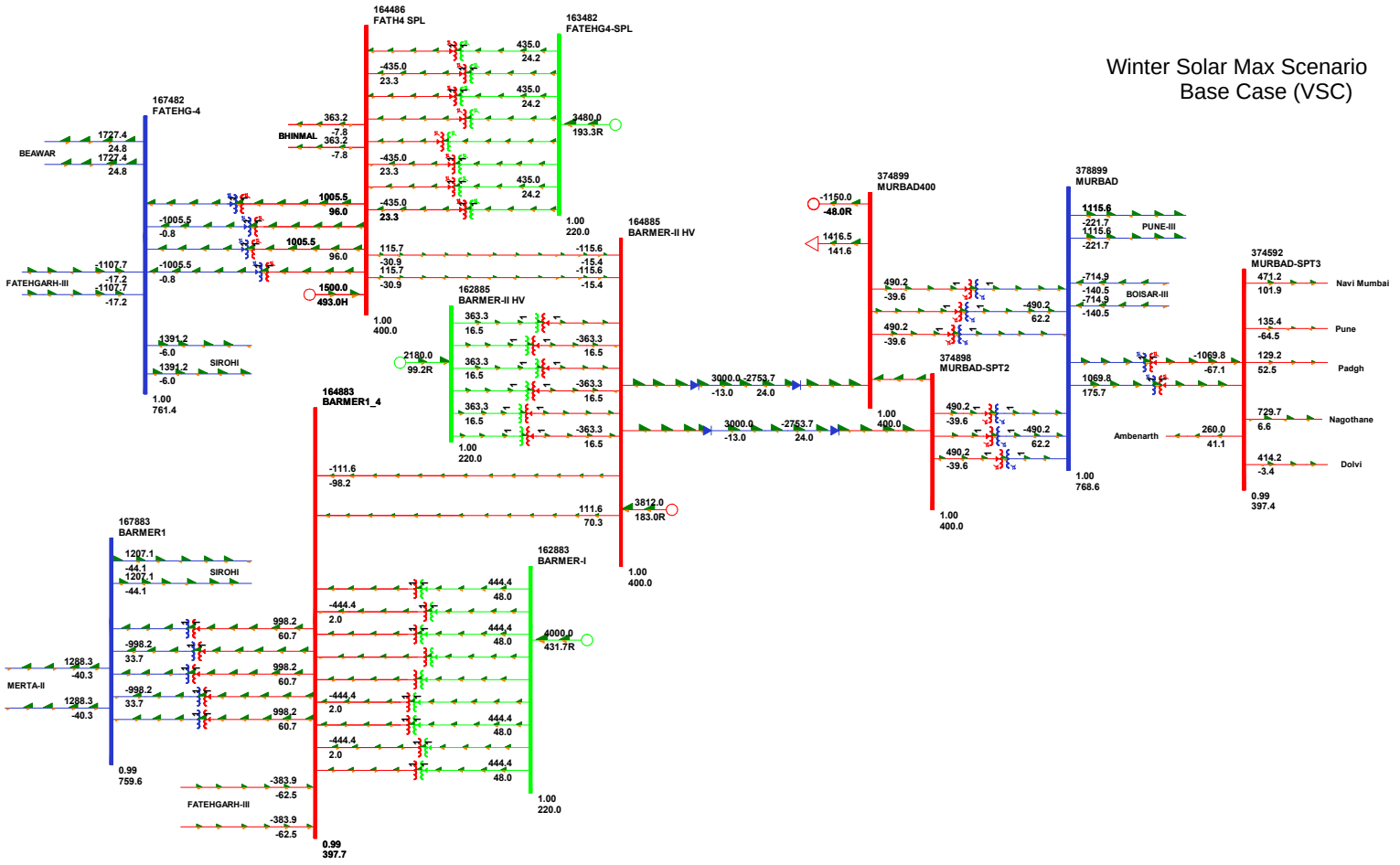

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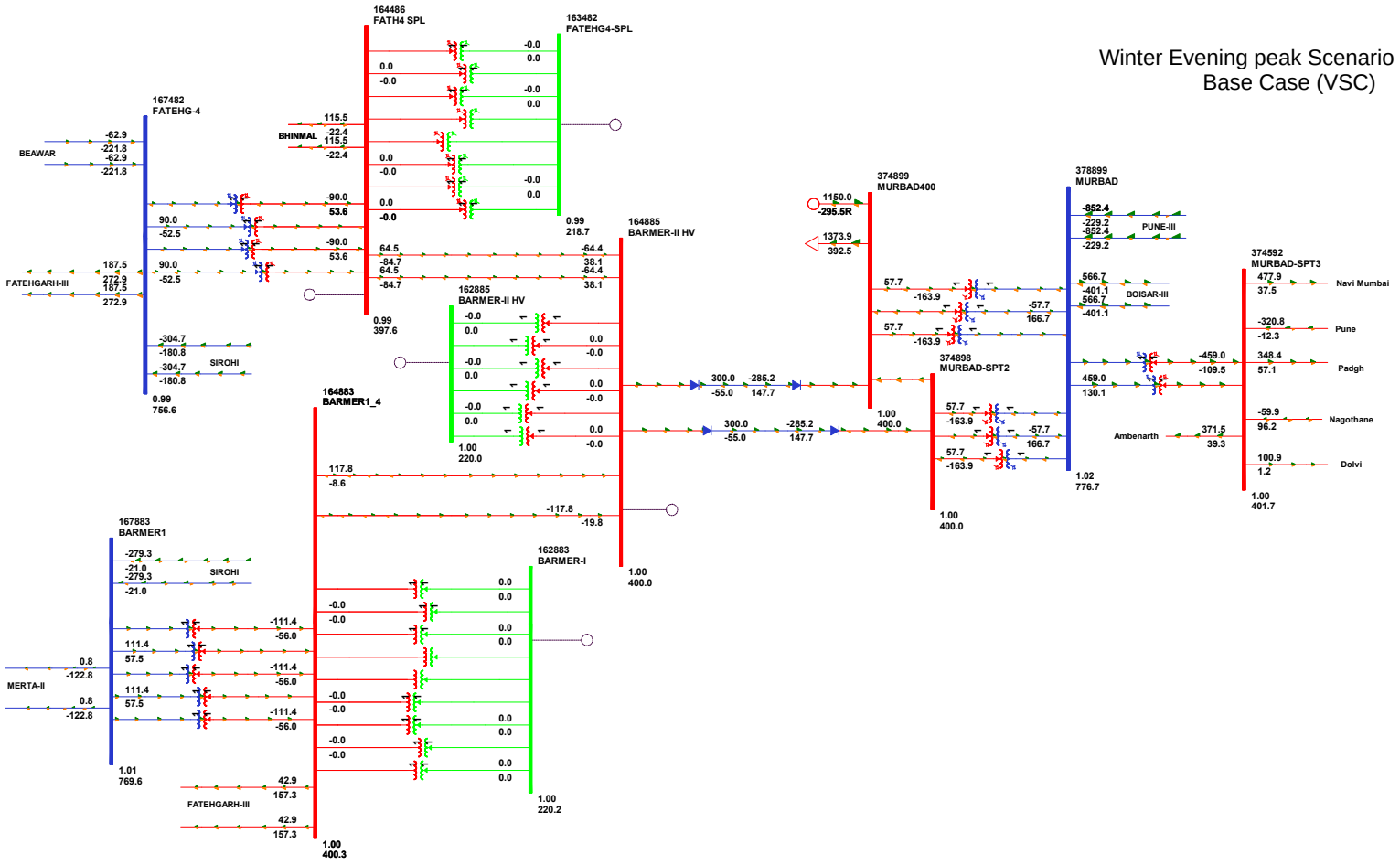

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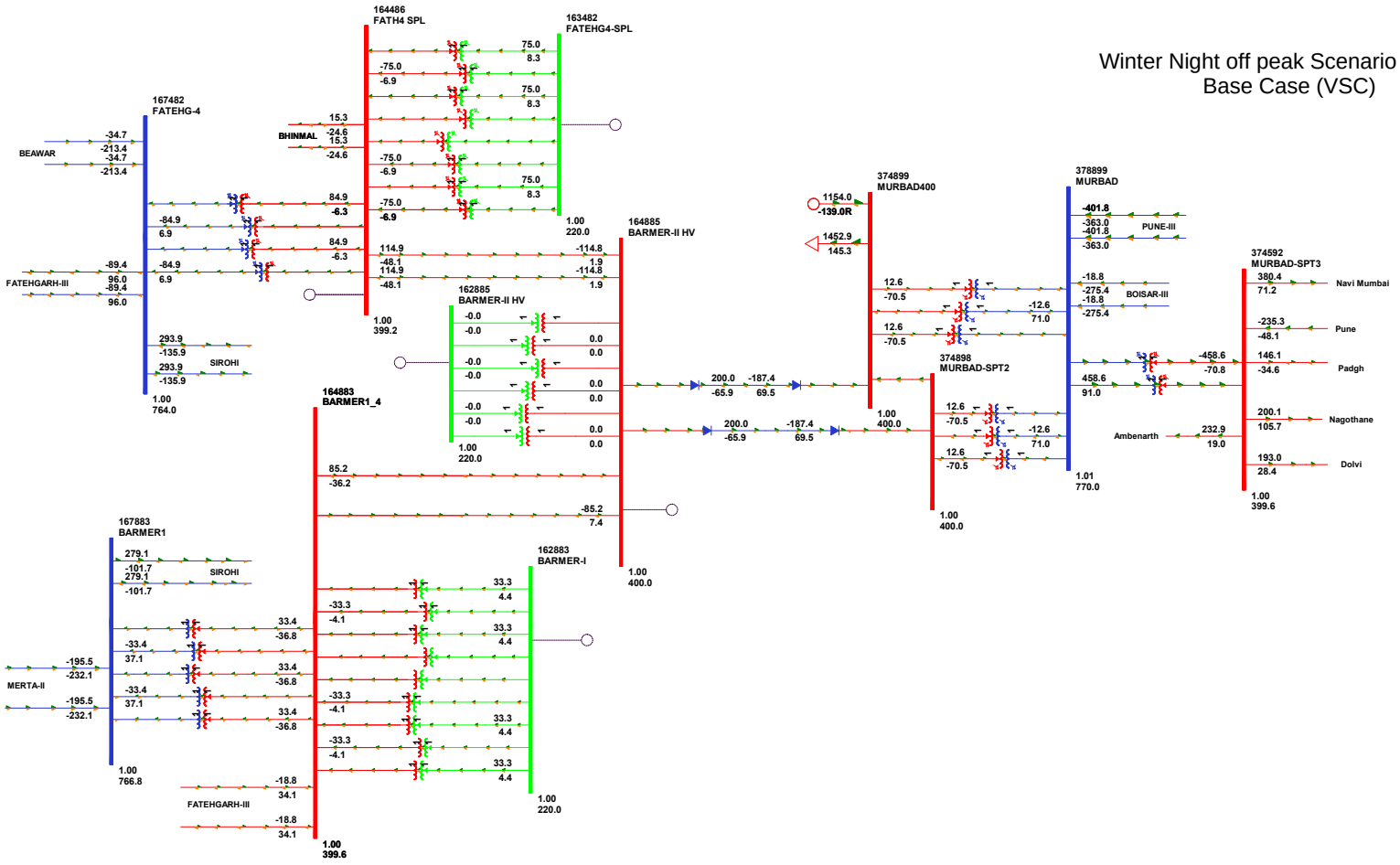

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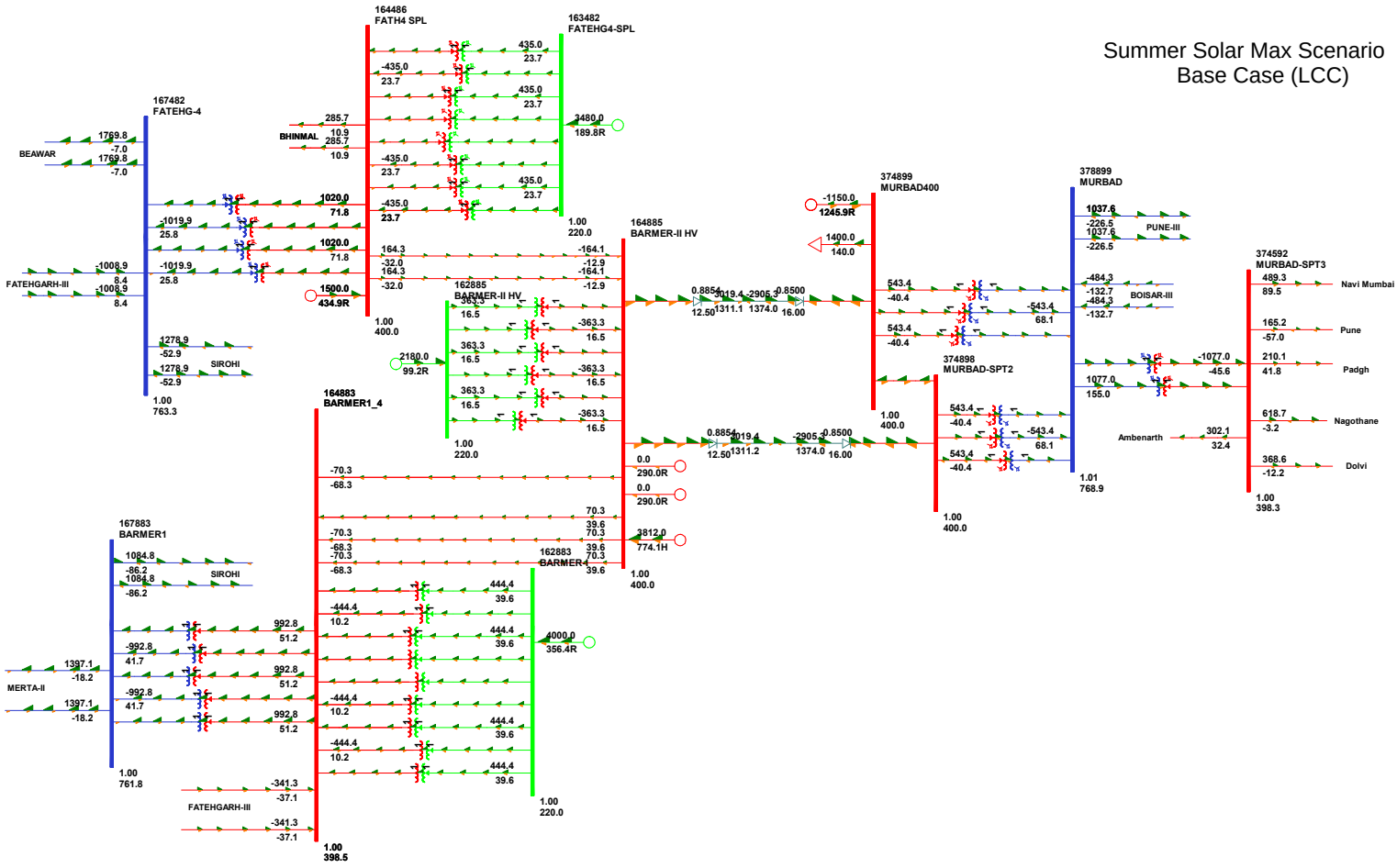

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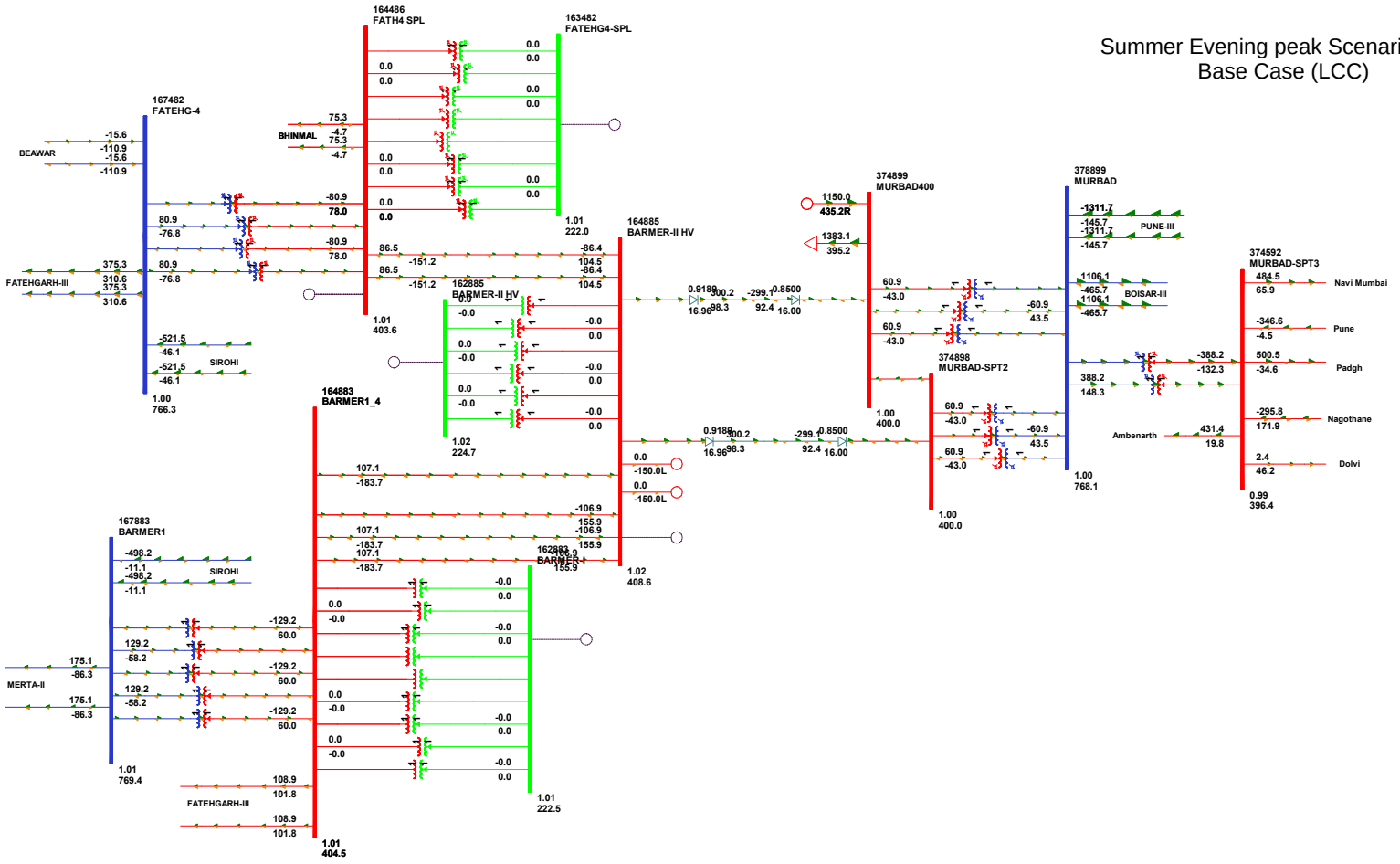

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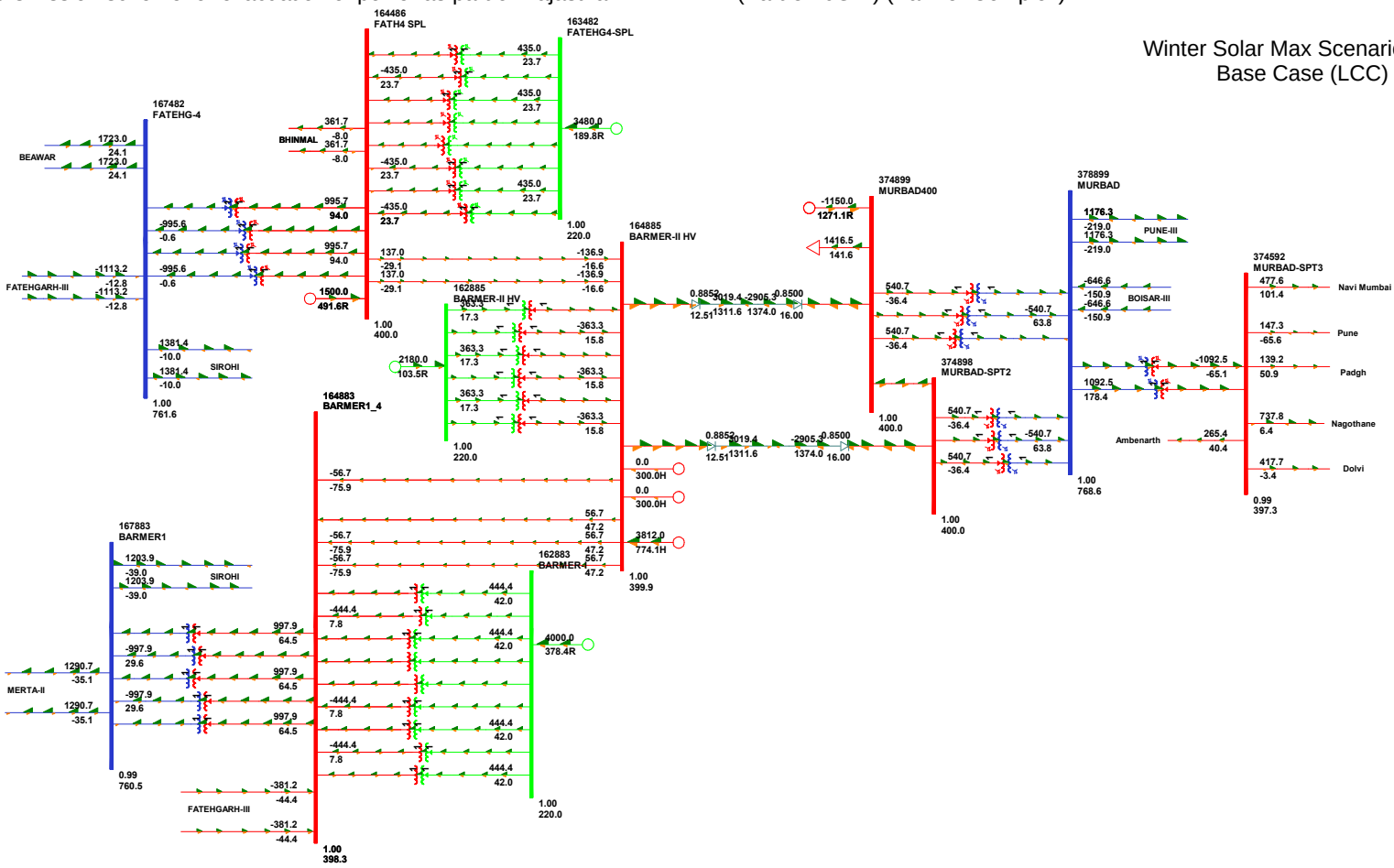

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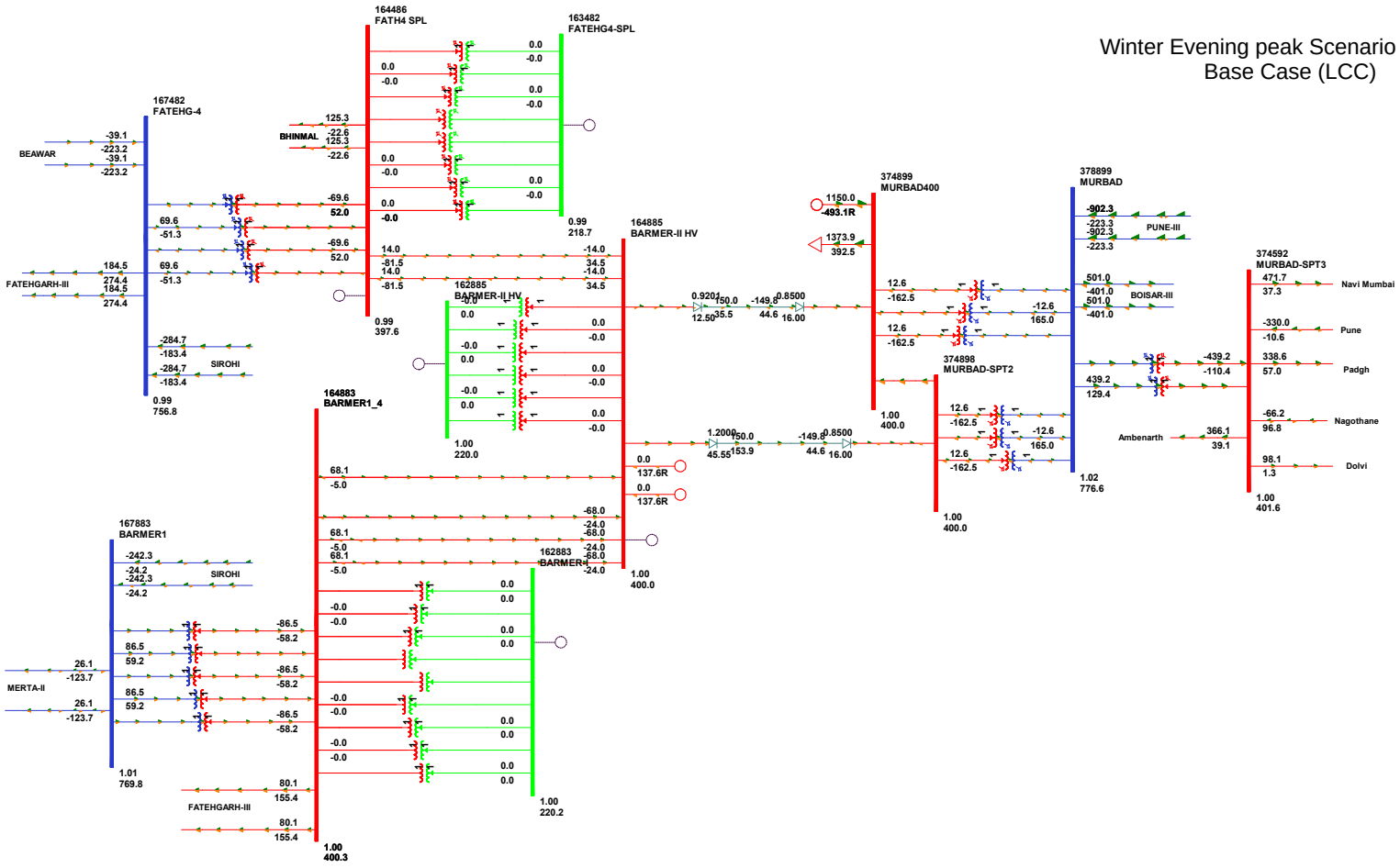

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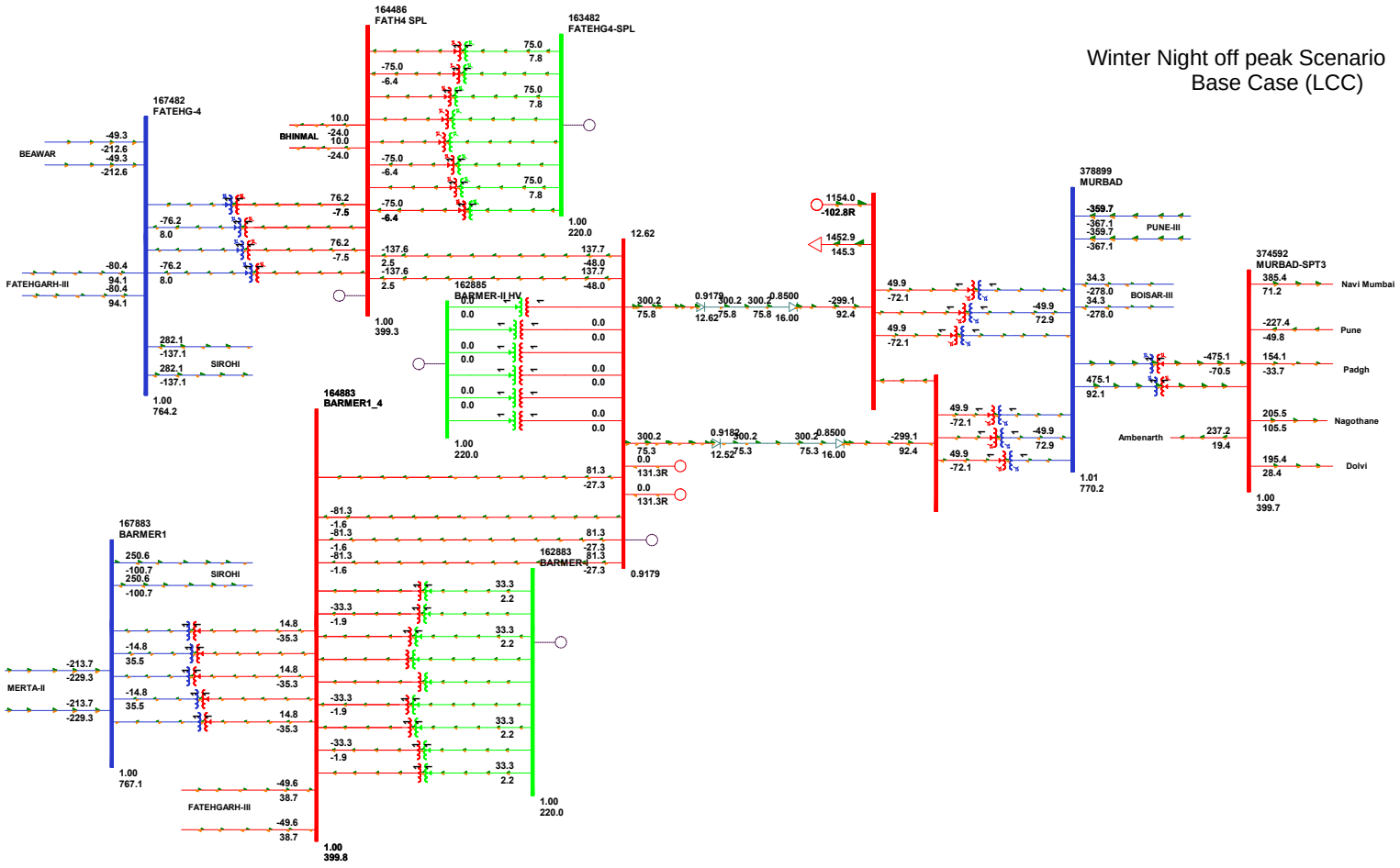
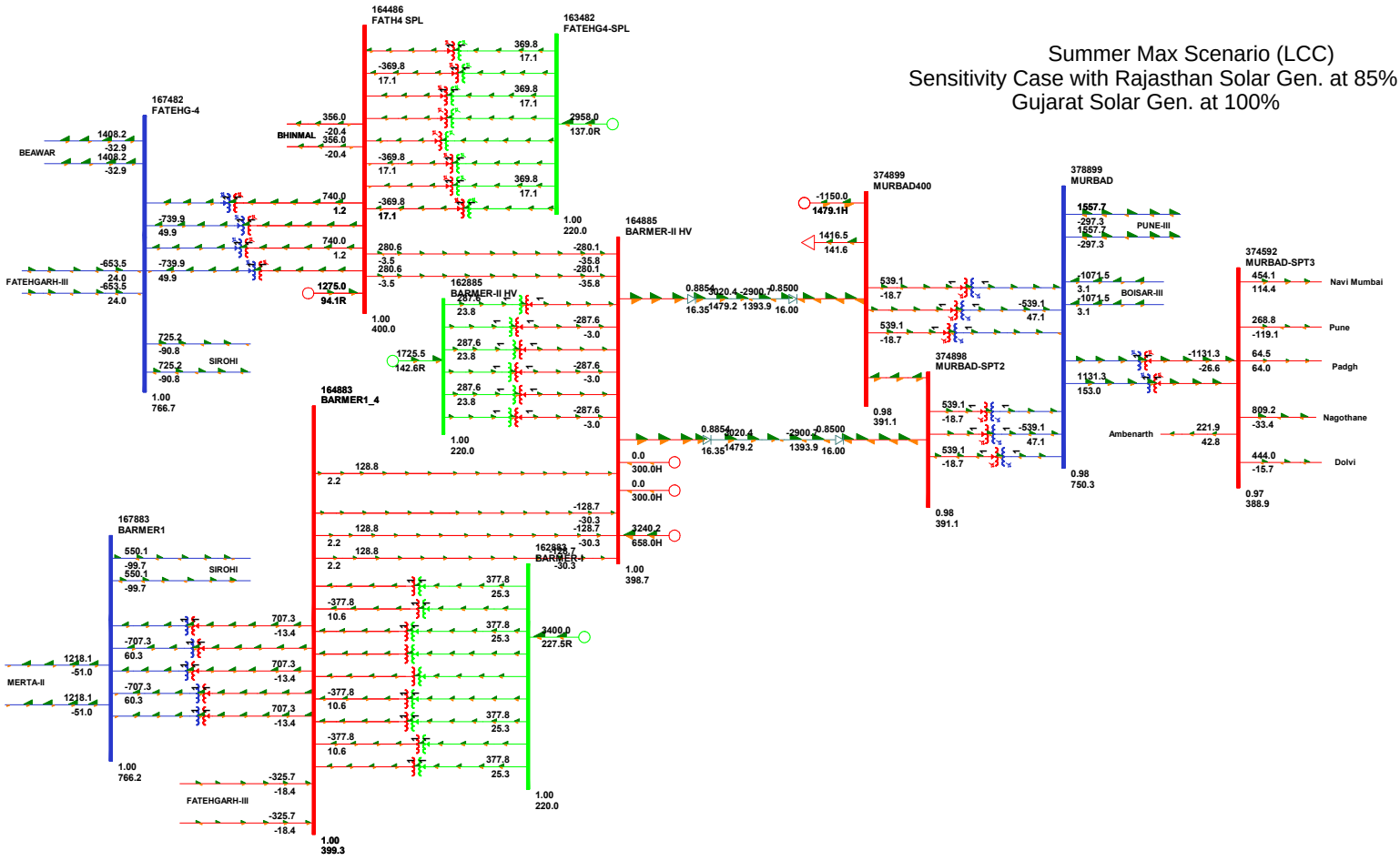


Transmission scheme for evacuation of power as part of Rajasthan REZ Ph-IV (Part-5 : 6GW) (Barmer Complex)

Summer Max Scenario (LCC)
Sensitivity Case with Rajasthan Solar Gen. at 85% &
Gujarat Solar Gen. at 100%



Energy (Kutehr) Limited
Regd Off: Village – Machetar,
PO - Chanhota,Tehsil -
Bharmour,District - Chamba
Himachal Pradesh: 176309
CIN:U40101HP2013PLC000345
Tel & Fax: 91-1899- 220847
Website: www.jsw.in

7.3.2025

Member Secretary
Northern Regional Power Committee
18-A, Shaheed Jeet Singh Marg,
Qutab Institutional Area, Katwaria Sarai,
New Delhi-110 016

Sub: Agenda point for forthcoming NRPC / TCC meeting

Reg.: Evacuation of power from Kutehr HEP 240 MW

Dear Sir,

JSW Energy (Kutehr) Ltd. is in final stage of construction of Kutehr HEP 240 MW in the Chamba District of Himachal Pradesh. COD of the project is expected very shortly around 1st week of May'2025.

HPPTCL has developed 400 kV D/C transmission line from Lahal pooling substation to 400 kV Rajera substation of Power Grid Corporation of India Limited for evacuation of power from hydro-electric projects in the Ravi basin.

Kutehr HEP shall be connected with the network of the Himachal Pradesh Power Transmission Corporation Limited (HPPTCL) through LILO from 400 KV double Circuit Transmission Line Lahal to Rejera at Tower No.8 to Pot Head Yard for evacuation of power. This D/c line is already carrying ISTS power of GMR Bajoli Holi HEP. Further, Kutehr HEP has signed PPA with Haryana State, and this will ultimately form an ISTS power flow on the same line.

Reference is also invited to the HPPTCL letter dated 2.7.2024 addressed to Chief Engineer, PSPA-1 division, CEA wherein HPPTCL has requested for conversion of aforesaid transmission line from non-ISTS to ISTS line. (**Annexure 1**)

Energy (Kutehr) Limited
Regd Off: Village – Machetar,
PO - Chanhota,Tehsil -
Bharmour,District - Chamba
Himachal Pradesh: 176309
CIN:U40101HP2013PLC000345
Tel & Fax: 91-1899- 220847
Website: www.jsw.in

In view of the above facts, we request to take up the aforesaid matter in the forthcoming TCC/NRPC meeting of NRPC, for the consideration of all the stakeholders.

Thanking You,

Yours Sincerely,

For **JSW Energy (Kutehr) Limited**

Anurag Agarwal

(General Manager)

H.P. POWER TRANSMISSION CORPORATION LIMITED

(A State Government Undertaking)
Regd. Office: Himfed Bhawan, Panjari, Tutikandi, Shimla-171005.
(CIN): U40101HP2008SGC030950
Ph: -0177-2633284, **FAX**: -0177-2832384
Email :gmcd.tcl@hpmail.in; dgmcomm.tcl@hpmail.in **Web:** hpptcl.com

No.: HPPTCL/C&M/Lahal Petition /2024 -433346 Dated: - 02-07-2024

To

Chief Engineer,
Power System Planning & Appraisal-I Division,
Central Electricity Authority, Sewa Bhawan R K Puram,
New Delhi -110066.

Reference: Certification Process for Non-ISTS Lines carrying Inter-State Power as specified under Regulation 93 of CERC (Terms and Conditions of Tariff) Regulations, 2024.

Subject: Regarding recommendation as a part of the Inter-State Transmission System in line with the CERC (Terms and Conditions of Tariff) Regulations, 2024 for Certification of following transmission assets: -

1. 400 kV D/C Lahal-Chamera Transmission line.
2. 400/220/33kV GIS Substation (400/220kV, 2×315 MVA + 220/33kV, 50/63MVA) at Lahal alongwith 220kV Lahal-Budhil S/C Transmission Line in District Chamba, Himachal Pradesh.
3. 220 kV D/C Bajoli Holi - Lahal Transmission line.

Sir,

Hon'ble CERC, under Regulation 93 of the CERC (Terms and Conditions of Tariff) Regulations, 2024, has specified the procedure to be followed for certification of intra-state transmission systems as ISTS Systems that are being developed or that have already been developed by State Transmission Licensee and are being utilized for evacuation & transfer of inter-state power.

In context to above, a meeting was scheduled by NRPC on 03.05.2024 to discuss the nature of assets as ISTS/non-ISTS wherein in the agenda at annexure-II, the existing IaSTS system in the state of Himachal starting from the GMR Bajoli Holi Bus till Chamera_II (PS) including 630MVA Lahal Pooling Station (STU-PS) consisting of subject cited transmission assets of HPPTCL was also included. After deliberations in presence of NRPC, CEA, NRLDC, CTUIL, HPPTCL, HPSLDC, HPSEBL and GMR Bajoli Holi Hydropower Pvt. Ltd., as per the minutes of meeting following was decided (MoM enclosed as **Annexure-1**): -

"a. Under clause 93 of Tariff Regulations-2024, CEA has to certify the ISTS status for intra-state transmission lines based on recommendations of STU

and RPC. In view of above, CEA may devise a uniform philosophy for the same alongwith definition of various terms mentioned in the clause.
b. This case may be examined after the formulation of policy by CEA for granting ISTS status to intra state lines/dedicated lines."

HPPTCL being a deemed Transmission Licensee of Himachal Pradesh has commissioned following assets for evacuation of power generated from the Hydro Generation in the Rabi Basin within the State of Himachal Pradesh:

1. 400 kV D/C Lahal-Chamera Transmission line.
2. 400/220/33kV GIS Substation (400/220kV, 2×315 MVA + 220/33kV, 50/63MVA) at Lahal alongwith 220kV Lahal-Budhil S/C Transmission Line in District Chamba, Himachal Pradesh.
3. 220 kV D/C Bajoli Holi - Lahal Transmission line.

The date of commissioning of the subject assets is as specified in the following table: -

S.No.	Asset Details	COD
1.	400 kV D/C Lahal-Chamera Transmission line.	11.01.2023
2.	400/220/33kV GIS Substation (400/220kV, 2×315 MVA + 220/33kV, 50/63MVA) at Lahal alongwith 220kV Lahal-Budhil S/C Transmission Line in District Chamba, Himachal Pradesh	11.01.2023 *
3.	220 kV D/C Bajoli Holi - Lahal Transmission line	19.11.2021#

** COD of 400/220/33kV GIS Substation has been considered on 11.01.2023 after charging of 400/220kV portion of Lahal Substation upon charging/commissioning of 400kV D/C Lahal-Chamera Transmission line on 11.01.2023.*
 # In the interest of green energy HPPTCL commissioned 220/33kV portion of Substation alongwith 220kV Lahal-Budhil S/C Line as an interim power evacuation arrangement on 19.11.2021 during FY 2020-21 which in case of contingency, shall remain an alternative route of power evacuation from various HEPs.

It is humbly submitted that the abovementioned assets have been developed by HPPTCL in accordance with the Master Plan developed by CEA. It is further submitted that the said assets meet the criteria specified under Regulation 93 and hence HPPTCL as State Transmission Licensee (STU) recommends that abovementioned assets be certified as a part of the Inter-State Transmission (ISTS) System in accordance with Regulation 93 of CERC Tariff Regulations, 2024:

Regulation 93 of CERC Tariff Regulations, 2024 specifies as follows:

"93. Approval Process of Non-ISTS Lines carrying Inter-State Power:

...

(1) Existing Intra State lines which were planned as ISTS System shall also be considered as ISTS lines;

Provided that such lines have not been developed for the sole purpose of the beneficiary (ies) of a single State;

Provided further that such transmission system is under operation and appropriate metering system is in place to record flow of power;

Provided further that a proper mechanism is in place for the maintenance of such a transmission system after its COD.

(2) CTU, in consultation with RLDC, shall identify all such non-ISTS lines which are utilized for ISTS power transfer after ascertaining that such nature of flow of power has become permanent.

..."

(Emphasis provided)

It is humbly submitted that since the inception stage, these Assets have been planned primarily to evacuate power from upcoming generating stations in the Ravi Basin to outside the State of Himachal Pradesh. The Master Plan approved by CEA is attached herewith as **Annexure-2**. It is further submitted that the assets have been subsequently discussed and agreed in the 3rd meeting of NRPC (Transmission Planning) dated 19.02.2021 (circulated vide letter dated 09.05.2021) as well as in the 27th meeting of Standing Committee dated 30.05.2009 (circulated vide letter dated 11.06.2009) on Power System Planning of Northern Region. A copy of the MoM is attached herewith as **Annexure-3**.

It is further submitted that currently the assets under consideration are being used to evacuate and supply power from Bajoli Holi HEP (180 MW) and other SHPs (34MW) having PPA with HPSEBL (DISCOM) located in Ravi Basin of the State of Himachal Pradesh. The power is being supplied to the States of Delhi (GMR- 120 MW) and Uttar Pradesh (GMR- 60MW) as well as Himachal Pradesh (34MW).

It is also submitted that HPPTCL has also granted connectivity to Kuteher HEP (240 MW) and LTA in this regard has been signed on dated 22.03.2022.

The detailed summary of the Beneficiaries along with the PPA capacity of the abovementioned assets is as following:

S. No.	Name of Beneficiary	State of Beneficiary	Contracted Demand (MW)	Period	LTA/TSA
1.	GMR	Delhi	120	20 years till 03.05.2037 as per PPA dated 11.09.2017	178.2 MW as per LTA dated 03.09.2015
2.	GMR	Uttar Pradesh	60	25 years as per PPA dated 17.05.2021	
3.	HPSEBL	Himachal	34		SHPs of the capacity

	(DISCOM)	Pradesh		----------	34 MW as per Supplementary TSA dated 14.07.2022 in continuation to main TSA dated 10.02.2012.
4.	Kutehr HEP	Haryana	240	25 years w.e.f. 30.06.2023	LTA dated 22.03.2022

The copy of the PPAs/LTAs with the Beneficiaries along with TSA executed with HPSEBL are attached herewith as **Annexure-4** for reference.

In view of the above, and in terms of detailed justification provided in the following section the subject transmission assets fully meets the criteria specified under Regulation 93 of the CERC Tariff Regulations, 2024.

Condition 1: Such lines have not been developed for the sole purpose of the beneficiary (ies) of a single State:

The assets under consideration were part of the Master Plan prepared by CEA for evacuation of power from various hydro projects in Himachal Pradesh. These specific assets form the part of Rabi Basin. The relevant extracts of the Master Plan are summarized below:

> *"**Rabi basin***
>
> *Major projects existing in Rabi Basin are Chamera-I (540MW) and Chamera-II (300MW). For evacuation of power 400 kV D/C line from Chamera-I to Jullendher and 400kV S/C from Chamera-I to Kishenpur LILOed to Chamera-II are existing.*
>
> *Chamera-III (231MW) and Budhil (70MW) are under construction and Kuther (260 MW), Bajoli Holi (200 MW), Bara Bhangal (200 MW), Bharmor (45 MW), Hudsar (60 MW) and Kugti (45 MW) are planned.*
>
> *For evacuation of power from the projects upstream of Chamera-II, a 400/220kV pooling station is planned near Chamera-II which is required matching with Budhil HEP which would be the next project in the valley. This pooling station would be connected to Chamera-II through a 400kV S/C line and to Jullundhar through 400kV D/C line. The line to Jullundhar would be needed with the next generation project which is Chamera-III.*
>
> *A 220kV pooling station at a suitable location upstream of Chamera III is also proposed where power is proposed to be pooled and transmitted to Chamera-II 400/220kV pooling station through three numbers of 220kV D/C lines with 1xMoose conductors. These would be optimum solution for phased development. However, if there are physical constraints in constructing three of 220 kV D/C lines through the valley, it may be required to build two nos. of 220 D/C lines with 2x Moose conductors."*
>
> *(Emphasis provided)*

The Write-up for the Master Plan is attached herewith as Annexure-2.

Further, the development of the said assets was also discussed in the 27th Standing Committee on power system planning of Northern Region held on 30th May 2009 at Nainital, Uttarakhand. The relevant extracts are summarized as below:

"4. Evacuation of power from Kutehr HEP (260 MW) in the upstream of Chamera- III HEP

Member (PS) informed that for evacuation of power from various hydro projects in Himachal Pradesh, a master plan was prepared. In line with the master plan during the 23rd Meeting of the Standing Committee for planning of transmission system in NR, it was decided that in phased development, pooling station upstream of Chamera-III would be constructed by PGCIL as a regional pooling station. It was also agreed that power from Kutehar would be injected at 220 kV level at this new pooling station.

Further for evacuation of power from Budhil project it was agreed to LILO one circuit of Chamera-III – Chamera Pooling station 220 kV D/C line (with Twin Moose conductor) at Budhil. It was further informed that HP has changed the master plan and now proposed two nos. of 220 kV D/C lines instead of 3 nos. of 220 kV D/C lines and also they intend to establish 220 kV pooling station at Lahal which is close to Kutehar HEP. Member (PS) explained that considering the overall power flow requirement of about 1000-1100 MW, 2 nos. of 220 kV D/c lines would not be adequate and proposed that line from Lahal to Chamera pooling station should be a 400 kV D/C line, this would optimize ROW – the requirement of Forest Department of HP. For connectivity of Kutehar it was proposed that a 220 kV D/C line can be constructed by the project developer upto Lahal Pooling station.

For evacuation of power from Budhil, two options were discussed i.e. either they should carry out the LILO of Chamera-III – Chamera Pooling station 220 kV D/C line with Twin Moose conductor or they can construct 220 kV S/C line up to Chamera-III utilizing one 220 kV bay at Chamera-III, space for which is available at Chamera-III. It was also informed that second option would not provide any reliability; however it was to be decided by the generation developer.

Further it was also informed that above issue had already been discussed in a meeting held in CEA on 18.5.2009 wherein representatives from HP, Lanco, and Kutehar & Powergrid were present.

Powergrid informed that they have received Long Term Open Access Application from the developer of Kutehar HEP & beneficiaries of the project are Northern Region Constituents and since system has already been decided, it was proposed to grant the LTOA. It was agreed by the constituents.

Concluding the discussions, following were agreed:

i) Lanco to confirm about the connectivity of Budhil HEP to Chamera III transmission.

ii) HP would establish a 400/220 kV substation at Lahal in the time frame of Kutehar HEP which would be connected to Chamera Pooling Station by a 400 kV D/C line. Initially this line would be charged at 220 kV level and subsequently with the coming up of more generation this line can be charged at 400 kV level ensuring that the ICTs (2×315 MVA) at Chamera II Pooling station are not overloaded.

iii) CTU can grant LTOA to M/s JSW (developer of Kutehar HEP)"

(Emphasis provided)

The Minutes of the Meeting of the 27th Standing Committee on power system planning of Northern Region is attached herewith as **Annexure-3**.

The assets under consideration were also discussed in the 3rd Meeting of Northern Regional Power Committee (Transmission Planning) held on 19.02.2021. The relevant extracts are summarized below:

"17.0 Construction of 220/400kV, 2×315 MVA PS at Lahal & 400 kV D/C (Twin Moose) line from 400/220 kV, 2×315 MVA, Lahal Sub-Station to 400/220 kV Chamera P.S. of PGCIL

17.1 HPPTCL stated that in the 27th meeting of SCPSPNR held on 30th May 2009, following was approved for evacuation of power from Hydro Electric Projects in Ravi Basin:

"HP would establish a 400/220 kV Sub-Station at Lahal in the time frame of Kutehar HEP which would be connected to Chamera Pooling Station by a 400 kV D/C line. Initially this line would be charged at 220 kV level and subsequently with the coming up of more generation, this line can be charged at 400 kV level ensuring that the ICTs (2×315MVA) at Chamera-II Pooling station are not overloaded"

It was further mentioned that instead of 2 No. of 220 kV D/C Lines, a 400 kV D/C Line considering the overall power flow requirement of about 1000-1100 MW shall be constructed in order to conserve R.O.W.

HPPTCL had accordingly taken up the execution of the following Transmission Elements:

1. 400/220 kV, 2×315 MVA & 220/33 kV, 63 MVA Sub-Station at Lahal.

2. 400 kV D/C (Twin Moose) line from 400/220 kV, 2×315 MVA, Lahal Sub-Station to 400/220 kV Chamera P.S. of PGCIL.

The work of construction of 400/220kV Sub-Station has been completed. The 220/33kV portion of the Sub-Station has already been commissioned to provide interim power evacuation path to SHEPs via construction of 220 kV S/C line on D/C towers from Lahal to Budhil HEP till completion of 400 kV D/C (Twin Moose) line from 400/220 kV, 2×315MVA, Lahal Sub-Station to 400/220 kV Chamera P.S. of PGCIL.

17.2 HPPTCL further stated that in order to charge the 400/220 kV S/s, HPPTCL had approached NRLDC for no load charging of 400/220kV Sub-Station through 220/400kV ICT from 220 kV side. However, NRLDC had observed that the

transformation capacity of 400/220 kV Substation has not been mentioned in the Standing Committee approval accorded in the 27th meeting which is required before according approval for charging.

17.3 The matter was accordingly taken up with CEA vide letter dated 05.11.2020 to clarify on the capacity of S/Stn. Accordingly, CEA convened a meeting of all concerned stakeholders through VC on 11.11.2020, wherein following was decided:

(i) POSOCO to provide permission to HPPTCL for charging of 400/220 kV, 2×315MVA Lahal substation.

(ii) Transformation capacity of 2×315 MVA at 400/220 kV Lahal substation would be ratified in the next standing committee meeting.

(iii) HPPTCL to explore the possibility of installation of Bus Reactor at Lahal S/Stn.

17.4 In view of above, HPPTCL requested members to consider & approve the following-

(i) The capacity of Lahal S/S as 400/220 kV, 2×315MVA.

(ii) Construction of 400 kV D/C (Twin Moose) line from 400/220 kV, 2×315 MVA Lahal Sub-Station to 400/220 kV Chamera P.S. of PGCIL

17.5 Members agreed to the proposal of HPPTCL. HPPTCL was again requested to explore the possibility of installation of Bus Reactor at Lahal S/Stn. HPPTCL agreed for the same and to revert with the details."

(Emphasis provided)

The Minutes of the 3rd Meeting of Northern Regional Power Committee (Transmission Planning) held on 19.02.2021 is attached herewith as **Annexure-3**.

Further, as discussed earlier, the transmission assets under consideration were envisioned to supply power outside the State of Himachal Pradesh by CEA and subsequently have been developed by HPPTCL for evacuating power from hydro power plants in the Rabi Basin to beneficiaries that are located in the Delhi, Uttar Pradesh and Himachal Pradesh. Hence, the stipulated condition is satisfied.

Condition 2: Such transmission system is under operation and appropriate metering system is in place to record flow of power;

Condition 3: A proper mechanism is in place for the maintenance of such a transmission system after its COD.

It is to confirm that HPPTCL has already established the assets under consideration along with all the requisite system for metering as per the Central Electricity Authority (Installation and Operation of meters) Regulations, 2006 read with all subsequent amendments and is operating these assets since their CoD in accordance with the standards specified under the Central Electricity Authority (Safety requirements for construction, operation and maintenance of electrical plants and electric lines) Regulations 2011 read with all subsequent amendments. A copy of Single

Line Diagram depicting the metering arrangement is also attached herewith as **Annexure-5**. Thus Conditions 2 & 3 under Regulation 93 of the CERC Tariff Regulations, 2024 are also fulfilled.

In light of the discussions made above and considering that the subject assets have satisfied all the pre-requisite conditions for certification as Inter-State Transmission Assets, HPPTCL (STU) recommends that CEA may kindly initiate the process for certification of the subject assets in accordance to the Regulation 93 of the CERC Tariff Regulations, 2024.

Yours faithfully,

(Er. Manoj Kumar)
General Manager (C&D),
HPPTCL, Shimla-05.

Copy of above is forwarded to following for kind information in the matter please: -

1. The Managing Director, HPPTCL, Shimla-05.
2. The Director (Projects), HPPTCL, Shimla-05.
3. The Director (P&C), HPPTCL, Shimla-05.
4. The General Manager (Projects), HPPTCL, Shimla-05.
5. The Dy. General Manager(C&M), HPPTCL, Shimla-05.
6. The Dy. General Manager (Planning & IT), HPPTCL, Shimla-05.

Sd/-
General Manager (C&D),
HPPTCL, Shimla-05.

ANNEXURE - 1

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

दिनांकः 18.05.2024

विषय: **MoM of meeting held on 03.05.2024 to discuss the nature of lines as dedicated/ISTS/Not ISTS status -reg.**

महोदय / महोदया,

Kindly find attached minutes of the meeting held on **03.05.2024** at **11:00Hrs.** via **video conferencing** to discuss the nature of ISTS/Not ISTS status for the following cases as given below-

I. Karcham Wangtoo - N.Jhakri portion of Baspa – N.Jhakri D/c transmission line (agenda enclosed as **Annexure-I**).

II. GMR Bajoli Holi Hydropower Pvt. Ltd vide for existing laSTS system in the state of Himachal starting from the GMR Bajoli Holi Bus till Chamera_II (PS) including 630MVA Lahal Pooling Station (STU-PS)(agenda enclosed as **Annexure-II**).

Enclosure: As above

Signed by Dharmendra Kumar Meena
Date: 19-05-2024 17:08:03

डी. के. मीणा
अधीक्षण अभियंता (संरक्षण)

सेवा मे:

1. Chief Engineer, PSPA-I, CEA (cea-pspa1@gov.in)
2. Executive Director, NRLDC (nroy@grid-india.in)
3. Chief Operating Officer, CTUIL (pcgarg@powergrid.in)
4. MD, HPPTCL (md.tcl@hpmail.in)
5. MD, HPSLDC (mdhpsldc@gmail.com)
6. MD, HPSEB (md@hpseb.in)
7. Plant Head, M/s GMR Bajoli Holi Hydropower Pvt. Ltd

Minutes of meeting held on 03.05.2024 to discuss the nature of ISTS/Not ISTS status

The meeting was held on 03.05.2024 at 11:00 Hrs. via video conferencing. MS, NRPC welcomed all participants of PSPA-I division CEA, NRLDC, CTUIL, HPPTCL, HPSLDC, HPSEB and GMR Bajoli Holi Hydropower Pvt. Ltd. List of participants is attached as **Annexure-III**.

A. The case for Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line was discussed as below-

A.1 NRPC representative apprised that CTUIL has requested discussion on the matter to file a reply in Hon'ble CERC relating to a petition for grant of Transmission License for Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line.

A.2 Member Secretary, NRPC opined that the matter is sub-judice and any decision at this meeting level may not be appropriate. CTU may file reply based on their views as NRPC has not been made respondent in petition.

A.3 CTUIL representative highlighted that in Tariff Regulation-2024, there is no provision given for granting ISTS status to a dedicated line. In view of above, CTUIL requested for discussion so that a decision may be arrived for this case.

A.4 CTUIL representative briefed the connectivity of transmission lines as mentioned in **Annexure-I.** She conveyed that based on HPERC's direction, M/s JSWHEL filed application for the grant of an Inter-state transmission license to CERC for Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line.

A.5 CTUIL was of view that line, LILo portion onwards Karcham Wangtoo to N.Jhakri is being utilised for multi generators power flow i.e. Karcham Wangtoo and Baspa.

A.6 CGM, NRLDC commented that NRLDC has already shared the power flow data to CTUIL. CTUIL acknowledged the same. However, CTU stated that only data is not sufficient, its interpretation and decision on flow of power is to be identified.

A.7 CGM, NRLDC highlighted that in Tariff Regulation-2024, there are terms such as 'regular power flow', 'transfer of inter-state power', 'ISTS power' which require uniform definition for interpretation of power flow data.

A.8 CTUIL representative mentioned that at present, during peak hydro conditions power of about 400-450 MW flows through the Karcham Wangtoo- N.Jhakri portion of Baspa – N.Jhakri D/c transmission line. She also added that power from other future hydro projects in the upper Sutluj basin (like Shongtong HEP & Tidong HEP) shall also be pooled at Wangtoo Substation of HPPTCL, which was implemented through LILO of K.Wangtoo-Abdullapur 400 kV D/c line. Some portion of this additional power is also to be wheeled through the Karcham Wangtoo- N.Jhakri portion of

Baspa – N.Jhakri D/c transmission line under different seasonal/load-generation scenarios.

A.9 CGM, NRLDC replied that this is seasonal and futuristic condition. This should not solely be considered for finalization of power flow scenario.

A.10 MS, NRPC conveyed that earlier NRPC secretariat used to certify the conversion of intra state to ISTS status but it is not applicable for secretariat to decide as of now. Now, CEA will certify under clause 93 of Tariff Regulation-2024. Accordingly, there is need to discuss this issue at CEA level for formulation of procedure (nature/ period of power flow) for conversion of intra state (including dedicated) to ISTS.

A.11 HPPTCL representative submitted that Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line may be granted transmission licensee as there is no intra state involvement with the bus of Baspa and Karcham Wangtoo.

A.12 PSPA-I division, CEA representative commented that transmission licensee for Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line may not be granted based on the clause 93 of CERC tariff regulation -2024 as it does not cover the provision for dedicated lines. However, CTUIL may use the precedence adopted in finalization of ISTS status to LiLo portion of Karcham Wangtoo line and Karcham Wangtoo- Abdullapur line.

A.13 CTUIL representative conveyed that there is power flow of multi generators in the portion of Karcham Wangtoo – N.Jhakri of Baspa - N.Jhakri.

A.14 MS, NRPC highlighted that based on data submitted by NRLDC, CTUIL may provide technical recommendation to honourable commission.

A.15 SE (O), NRPC mentioned that CTUIL may also include nature of status of line envisaged at the time of commissioning of line. NRLDC representative highlighted that past case of charor- banala line and ADHPL case may be explored by CTUIL.

A.16 After deliberation followings were decided-

a. CTUIL may submit reply based on data of power flow provided by NRLDC.
b. Under clause 93 of Tariff Regulation-2024, CEA has to certify the ISTS status for intra-state transmission lines based on recommendations of the STU and RPC. Therefore, CEA may devise a uniform philosophy for the same along with definition of various related terms mentioned in the clause.

B. The case for existing IaSTS system in the state of Himachal starting from the GMR Bajoli Holi Bus till Chamera_II (PS) including 630MVA Lahal Pooling Station (STU-PS) was discussed as below-

B.1 Plant head, GMR Bajoli Holi Hydropower Pvt. Ltd briefed the connectivity of lines as mentioned in **Annexure-II**. He requested for granting ISTS connectivity under clause

93 of Tariff regulation-2024 for the whole system carrying inter-state power starting from GMR Bajoli Holi Bus till Chamera_II (PS) including 630MVA Lahal Pooling Station (STU-PS) with transmission lines 220kV Bajoli-Holi D/C and 400kV Lahal-chamera-II D/C.

B.2 He mentioned about the LTA and GNA connectivity of GMR Bajoli Holi Hydropower Pvt. Ltd that plant has been granted 178.2 MW LTA connectivity from HPSTU and 155 MW GNA connectivity from CTU. In this 33 MW Power is allocated to Delhi International Airport, 60 MW to UPPCL and remaining is being sold in the market. He submitted that there is regular inter-state power flow and it fulfils conditions of Tariff regulation for conversion to ISTS.

B.3 CTUIL representative asked HPPTCL comment on the power flow.

B.4 HPPTCL commented that there will be power injection from upcoming 220/66kV Heiling S/s of HPSTU also.

B.5 CTUIL representative mentioned that GMR bajoli holi to Lahal PS is dedicated nature of line. Further, he mentioned that 400kV Lahal to chamera PS may be discussed for ISTS grant based on its integration.

B.6 HPPTCL representative added that JSW is going to implement the 240 MW kuther generating station and will be connected by Liloing of one circuit of 400kV lahal Pooling Station to chamera PS. There will be power in the lines from HPSEB generator, JSW Kuther and GMR Bajoli Holi Hydropower Pvt. Ltd. He added that most of power will be available of JSW kuther and GMR Bajoli Holi Hydropower Pvt. In present scenario, power is going out the HP state. Therefore, the ISTS status may be granted in this case under discussion of GMR bajoli holi.

B.7 CTUIL representative commented that JSW kuther has not applied for the connectivity to CTUIL as of now.

B.8 PSPA-I division, CEA representative highlighted that this case comes under purview of clause 93 of Tariff regulation-2024. Therefore, after finalization of philosophy, CEA will certify the ISTS status.

B.9 CGM, NRLDC asked HPPTCL regarding beneficiaries mandated for the transmission system. HPPTCL representative replied that the system was constructed for multiple beneficiaries for Ravi basin. Plant head, GMR Bajoli Holi Hydropower Pvt. Ltd added that it was part of green corridor.

B.10 Further, CGM, NRLDC desired to have a clarification on the definition of regular and ISTS power. Plant head, GMR Bajoli Holi Hydropower Pvt. Ltd highlighted that they have PPA for more than 25 years with Delhi International Airport (33 MW RTC) & UPPCL (60 MW continuous power from May to October).

B.11 HPPTCL conveyed that such cases may be examined considering all hydro basins areas, corridors and load centres connectivity and availability in the corresponding areas.

B.12 MS, NRPC conveyed that this case will be examined after the formulation of philosophy for certification of ISTS by CEA.

B.13 After deliberation followings were decided-

a. Under clause 93 of Tariff Regulation-2024, CEA has to certify the ISTS status for intra-state transmission lines based on recommendations of the STU and RPC. In view of above, CEA may devise a uniform philosophy for the same along with definition of various terms mentioned in the clause.

b. This case may be examined after the formulation of policy by CEA for granting ISTS status to intra state lines/ dedicated lines.

Meeting ended with a vote of thanks.

******

In the meanwhile, OTPC proposed to avail the viability gap funding for the transmission lines from Pallatana(generating Switchyard) to Bongaigaon S/s of POWERGRID which was discussed in a meeting chaired by Secretary(Power) on 13-03-2006 wherein representative of CEA, POWERGRID, ONGC and IL&FS were present. It was decided in the meeting that the conditional viability gap funding for the transmission project can be recommended by Ministry of Power for the transmission system from Pallatana to Siliguri.

The above proposed transmission system for long term open access was discussed with the NR beneficiaries in a meeting held on 22.04.06 at Nainital wherein CEA and POWERGRID were also present. During the discussion, it emerged that as decided in Ministry of Power for Viability Gap Funding, the transmission elements from Pallatana to Siliguri would be a part of generation project cost and transmission charges for Purnea – Biharshariff shall be borne by NR constituents. In the event Viability Gap Funding is not available, constituents were of the view that transmission line from Pallatana to Bongaigaon may be constructed as a part of generation project, while the transmission system beyond Bongaigaon should be developed by CTU as a regional scheme. However, the above was subject to the approval of Ministry of Power.

The matter was further discussed in a meeting taken by Secretary (Power) on 06-06-2006 wherein Secretary (Power) indicated that the transmission system to be developed under private-public partnership should include a transmission system from Pallatana upto Biharsharif including Bongaigaon-Siliguri and Purnea-Biharsharif lines. Subsequently, OTPC vide its letter dated 30-06-2006 to Ministry of Power informed that its request for Viability Gap Funding for the transmission project is being withdrawn.

Further, M/s OTPC vide its letter dated 11/07/2006 informed that the project capacity has been downsized from 1100 MW to 740 MW in phase-I, having net exportable capacity of 700 MW. OTPC vide another letter dated 11/07/2006 had requested that in view of revision of plant capacity, the immediate evacuation system from Pallatana

to Bongaigaon, via Silchar may be revised as 400kV D/c line with twin Moose conductor. Further OTPC vide its letter dated 21/07/2006 informed that it has no future plans for expansion.

The matter was further discussed in a meeting taken by Joint Secretary (Transmission), Ministry of Power on 10-10-2006 wherein following was observed:

- The 400kV transmission lines from Pallatana GBPP to Bongaigaon, via Silchar, would be constructed by the generating agency and the balance transmission system i.e. Bongaigaon - Siliguri and Purnea - Biharsharif 400 kV D/c lines has to be taken up as regional scheme with Northern region constituents as the beneficiaries.
- It was also mentioned that as 500 MW power has been allocated to NR constituents from this project, it is expected that a large quantum of power would flow out of North-Eastern region. Though the generating agency has downsized the generation capacity to 740 MW, there will be no change in the transmission system.
- Though the scheme was discussed and agreed by Northern region constituents, the matter needs to be discussed again due to downsizing of project capacity.

In view of the above, following transmission system has been proposed.

A. Immediate Evacuation to be taken up by generating agency

- Power project (Pallatana) - Silchar 400 kV D/C line with twin moose conductor
- Silchar – Bongaigaon 400 kV D/C line with twin moose conductor and 40% series compensation
- New 2x200 MVA, 400/132 kV sub-station at Silchar (Assam)
- Extension of Bongaigaon substation by 400/220kV, 315MVA transformer.

B. Regional Scheme for power transfer to Northern Region

- Bongaigaon - Siliguri 400 kV D/C line with quad Moose conductor
- Purnea – Biharsharif 400 kV D/C line with quad Moose conductor

The system was discussed by the members and agreed to the above mentioned scheme.

POWERGRID enquired the commissioning schedule of the project. Representative from OTPC informed that the revised schedule of the generation is December 2009.

Concluding the discussion following was agreed

- Members agreed that to transfer 700MW power from Pallatana generation project (500MW to NR and 200MW to NER), following transmission system would be required :
  1. Power project (Pallatana) - Silchar 400kV D/C line with twin moose conductor
  2. Silchar-Bongaigaon 400kV D/C line with twin moose conductor and 40% series compensation
  3. New 2x200 MVA, 400/132 kV sub-station at Silchar (Assam)
  4. Extension of Bongaigaon substation by 400/220kV, 315MVA transformer.
  5. Bongaigaon - Siliguri 400 kV D/C line with quad Moose conductor
  6. Purnea – Biharsharif 400 kV D/C line with quad Moose conductor

  Items 1 to 4 are part of the interconnection arrangement of OTPC generation upto Bongaigaon would be in the scope of M/s OTPC. The transmission charges for item 5 & 6 i.e. the transmission system beyond Bongaigaon would have to be borne by NR constituents.
- OTPC should also make sure of the execution of the 132kV interconnection of the new substation at Silchar with the existing transmission system. This is essential as the proposed transmission system from power plant to Bongaigaon can not be operated without proper anchoring arrangement at Silchar.
- For supply of power to Tripura, the necessary arrangement along with cost at the Pallatana switchyard shall be carried out by the generating company and the transmission line would require to be tied up.
- M/s OTPC would be entering into suitable agreements including BPTA with POWERGRID/STU's for payment of transmission charges of the respective system as per CERC /SERC norms.

The meeting ended with a vote of thanks

Annexure-I

List of Participants

CEA	
1. Sh. A.K.Asthana	Chief Engineer (SP&PA)
2. Sh.Gautam Roy	Dy.Director, CEA.
3. Sh.Rajeev Kumar	Asst.Dorector, CEA.
POWERGRID	
1. Sh. R.N.Nayak	Executive Director(Engg,QA&I & HR)
2. Sh. Y.K.Sehgal	AGM(Engg)
3. Sh. Ashok Pal	Chief Design Engineer(Engg)
DTL	
1. Sh. A.K.Kaul	GM(SLDC)
2. Sh.Raj Bhatia	GM(Pllg)
HVPNL	
1. Sh. T.K.Dhingra	SE(planning)
2. Sh.S.K.Bansal	Exec.Engineer
RRVPNL	
1. Sh Y.K.Raizada	Director(Trans)
2. Sh.Umesh Gupta	CE(PPM)
3. Sh. L.N.Nimawat	Addl.S.E(PSS)
J&K,PDD	
1. Sh.R.K.Seli	CE(S&O), Jammu
PSEB	
1. Sh. K.S.Jolly	CE(SO&C)
2. Sh. I.S.Anand	Director(Planning)
3. Sh.Padmjit	Advisor
PTCUL	
1. Sh. Mohan Ram	MD
2. Sh.J.P.Tomar	DGM
3. Sh.V.K.Gupta	Consultant
UPPCL	
1. Sh. V.K.Aggarwal	SE(T&C)
2. Sh.V.P.Tewari	EE(Planning)
BBMB	
1. Sh.Niraj Gulati	Dy.Chief Engineer
NTPC Ltd	
1. Sh.Ajit Kumar	AGM(Elect)
2. Sh. Pramod Kumar	DGM(E)

NHPC

1. Sh. Raj kumar	GM(T&RE)

NRPC

1. Sh.S.P.Singh	Member Secretary
2. Sh.R.P.Aggarwal	SE(O)
3. Sh.Pralad Meena	Xen(O)

PTC

1. Sh.S.S.Sharma	Sr.V.P.
2. Sh.Harish Saran	V.P.

HPSEB

1. Sh.S.K.Chanana	CE(SP)
2. Sh.R.L.Gupta	Dir(SP)
3. Sh.R.N.Kaul	Dir(I/S)

NPCIL

1. Sh.Sandeep sarwate	S.O./F.

IL&FS

1. S.C.Misra	Advisor(T)
2. Haziq Beg	VP

Maithon Power Ltd

1. R.K.Agarwal	CEO & ED
2. G.R.Nagengdran	Company Secretary

REGL

1. S.K.Deb	Sr.V.P
2. P.Srinivasan	Head Project
3. Rakesh Raman	Chief Project Manager
4. Mukesh Paliwal	Head Network study

NTPC-Lohari Nagpala

1. Sh Vinod Padha	AGM (Comml)
2. Sh.A.Basu	Ch Manager (Comml)

पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)
पावरग्रिड

केन्द्रीय कार्यालय "सौदामिनी" प्लॉट सं. 2, सैक्टर–29, गुड़गॉव–122 001, हरियाणा
फोन : 2571700 - 719 फैक्स : 2571760, 2571761 तार 'नेटग्रिड'
Corporate office : "Saudamini" Plot No. 2, Sector-29, Gurgaon-122 001 Haryana
Tel. : 2571700 - 719, Fax : 2571760, 2571761 Gram : 'NATGRID'

संदर्भ संख्या /Ref. Number

C/ENG/SEF/N/ LTOA

April 9, 2007

To

As per the List Attached

Sub: Minutes for Long Term Open Access Application of M/s PTC for evacuation of power from Karcham Wangtoo HEP in Northern region

Sir,

We write with reference to the Long Term Open Access Meeting held on 12/03/2007 at Udaipur, wherein the application from M/s PTC for transfer of power from Karcham Wangtoo which was discussed. Please find enclose the Minutes for the same.

Thanking You,

Yours faithfully

(Y.K.Sehgal)
Addl. General Manager (Engg-SEF)

1. Sh. V.Ramakrishna
Member(PS), CEA,
Sewa Bhawan, R.K. Puram,
New Delhi –66

2. Sh. S.P.Singh Gaharwal
Member Secretary,NREB
18A, Shaheed Jit Singh Sansawal Marg, Katwaria Sarai, New Delhi – 110 016

3. Director (Projects),HVPNL,
Shakti Bhawan, Sector-6,
Panchkula-134109 Haryana,

4. Chief General Manager (Trans.),
UPPCL, Shakti Bhawan Extn.3rd floor, 14, Ashok Marg,
Lucknow - 226001

5. Executive Director (E&M),
National Hydroelectric Power Corporation
N.H.P.C. Office Complex,
Sector-33, Faridabad-121003.

6. Director (Operations)
NTPC Bhawan, Core-7, Scope complex, Lodhi road New Delhi-110003

7. Director (Operation)
PTC India Ltd,2nd Floor,
15NBCC Tower, Bhikaji Cama Place,
New Delhi – 110 066

8. Director (Operations)
Delhi Transco Ltd.,Shakti Sadan,
Kotla Road, New Delhi-110 002

9. Managing Director
PTCUL, Urja Bhawan,
Kanwali Road, Dehradun,
Uttaranchal-248001

10. Director(Transmission)
RRVPNL, Vidyut Bhawan,
Janpath, Jyoti Nagar, Jaipur,
Rajasthan.

11. Chief Engineer (Operation),
Electricity Department,
UT Sectt, Sector-9D
Chandigarh.-161009

12. GM(Transmission)
Nuclear Power Corporation of India Ltd. 9-s-30,12th Floor, North Wing, VS Bhawan
Anushaktinagar, Mumbai 400 094

13. Member(Operation)
Punjab State Electricity Board,
Mall Road, Patiala,-147001, Punjab.

14. Member(Technical),
HPSEB,
Vidyut Bhawan, Shimla-171004

15. Power Development Commissioner,
Power Development Department, J&K,
Janipur, Jammu.

16. Member(Power),BBMB,
Sector 19-B, Madhya Marg,
Chandigarh.- 160019

17. Shri Rajiv Bhardwaj
Director,
Jaypee Karcham Hydro Corporation Ltd.
JA House, 63, Basant Lok,
Vasant Vihar, New Delhi

Minutes of Meeting for Long Term Open Access Application of M/s Power Trading Corporation Ltd for transfer of 689.92MW from Karcham Wangtoo HEP held on 12/03/2007 at Udaipur

List of Participants is enclosed at **Annexure-I**

POWERGRID welcomed the participants to the long-term open access meeting of Northern Region and informed that application from M/s Power Trading Corporation Limited for transfer of power from Karcham Wangtoo HEP was discussed in the long-term open access meeting held on 03/11/2006 for Northern region. During the discussion HPSEB informed that in the upstream of Karcham Wangtoo many hydro projects would be developed and there is a serious Right-of Way constraint and while developing the transmission system these should also be considered and accordingly the following was agreed:

- LILO of Nathpa Jhakri – Baspa 400 kV D/c line at Karcham Wangtoo and Karcham Wangtoo – Abdullapur 400 kV D/c (Quad) including bays at both ends would be the dedicated transmission system and all the costs towards this would be borne and implemented by the project developer. Beyond Abdullapur, a 400kV D/c (Triple Conductor) would be constructed to Sonepat substation for reliable transfer of Karcham Wangtoo power to beneficiaries. Abdullapur-Sonepat 400kV D/c (Triple Conductor) shall be a regional scheme.

- As full generation capacity (1000MW) would be injected into the Grid the applicable pooled transmission charges should be for the full generation capacity as per the present practice. The issue of sharing of transmission charges for free power needs to be resolved between M/s PTC, M/s Jaypee Karcham Hydro Corporation Ltd (JKHCL) and HPSEB.

- Requisite agreement needs to be signed for payment of transmission charges by M/s PTC India Ltd and JKHCL. The applicable transmission charges shall be as per CERC norms.

- The Long Term Open Access can be granted subject to the conditions mentioned above.

POWERGRID further informed that M/s Jaypee Karcham Hydro Power Ltd have now raised the issue that as their generation project is of only 1000MW capacity, a 400kV D/c line with triple conductor would be adequate from Karcham Wangtoo to Abdullapur and this is increasing their cost & affecting competitiveness.

HPSEB representative mentioned they are planning to implement the Shongtog Karcham, Jhangi Thopan and Thopan Powari hydro projects, totaling to about 1350 MW, in the upstream of Karcham Wangtoo HEP and these should be considered while finalizing the transmission system of Karcham Wangtoo.

In this regard Mr. Bhardwaj from JKHCL brought out that there is a cost increase in 400 kV Quad D/c line in place of constructing the line with triple conductor. It was further informed by Mr. Bhardwaj of JKHCL that cost of the dedicated system would be approximately Rs. 900 Crores. CEA and all the constituents / beneficiaries of

Northern region noted the increase and reiterated the requirement of Quad D/c line. Further no objection was raised by any of the participant.

In regard to the sharing of regional transmission charges POWERGRID informed that during the last meeting CEA & Constituents were of the opinion that the it should be corresponding to full 1000 MW generation capacity of Karcham Wangtoo as the full power from the project would be injected into the Northern region Grid. As there is a allocation of 12% free power to Govt of Himachal Pradesh the sharing of regional charges for this free power was to be resolved by PTC / JKHCL with Himachal Pradesh. Representative of JKHCL informed that as per the allocation 704 MW has been allocated to PTC, 176 MW power has been reserved for Merchant sale and balance 120 MW is the free power to Govt of Himachal Pradesh and they are ready for sharing the regional transmission charges for 176 MW of their power. PTC also confirmed that they are also ready to bear the transmission charges for 704 MW. It was further opined by the members that POWERGRID should grant the open access for the desired quantum of power i.e. 880 MW (704 MW of PTC and 176 MW by JKHCL) and pooled transmission charges of Northern Region shall be recovered in proportion to 880 MW. All the constituents agreed for the same.

Member (PS), CEA directed HPSEB that system development in their state is their responsibility and they should convene a meeting of the concerned parties and discuss the matter.

Concluding the discussions following was agreed:

- The dedicated transmission system of Karcham Wangtoo would include the LILO of Nathpa Jhakri – Baspa 400 kV D/c line at Karcham Wangtoo and Karcham Wangtoo – Abdullapur 400 kV D/c (Quad) including bays at both ends & line reactors. Dedicated transmission system shall be implemented by the project developer and all the costs towards implementation as well as for O&M shall be borne by them.

- CEA and all the constituents / beneficiaries of Northern region noted that there is cost increase for the construction of 400 kV Quad D/c line in place of 400 kV Triple conductor D/c line and reiterated the requirement of Quad D/c line. Further no objection was raised by any of the participant.

- It was also agreed that the PTC and JKHCL shall pay the Northern regional transmission charges corresponding to the allocation of power i.e. 704 MW to PTC and 176 MW to JKHCL from the generation project from the beneficiaries of the project.

- Requisite agreement needs to be signed for payment of transmission charges by M/s PTC India Ltd and JKHCL with POWERGRID. The applicable transmission charges shall be as per CERC norms.

- The Long Term Open Access can be granted subject to the signing of the desired agreements.

Annexure-I

List of Participants

CEA	
1. Sh. V Ramakrishna	Member (PS)
2. Sh. A.K.Asthana	Chief Engineer (SP&PA)
POWERGRID	
1. Sh. Y.K.Sehgal	AGM(Engg-SEF)
2. Sh. Mukesh Khanna	Chief Design Engineer(Engg-SEF)
DTL	
1. Sh. Raj Bhartiya	GM(Plg)
2. Sh.Bhupinder Nath	DGM(Plg)
HVPNL	
1. Sh. A S Chugh	Director (Projects)
2. Sh. T.K.Dhingra	SE(Planning)
RRVPNL	
1. Sh Y.K.Raizada	Director(Trans)
2. Sh.Umesh Gupta	CE(PPM)
3. Sh. M K Kasliwal	S.E
4. Sh. L.N.Nimawat	Addl.S.E(PSS)
J&K,PDD	
1. Sh.R.K.Seli	CE(S&O), Jammu
PSEB	
1. Sh. K.S.Jolly	CE(SO&C)
2. Sh. I.S.Anand	CE(Planning)
PTCUL	
1. Sh. Mohan Ram	MD
2. Sh.J.P.Tomar	GM
UPPCL	
1. Sh. A Guha Roy	SE(Planning)
2. Sh.V.P.Tewari	EE(Planning)
BBMB	
1. Sh.Niraj Gulati	Dy.Chief Engineer
NTPC Ltd	
1. Sh.Ajit Kumar	HOD (Elect)
2. Sh. Pramod Kumar	AGM
PTC	
1. Sh.Kunal Yadav	Manager.
HPSEB	
1. Sh.R.L.Gupta	Dir(SP)

NPCIL

1. Sh. K P Singh — Addl. CE

Jaypee Karcham Hydro Corporation Ltd.

1. Rajiv Bhardwaj — Dir

GMR Bajoli Holi Hydropower Private Limited

GMR

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New Shakti Bhawan, Building No. 302,
New Udaan Bhawan Complex
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W www.gmrgroup.in

Ref: GMR/Bajoli Holi/NRPC/2024/4800
Date: 22.03.2024

The Member Secretary
Northern Regional Power Committee
18-A, Qutab Institutional Area
Shaheed Jeet Singh Marg
Katwaria Sarai,
New Delhi 110016,

pl examine
SE(O)
01/04/24

EE(P)
02/4/24

सं./No. 363
दिनांक/Date 3/4/20

8/4/24
A meeting may be planned with all stakeholders.

Sub: ***Request from GMR Bajoli Holi Hydropower Pvt. Ltd for approval of existing IaSTS system in the state of Himachal Pradesh to ISTS System .***

Dear Sir,

1. GMR Bajoli Holi Hydropower Private Limited (GBHHPL) established a 180 MW Hydropower Project at Village Holi- District Chamba, Himachal Pradesh, which has been operational since 28.3.2022.

2. GBHHPL is a HP State embedded generator and evacuating their generated power over Transmission system established by Himachal Pradesh Power Transmission corporation Limited (The HP STU). The Transmission System being utilized by GBHHPL comprises of 3 elements as 220 KV D/c Bajoli Holi – Lahal Transmission Line, 630 MVA- 400/220/33 KV Lahal PS and 400 KV D/C Lahal- Chamera-II (Rajera-CTU PS at Chamba).

3. GBHHPL is a having granted 178.2 MW LTA from HP STU and GNA Connectivity for 155 MW from CTU. Where in the LTA has been operationalized by HP STU on 11.1.2023.

4. As the Tariff for the STU system is yet to be determined, GBHHPL is paying Transmission Charges in the tune of Rs 45 Cr/Annum towards LTA as an Interim, which is mutually agreed between GBHHPL and HPPTCL.

5. it is noteworthy that all the 3 Transmission elements, mentioned above, were developed to evacuate power of GBHHL along with other HEPs to Chamera Pooling Station (under purview of Central Transmission Utility) and are being utilised to transmit power outside the state of Himachal Pradesh over ISTS network. As, by virtue, this IaSTS is terminating to CTU PS at Chamera -II to connect ISTS through the last leg of said STU system i.e. 400 KV Lahal Chamera (Rajera).

6. It is also pertinent to mention that "The beneficiaries of GMR Bajoli Holi are the Delhi international Airport (DIAL) and Uttar Pradesh Power Corporation Limited (UPPCL) in NR.

4

7. Further, the Transmission system comprising the Lahal SS and Lahal-Chamera Line caters to various HEPs (including GBHHPL) in the State of Himachal Pradesh wherein power is not supplied within the State of Himachal Pradesh. It is reiterated that GMR BHHP's 100 % power (discount 12% Free power to the state) is getting evacuated through this Evacuation System and such flow of power is permanent in nature due to the PPA executed with the Delhi International Airport and UPPCL located in NR.

8. It is also confirm from above that proper maintenance of these laSTS is being carried out by HPPTCL (currently under the supervision of HPPTCL (HP STU)) & would be utilised by JSW Kuther (240 MW) where power will also be evacuated outside the state of Himachal Pradesh as they have a PPA with Haryana Discoms. The JSW Kuther project is expected to commission in the coming financial year of 2024-2025. Pertinently, this evacuation will also utilise the 630 MVA Lahal Pooling station and 400 KV D/C Transmission Line from Lahal to Chamera _II.

9. It is relevant to note that these above-mentioned Transmission Line and substation are non ISTS and carrying Inter- State Power on regular basis, under operation & appropriate metering system is in place on them.

10. In view of the above as explained, that the above system falls under the category of a Non ISTS system as per the Cl 93 of the CERC Tariff Regulation -24-29.

Therefore, you are requested to put up your recommendations under the prevailing Tariff Regulation and endorse that the exiting laSTS system in the state of Himachal starting from the GMR Bajoli Holi Bus till Chamera _II (PS) including 630 MVA Lahal Pooling Station (STU-PS) is a non ISTS system and shall be considered as ISTS system.

Thanking you,

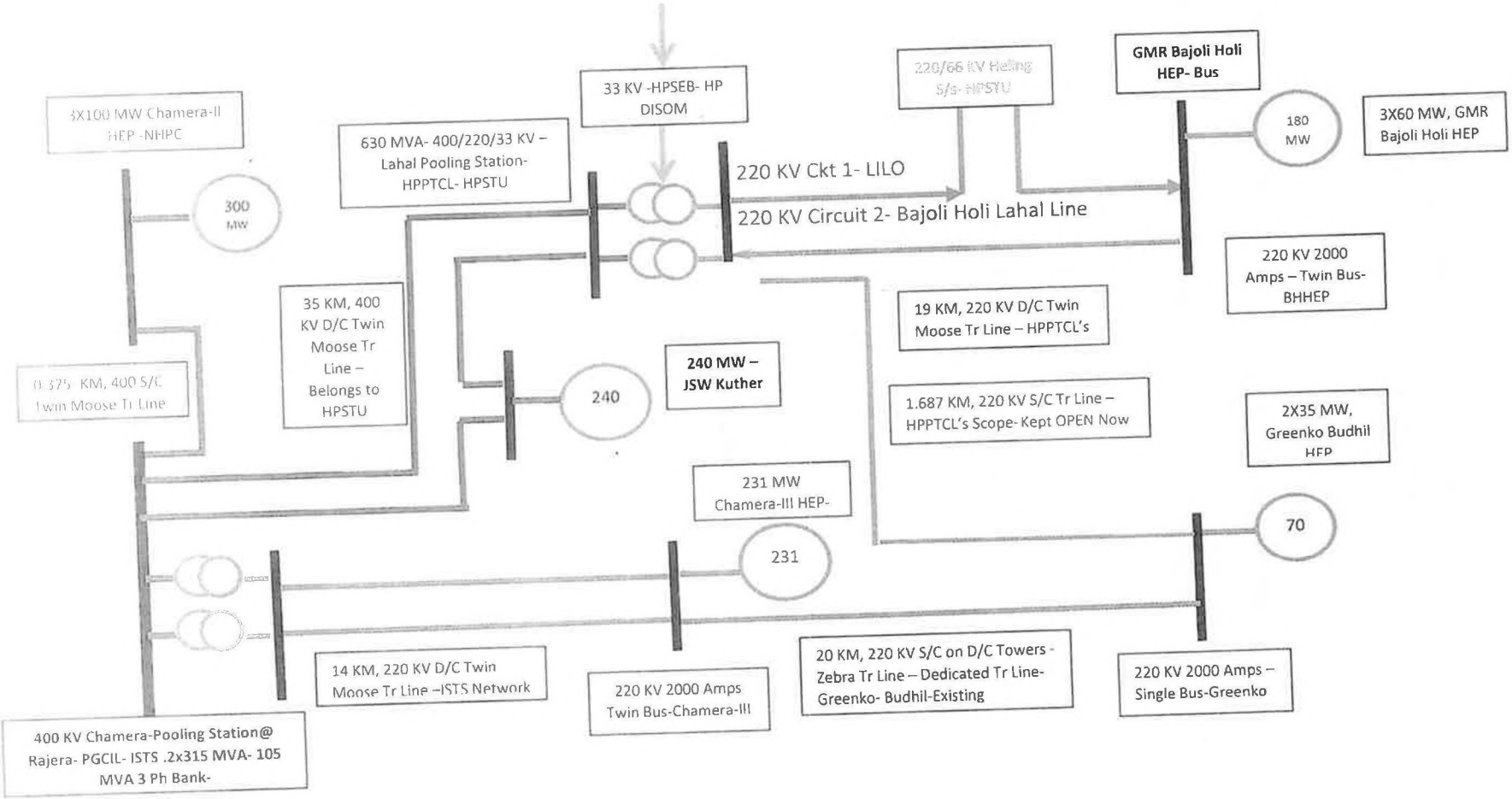
Yours sincerely,

For and on behalf of GMR Bajoli Holi Hydropower Pvt. Ltd.

22/3/2024

Gopendra Saraswat
Plant Head

Schematic of Transmission Lines, Substations and HEP's at a Glance- The Tr System from Bajoli Holi Bus including Lahal PS till Chamera-II PS (Rajera) is a Radial System



ANNEXURE -2

UPPER PART OF SATLUJ BASIN & SPITI VALLEY (SATLUJ BASIN)

The list of identified hydro projects in the Upper Part is given below:

S.No.	Project	MW	Time Frame	Developer	Status of Application for Access to Grid as per CERC regulations
1	SHPs	142	2014		
2	Shongtong Karcham	450	2017	HPPCL	Received
3	Kashang-I	65	2013	HPPCL	Received
4	Kashang-II & III	65 & 65	2015 2017	HPPCL	Received
5	Kashang-IV	48	-	HPPCL	
6	Tidong-I	100	2015	Nagarjuna Constructions Group	Received
7	Chango Yangthang	140	2017	Bhilwara Group	Received
8	Yangthang Khab	261			X
9	Ropa	60			X
10	Khab	636			X
11	Tidong-II	90			X
12	Jhangi Thopan	480			X
13	Thopan Powari	480			X
14	Sumte Khatang	130			X
15	Lara Sumte	104			X
16	Mane-Nadang	70			X
17	Lara	60			X
18	Killing-Lara	40			X
	Total	**3486**			

CHANDRABHAGA BASIN (LAHAUL & SPITI AREA)

The list of identified projects in the upper part is given below:

S.No.	Project	MW	Time Line	Developer	Status of Application for Connectivity / Access to Grid as per CERC regulations
1	Chhatru	120	2018	DCM Sriram	X
2	Teling	94			X
3	Shangling	44		Reliance Power	X
4	Jispa	300		HPPCL	X
5	Tandi	104		ABG Shipyard	X
6	Rashil	130		ABG Shipyard	X
7	Bardang	126		ABG Shipyard	X
8	Tignet	81		Amar-Mitra JV	X
9	Pattam	60			X
10	Seli	400	2017-18	Moser Baer	Connectivity Application Received
11	Miyar	120	2016-17	Moser Baer	Connectivity Application Received
12	Reoli Dugli	420	2018	L&T	X
13	Sach Khas	149	2018	L&T	X
14	Purthi	300		Reliance Power	X
15	Duggar	236		Tata + SN Power	X
16	SHPs	300			
17	Other	500			
	Total	**3500**			

Planned Transmission System alongwith phased development for upper part of Satluj Basin and Spiti Valley (Satluj Basin)

- **SHPs** : Establishment of 66/220/400 kV GIS Pooling Station at Wangtoo by Mid 2014 to match commissioning of SHPs in Bhaba Khad (57 MW) and Sangla Valley (40 MW) + LILO of 220 kV Kashang- Bhaba D/c Line and LILO of both circuits of 400 kV Karcham Wangtoo-Abdullapur D/c line at Wangtoo. – ***Proposed Implementation through STU.***

  HPPTCL proposed to implement this substation by Mid 2014 and they have tied up the funds from ADB. The switchgear rating and bus capacity etc. at Wangtoo substation should be equivalent to 4000 Amps.

- **Kashang-I (65 MW), Kashang-II (65 MW) and Tidong-I (100 MW)** : During the meeting HPPTCL stated that Kashang-I is likely to be commissioned by 2013. For evacuation of power from Kashang-I, HP is constructing a 220 kV D/c line from Bogtu to Kashang. Accordingly, power can be evacuated through Bogtu - Bhabha 220 kV D/c line. HPPTCL stated that Tidong-I is under construction and is likely to be commissioned by December 2014. Since, Tidong-I (100 MW) is due for commissioning in December, 2014 and Jangi Pooling station may not come up by that time, Tidong-I power shall be temporarily evacuated by LILO of one circuit of 220 kV D/C Kashang- Bhaba line at Tidong-I HEP. These works shall be carried out by HPPTCL. Later on when Jangi P.S. is commissioned, Tidong-I - Jangi line shall be constructed and also Kashang – Jangi 220 kV D/c line with ingle HTLS conductor shall be established. These works are proposed to be carried out by HPPTCL.

  HPPTCL further informed that works for Kashang-II (65 MW) has also been awarded and commissioning is expected by 2015. It was suggested that Kashang-II is also evacuated through 220 kV system as Jangi pooling station may not be available in that time frame, however some constraints may be faced during contingency of outage of one circuit. POWERGRID stated that establishment of Jangi Pooling station may be taken up with further stages of Kashang.

- **Shongtong Karcham** : During the meeting it was informed that Shongtong Karcham HEP (450 MW) is likely to be commissioned by 2017. For transfer of power from this project, following is proposed:
  - Shongtong Karcham – Wangtoo 400 kV D/c Line (Quad HTLS Conductor –Equivalent to about 3000MW) – 18 km - ***Proposed Implementation as ISTS***
  - Switchyard Capacity etc. must be able to handle about 2800-3000MW power planned in the upstream of the generation project. It is proposed that the GIS switchyard may be designed with 4000 Amps switchgear. However, the cable capacity from Pot head yard to GIS switchyard may be augmented with generation addition in the upstream projects.

- **Kashang-III (65 MW) & Kashang-IV (48 MW) and Tidong-II (90 MW) HEP**: Evacuation of power from Kashang –I (65 MW), Kashang –II (65 MW) and Tidong-I (100 MW) is discussed above. With the commissioning of other stages of Kashang and Tidong, the power shall be injected at Jangi pooling station. The

Jangi Pooling station shall be established by this time frame. Transmission scheme for Kashang & Tidong shall be as given as below:

- Kashang-Jangi Pooling Station 220 kV D/c line (Single HTLS- Equivalent to 300 MW capacity) - ***Proposed Implementation as STU network***
-
- 2x315 MVA (7x105 MVA units) 220/400 kV GIS Pooling Station at Jangi (with 4000 Amps. switchgear) (with space provision for 3rd ICT) - ***Proposed Implementation as ISTS***
- LILO of one ckt. of Shongtong –Wangtoo 400 kV Line at Jangi - ***Proposed Implementation as ISTS***
- Tidong – Jangi Pooling Station 220 kV D/c line - ***Proposed Implementation as STU network***

Note: After coming up of Kashang III & Tidong-II and its inter-connection with Jangi Pooling Station, the Kashang-Bogtu 220kV line has to be kept in open condition.

- **Chango Yangthang (140 MW)**: Chango Yangthang is envisaged to be commissioned by 2017. Following transmission system is proposed matching with Chango Yangthang:
  - Chango Yangthang – Proposed site of Ka Dogri Pooling Station 220 kV D/c line – 18 km - ***Proposed Implementation by developer***
  - Proposed Site of Ka Dogri – Jangi Pooling Station 400 kV D/c line (Twin Moose) to be initially charged at 220 kV – 50 km ***Proposed Implementation as ISTS***
  - Provision of 3rd 400/220 kV ICT (3 nos. of 105 MVA Single Phase units) at Jangi Pooling Station - ***Proposed Implementation as ISTS***

- **Yangthang Khab (261 MW)**:
  - 220 kV Yangthang Khab- Ka Dogri D/c Line with HTLS conductor - adequate for 300 MW capacity – 4 km - ***Proposed Implementation as ISTS***
  - 2x315 MVA (7x105 MVA units) 220/400 kV GIS Pooling Station at Ka Dogri - ***Proposed Implementation as ISTS***
  - Charging of Ka Dogri – Jangi line at 400 kV level - ***Proposed Implementation as ISTS***
  - Direct termination of Chango Yangthang at Ka Dogri Pooling Station - ***Proposed Implementation by generation developer***

- **Khab (636 MW)**:
  - Khab – Jangi Pooling Station 400 kV D/c line – 20 km - ***Proposed Implementation as ISTS***

- **Jangi Thopan (480 MW) & Thopan Powari (480 MW) :**
  - LILO of one circuit of Jangi Pooling Station – Wangtoo 400 kV D/c (Quad HTLS) line at generation project - ***Proposed Implementation as ISTS***
  - Switchgear Capacity at Generation switchyard must be equivalent to 4000 Amps.

- **Ropa (60 MW)**

- Direct injection to Jangi Pooling station by a 220 kV D/c line - ***Proposed Implementation by generation developer***
- The generation of SHPs in the area may be injected at Ropa Generation Switchyard

- **Other Projects of Spiti Valley (Satluj Basin)**
  - The generation of these projects can be injected at Ka Dogri Pooling Station.
  - From Killing Lara (40 MW), Lara (60 MW) & Mane Nadang (70 MW), a combined 220 kV D/c line can be constructed upto Lara Sumte HEP. From Lara Sumte HEP(104MW), a high capacity 220 kV line (with twin Moose conductor) can be constructed upto Ka Dogri Pooling Station - ***Proposed Implementation as ISTS except for the generators below 50 MW.***
  - Augmentation of transformation capacity would be required at Ka Dogri. Space for 2 additional ICTs of 315 MVA (105 MVA single phase units) would be required. These transformers can be provided progressively matching with the generation addition. - ***Proposed Implementation as ISTS***

NOTE :

Present / Planned system beyond Wangtoo station would be capable of handling about 500-600 MW of power (to be confirmed with the development of the generation proejcts). One more additional high capacity line (400 kV Quad) from Wangtoo towards Haryana/Punjab shall be required which can be constructed through the right bank of the river.

B

Planned Tr. System alongwith Phased development for Chandrabhaga Basin

The total power in this area is about 3850 MW (considering 10% overload). Out of these projects, two projects namely, Miyar & Seli are expected to come up by 2017 and three projects Chhatru, Reoli Dugli & Sach Khas are expected by 2018. The next project expected in this area would be Jispa. The status and time frame of other projects are not yet clear.

Based on the progress of generation, availability of corridors, severe R-o-W constraints near Seli, quantum of power, it was considered prudent to develop two transmission corridors, one towards Hamirpur and the other towards J&K. It is proposed that the corridor to start from Seli HEP would go towards Hamirpur and the other corridor to start from Reoli Dugli would go towards J&K. The corridor capacity towards Hamirpur would be of the order of 2500 MW and corridor capacity towards J&K would be about 1500 MW.

Keeping above observations in view, following transmission system is proposed which is matched with the sequence of commissioning of generation projects:

CHANDRABHAGA CORRIDOR-I

Seli HEP (400 MW): Earlier the Project size was 320 MW, however with the detailed investigations, the project size is revised to 400 MW.

- 400 kV D/c Line (Twin HTLS-Adequate for about 2000 MW) from Seli to the site of 400 kV Pooling Station near Sissu /Gramphu (Pooling Station shall not be constructed during this time frame) - ***Proposed Implementation as ISTS***
- From site proposed near Sissu/Gramphu Pooling Station – Hamirpur 400 kV D/c (Triple HTLS – adequate for 2500 MW capacity) – For this line section, Rohtang Pass is to be crossed. There is about 8-10 feet of snow at Rohtang Pass during winters and working season is very less. For implementation of overhead line, SASE and some international expert would have to be involved. Special design with pole type towers may be required which can be firmed up during detailed engineering. - ***Proposed Implementation as ISTS***

Miyar HEP(120 MW) :

- Step up of Miyar generation at 400 kV level
- LILO of one circuit of Seli – Hamirpur (via Rohtang) 400 kV D/c line (Twin HTLS) at Miyar - ***Proposed Implementation as ISTS***

Note : During the meeting it was informed that Miyar would come up earlier than Seli, the line from Miyar to Hamirpur (configuration explained under Seli system) may be taken up initially and the same can be extended to Seli.

Chhatru HEP (120 MW) : With the coming of Chhatru HEP, following is proposed:

- Establishment of 2x315 MVA (7x105 Single Phase units) 400/220 kV GIS Pooling station near Sissu / Gramphu - ***Proposed Implementation as ISTS***
- Chhatru – Sissu / Gramphu GIS Pooling Station 220 kV D/c line (HTLS adequate for 300 MW per circuit) - ***Proposed Implementation as ISTS***
- LILO of both circuits of Seli - Hamirpur line at Sissu/ Gramphu GIS Pooling Station.- ***Proposed Implementation as ISTS***

Teling & Shangling HEP (94 & 44 MW) : For evacuation of power from these projects, following is proposed:

- LILO of one circuit of Chhatru – Sissu / Gramphu Pooling Station 220 kV D/c (HTLS) at Teling - ***Proposed Implementation as ISTS***
- LILO of one circuit of Chhatru – Sissu / Gramphu Pooling Station 220 kV D/c (HTLS) at Shangling - ***Proposed Implementation by STU or developer***

Note: The capacity of generation switchyards at Chhatru, Teling & Shangling HEPs must be equal to power handling capacity of 300 MW otherwise there would be constraints during contingency of outage of one circuit.

Jispa (300 MW): For evacuation of power from Jispa HEP, following is proposed:

- Jispa – Sissu / Gramphu Pooling Station 400 kV D/c line - ***Proposed Implementation as ISTS***

Bardang HEP (126 MW) : Following is proposed for Bardang HEP

- Step up at 400 kV
- LILO of one circuit of Seli – Sissu / Gramphu Pooling Station 400 kV D/c (Twin HTLS) - ***Proposed Implementation as ISTS***

Rasil HEP (130 MW)

- Step up at 400 kV
- LILO of one circuit of Seli – Sissu / Gramphu Pooling Station 400 kV D/c (Twin HTLS) - ***Proposed Implementation as ISTS***

Tandi HEP (104 MW)

- Step up at 400 kV
- LILO of one circuit of Seli – Sissu / Gramphu Pooling Station 400 kV D/c (Twin HTLS) - ***Proposed Implementation as ISTS***

Pattam HEP (60 MW) :

- Step up at 220 kV
- Pattam – Miyar 220 kV D/c - ***Proposed Implementation as ISTS***
- Provision of 1x250 MVA(4 nos. of 83.3MVA Single Phase units), 220/400 kV GIS Pooling Station at Miyar. Incase of space constraints at Miyar switchyard, a separate pooling station would be required.- ***Proposed Implementation as ISTS***

Tignet HEP (81 MW)

- Step up at 220 kV
- LILO of one circuit of Pattam – Miyar 220 kV D/c - ***Proposed Implementation as ISTS***

For Pattam & Tignet HEP transmission systems, it is assumed that Pattam would be coming up prior to Tignet. In case Tignet HEP materializes before Pattam, 220 kV D/c line and provision of ICTs shall have to be matched with Tignet HEP.

NOTE: (Additional system beyond Hamirpur would be planned based on the requirement / commissioning of new projects.) - ***Proposed Implementation as ISTS***

CHANDRABHAGA CORRIDOR-II

It was proposed that the generation projects in the downstream of Seli HEP i.e. Reoli Dugli (420 MW), Sach Khas (149 MW), Purthi (300 MW) and Duggar (236 MW) may be evacuated through Jammu region as these projects are close to that region, there are severe R-o-W constraints from Seli to Reoli Dugli and it may not be feasible / reliable to evacuate full 3850 MW through single corridor.

Reoli Dugli HEP (420 MW) & Sach Khas (149 MW): Both these projects are allocated to L&T and investigations for preparation of DPR are in progress. As per preliminary discussions, these projects are expected to come up by 2018. Following transmission scheme is proposed for evacuation of power from these projects:

- Generation step up at 400 kV level (for both projects)
- Reoli Dugli– Kishtwar 400 kV D/c (Twin HTLS-Adequate for 1500 MW) - ***Proposed Implementation as ISTS***
- Establishment of 400 kV switching station at Kishtwar - ***Proposed Implementation as ISTS***

- LILO of Dulhasti / Ratle – Kishenpur 400 D/c (Quad) line at Kishtwar - ***Proposed Implementation as ISTS***
- LILO of one circuit of Reoli – Kishtwar at Sach Khas - ***Proposed Implementation as ISTS***
- Generating Switchyard capacity to be kept for 1500 MW at each Power House.

Purthi HEP (300 MW) : Following transmission system is proposed with Purthi HEP

- Generation step up at 400 kV level
- LILO of one circuit of Reoli – Kishtwar 400 kV D/c at Generating station - ***Proposed Implementation as ISTS***
- Generating Switchyard capacity to be kept for 1500 MW at Power House.

Duggar HEP (236 MW): Following is proposed for transfer of power from Duggar

- Generation step up at 400 kV level
- LILO of one circuit of Reoli – Kishtwar 400 kV D/c at Generating station - ***Proposed Implementation as ISTS***
- Generating Switchyard capacity to be kept for 1500 MW at Power House.

Note: Initially some margins may be available beyond Kishtwar, however system strengthening would be required depending on the generation addition. - ***Proposed Implementation as ISTS***

Rabi basin

Major projects existing in Rabi Basin are Chamera-I (540MW) and Chamera-II (300MW).For evacuation of power 400 kV D/C line from Chamera-I to Jullendher and 400kV S/Cfrom Chamera-I to Kishenpur LILOed to Chamera-II are existing. Chamera-III (231MW)and Budhil (70MW) are under construction and Kuther(260 MW), Bijoli holi (200 MW),Bara Bengal (200 MW), Burmur (45 MW), Hudsar (60 MW) and Kugti (45 MW) are planned.

For evacuation of power from the projects upstream of Chamera-II, a 400/220kV pooling station is planned near Chamera-II which is required matching with Budhil HEP with would be the next project in the valley. This pooling station would be connected toChamer-II through a 400kV S/C line and to Jullundhar through 400kV D/C line. The line to Jullundhar would be needed with the next generation project which is Chamera-III.

A 220kV pooling station at a suitable location upstream of Chamera III is also proposed where power is proposed to be pooled and transmitted to Chamera-II 400/220kV pooling station through three numbers of 220kV D/C lines with 1xMoose conductors. These would be optimum solution for phased development. However, if there are physical constraints in constructing three of 220 kV D/C lines through the valley, it may be required to built two nos. of 220 D.C lines with 2x Moose conductors

Beas Basin

The existing major projects in Beas basin are Malana-I (87MW) and Larji (126 MW). Power from both these projects is being evacuated through 132 kV HPSEB system. The other major projects in Beas/Parbati basin are Allain Duhangan (192 MW), Malana-II(100MW), Koldam (800MW) Parbati-II (800 MW), Parbati III (501 MW) and Sainj (100 MW).Evacuation from Koldam, Parbati-II and Parbati-III is planned through 400kV system. The transmission lines are:

Koldam-Nalagarh 400kV D/C Quad conductor
Parbati-II-Koldam 400kV 2xS/C Quad conductor
Koldam-Ludhiana 400kV D/C Triple conductor

With Parbati-III, a pooling station at Panarsa is proposed and Panarsa-Amritsar 400kV D/C twin Moose line has been planned.

The Panarsa 400/220kV pooling station was required in the time frame of Allain Duhangan and Malana-II. However, as the time schedule did not match, a direct 220kV D/C line from Allain Duhangan to Nalagarh has been taken-up for construction by ADHPL. This line with 1xZebra conductor has a capacity of 400 MW through which Malana-II power can also be evacuated.

Power from Sainj is proposed to be evacuated through 400kV via Parbati-III. For this, either Sainj may adopt direct step-up to 400kV or have its own 400/132kV substation.

The 400/220kV pooling station at Panarsa would still be needed to pool the power to be received from Tandi 220kV pooling station proposed in Chenab basin. As the line from Tandi would be at high altitude, and there may also be need of cables in some portion,220kV line would be a better option rather that 400kV. The 220kV lines would have to be with higher conductor specification say 220kV D/C line with quad Moose conductors.

ANNEXURE - 3

Central Electricity Authority
Government of India
System Planning & Project Appraisal Division
Sewa Bhawan R K Puram,
New Delhi -110066

No.1/9/06-SP&PA/ Dated: 11.06.2009

-As per List enclosed-

Sub: Minutes of the 27th meeting of the Standing Committee on Transmission System Planning of Northern Region held on 30th May, 2009 at 1000 Hrs. in Nainital, Uttarakhand.

Sir,

Please find enclosed the minutes of the 27th meeting of the Standing Committee on Transmission System Planning of Northern Region held on 30th May, 2009 at 1000 Hrs in Nainital, Uttarakhand. This is for your kind information and further necessary action at your end please. **The minutes is also be available on CEA website under PS wing/standing committee meeting/NR.**

Yours faithfully

(Naresh Bhandari)
Director (SP&PA)

List of Addresses-

1	Member Secretary NREB, 18-A Shajeed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi - 110016	2	Director (Projects) NTPC, NTPC Bhawan, Core 7 Scope complex – 6, Institutional Area, Lodhi Road, New Delhi - 110003
3	Director (Technical) NHPC Office Complex, Sector – 33, NHPC, Faridabad - 121 003	4	Director (Projects) POWERGRID, Saudamini, Plot no. 2, Sector - 29, Gurgaon-122 001
5	Sr. Vice President, PTC Ltd, 2nd floor, 15 NBCC Tower, Bhikaji Cama Place, New Delhi - 66	6	Member (Transmission) HPSEB, Vidyut Bhawan, Shimla - 171 004
7	Director (Transmission) UPPCL, Shakti Bhawan Extn, 3rd floor, 14, Ashok Marg, Lucknow - 226 001	8	Director (Transmission) Urja Bhawan, Kawali Road Dehradun, Uttaranchal - 248 001
9	Director (Projects) DTL, Shakti Sadan. Kotla Road New Delhi - 110 002	10	Member (Transmission) PSEB, Mall road, Patiala - 147 001
11	Director (Projects) HVPNL Shakti Bhawan, Sector -6 Panchkula - 134 109	12	Director (Transmission) RVPNL, Vidyut Bhawan, Janpath, Jyoti Nagar, Jaipur, Rajasthan
13	Development Commissioner (Power), J&K, Exhibition Ground, Near New Secretariat, Srinagar - 190 001	14	Member (Power) BBMB, Sectot-19 B Madya Marg, Chandigarh-160019
15	Chief Engineer (Transmission) NPCIL, 9- S-30 Vikram Sarabhai Bhawan, Anushakti Nagar, Mumbai - 400 094	16	Chief Engineer (Operation) Ministry of Power, UT Secretariat Sector - 9 D Chandigarh - 161 009

Member (PS) stated that CERC is looking into transmission pricing afresh and discussion paper on apportioning of transmission charges has been issued and public comments have been sought. The proposed approach is broadly towards National Pool and if implemented would result in major shift in payment of transmission charges. He said that PSEB should look into its requirement in the time frame as nearly 24 months are required to complete 220 kV bays. PSEB stated that they would revert back in one month.

RRVPNL stated that requirement of 220 kV bays are going to increase and therefore decision taken in 23rd SCM should be implemented in standard design of S/S. Member (PS) agreed to keep provision but implementation can be done if requirement is indicated in advance.

4. Evacuation of power from Kutehr HEP (260 MW) in the upstream of Chamera III HEP

Member (PS) informed that for evacuation of power from various hydro projects in Himachal Pradesh a master plan was prepared. In line with the master plan during the 23rd Meeting of the Standing Committee for planning of transmission system in NR, it was decided that in phased development, pooling station upstream of Chamera-III would be constructed by PGCIL as a regional pooling station. It was also agreed that power from Kutehar would be injected at 220 kV level at this new pooling station.

Further for evacutation of power from Budhil project it was agreed to LILO one circuit of Chamera-III – Chamera Pooling station 220 kV D/c line (with Twin Moose conductor) at Budhil. It was further informed that HP has changed the mater plan and now proposed two nos. of 220 kV D/c lines instead of 3 nos. of 220 kV D/c lines and also they intend to establish 220 kV pooling station at Lahal which is close to Kutehar HEP. Member (PS) explained that considering the overall power flow requirement of about 1000-1100 MW, 2 nos. of 220 kV D/c lines would not be adequate and proposed that line from Lahal to Chamera pooling station should be a 400 kV D/c line, this would optimize ROW – the requirement of Forest Department of HP. For connectivity of Kutehar it was proposed that a 220 kV D/c line can be constructed by the project developer upto Lahal Pooling station.

For evacuation of power from Budhil two options were discussed i.e. either they should carry out the LILO of Chamera-III – Chamera Pooling station 220 kV D/c line with Twin Moose conductor or they can construct 220 kV S/c line upto Chamera-III utilizing one 220 kV bay at Chamera-III, space for which is available at Chamera-III. It was also informed that second option would not provide any reliability, however it was to be decided by the generation developer.

Further it was also informed that above issue had already been discussed in a meeting held in CEA on 18.5.2009 wherein representatives from HP, Lanco, Kutehar & Powergrid were present.

Powergrid informed that they have received Long Term Open Access Application from the developer of Kutehar HEP & beneficiaries of the project are Northern Region Constituents and since system has already been decided, it was proposed to grant the LTOA. It was agreed by the constituents.

Concluding the discussions, following were agreed:

i) Lanco to confirm about the connectivity of Budhil HEP to Chamera III transmission.

ii) HP would establish a 400/220 kV substation at Lahal in the time frame of Kutehar HEP which would be connected to Chamera Pooling Station by a 400 kV D/c line. Initially this line would be charged at 220 kV level and subsequently with the coming up of more generation this line can be charged at 400 kV level ensuring that the ICTs (2x315 MVA) at Chamera II Pooling station are not overloaded.

iii) CTU can grant LTOA to M/s JSW (developer of Kutehar HEP)

5. Modification of 220 kV transmission line from NTPC Faridabad to Samaypur S/S of BBMB – Regarding power evacuation constraint

Member (PS) informed to the constituents that NTPC has requested that one of the 220 kV Samaypur- Ballabgarh line be bypassed at Samaypur and connected directly to one of the 220 kV Faridabad - Samaypur line, thus creating a alternative route for power evacuation from Faridabad GPP as Faridabad GPP has witnessed several station blackouts on account of major failure at Samaypur S/S.

भारत सरकार

Government of India

विद्युत मंत्रालय

Ministry of Power

केन्द्रीय विद्युत प्राधिकरण

Central Electricity Authority

विद्युत प्रणाली योजना एवं मूल्यांकन–I प्रभाग

Power System Planning & Appraisal-I Division

सेवा में/**To**

-As per list enclosed-

विषय/Subject: Minutes of 3rd Meeting of Northern Regional Power Committee (Transmission Planning) [NRPC(TP)].

Sir/ Madam,

Please find enclosed the minutes of the 3rd meeting of Northern Regional Power Committee (Transmission Planning) [NRPC(TP)] held on 19.02.2021 through VC. The minutes are also available on CEA's website: www.cea.nic.in (path to access: Home Page - Wing - Power System-PSPA-I- Standing Committee on Power System Planning- Northern Region).

Yours faithfully,

Signature Not Verified
Digitally signed by ISHAN SHARAN
Date: 2021.05.09 22:26:37 IST

(ईशान शरण/ Ishan Sharan)

मुख्य अभियन्ता/ Chief Engineer

1.	Chairperson, CEA, Sewa Bhawan, New Delhi-110066	2.	Member (Power System), CEA, Sewa Bhawan, New Delhi-110066	3.	Member Secretary, NRPC, 18-A Shajeed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi - 110016 (Fax-011-26865206)
4.	MD, SECI, Prius Platinum, D-3, District Centre, Saket, New Delhi - 17	5.	COO (CTU) POWERGRID, Saudamini, Plot no. 2, Sector -29, Gurgaon-122 001 (Fax-0124-2571809)	6.	Chief GM(C&SO), SJVNL, Corporate Office Complex, Shanan, Shimla- 171006
7.	Director (PP&D) RVPN, 3rd Floor, Room no 330, Vidhyut Bhawan, Janpath, Jaipur-302005.	8.	Director (Technical) HVPNL Shakti Bhawan, Sector-6 Panchkula-134109	9.	Director (Technical) HPSEB Ltd. VidutBhawan, Shimla -171004 Fax-0177-2813554
10.	Managing Director, HPPTCL, Barowalias, Khalini Shimla-171002 Fax-0177-2623415	11.	Chief Engineer (Operation) Ministry of Power, UT Secretariat, Sector-9 D Chandigarh -161009 Fax-0172-2637880	12.	Director (W &P) UPPTCL, Shakti Bhawan Extn,3rd floor, 14, Ashok Marg, Lucknow - 226 001 (Fax:0522-2287822)
13.	Director (Projects), PTCUL, Vidhyut Bhawan, Near ISBT Crossing, Saharanpur Road, Majra, Dehradaun-248002	14.	Director (System Operation), POSOCO B-9, Qutab Institutional Area, Katwaria Sarai New Delhi – 110010	15	Chief Engineer (System & Operation Wing), JKPDD, Grid Substation Complex, Janipur, Jammu-180006
16.	Director (Technical), Punjab State Transmission Corporation Ltd. (PSTCL)Head Office The Mall Patiala - 147001	17.	Development Commissioner (Power), JKPDD, Jehangir Complex, Exhibition Grounds, Srinagar		

(iv) POSOCO to give charging permission for LILO of one circuit of 400kV Jhakri – Panchkula transmission line at Gumma S/s after implementation of revised SPS by HPPTCL.

16.3 HPPTCL informed that after attending to the above points, NRLDC accorded the permission for charging the LILO of one circuit and the 400/220 kV Transformer ICT-I on 31.10.2020 & 01.11.2020 respectively and vide their email dated 05.11.2020 requested CEA to get the system ratified in the forthcoming Standing Committee.

16.4 Members agreed and noted the same.

16.5 CTU and POSOCO suggested HPPTCL to examine space for installation of a 125 MVAR bus reactor at Gumma substation as issue of high voltage has been observed at Gumma specially during winter night when generations at Nathpa-Jhakri and Rampur is down. HPPTCL agreed for the same and to revert with the details.

17.0 Construction of 220/400kV, 2x315 MVA PS at Lahal & 400 kV D/C (Twin Moose) line from 400/220 kV, 2 x 315 MVA, Lahal Sub-Station to 400/220 kV Chamera P.S. of PGCIL

17.1 HPPTCL stated that in the 27th meeting of SCPSPNR held on 30th May 2009, following was approved for evacuation of power from Hydro Electric Projects in Ravi Basin:

"HP would establish a 400/220 kV Sub-Station at Lahal in the time frame of Kutehar HEP which would be connected to Chamera Pooling Station by a 400 kV D/C line. Initially this line would be charged at 220 kV level and subsequently with the coming up of more generation, this line can be charged at 400 kV level ensuring that the ICTs (2x315MVA) at Chamera-II Pooling station are not overloaded"

It was further mentioned that instead of 2 no. of 220 kV D/C Lines, a 400 kV D/C Line considering the overall power flow requirement of about 1000-1100 MW shall be constructed in order to conserve R.O.W.

HPPTCL had accordingly taken up the execution of the following Transmission Elements:

1. 400/220 kV, 2 x315 MVA & 220/33 kV, 63 MVA Sub-Station at Lahal.
2. 400 kV D/C (Twin Moose) line from 400/220 kV, 2 x315 MVA, Lahal Sub-Station to 400/220 kV Chamera P.S. of PGCIL.

The work of construction of 400/220kV Sub-Station has been completed. The 220/33kV portion of the Sub-Station has already been commissioned to provide interim power evacuation path to SHEPs via construction of 220 kV S/C line on D/C towers from Lahal to Budhil HEP till completion of 400 kV D/C (Twin Moose) line from 400/220 kV, 2x315 MVA, Lahal Sub-Station to 400/220 kV Chamera P.S. of PGCIL.

17.2 HPPTCL further stated that in order to charge the 400/220 kV S/s, HPPTCL had approached NRLDC for no load charging of 400/220kV Sub-Station through 220/400kV ICT from 220 kV side. However, NRLDC had observed that the transformation capacity of 400/220 kV Substation has not been mentioned in the Standing Committee approval accorded in the 27th meeting which is required before according approval for charging.

17.3 The matter was accordingly taken up with CEA vide letter dated 05.11.2020 to clarify on the capacity of S/Stn. Accordingly, CEA convened a meeting of all concerned stakeholders through VC on 11.11.2020, wherein following was decided:

(i) POSOCO to provide permission to HPPTCL for charging of 400/220 kV, 2x315 MVA Lahal substation.

(ii) Transformation capacity of 2x315 MVA at 400/220 kV Lahal substation would be ratified in the next standing committee meeting.

(iii) HPPTCL to explore the possibility of installation of Bus Reactor at Lahal S/Stn.

17.4 In view of above, HPPTCL requested members to consider & approve the following -

(i) The capacity of Lahal S/S as 400/220 kV, 2x315MVA.

(ii) Construction of 400 kV D/C (Twin Moose) line from 400/220 kV, 2x315 MVA Lahal Sub-Station to 400/220 kV Chamera P.S. of PGCIL

17.5 Members agreed to the proposal of HPPTCL. HPPTCL was again requested to explore the possibility of installation of Bus Reactor at Lahal S/Stn. HPPTCL agreed for the same and to revert with the details.

18.0 Establishment of 400/220kV Nange Pooling Station for proposed SJVN Hydro Power Plant Luhri Stage-I, II & Sunni Dam:

18.1 Director (PSPA-I) stated that in the 2nd NRSCT meeting held on 13.11.18, transmission system for connectivity to Luhri-I (210 MW), Luhri-II (172 MW) & Sunni Dam (382 MW) HEP were agreed. It was decided during the meeting that power from all the three stages of Luhri HEP would be evacuated at 220 kV level and would be pooled at 400/220 kV proposed ISTS Nange pooling station located near Luhri-II HEP and further evacuated to Koldam through 400 kV D/c line (along with associated bays at both ends). In the 3rd NRSCT meeting also, information of connectivity granted for above projects was recorded.

However, transformation capacity of 400/220 kV Nange Pooling Station (315 MVA) has been missed inadvertently in the minutes of 2nd NRSCT meeting. Accordingly, it is proposed that transformation capacity at 400/220 kV Nange Pooling Station (2x315 MVA) may be included. Further, CTU is in receipt of Connectivity & LTA application from SJVN for Luhri-I and Connectivity applications for Luhri-II & Sunni Dam. Accordingly, 2nd 315 MVA ICT at Nange PS shall be considered with grant of LTA to Luhri Stage-I in order to meet n-1 contingency criteria.

18.2 Accordingly, connectivity system for Luhri-I, Luhri-II & Sunni Dam HEP is as under:

(i) Establishment of 2x315MVA, 400/220 kV Nange GIS Pooling Station (tentatively Identified near Luhri Stage-II HEP).

(ii) Nange GIS Pooling Station – Koldam 400kV D/c line along with associated bays at both ends (GIS bays at Koldam).

(iii) 125 MVAR Bus Reactor at Nange GIS PS.

Identified transmission system each from Luhri-I/Luhri-II/Sunni Dam upto Nange Pooling station shall be under the scope of SJVN/generation developer. Further LTA system for Luhri-I shall include 2nd 315 MVA ICT at Nange GIS Pooling Station.

ANNEXURE-4

हिमाचल प्रदेश HIMACHAL PRADESH

A 609110

FORMAT-LTA-6B

Agreement for Long Term Access

(Applicable for One party / Multi party developers requiring transmission system strengthening)

BETWEEN

H. P. POWER TRANSMISSION CORP. LTD.

AND

GMR BAJOLI HOLI HYDROPOWER PRIVATE LIMITED

This Bulk Power Transmission Agreement entered into on the 3rd day of Sept Two Thousand fifteen between H. P. POWER TRANSMISSION CORP. LTD, a company incorporated under the Companies Act, 1956, having its registered office at Barowalias House Khalini, Shimla -2 (hereinafter called "HPPTCL" which expression shall unless repugnant to the H.P.POWERTRANSMISSION CORPORATION LIMITED context or meaning thereof include its successors and assigns) as party of the first part; and

Company- A, GMR Bajoli Holi Hydropower private Limited, a company incorporated under the companies Act 1956, having its registered office at 302, New Shakti Bhawan, IGI airport, New Delhi-110037 and

Company- B, a company incorporated under the Companies Act, 1956 having its registered office at ...--NOT APPLICABLE--... and

Company –Z , a company incorporated under the Companies Act, 1956 having its registered office at ...--NOT APPLICABLE--... and (hereinafter collectively referred to as Long Term Transmission Customers and individually referred to as Company- A, B,.....Z respectively) which expression shall unless repugnant to the context or meaning thereof include its successors and assigns as party of the second part.

GMR Bajoli Holi Hydropower Pvt. Ltd.

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House, Khalini, Shimla-2

A. Whereas Long Term Transmission Customer is the Power Project Developer and is desirous to avail Long Term Open Access in accordance with State Electricity Regulatory Commission (Grant of Connectivity, Long-term Access and Medium-term Open Access in Intra-State Transmission and related matters) Regulations, 2010 hereinafter referred to as "Regulations" and Electricity Act 2003 (including their amendments if any) to the Transmission System of HPPTCL for transfer of power from the respective places of generation to the places of delivery as per the details contained in the Annexure-1.

B. Whereas the comprehensive transmission system for above Long Term Open Access was evolved by CEA, developers , constituents and HPPTCL which was discussed in the meeting held at Power Grid Office, Gurgaon on 29.12.2010.

C. The transmission system required for direct evacuation of power from respective generating units to the pooling points of HPPTCL has been finalized in consultationwith CEA, developers and Constituents and shall be built, owned, operated and maintained by respective Long Term Transmission Customers as indicated at Annexure-2. –NOT APPLICABLE--

D. The common transmission system to evacuate and dispatch power to respectivebenefici aries from the generation projects, has been finalized in consultation with CEA , developers and constituents and shall be built, owned, operated and maintained by HPPTCL as indicated at Annexure-3.

E. Each of the project developers i.e., the long term transmission customer has agreed to share and bear the applicable transmission charges as decided by H.P. State Electricity regulatory Commission of the total transmission scheme as per Annexure-3 from the scheduled date of commissioning of respective generating units, corresponding to the capacity of power contracted from the said generation project through Open Access as indicated at Annexure-1 irrespective of their actual date of commissioning. The sharing mechanism for these transmission charges has been agreed to be as per Annexure-4 of this agreement.

F. AND WHEREAS in accordance with State Electricity Regulatory Commission Regulations 2010 and Electricity Act 2003(including their amendment if any) and inaccordance with the term mentioned above, H.P.POWER TRANSMISSION CORPORATION LTD has agreed to provide such open access required by these Long Term Transmission Customers from the date of availability of evacuation transmission system for the transfer of power as mentioned in Annexure-2 and Annexure-3 of this agreement.

G. AND WHEREAS the parties have agreed that in case any of the asset mentioned atAnnex ure 3 are executed, owned and operated by any agency (ies) other than HPPTCL, as per the directives of competent authority (for which HPPTCL wouldimmediately inform all the parties) then the tariff of the same would be payable by the long term customer directly to the concerned agency (ies) through a separateAgreement to be entered by the Long term customer with the c oncerned agency (ies).

H. AND WHEREAS Long term transmission customers have agreed to share and pay all the transmission charges of HPPTCL in accordance with the regulation/tariff order issued by State Electricity Regulatory Commission from time to time for the use of its Transmission System of the concerned Regions including inter State links /ULDC/NLDC charge and any additions thereof in proportion to their proposedcapacity addition as

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indicated at Annexure-
1 of this Agreement. These charges wouldbe shared and paid from the scheduled date o f commissioning of respective generatingunits as indicated at Annexure-1.

J. AND WHEREAS it has become incumbent upon Long term Transmission Customers and HPPTCL to enter into Bulk Power Transmission Agreement as envisaged under the H.P. State Electricity Regulatory Commission Regulations,2010 (including their amendments if any) for payment of above transmission charges.

K. AND WHEREAS the Bulk Power Transmission Agreement has already been entered intob etween HPPTCL and Bulk Power Beneficiaries of all the regions. A copy of BPTAentered i nto with constituents of Northern Region dated ----NIL----------, Western Region dated ---- -NIL----------, Eastern Region dated ...NIL....., Northern Region dated ..... and Southern Region
dated...NIL..... are enclosed at Annexure A, Annexure B,Annexure C , Annexure D and Annexure E respectively.These agreements arelikely to be replaced on its renewal. The r enewed/modified agreements would begenerally in line with the Transmission Service A greement (TSA) issued by Ministry ofPower as part of standard bid documents for comp etitive bidding for transmissioninaccordance with Section63 of the Act. Accordingly, on replacement of renewed/ modified agreement in line with TSA, the same would become part of this agreement. –NOT APPLICABLE--

L. AND WHEREAS the Long term transmission customer is desirous of wheeling its power to its consumers through long term open access on the same terms and conditions as contained in the Bulk Power Transmission Agreement of the respective region. Words and expressions used in the Bulk Power Transmission agreement at Annexure A, B, C, D and E shall have the same meaning assigned to them under the Electricity Act, 2003 or Grid Code or H.P. State electricity Regulatory commission Regulations, 2010 as the case may be (including their amendments , if any). Now, therefore in consideration of the premises and mutual Agreements, covenants and conditions set forth herein, and in the Agreement as contained in Annexure A, B, C, D and E attached hereto which shall form an integral part of this agreement, it is hereby agreed by and between the parties as follows:

1.0 In accordance with H.P. State Electricity Regulatory Commission Regulations, 2010 a nd Electricity Act, 2003 (including their amendment, if any) and in accordance with the term mentioned above HPPTCL agrees to provide such open access required by this long term transmission customers from the date and in the manner mentioned in the Annexure 1, Annexure 2, Annexure 3 and Annexure 4 of this agreement for a period of 12 Years from the schedule date of generation of individual long term open access customers.

2.0 (a) Long term transmission customers shall share and pay the transmission charges in accordance with in accordance with the regulation/tariff order issued by State Electricity Regulatory commission from time to time of HPPTCL transmission system of concerned applicable Region i.e. Northern Region including charges for interstate links/SLDC/NLDC charges and any additions thereof.
These charges would be applicable corresponding to the capacity of power contracted from the said generation project through Open Access from scheduled date of commissioning of generating projects as indicated at Annexure-1 irrespective of their actual date of commissioning.
(b) Long term transmission customer shall share and pay the transmission charges of the transmission system as indicated as detailed in annexure-3 in accordance with the sharing mechanism detailed in Annexure-4. In case, in future, any other long-

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term transmission customer(s) is/are granted open access through the transmission system detailed at Annexure-3 (subject to technical feasibility), he /they would also share the applicable transmission charges.

(c) Each Long term transmission customer its successor/assignee shall pay the applicable transmission charges from the date of commissioning of the respective transmission system which would not be prior to the scheduled commissioning date of generating units as indicated by of the respective developer as per Annexure -1. The commissioning of transmission system would be proponed only if the same is agreed mutually by concerned parties.

(d) In addition to opening of LC for 105% of estimated average monthly billing forcha rges mentioned at 2(a) and 2(b) above, Long-

Term Transmission customerwould provide security in the form of irrevocable Bank Guarantee (BG), in favor of HPPTCL, equivalent to two months estimated average monthly billing, three months prior to the scheduled date of commissioning of generating units as indicated at Annexure-1. Initially the security mechanism shall be valid for a minimum period of three (3) years and shall be renewed from time to time till the expiry of the open access.

(e) The estimated average transmission charges would be reviewed every six months and accordingly the amount of security would be enhanced /reduced by long term transmission customers.

(f) In case the long term transmission customer defaults in payment of the monthly chargesofH .P. POWER TRANSMISSION CORPORATION LTD. bills then,H. P.POWER TRANSMISSION CORPORATION LTD shall be entitled to encash/adjust the BG immediately.

(g) In case of encashment / adjustment of the BG by H. P.POWER TRANSMISSIONCO RPORATION LTD against non-payment of monthly charge bylong-termtransmission customer, the same should be immediately replenished/ recouped by long-term transmission customers before the next billing cycle.

(h) The format for bank guarantee is enclosed as Annexure-X. The Bank Guarantee shall be issued by

iv) A Public Sector Bank or

i) Scheduled Indian Bank having paid up capital (net of accumulated losses) of Rs. 100 Crores or above (duly supported by Latest Annual Report) and also satisfying the minimum capital adequacy requirement or

ii) Any foreign Bank with overall International corporate rating or rating of longt erm debt not less than A –(A minus) or equivalent by reputed rating agency.

3.0 H. P. POWER TRANSMISSION CORPORATION LTD provide Long term Open Access required by Long Term transmission customer as per the details mentioned above and in accordance with the regulations under H.P. State Electricity Regulatory Commission Regulations, 2010 and conditions specified the HPERC from time to time. However, during the tenure of this agreement if any of the covenants and conditions recited in this agreement including agreements at Annexure-A,B,C and D found inconsistent with the provisions of the Electricity Act 2003 and or applicable notifications/rules/regulations issues either by HPERC or by HP as per the provisions of the Electricity Act , then not withstanding anything contained in the agreement referred to above, the said rules and regulations shall prevail.

4.0 Copy of the Agreements entered with Northern Region dated -----NIL-------

(Annexure

A shall form part and parcel of this Agreement and accordingly, allterms and conditi

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ons of Agreements dated ----NIL------, ---NIL-------, ----NIL---- and...NIL.....
Shall mutatis mutandis apply to the Long Term Transmission Customer. Any revision, replacement, modification and extension of these Agreements shall also apply to the Long term Transmission Customer.

5.0 (a) The Long term transmission customer shall not relinquish or transfer its rights an d Obligations specified in the Bulk Power Transmission Agreement, without prior approval of HPPTCL and HPERC and subject to payment of compensation in accordance with the HPERC Regulations issued from time to time.

6.0 (a) In case any of the developers fail to construct the generating station/dedicated transmission system or makes an exit or abandon its project, HPPTCL shall have the right to collect the transmission charges and or/damages as the case may be in accordance with the notification/regulation issued by HPERC time to time. The Developer shall furnish a Bank Guarantee from a nationalized Bank for an amount which shall be equivalent to Rs 5 (five) lakhs/MW to compensate such damages. The bank guarantee format is enclosed as Annexure-Y. The details and categories of bank would be in accordance with clause 2(h) above, the Bank Guarantee would be furnished in favor of HPPTCL within 3(three) months of signing the agreement.

(b) This Bank Guarantee would be initially valid for a period of six months after the expected date of commissioning schedule of generating units mentioned at Annexure-1 or actual date of commissioning whichever is earlier. The bank guarantee would be en-cashed by HPPTCL in case of adverse progress of individual generating unit(s) assessed during the coordination meeting as para 7 below. However, the validity should be extended by concerned Long Term transmissioncust omer(s) as per the requirement to be indicated during coordination meeting.

(c) The HPPTCL shall build transmission system included at Annexure-3 keeping view of various commissioning schedules; however, till the completion of identified transmission elements the transfer of power will be based on the availability of the system on short term basis.

(d) In the event of delay in commissioning of concerned transmission system from its schedule, as indicated at Annexure-4, HPPTCL shall pay proportionate transmission charges to concerned long tern Open Access customer (s) proportionate to its commissioned capacity (which otherwise would have been paid by the concerned Long term Open access Customer(s) to HPPTCL provided generation is ready and HPPTCL fails to make alternate arrangement for dispatch of power.

7.0 In order to monitor/ review the progress of generating units along with its directeva cuation lines and also the common transmission system, Joint coordination meeting with the representative of each developers and HPPTCL shall be held at regular interval **(preferably quarterly)**after signing of this Agreement.

8.0 All differences/ disputes between the parties arising out of or in connection withthis Agreement shall be resolved in terms of the Redressal Mechanism provided underRe gulation 33 & 37 of the HPERC Regulations, 2010 and under Electricity Act 2003.

9.0 The parties shall ensure due compliance with the terms of this Agreement. However, no party shall be liable for any claim for any loss or damage whatsoever arising out of failure to carry out the terms of the Agreement to the extent that such a failure is due to force majeure events such as war, rebellion, mutiny, civil commotion, riot, strike, lock out, fire, flood, forces of nature, major accident, act of God, change of law and any other causes beyond the control of the defaulting party.

But any party claiming the benefit of this clause shall satisfy the other party of the existence of such an event and give written notice of 30 days to the other party to

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this effect. Transmission/drawl of power shall be started as soon aspracticable by the parties concerned after such eventuality has come to an end or ceased to exist.

10.0 In the event of finalization of beneficiaries by the developers the applicabletrans mission charges and other charges covered under this agreement would be payable by the concerned beneficiary. These charges would be effective only from the date of signing of agreement by concerned beneficiary with HPPTCL for the validity period of open access.

11.0 This Agreement shall be valid from the date of signing of this agreement till the validity of open access subject to its revision as may be made by the parties to this agreement provided that this agreement may be mutually extended, renewed or replaced by another Agreement on such terms and for such further period as the parties may mutually agree. In case Long term Transmission customers continue to get transmission services from HPPTCL even after expiry of this agreement without further renewal or formal extension thereof , then all the provisions of this agreement shall continue to operate till this agreement is formally renewed, extended or replaced.

In witness whereof both the parties have executed this Agreement through their authorized representative.

Witness For and on behalf of company	For and on behalf of HPPTCL
1. Signature:	1.Signature: .....
Name: AJAYA KUMAR NATHANI	Name : Ashwani Kumar Khaatria
Designation Head Transmission	Designation .....
	DGM (C&M) HPPTCL Barowalia House, Khalini, Shimla-2

Annexure-1

List of Gen Projects and their beneficiaries
Details of Generation Projects – GMR Bajoli Holi Hydropower private Limited

Sl. No	Applicant	Gen. Project Capacity (MW)	LTOA Applied for (MW)	Location	Time Frame (Unit wise)	Long Term Access granted				
						WR	SR	NR	ER	NER
1.	GMR Bajoli Holi Hydropower private Limited	180 MW	178.2	Chamba District, Himachal Pradesh (Plant Bus)	Unit 1: June2018 Unit 2: July 2018 Unit 3: Aug 2018			178.2		

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Annexure-2

Transmission system to be implemented by Generation project developers and its Schedule of commissioning

Sr.No.	Name of Scheme & Elements
1.	
2.	---NOT APPLICABLE---
3.	
4.	

Note:

c) The termination of the line as well as location of pooling station is subject to minor changes depending upon final survey and physical constraint, if any.

d) In case of any major development, if there is any change in the transmission system to achieve overall optimization of the system, then, above details would be modified on mutual consent.

e) In case, in future, any other long-term transmission customer(s) is/are granted open access through the transmission system detailed at Annexure-3 (subject to technical feasibility), he/they would also share the applicable transmission charges.

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Annexure-3

Transmission System under the Scope of H. P.POWER TRANSMISSION CORPORATION LTD.

Sr. No. Name of Scheme & Elements

1. 400/220/33 KV, 2*315 MVA, Lahal GIS-Substation
2. 220 KV, Double Circuit (D/C), Twin Moose Transmission Line from Project to Lahal Substation
3. 400 KV D/C Transmission Line from Lahal Pooling Station to Chamera Pooling Station

Note:

1 The termination of the line as well as location of pooling station is subject to minor changes depending upon final survey and physical constraint, if any.

2. In case of any major development, if there is any change in the transmission system to achieve overall optimization of the system, then, above details would be modified on mutual consent.

3. In case, in future, any other long-term transmission customer(s) is/are granted open access through the transmission system detailed at Annexure-3 (subject to technical feasibility), he/they would also share the applicable transmission charges.

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Annexure-4

Transmission Charges for the transmission system of respective Generation Projects

The transmission charges for different stages of the transmission system would be borne by the generation developers / beneficiaries as given below:

- The dedicated transmission system indicated at Annexure-2 i.e. from the generation switchyard up to various pooling points/substations shall be built, owned and operated by the generation project developer.
- However, some of the dedicated transmission system indicated at Annexure-3 i.e. from the generation switchyard up to various pooling points/substations shall be built, owned and operated by H. P.POWER TRANSMISSION CORPORATION LTD. The transmission charges for these dedicated transmission system shall be paid by the concerned generation developers.
- The charges for the transmission system (other than the dedicated system) indicated at Annexure-3 would be borne by the generation developers in proportion to capacity for which long term open access has been sought. The transmission charges will be corresponding to phased development of transmission system and in each time frame, charges should be shared by all the generation developer whose generation projects are scheduled to come up in that time frame or earlier.
- The long term Open Access Applicants would also have to share the applicable State transmission charges in proportion to the Long term capacity sought by them as per HPERC norm.
- As the transmission system has been evolved considering target beneficiaries and tentative allocation indicated by the developer(s) in their application, some transmission strengthening may be required in the receiving end/region once the beneficiaries/quantum of allocation is finalized. The cost/tariff of such system strengthening would also have to be borne by the developer(s) as and when identified.
- In the event of default by any developer under Clause 5 and 6 of this Agreement, the transmission charges for the system mentioned at Annexure-3 would be shared by balance developers. However, the damages collected (if any) from the defaulting developer(s) under clause 5 & 6 of this agreement shall be adjusted for the purpose of claiming transmission charges from the balance (remaining) developers.

The composite transmission scheme would be developed in phases keeping in view the commissioning schedule of generation project. Depending upon the status of various generation projects as informed by different generation developers, the details of phasing of development of transmission system has been evolved. Details of staging are described as follows –

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House, Khalini, Shimla-2

1.0 Stage-I

1.1 Generation project and its schedule

GMR Bajoli Holi Hydropower private Limited (180 MW)

Unit 1 : June 2018

Unit 2 : July 2018

Unit 3 : August 2018

1.2 Transmission System

1.2.1 Transmission system to be developed by the generation developer and its Schedule ---NOT APPLICABLE--

.....

.....

1.2.2 Transmission system to be developed by H. P. POWER TRANSMISSION CORPORATION LTD. and its schedule

1. 400/220/33 KV, 2*315 MVA, Lahal GIS Substation : 30th April 2018
2. 220 KV, Double Circuit (D/C), Twin Moose Transmission Line from Project to Lahal Substation: 31st December 2017
3. 400 KV D/C Transmission Line from Lahal Pooling Station to Chamera Pooling Station : 31st March 2018

Sharing of transmission charges by above developers.

2.0 Stage-II

2.1 Generation project and its schedule

---NOT APPLICABLE--

2.2 Transmission System

2.2.1 Transmission system to be developed by the generation developer and its schedule

---NOT APPLICABLE--

2.2.2 Transmission system to be developed by H. P.POWER TRANSMISSION CORPORATION LTD. and its schedule

---NOT APPLICABLE--

Sharing of transmission charges by above developers.

Note: In case, in future, any other long term transmission customer(s) is/are granted open access through the transmission system detailed at Annexure 3 (subject to technical feasibility), he/they would also share the applicable transmission charges.

GMR Bajoli Holi Hydropower Pvt. Ltd.

DGM (C&M)
HPPTCL Barowalia
House, Khalini, Shimla-2

हिमाचल प्रदेश HIMACHAL PRADESH C 647051

SUPPLEMENTARY TRANSMISSION SERVICE AGREEMENT

This Supplementary Agreement is executed on this 14th day of July 2022, at Shimla between H.P. Power Transmission Corporation Ltd., a State Government owned Transmission Utility incorporated under the Companies Act, 1956, having its register office at HIMFED Bhawan, Panjari, Shimla-171005 (hereinafter called "HPPTCL" which expression shall unless repugnant to the context or meaning thereof, includes its successors, administrators and permitted assigns) on the **First Part**.

AND

Himachal Pradesh State Electricity Board Ltd., a State Government owned Distribution Utility incorporated by Government of Himachal Pradesh under the Companies Act 1956, having its registered office at Kumar House, Vidyut Bhawan, Shimla-171004 (hereinafter called "HPSEBL" which expression shall unless repugnant to the context or meaning thereof, includes its successors, administrators and permitted assigns) on the **Second Part**.

AND WHEREAS, HPPTCL is transmitting the power of HPSEBL through its system mentioned in original Transmission Service Agreement executed between parties on dated-10.02.2012, supplementary transmission agreement dated- 29.05.2018 and a separate Agreement signed between parties on dated 12.04.2021. The revised list of HPPTCL system used by HPSEBL whose Transmission Service Agreement has been signed till date is placed at revised **Annexure-A of this agreement**.

General Manager (C&D)
HPPTCL, Totu Kandi Shimla-5

Chief Engineer (SO)
Shimla-4

AND WHEREAS, in accordance with Clause 5.2 of the Transmission Service Agreement dated 10.02.2012 executed between parties, a Supplementary Agreement is required to be signed as and when new transmission element owned by HPPTCL comes in operation and is being utilized by HPSEBL. Accordingly, the supplementary Transmission Service Agreement (TSA) is required to be signed between the parties to include Transmission assets mentioned under revised **Annexure-B** of this Agreement.

AND WHEREAS, HPPTCL and HPSEBL signed addendum to Transmission Service Agreement (TSA) on dated 18.04.2017, wherein following points were agreed between the parties:

(i) *The Transmission losses of Intra-state Transmission system (IaSTS) were determined by HPPTCL as 0.75% on actual basis and both parties agreed to said loss figure of 0.75%.*

(ii) *The maximum capacity utilization of HPPTCL system was agreed as 1060MW i.e. 670MW on Intra-state lines mentioned at* ***Annexure-A of agreement dated-18.04.2017*** *and 390MW on interstate lines mentioned in* ***Annexure-B of agreement dated-18.04.2017****.The agreed figure of 1060MW is the sum of drawls on HPPTCL lines at the time of occurrence of maximum demand of the State during FY 2015 and FY 2016.*

AND WHEREAS, HPPTCL has signed Long Term Open Access (LTOA) Agreement with other beneficiaries for usage of STU system. As per Clause (33) of HPERC (Terms and Conditions for determination of Transmission Tariff) Regulations, 2011 and subsequent amendments thereof, Annual Transmission Service Charge (ATSC) shall be shared between long and medium term customers of Transmission system on monthly basis based on the allotted transmission capacity or contracted capacity, as the case may be. The maximum capacity utilization of HPPTCL system for HPSEBL after addition/inclusion of following assets mentioned at Sr. No. 1 to 7 shall remain 670 MW on intra-state system.

However, the methodology to ascertain the contracted capacity of HPSEBL in future on the HPPTCL's Transmission lines shall be as under:

"The contracted capacity of HPSEBL will be ascertained on the basis of the average of 'A' for the last three financial years.

Where,
'A'= {0.5 x maximum of HPSEBL drawl in a time block during the year} + {0.5 x [average of (maximum HPSEBL drawl in a time block in a day) during the year]}.

AND WHEREAS, HPPTCL has commissioned the following Transmission assets **(Annexure-B)** which are being used by HPSEBL as per the contracted capacity or allotted capacity as such it is agreed between the parties as under: -

1. **<u>133/33kV Pandoh Substation:-</u>**

   HPPTCL has commissioned 33/132kV Substation at Pandoh on dated 24.08.2019 by LILO of 132 kV Larji-Bijni line and second 33/132kV Transformer at Pandoh Substation was energized on dated 08.10.2020 to pool in and evacuate power from SHPs in Pandoh Valley. Presently, HPSEBL is using this system for evacuation of power of Patikari HEP (16 MW).This system isensuring reliable and quality power supply to the consumers of Thunag and Siraj areas. The filing of Tariff petition of this asset before Hon'ble HPERC is in process and upon determination of tariff, ARR (Aggregate Revenue Requirement) approved for the instant asset will be recovered from the beneficiaries of the asset in line with the tariff order approved by the Commission.

2. **<u>132/33kV Chambi Substation:-</u>**

   HPPTCL has commissioned 33/132kV Chambi Substation on dated 24.08.2019 and LILO portion of 132kV Dehra-Kangra line was commissioned on 06.08.2020 to pool in and evacuate power from small HEPs in Shahpur area. The 132kV Dehra-Kangra Transmission line has been LILOed at 132kV Chambi Substation alongwith Gaj-Shahpur line and is providing constraint free evacuation to SHEP's from Shahpur and Gaj area alongwith increase in reliability of power

General Manager (C&D)
HPPTCL, Tutikandi Shimla-5

supply to Shahpur area. The filing of Tariff petition of this asset before Hon'ble HPERC is in process and upon determination of tariff, ARR (Aggregate Revenue Requirement) approved for the instant asset will be recovered from the beneficiaries of the asset in line with the tariff order approved by the Commission.

3. **400/220/66kV Wangtoo Substation:-**

HPPTCL has commissioned 400/220/66kV Wangtoo Substation on dated 29.09.2019. Presently, Wangtoo Substation is evacuating power of Rala HEP (13MW), Kashang HEP (65MW) and small HEPs having PPA with HPSEBL. This Substation is meant for evacuating power of HEP's pooling their power in the instant asset and will also ensure reliable & quality power supply. The filing of Tariff petition of this asset before Hon'ble HPERC is in process and upon determination of tariff, ARR (Aggregate Revenue Requirement) approved for instant asset will be recovered from beneficiaries of asset in line with the tariff order approved by the Commission. However, this asset may form part of interstate Transmission system based on petition to be filed before CERC, in case of declaration as ISTS, the transmission charges for this asset will be recovered as per CERC Sharing of Transmission Charges Regulations, 2020 as amended from time to time.

4. **33/220kV Phozal Substation:-**

HPPTCL has commissioned 33/220kV Phozal Substation on dated 05.06.2016. Presently, HPPTCL is evacuating power of Baragaon HEP (24MW) and HPSEBL through Phozal Substation. HPPTCL has entered into IPTA with M/s Kanchanjunga Power Company Pvt. Ltd. and HPSEBL for contracted capacity of 24MW and 27MW respectively. As per IPTA, tariff rate agreed is Rs 40,000/MW/month. Charges collected as per IPTA are subject to adjustment based on tariff determined by Hon'ble HPERC. As per Hon'ble APTEL order dated 20.07.2020, APTEL has stayed for Tariff determination of Phozal Substation. The filing of Tariff petition of this asset before Hon'ble HPERC is in process and upon determination of tariff, ARR (Aggregate Revenue Requirement) approved for instant asset will be recovered from beneficiaries of asset in line with the tariff order approved by the Commission. However, this asset may form part of interstate Transmission system based on petition to be filed before CERC, in case of declaration as ISTS, the transmission charges for this asset will be recovered as per CERC Sharing of Transmission Charges Regulations, 2020 as amended from time to time.

5. **66kV Switching Station at Urni& 66 kV D/C Urni to Wangtooline:-**

HPPTCL has commissioned 66 kV Urni Substation on dated 26.09.2020 for evacuating power of HEP's pooling their power in the instant asset.Upon commissioning of 66KV Urni-Wangtoo Transmission line, Brua HEP (9MW), Shaung HEP (3MW) and Raura HEP (12MW) which are presently evacuating their power through 220kV Kashang-Bhaba Transmission line under an interim arrangement, will start evacuating their power through Urni Sub-station via 66KV Urni-Wangtoo line to Wangtoo station. The filing of Tariff petition of this asset (66 kV Line + 66 kV switching station) before Hon'ble HPERC is in process and upon determination of tariff, ARR (Aggregate Revenue Requirement) approved for instant asset will be recovered from beneficiaries of asset in line with the tariff order approved by the Commission. However, in the case, this asset may form part of interstate Transmission system based on petition to be filed before CERC, in case of declaration as ISTS, the transmission charges for this asset will be recovered as per CERC Sharing of Transmission Charges Regulations, 2020 as amended from time to time.

6. **220kV Kashang-Bhaba Transmission Line:-**

HPPTCL has commissioned 220kV Kashang-Bhaba Transmission line on dated 01.06.2016. Hon'ble HPERC vide its order dated 26.08.2020 passed in Petition No. 3/2020 has approved tariff of instant Transmission line. In the order, Hon'ble HPERC has stated as under: -

"In view of the dedicated nature of line, the approved ARR of Kashang-Bhaba line has to be recovered from HPPCL irrespective of LTOA. However, any charges recovered from other beneficiaries/generators as a result of IPTA agreement during FY 2018-19 for FY 2018-19 shall be adjusted from the charges payable by LTOA/MTOA".

General Manager (C&D)
HPPTCL, Totikandi Shimla-5

Presently, Kashang-Bhaba Transmission line is being used for evacuation of power of Kashang HEP(65MW) and in accordance with Tariff Order dated 26.08.2020, Transmission charges irrespective of LTOA have to be recovered from HPPCL. Free power share of GoHP in Kashang HEP is being availed by HPSEBL and is one of the beneficiaries of this line.In addition to above, Shyang HEP (3MW) and Tangling HEP (5MW) have signed connectivity at Bhoktoo Substation and are presently evacuating their power through Bhoktoo station. These generators have also signed PPA with HPSEBL and surplus/deficit power after being utilized through local feeders also flows through Kashang-Bhaba Transmission line. The HPSEBL shall be billed for the use of this line as per the capacity utilization to be decided between HPPTCL and HPSEBL. Though HPERC in its order dated 02.05.2022 of Petition No. 12 of 2021has rejected the claim of the HPPCL in Petition No. 48/2021 that Kashang Bhaba Transmission line is dedicated line for IKHEP.The issue regarding dedicated nature of line is pending before Hon'ble APTEL. In case, subsequently, the line is considered as STU line then the recovery of tariff shall be as per Clause (33) of HPERC (Terms and Conditions for determination of Transmission Tariff) Regulations, 2011 and subsequent amendments thereof.

7. **400/220/33kV Lahal Substation& 220 kV Lahal to Budhil Transmission line:-**

HPPTCL has commissioned 400/220/33kV Lahal Substation in November 2020 and 220 kV Lahal to Budhil line. Small HEPs having PPA with HPSEBL have signed Connection agreement with HPPTCL. Further, Bajoli Holi HEP (180 MW) has also signed LTOA with HPPTCL for evacuation of their power. Presently, Lahal Substation is evacuating power of Kuwarsi HEP (15 MW), Salun HEP (9 MW), Kiunar (5MW), Chirchind (5MW) &Bajoli Holi HEP (180MW) under interim arrangement. As an interim arrangement till completion of 400 kV Lahal to Rajera line the power is being evacuated through 220 kV S/C Lahal to Budhil line. This Substation and 220 kV Transmission line from Lahal to Budhil is meant for evacuating power of HEP's pooling their power in the instant asset and will also ensure reliable & quality power supply. The filing of Tariff petition of this asset before Hon'ble HPERC is in process and upon determination of tariff, ARR (Aggregate Revenue Requirement) approved for instant asset will be recovered from beneficiaries of asset in line with the tariff order approved by the Commission. However, this asset may form part of interstate Transmission system based on petition to be filed before CERC, in case of declaration as ISTS, the transmission charges for this asset will be recovered as per CERC Sharing of Transmission Charges Regulations, 2020 as amended from time to time.

AND WHEREAS, the HPPTCL transmission asset(s) earlier not included in HPPTCL common ARR whose ARR have been got approved separately, shall be included in the HPPTCL common ARRand shall be shared among all the beneficiaries of the assets to the extent of utilization of these assets. The petition to this effect shall be filed before HPERC by HPPTCL.

AND WHEREAS, if Transmission Asset(s) included in Transmission Service Agreement are declared as interstate asset(s) in future, transmission tariff of such asset will be recovered in accordance with CERC Sharing of Transmission Charges Regulations, 2020 as amended from time to time.

AND WHEREAS, the tariff and its sharing for above mentioned assets is yet to be determined by Hon'ble HPERC and therefore HPPTCL will approach/has approached Hon'ble HPERC for determination of the transmission charges. The system built/to be built upto interconnection points by the IPPs as per the provisions in the IAs/PPAs will not be considered for determination of the transmission charges to be paid by HPSEBL/other user(s)/beneficiary(ies). HPPTCL will charge HPSEBL/user(s) of the system as per the contracted capacity or approved capacity & their sharing approved by the HPERC.

General Manager (C&D)
HPPTCL, Tutikandi Shimla-5

AND WHEREAS, this Supplementary Transmission Service Agreement (TSA) is hereby entered into and the revised **Annexure-A & B of this agreement** shall form part of this supplementary agreement. All other terms and conditions of the **Original TSA dated 10.02.2012** shall remain unaltered and in the full force.

IN WITNESS whereof the parties have executed these presents through their Authorized Representatives on the dated mentioned above.

For and on the behalf of HPPTCL

Signature:

Name: General Manager (C&D) HPPTCL, Tutikandi Shimla-5
Er. Rajneesh Kumar

Designation: GM (C&D)

Witness

Signature:

Name: Er. S.K. SHARMA

Designation: DGM (Plg. & IT) HPPTCL

For and on the behalf of HPSEBL

Signature:

Name: Chief Engineer (System Operation) H.P. State Electricity Board Ltd. Vidyut Bhawan, Shimla-171004
CHIEF ENGINEER

Designation: CE(SO)

Witness

Signature:

Name: RAJIV KUMAR VERMA

Designation: SE (I/S)

ANNEXURE-A

Sr.No.	Name of the Line	Line Length (Kms)	Commercial Operation Date
A.	**220 kV Lines:**		
1.	220kV D/C Bairasuil Pong line (one circuit LILO at Jassure)	0.240	09/1985
2.	220kV D/C Nalagarh (PGCIL) to Nalagarh line	3.500	07/2010
3.	220kV S/C line on D/C towers Dehar to Kangoo line	4.177	06/1999
4.	220 kV S/C line on D/C towers from Karian to Rajera.	3.7	05/2018
	Sub Total (A)	**7.917**	
B	**132 kV Lines:**		
1.	132kV S/C Dehar-Kangoo line	2.992	12/1998
2.	132kV D/C Giri-Abdullapur line	16.220	08/1982
3.	132kV Giri-kulhal Line	17.40	04/1978
4.	132kV D/C Shanan-Bassi Line	5.00	03/1970
5.	132kV S/C Kangra Tap	0.135	02/1979
	Sub Total (B)	**41.747**	
C.	**66 kV Lines:**		
1.	66kV Shanan-Bijni Line	35.00	10/1969
2.	66kV S/C Pong-Sansarpur Terrace Line	6.300	10/1990
3.	66kV S/C Bhakra-Una LILO Gwalthai Line	16.724	12/1985
4.	66kV Pinjore-Parwanoo Line	8.230	04/1956
	Sub Total (C)	**66.254**	
	Grand Total (A+B+C)	**115.918**	

Sr. No.	Name of Substation	Transmission Capacity (MVA)	Commercial Operation date
1.	22/66/220 kV Bhoktoo Substation along with S/C LILO of Kashang-Wangtoo line	1. 220/66 kV = 31.5 2. 66/22kV=2x10	23.03.2017
2.	33/220 KV Karian Substation	63	05/2018
	Total	**114.5 MVA**	

General Manager (C&D)
HPPTCL, Tutikandi Shimla-5

Chief Engineer (SO) Shimla-4

ANNEXURE-B

Sr.No	Name of Substation	Capacity(MVA)	Commercial Operation Date
1.	132/33kV Pandoh Substation alongwith LILO of one circuit of 132kV Larji-Bijni Transmission line	2x31.5	24.08.2019
2.	132/33kV Chambi Substation alongwith LILO of 132kV S/C Dehra-Kangra Transmission Line	2x 31.5	28.08.2019
3.	66/220/400kV Wangtoo Substation	400/220 = 2x315 220/66 = 2x100	29.09.2019
4.	33/220kV Phozal Substation	100	05.06.2016
5	66kV Urni Substation	NA	26.09.2020
6	400/220/33 kV Lahal Substation	400/220= 630 220/33= 63	Nov.2020
	TOTAL	**1749 MVA**	

Sr.No	Name of Transmission Line	Line Length (kms.)	Commercial Operation Date
1.	220kV D/C Kashang–Bhaba Transmission line	38.79	01.06.2016
2.	220 kV S/C line on D/C Tower from Lahal to Budhil	1.895	07.07.2020
3.	S/C LILO of 220 kV Prini to Nalagarh line of ADHPL at Phojal	6.8	05.06.2016
4.	66 kV D/C Urni to Wangtoo line	13.38	July 2022
	Total	**54.065**	

General Manager (C&D)
HPPTCL, Tutikandi Shimla-5

Chief Engineer (S.O.)
HPPTCL, Tutikandi, Shimla-5

हिमाचल प्रदेश HIMACHAL PRADESH C 858441

FORMAT-LTA-6A

(Applicable for One party requiring NO transmission system strengthening)

BULK POWER TRANSMISSION AGREEMENT

BETWEEN

H. P. POWER TRANSMISSION CORP. LTD.

This Bulk Power Transmission Agreement entered into on the 22nd day of March Two thousand Twenty Two between H. P. POWER TRANSMISSION CORP. LTD., incorporated under the Companies Act, 1956 and wholly owned by Government of H. P. having its registered office at Himfed Bhawan Shimla-05. (hereinafter called "HPPTCL." which expression shall unless repugnant to the context or meaning thereof include its successors and assigns) as party of the first part;

AND

M/s JSW Energy (Kutehr) Ltd. (JSWEKL) a Long-Term transmission Customer incorporated under the companies Act, 1956 having its registered office at Kutehr HEP (240 MW), Village Machhettar, P.O. Chanhouta, Tehsil- Bharmour, Distt: Chamba, Himachal Pradesh-176309 (hereinafter called "Long Term transmission Customer" which expression shall unless repugnant to the context or meaning thereof include its successors, and assigns) as party of the second part.

JSW Energy (Kutehr) Limited

General Manager (C&D)
HPPTCL Tutikandi Shimla-5

And Whereas the Long-Term transmission customer is a generating company/licensee/ consumer/others permitted by State Commission and is desirous to avail Long Term Open Access in accordance with "H.P. State Electricity Regulatory Commission (Grant of Connectivity, Long-term Access and Long-term Open Access in Intra-State Transmission and related matters) Regulations, 2010 and Electricity Act 2003 to the Transmission System of HPPTCL.

And Whereas in accordance with "State Electricity Regulatory Commission (Grant of Connectivity, Long-term Access and Medium-term Open Access in Intra-State Transmission and related matters) Regulations, 2010 and Electricity Act 2003 open access shall be allowed by HPPTCL to Long Term open access customer.

And Whereas the Long Term access is required by the Long Term transmission customer as per the following details:

Injection Utility
Name – Kutehr HEP
Location Distt: Chamba
Region – NR
Capacity (MW) 240 MW

Drawee Utility (ies)
Name Haryana Power Purchase Center
Location Region(s) : NR
Capacity (MW) 240 MW

Date from which the open access is granted is 30.06.2023 for a period of 25 years
And Whereas in accordance with the system studies carried out by HPPTCL, following transmission system is required to facilitate operationalization of above Long term access.

1. S/C LILO of 400 kV D/C Lahal to Rajera line at Kutehr HEP. (dedicated line being constructed by HPPTCL as per Approved procedure of HPERC)
2. 400 kV D/C Lahal to Rajera line . (Under construction)

And whereas the implementation of above transmission system is to be undertaken by Long Term Transmission Customer.

And whereas Long Term transmission customer has agreed to share and pay all the transmission charges of Intra State Transmission System (IaSTS) for the use of IaSTS of Northern Region and including system strengthening scheme and any addition thereof.

And whereas it has become incumbent upon both the parties to enter in to Bulk Power Transmission Agreement as envisaged under the "State Electricity Regulatory Commission (Grant of Connectivity, Long-term Access and Medium-term Open Access in Intra-State Transmission and related matters) Regulations, 2010

AND Whereas the Long term transmission customer is desirous of wheeling its power through Long term access on the same terms and conditions as contained in the Bulk Power Transmission Agreement.

Now, therefore in consideration of the premises and mutual agreements, covenants and conditions set forth herein, it is hereby agreed by and between the parties as follows :

1.0 (a) Long Term transmission customer shall share and pay the transmission charges of IaSTS of Himachal Pradesh (as applicable) including charges for inter State links and system strengthening scheme and any addition thereof.
(b) Long Term Transmission customer would provide security in the form of or irrevocable Bank Guarantee (BG) in favor of HPPTCL, equivalent to Two (2) months estimated average transmission charges of concerned Region(s) applicable to the long-term transmission customer. The security mechanism

JSW Energy (Kutehr) Pvt. Ltd.

General Manager (C&D)
HPPTCL, Tutikandi Shimla-5

shall be valid till One month after the validity of the open access.

(c) The estimated average transmission charges would be reviewed every six months and accordingly the amount of security would be enhanced / reduced by Long Term transmission customers.

(d) In case the Long Term transmission customer defaults in payment of the monthly charges of HPPTCL bills then, HPPTCL shall be entitled to encash/adjust the FDR/ deposit/ BG immediately.

(e) In case of encashment/ adjustment of the / BG by H. P.POWER TRANSMISSION CORPORATION LTD. against non-payment of monthly charges by Long-term transmission customer, the same should be immediately replenished/recouped by Long term transmission customer before the next billing cycle.

(f) The format for bank guarantee is enclosed as Annexure-X. The Bank Guarantee shall be issued by

i) A Public Sector Bank or

ii) Scheduled Indian Bank having paid up capital (net of accumulated losses) of Rs.100 crore or above (duly supported by latest annual report) and also satisfying the minimum capital adequacy requirement or

iii) Any foreign Bank with overall International corporate rating or rating of Medium Term debt not less than A –(A minus) or equivalent by reputed rating agency.

2.0 H. P. POWER TRANSMISSION CORPORATION LTD. agrees to provide Long Term Open Access required by Long term transmission customer as per the details mentioned above and in accordance with the Regulations under the H.P. State Electricity Regulator y Commission, Regulations 2010 and conditions specified by the HPERC from time to time.

3.0 The Long Term transmission customer shall not relinquish or transfer its rights and obligations specified in the Bulk Power Transmission Agreement, without prior approval of HPPTCL and HPERC and subject to payment of compensation as may be determined by the HPERC.

4.0 All differences/ disputes between the parties arising out of or in connection with this Agreement shall be resolved in terms of the Redressal Mechanism provided under Regulation 33 & 37 of the HPERC Regulations 2010 .

5.0 This Agreement shall be valid from the date of signing of this Agreement till the validity of open access. In witness whereof both the parties have executed this Agreement through their authorized representative.

Witness For and on behalf of JSWEKL

JSW Energy (Kutehar) Limited

Head Corporate Affairs
JSW Energy (Kutehar) Ltd

2.

(AJAY NATH)

For and on behalf of HPPTCL

General Manager (C&D)
HPPTCL, Shimla-05

1. Er. Rajneesh Kumar
General Manager (C&D)
HPPTCL, Shimla -05

2.

Assistant Engineer
HPPTCL

उत्तर प्रदेश पावर कारपोरेशन लिमिटेड

(उ० प्र० सरकार का उपक्रम)

U.P. POWER CORPORATION LIMITED

(Govt. of Uttar Pradesh Undertaking)

CIN No. U32201UP1999SGC024928

Planning Wing
3rd Floor, Shakti Bhawan Extension,
14-Ashok Marg, Lucknow 226001.
Phone: (0522) 2218297
Fax : (0522) 2288484/2287343
E mail : cgm2plg@yahoo.co.in

नियोजन स्कन्ध
ततीय तल, शक्ति भवन विस्तार,
14–अशोक मार्ग, लखनऊ 226001
दूरभाष : (0522) 2218297
फैक्स : (0522) 2288484/2287343
ई–मेल : cgm2plg@yahoo.co.in

No. 390- Plg/UMPP-I/400 MW Hydro

Date: 18.05.2021

M/s GMR Bajoli Holi Hydropower Pvt. Ltd.
New Shakti Bhawan, Building No. 302,
New Udaan Bhawan Complex,
Opp. Terminal-3, IGI Airport,
New Delhi 110037

Subject- Signing of PPA for procurement of 400 MW Hydro Power for 25 years by UPPCL against Tender Specification no. 01/PLG/UMPP/Hydro/400 MW/2020

Dear Sir,

Please refer to your authorization letter no. GBHHPL/UPPCL/2021-22/4172 dated 18-05-2021. In reference to letter dated 18.05.2021, a copy of PPA(in original), signed by all parties i.e. M/s GMR Bajoli Holi Hydropower Pvt. Ltd., UP DISCOMs i.e DVVNL, MVVNL, PuVVNL & PVVNL(beneficiaries) and U.P Power Corporation Limited (Signatory) is being handed over to Ms. Shrutika Prabind, Associate Manager(GMR).

Thanking you,

Encl. As above(in original)

Your's Sincerely

(Sanjiv Shukla)
Chief Engineer (Planning)

INDIA NON JUDICIAL

Government of National Capital Territory of Delhi

e-Stamp

सत्यमेव जयते

Certificate No.	:	IN-DL77577340711821T
Certificate Issued Date	:	13-May-2021 07:31 PM
Account Reference	:	IMPACC (IV)/ dl877103/ DELHI/ DL-DLH
Unique Doc. Reference	:	SUBIN-DLDL87710354561863854737T
Purchased by	:	GMR BAJOLI HOLI HYDROPOWER PRIVATE LIMITED
Description of Document	:	Article 5 General Agreement
Property Description	:	Not Applicable
Consideration Price (Rs.)	:	0 (Zero)
First Party	:	GMR BAJOLI HOLI HYDROPOWER PRIVATE LIMITED
Second Party	:	DISTRIBUTION COMPANIES OF UTTAR PRADESH
Stamp Duty Paid By	:	GMR BAJOLI HOLI HYDROPOWER PRIVATE LIMITED
Stamp Duty Amount(Rs.)	:	100 (One Hundred only)

Please write or type below this line

HYDRO POWER PURCHASE AGREEMENT
BETWEEN

The Pashchimanchal Vidyut Vitran Nigam Limited (PVVNL) (the "**Procurer 1**"),
The Purvanchal Vidyut Vitaran Nigam Limited (PuVVNL) (the "**Procurer 2**"),
The Madhyanchal Vidyut Vitran Nigam Limited (MVVNL) (the "**Procurer 3**"),
The Dakshinanchal Vidyut Vitran Nigam Limited (DVVNL) (the "**Procurer 4**")
The Uttar Pradesh Power Corporation Limited (UPPCL)

And

GMR Bajoli Holi Hydropower Private Limited (GBHHPL)

GBHHPL | PVVNL | PuVVNL | MVVNL | DVVNL | UPPCL

Executive Engineer DVVNL AGRA
Head Office: VIDYUT BHAWAN, 220KV Sub Station
NAUTHURA BYPASS ROAD
AGRA-282007

Statutory Alert
1. The authenticity of this Stamp certificate should be verified at www.shcilestamp.com or using e-Stamp Mobile App of Stock Holding. Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.

HYDRO POWER PURCHASE AGREEMENT

For 25 years

Issued by:

Chief Engineer (Planning)
UP Power Corporation Limited
3rd Floor, Shakti Bhawan Extn,
14 Ashok Marg, Lucknow; Phone: 0522-2218297
Email: cgm2plg@yahoo.co.in; cgm2plg@gmail.com

Date of issue of HPPA: 17.05.2021

Contents

Executive Engineer (Commercial),DVVNL AGRA
Head Office: URJA BHAWAN, 220kV Sub Station
AGRA-MATHURA BYPASS ROAD
SIKANDRA - AGRA-282007

मुख्य अभियन्ता (नियोजन)
उ.प्र.पा.को.लि.
लखनऊ

Part I

Preliminary

AGREEMENT FOR PROCUREMENT OF POWER

THIS AGREEMENT is entered into on this the 17th day of May 2021.

BETWEEN

1. The Pashchimanchal Vidyut Vitran Nigam Limited (PVVNL) represented by its Managing Director and having its principal/registered office at Urja Bhawan, Pashchimanchal Vidyut Vitran Nigam Ltd., Victoria Park, Meerut, 250001 (hereinafter referred to as the "**Procurer 1**" which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns) of One Part;

2. The Purvanchal Vidyut Vitaran Nigam Limited (PuVVNL) represented by its Managing Director and having its principal/registered office at Vidyut Nagar, Bhikharipur, DLW, Varanasi, 221010 (hereinafter referred to as the "**Procurer 2**" which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns) of Second Part;

3. The Madhyanchal Vidyut Vitran Nigam Limited (MVVNL) represented by its Managing Director and having its principal/registered office at Madhyanchal Vidyut Vitran Nigam Limited Head Office 4-A, Gokhale Marg, Lucknow, 226001 (hereinafter referred to as the "**Procurer 3**" which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns) of Third Part;

4. The Dakshinanchal Vidyut Vitran Nigam Limited (DVVNL) represented by its Managing Director and having its principal/registered office at Urja Bhavan, NH-2 (Agra – Delhi Bypass Road), Sikandra, Agra – 282002 (hereinafter referred to as the "**Procurer 4**" which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns) of Four Part;

5. The Uttar Pradesh Power Corporation Limited (UPPCL) represented by its Managing Director and having its principal/registered office at Shakti Bhawan 14 Ashok Marg, Lucknow, 226001 (hereinafter referred to as the "**UPPCL**" which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns) of Fifth Part;

AND

6. GMR Bajoli Holi Hydropower Private Limited, a company incorporated under the provisions of the Companies Act, 1956/2013 represented by its Authorised Signatory, Mr. Rajib Misra and having its principal office at New Shakti Bhawan, Building No. – 302, New Udaan Bhawan Complex, Near Terminal 3, IGI Airport New Delhi - 110037 and having its registered office at GMR Office, Village Deol, PO – Holi, Sub Tehsil – Holi, Tehsil – Bharmour, District – Chamba, Himachal Pradesh - 176326, (hereinafter referred to as the "**Supplier**" which expression shall, unless repugnant to the context or meaning thereof, include its successors and permitted assigns and substitutes) of the Other Part.

Executive Engineer (Commercial), DVVNL, AGRA
Head Office: URJA BHAWAN, 220kV Sub Station
AGRA-MATHURA ROAD

WHEREAS:

A. The PVVNL, PuVVNL, MVVNL, DVVNL and UPPCL (the "Procurer"), has decided to procure electricity from the ***Run off the River/ Pondage/ Pumped Storage*** hydro power generating station(s) (the "Power Station") that would dedicate a capacity for supply of Electricity thereof for a specified period and time (the **"Supply of Electricity"**) and has, therefore, decided to carry out the bidding process for selection of the Bidder to whom the contract may be awarded for production of electricity and supply thereof as per the terms and conditions specified in the Bidding Document.

B. The Procurer had invited bids from the Bidders in accordance with the Standard Bidding Documents issued on 24.01.2014 under and including the Guidelines issued by the Central Government under Section 63 of the Act vide Notification No. 23/17/2013-R&R (Vol-II) dated 10.02.2014 which were modified by the Procurer to accommodate long term procurement of power from hydro power stations and approved by the Hon'ble Uttar Pradesh Electricity Regulatory Commission vide orders in petition nos 1343/2018 dated 14.01.2019, 1456/2019 dated 10.06.2019 and 1553/2020 dated 12.02.2020.

C. After completion of the Bidding Process, the Procurer had accepted the Bid of the Selected Bidder and issued its Letter of Award No. 350 Plg/ UMPP-I/400 MW Hydro dated 16.04.2021 (hereinafter called the "**LOA**") to the Selected Bidder requiring, *inter alia*, the execution of this Agreement for Procurement of Hydro Power within 30 (thirty) days of the date of issue thereof.

D. In pursuance of the LOA, the Parties have agreed to enter into this Agreement for Procurement of Hydro Power on the terms and conditions set forth hereinafter.

NOW, THEREFORE, in consideration of the foregoing and the respective covenants and agreements set forth in this Agreement for Procurement of Hydro Power for 25 years the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound hereby, the Parties agree as follows:

Executive Engineer (Commercial) DVVNL AGRA
Head Office: URJA BHAWAN, 220KV Sub Station
AGRA-MATHURA BYPASS ROAD
KHANDORA, AGRA-282007

ARTICLE 1

DEFINITIONS AND INTERPRETATION

1.1 Definitions

The words and expressions beginning with capital letters and defined in this Agreement (including those in Article 26) shall, unless the context otherwise requires, have the meaning ascribed thereto herein, and the words and expressions defined in the Schedules and used therein shall have the meaning ascribed thereto in the Schedules.

1.2 Interpretation

1.2.1 In this Agreement, unless the context otherwise requires,

(a) references to any legislation or any provision thereof shall include amendment or re-enactment or consolidation of such legislation or any provision thereof so far as such amendment or re-enactment or consolidation applies or is capable of applying to any transaction entered into hereunder;

(b) references to laws of the State, laws of India or Indian law or regulation having the force of law shall include the laws, acts, ordinances, rules, regulations, bye laws or notifications which have the force of law in the territory of India and as from time to time may be amended, modified, supplemented, extended or re-enacted;

(c) references to a "**person**" and words denoting a natural person shall be construed as a reference to any individual, firm, company, corporation, society, trust, government, state or agency of a state or any association or partnership (whether or not having separate legal personality) of two or more of the above and shall include successors and assigns;

(d) the table of contents, headings or sub-headings in this Agreement are for convenience of reference only and shall not be used in, and shall not affect, the construction or interpretation of this Agreement;

(e) the words "**include**" and "**including**" are to be construed without limitation and shall be deemed to be followed by "**without limitation**" or "**but not limited to**" whether or not they are followed by such phrases;

(f) references to "**construction**" or "**building**" include, unless the context otherwise requires, investigation, design, engineering, procurement, delivery, transportation, installation, processing, fabrication, testing, commissioning and other activities incidental to the construction, and "**construct**" or "**build**" shall be construed accordingly;

(g) references to "**development**" include, unless the context otherwise requires, construction, renovation, refurbishing, augmentation, upgradation and other activities incidental thereto, and "**develop**" shall be construed accordingly;

(h) any reference to any period of time shall mean a reference to that according to Indian Standard Time;

(i) any reference to "**hour**" shall mean a period of 60 (sixty) minutes commencing either on the hour or on the half hour of the clock, which by way of illustration means 5.00 (five), 6.00 (six), 7.00 (seven) and so on being hours on the hour of the clock and 5.30 (five thirty), 6.30 (six thirty), 7.30 (seven thirty) and so on being hours on the half hour of the clock;

(j) any reference to day shall mean a reference to a calendar day;

(k) reference to a "**business day**" shall be construed as reference to a day (other than a Sunday) on which banks in the State where the Power Station is situate are generally open for business;

(l) any reference to month shall mean a reference to a calendar month as per the Gregorian calendar;

(m) references to any date, period or Project Milestone shall mean and include such date, period or Project Milestone as may be extended pursuant to this Agreement;

(n) any reference to any period commencing "**from**" a specified day or date and "**till**" or "**until**" a specified day or date shall include both such days or dates; provided that if the last day of any period computed under this Agreement is not a business day, then the period shall run until the end of the next business day;

(o) the words importing singular shall include plural and vice versa;

(p) references to any gender shall include the other and the neutral gender;

(q) "**kWh**" shall mean kilowatt hour;

(r) "**lakh**" shall mean a hundred thousand (100,000) and "**crore**" shall mean ten million (10,000,000);

(s) "**indebtedness**" shall be construed so as to include any obligation (whether incurred as principal or surety) for the payment or repayment of money, whether present or future, actual or contingent;

(t) references to the "**winding-up**", "**dissolution**", "**insolvency**", or "**reorganisation**" of a company or corporation shall be construed so as to include any equivalent or analogous proceedings under the law of the jurisdiction in which such company or corporation is incorporated or any jurisdiction in which such company or corporation carries on business including the seeking of liquidation, winding-up, reorganisation, dissolution, arrangement, protection or relief of debtors;

(u) save and except as otherwise provided in this Agreement, any reference, at any time, to any agreement, deed, instrument, licence or document of any

description shall be construed as reference to that agreement, deed, instrument, licence or other document as amended, varied, supplemented, modified or suspended at the time of such reference; provided that this Sub-clause (u) shall not operate so as to increase liabilities or obligations of the Procurer hereunder or pursuant hereto in any manner whatsoever;

(v) any agreement, consent, approval, authorisation, notice, communication, information or report required under or pursuant to this Agreement from or by any Party shall be valid and effective only if it is in writing under the hand of a duly authorised representative of such Party, in this behalf and not otherwise;

(w) the Schedules and Recitals to this Agreement form an integral part of this Agreement and will be in full force and effect as though they were expressly set out in the body of this Agreement;

(x) references to Recitals, Articles, Clauses, Sub-clauses, Provisos or Schedules in this Agreement shall, except where the context otherwise requires, mean references to Recitals, Articles, Clauses, Sub-clauses, Provisos and Schedules of or to this Agreement; reference to an Annex shall, subject to anything to the contrary specified therein, be construed as a reference to an Annex to the Schedule in which such reference occurs; and reference to a Paragraph shall, subject to anything to the contrary specified therein, be construed as a reference to a Paragraph of the Schedule or Annex, as the case may be, in which such reference appears;

(y) the damages payable by either Party to the other of them, as set forth in this Agreement, whether on per diem basis or otherwise, are mutually agreed genuine pre-estimated loss and damage likely to be suffered and incurred by the Party entitled to receive the same and are not by way of penalty (the "**Damages**");

(z) time shall be of the essence in the performance of the Parties' respective obligations. If any time period specified herein is extended, such extended time shall also be of the essence; and

(za) capitalised terms used in the Agreement, but not defined herein, shall have the meaning ascribed to such terms in the Electricity Act, 2003.

1.2.2 Unless expressly provided otherwise in this Agreement, any Documentation required to be provided or furnished by the Supplier to the Procurer shall be provided free of cost and in three copies, and if the Procurer is required to return any such Documentation with its comments and/or approval, they shall be entitled to retain two copies thereof.

1.2.3 The rule of construction, if any, that a contract should be interpreted against the parties responsible for the drafting and preparation thereof, shall not apply.

1.2.4 Any word or expression used in this Agreement shall, unless otherwise defined or construed in this Agreement, bear its ordinary English meaning and, for these purposes, the General Clauses Act, 1897 shall not apply.

1.3 Measurements and arithmetic conventions

All measurements and calculations shall be in the metric system and calculations done to 2 (two) decimal places, with the third digit of 5 (five) or above being rounded up and below 5 (five) being rounded down.

1.4 Priority of agreements, clauses and schedules

1.4.1 This Agreement, and all other agreements and documents forming part of or referred to in this Agreement are to be taken as mutually explanatory and, unless otherwise expressly provided elsewhere in this Agreement, the priority of this Agreement and other documents and agreements forming part hereof or referred to herein shall, in the event of any conflict between them, be in the following order:

(a) this Agreement; and

(b) all other agreements and documents forming part hereof or referred to herein,

i.e. the Agreement at (a) above shall prevail over the agreements and documents at (b) above.

1.4.2 Subject to the provisions of Clause 1.4.1, in case of ambiguities or discrepancies within this Agreement, the following shall apply:

(a) between two or more Clauses of this Agreement, the provisions of a specific Clause relevant to the issue under consideration shall prevail over those in other Clauses;

(b) between the Clauses of this Agreement and the Schedules, the Clauses shall prevail and between Schedules and Annexes, the Schedules shall prevail;

(c) between any two Schedules, the Schedule relevant to the issue shall prevail;

(d) between the written description on the drawings and the Specifications and Standards, the latter shall prevail;

(e) between the dimension scaled from the drawing and its specific written dimension, the latter shall prevail; and

(f) between any value written in numerals and that in words, the latter shall prevail.

Part II

The Procurement Contract

ARTICLE 2

SCOPE OF THE PROJECT

2.1 Scope of the Project

The scope of the Agreement (the "**Scope of the Agreement**") shall mean and include, during the Contract Period:

(a) ensure the operation and maintenance of the Power Station(s), situated at the Site(s) described in Schedule-A and having the principal features stated therein, in accordance with the provisions of this Agreement;

(b) supply of electricity to the Procurer in accordance with the provisions of this Agreement; and

(c) performance and fulfilment of all other obligations of the Supplier and the Procurer, as the case may be, in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Supplier under this Agreement.

ARTICLE 3

GRANT OF PROCUREMENT CONTRACT

3.1 The Grant of Procurement Contract

3.1.1 Subject to and in accordance with the provisions of this Agreement, Applicable Laws and the Applicable Permits, the Procurer hereby awards to the Supplier the procurement contract set forth herein for generating electricity at the Power Station(s)" for supply thereof to the Procurer for a period of 25 years commencing from the Appointed Date (the "**Procurement Contract**"), and the Supplier hereby accepts the Procurement Contract and agrees to implement the same subject to and in accordance with the terms and conditions set forth herein.

Provided that at any time 3 (three) months, prior to the expiry of the Contract Period specified hereinabove, the Parties may with mutual agreement extend the Contract Period for such further period for five year with same terms and conditions set forth herein.

3.1.2 Subject to and in accordance with the provisions of this Agreement, the Procurement Contract hereby awarded shall oblige or entitle (as the case may be) the Supplier to:

(a) Finance, own, operate and maintain the Power Station(s) in accordance with this Agreement", or ensure that the Developer finances, owns, operates and maintains the Power Station(s) in accordance with this Agreement";

(b) procure if Supplier Supply of the Capacity for generation of electricity and Supply of Electricity thereof to the Procurer under and in accordance with the provisions of this Agreement, save and except as expressly provided in the Agreement;

(c) to receive Fixed Charge from the Procurer in accordance with the provisions of this Agreement;

(d) to receive Variable Charge in accordance with the provisions of this Agreement;

(e) perform and fulfil all of the Supplier's obligations under and in accordance with this Agreement;

(f) save as otherwise expressly provided in this Agreement, bear and pay all costs, expenses and charges in connection with or incidental to the performance of the obligations of the Supplier under this Agreement; and

(g) neither assign, transfer or sub-let or create any lien or Encumbrance on this Agreement, or the Procurement Contract hereby granted or on the whole or any part of the Power Station nor sell, transfer, exchange, lease or part possession thereof, save and except as expressly permitted by this Agreement", or neither assign, transfer or sub-let or create any lien or

Encumbrance on this Agreement, or the Procurement Contract hereby granted or allow the Developer to assign, transfer or sub-let or create any lien or Encumbrance on the whole or any part of the Power Station nor sell, transfer, exchange, lease or part possession thereof, save and except as expressly permitted by this Agreement.

3.2 Substitution of the Procurer

The Parties expressly agree that the Procurer may, in pursuance of any re-organisation or restructuring undertaken in pursuance of Applicable Laws, or if it is unable to discharge its liabilities and obligations under this Agreement, substitute itself by another **PVVNL, PuVVNL, MVVNL, DVVNL** and **UPPCL** and upon such substitution, all the functions, rights and obligations of the Procurer under this Agreement shall be deemed to be transferred to the substituted entity in accordance with and subject to Applicable Laws. Provided, however, that prior to any substitution hereunder, the Parties shall, on a best endeavour basis, make such arrangements and enter into such further agreements as may be necessary for performance of their respective obligations hereunder, including the rights and obligations arising out of the provisions of Article 13. Provided further that the creditworthiness of the substituted entity shall be substantially similar or greater as compared to the Procurer and in the event of any shortfall therein, credit enhancement shall be provided by the substituted entity to bridge the gap.

ARTICLE 4

CONDITIONS PRECEDENT

4.1 Conditions Precedent

4.1.1 Save and except as expressly provided in Articles 4, 5, 6, 7, 8, 9, 17, 19, 23 and 25, or unless the context otherwise requires, the respective rights and obligations of the Parties under this Agreement shall be subject to the satisfaction in full of the conditions precedent specified in this Clause 4.1 (the "**Conditions Precedent**"). Provided, however, that a Party may grant waiver from satisfaction of any Condition Precedent by the other Party in accordance with the provisions of Clauses 4.1.2 or 4.1.3, as the case may be, and to the extent of such waiver, that Condition Precedent shall be deemed to be fulfilled for the purposes of this Clause 4.1.1.

4.1.2 The Supplier may, upon providing the Performance Security to the Procurer in accordance with Article 9, at any time within 30 (Thirty) days from the date of this Agreement or on an earlier day acceptable to the Procurer, by notice require the Procurer to satisfy any or all of the Conditions Precedent set forth in this Clause 4.1.2 within a period of 30 (thirty) days of the notice, and the Conditions Precedent required to be satisfied by the Procurer shall be deemed to have been fulfilled when the Procurer shall have:

(a) executed and procured execution of the Default Escrow Agreement in accordance with the provisions of Clause 13.1;

(b) executed the Deed of Hypothecation in accordance with the provisions of Clause 13.1.2;

(c) procured adoption of the Tariff from the Appropriate Commission for payment of Tariff by the Procurer to the Supplier in accordance with the provisions of this Agreement;

Provided that upon request in writing by the Procurer, the Supplier may, in its discretion, grant extension of time, not exceeding 180 (one hundred and eighty) days, for fulfilment of the Conditions Precedent set forth in this Clause 4.1.2.

4.1.3 The Conditions Precedent required to be satisfied by the Supplier within a period of 90 (ninety) days from the date of this Agreement shall be deemed to have been fulfilled when the Supplier shall have:

a. provided Performance Security to the Procurer to be provided within 30 days;

b. deposited a certified true copy of this Agreement with the RLDC and SLDC having jurisdiction and obtained a receipt thereof, in accordance with the provisions of Clauses 14.3.3 and 19.4.1; and

c. procured access to the transmission system required for carrying electricity from the Power Station to the Delivery Point.

Provided that upon request in writing by the Supplier, the Procurer may, in its discretion, waive any of the Conditions Precedent set forth in this Clause 4.1.3 or grant extension of time, not exceeding 90 (ninety) days, for fulfilment thereof, as the case may be. For the avoidance of doubt, the Procurer may, in its sole discretion, grant any waiver hereunder, with such conditions as it may deem fit.

4.1.4 Each Party shall make all reasonable endeavours to satisfy the Conditions Precedent within the time stipulated and shall provide the other Party with such reasonable cooperation as may be required to assist that Party in satisfying the Conditions Precedent for which that Party is responsible.

4.1.5 The Parties shall notify each other in writing at least once a fortnight on the progress made in satisfying the Conditions Precedent. Each Party shall promptly inform the other Party when any Condition Precedent for which it is responsible has been satisfied.

4.2 Damages for delay by the Procurer

In the event that (i) the Procurer does not procure fulfilment or waiver of any or all of the Conditions Precedent set forth in Clause 4.1.2 within the period specified in respect thereof, and (ii) the delay has not occurred as a result of breach of this Agreement by the Supplier or due to Force Majeure, the Procurer shall pay to the Supplier Damages in an amount calculated at the rate of 0.1% (zero point one per cent) of the Performance Security for each day's delay until the fulfilment of such Conditions Precedent, subject to a maximum of 20% (twenty per cent) of the Performance Security.

If Performance Security is not provided within 30 Days, the Bid Security of the Supplier shall be encashed and appropriated by the Procurer.

4.3 Damages for delay by the Supplier

In the event that (i) the Supplier does not procure fulfilment or waiver of any or all of the Conditions Precedent set forth in Clause 4.1.3 within the period specified in that Clause and (ii) the delay has not occurred as a result of failure to fulfil the obligations under Clause 4.1.2 or other breach of this Agreement by the Procurer or due to Force Majeure, the Supplier shall pay to the Procurer Damages in an amount calculated at the rate of 0.3% (zero point three per cent) of the Performance Security for each day's delay until the fulfilment of such Conditions Precedent, subject to a maximum amount equal to the Bid Security, and upon reaching such maximum, the Procurer may, in its sole discretion, terminate the Agreement. Provided that in the event of delay by the Procurer in procuring fulfilment of the Conditions Precedent specified in Clause 4.1.2, no Damages shall be due or payable by the Supplier under this Clause 4.3 until the date on which the Procurer shall have procured fulfilment of the Conditions Precedent specified in Clause 4.1.2.

4.4 Deemed Termination upon delay

Without prejudice to the provisions of Clauses 4.2 and 4.3, and subject to the provisions of Clause 9.2, the Parties expressly agree that in the event the

Appointed Date does not occur, for any reason whatsoever, 120 (one hundred twenty) days from the date of this Agreement or the extended period provided in accordance with this Agreement, all rights, privileges, claims and entitlements of the Supplier under or arising out of this Agreement shall be deemed to have been waived by, and to have ceased with the concurrence of the Supplier, and the Hydro Power Purchase Agreement shall be deemed to have been terminated by mutual agreement of the Parties. Provided, however, that in the event the delay in occurrence of the Appointed Date is for reasons attributable to the Supplier, the Performance Security of the Supplier shall be encashed and appropriated by the Procurer as Damages thereof.

Executive Engineer (Commercial) DVVNL AGRA
Head Office: URJA BHAWAN, 220KV Sub Station
AGRA-MATHURA BYPASS ROAD
AGRA - AGRA-282007

GBHHPL	PVVNL	PuVVNL	MVVNL	DVVNL	UPPCL

मुख्य अभियन्ता (वाणिज्यिक)
उ.प्र.प.स.लि.
लखनऊ

ARTICLE 5

OBLIGATIONS OF THE SUPPLIER

5.1 Obligations of the Supplier

5.1.1 Subject to and on the terms and conditions of this Agreement, the Supplier shall, at its own cost and expense", undertake the operation and maintenance of the Power Station(s) and observe, fulfil, comply with and perform all its obligations set out in this Agreement or arising hereunder.

5.1.2 The Supplier shall comply with all Applicable Laws and other Applicable Permits (including renewals as required) in the performance of its obligations under this Agreement.

5.1.3 Save and except as otherwise provided in this Agreement or Applicable Laws, as the case may be, the Supplier shall, in discharge of all its obligations under this Agreement, conform with and adhere to Good Industry Practice at all times.

5.1.4 The Supplier shall operate and maintain the Power Station in accordance with the Specifications, Standards and the Maintenance Requirements such that the monthly supply of the Contracted Capacity of the Power Station in terms of million units is at least [***Run off the River - /Pondage – 90% (Ninety percent) without silt & 85% (Eight Five Percent) with silt/ Pumped Storage/ any other to be specified***] thereof during the peak hours pertaining to Procurers specified 6 hours during the Contract Period (the "**Contracted Supply**").

Explanation:

Supply in respect of any day shall be actual supply of power in terms of million units pertaining to the Contracted Capacity during peak hours pertaining to Procurers specified 6 hours during the Contract Period up to the Delivery Point.

The bidders shall have to provide CEA approved/certified monthly design energy for the power station for the 6 months from May to Oct during the contract period along with already tied-up firm commitments.

The Parties further agree that if the Power Station is not supplying electricity to its full capacity during any hour pertaining to the Procurer specified Peak Hours, or part thereof, not being less than a quarter of an hour, such hour or part thereof shall, in the computation of supply, be reduced proportionate to the non-supply during that hour. The Parties also agree that the determination of Supply hereunder shall be solely for the purposes of this Agreement and shall not in any manner affect the rights and obligations of the Supplier for and in respect of scheduling and despatch of electricity under Applicable Laws and the rules and regulations thereunder.

5.1.5 The Supplier shall, at its own cost and expense, in addition to and not in derogation of its obligations elsewhere set out in this Agreement

(a) make, or cause to be made, necessary applications to the relevant Government Instrumentalities with such particulars as may be required for

obtaining Applicable Permits, and obtain and keep in force and effect such Applicable Permits in conformity with Applicable Laws; Non-grant of long term open access shall be mutually decided by the Procurer and Supplier;

(b) procure, or cause to be procured, as required, the appropriate proprietary rights, licences, agreements and permissions for materials, methods, processes, know-how and systems used or incorporated into the Power Station;

(c) ensure and procure that its comply with all Applicable Permits and Applicable Laws in the performance by them of any of the Supplier's obligations under this Agreement;

(d) always act in a manner consistent with the provisions of this Agreement and not cause or fail to do any act, deed or thing, whether intentionally or otherwise, which may in any manner be violative of any of the provisions of this Agreement or Applicable Laws;

(e) support, cooperate with and facilitate the Procurer in the implementation of this Agreement;

(f) comply with the provisions of Applicable Laws with regard to metering of supply of electricity;

(g) comply with the directions of the Commission issued from time to time under the Act.

5.2 Obligations relating to Project Agreements

It is expressly agreed that the Supplier shall, at all times, be responsible and liable for all its obligations under this Agreement notwithstanding anything contained in the Project Agreements or any other agreement, and no default under any Project Agreement or agreement shall excuse the Supplier from its obligations or liability hereunder.

5.3 Obligations relating to Change in Ownership

The Supplier shall not undertake or permit any Change in Ownership, except with the prior written approval of the Procurer.

5.4 Obligations relating to operation of the Power Station

5.4.1 The Supplier shall at all times operate the Power Station in accordance with Applicable Laws and the provisions of the Grid Code and shall comply with such directions as the RLDC/SLDC may give from time to time in accordance with the provisions of the Act.

5.4.2 The Supplier shall comply with agreements for interconnection of the Power Station to the grid, sub-stations, licensees or consumers, as the case may be, under and in accordance with Applicable Laws.

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5.5 Obligations relating to transmission charges

The Supplier shall be liable for payment of all charges, due and payable under Applicable Laws, for inter-state and intra-state transmission of electricity from the Point of Grid Connection to the Delivery Point. For the avoidance of doubt, the Parties expressly agree that inter-state and intra-state transmission of electricity shall be undertaken solely at the risk and cost of the Supplier and all liabilities arising out of any failure of inter-state and intra-state transmission shall, subject to the provisions of Clause 11.4.4, be borne by the Supplier. The Parties further agree that the obligation of the Supplier to pay the regulated charges for transmission of electricity shall be restricted to the tariffs and rates applicable on the Bid Date for and in respect of the Contracted Capacity and any differential arising from revision of the regulated tariffs and rates thereafter shall be payable or recoverable, as the case may be, by the Procurer. The Parties also agree that the regulated charges applicable for transmission of electricity referred to hereinabove as on the Bid Date shall be deemed to be Rs. 0.7160/kWh for and in respect of the Contracted Capacity, which charges shall at all times be due and payable by the Supplier.

5.6 Obligations relating to transmission losses

5.6.1 The Supplier shall be liable for the transmission losses in all inter-state and intra-state transmission of electricity from the Point of Grid Connection to the Delivery Point. For the avoidance of doubt, the Parties expressly agree that transmission of electricity shall be undertaken solely at the risk and cost of the Supplier and all liabilities arising out of any transmission losses on inter-state and intra-state transmission lines shall be borne by the Supplier. The Parties further agree that the obligation of the Supplier to bear the transmission losses shall be restricted to the level of losses determined by the Central Commission as on the Bid Date for this Project and any differential (higher or lower) arising from revision in the level of losses thereafter by the Central Commission shall be borne by the Procurer.

5.6.2 The Supplier represents and warrants that it has ascertained and assessed the applicable transmission losses from the Point of Grid Connection to the Delivery Point as determined by the Appropriate Commission for and in respect of the Bid Date, and expressed in the form of their proportion to the electricity supplied hereunder at the Point of Grid Connection. The Supplier acknowledges, agrees and undertakes that the product of such transmission losses (expressed in kWh) and the Tariff shall be due and payable by the Supplier to the Procurer and shall be adjusted in the relevant Monthly Invoice in case of reduction in Transmission Loss but Procurer has already paid to the Supplier as per the prevailing order of the Commission. For the avoidance of doubt and by way of illustration, the Parties agree that if the transmission losses in any month are equivalent to 1 (one) lakh units and the Tariff payable for that month is Rs. 3 (Rupees three) per kWh, an amount of Rs. 3,00,000/- (Rupees three lakh) shall be due and payable by the Supplier to the Procurer and shall be adjusted in the Monthly Invoice for that month.

5.7 Obligations relating to SLDC and RLDC charges

The Supplier shall be liable for payment of all the charges, due and payable under Applicable Laws by the Supplier to the SLDC and RLDC for and in respect of all its supplies to the Procurer.

5.8 Obligations relating to taxes

The Supplier shall pay, at all times during the subsistence of this Agreement, all taxes, levies, duties, cesses and all other statutory charges payable in respect of the Power Station. Provided, however, that all payments made by the Supplier with respect to service tax, value added tax, general sales tax or electricity duty, if any, levied on or in respect of the supply of electricity to the Procurer under this Agreement shall be reimbursed by the Procurer upon receipt of particulars thereof.

5.9 Obligations relating to reporting requirements

All information provided by the Supplier to the SLDC and RLDC as a part of its operating and reporting requirements under Applicable Laws, including the Grid Code, shall also be provided by it to the Procurer simultaneously.

ARTICLE 6

OBLIGATIONS OF THE PROCURER

6.1 Obligations of the Procurer

6.1.1 The Procurer shall, at its own cost and expense undertake, comply with and perform all its obligations set out in this Agreement or arising hereunder.

6.1.2 The Procurer agrees to provide support to the Supplier and undertakes to observe, comply with and perform, subject to and in accordance with the provisions of this Agreement and Applicable Laws, the following:

(a) upon written request from the Supplier, and subject to the Supplier complying with Applicable Laws, provide reasonable support and assistance to the Supplier in procuring the Applicable Permits required from any Government Instrumentality for operation of the Project; Non-grant of long term open access shall be mutually decided by the Procurer and Supplier;

(b) not do or omit to do any act, deed or thing which may in any manner be violative of any of the provisions of this Agreement;

(c) support, cooperate with and facilitate the Supplier in the implementation and operation of the Project in accordance with the provisions of this Agreement and Applicable Laws.

6.1.3 The Procurer shall provide and facilitate non-discriminatory open access to its network for enabling the Supplier to supply electricity to Buyers in the licence area of the Procurer in accordance with the provisions of sections 42 and 49 of the Act.

Executive Engineer (Commercial) DVVNL AGRA
Head Office: JR. BHAWAN, 220KV Sub Station
AGRA-MATHURA BYPASS ROAD
[illegible] AGRA-282007

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उ.प्र.पा.को.लि.,
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ARTICLE 7

REPRESENTATIONS AND WARRANTIES

7.1 Representations and warranties of the Supplier

The Supplier represents and warrants to the Procurer that:

(a) it is duly organised and validly existing under the laws of India, and has full power and authority to execute and perform its obligations under this Agreement and to carry out the transactions contemplated hereby;

(b) it has taken all necessary corporate and other actions under Applicable Laws to authorise the execution and delivery of this Agreement and to validly exercise its rights and perform its obligations under this Agreement;

(c) this Agreement constitutes its legal, valid and binding obligation, enforceable against it in accordance with the terms hereof, and its obligations under this Agreement will be legally valid, binding and enforceable obligations against it in accordance with the terms hereof;

(d) it is subject to the laws of India, and hereby expressly and irrevocably waives any immunity in any jurisdiction in respect of this Agreement or matters arising thereunder including any obligation, liability or responsibility hereunder;

(e) the information furnished in the Bid and as updated on or before the date of this Agreement is true and accurate in all respects as on the date hereof;

(f) the execution, delivery and performance of this Agreement will not conflict with, result in the breach of, constitute a default under, or accelerate performance required by any of the terms of its Memorandum and Articles of Association or any Applicable Laws or any covenant, contract, agreement, arrangement, understanding, decree or order to which it is a party or by which it or any of its properties or assets is bound or affected;

(g) there are no actions, suits, proceedings, or investigations pending or, to its knowledge, threatened against it at law or in equity before any court or before any other judicial, quasi-judicial or other authority, the outcome of which may result in the breach of this Agreement or which individually or in the aggregate may result in any material impairment of its ability to perform any of its obligations under this Agreement;

(h) it has no knowledge of any violation or default with respect to any order, writ, injunction or decree of any court or Government Instrumentality which may result in any material adverse effect on its ability to perform its obligations under this Agreement and no fact or circumstance exists which may give rise to such proceedings that would adversely affect the performance of its obligations under this Agreement;

(i) it has complied with Applicable Laws in all material respects and has not been subject to any fines, penalties, injunctive relief or any other civil or criminal liabilities which in the aggregate have or may have a material adverse effect on its ability to perform its obligations under this Agreement;

(j) it shall at no time undertake or permit any Change in Ownership except in accordance with the provisions of Clause 5.3; and that its promoters together, hold not less than 51% (fifty one per cent) of its issued and paid up Equity as on the date of this Agreement;

(k) the Selected Bidder and have the financial standing and resources to fund the required Equity and to raise the debt necessary for undertaking and implementing the Project in accordance with this Agreement;

(l) the Selected Bidder is duly organised and validly existing under the laws of the jurisdiction of its incorporation or registration, as the case may be, and has requested the Procurer to enter into this Agreement with pursuant to the Letter of Award, and has agreed to and unconditionally accepted the terms and conditions set forth in this Agreement;

(m) no representation or warranty by it contained herein or in any other document furnished by it to the Procurer or to any Government Instrumentality in relation to Applicable Permits contains or will contain any untrue or misleading statement of material fact or omits or will omit to state a material fact necessary to make such representation or warranty not misleading;

(n) no sums, in cash or kind, have been paid or will be paid, by it or on its behalf, to any person by way of fees, commission or otherwise for securing the Supply Contract or entering into this Agreement or for influencing or attempting to influence any officer or employee of the Procurer in connection therewith;

(o) all information provided by the Selected Bidder in response to the Request for Qualification and Request for Proposals or otherwise, is to the best of its knowledge and belief, true and accurate in all material respects; and

(p) all undertakings and obligations of the Supplier arising from the Request for Qualification and Request for Proposals or otherwise shall be binding on the Supplier as if they form part of this Agreement.

7.2 Representations and warranties of the Procurer

The Procurer represents and warrants to the Supplier that:

(a) it has full power and authority to execute, deliver and perform its obligations under this Agreement and to carry out the transactions contemplated herein and that it has taken all actions necessary to execute this Agreement, exercise its rights and perform its obligations, under this Agreement;

(b) it has taken all necessary actions under Applicable Laws to authorise the execution, delivery and performance of this Agreement;

(c) it has the financial standing and capacity to perform its obligations under this Agreement;

(d) this Agreement constitutes a legal, valid and binding obligation enforceable against it in accordance with the terms hereof;

(e) it has no knowledge of any violation or default with respect to any order, writ, injunction or any decree of any court or any legally binding order of any Government Instrumentality which may result in any material adverse effect on the Procurer's ability to perform its obligations under this Agreement; and

(f) it has complied with Applicable Laws in all material respects.

7.3 Disclosure

In the event that any occurrence or circumstance comes to the attention of either Party that renders any of its aforesaid representations or warranties untrue or incorrect, such Party shall immediately notify the other Party of the same. Such notification shall not have the effect of remedying any breach of the representation or warranty that has been found to be untrue or incorrect nor shall it adversely affect or waive any right, remedy or obligation of either Party under this Agreement.

ARTICLE 8

DISCLAIMER

8.1 Disclaimer

8.1.1 The Supplier acknowledges that prior to the execution of this Agreement, the Supplier has, after a complete and careful examination, made an independent evaluation of the Bidding Document, Scope of the Agreement, Specifications and Standards, transmission network, Site, existing structures, local conditions, and any information provided by the Procurer or obtained, procured or gathered otherwise, and has determined to its satisfaction the accuracy or otherwise thereof and the nature and extent of difficulties, risks and hazards as are likely to arise or may be faced by it in the course of performance of its obligations hereunder. The Procurer makes no representation whatsoever, express, implicit or otherwise, regarding the accuracy, adequacy, correctness, reliability and/or completeness of any assessment, assumption, statement or information provided by it and the Supplier confirms that it shall have no claim whatsoever against the Procurer in this regard.

8.1.2 The Supplier acknowledges and hereby accepts the risk of inadequacy, mistake or error in or relating to any of the matters set forth in Clause 8.1.1 above and hereby acknowledges and agrees that the Procurer shall not be liable for the same in any manner whatsoever to the Supplier, or any person claiming through or under any of them.

8.1.3 The Parties agree that any mistake or error in or relating to any of the matters set forth in Clause 8.1.1 above shall not vitiate this Agreement, or render it voidable.

8.1.4 In the event that either Party becomes aware of any mistake or error relating to any of the matters set forth in Clause 8.1.1 above, that Party shall immediately notify the other Party, specifying the mistake or error; provided, however, that a failure on part of the Procurer to give any notice pursuant to this Clause 8.1.4 shall not prejudice the disclaimer of the Procurer contained in Clause 8.1.1 and shall not in any manner shift to the Procurer any risks assumed by the Supplier pursuant to this Agreement.

8.1.5 Except as otherwise provided in this Agreement, all risks relating to the Project shall be borne by the Supplier and the Procurer shall not be liable in any manner for such risks or the consequences thereof.

INDIA NON JUDICIAL

Government of National Capital Territory of Delhi

e-Stamp

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Certificate No.	:	**IN-DL26732940153554P**
Certificate Issued Date	:	04-Sep-2017 08:16 PM
Account Reference	:	IMPACC (IV)/ dl942203/ DELHI/ DL-DLH
Unique Doc. Reference	:	SUBIN-DLDL94220354013111672434P
Purchased by	:	DELHI INTERNATIONAL AIRPORT LIMITED
Description of Document	:	Article 5 General Agreement
Property Description	:	Not Applicable
Consideration Price (Rs.)	:	0 (Zero)
First Party	:	DELHI INTERNATIONAL AIRPORT LIMITED
Second Party	:	Not Applicable
Stamp Duty Paid By	:	DELHI INTERNATIONAL AIRPORT LIMITED
Stamp Duty Amount(Rs.)	:	150 (One Hundred And Fifty only)

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This Stamp Paper forms part and parcel of the Power Purchase Agreement dated September 11, 2017 entered by and between Delhi International Airport Limited and GMR Kajala Hob Hydropower Private Limited.

Delhi International Airport Ltd

GMR Baloji Hob Hydropower Pvt. Ltd.

POWER PURCHASE AGREEMENT

FOR THE PROCUREMENT OF POWER FROM A POWER STATION

AS A

CAPTIVE USER

BETWEEN

DELHI INTERNATIONAL AIRPORT LIMITED

(formerly known as Delhi International Airport Private Limited)

AND

GMR BAJOLI HOLI HYDROPOWER PRIVATE LIMITED

Contents

Part I

Preliminary

POWER PURCHASE AGREEMENT

THIS POWER PURCHASE AGREEMENT is entered into and made at New Delhi on this 11th day of September, 2017

BY AND BETWEEN

(1) **Delhi International Airport Limited** (formerly known as Delhi International Airport Private Limited), a company incorporated under the Companies Act, 1956 and having its registered office at New Udaan Bhawan, Opposite Terminal - 3, Indira Gandhi International Airport, New Delhi 110 037 (hereinafter referred to as "**DIAL**", which expression shall, unless repugnant to or inconsistent with the context, mean and include its successors and assigns) of the **First Part**;

AND

(2) **GMR Bajoli Holi Hydropower Private Limited** , a company incorporated under the provisions of the Companies Act, 1956 / 2013 and having its registered office at Rattan Chand Building, VPO Kuleth, Sub-Tehsil Holi, Distt. Bharmour, Chamba, Himachal Pradesh - 176236, (hereinafter referred to as the "**Supplier**" which expression shall, unless repugnant to the context or meaning thereof, include its successors and permitted assigns and substitutes) of the **Second Part**.

Each of DIAL and Supplier are individually referred to as a "**Party**" and collectively referred to as the "**Parties**".

WHEREAS:

(A) DIAL being a large consumer of electricity on account of operating, managing and developing the Airport and for the purpose of reducing the cost of electricity, intends to procure/consume electricity as a captive user on a long term basis from the Power Station to meet its Annual Energy Requirement in accordance with the terms and conditions to be set forth in a power purchase agreement and the provisions of the Electricity Act, 2003.

(B) DIAL further wishes to procure equity stake in the Supplier such that the Power Station will be regarded as a "Captive Generating Plant" as defined in the Electricity Rules, 2005.

(C) DIAL had accordingly invited proposals by its request for proposal dated 08.12.2016 (as amended by way of an addendum on February 9, 2017) (the "**Request For Proposal**" or "**RFP**") for selection of Bidders who offer to supply electricity from a Captive Generating Plant, as per terms of the Project

Agreements.

(D) DIAL had prescribed the technical and commercial terms and conditions by its Request for Proposal and invited Bids pursuant to the RFP for undertaking the Project (as defined herein below).

(E) After evaluation of the Bids received, DIAL had accepted the Bid of the Selected Bidder and upon completion of the due diligence process carried out by DIAL issued the Letter of Award Ref. No. DIAL/2017-18/Fin/780 dated August 31, 2017 (hereinafter called the **"LOA")** to the Selected Bidder requiring, *inter alia,* the execution of this long term power purchase agreement (the **"Power Purchase Agreement"** or **"PPA").**

(F) Pursuant to the (i) issuance of LOA dated August 31, 2017 by DIAL, (ii) confirmation by the Supplier of the completion of the CP's as mentioned in the LOA, the Parties have agreed to enter into this Power Purchase Agreement on the terms and conditions set forth hereinafter.

NOW, THEREFORE, in consideration of the foregoing, the respective covenants, terms and conditions and understandings set forth in this Power Purchase Agreement, the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound hereby, the Parties agree as follows:

(Intentionally left blank)

ARTICLE 1

1. DEFINITIONS AND INTERPRETATION

1.1 Definitions

The words and expressions beginning with capital letters and defined in this Agreement shall, unless the context otherwise requires, have the meaning ascribed thereto herein, and the words and expressions defined in the Schedules and used therein shall have the meaning ascribed thereto in the Schedules.

"Accounting Year" or **"Financial Year"** means the financial year commencing from the first day of April of any calendar year and ending on the thirty-first day of March of the next calendar year;

"Acquisition Price of Equity" shall mean the consideration in Rs.108.33,33,340/- (Rupees One Hundred Eight Crore Thirty Three Lacs Thirty Three Thousand Three Hundred and Forty only) in lieu of the equity stake offered by the Bidder in the special purpose vehicle (SPV) to DIAL;

"Act" means the Electricity Act, 2003;

"Additional Surcharge" shall mean the surcharge payable by open access consumers in accordance with Section 42 of the Electricity Act, 2003, and as determined by the Appropriate Commission through regulations and tariff orders, from time to time;

"Adjustment Amount" shall have the meaning as set forth in Clause 12.3;

"Affected Party" shall have the meaning as set forth in Clause 16.1;

"Agreement" or **"Power Purchase Agreement"** means this Agreement, its Recitals, the Schedules hereto and any amendments thereto made in accordance with the provisions contained in this Agreement;

"Agreement Date" shall mean the date of signing of the Power Purchase Agreement and the Share Subscription cum Shareholders' Agreement, which shall be signed together on same day, between the Supplier and DIAL;

Airport shall mean the Indira Gandhi International Airport at Delhi;

"Annual Energy Requirement" shall have the meaning as set forth in Clause 11.1.1;

"Applicable Laws" means all applicable laws in force and effect as of the date hereof and which may be promulgated or brought into force and effect hereinafter in India including bye-laws, statutes, rules, regulations, orders, ordinances, protocols, codes, guidelines, policies, notices, directions, judgments, decrees or other requirements or official directive of any Governmental Authority or person acting under the authority of any governmental authority and/or of any statutory authority in the Republic of India, and

specifically including the AAI , Bureau of Civil Aviation Security ("**BCAS**"), the authorities concerned under the Electricity Act, 2003 read with rules made thereunder and the rules, regulations and guidelines (including policies and circulars) framed by DIAL from time to time as the airport operator, whether in effect on the execution date or thereafter;

"Applicable Permits" means all clearances, licences, permits, authorisations, no objection certificates, consents, approvals and exemptions required to be obtained or maintained under Applicable Laws in connection with the construction, operation and maintenance of the Power Station during the subsistence of this Agreement;

"Appointed Date" means the date on which all the Conditions Precedent are achieved, and every Condition Precedent is either satisfied or waived, as the case may be, in accordance with the provisions of this Agreement, and such date shall be the date of commencement of the Contract Period;

"Appropriate Commission" shall mean the CERC, or the SERC or the Joint Commission referred to in Section 83 of the Electricity Act 2003, as the case may be;

"Arbitration Act" means the Arbitration and Conciliation Act, 1996 and shall include modification/amendment to or any re-enactment thereof, as in force from time to time;

"Associate" or **"Affiliate"** means, a company that either directly or indirectly

i. controls or
ii. is controlled by or
iii. is under common control with

a bidding company and "control" shall mean ownership by one company of at least twenty six percent (26%) of the voting rights of the other company. "Controlling" and "Controlled by" shall be construed accordingly;

"Availability Based Tariff" or **"ABT"** shall mean all the regulations contained in the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2004, as amended or revised from time to time, to the extent applied as per the terms of this Agreement;

"Bank Rate" means the rate of interest specified by the Reserve Bank of India from time to time in pursuance of section 49 of the Reserve Bank of India Act, 1934 or any replacement of such Bank Rate for the time being in effect;

"Base Year" means the Accounting Year in which the Bid Date occurred;

"Bid" means the documents in their entirety comprised in the Bid submitted by the Interested Parties in response to the Request for Proposal in accordance with the provisions thereof and **"Bids"** shall mean the Bids submitted by any and all Bidders;

"Bid Date" means the last date on which the Bid may have been submitted in accordance with the provisions of the Request for Proposal;

"Bid Security" means the security provided by the Supplier to DIAL along with the Bid, in a sum of Rs. 5,00,000 (Rupees Five Lacs only) in accordance with the Request for Proposal, and which is to remain in force until substituted by the Performance Security;

"Buy Back" shall have the meaning as defined in the Share Subscription cum Shareholders' Agreement;

"Buy Back Price" shall have the meaning as defined in the Share Subscription cum Shareholders' Agreement;

"Buyer(s)" shall mean the third parties buying electricity from the Power Station, in accordance with the provisions of this Agreement and Applicable Laws;

"Carrying Cost of Equity per Unit" shall mean the product of aggregate Acquisition Price of Equity and fourteen percent (14%), of this aggregate amount shall be the Carrying Cost of Equity for any Accounting Year. The Carrying Cost of Equity per Unit shall be computed by dividing the Carrying Cost of Equity by the total units of energy consumed in any Accounting Year;

"Change in Law" means the occurrence of any of the following after the Bid Date:

(a) the enactment of any new Indian law;

(b) the repeal, modification or re-enactment of any existing Indian law;

(c) the commencement of any Indian law which has not entered into effect until the Bid Date;

(d) a change in the interpretation or application of any Indian law by a judgement of a court of record which has become final, conclusive and binding, as compared to such interpretation or application by a court of record prior to the Bid Date; or

(e) any change in the rates of any of the Taxes that have a direct effect on the Project;

"Change in Ownership" means a transfer of the direct and/or indirect legal or beneficial ownership of any shares, or securities convertible into shares, that causes the aggregate holding of the Existing Shareholders in the total Equity to decline below 26% (twenty six per cent) thereof during the term of the PPA or the period of 10 (ten) years following COD, whichever is earlier, or such lower proportion as may be permitted by DIAL upon substitution of the promoters of the Supplier by an entity having sufficient financial and technical capacity to discharge the obligations of the Supplier under this Agreement;

"Commission" means the Appropriate Commission or any successor thereof duly constituted under the Act;

"Company" means the company acting as the Supplier under this Agreement;

"Conditions Precedent" shall have the meaning as set forth in Clause 4.1.1;

"Construction Period" means the period beginning from the Appointed Date and ending on date of declaration of commercial operation;

"Contract Capacity" shall have the meaning as set forth in Clause 11.2.1;

"Contract Period" means the period starting on and from the Appointed Date and ending on 3rd May 2036 in accordance with Clause 3.1.1;

"Council" shall have meaning as ascribed in Clause 16.7;

"Cost of RPO" shall mean the cost incurred by DIAL in meeting renewable purchase obligations applicable on DIAL for any Financial Year as per relevant regulations and orders of the DERC;

"Cross Subsidy Surcharge" shall mean the surcharge payable by open access consumers in accordance with Section 38, Section 39 and Section 42 of the Electricity Act, 2003, and as determined by the Appropriate Commission through regulations and tariff orders, from time to time;

"Cure Period" means the period specified in this Agreement for curing any breach or default of any provision of this Agreement by the Party responsible for such breach or default and shall:

(a) commence from the date on which a notice is delivered by one Party to the other Party requiring the latter to cure the breach or default specified in such notice;

(b) not relieve any Party from liability to pay damages or compensation under the provisions of this Agreement; and

provided that if the cure of any breach by the Supplier requires any reasonable action by the Supplier that must be approved by DIAL hereunder, the applicable Cure Period shall be extended by the period taken by DIAL or to accord their approval;

"Damages" shall have the meaning as set forth in Sub-clause (w) of Clause 1.2.1;

"Decommissioning due to Emergency or Forced Outage" shall mean de-commissioning or shut down of the whole or any part of the Power Station due to an Emergency or Forced Outage situation, as the case may be. The Supplier shall be entitled to de-commission or shut down the whole or any part of the Power Station for so long as such Emergency or Forced Outage and the consequences thereof warrant; provided that such de-commissioning or shut down and particulars thereof shall be notified by the Supplier to DIAL, the RLDC and the SLDC without any delay, and the Supplier shall diligently carry out and abide by any reasonable directions that DIAL, the

RLDC or the SLDC may give for dealing with such Emergency or Forced Outage;

"Delivery Points" means the receiving substations of DIAL as per Schedule -F where the electricity supplied under this Agreement will be received by DIAL;

"Despatch" shall have the meaning as set forth in Clause 14.2.1;

"Deviation" in a time-block for a seller means its total actual injection minus its total scheduled generation and for a procurer means its total actual drawal minus its total scheduled drawal (as per DSM Regulations);

"DIAL's Default" shall have the meaning as set forth in Clause 18.2.1;

"DIAL's Representative" means such person or persons as may be authorised in writing by DIAL to act on its behalf under this Agreement and shall include any person or persons having authority to exercise any rights or perform and fulfil any obligations of DIAL under this Agreement;

"Dispute" shall have the meaning as set forth in Clause 22.1.1;

"Disputed Amounts" shall have the meaning as set forth in Clause 12.4.3;

"Dispute Resolution Procedure" means the procedure for resolution of Disputes as set forth in Article 22;

"Distribution Licensee" or **"DISCOM"** means a person who has been granted a license under section 14 of the Electricity Act, 2003 to distribute electricity as a distribution licensee and includes **"BSES Rajdhani Private Limited"** or **"BRPL"** as the existing distribution licensee;

"Document" or **"Documentation"** means documentation in printed or written form, or in tapes, discs, drawings, computer programmes, writings, reports, photographs, films, cassettes, or expressed in any other written, electronic, audio or visual form;

"DSM Regulations" means the Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) Regulations 2014;

"Emergency" means a condition or situation that is likely to endanger the security of the individuals on or about the Power Station, including Buyers thereof, or which poses an immediate threat of material damage to any of the Project Assets;

"Encumbrances" means, in relation to the Power Station, any encumbrances such as mortgage, charge, pledge, lien, hypothecation, security interest, assignment, privilege or priority of any kind having the effect of security or other such obligations, and shall include any designation of loss payees or beneficiaries or any similar arrangement under any insurance policy pertaining to the Power Station, where applicable herein but excluding utilities;

"Equity" means the sum expressed in Indian Rupees representing the paid up equity share capital of the Supplier for meeting the equity component of the Total Project Cost;

Existing Shareholders shall mean such shareholders of the Selected Bidder cumulatively holding 100% of the issued and paid up equity share capital of the Bidder as on date of execution of the Project Agreements;

"Financial Close" means the fulfilment of all conditions precedent to the initial availability of funds under the Financing Agreements;

"Financial Model" means the financial model adopted by Lenders, setting forth the capital and operating costs of the Project and revenues therefrom on the basis of which financial viability of the Project has been determined by the Lenders, and includes a description of the assumptions and parameters used for making calculations and projections therein;

"Financial Package" means the financing package indicating the total capital cost of the Power Station and the means of financing thereof, as set forth in the Financial Model and approved by the Lenders, and includes Equity, all financial assistance specified in the Financing Agreements and subordinated debt, if any;

"Financing Agreements" means the agreements executed by the Supplier in respect of financial assistance to be provided by the Lenders by way of loans, guarantees, subscription to non-convertible debentures and other debt instruments including loan agreements, guarantees, notes, debentures, bonds and other debt instruments, security agreements, and other documents relating to the financing (including refinancing) of the Total Project Cost, and includes amendments or modifications as per provisions of this Agreement;

"Fixed Charges" shall mean the fixed monthly charges payable by DIAL to the DISCOM for maintaining the connection for supply of power, in case it so decides;

"Force Majeure" or **"Force Majeure Event"** shall have the meaning ascribed to it in Clause **Error! Reference source not found.**;

"Forced Outage" means an outage of the Power Station due to a fault or any other reason which was not anticipated and includes any tripping's, breakdown or unscheduled shutdown and an Emergency;

"GOI" means the Government of India;

"Good Industry Practice" means the practices, methods, techniques, designs, standards, skills, diligence, efficiency, reliability and prudence which are generally and reasonably expected from a reasonably skilled and experienced operator engaged in the same type of undertaking as envisaged under this Agreement and which would be expected to result in the performance of its obligations by the Supplier in accordance with this Agreement,

Applicable Laws and Applicable Permits in reliable, safe, economical and efficient manner, and includes prudent DIAL practices generally accepted by electricity generating stations for ensuring safe, economic and efficient construction, operation and maintenance of the Power Station and for providing safe, economic, reliable and efficient supply of electricity;

"Government" means the Government of India or the Government of the State, as the case may be;

"Government Instrumentality" means any department, division or sub-division of the Government of India or the State Government and includes any commission, board, authority, agency or municipal and other local authority or statutory body, including Panchayat, under the control of the Government of India or the State Government, as the case may be, and having jurisdiction over all or any part of the Power Station or the performance of all or any of the services or obligations of the Supplier under or pursuant to this Agreement;

"Grid" means the high voltage backbone system of inter-connected transmission lines and sub-stations;

"Grid Code" means the India Electricity Grid Code, 2010 or any substitute thereof

"Indemnified Party" means the Party entitled to the benefit of an indemnity pursuant to Article 21;

"Indemnifying Party" means the Party obligated to indemnify the other Party pursuant to Article 21;

"Insurance Cover" means the aggregate of the maximum sums insured under the insurances taken out by the Supplier pursuant to Article 15, and includes all insurances required to be taken out by the Supplier under Clause 15.2 but not actually taken, and when used in the context of any act or event, it shall mean the aggregate of the maximum sums insured and payable or deemed to be insured and payable in relation to such act or event;

"Interested Parties" shall mean the person who are engaged in the business of generation of electricity including Affiliate thereof, to whom the RFP has been issued;

"Late Payment Surcharge" shall have the meaning as set forth in Clause 12.6 of this Agreement;

"LOA" or **"Letter of Award"** means the letter of award referred to in Recital (D);

"Lenders" means one or more financial institutions, banks, multilateral lending agencies, trusts, funds and agents or trustees of debenture holders, including their successors and assignees, who have agreed to guarantee or provide finance to the Supplier under any of the Financing Agreements for meeting all or any part of the Total

Project Cost;

"Lenders' Representative" means the person duly authorised by the Lenders to act for and on behalf of the Lenders with regard to matters arising out of or in relation to this Agreement, and includes his successors, assigns and substitutes;

"Letter of Credit" shall have the meaning as set forth in Clause 13.1.1;

"Material Adverse Effect" means a material adverse effect of any act or event on the ability of either Party to perform any of its obligations under and in accordance with the provisions of this Agreement and which act or event causes a material financial burden or loss to either Party;

"Meters" or "Metering System" shall mean meters used for accounting and billing of electricity in accordance with Central Electricity Authority (Installation and Operations of Meters) Regulations, 2006, Grid Code and ABT, as amended from time to time;

"Minimum Monthly Payment" shall have the meaning as set forth in Clause 13.1.1;

"Minimum Guaranteed Offtake" shall have the meaning as ascribed in Clause 11.1.2.

"Monthly Invoice" shall have the meaning as set forth in Clause 12.4.1;

"Notice Shortfall Period" shall have the meaning set forth in Clause 18.5.1;

"OMDA" shall mean the Operation Management and Development Agreement dated April 4th, 2006, entered into between AAI and DIAL;

"O&M" means the operation and maintenance of the Power Station and includes all matters connected with or incidental to such operation and maintenance, and provision of generating and transmission services and facilities in accordance with the provisions of this Agreement;

"O&M Contract" means the contract, if any, which the Supplier has entered into with any person for discharging O&M obligations for and on behalf of the Supplier;

"O&M Expenses" means expenses incurred by or on behalf of the Supplier or by DIAL, as the case may be, for all O&M including (a) cost of salaries and other compensation to employees, (b) cost of materials, supplies, utilities and other services, (c) premia for insurance, (d) all taxes, duties, cess and fees due and payable for O&M, (e) all repair, replacement, reconstruction, reinstatement, improvement and maintenance costs, (f) payments required to be made under the O&M Contract or any other contract in connection with or incidental to O&M, and (g) all other expenditure required to be incurred under Applicable Laws, Applicable Permits or this Agreement;

"Operation Period" means the period commencing from Scheduled Supply Commencement Date and ending on 3rd May 2036;

"Operations Agreements" means the documents and agreement relating to fuel tie up and agreements relating to operations and maintenance including O&M Contract, if any, for the period as specified by the power procurer;

"Parties" means the parties to this Agreement collectively and "Party" shall mean any of the parties to this Agreement individually;

"Payment Due Date" shall have the meaning as set forth in Clause 12.4.3;

"Performance Security" shall have the meaning as set forth in Clause 9.1.1;

"Point of Grid Connection" means the point of interconnection at which the electricity generated by the Power Station is transferred to the Grid;

"Power Station" shall have the meaning as set forth in Clause 2.3;

"Power Purchase Cost' shall have the meaning as set forth in Clause 12.1.1;

"Project" shall have the meaning as set forth in Clause 2.1;

"Project Agreements" shall collectively refer to the Power Purchase Agreement and the Shareholder's Agreement;

"Project Assets" means all physical and other assets relating to and forming part of the Project including:

a. rights over the Site in the form of licence, Line ROW or otherwise; tangible assets such as civil works and equipment including foundations, embankments, pavements, electrical systems, communication systems, administrative offices and Sub-stations;
b. all rights of the Supplier under the Project Agreements;
c. financial assets, such as receivables, security deposits etc.;
d. insurance proceeds; and
e. Applicable Permits and authorisations relating to or in respect of the Power Station;

"RLDC" means the Regional load Despatch Centre as specified in the Act;

"Reactive Energy Charge" shall mean the charge for "non-working" power, or power that has to be made up due to inefficiencies at the customer's load source and the charge shall be as determined by the Appropriate Commission through regulations and tariff orders, from time to time for open access customers.;

"Re.", **"Rs."** or **"Rupees"** or **"Indian Rupees"** means the lawful currency of the Republic of India;

"Request For Proposal" or **"RFP"** shall have the meaning as set forth in Recital (B);

"Revenues" means all of the present and future funds, payment obligations, monies, claims, bills and any other property whatsoever which may from time to time be derived from or accrue to or be offered or due to DIAL in the form of cash receipts or receivables from any and all sources, save and except any capital receipts of DIAL for and in relation to any capital expenditure for creation of assets;

"Sale Shares" shall have the meaning as ascribed in the Share Subscription cum Shareholders' Agreement;

"SLDC" means the State Load Despatch Centre as specified in the Act;

"SLDC/RLDC Charges" shall have the meaning as ascribed in Clause 12.1.1;

"Scheduled Maintenance" shall mean any maintenance carried out by the Supplier as notified to DIAL no later than 15 (fifteen) days prior to the beginning of each Accounting Year during the Operation Period, as the case may be, regarding its proposed annual programme of preventive, urgent and other scheduled maintenance;

"Scheduled Supply Commencement Date" shall mean 1st April, 2019, the date of start of supply of electricity to DIAL, under this Agreement;

"Scope of the Project" shall have the meaning as set forth in Clause 2.2;

"Special Purpose Vehicle" or "SPV" shall mean a company incorporated under the Companies Act 1956/2013 owning the Power Station;

"Standby Charges" shall mean the charges payable by the open access consumers to the Distribution Licensee for availing standby power backup facilities, as determined in the tariff orders by Appropriate Commission from time to time;

"State" means the National Capital Territory of Delhi, in which DIAL is situated;

"Statement of Expenses" shall have the meaning as set forth in Clause 12.3;

"State Transmission Utility or STU" shall mean the Board or the Government Company specified as such by the State Government under sub-section (1) of section 39;

"Sub-station" means a station for transforming or converting electricity for the transmission thereof and includes transformers, converters, switchgears, capacitors, synchronous condensers, structures, cable and other appurtenant equipment and any buildings used for that purpose and the site thereof;

"Supplier" shall have the meaning attributed thereto in the array of Parties as set forth in the Recitals;

"Supplier Default" shall have the meaning as set forth in Clause 18.1.1;

"Supply Contract" shall have the meaning as set forth in Clause 3.1.1;

"Tariff" shall have the meaning as set forth in Clause 12.1.1 and as elaborated in Clause 12.1.2;

"Taxes" means any Indian taxes including goods and services tax local taxes, cess and any impost or surcharge of like nature (whether Central, State or local) on the goods, materials, equipment and services incorporated in and forming part of the Power Station and which is charged, levied or imposed by any Government Instrumentality, but excluding any interest, penalties and other sums in relation thereto imposed on any account whatsoever. For the avoidance of doubt, Taxes shall not include taxes on corporate income;

"Termination" means the expiry or termination of this Agreement and the Supply Contract hereunder;

"Termination Notice" means the communication issued in accordance with this Agreement by one Party to the other Party terminating this Agreement;

"Termination Payment" means the amount payable, by the defaulting party to the other party, under and in accordance with the provisions of this Agreement, upon Termination thereof;

"Total Project Cost" means the capital cost incurred on construction and financing of the Power Station and shall be limited to the lower of:

(a) the capital cost of the Power Station as set forth in the Financial Package; and
(b) the actual capital cost of the Power Station upon completion of Construction;

"Transfer Date" means the date on which this Agreement and the Supply Contract hereunder expires pursuant to the provisions of this Agreement or is terminated by a Termination Notice;

"Unit Closure" shall mean shut down or de-commission any Unit of the Power Station for undertaking maintenance or repair works, not forming part of the Maintenance Programme, with the prior written intimation to DIAL at least 7 (seven) days before the proposed closure of such Unit and which shall be accompanied by particulars thereof;

"Unscheduled Maintenance" shall mean any maintenance or repair of the Power Station not forming part of Scheduled Maintenance. For the avoidance of doubt, the Parties agree that any decommissioning or shut down of the whole or any part of the Power Station shall be deemed to be Unscheduled Maintenance;

"Wheeling Charges" shall mean the charges payable by the open access consumer to the DISCOM for transmission of electricity in the distribution network of the DISCOM as determined in the tariff orders by Appropriate Commission from time to time;

"Unit" means a unit of the Power Station which is equipped with a turbine and associated facilities for generation of electricity independently of other units at the Power Station.

1.2 Interpretation

1.2.1 In this Agreement, unless the context otherwise requires,

(a) references to any legislation or any provision thereof shall include amendment or re-enactment or consolidation of such legislation or any provision thereof so far as such amendment or re-enactment or consolidation applies or is capable of applying to any transaction entered into hereunder;

(b) references to laws of the State, laws of India or Indian law or regulation having the force of law shall include the laws, acts, ordinances, rules, regulations, bye laws or notifications which have the force of law in the territory of India and as from time to time may be amended, modified, supplemented, extended or re-enacted;

(c) references to a **"person"** and words denoting a natural person shall be construed as a reference to any individual, firm, company, corporation, society, trust, government, state or agency of a state or any association or partnership (whether or not having separate legal personality) of two or more of the above and shall include successors and assigns;

(d) the table of contents, headings or sub-headings in this Agreement are for convenience of reference only and shall not be used in, and shall not affect, the construction or interpretation of this Agreement;

(e) the words **"include"** and **"including"** are to be construed without limitation and shall be deemed to be followed by **"without limitation"** or **"but not limited to"** whether or not they are followed by such phrases;

(f) any reference to any period of time shall mean a reference to that according to Indian Standard Time;

(g) any reference to "hour" shall mean a period of 60 (sixty) minutes commencing either on the hour or on the half hour of the clock, which by way of illustration means 5.00 (five), 6.00 (six), 7.00 (seven) and so on being hours on the hour of the clock and 5.30 (five thirty), 6.30 (six thirty), 7.30 (seven thirty) and so on being hours on the half hour of the clock;

(h) any reference to day shall mean a reference to a calendar day;

(i) reference to a **"business day"** shall be construed as reference to a day (other than a Sunday) on which banks in the State where the Power Station is situate are generally open for business;

(j) any reference to month shall mean a reference to a calendar month as

per the Gregorian calendar;

(k) references to any date or period shall mean and include such date or period as may be extended pursuant to this Agreement;

(l) any reference to any period commencing **"from"** a specified day or date and **"till"** or **"until"** a specified day or date shall include both such days or dates; provided that if the last day of any period computed under this Agreement is not a business day, then the period shall run until the end of the next business day;

(m) the words importing singular shall include plural and vice versa;

(n) references to any gender shall include the other and the neutral gender;

(o) **"kWh"** shall mean kilowatt hour and **"kCal"** shall mean kilo calories;

(p) **"lakh"** shall mean a hundred thousand (100,000) and **"crore"** shall mean ten million (10,000,000);

(q) **"indebtedness"** shall be construed so as to include any obligation (whether incurred as principal or surety) for the payment or repayment of money, whether present or future, actual or contingent;

(r) references to the **"winding-up"**, **"dissolution"**, **"insolvency"**, or **"reorganisation"** of a company or corporation shall be construed so as to include any equivalent or analogous proceedings under the law of the jurisdiction in which such company or corporation is incorporated or any jurisdiction in which such company or corporation carries on business including the seeking of liquidation, winding-up, reorganisation, dissolution, arrangement, protection or relief of debtors;

(s) save and except as otherwise provided in this Agreement, any reference, at any time, to any agreement, deed, instrument, licence or document of description shall be construed as reference to that agreement, deed, instrument, licence or other document as amended, varied, supplemented, modified or suspended at the time of such reference; provided that this sub-clause shall not operate so as to increase liabilities or obligations of DIAL hereunder or pursuant hereto in any manner whatsoever;

(t) any agreement, consent, approval, authorisation, notice, communication, information or report required under or pursuant to this Agreement from or by any Party shall be valid and effective only if it is in writing under the hand of a duly authorised representative of such Party or in this behalf and not otherwise;

(u) the schedules and recitals to this Agreement form an integral part of this

Agreement and will be in full force and effect as though they were expressly set out in the body of this Agreement;

(v) references to recitals, articles, clauses, sub-clauses, provisos or schedules in this agreement shall, except where the context otherwise requires, mean references to recitals, articles, clauses, sub-clauses, provisos and schedules of or to this agreement; reference to an annex shall, subject to anything to the contrary specified therein, be construed as a reference to an annex to the schedule in which such reference occurs; and reference to a paragraph shall, subject to anything to the contrary specified therein, be construed as a reference to a paragraph of the schedule or annex, as the case may be, in which such reference appears;

(w) the damages payable by either Party to the other of them, as set forth in this Agreement, whether on per diem basis or otherwise, are mutually agreed genuine pre-estimated loss and damage likely to be suffered and incurred by the Party entitled to receive the same and are not by way of penalty (the "**Damages**");

(x) time shall be of the essence in the performance of the Parties' respective obligations. If any time period specified herein is extended, such extended time shall also be of the essence; and

(y) capitalised terms used in the Agreement, but not defined herein, shall have the meaning ascribed to such terms in the Electricity Act, 2003.

1.2.2 Unless expressly provided otherwise in this Agreement, any documentation required to be provided or furnished by the Supplier shall be provided free of cost and in three copies, and if DIAL is required to return any such documentation with their comments and/or approval, they shall be entitled to retain two copies thereof.

1.2.3 The rule of construction, if any, that a contract should be interpreted against the parties responsible for the drafting and preparation thereof, shall not apply.

1.2.4 Any word or expression used in this Agreement shall, unless otherwise defined or construed in this Agreement, bear its ordinary English meaning and, for these purposes, the General Clauses Act, 1897 shall not apply.

1.3 **Measurements and arithmetic conventions**

All measurements and calculations shall be in the metric system and calculations done to 2 (two) decimal places, with the third digit of 5 (five) or above being rounded up and below 5 (five) being rounded down.

1.4 Priority of agreements, clauses and schedules

1.4.1 This Agreement, and all other agreements and documents forming part of or referred to in this Agreement are to be taken as mutually explanatory and, unless otherwise expressly provided elsewhere in this Agreement, the priority of this Agreement and other documents and agreements forming part hereof or referred to herein shall, in the event of any conflict between them, be in the following order:

(a) this Agreement; and
(b) all other agreements and documents forming part hereof or referred to herein,

i.e. the Agreement at (a) above shall prevail over the agreements and documents at (b) above.

1.4.2 Subject to the provisions of Clause 1.4.1, in case of ambiguities or discrepancies within this Agreement, the following shall apply:

(a) between two or more clauses of this agreement, the provisions of a specific clause relevant to the issue under consideration shall prevail over those in other clauses;
(b) between the clauses of this agreement and the schedules, the clauses shall prevail and between schedules and annexes, the schedules shall prevail;
(c) between any two schedules, the schedule relevant to the issue shall prevail;
(d) between any value written in numerals and that in words, the latter shall prevail.

Part II

The Supply Contract

ARTICLE 2

2. SCOPE OF THE PROJECT

2.1 Project

The Supplier agrees to supply electricity to DIAL on a long term basis (the **"Project"**) from the Power Station to meet the Annual Energy Requirement in accordance with the provisions of this Agreement.

2.2 Scope of the Project

The scope of the project (the **"Scope of the Project"**) shall mean and include, during the Contract Period:

(a) production and supply of electricity to DIAL in accordance with the provisions of this Agreement starting from 1st April, 2019 (the "**Scheduled Supply Commencement Date**"); and

(b) performance and fulfilment of all other obligations of the Supplier in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Supplier under this Agreement.

The issuance of the LOA dated August 31, 2017 or Project Agreements pursuant hereto does not restrict or limit any / all rights of DIAL to enter into a similar arrangement with any party / person / entity whomsoever, at any location for additional energy requirement, over and above the Annual Energy Requirement.

2.3 Power Station

The Power Station is the generating station of the Supplier selected in pursuance to RFP dated 08.12.2016 located at Village Holi, District Chamba, Himachal Pradesh (the "**Power Station**").

The technical details of the Power Station have been provided at Schedule -A.

ARTICLE 3

3. GRANT OF SUPPLY CONTRACT

3.1 The Supply Contract

3.1.1 Subject to and in accordance with the provisions of this Agreement, Applicable Laws and the Applicable Permits, DIAL hereby awards to the Supplier the supply contract set forth herein for supply of electricity at the Power Station for supply thereof to DIAL to meet the Annual Energy Requirement throughout the Contract Period (the "**Supply Contract**") and the Supplier hereby accepts the Power Purchase Agreement and agrees to implement the same subject to and in accordance with the terms and conditions set forth herein.

The Parties may mutually agree to extend the term, subject to AAI approval and other necessary approvals as may be required.

3.1.2 Subject to and in accordance with the provisions of this Agreement, the Supply Contract hereby awarded shall oblige, require or entitle (as the case may be) the Supplier to:

(a) operate and maintain the Power Station to ensure supply of power to DIAL to meet the Annual Energy Requirement in accordance with this Agreement;

(b) receive from DIAL, the Power Purchase Cost applicable at DIAL's Receiving Sub-station as per the provisions of this Agreement in respect of the electricity supplied to DIAL;

(c) perform and fulfil all of the obligations of the Supplier's under and in accordance with this Agreement;

(f) save as otherwise expressly provided in this Agreement, bear and pay all costs, expenses and charges in connection with or incidental to the performance of the obligations of the Supplier under this Agreement; and

(g) not assign, transfer or sub-let or create any lien or Encumbrance on this Agreement, or the Supply Contract hereby granted.

3.2 Commencement of Supply

3.2.1 The Parties agree that the supply of power to DIAL under this Agreement shall commence on or before 00:00 hours of the Scheduled Supply Commencement Date.

3.2.2 Either Party may, in writing, make a request to the other Party to pre-pone or post-pone the date of commencement of supply by a period not exceeding six months from the Scheduled Supply Commencement Date. In case of request for preponement of commencement of supply, the request may be made at least 180 days prior to the proposed supply commencement date and in case of request for postponement of commencement of supply, the request may be made at least 180 days prior to the Scheduled Supply Commencement Date. The acceptance of the request for such preponement or postponement of commencement of supply shall be at the sole discretion of DIAL.

3.2.3 If the Supplier is unable to commence supply of power to DIAL on the Scheduled Supply Commencement Date or the proposed date of commencement of supply pursuant to Clause 3.2.2, then provisions of Clause 5.12 and Clause 5.13 shall apply.

ARTICLE 4

4. CONDITIONS PRECEDENT

4.1 Conditions Precedent

4.1.1 Save and except as expressly provided in Articles 4, 5, 6, 7, 8, 9, 16, 22 and 24, or unless the context otherwise requires, the respective rights and obligations of the Parties under this Agreement shall be subject to the satisfaction in full of the conditions precedent specified in this Clause 4.1 (the **"Conditions Precedent"**). Provided, however, that a Party may grant waiver from satisfaction of any Condition Precedent by the other Party in accordance with the provisions of Clauses 4.1.2 or 4.1.3, as the case may be, and to the extent of such waiver, that Condition Precedent shall be deemed to be fulfilled for the purposes of this Clause 4.1.1.

4.1.2 DIAL shall satisfy the Conditions Precedent set forth in this Clause 4.1.2 within a period of 180 (One hundred and Eighty) days from the Agreement Date. The Conditions Precedent required to be satisfied by DIAL shall be deemed to have been fulfilled when DIAL shall:

(a) Nominate the member from DIAL for the Council and assist in appointment of third member of the Council.

Provided that upon request in writing by DIAL, the Supplier may, in its discretion, grant extension of time, not exceeding 180 (one hundred and eighty) days, for fulfilment of the Conditions Precedent set forth in this Clause 4.1.2.

4.1.3 The Conditions Precedent required to be satisfied by the Supplier within a period of 180 (one hundred and eighty) days from the Agreement Date, shall be deemed to have been fulfilled when the Supplier shall have:

(a) deleted;

(b) procured No-objection Certificate from Licensed Distributor regarding procurement of power through open access using the distribution network of the Licensed Distributor for the entire Contract Period;

(c) obtained long term access of transmission system from the Power Station till the Receiving Sub-station of DIAL and submitted all approval documents in this regard to DIAL;

(d) provided construction and commissioning plan to DIAL proving the ability to supply power to DIAL from the date of commencement of, in case the plant is under construction;

(d) delivered to DIAL 3 (three) true copies of the Financial Model, duly

attested by a Director of the Supplier, along with 3 (three) soft copies of the Financial Model in MS Excel version or any substitute thereof, which is acceptable to the Lenders;

(e) nominated the member from the Supplier for the Council and assisting in appointment of third member of the Council; and

(g) deposited a certified true copy of this Agreement with the RLDC and SLDC having jurisdiction and obtained a receipt thereof.

Provided that upon request in writing by the Supplier, DIAL may, in its sole discretion, waive any of the Conditions Precedent set forth in this Clause 4.1.3 or provide a suitable and reasonable extension of time, in writing, to the Supplier to satisfy any of the Conditions Precedent set forth in this Clause 4.1.3.

4.1.4 Each Party shall make all reasonable endeavors to satisfy the Conditions Precedent within the time stipulated and shall provide the other Party with such reasonable cooperation as may be required to assist that Party in satisfying the Conditions Precedent for which that Party is responsible.

4.1.5 The Parties shall notify each other in writing at least once a fortnight on the progress made in satisfying the Conditions Precedent. Each Party shall promptly inform the other Party when any Condition Precedent for which it is responsible has been satisfied.

4.2 Damages for delay by the Supplier

In the event that (i) the Supplier does not procure fulfilment or waiver of any or all of the Conditions Precedent set forth in Clause 4.1.3 within the period specified in that Clause, and (ii) the delay has not occurred as a result of failure to fulfil the obligations under Clause 4.1.2 by DIAL or due to Force Majeure, the Supplier shall pay to DIAL Damages in an amount calculated at the rate equivalent to 0.25% (zero point two five per cent) of the Performance Security for each day's delay until the fulfilment of such Conditions Precedent, subject to a maximum amount equal to thirty three percent (33%) of the Performance Security, and upon reaching such maximum, DIAL may, in its sole discretion and subject to the provisions of Clause 9.2, terminate the Agreement.

4.3 Commencement of Contract Period

The date on which all the Conditions Precedent specified in Clause 4.1 are satisfied or waived, as the case may be, shall be the Appointed Date which shall be the date of commencement of the Contract Period.

4.4 Deemed Termination upon delay

Without prejudice to the provisions of Clauses 4.1 and 4.2, the Parties expressly

agree that in the event the Appointed Date does not occur, for any reason whatsoever, before 330 days of the Agreement Date or the extended period provided in accordance with this Agreement, all rights, privileges, claims and entitlements of the Supplier under or arising out of this Agreement shall be deemed to have been waived by, and to have ceased with the concurrence of the Supplier, and the Power Purchase Agreement shall be deemed to have been terminated by mutual agreement of the Parties. Provided, however, that in the event the delay in occurrence of the Appointed Date is for reasons attributable to the Supplier, the Performance Security of the Supplier or part of the Performance Security already furnished by the Supplier may be encashed and appropriated by DIAL as Damages thereof.

ARTICLE 5

5. OBLIGATIONS OF THE SUPPLIER

5.1 General Obligations of the Supplier

5.1.1 Subject to and on the terms and conditions of this Agreement, the Supplier shall, undertake the design, development, construction (for projects under construction/ to be constructed), finance, operation, maintenance and management of the Power Station to ensure the production and supply of Annual Energy Requirement to DIAL and observe, fulfill, comply with and perform all its obligations set out in this Agreement or arising hereunder.

5.1.2 The Supplier shall comply with all Applicable Laws and other Applicable Permits (including renewals as required) in the performance of its obligations under this Agreement.

5.1.3 Save and except as otherwise provided in this Agreement or Applicable Laws, as the case may be, the Supplier shall, in discharge of all its obligations under this Agreement, conform with and adhere to Good Industry Practice at all times.

5.1.4 The Supplier shall, in addition to and not in derogation of its obligations elsewhere set out in this Agreement:

(a) furnish Performance Security in accordance with the terms set out in this PPA;

(b) make, or cause to be made, necessary applications to the relevant Government Instrumentalities with such particulars as may be required for obtaining Applicable Permits and obtain and keep in force and effect such Applicable Permits in conformity with Applicable Laws.

(c) Procure and maintain open access to the transmission networks from the Power Station bus till the point of interconnection of Delhi Transco Limited with the DISCOM and open access to the distribution network of the DISCOM till the Receiving Sub-station.

(d) procure, as required, the appropriate proprietary rights, licences, agreements and permissions for materials, methods, processes, know-how and systems used or incorporated into the Power Station.

(e) ensure and procure that its contractors comply with all Applicable Permits and Applicable Laws in the performance by them of any of the Supplier's obligations under this Agreement.

(f) comply with/regularly maintain statutory compliances under the Applicable Laws;.

(g) ensure that the units of the Power Station identified for supply of power to DIAL are commissioned before the Scheduled Date of Commencement of Supply.

(h) always act in a manner consistent with the provisions of this Agreement and not cause or fail to do any act, deed or thing, whether intentionally or otherwise, which may in any manner be violative of any of the provisions of this Agreement or Applicable Laws.

(i) procure that all equipment and facilities comprising the Power Station are operated and maintained in accordance with the specifications and standards, maintenance requirements, safety requirements and Good Industry Practice.

(j) support, cooperate with and facilitate DIAL in the implementation of this Agreement.

(k) comply with the provisions of Applicable Laws with regard to metering of supply of electricity.

(l) comply with the directions of the Commission issued from time to time under the Act.

5.2 Obligations relating to Operations Agreements

5.2.1 It is expressly agreed that the Supplier shall, at all times, be responsible and liable for all its obligations under this Agreement notwithstanding anything contained in the Operations Agreements or any other agreement, and no default under any Operations Agreement or agreement shall excuse the Supplier from its obligations or liability hereunder.

5.2.2 The Supplier shall submit to DIAL the drafts of all Operations Agreements or any amendments or replacements thereto for its review and comments, and DIAL shall have the right but not the obligation to undertake such review and provide its comments, if any, to the Supplier within 30 (thirty) days of the receipt of such drafts. Within 7 (seven) days of execution of any Operations Agreement or amendment thereto, the Supplier shall submit to DIAL a true copy thereof, duly attested by a Director of the Supplier, for its record. It is further agreed that any failure or omission of DIAL to review and/ or comment hereunder shall not be construed or deemed as acceptance of any such agreement or document by DIAL. No review and/ or observation of DIAL and/ or its failure to review and/ or convey its observations on any document shall relieve the Supplier of its obligations and liabilities under this Agreement in any manner nor shall DIAL be liable for the same in any manner whatsoever. In case the Power Station is a hydro-electric generating station, the Supplier must submit to DIAL, a techno-Economic concurrence from the Central Electricity Authority (CEA) mentioning the design energy of the Power Station.

5.3 Obligations relating to Change in Ownership

Change in ownership shall be governed by the Share Subscription cum Shareholders' Agreement.

5.4 Obligations relating to operation of the Power Station

5.4.1 The Supplier shall at all times operate the Power Station in accordance with Applicable Laws and the provisions of the Grid Code and shall comply with such directions as the RLDC/SLDC may give from time to time in accordance with the provisions of the Act.

5.4.2 The Supplier shall enter into and comply with agreements for interconnection of the Power Station to the grid, sub-stations, licensees or consumers, as the case may be, under and in accordance with Applicable Laws.

5.5 Obligations relating to transmission charges

5.5.1 The transmission charges applicable for the period of supply in respect of transmission of electricity from the Power Station to the Receiving Sub-station shall be paid by the Supplier, due and payable, as per the order of the Appropriate Commission and Applicable Laws, for inter-state and intra-state transmission of electricity.

5.5.2 The Parties also agree that the regulated charges applicable for transmission of electricity referred to hereinabove for the period of supply of electricity for and in respect of the electricity sold to DIAL, as per the order of the Appropriate Commission, which charges shall at all times be payable by the Supplier. For the avoidance of doubt, the Parties expressly agree that the transmission charges mentioned hereinabove shall constitute part of the Power Purchase Cost.

5.6 Obligations relating to transmission losses

5.6.1 The cost of transmission losses applicable for the period of supply in respect of transmission of electricity from the Power Station to the Receiving Sub-station shall be paid by the Supplier, due and payable, as per the order of the Appropriate Commission and Applicable Laws, for inter-state and intra-state transmission of electricity.

5.6.2 The Parties also agree that the regulated costs of transmission losses applicable for transmission of electricity referred to hereinabove for the period of supply of electricity for and in respect of the electricity sold to DIAL, as per the order of the Appropriate Commission, which charges shall at all times be payable by the Supplier. For the avoidance of doubt, the Parties expressly agree that the costs of transmission losses mentioned hereinabove shall constitute part of the Power Purchase Cost.

5.6.3 The Supplier must ensure that the energy injected at the Point of Grid Connection is equal to the aggregate of the energy required at the Delivery Point and the applicable transmission losses from the point of Grid Connection to the Delivery Point. In case of any revision in transmission losses from the point of Grid Connection to the Delivery point with reference to the Bid Date, the Supplier shall inject more or less energy, as the case may be, to ensure that the energy required by DIAL at the Delivery point is met.

Obligations relating to Wheeling Charges for open access of distribution network

The Supplier shall be liable for payment of all charges, due and payable under Applicable Laws, for intra-state wheeling of electricity from the point of Grid Connection to the Delivery Point through the distribution network of the DISCOM. For the avoidance of doubt, the Parties expressly agree that the Wheeling Charges mentioned hereinabove shall constitute part of the Power

Purchase Cost.

5.8 **Obligations relating to SLDC and RLDC charges**

The Supplier shall be liable for payment of all the charges, due and payable under Applicable Laws to the SLDC and RLDC for and in respect of all its supplies to DIAL. For the avoidance of doubt, the Parties expressly agree that the SLDC/RLDC Charges mentioned hereinabove shall constitute part of the Power Purchase Cost.

5.9 **Obligations relating to taxes**

The Supplier shall pay, at all times during the subsistence of this Agreement, all Taxes and all other statutory charges payable in respect of the Power Station.

5.10 **Obligations relating to reporting requirements**

All information provided by the Supplier to the SLDC and RLDC as a part of its operating and reporting requirements under Applicable Laws, including the Grid Code, shall also be provided by it to DIAL simultaneously.

5.11 **Obligations relating to Cross Subsidy-Surcharges**

In case the electricity procured by DIAL at the Receiving Sub-station during any year is less than the Minimum Guaranteed Offtake, DIAL shall make payment of the Power Purchase Cost for the differential quantum of electricity between the Minimum Guaranteed Offtake and actual electricity procured during such year, to the Supplier. Moreover, if the electricity procured by DIAL is less than the Minimum Guaranteed Offtake during any year and Cross Subsidy Surcharge is applicable thereon, then DIAL shall bear the cost of applicable Cross Subsidy Surcharge as payable to the Licensed Distributor entity for such year.

In case the electricity procured by DIAL during a year is more than the Minimum Guaranteed Offtake, the Supplier shall bear the entire cost on account of applicable Cross Subsidy Surcharge, payable to the Licensed Distributor entity for that year.

However, the Supplier has the flexibility of adopting any measure, permitted under Applicable Laws including Rule 3 of the Electricity Rules 2005, to qualify the generating station as Captive Generating Plant.

The Cross Subsidy Surcharge shall be determined in accordance with the relevant order of the appropriate commission applicable for the period of supply.

5.12 **Obligations relating to alternate power source**

5.12.1 As Airport is operational 24 hours and 7 days in a week and has various equipment installed which are sensitive to safety of ATM's and Airport operations, therefore, the Supplier shall provide/ensure continued and

uninterrupted power supply to DIAL. If the Supplier fails to supply power from the Power Station per the provisions of the Agreement for any reason including Scheduled Maintenance, Unscheduled Maintenance, Unit Closure and Decommissioning due to Emergency or Forced Outage, then it has to ensure that power is available from any other alternative source fulfilling energy requirement of DIAL on a day to day basis in accordance with Clause 14.2. DIAL shall not bear any additional cost implications on account of supply from alternate power source and the Supplier shall solely bear all direct and indirect charges, taxes and duties relating but not limited to cross subsidy, wheeling and any other charges in excess of Power Purchase Cost.

5.12.2 The Parties expressly agree that in the event the Supplier fails to arrange any alternate source for fulfilling the energy requirements of DIAL as per provisions of this Clause 5.12, the provisions of Clause 5.13 of this agreement shall apply.

5.12.3 The Parties expressly agree that supply of power from alternate power source shall only be availed if it is not possible to supply power from the Power Station.

5.12.4 The Cross Subsidy Surcharges payable by DIAL for supply of power from alternate power source shall be shall be reimbursed by the Supplier as an adjustment in the next Monthly Invoice.

5.13 **Obligations relating to Standby Charges**

If the Supplier fails to supply power from the Power Station per the provisions of the Agreement and also fails to arrange supply of power from any alternate power source as per Clause 5.12, then DIAL will have to procure power from the DISCOM through DSM mechanism or through Standby power mechanism in accordance with applicable open access regulations of the DERC. The entire cost incurred by DIAL on account of procurement of power from the DISCOM under provisions of this Clause 5.13 shall be reimbursed by the Supplier as an adjustment in the Monthly Invoice.

5.14 Obligation to comply with cap on Tariff for each year

5.14.1 During the entire term of the contract period, the Applicable Cost of Electricity must be less than the prevailing DISCOM tariff applicable for the financial year, as determined by DERC and applicable to airport. For this purpose, the prevailing DISCOM tariff applicable for the financial year, as determined by DERC and applicable to airport shall always mean and include all charges, taxes, duties, surcharges, etc. and any other incidental charges as applicable till the receiving sub-station of DIAL.

5.14.2 The applicable cost of electricity for any year (the "**Applicable Cost of Electricity**") for any financial year shall comprise of the following components:

(a) the Power Purchase Cost; plus
(b) the Carrying Cost of Equity; plus
(c) Cross Subsidy Surcharge if applicable; plus
(d) Additional Surcharge, if applicable; plus
(e) Reactive Energy Charges; plus
(f) Standby Charges, if applicable; plus
(g) Fixed Charges for maintaining connection with the DISCOM, if applicable, plus
(h) Charges applicable on DIAL as per DSM Regulations, if applicable; plus
(i) Electricity duty and any other statutory taxes as applicable; plus
(j) the Cost of RPO for DIAL; plus
(k) any other associated charges as per DERC (Terms and conditions of Open Access) Regulations 2005 and its tariff orders thereunder; minus
(l) dividend received for the financial year

5.14.3 If at any time during the Contract Period, the Applicable Cost of Electricity is higher than the DISCOM tariff applicable for the year, as determined by DERC and applicable to airport, the Supplier will be required to reduce the Power Purchase Cost such that the Applicable Cost of Electricity must be less than the prevailing DISCOM tariff applicable for the year, as determined by DERC and applicable to airports. Non adherence of the same shall entitle DIAL to terminate the agreement as per the provisions of Article 18 of the PPA.

In case DERC discontinues the separate tariff category as applicable to airport in its tariff order(s) for any year(s) during the Contract Period, then the difference between the tariff as applicable to non-domestic (commercial) tariff category and the last applicable tariff category for the airport, as available on the date on which it is withdrawn ("**Tariff Difference**"), shall always remain and be counted/adjusted from the DISCOM tariff for non-domestic category as applicable for any financial year(s), such that the Applicable Cost of Electricity is always less than the adjusted DISCOM tariff for non-domestic (commercial) tariff category (post giving effect to the above stated difference).

For illustration, the following methodology shall be applied to calculate the adjusted DISCOM tariff:

Tariff Difference= Tariff as applicable to non-domestic (commercial) category - tariff as applicable to airport

The Applicable Cost of Electricity for any subsequent year(s) shall be less than the prevailing tariff for non-domestic category in respective financial years minus the Tariff Difference calculated above.

Illustration: For example, in 2020-21, tariff category for airport is discontinued, then from the date on which it is withdrawn the Applicable Cost of Electricity shall be calculated as below:

FY 2020-21
(A) Tariff as applicable to airport in FY 2020-21: Rs. 12.50/ unit
(B) Tariff for non-domestic category in FY 2020-21: Rs. 14.00/ unit

Tariff Difference (B-A): Rs. 1.50/ unit
Hence, for FY 2020-21, the adjusted DISCOM tariff shall be Rs. 14.00/unit minus Rs. 1.50/unit = Rs. 12.50/unit

FY 2021-22
Tariff Difference: Rs. 1.50/ unit

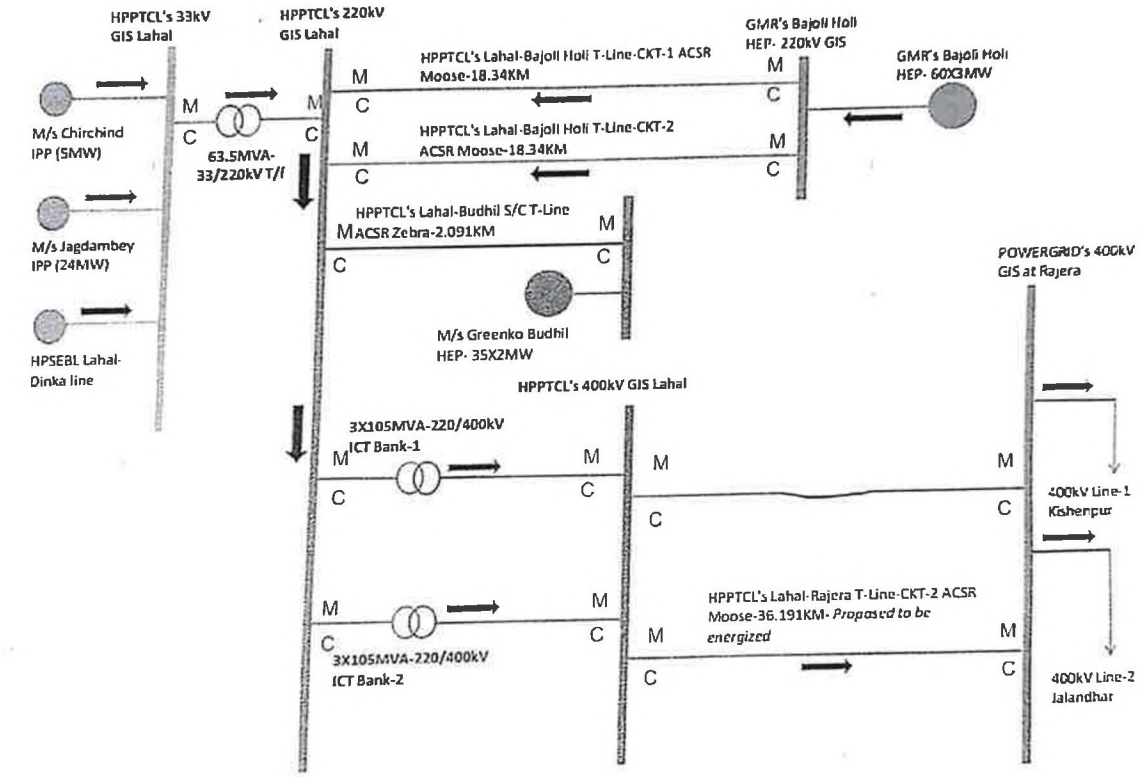
Tariff for non-domestic category in FY 2021-22: Rs. 16.00/ unit
Hence, for FY 2021-22, the adjusted DISCOM tariff shall be Rs. 16.00/unit minus Rs. 1.50/unit = Rs. 14.50/unit.

5.15 Obligations relating to scheduling and despatch of electricity

The Supplier shall be responsible for scheduling and despatch of electricity in accordance with Article 14. Respective Parties shall bear the charges on account of difference in the daily scheduling as per the DSM Regulations. However, the provisions of Applicable Cost of Tariff as given in Clause 5.14.2 of PPA shall apply and the Supplier has to reduce the Power Purchase Cost as per Clause 5.14.3.

ANNEXURE-5

Single Line Diagram Depicting Meter arrangement



Indicates Power Flow Direction

M= Main Meter

C=Check meter

Meter detail is attached as Annexure-A

Senior Manager (P)
HPPTCL, PIU Lahal

Annexure-A

Sr. No.	Element	Element description/Bay No.	Lahal End		Remote End	
			Main Meter	Check Meter	Main Meter	Check Meter
1	400kV D/C Lahal-Rajera T.L.	400kV D/C Lahal-Rajera T.L. ckt-1(Bay-407)	NS1555A	HPU07931	NS1556A	NS1553A
		400kV D/C Lahal-Rajera T.L. ckt-2(Bay-405)	NS1554A	HPU7929	NS1558A	NS1557A
2	400/220/33kV Lahal Substation alongwith 220kV Lahal-Budhil Transmission line	LV side 33/220kV,63.5MVA Power Trafo(Bay-301)	HPU07919	HPU07920	NA	NA
		HV side 33/220kV,63.5MVA Power Trafo(Bay-209)	HPU06813	HPU06814		
		LV side ICT bank -2(Bay-202)	HPU07924	HPU07922		
		LV side ICT bank -1(Bay-203)	HPU07921	HPU07923		
		HV side ICT bank -2(Bay-402)	HPU07928	HPU07927		
		LV side ICT bank -1(Bay-404)	HPU07926	HPU07925		
		220kV Lahal-Budhil line(Bay-206)	NR3246A	HPU06815	NP8575A	NP8844A
3	220kV D/C Bajoli Holi-Lahal T.L.	220kV Lahal-Bajoli Holi line Ckt-1(Bay-207)	HPU06822	HPU06820	21003565	21003567
		220kV Lahal-Bajoli Holi line Ckt-2(Bay-208)	HPU06821	HPU06819	21003559	21003566

Senior Manager (P)
HPPTCL, PIU Lahal

No. CEA-EC-11-18(12)/1/2023-FCA Division/1170
भारत सरकार /Government of India
विद्युत मंत्रालय/Ministry of Power
केंद्रीय विद्युत प्राधिकरण/Central Electricity Authority
वित्तीय और वाणिज्यिक मूल्यांकन प्रभाग/Financial and Commercial Appraisal Division

Sewa Bhawan,
R K Puram, New Delhi-66
Dated 24.02.2025

To
Member Secretary (NRPC, WRPC, SRPC, ERPC, NERPC)

Subject: Request for Inclusion of "Monetization of Transmission Assets" in Agenda items in RPC Meetings-reg.

Sir,
I am directed to refer the Guiding Principles for Monetization of Transmission Assets in the Public Sector through Acquire Own Maintain Transfer (AOMT) based Public Private Partnership model issued by the Ministry of Power on 3rd October, 2022 (copy enclosed). Monetization of assets unlocks their value, eliminates their holding cost and enables scarce public funds to be deployed to new projects, thus fast-tracking new infrastructure creation. lndia has developed a solid track record of attracting institutional investment in infrastructure assets utilizing innovative structures such as lnfrastructure lnvestment Trusts (lnvlTs) and PPP based models [Toll Operate Transfer (TOT), Operation, Management and Development Agreement (OMDA) etc.l to monetize assets such as toll roads, transmission assets, pipelines and telecom.

2. The States also have a significant potential for monetisation of their transmission assets, so that the much needed capital for creation of transmission assets in the States is available. With growing demands for investment in infrastructure development, monetization of existing assets presents a valuable opportunity to unlock new revenue streams and improve sectoral efficiency. A one day "Workshop on Monetization of Transmission Assets" was organised by Central Electricity Authority in collaboration with PFCCL, PGInvIT and NIIF on 06.12.2024 at NRPC Conference Room, Katwaria Sarai, New Delhi-110016. The workshop was a huge success and was attended by senior level participants from more than 20 State/UTs and representatives of Central Ministries/Departments. The workshop focussed on key strategies for unlocking value in brownfield transmission assets. The key strategies identified for successful monetisation of transmission assets include selection of relative new assets, appropriate size of assets bundle to get investors' interest, pipelines of assets, continuous engagement with regulators in terms of revenue certainty of selected

assets, engaging in comprehensive consultations with investors, putting into place adequate payment security mechanism etc. The outcome document is enclosed.

3. In order to take forward the engagement with the States, Regional Power Committee Forum would be needed. Therefore, it is requested that an agenda item for presentation by CEA on "Monetization of Transmission Assets—Capital recycling for a robust grid" may be kept in the forth coming RPC meeting.

This issues with the Approval of Member (E&C), CEA

Encl: as above

Yours faithfully

Mrityunjay 24/02/25

(Mrityunjay Varshney)
Deputy Director & SA to Member(E&C)

Copy to:

1. Sr PPS/PPS Member (E&C)/Chief Engineer (F&CA), CEA

No.25-10/28/2021-PG
Government of India
Ministry of Power
***

Shram Shakti Bhawan, Rafi Marg,
New Delhi, the 03rd October, 2022

To,

1. The Chief Secretary / Secretary(Energy), All State Governments and UTs
2. The Chairperson, All State Transmission Companies /Utilities

Subject: Guiding Principles for Monetization of Transmission Assets in the Public Sector through Acquire, Operate, Maintain and Transfer (AOMT) based Public Private Partnership model – reg.

Sir,

I am directed to convey that the Government of India have been emphasizing the need for quality infrastructure creation, as it results in increased employment opportunities, access to market and materials, improved quality of life and empowerment of vulnerable sections. In order to fast-track quality infrastructure creation, the Government of India have identified asset monetization as an important financing option for creation of infrastructure, as it serves two critical objectives, unlocking value from public investment in infrastructure and tapping private sector flexibility in operations and management of infrastructure.

2. Monetization of assets unlocks their value, eliminates their holding cost and enables scarce public funds to be deployed to new projects, thus fast-tracking new infrastructure creation. India has developed a solid track record of attracting institutional investment in infrastructure assets utilizing innovative structures such as Infrastructure Investment Trusts (InvITs) and PPP based models [Toll Operate Transfer (TOT), Operation, Management and Development Agreement (OMDA) etc.] to monetize assets such as toll roads, transmission assets, pipelines and telecom.

3. In this regard, Power Grid Corporation of India Limited (POWERGRID), a Central Power Sector Enterprise under the Ministry of Power, had monetised more than Rs. 7700 crore in May 2021 by monetizing 5 of their transmission assets through Infrastructure Investment Trust (InvIT).

4 The States also have a significant potential for monetisation of their transmission assets, so that the much needed capital for creation of transmission assets in the States is available. With a view to evolve a common framework and approach for transmission companies desirous of undertaking monetisation of transmission assets, Ministry of Power has developed the "Guiding Principles for Monetization of Transmission Assets in the Public Sector" in consultation with relevant stakeholders. A copy of the same is enclosed.

5. Considering the need to retain a degree of oversight through contractual mechanisms, protection of user interests and maximization of value to the public authority, this document lays down the contours of monetisation of transmission assets through an Acquire, Operate, Maintain and Transfer (AOMT) based Public Private Partnership model. The model suggested comprises of a limited period transfer of ownership of a transmission service provider SPV along with a mandatory buy back to the asset owning public sector entity at the end of the transaction period.

Cont/...

6. It is requested that the States may consider the monetisation of transmission assets with the principles suggested in the Guiding Principles.

Encls: As above

Yours faithfully,

(Sanjeev Jain)
Under Secretary to the Govt. of India
Tele: 011- 23730264

Copy to:

1. The Chairperson, Central Electricity Authority, New Delhi
2. CMDs of all CPSEs under administrative control of Ministry of Power
3. CTUIL, Saudamini Plot 2 Sector 29 Gurugram, 122001
4. Vice Chairman, NITI Aayog, NITI Bhawan, Sansad Marg New Delhi 110001
5. In-Charge, NIC Cell, MoP with a request to upload the Draft Guideline on the website of Ministry of Power for wider publicity.

Guiding Principles for Monetization of Transmission assets in the Public Sector through Acquire, Operate, Maintain and Transfer (AOMT) based Public Private Partnership model

1. Preamble

1.1 Infrastructure is critically linked to growth and economic performance. The benefits of higher investment in good quality infrastructure manifest in the form of increased employment opportunities, access to market and materials, improved quality of life and empowerment of vulnerable sections. Recognizing the importance of infrastructure, the Government has continued its focus on sustaining and stepping up the pace of infrastructure investment. Monetization is the key to value creation in infrastructure as it serves two critical objectives, unlocking value from public investment in infrastructure and tapping private sector flexibilities in operations and management of infrastructure.

1.2 Infrastructure assets could be appropriately monetized to create greater financial leverage and value for asset owners, be it in public sector or private sector. Monetization of assets unlocks their value, eliminates their holding cost and enables scarce public funds to be deployed in new projects, thus fast-tracking new infrastructure creation. India has developed a solid track record of attracting institutional investment in infrastructure assets utilizing innovative structures such as Infrastructure Investment Trusts (InvITs) and PPP based models (TOT, OMDA etc.) to monetize assets such as toll roads, transmission assets, pipelines and telecom. The Brownfield seasoned transmission assets in particular have demonstrated significant investor appetite from long-term institutional investors owing to underlying asset characteristics and availability-based business model as evidenced by successful InvIT based monetisation for Transmission assets in public as well as private sector.

1.3 The States have a significant potential for Asset Monetization by leveraging brown-field transmission assets and mobilizing much needed proceeds for new infrastructure investment which will have multiplier effects on the respective state economies.

1.4 India's electricity transmission sector is gearing up to face the challenges posed by a changing power demand and energy mix. In order to meet the future load growth and changing generation mix, huge investments are required to strengthen and ramp up the country's transmission system. The electricity transmission sector in India has witnessed an increased participation of both large domestic and institutional investors, owing to the stability of asset class and an availability-based business model. Revenue for electricity transmission is generated from transmission charges under long-term Transmission Service Agreements (TSAs), with a low level of operating risk and an availability-based payment mechanism.

1.5 Over the years, an extensive network of Transmission and Distribution infrastructure has been developed for evacuating power produced by different electricity generating stations and distributing the same to the consumers. These lines have been installed by Generation/ Transmission/ Distribution Utilities including Central Sector Organizations and State/UT Electricity Departments. As on March 31, 2020, India's total transmission line length network stood at around 7,13,400 circuit kms (66 kV

and above voltage)[1]. The country's network is owned and operated by several public sector entities and private companies.

1.6 Sections 61 & 62 of the Electricity Act, 2003, provide for determination of tariff of generation, transmission, wheeling and retail sale of electricity by the Appropriate Commission. Such transmission assets are normally referred to as **Regulated Tariff Mechanism (RTM) assets**. With a view to facilitate competition in this sector through wider participation in providing transmission services and tariff determination through a process of tariff-based bidding, Section 63 of the Electricity Act, 2003 provides for adoption of the tariff determined through transparent process of bidding in accordance with the guidelines issued by the Central Government. Such transmission assets are normally referred to as **Tariff Based Competitive Bidding (TBCB) assets**. While the TBCB assets are housed in a specifically created project level special purpose vehicles (SPVs), the RTM assets are typically housed in the balance sheet of the respective transmission undertakings.

1.7 The National Highways Authority of India (NHAI) has been employing a Toll Operate Transfer (TOT) based model to monetize public funded operational NH projects generating toll revenues. Under the TOT Model, the right of collection and appropriation of toll are assigned for a pre-determined concession period to concessionaires against an upfront consideration. A ToT concession like model however was not found to be commercially most efficient model for monetisation of transmission assets on account of its being a licensed activity and associated tax incidence apart from other regulatory challenges.

1.8 With a view to structure a framework with careful consideration towards the need to retain a degree of oversight through contractual mechanisms, protection of user interests and maximization of value to the public authority, this document lays down the contours of monetisation of transmission assets through an **Acquire, Operate, Maintain and Transfer (AOMT) based Public Private Partnership model**. This model comprises of a limited period transfer of ownership of a transmission service provider SPV along with a mandatory buy back at the end of transaction period to the asset owning public sector entity.

1.9 With a view to evolve a common framework and approach for national and state level transmission undertakings desirous of undertaking monetisation of transmission assets, Ministry of Power has developed this document containing the "**Guiding Principles for Monetization of Transmission Assets in the Public Sector**", in consultation with relevant stakeholders (hereinafter referred to as "**the Guiding Principles**"). The specific objectives of these guiding principles are as follows:

- Make available efficient capital for new investment in the transmission sector through upfront payment received from the monetization process.
- Facilitate transparency, consistent approach and efficiency in monetization processes to be undertaken by public sector transmission undertakings.
- Enable proficient project preparation and planning activities under a guiding framework for running credible transaction processes that instill investor confidence.

[1] *Source: All India Electricity Statistics, General Review 2021, CEA, Ministry of Power, GoI*

- Enable sharing of good practices and models for monetisation of infrastructure assets for value maximization and tapping private sector efficiencies.

2. Definitions

2.1. In these guiding principles, unless the context otherwise requires, -

a) AOMT: Acquire, Operate, Maintain and Transfer model of asset monetization wherein the SPV owning the identified transmission assets is bought by the selected Investor Entity with responsibility to operate and maintain these assets for a certain duration of time with associated rights and duties against payment of upfront lumpsum amount.

b) CTUIL: Central Transmission Utility of India Limited notified by the Central Government under Section 38 of the Electricity Act, 2003.

c) Investor Entity: An eligible company or Trust selected through competitive bidding process to take over the SPV of the Sponsoring Transco for specified Transfer Transaction period on AOMT basis

d) Infrastructure Sector: Infrastructure Sector shall mean such sectors notified by Department of Economic Affairs, in its Gazette Notification no. 13/1/2017-INF dated 14th November, 2017 and as amended from time to time

e) Sponsoring Transco: A Transmission Company owned by the Central or State Government seeking to monetize assets under these guiding principles.

f) SPV: A company incorporated under the Companies Act which will hold the identified assets of the Sponsoring Transco and will be taken over by the Investor Entity.

g) STU: State Transmission Utility notified under Section 39 of the Electricity Act, 2003.

h) Transfer Agreement: An Agreement governing the terms and conditions of transfer of assets of a Sponsoring Transco housed in a SPV to private entity for a specified period on BOMT basis

i) TBCB asset: The transmission asset built through tariff based competitive bidding under Section 63 of the Electricity Act, 2003

j) Transmission Service Provider (TSP): Once an Investor Entity takes over the SPV consequent to signing of Transfer Agreement, it shall be referred to as Transmission Service Provider (TSP)

k) Upfront Payment: A lumpsum payment to be paid by the selected bidder to acquire the asset

2.2. Words and expressions used and not defined herein but defined in the Act shall have the meaning respectively assigned to them in the Act.

3. Scope of the Guiding Principles

3.1. The guiding principles are intended to enable implementation of monetization program for identified transmission assets of the State Government owned transmission undertakings and CPSEs/PSUs/other Government Organizations in the Central Sector who may adopt this framework with the approval of the respective competent authority.

3.2. The aforementioned framework has been detailed under this document to delineate the broad principles and an approach for undertaking monetisation transaction for transmission assets.

3.3. The guiding principles detailed in this document are not mandatory and the respective asset owning entities may adopt any other approach and / or model based on necessary due diligence for appropriately structuring transactions, on a case-to-case basis and as necessitated by various respective regulatory and commercial considerations.

4. AOMT transaction structure contours and steps

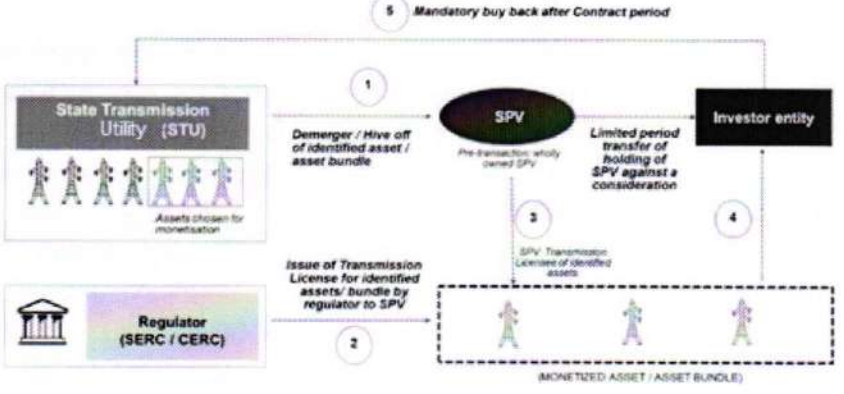
4.1. In order to enable monetisation, selection of de-risked and brown-field assets with a stable and ring-fenced revenue generation profile (or long-term revenue rights) is a *sine qua non*. Hence, as the first step, Sponsoring Transco or Energy Departments (hereinafter referred to as "**Sponsoring Transco**"), may take up monetization of its brown-field transmission assets through the model envisaged under this document by hiving off the transmission assets supposed to be monetised (either individual transmission lines or a bundle of transmission lines and substations) by way of a special demerger under a new specific Special Purpose Vehicle (hereinafter referred to as the "**SPV**"). The nature of such demerger and consequent process requirements will be guided by the constitution of asset owning Transco.

4.2. As the RTM assets are typically housed in the balance sheet of the Sponsoring Transcos / Power Department, a demerger into a SPV is necessitated as a first step towards undertaking monetisation. In case of TBCB assets, since such transmission assets are normally housed in a project specific SPVs, such a demerger may not be essential.

4.3. Under the AOMT model, the entire shareholding of the SPV would be transferred to an Investor Entity, as part of monetization and bought back at a nominal cost of INR 1.00 at the end of a stipulated transaction period. Such transaction period may be

specified in the Transfer Agreement and be coterminous with the residual economic life of the asset. For the stipulated transaction period, the Investor Entity will undertake O&M of the transmission network including the right to earn transmission charges subject to provisions of the Transmission Service Agreement. An indicative transaction structure and the key steps envisaged therein are depicted in the exhibit below.

Exhibit: Transaction structure and steps under AOMT model



Step 1	*Demerger of identified asset (s) into a new SPV*
Step 2	*Issue of transmission license to new SPV*
Step 3	*Wholly owned subsidiary SPV becomes TSP*
Step 4	*Limited period shareholding transfer of SPV to Investor entity*
Step 5	*Mandatory hand back of SPV holding STU*

4.4. The SPV formed under para 4.1 above shall apply to the respective regulatory commission (hereinafter referred to as "**the Regulator**") for grant of separate Transmission License / (s) to operate and maintain the identified assets / asset bundle for a period up to the terminal date envisaged under the Transfer Agreement

4.5. The Investor Entity would be selected through a competitive bidding process to acquire the 100% shareholding of the SPV. As the shareholder of the SPV, it will own, operate and maintain the identified assets during the tenure of the Transfer Agreement

4.6. At the expiry of Transfer Agreement, the SPV along with the rights, title and interest in all the assets held by the SPV shall be mandatorily transferred back to the Sponsoring Transco at a nominal consideration of INR 1.00 and free from any encumbrance and liability.

5. Identification and Book Value of Assets for transfer to SPV

In case of RTM assets, the Sponsoring Transco shall identify assets which can be clearly ring-fenced, have identifiable revenue stream and clear from all litigations, preferably with vintage of upto 10 years from the date of commercial operation for the purpose of monetization. This is recommended in view of better monetization potential and investor attractiveness. The estimated book value of the assets identified for such transfer will preferably be determined or vetted, as the case may be by an independent auditor, space that may be appointed by the Sponsoring Transco. The key

considerations for identification of assets / asset bundle that need to be assessed at this stage by Sponsoring Transcos are as under:

a) Vintage of the asset, availability factor and associated maintenance cost
b) Future capex requirements
c) Need to bring scale in the transaction to attract credible players and investor entities

6. Scheme for Transfer of identified assets of Sponsoring Transco to an SPV

As mentioned earlier, the RTM assets are normally housed in the sponsoring transmission entity's balance sheet or are departmentally held (in case of Energy Departments of certain States and UTs) and are not under separate SPVs (which is the case in TBCB assets). Monetisation for such RTM assets under the envisaged model hence may require a scheme of transfer by way of special demerger. With the amendments effected to Section 47 of the Income Tax Act, 1961 under The Finance Bill, 2021, transfer of capital assets by a PSU to another notified public sector company, Central Government or State Government may not be regarded as transfer subject to approval of scheme and certain requirements there under.

The identification of assets and demerger into separate SPVs shall be made taking into consideration the amount to be monetized over a long term (5 years) and in such a manner that multiple SPVs are created abinitio to reduce the impact of capital gains tax.

State Sector:

In case of RTM assets, the States may, in consultation with the Sponsoring Transco, formulate a scheme of transfer under Part XIII of the Electricity Act, 2003 and as provided in these guiding principles.

Alternatively, the Sponsoring Transco/STU may form an SPV by special demerger with the approval of the State Government and apply for a separate license to it.

Central Sector:

The identified RTM assets on balance sheet of the Sponsoring Transco owned or controlled by the Central Government may be hived off into a new SPV. The Sponsoring Transco may approach Ministry of Power for approval of the scheme so as to enable requisite notification by the Central Government in the Official Gazette.

7. Grant of Transmission License by respective regulatory commission to the SPV

The new SPV thus formed will be a wholly owned subsidiary of the Sponsoring Transco. The SPV shall apply to the respective regulatory commission (CERC or SERC, as the case maybe) for grant of a separate transmission license to operate and maintain the identified assets for a period in consonance with the Transfer Agreement.

8. Tenure of Transfer Agreement

The tenure of the Transfer Agreement shall be decided by the Sponsoring Transco on a case-to-case basis and may normally be coterminous with economic life of the asset in case of RTM assets or residual license period in case of TBCB assets. In case of bundle of assets under RTM that have been commissioned on different dates, the tenure may either be calculated based on effective date of COD, i.e the weighted average date of COD or be limited with the asset which was commissioned earliest.

9. Technical Due Diligence

The Sponsoring Transco will preferably appoint an independent technical consultant for carrying out technical due diligence of the assets. The technical report will preferably include asset profile, and latest line patrolling reports. The Asset Profile must contain relevant data regarding the line i.e. voltage level, line configuration i.e S/C or D/C, specifications of conductor etc. and specifications of the substations or converter stations (in case of HVDC line). The Asset Profile shall give the actual route with route length, type of terrain, maximum altitude, snow zones, wind zones, forest / wildlife infringement, infringement of endangered species habitat, vicinity to civil and defense Airports, major river/sea crossings & coal/ mineral mine areas likely to be encountered and location of substations or converter stations. The report shall also cover the environment, safety, Quality Control, operational and maintenance procedure/standards being followed, the historic availability of the assets, availability of spares parts, security, insurance and the risk analysis.

10. SPV Enterprise Value

The Sponsoring Transco will preferably appoint an independent valuer for carrying out financial valuation of the assets. The valuer shall submit a comprehensive valuation report to the Sponsoring Transco. Asset enterprise valuation will preferably be done based on Discounted Cash Flow ("DCF") method. The Enterprise Value so determined may be reckoned as an undisclosed reserve value for bidding process by the Sponsoring Transco to enable an efficient price discovery of asset[2].

11. Key Agreements and salient features thereof

11.1 *Transfer Agreement*

The Sponsoring Transco may enter into a Transfer Agreement with the Investor Entity. This agreement shall inter-alia cover aspects related to transactions for purchase of shares by the Investor Entity at the beginning of the transaction as well as by the Sponsoring Transco at the end of tenure of Transfer Agreement, besides usual

[2] *There is precedence of this approach as the same has also been adopted by NHAI in case of bidding for TOT based projects and by AAI in case of leasing of brownfield airports through PPP.*

provisions of any agreement such as roles and responsibilities, risk allocation, dispute resolution etc.

11.2 ***Transmission Service Agreement (TSA)***

In case of TBCB assets, the pre-existing TSA shall continue to apply to the SPV, after the latter has been taken over by the Investor Entity. In case of RTM assets, the Sponsoring Transco may enter into a tripartite agreement with the new SPV as well as Investor Entity for assignment of its rights under the existing Transmission Service Agreement/Bulk Power Transmission Agreement to the newly created SPV provided that the terms and conditions of existing Transmission Service Agreement/Bulk Power Transmission Agreement shall not be altered. In case of absence of existing Transmission Service Agreement/Bulk Power Transmission Agreement, the TSP on the date of acquisition of SPV may enter into a Transmission Service Agreement (TSA) with the CTUIL (in case of interstate projects) / the concerned utilities as advised by STU (in case of intra State projects).

11.3 The TSP shall enter into other agreement(s), if required, under Central Electricity Regulatory Commission (Sharing of Inter-State Transmission Charges and Losses) or any other agreements mandated through regulations framed by the Appropriate Commission, as amended from time to time, within fifteen (15) days from the date of acquisition of the SPV.

11.4 The TSP shall be responsible for operation and maintenance of all the transmission assets in accordance with best practices and relevant rules and regulations read in conjunction with guidelines thereof issued by the Central Electricity Authority and Appropriate Commission.

11.5 The TSP shall ensure that all the assets are kept free from encumbrances. The equipment shall be maintained with all safety aspects and as per the CEA (Measures related to Electric Safety and Supply), Regulations, 2010 as amended from time to time. The TSP shall maintain data and communication link with the State Load Dispatch Centre (SLDC) or Regional Load Dispatch Centre (RLDC) as the case may be and adhere to its directions for operation of the assets and any shutdown activity for planned maintenance, emergency should be done in concurrence with the SLDC/RPC. On occurrence of any Force Majeure event necessitating the tripping of equipment, the TSP shall inform the SLDC/RLDC immediately and adhere to the instructions received from them.

11.6 The TSP shall ensure the availability of the transmission system to be at least or higher than normative availability (in accordance with TSA in case of TBCB assets or as specified by the Appropriate Commission in case of RTM assets) for the last 3 years of the tenure of the Transfer Agreement, failing which a penalty to be specified in the Transfer Agreement shall be imposed. The Transfer Agreement may mandate

the TSP to provide the required assistance to the Sponsoring Transco for smooth return of ownership.

12. Tariff

In case of TBCB assets, the tariff adopted by the Appropriate Commission, as applicable during the tenure of the Transfer Agreement, shall continue to be collected by the SPV, subject to the provisions of TSA. In case of RTM assets, the Appropriate Commission may specify a premium, which may be provided over and above the prevailing return on long term government securities (5 yr G-Sec) to arrive at the rate of return on equity applicable for the tenure of the Transfer Agreement. This shall be done prior to the process of monetization is undertaken by the Sponsoring Transco. Other parameters for determination of tariff for RTM assets shall be in accordance with the Tariff Regulations specified by the Appropriate Commission from time to time.

13. Bidding and evaluation

13.1. The Investor Entity shall be selected in accordance with these guiding principles, through a fair and transparent bid process which may be undertaken by the Sponsoring Transco with credible and professional transaction advisers.

13.2. The Sponsoring Transco may at its option either adopt a two-stage process featuring separate Request for Qualification (RfQ) and Request for Proposal (RfP) or adopt a single stage two envelope tender process combining the RfP and RfQ processes. The bidding process may preferably be conducted online through electronic medium. If desired, e-reverse auction may be adopted. In this context, while developing bidding documents, Model RfQ and Model RfP for PPP projects notified by the DoE, Ministry of Finance may be relied upon.

13.3. The bid documents so developed shall, interalia, include the technical report submitted by the technical consultant, the Transfer Agreement, the Transmission Service Agreement and minimum qualification criteria to be met by the bidders and any other standard bidding related requirements.

13.4. The technical criterion for eligibility may include companies and Investment Trusts, having experience in development and/or operation & maintenance of infrastructure projects. However, the Sponsoring Transco may opt for specific O&M experience in transmission sector also. The financial criterion may be a pre-specified net-worth in relation to a certain percentage of the estimated book value of assets (may be kept at 25% of such value).

13.5. The bidder may be given an opportunity to inspect the underlying asset base within a prescribed time window and in a manner specified in the bidding documents. Maintenance record of major equipment(s) for past three years or from the COD whichever is earlier, may be allowed to be inspected by the bidders.

13.6. The notice for RfP may be published in accordance with applicable procedures of the respective Sponsoring Transco suitably so as to accord it wide publicity. The bidding may preferably be done by way of International Competitive Bidding (ICB), subject to Government of India orders issued from time to time.

13.7. As is a normal practice in case of PPP projects, the Sponsoring Transco may undertake pre-bid interaction and may preferably provide written responses to pre-bid queries by prospective bidders / participants, and the same may be made available to all the other bidders.

13.8. The bidder quoting the highest Upfront Payment may be selected as Investor Entity.

14. Payment Security Mechanism

Collection and disbursement of transmission charges shall be done in accordance with relevant Regulations of the Appropriate Commission.

The payment security to TSP shall be as per relevant rules issued by the Ministry of Power from time to time.

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Annexure-IX

No. CEA-EC-11-18(12)/1/2023-FCA Division

भारत सरकार /Government of India

विद्युत मंत्रालय/Ministry of Power

केंद्रीय विद्युत प्राधिकरण/Central Electricity Authority

वित्तीय और वाणिज्यिक मूल्यांकन प्रभाग/Financial and Commercial Appraisal Division

Sewa Bhawan, R K Puram, New Delhi-66

Dated 01.01.2025

To

1. Chief Secretary of all States/UT
2. Principal Secretary (Energy) of all States/UTs
3. Secretary of all State Regulatory Commissions
4. Secretary, Forum of Regulators
5. Secretary, Central Electricity Regulatory Commissions

Subject: Workshop on Monetisation of Transmission Assets organised by Central Electricity Authority in association with PGInvIT, PFCCL, and National Investment and Infrastructure Fund (NIIF) on 06.12.2024 in New Delhi-Outcome Document

Madam/Sir

You are aware that one day "Workshop on Monetization of Transmission Assets" was organised by Central Electricity Authority in collaboration with PFCCL, PGInvIT and NIIF on 06.12.2024 at NRPC Conference Room Katwaria Sarai, New Delhi-110016. The workshop was attended by senior level participants from more than 20 State/UTs and representatives of Central Ministries/Departments.

2. The workshop focussed on key strategies for unlocking value in brownfield transmission assets. The key strategies identified for successful monetisation of transmission assets include selection of relative new assets, appropriate size of assets bundle to get investors' interest, pipelines of assets, continuous engagement with regulators in terms of revenue certainty of selected assets, engaging in comprehensive consultations with investors, putting into place adequate payment security mechanism etc.

3. An outcome document highlighting the focus areas of discussion and way-forward has been prepared and the same is enclosed for information and necessary action please.

Encl: as above

Yours faithfully

Mrityunjay 01/01/2025

(Mrityunjay Varshney)

Deputy Director (F&CA)

Copy to:

1. Secretary, Ministry of Power, New Delhi
2. Chairperson, CEA/Member (E&C), CEA
3. All Speakers, Panelists and Participants in the Workshop
4. CEO, PFCCL, Gurgaon
5. CEO, PGInvIT, Gurgaon
6. Director, NIIF, New Delhi
7. Director (IT Division), CEA -with a request to upload the same in CEA website

Workshop on Monetization of Transmission Assets -Outcome Document

Held on

06.12.2024

at NRPC Conference Room, New Delhi

Workshop on Monetization of Transmission Assets

-Outcome Document

Background

Central Electricity Authority, in collaboration with National Investment and Infrastructure Fund (NIIF), PFC Consulting Limited (PFCCL), and PGInvIT organized a workshop on monetisation of transmission assets on 6th December 2024, at New Delhi. The workshop was attended by representatives of 24 States/UTs.

This document provides a consolidation of key discussions undertaken by the participants during the workshop. *Annexure I* – presents the key points made by the respective participants, and *Annexure II* – contains list of key speakers, panellists and participants.

[1] Key discussion points:

(i) Private investment in infrastructure

As per CEA's National Electricity Plan 2023-32, about ₹9.16 lakh crore investment would be required for creation of new transmission infrastructure during the period 2023-32, and out of that, more than 30% will be required in intra-state level.

The Government of India as well as in States have been investing heavily in infrastructure. Given other social and economic needs, it may not be feasible for Governments to continue this high level of public financing of infrastructure. As such, there is a need to increase private investment. Monetisation of brownfield assets offers a less risky and more attractive way for private investment.

There is limited experience in monetisation of transmission sector in India but States could adopt learnings from monetisation models in other infrastructure sectors, such as TOT model in highways and experience of monetisation of operating non-metro airports.

(ii) Learnings from International experience

International experience from New South Wales in Australia, Philippines, Oman and other markets indicated the willingness of countries to hand over operations of the entire grid to private companies. The model of monetisation of specific assets or bundle of assets within the publicly operated larger grid as proposed in India, is a prudent approach. Further, acceptability of monetisation would increase if it is preceded by a well-structured and articulated asset recycling program. Like New South Wales, States could consider setting up a ring-fenced fund for a structured recycling program to help overcome public apprehension of monetisation and to leverage funds for new infrastructure investments. Central Government could consider financial incentives to States that recycle proceeds from monetisation to infrastructure investment.

(iii) Models for Asset Monetisation

The two models for asset Monetisation - (i) Structured Financing models (InvIT) and (ii) Direct Contractual Approach (AOMT model) were discussed.

(a) InvIT Monetisation model: intricate but successfully tested

The InvIT model has been successfully implemented by POWERGRID and Sterlite. The model seems somewhat intricate as it involves several participants such as the Sponsor, Trustee, Unit holders, Investment Manager and Project Manager. However, it operates under a robust regulatory framework overseen by SEBI that gives confidence to investors. POWERGRID operational assets developed through tariff based competitive bidding (TBCB) when monetized through the InvIT route offer assured revenues to investors and help in discovery of optimum value.

(b) **AOMT Monetisation model: Requires enablers to boost investor interest**

The guiding principles for Monetisation of Transmission Assets through Acquire, Operate, Maintain and Transfer (AOMT) based Public Private Partnership model issued by Ministry of Power provides a reference point for States. States could modify the proposed structure as needed.

It was discussed that apart from a few TBCB assets, most assets at State level have been developed through Regulated Tariff Mechanism (RTS) and have tariffs that are subject to periodic regulatory determination.

Predictable cash flow through regulatory certainty is important. To provide predictability of cash flow for such RTM assets to be monetised, there should be a pre-agreed regulatory approach for tariff setting for assets that are to be monetized.

Some State representatives requested that Government of India could prepare and share draft model concession agreement.

Moreover, a well laid out pipeline of assets to be monetized helps attract investors as they need to have a line of sight on future opportunities that will help them achieve optimum scale of investments.

(iv) Key consideration of the investors

Investors emphasised the importance of certainty and transparency around bid process and certainty of revenues as the key value drivers. Investors also consider credit quality of state counterparties, track-record for timely payments and well working contracts while doing risk assessment.

The key recommendation from investor consultation include:

i. expected revenues to private investors should be predictable through the monetisation / concession term
ii. robust payment security mechanism – particularly important to establish payment security at State level projects as this shall be a cornerstone for bankability
iii. high quality technical, financial and legal diligence to be undertaken for the stock of assets to be monetised; this information to be made available to investors at bidding stage
iv. Unambiguous allocation of responsibilities between the Sponsoring Transco and private sector entity can assist in reducing scope of disputes
v. quick and smooth transfer of asset, for fast operational turnaround

(v) Key challenges flagged by States

Participating States endorsed the huge financing requirement required for creation of new transmission infrastructure and the need for tapping private capital through different means including monetisation of brown-field transmission assets. Challenges highlighted include unpredictability of tariff (for RTM assets, tariff changes every 5 year), regulatory concurrence, uncertainty on tax implication for RTM assets demerger, re-deployment of

man-power associated with monetized assets. Some of the suggestions given by States include:

i. This issue of revenue certainty for monetisation of RTM assets could be discussed by CEA / MOP with the Forum of Regulators so as to evolve a common approach across the country.
ii. The State Regulators concerned may be on-boarded on the issue of monetisation of transmission assets.
iii. The issue of tax-implication for assets, can be taken up with Ministry of Finance for clarity.
iv. Presently, States have one single Transmission Company. Once multiple transmission licensees are there in a State, there shall be a need for bringing out Regulation by concerned SERC on sharing of transmission charges by different transmission licensees operating in the State as has been done by CERC.

(vi) Developing a credible project structure

It was suggested that certainty around the bid process, high level of preparedness with respect to consultations with regulators, treatment of pre-existing litigations related to the transferred assets, treatment of existing human resource and associated costs that are directly connected to the transferred asset and payment security aspects are critical to encourage private sector participation.

State transmission utilities may consider taking up certain obligations prior to tendering or as a condition precedent to effectiveness to strengthen project's bankability. These include:

- obligations related to ROWs and transfer of land,
- treatment of warranties and defects liability assurances from suppliers,
- license transfer,
- approval for tariff (in case of RTM model) to provide tariff certainty and
- formulation of settlement plan of pre-identified asset specific risks.

(vii) Presumptive taxation on Terminal value:

The guidelines for the AOMT model propose the transfer of the monetized asset back to the Sponsoring Transco at a nominal cost of INR 1.00 at the end of the AOMT term.

However, investors are concerned that unless a waiver is specifically given by tax authorities, a nominal transfer price could still be subject to presumptive taxation. In any case investors should not be liable to pay tax on transfer back of asset.

(viii) Transfer of O&M obligations:

In the case of AOMT, the concessionaire would be responsible for operation and maintenance of the transmission assets. In case of InvIT model, while investors were comfortable with POWERGRID continuing to operate the monetized assets, however at State level, investors may require operation and maintenance to be done by a private third party rather than by the STU who is monetizing the assets. So, O&M obligations may be transferred on a case-to-case basis after evaluating developer's interest and risk appetite.

[2] Way-forward:

Sl No	Plan	Key Stakeholders
1	Developing a process to derive predictable long-term revenues from monetisation of transmission assets that are presently owned by state transmission companies (RTM assets)	Forum of Regulators (FoR)
2	Conceptualisation of a strong payment security mechanism that can support state level transmission assets monetisation	CEA in consultation with MoP, NIIF and selected State Governments
3	Developing a clear view of any incidents of taxes through the monetisation process (at the time of demerger/at the time of concession award / return of asset)	DEA
4	Pilot transmission asset monetisation initiative with willing States	Willing State Govt
5	Preparation of Model Bidding Documents based on experience of monetisation at one State.	CEA with support from BPCs

Annexure I: Highlights of discussion points made by various participants

Central Electricity Authority (CEA)

- Infrastructure is critically linked to growth and economic performance. Based on the National Electricity Plan (Transmission) published by CEA for 2022-32, additional capacity of about 9,45,00 ckm of Inter Sate transmission system and 9,70,00 ckm of Intra state transmission lines would be added in the country during the period 2022-32 and total investment required for creation of new transmission infrastructure is estimated at ₹ 9,16,200 crore. Out of that more than 30% investment will be required in Intra State level, while remaining in the Inter State level.
- Monetisation of assets unlocks their value, eliminates their holding cost and enables scarce public funds to be deployed in new projects, thus fast-tracking new infrastructure creation
- India has developed a solid track record of attracting institutional investment in infrastructure assets utilizing innovative structures such as Infrastructure Investment Trusts (InvITs) and PPP based models (TOT, OMDA etc.) to monetize assets such as toll roads, transmission assets, pipelines and telecom.
- Transmission assets provide a stable cash flow over the concession/licensee period is suitable for monetisation. POWERGRID has already monetised 5 nos of TBCB assets through InvIT route. The States have a significant potential for Asset Monetisation by leveraging brownfield transmission assets and mobilizing much needed proceeds for new infrastructure investment.
- CEA in consultation with few States and NITI Aayog prepared "Guiding Principles for monetisaiton of transmission asset monetisation through Acquire, Operate, Maintain, and Transfer (AOMT) model" and the same was issued by Ministry of Power in 2022.
- The model envisages limited period transfer of assets. The Guiding Principles cover various steps in monetisation process including identification of assets, demerger of assets in a separate SPV (for RTM assets), obtaining license from SERC for the SPV, appointment of technical consultant for carrying out technical due diligence, appointment of independent valuer for carrying out financial valuation, appointment of Bid Process Co-ordinators for carrying out bidding process, preparation of transfer

agreement with buyer, preparation of transmission service agreement, tenure of transfer agreement, tariff of the monetised assets, bidding and evaluation, need for Payment Security Mechanism etc.

- Issues in monetisation of transmission assets include challenges regarding demarcation of assets (meshed network, ARR for whole network), unpredictability of tariff (for RTM assets, tariff changes every 5 year), inadequate payment security mechanism, unclear O&M obligations and complex approval process of lenders as sponsoring agency takes loan on collective assets.
- Key enablers required to boost asset monetisation in transmission space include creation of a collective knowledge base, and setting the necessary ecosystem in place.

Ministry of Power

- Over the last decade, the central grid has seen significant investments through Tariff-Based Competitive Bidding (TBCB) mode with pace of investment accelerating in recent years, driven by the rapid deployment of renewable energy.
- A similar approach can be adopted at the state level to expand grid infrastructure where monetisation of state transmission assets can fund future grid expansions.
- Monetisation involves a fixed period of transfer of assets, addressing fears of privatization of transmission systems, effective communication with stakeholders is critical to ensure acceptance and clarity on this approach.
- Specific assets should be demerged and identified for monetisation, ensuring they are litigation-free and along with support to the staff managing them.
- A transparent bidding process and identification of investors are necessary to build trust and accountability.
- For states lacking investor confidence regarding payment security, PSUs can manage bidding, and enter back-to-back agreements with state governments and service providers.
- Funds collected upfront from monetisation can be parked with state transmission entities to strengthen financial stability.

Department of Economic Affairs (DEA)

- Investment in infrastructure has multiplier effects on the respective state economies.

- Infrastructure can be financed through multiple mechanisms – Grant, Debt instruments and Equity
- Central government has designed various policies (high budgetary capex, National Infrastructure Pipeline, National Monetisation Pipeline, PM Gati Shakti National Monetisation Plan) and has been working towards establishing enabling financial infrastructure (NABFID, Infrastructure financing reforms by way of REITs, InvITs, VGF) to boost investment in infrastructure.
- As the private sector is wary of greenfield asset due to higher risk, state should consider monetisation of brownfield assets.
- States should adopt learnings from monetisation models in other infrastructure sectors (TOT, securitization model) to attract private investors in transmission sector, so states can generate significant returns.

POWERGRID Infrastructure Investment Trust (PGInvIT)

- PGCIL has monetized five tariff-based competitive bidding (TBCB) assets through the infrastructure investment trust (InvIT) route during 2021.
- It was brought to attention that while the management of InvIT model is intricate with various stakeholders – the Sponsor, the Trustee, the Unit holders, the Investment manager and the Project Manager, InvITs provides an opportunity to monetize brownfield assets with predictable cash flows.
- It was suggested that as bulk of state's assets belong to the regulated assets category, (RTM) which are housed in the parent entity's balance sheet and not under separate SPVs, monetisation for such assets hence may require a scheme of arrangement / demerger process which may pose associated transaction overheads such as continuation of tax holiday on assets, capital gains tax, stamp duty etc., due to asset transfer. The Forum of Regulators may be approached to seek guidance on providing a uniform approach for monetisation of RTM assets.
- Learnings were shared on the approach adopted by PGCIL towards identification of assets which included the following:
    - adoption of SEBI InvIT Regulations (Investment by InvIT shall be in holdco and or SPVs or Infrastructure projects or securities in India, InvIT shall invest not less than 80% of the value of the assets in completed and revenue generated infrastructure projects, InvIT holding controlling interest and not less than 51% of the equity

share capital or interest in the SPV, SPVs under successful commercial operation for more than 1 year)
    - Addressing investor expectations on revenue visibility (Transmission charges were discovered through competitive bidding and fixed for 35 years as per TSA – No regulatory reset) and revenue stability (Transmission charges linked to availability & not power flow)
    - Assets housed in project specific SPVs with 100% shareholding of PGCIL
    - Relaxation in equity lock in condition (Transfer of 51% holding permitted after 2 year of commercial operation)
- Key valuation drivers include revenue stability and predictability, quality of asset and remaining useful life, expansion opportunities, scale of project to attract reputed investors and strengthening of regulatory frameworks with clarity on tax incentives.

International Finance Corporation

- Internationally, many countries like Australia, Philippines, US have adopted various transmission assets monetisation models.
- Learnings from Australia (privatized their entire electricity networks):
    - Central government provided financial incentive to States (15% of price of an asset as incentive to States that sell infrastructure assets and re-invest 100% proceeds into new infra) to link monetisation to recycling and trigger infrastructure investment.
    - States could consider setting up a ringfenced fund for a structured recycling program to help overcome public apprehension of monetisation
- Learning from Philippines:
    - Concession was more acceptable than privatization because permanent ownership of strategic assets was not transferred
    - However, concessioning whole-of-grid still creates private monopoly, which puts a heavy burden on regulatory capacity and has higher potential for disputes
- Whole of grid tenders typically attract only a few specialized investors. Less competition means price may not reflect the true value of the business. Concessions for specific transmission assets within a larger network are less complex and may attract more competition.
- Learning from other examples include:

- A defined concession period matching the remaining useful life of asset is preferred for cashflow visibility for investors
- Requirement for better governance on the relationship and risk allocation between key stakeholders

Shardul Amarchand Mangaldas

- The strategic objective of Asset Monetisation is to unlock the value of investments in public sector assets by tapping private sector capital and efficiencies, which can thereafter be leveraged for augmentation/greenfield infrastructure creation
- Substantial investment is required for developing the country's transmission infrastructure, including lines, substations and reactive compensation at 220 kV and above voltage levels which provides justification for monetisation of existing assets.
- It was suggested that certainty around the bid process, high level of preparedness with respect to consultations with regulators, treatment of pre-existing litigations related to the transferred assets, treatment of existing human resource and associated costs which are directly connected to the transferred asset and payment security aspects are critical to encourage private sector participation.
- State transmission Utilities may consider taking up certain obligations prior to tendering or as a condition precedent to effectiveness to strengthen project's bankability. This includes:
  - Asset transfer:
    - Prior to bid completion, assets to be transferred to SPV. Maybe by demerger (i.e through MCA) or through a slump sale (i.e direct contractually) or through G.O in case of statutory corporations / departments.
    - ROWs and land to be transferred and duly registered in the hands of SPV
  - Treatment of warranties and defects liability assurances from suppliers and contractors to be assigned such that SPV operates with the same level of protection as currently available
  - License transfer
    - Transmission license by the CERC/SERC under Section 14, r/w 15 (1) of the Electricity Act for grant of transmission license to be transferred to SPV

    - Other licenses such as from CEA, or from other central and state governments to be transferred to SPV such that SPV has all requisite licenses to operate the transmission business
- Tariff approval
    - In case of RTM model, fresh tariff approval to be taken from ERC. Long term tariff certainty to be provided to investor. In other sectors, a floor tariff principle has been used to underwrite a minimum cash flow
    - In case of TBCB projects, the relevant SPV itself could be used as the monetisation vehicle
- Recasting of TSAs & other agreements: As part of the asset transfer process, all TSAs and other key agreements entered into with respect to the assets under consideration to be transferred to SPV.
- Formulation of Settlement / risk assumption of pre-identified asset specific risks
    - With respect to ongoing claims (employees / contractors / regulatory) or ongoing disputes, a clear settlement plan or a strategy for assumption of risks by the STU will need to be created.
    - Learnings from other sectors (for e.g. Airport sector) on issues of employee claims / pre-existing disputes may be useful
    - Any pre-existing encumbrances / encroachments will need to be considered and dealt with.
- Assets to be 'going concern' ready at the time of acquisition, such that upon acquisition, there is continuity of business operations in the hands of the acquirer.

IndiGrid

- Emphasized the importance of certainty and transparency around bid process and certainty of revenues as the key value drivers.
- Additional factors to be considered to boost investor participation:
    - high quality technical, financial and legal diligence details for assets to be made available to investors prior to bidding.
    - robust payment security mechanism to be put in place to provide comfort to investors as infrastructure monetisation projects entail heavy investments.

    - Cost of capital and valuation: for high quality assets, following assumptions may be considered: ~12% RoE, ~70% debt, and cost of debt at 7-8%; 9x to 9.5x of annual EBIDTA
    - quick and smooth transfer of asset to be ensured for fast operational turnaround
    - clear risk allocations to minimize scope of disputes in future
- It was highlighted that large investors take concentrated positions with investments with platforms, and hence may not be able to make fragmented investments.
- Investors also consider credit quality of state counterparties, track-record for timely payments and well-working contracts while doing risk assessment.

National Investment and infrastructure Fund (NIIF)

- High investment demand in state transmission infrastructure; the AOMT model offers a viable framework for asset monetisation, requiring enablers like model documents and a supportive ecosystem.
- PowerGrid's monetisation experience highlights the importance of regulatory robustness, revenue assurance, and intricate InvIT model management for value discovery.
- The government has been leading infrastructure creation; private sector involvement is crucial, with opportunities to learn from successful monetisation processes.
- Globally, large-scale transmission asset monetisation has attracted significant capital; AOMT/TOT models for specific assets with defined concession periods show promise.
- Certainty in bid processes, high-quality diligence, and robust payment security mechanisms are critical to ensure investor confidence and predictability.
- Successful monetisation requires clear processes, including asset transfer under SPVs, personnel management, and tariff predictability.
- States are increasingly proactive in engaging stakeholders; examples like Orissa show the need for careful handling of asset and personnel transfers.
- Large investors prefer concentrated investments in platforms, emphasizing the importance of ensuring creditworthiness and timely payments from state counterparties.

- Collaborative efforts between stakeholders can mobilize the required resources, ensuring a transparent, bankable process for long-term success.

Annexure II: key speakers, panellists and participants

Key speakers:

- Mr. Ghanshyam Prasad, Chairperson, Central Electricity Authority (CEA)
- Shri Srikant Nagulapalli, Additional Secretary, Ministry of Power
- Mr. Ajay Talegaonkar, Member, Central Electricity Authority
- Mr. Soloman Arokiaraj, Joint Secretary, Department of Economic Affairs (DEA)
- Mr. Goutam Ghosh, Chief Engineer, Central Electricity Authority
- Mr. Sanjay Sharma, Director, PUTL
- Mr. Bhanu Mehrotra, Principal Investment Officer, International Finance Corporation (IFC)
- Mr. V.R. Neelakantan, Partner, Shardul Amarchand Mangaldas

Panel Discussion: Perspective of Investors

Panelists:

- Mr. Amit Garg, Director, PUTL
- Mr. Harsh Shah, Chief Executive Officer and Director, IndiGrid
- Mr. Rohit Acharya, Principal, Infrastructure and Sustainable Energies Group, CPP Investments

Moderator:

- Mr. Saurabh Suneja, National Investment and Infrastructure Fund (NIIF)

Panel Discussion: Perspective of State Government

Panelists:

- Dr. D. Sai Baba, Joint Secretary, Ministry of Power, GOI
- Ms. Puja Kulkarni, CEO, Tamil Nadu Infrastructure Development Board (TNIDB)

- Mr. Bhaskar Jyoti Sarma, Chairman & MD, Odisha Power Transmission Corporation Limited.
- Mr. Nathmal Didel, Managing Director, Rajasthan Rajya Vidyut Prasaran Nigam Limited

Moderator:

- Mr. Ajay Talegaonkar, Member, CEA

List of Participants

- Sh. V.K Singh, Member Secretary, NRPC, CEA
- Sh. Debasish Prusty, Secretary(Finance), Rajasthan
- Dr. Arun , Secretary(Power), UT of DNH&DD
- Sh. Vishu Mahajan, JMD, TNPDCL, Tamil Nadu
- Sh. Pralay Majumdar, Additional Secretary, Power Dept Govt of W.B
- Sh. Panicker Harishankar, Special Secretary Finance, Govt of W.B
- Sh. Mohammad Tayyab, DTA cum Secretary to Govt. of Punjab, Dpt. Of Finance, Punjab
- Sh. Jatinder Tageja, Financial Advisor, PSPCL, Punjab
- Sh. Uttam Kumar, PSTCL, Punjab
- Sh. Sourabh Maheshwari, Deputy Manager, DNHDDPCL
- Sh. C.A Parmar, Chief Engineer, DNH& DD power Corporation Ltd.
- Sh. T Nengshi wati, Investment officer, IDAN, Government of Nagaland
- Sh. T. Lithrichum Sangtam, SE(GEN), Deptt. Of power Nagaland
- Ms. Bhakti Shamal, Joint Secretary, Energy & Petro Dept. Gujarat
- Sh. Jaynish Modi, GM , GETCO, Gujarat

- Sh. Ganesh Shaw, CFM, GETCO, Gujarat
- Sh. G.P Fanse, O.S.D, F.D, Finance Department, Gujarat
- Sh. Debasish Chakraborty, Chief Engineer, MPPTCL, Madhya Pradesh
- Sh. Birendra Prasad, Director (Operation), DTL, Delhi
- Sh. Radheyshyam Meena, GM, DTL, Delhi
- Ms. Kamna Gupta, AGM, DTL
- Sh. Satish Chavan, Director (op), MSETCL, Maharashtra
- Sh. Kishor B. Garud, Chief Engineer (Design), MSETCL, Maharashtra
- Sh. A.K.V Bhaskar, Director, APTRANSCO, Andhra Pradesh
- Sh. K.V.S Murty, FA&CCA, APTRANSCO, Andhra Pradesh
- Sh. Pankaj Pandey, MD, KPTCC, Karnataka
- Sh. K.N. Gangadhar, KPTCL, Karnataka
- Sh. B.S Lakshmikantha, Chief Engineer, KPTCL, Karnataka
- Sh. B H Shivashankar, Controller of Account, KPTCL, Karnataka
- Sh. Vivek Singh Elangbam, Joint Secretary (Finance), Govt of Manipur
- Sh. S. Priyananda, Executive Director(tech) , MSPCL, Manipur
- Sh. Zahoor A. Wani, Director finance, Power Deptt J&K
- Sh. Vikas Anand , Chief Engineer(Transmission), JKPTCL (Jammu)
- Sh. Jigmet Namgyal, Joint Director , Power deptt UT ladakh
- Sh. Sushil Kumar , SE, SLDC (D&C), HVPNL, Haryana
- Sh. R.S Dahiya, Executive Engineer, HVPNL, Haryana
- Sh. Alok Mehrotra, Chief Engineer, U.P Power corporation Ltd
- Sh.Rajiv Kumar, Sr. Advisor, UPPTCL, Uttar Pradesh
- Sh. Vijay Kumar, Director (Operation) , SBPDCL, Bihar

- Sh. K.R Prasant, Chief Engineer, BSPTCL, Bihar
- Sh. G.S Budiyal, Director (Operation), PTCUL, Uttarakhand
- Sh. R.K Shukla, MD, CSPTCL, Chattisgarh
- Sh. M.S Chauhan , ED (finance), CSPTCL, Chattisgarh
- Sh. Manoj Verma, EE, CSPTCL, Chattisgarh
- Sh. Mrinal Kanti Das, DGM, TPTL, Tripura
- Sh. Pranab Saha , DGM, AEGCL, Assam
- Sh. Sanjeev K. Rawat, DGM (Project), HPPTCL, Himachal Pradesh
- Sh. T. Chanemougam, SE cum HoD, Puducherry
- Sh. V.Suresh , Deputy Chief Engineer, KSEBL, Kerala
- Sh. G.D Pamnani, SE, RRVPNL, Rajasthan
- Sh. Naveen Nikhil Pandey, Assistant Engineer, RVPN, Rajasthan
- Sh. Rohit Maheshwari, Account officer, RVPN, Rajasthan
- Sh. Mahfoz Alam, Resident Engineer , GRIDCO Ltd., Odisha
- Sh. Rahul Srivastav, VP , NaBFID
- Ms. Roli Agarwal, Investment Officer, IFC
- Sh. Abhishek Neotia, Principal, NIIF
- Ms. Kirti Manjusha, Consultant , NIIF
- Sh. Ayush Goyal, VP M&A, IndiGrid
- Sh. Venkataprashanth, AGM, CEO office, IndiGrid
- Sh. Lokendra Singh Ranawat, Head Regulatory, IndiGrid
- Ms. Samridha Nevpane, Partner Shardul Amarchand
- Sh. Neeraj Singh , CGM , PFCCL
- Sh. Sanjay Nagar, SGM, PFCCL

- Sh. Dheeraj Kumar, Dy. Manager, PUTL
- Sh. Gaurav Malik, CFO, PUTL
- Ms. Neela Das, CEO, PUTL
- Sh. Vipin Joseph, DGM, PGInvIT
- Sh. Subhro Paul, Director, CEA
- Sh. Anzum Parwej, SE, NRPC
- Sh. Praveen Jangra, Deputy Director, CEA
- Sh. Manish Maurya, Deputy Director, CEA
- Sh. Saurabh Mishra, Deputy Director, CEA
- Sh. Sharad Chandra, Deputy Director, CEA
- Sh. Mrityunjay Varshney, Assistant Director, CEA
- Sh. Ayush Srivastav, Assistant Director, CEA
- Sh. Ajay Devedwal, Assistant Director, CEA

Annexure-X

Gaurav Gupta, I.A.S.,
Managing Director

KPCL
ಕರ್ನಾಟಕ ವಿದ್ಯುತ್ ನಿಗಮ ನಿಯಮಿತ
KARNATAKA POWER CORPORATION LIMITED
(A premier power generating company of Government of Karnataka)
CIN U85110KA1970SGC001919

Chairperson, SRPC, MD, KPCL, Bangalore & ACS (Energy), GoK

15.01.2025

सेवा में/To

As per attached list

Subject: Recovery of Relinquishment charges as per the direction of CERC in order dated 08.03.2019 – Collective efforts of RPCs to pursue cases in APTEL - reg.

महोदया/महोदय/Madam/Sir,

I. As you are kindly aware, that the CERC Order dated 08.03.2019 in Petition No. 92/MP/2015, directed CTU to assess the stranded transmission capacity and calculate the charges payable towards relinquishment and the relinquishment charges paid by LTA customers shall be used for reducing transmission charges payable by other long term and medium term customers in the year in which such compensation is due in the ratio of transmission charges payable for that year by such long term customers and medium term customers. Accordingly, the relinquishment charges had been computed by CTUIL and uploaded on its website (Before the CERC Order, many IPPs/generators had relinquished the LTA and the charges were being recovered from the beneficiaries).

II. It is noted that some of the generators filed appeal in APTEL against the recovery. Insolvency proceedings (CIRPL) of some generators, among the above generators have been completed. Insolvency proceedings of some generators are currently underway. CTUIL informed that APTEL stayed raising of invoices against generators who are not under insolvency proceedings.

III. The Southern Regional Power Committee (SRPC) has been closely following up the matter of recovery of relinquishment charges and the implications of the APTEL stay order on raising bills, with the CTUIL and deliberating the issue in the successive meetings of RPC and commercial subcommittee, ever since. During recent SRPC meeting, it has been emphasized that coordinated efforts across all RPCs are essential to address this matter effectively.

IV. The current litigations led to delays in the recovery of charges and have impacted the beneficiaries across regions. CTUIL has been actively pursuing the vacation of the APTEL stay order and requested the support of all stakeholders, including DISCOMs, through representation/implead in the APTEL case.

V. In light of the discussions and recommendations of SRPC members in the meeting held on 18.11.2024, it is requested that each RPC may actively participate in the matter and the following suggestions emerged in the SRPC meeting are forwarded for further needful:

1. **Representation:** Encourage all DISCOMs in the Region to actively participate in the Judicial proceedings. This collective action can emphasize the liabilities of beneficiaries and the financial impact on the pool.
2. **Expert Legal Consultation:** Obtain and share expert legal opinions on the relinquishment charge recovery to strengthen the case, across judicial platforms.
3. **Awareness and Preparedness:** CTUIL has assured the sharing of hearing schedules and the list of appeals with constituents. It is suggested that this practice be adopted by all RPCs to ensure better preparedness for court proceedings.
4. **Coordination across RPCs:** Propose regular communication among RPCs to exchange updates and formulate a unified approach to address the matter of recovery of relinquishment charges and stay order/legal issues effectively.

It is felt that by collectively engaging in this matter, the resolution of the challenges can be expedited and ensure equitable recovery, as early as possible, that would protect the interests of all stakeholders. SRPC remains committed to supporting collaborative efforts and is open to further discussions to facilitate this process.

It is requested that each RPC may deliberate on the above points and initiate suitable actions.

Yours faithfully,

Chairperson, SRPC

Copy to:

Member Secretary, NRPC [*Email: ms-nrpc@nic.in*]
Member Secretary, WRPC [*Email: mswrpc@nic.in*]
Member Secretary, ERPC [*Email: mserpc-power@nic.in*]
Member Secretary, NERPC [*Email: ms-nerpc@gov.in*]

Annexure-XI

HIMACHAL PRADESH STATE LOAD DESPATCH CENTRE
(AN APEX BODY)
GOVERNMENT OF HIMACHAL PRADESH

No: HPSLDC/SLDC-SOC-98/2024-25/ 9820 Dated: 04-02-2025

To

The Member Secretary,
Northern Regional Power Committee,
18-A, Qutub Institutional Area,
Shaheed Jeet Singh Marg,
Katwaria Sarai, New Delhi-110016.
Email ID: as-nrpc@nic.in

Sub: Submission of Detailed Project Report for the work" Establishment of Security Operation Centre (SOC) at HPSLDC Shimla" for appraisal from Regional Power Committee.

Sir,

Enclosed please find herewith the DPR in respect of the subject captioned work amounting to Rs. 11.93 Crore, for having appraisal from Regional Power Committee. It is further submitted that the appraisal report of NRPC is required with the proposed DPR for funding from Central PSDF grant by the nodal agency.

Yours Sincerely,

DA: As Above.

Chief Engineer
HPSLDC, Govt of HP
SLDC Complex, Totu, Shimla-11

HIMACHAL PRADESH STATE LOAD DESPATCH CENTRE
(an Apex body)
GOVERNMENT OF HIMACHAL PRADESH

Detailed Project Report for Establishment of Security Operation Centre (SOC) at HPSLDC Shimla.

Total Estimated cost -₹ 11.93 Crores

Submitted by:

Superintending Engineer,
HP State Load Despatch Centre,
Govt. of HP, Totu, Shimla-11

Table of Contents

Definitions and Acronyms

S/N	Acronym	Definition
1	DB	Database
2	DC	Data Centre
3	DR	Disaster Recovery Site
4	DAM	Database Access Management
5	INR	Indian Rupees
6	IP	Internet Protocol
7	IT	Information Technology
8	ISO	International Organization for Standardization
9	LAN	Local Area Network
10	LDAP	Lightweight Directory Access Protocol
11	LLD	Low Level Design
12	MIS	Management Information System
13	Mbps	Million Bits per Second
14	MPLS	Multi-Protocol Label Switching
15	MSE	Micro & Small Enterprise
16	MTBF	Mean Time Between Files
17	MDM	Mobile Device Management
18	NDA	Non-Disclosure Agreement
19	NAC	Network Access Control
20	OEM	Original Equipment Manufacturer
21	OS	Operating System
22	PIM	Privilege Identity Management
23	PO	Purchase Order
24	PSDF	Power System Development Fund
25	RLDC	Regional Load Dispatch Centre
26	REMC	Renewable Energy Management Centre
27	RFP	Request for Proposal
28	RCA	Root cause analysis
29	RDBMS	Relational Database Management System
30	RPO	Recovery Point Objective
31	RTO	Recovery Time Objective
32	SIEM	Security Information and Event Management
33	SLA	Service Level Agreement
34	WAN	Wide Area Network

Detailed Project Report for Establishment of Security Operation Centre (SOC) at HPSLDC Shimla.

1. Executive Summary:-

Name of the Project:	Establishment of Next Generation Security Operation Centre (SOC) at Himachal Pradesh State Load Despatch Centre (An apex Body) Govt. of Himachal Pradesh Totu, Shimla -171011
Period of Completion:	**12** Months
Total Estimated cost :	Rs. 11.93 Crores
Implementation Agency:	
Mode of Execution:	Through external agencies on contract basis as per Govt procedures under the supervision of Himachal Pradesh SLDC.
No. of sites to be integrated to SOC:	MAIN SLDC/ DR Site
Major Equipment:	Log Collectors, SIEM, SOAR, UEBA, NBAD, DAM. Required Hardware, Display & peripheral software
Source of Fund:	From Central PSDF Scheme as per approved limit.

2. Introduction:-

Himachal Pradesh is situated in the North-West corner of India in the lap of the Himalayan ranges. It is surrounded by Jammu and Kashmir in the North, Uttarakhand/Uttar Pradesh in the South-East, Haryana in the South and Punjab in the West. The state is almost entirely mountainous with altitudes ranging from 460 m to 6600 m above sea level. The normal rainfall is 181.6cm.

Details of Power handling capacity/Generation capacity:

Power handled by HPSLDC: 3784 MW.
Harnessed Generation Capacity of HP=11,245MW .
Installed Generation Capacity of India: 404,132.95 MW
Contribution of HP to Nation in hydro energy generation: 375.32GW

Himachal Pradesh is drained by a number of rivers and rivulets of which the five major river systems are the Chenab, the Ravi, the Beas, the Satluej and the Yamuna, which emanate from the western Himalayas. All the rivers are snow fed and hence perennial. The natural reservoirs and the large drops available in the river courses provide immense potential for hydel power generation at low cost. Himachal Pradesh is blessed with abundant water resources. The assessed hydroelectric potential of the country in terms of schemes considered feasible for development is about 500 billion units. Out of this potential, nearly 160 billion units i.e. 32 percent, lies in the northern region.

Himachal Pradesh with its estimated power potential of more than 20,000 MW, in its five river basins, itself accounts for nearly 100 billion units.

HP State Load Dispatch Centre (HPSLDC) formed under Section-31 of the Indian Electricity Act-2003, situated at Totu, Shimla-11 under the aegis of the HP Load Dispatch Authority and constituted under the **HP Societies Registration Act-2006 (Registration No. 438/ 2011)** is an independent Apex entity under the direct control of HP Govt.

The Govt. of Himachal Pradesh vide Notification No. MPP-B (13)-16/ 2018, dated: 14.11.2018 has amended the General Body and Executive Committee of the HP Load Dispatch Authority, which was earlier constituted by the department of MPP & Power, Govt. of HP vide Notification No. MPP-B (13)-2/ 2010, dated: 08.11.2010. The present General Body and the Executive Committee of the HP Load Despatch Authority is as under.

A. Present General Body		
Sr. No.	**Designation**	**Designation**
1	Chief Secretary (MPP & Power)	Chairman
2	Managing Director, HPPCL	Member
3	Director (Energy)	Member
4	Special Secretary (MPP & Power)	Member
5	Special Secretary (Finance)	Member
6	Managing Director, HPSEBL	Member
7	Managing Director, HPPTCL	Member
8	Managing Director, HPSLDC	Member
9	Chief Engineer, HPSLDC	Member Secretary
B. Present Executive Committee		
1	Chief Secretary (MPP & Power)	Chairman
2	Managing Director, HPSLDC	Member
3	Chief Engineer, HPSLDC	Member Secretary

The major functions entrusted to the HP State Load Dispatch Centre, as per the provisions of Section-32 of the Indian Electricity Act-2003 are listed below.

1. The HPSLDC is an Apex body to ensure integrated operation of the power system in the HP State.
2. The HPSLDC is responsible for optimum scheduling and despatch of electricity within the HP State, in accordance with the contracts entered into with the licensees or the generating companies operating in the HP State and to monitor the Grid operations.
3. Keeping accounts of the quantity of electricity transmitted through the HP State grid.

4. To exercise supervision and control over the intra-State transmission system and responsibility for carrying out real time operations for grid control and despatch of electricity within the HP State through secure and economic operation of the State grid in accordance with the Grid Standards and the State Grid Code.

5. Levy and collect such fee and charges from the generating companies and licensees engaged in intra-State transmission of electricity as specified by the HP State Electricity Regulatory Commission, Kasumpti, Shimla.

3. Need for Establishment of SOC:-

At present there are three systems deployed for automation of the services in HPSLDC i.e SCADA, URTDSM & SAMAST.The systems installed at HPSLDC have been identified as Critical Information Infrastructure(CII) by the National Critical Information Infrastrucutre Protection Centre (NCIIPC) and declared Critical Information Infrastructure(CII) by the GoHP in the official gazette(*Annexure-I*). As per the IT amendment act 2018 organisation having the protected system shall establish a Cyber Security Operation Center (C-SOC) using tools and technologies to implement preventive, detective and corrective controls to secure against advanced and emerging cyber threats. In addition, Cyber Security Operation Center is to be utilised for identifying unauthorized access to "Protected System", and unusual and malicious activities on the "Protected System", by analyzing the logs on regular basis. Further as per the directions issued from the GRID INDIA (Erstwhile POSOCO) it was requested for submiision of DPRs for 100% financing of the C-SOC project from PSDF funding from the SLDCs(*Annexure-II*). In order to meet the directives as above HPSLDC intended to set-up on-premises state of- the-art Next Generation Security Operations Centre (SOC) which can collate, integrate and analyze logs/ data form various security devices and end-points at extremely high concurrency operating on 24x7x365 basis.

4. Proposed Scheme:-

SOC shall be established at the HPSLDC premise and be manned by skilled IT security professionals, who continuously monitor the traffic passing through the devices using the SIEM (Security Information and Event Management) tools and take proactive actions to mitigate any threat as per the generated alerts and advisories from authentic sources. The intent for Services / Solutions shall be based on following principles:

- **Identification & Prevention of Information Security Vulnerabilities:** The SOC should be able to identify information security vulnerabilities in HPSLDC environment and prevent these vulnerabilities through implementation of adequate security solutions. Automated response to the known threats may be featured using suitable correlation, playbook and orchestration tool.
- **Incident Management:** Reporting of information security incidents using appropriate tools. Track and monitor the closure of these information security incidents and escalation of these incidents to appropriate teams / individuals in HPSLDC or other statutory agencies as the requirement may arise.
- **Continuous Improvement:** Continuously improve services/ solutions as per the requirements of HP SLDC.
- **Threat information integration and dissemination:** The system should be capable of integrating secured with various Threat Intelligence Platforms provided by statutory and trusted agencies like NCIIPC, CERT-IN etc. The system should also provide platform for dissemination of the findings to the external interested / intended entities through open interoperable platforms like MISP etc.

HPSLDC has envisaged the following security solutions required to enhance the robust monitoring that are

compliant with ISO 27001, CERT-In, NCIIPC, CEA Cyber Security Guidelines 2021, Any cyber-Security regulations issued by CEA/CERC in due course etc.

i. Next Generation Security Information and Event Management (NGSIEM)
ii. Security Orchestration, Automation and Response (SOAR)
iii. Network Behavior Anomaly Detection (NBAD)
iv. User and Entity Behavior Analytics (UEBA)
v. Database Activity Monitoring (DAM)

5. Scope of the project

The objective is to establish HP SLDC's own on-premise Security Operation Centre(SOC). The following are the brief activities to be performed for successful Supply, Installation, Implementation, Integration, Maintenance and Support of state of-the- art Next Generation Security Operation Centre (SOC).

i. Security event monitoring by leveraging on Big Data based technology to deliver Advanced Threat detection, automated incident response, incident analysis, customized security intelligence & Threat/Vulnerability advisories, as one solution. Advanced Threat detection should be based on data analytics beyond rules & signatures using Big-Data platform with capabilities for Threat assessment Hunting & Predictive Analysis.
ii. The services and solutions offered should be modular, scalable, and should be able to address requirements during the period of contract as per technical specifications. It should be based on big-data analytics and machine learning capabilities with pre-built analytical models to detect targeted attacks and unknown threats.
iii. Root Cause Analysis of the incidents (Major & Minor) to identify threat sources and proactive measures to prevent recurrence with identification of patient zero and blast radius. Analysis of SIEM logs to identify information security vulnerabilities in HPSLDC environment and provide recommendations to prevent these vulnerabilities.
iv. Reporting and logging of all security incidents through the use of appropriate ticketing tools. Track and monitor the closure of these information security incidents and escalation of these incidents to appropriate teams/ individuals of HPSLDC.
v. Detailed process for managing Incident Response (IR) - describing each phases of the process – prepare, identify, contain, eradicate, recover and learn from the incidents responded to.
vi. Conduct policy identification exercise for target scope; perform asset classification based on understanding of business flow of critical data and business impacting processes. Adequate resources for implementation and facility management are required.
vii. End to end installation, configuration, parameterization, customization, implementation, integration, support and maintenance of all the solutions at central site i.e. DC.
viii. Coordinating with the existing System Integrator(s) of the HPSLDC to integrate the security solutions with existing application platforms (IT & OT), server and storage environment, enterprise network, existing ISP, NMS solutions, security solutions etc.
ix. Providing the necessary personnel to manage the operations of the proposed solutions in scope and to ensure SLA compliance for a period specified under the contract.
x. Manpower as indicated above shall be deployed for 24x7 manning of the SOC at HP location.
xi. Study the existing bandwidth at HPSLDC Premises and check, if any upgrade is required in terms of bandwidth.
xii. Integration of any new devices, software etc. to be procured.
xiii. Proposed solution shall also be able to integrate the software, applications etc. hosted in cloud environment on PAAS / IAAS model.
xiv. It should be ensured that neither during installation nor during operations of the security solutions any of the existing infrastructure/ business of HPSLDC is impacted.

xv. All the services/Solutions in scope needs to be designed and implemented with adequate redundancy and fault tolerance to ensure compliance with SLAs for uptime.

xvi. Supply of required Infrastructure required for establishment of SOC.

xvii. Solution shall be latest and it shall have more than 5 years of life (i.e. "End of Support Life" for minimum 5 years from date of Go-Live)

6. Hardware Requirement:-

The scope essentially includes design, engineering, supply and commissioning ofnecessary hardware for installation and operation of the SOC components and integration of the same with the existing IT/OT Network of the HPSLDC.

The vendor must ensure that the hardware specification and sizing is sufficiently adequate to cater the requirement of installation and smooth operation of all the desired and functional features of this project till 5 years of operation of the supplied SOC. The hardware designed should be redundant in nature with minimum 30% additional capacity available for all individual components as well as for the system as a whole while running in peak load.

If the vendor feels that the tendered specification and sizing is not adequate to cater the requirement as indicated above, the vendor is liable to design the requirement and propose the higher specification and size of hardware felt suitable accordingly.

During the course of operation and maintenance of the SOC for the defined life cycle of 5 years, if the installed hardware fails to meet the requirement for full-load operation of the SOC with the desired redundancy and additional free capacity as indicated above, the vendor will be liable to provide the additional hardware required for compliance to the requirement at no extra cost.

6.1 Geographical Location

For the purpose of solution implementation, the location of different sites is as follows:

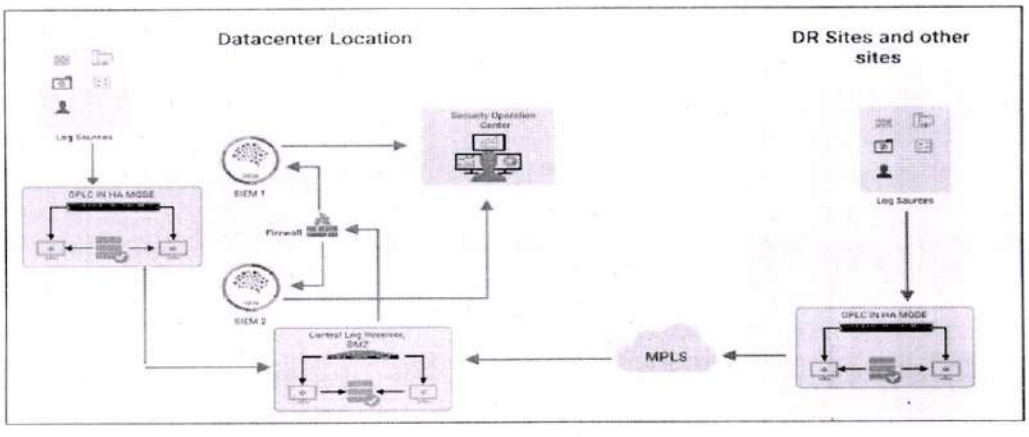
Main DC: HPSLDC Shimla

Disaster Recovery Site: SLDC Panipat and proposed DR at Hamirpur (H.P)

Provisioning of Logs collectors to collect logs of devices from different sites (main, backup control Centre of IT & OT) has to be considered to collect and send logs to SIEM which shall be installed in HPSLDC Shimla. Main and Backup Control Centers will be connected via existing HPSLDC Point-to-Point network (WAN). Necessary provision for triggered fail-over of the SOC operation to backup / DR site from main site should be considered in the design in case necessitates.

6.2 Design Considerations

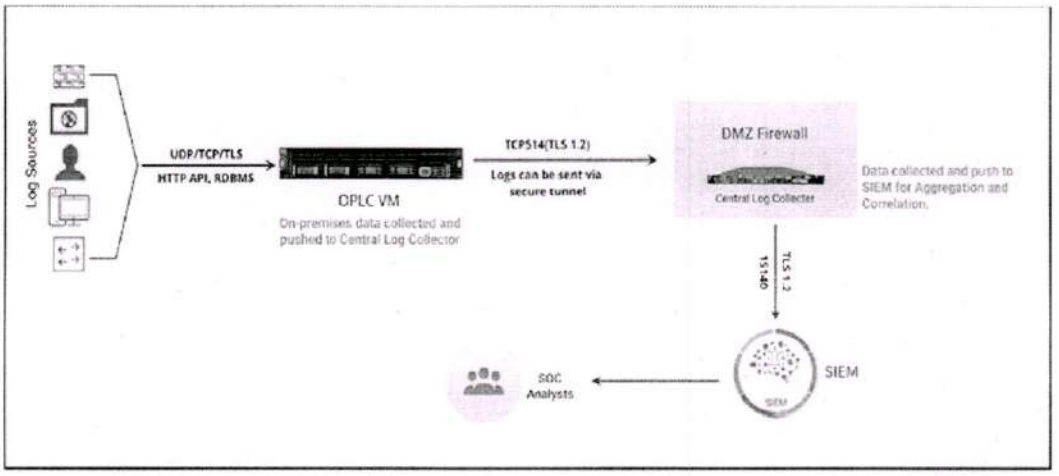
The solution to be designed & deployed at DC centers as per present industry best practices in their design document. Basic Architecture to be deployed is shown below.



Above High-level Diagrams show how the connection is established between DC and DR. Likewise other sites may also be connected (if applicable).

- ✓ SIEM Server, Central Log and On-premises Log collectors are built on VM with High-availability (HA)
- ✓ SLDC Remote Locations are connected VIA MPLS.
- ✓ All the device logs are collected in OPLC (on-premise Log collector) and pushed to the Central Log Receiver in DC.

The architecture for log collection at OPLC is represented below:



Provisioning of Log Collectors in HA to collect logs from envisaged sites and exchange of the same with DC.

i. If connectivity between log collector and logger is down then the Log collector should store the logs of at least five days and send them once connectivity is established.

ii. Collection of logs from multiple IT and OT systems.

iii. Dedicated dashboard for each site (there shall not be any restriction in user and site) shall be envisaged/developed, so that each site should have the visibility of their security alerts/incidents which shall also include report generation. Design, create and customize the dashboards as per the requirements during entire period of contract.

iv. NBAD and DAM (if required) shall be deployed at each site.

v. The SIEM solution should maintain minimum latest 3 (Three) Months of Online logs (Frequent Searches, Reporting & Threat Hunting) and rest of 9 (Nine) Months offline logs (Non-Frequent Searches, Threat Hunting & Forensic Investigation). Minimum 12 Months log must be available at any point of time.

The compression ratio between online logs and the archived / offline logs should be as per industry standard and should not be less than 70% of the raw log volume.

However, storage period 'online' or 'off-line' can be user adjustable for any defined period without requirement of any additional requirement

vi. Deployment of ticketing tool along-with the solution so that HPSLDC representative can report any security incident and track the status of incident. It shall also have auto escalation features based on the severity.

6.3 Scope of work for each security solution

6.3.1 Software

- **Security Information & Event Management (SIEM)**

The SIEM solution is expected to collect logs from security and network devices, servers, application security logs etc. installed at various locations of HPSLDC. In addition, the logs being generated by the solutions deployed as part of the SOC implementation, if any, need to be collected by the SIEM. It is expected to perform the following as part of the SIEM:

i. Implement SIEM solution at DC with log collectors at other HPSLDC locations.
ii. Implement Packet solution at DC.
iii. Integrate the identified devices/application/operating systems/database with SIEM.
iv. Integrate existing security solutions with the new solution with SIEM.
v. Integrate Application Logs with SIEM.
vi. Developing custom parsers for non-standard logs.
vii. Implement correlation rules out of the box and standard use cases.
viii. Implement and configure user and entity behavior analysis rules.

Storage

The SIEM should be able to maintain minimum latest 3 (Three) Months of Online logs (Frequent Searches, Reporting & Threat Hunting) and rest of 9 (Nine) Months offline logs (Non-Frequent Searches, Threat Hunting & Forensic Investigation) as per compression ratio indicated above. Minimum 12 Months log must be available at any point of time. In addition, after 12 months duration, logs shall be maintained on the other Drives to be provided by the HP SLDC. The solution should be capable of automatically moving the logs from online to archival drives based on the ageing of the logs. There should be a facility to load the old data from archival to replay the typical incident scenario.

The vendor should consider supply of adequate storage capacity to store the entire log for a period of 5 years from inception of the project with minimum 30% additional capacity as threshold.

- **User and Entity Behaviour Analystics (UEBA)**

UEBA will be deployed to profile and analyze the activities of users performing unexpected activities thereby showing signs of behavior different than their peers in same team, group, business/ IT unit or function, region, zone, delegated powers/authority etc.

i. Implement the solution across Data Center
ii. Integrate UEBA with other supplied and existing solution
iii. Implement out of the box supported multiple use-cases
iv. Validate and verify configuration and functionality
v. UEBA will be used to analyze the behavior of servers and user end device.

- **Security Orchestration, Automation and Response (SOAR)**

SOAR solution will be deployed to automate specific use cases to reduce time gap between incident detection, analysis and closure by continuous optimization of workflows, playbooks to lessen dependency on L1/L2 resources. SOAR should help HPSLDC to reduce mean time to detect (MTTD) and mean time to respond (MTTR). It is expected to perform the following as part of the SOAR solution:

i. Implement the solution across Data Center (DC).

ii. Integrate SOAR with other supplied and existing solution.

iii. Implement out of the box supported playbooks and custom playbooks

iv. Validate and verify configuration and playbooks functional

- **Network Behaviour and Anomly Detection (NBAD)**

NBAD solution will be deployed to monitor network for unusual events or trends by collecting flows from the network devices. This will help to detect anomalous traffic flows such as malware, identify user access policy violations, obtain deep and broad visibility into all network traffic

i. Implement the solution at DC.

ii. Integration of network devices and flow records collection.

iii. Configuration of policies for different segments and analysis of flows.

iv. Integrate with SIEM to enrich the security alerts and for early detection and response to the threat and also to provide single view of solution.

v. The NBAD solution should utilize standard methodologies/ models to reduce false positives and reduce error rates.

vi. Fine tune the baseline profile for network access.

vii. Identify the network baseline and configure the NBA policies.

- **Database Activity Management (DAM)**

The proposed Database Activity Management solution should be able to address the following key areas but not restricted:

i. Creation of an inventory through auto discovery of all databases and database users, deployed across the enterprise. Discovery of sensitive data.

ii. Discovery of vulnerabilities, missing patches.

iii. Creation of policies/rules for enforcing access control and proper rights management on databases.

iv. Monitoring access to databases, database activities, blocking unauthorized access / activities and segregation of duties.

v. Reporting of deviations to the policies and access control.

vi. Masking of sensitive data in output.

vii. Virtual patching of database for known missing patches.

viii. Complying with relevant regulatory demands.

ix. Help enhance forensic capability along with supporting solutions.

x. Monitor events from DAM and suggest/ take appropriate action to HPSLDC on an on-going basis.

xi. Improve the policies configured on an on-going basis to reduce the occurrence of false positives.

6.3.2 Hardware

i. Required adequate computation and storage for successful implementation of the proposed solution along with workstations, Video Projection Display and Operator Consoles.

ii. All the servers (physical as well as VM), Collectors etc., shall be redundant and be able to operate

in HA. The infrastructure should be designed using minimum 2 nodes HCI (Hyper converged infrastructure) cluster with redundant SAN storage / V-SAN.

iii. Hardware shall be compliant with ISO 27001, CERT-In, NCIIPC, CEA Cyber Security Guidelines 2021, Any cyber-Security regulations issued by CEA/CERC in due course.

iv. Operator Console hardware configuration shall support seamless operation with various software Tools supplied and for maintenance of SOC and should be industrial class workstation capable of performing 24 x 7 x 365.

7. Infrastructure

7.1 Wall Unit & Workstations

i. Wall unit gives operators a top-line view of mission-critical information. Control room operators need this high-level view to simultaneously access data streams of all types in real time. With a comprehensive array of information, operators get a broader understanding of what's happening during an incident, allowing for better informed decision- making in moments of crisis.

ii. Charts, graphs and indices on digital dashboards used in control room environments reflect real-time snapshots of statuses, trends, alerts, key performance indicators (KPIs) and activities. Smaller screens on walls and at workstations provide complementary information, allowing users to focus on specific tasks and information streams

iii. Hence, wall unit & workstations shall be designed and positioned appropriately and shall have long life.

iv. Dashboard should be customized and designed to provide necessary insight and alerts on real-time basis.

7.2 Miscellaneous

i. Aesthetically designed cable trenches if needed with false flooring.

ii. Provision for Separate and suitably identified cabling for LAN & Power cable should be considered within the scope of the contract.

7.3 Warranty / Maintenance and Support

i. The contract is to be operated on single responsibility basis. The availability of all the solutions supplied under the contract is the essence of the contract. The maintenance of all the supplied system is comprised of all activities required to keep the above systems up and running all the time at an optimum level by proactive monitoring, diagnosis and rectification of any failure of all the hardware(s)/ software(s).

ii. Management, Maintenance and Configuration of the newly delivered systems for the entire contract period (Management and Configuration scope is also included for existing Information Security Infrastructure). The support to be provided to HPSLDC should be on a 24x7 Onsite basis.

iii. Support shall be provided to ensure an uptime of 99.9% for the supplied solution.

iv. This part of this section covers the various type of supports to be provided during the 24x7 Operations and Maintenance of SOC along-with other scope of work specified under the contract.

7.4 Scope of work during Warranty & Support Period

The detailed scope of services to be provided after Go-Live, shall include but not limited to the following:

i. Maintenance of all the components of the Security Solutions

ii. All proposed solution should have five year onsite & comprehensive warranty.

iii. 24*7*365 support for all the security application related malfunctions and ability to log requests online.

iv. System administration tasks including regular backup of system, restoration, installation, health check etc.

7.5 Manpower During Maintaince Contract

A team of qualified, trained, and certified professionals shall be deputed at HP SLDC premises as per the resource positioning table given below:

a. Qualification and skill requirements of the onsite resources are as under:

Sr. No.	Job Profile	Qualification and Skills
1	L1	• B.E. / B.Tech. / MCA. • More than 3 years of IT experience, out of which at least 1 years will be on Security domain and in dealing with SOC systems on proposed OEM.
2	L2	• B.E. / B.Tech. / MCA. • More than 5 years of IT experience, out of which at least 3 years in dealing with SOC systems and operations (SIEM, log monitoring, event correlation, analysis etc). • Professional certification (1 or more of the following) such as CEH/OSCP/CCSP + OR OEM certifications for the product being proposed as part of the solution.

b. Brief activities to be performed by various level of resources deployed at SOC are:

- **L1 Resources:** The operations monitoring/L1 team shall oversee the tools monitoring and daily operations of the NG-SOC and manning the helpdesk and work as per industry best practices. The team shall comprise of 24x7 resources, supported by an L2 analyst.
- **Level-2 (L2) Resources:** This team shall handle the responsibility of NG- SOC Analyst. Shall be responsible for tools Managing & Threat Hunting and Analytics behavior and Handling critical issues. Risk and incident management for security events and the execution of proper responses to those events. They are expected to closely work with the other teams, proactively advice HPSLDC on security incidents and threats. L2 resources should showcase multi domain expertise in fields like SIEM, SOAR, NBAD, UEBA, DAM and should be capable to resolve the complex incidents with Root Cause Analysis and event correlations.

8. Work Schedule

Phase	Duration in Months													
	1	2	3	4	5	6	7	8	9	10	11	12	13-24	25-36
Phase I														
Phase II														
Phase III														
Phase IV														
Phase V														
Phase VI														
Phase VII														

Phase	
Phase I	Infrastructure Setup
Phase II	Supply of all Solutions, Hardware
Phase III	Installation, Configuration, Integration, Implementation, Documentation, Testing.
Phase IV	Documentation, Testing (Final Acceptance Test (FAT)) and Training
Phase V	Go-Live
Phase VI	Tuning of SOC: a. SIEM - Event Log Collection & Management b. SOAR – Automation of actions c. UEBA – Analysis of high-risk entities / users d. NBAD – Network security threat detection e. DAM - Database Activity Management
Phase VII	AMC

9. List of existing IT & OT System

Information Technology (IT)

Name of theOrganization	Description	Quantity
HPSLDC	Router	1
	Network Switch	10
	Firewall	2
	Server	22
	Storage	1
	Database	4
	End-point Users	60
	Anti-virus	2
	APT (Sandbox)	1

Operation Technology (OT)

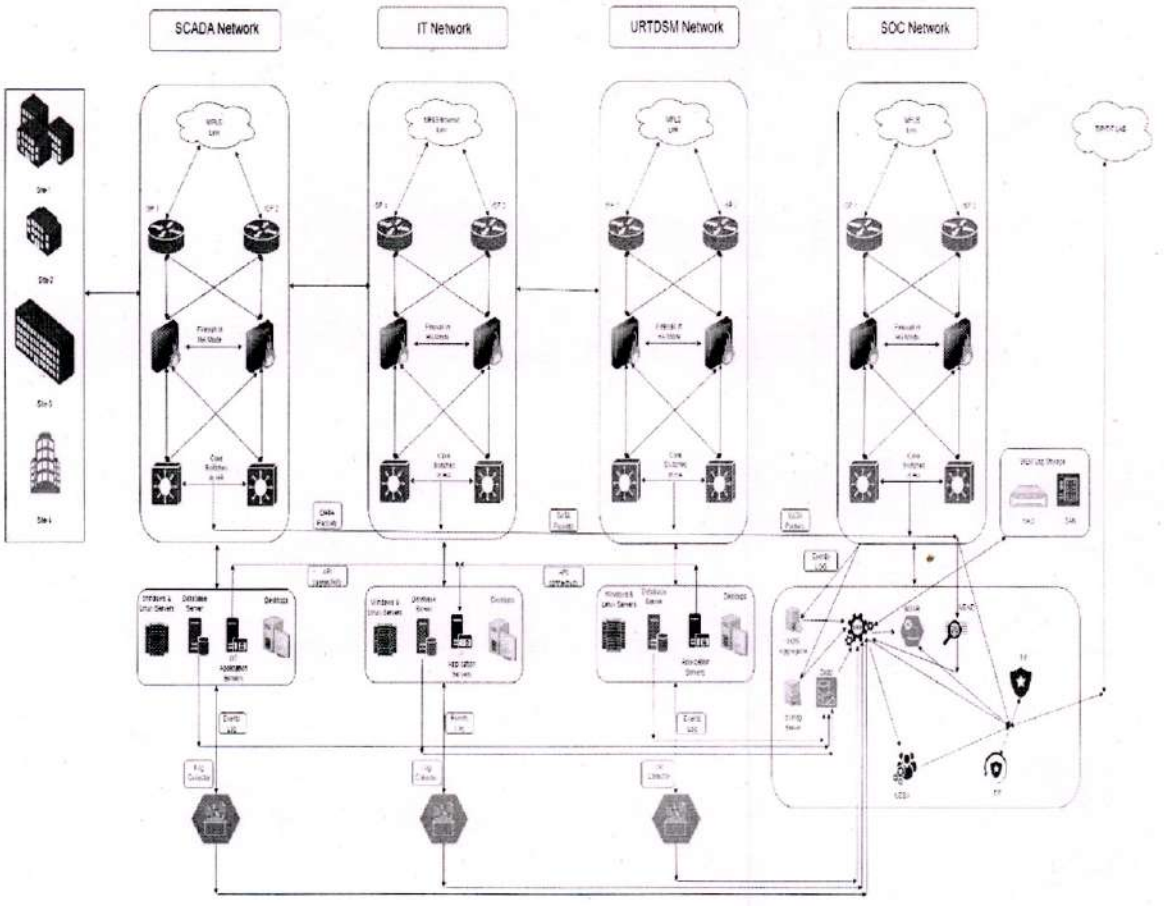
Name of the Organization	Description	Quantity
HPSLDC	Router	8
	Network Switch	28
	Firewall	6
	Server	49
	Storage	6
	Database	6
	End-point Users	28
	Anti-virus	2

10. EPS Calculation Sheet

EPS CALCULATION FOR IT SYSTEMS									
S.No	Devices	No Of Raw Data Source	Raw Data Rate (per sec) per Sources (EPS)	Avg Raw Data Size (Bytes)	Aggregated Raw Data Rate (per sec) For ingestion into SDL	Aggregated Raw Data Rate (KB per sec) For ingestion into SDL	Processed Data Overhead(multiplier) for metadata, indexes etc	Aggregated Processed Data Size (KB per Sec) including overhead	Aggregated Data Volume (GB) to be stored in SDL per day
1	Windows Server	20	15	500	300	146.48	1.6	234.38	19.31
2	Linux server	12	3	500	36	17.58	1.6	28.13	2.32
3	Anitvirus Server	2	20	500	40	19.53	1.6	31.25	2.57
4	Database server	2	1	500	2	0.98	1.6	1.56	0.13
5	Windows Desktop	120	0.25	500	30	14.65	1.6	23.44	1.93
6	Router & Switches	10	2	500	20	9.77	1.6	15.63	1.29
7	Access Point	10	5	500	50	24.41	1.6	39.06	3.22
8	Firewall	2	150	500	300	146.48	1.6	234.38	19.31
9	VPN	30	5	500	150	73.24	1.6	117.19	9.66
10	Anit-APT	1	5	500	5	2.44	1.6	3.91	0.32
					933				60.06

EPS CALCULATION FOR OT SYSTEMS									
S.No	Devices	No Of Raw Data Source	Raw Data Rate (per sec) per Sources (EPS)	Avg Raw Data Size (Bytes)	Aggregated Raw Data Rate (per sec) For ingestion into SDL	Aggregated Raw Data Rate (KB per sec) For ingestion into SDL	Processed Data Overhead(multiplier) for metadata, indexes etc	Aggregated Processed Data Size (KB per Sec) including overhead	Aggregated Data Volume (GB) to be stored in SDL per day
1	Windows Server	20	15	500	300	146.48	1.6	234.38	19.31
2	Linux server	50	3	500	150	73.24	1.6	117.19	9.66
3	Anitvirus Server	2	20	500	40	19.53	1.6	31.25	2.57
4	Database server	2	1	500	2	0.98	1.6	1.56	0.13
5	Windows Desktop	50	0.25	500	12.5	6.10	1.6	9.77	0.80
6	Router & Switches	35	2	500	70	34.18	1.6	54.69	4.51
7	Access Point	10	5	500	50	24.41	1.6	39.06	3.22
8	Firewall	3	150	500	450	219.73	1.6	351.56	28.97
9	VPN	0	5	500	0	0.00	1.6	0.00	0.00
10	Anit-APT	0	5	500	0	0.00	1.6	0.00	0.00
					1074.5				**69.17**
		Total EPS			2007.5				

11. Architectural Diagram of Proposed SOC Solution



भारत सरकार
Government of India
राष्ट्रीय महत्वपूर्ण सूचना अवसंरचना संरक्षण केंद्र
National Critical Information Infrastructure Protection Centre
(A Unit of NTRO)

Subject: Notification of Identified Critical Information Infrastructure (CIIs) in respect of Himachal Pradesh State Load Dispatch Centre (HPSLDC) as Protected System

Please refer various meetings held between HPSLDC, HPPTCL and NCIIPC towards identification of CII.

2. In this regard, joint evaluation was carried out by HPSLDC, HPPTCL and NCIIPC towards identification of CII, where the following systems at State Load Despatch Centre (SLDC), Shimla, Himachal Pradesh are identified to be CII:

(a). Supervisory Control and Data Acquisition (SCADA) System

(b). Unified Real Time Dynamic State Measurement (URTDSM) System

(c). Scheduling, Accounting, Metering and Settlement of Transactions (SAMAST) System

3. As per information given to NCIIPC, at present, there is no separate centralized SCADA system at HPPTCL for Transmission asset monitoring.

4. HPSLDC may get the above CIIs and the Computer resources of its associated dependencies notified as Protected System by Department of Multi-Purpose Projects & Power, Government of Himachal Pradesh.

5. Further, the State Government may, by order in writing, authorize the person who are authorized to access the notified protected systems.

(Lokesh Garg)
DDG, NCIIPC
011-26162269

No. XXXII/08/P&E/HPSLDC

10 June 2022

To,
Chief Information Security Officer (CISO), Sr. Xen (SCADA & Logistics),
Himachal Pradesh State Load Despatch Centre,
GoHP, SLDC Complex TOTU, Shimla, Himachal Pradesh – 171 011

NCIIPC, Block III, Old JNU Campus, New Delhi-110067,
Email : helpdesk2@nciipc.gov.in

केन्द्र, शिमला में स्थापित महत्वपूर्ण सूचना अवसंरचना प्रणाली (Critical Information Infrastructure, CII) में समावेषित निम्नलिखित प्रणालियों व इनसे सम्बन्धित / निर्भर कम्प्यूटर, कम्प्यूटर प्रणालियों या कम्प्यूटर नेटवर्क, को एतद्द्वारा संरक्षित प्रणालियां घोषित करती है:—

(क) पर्यवेक्षी नियंत्रण और डेटा अधिग्रहण (SCADA) प्रणाली

(ख) यूनिफाईड रियल टाईम डायनेमिक स्टेट मेजरमैंट (URTDSM) प्रणाली

(ग) शेड्यूलिंग अकाउंटिंग मिटरिंग और सेटलमेंट ऑफ ट्रांजक्शन्स (SAMAST) प्रणाली

यह अधिसूचना हिमाचल प्रदेश के राजकीय राजपत्र में प्रकाशित होने की तारीख से प्रवृत्त होगी

आदेश द्वारा,

आर० डी० धीमान,
मुख्य सचिव (विद्युत)।

[Authoritative English text of this Department Notification No. MPP-F(10)-13/2022, Dated 19- 09 -2022 as required under clause (3) of the Article 348 of the Constitution of India].

MPP & POWER DEPARTMENT

NOTIFICATION

Shimla-02, the 19th September, 2022

File No. MPP-F-(10)-13/2022.—As per provisions contained in Section 70(1) of the Information Technology Act, 2000 (21 of 2000), the Government of Himachal Pradesh hereby declares the following systems and its associated dependencies, computer, computer systems or computer networks, being Critical Information Infrastructure (CII) installed in the Himachal Pradesh State Load Despatch Centre Shimla, as Protected Systems:—

(a) Supervisory Control and Data Acquisition System (SCADA)

(b) Unified Real Time Dynamic State Measurement System (URTDSM)

(c) Scheduling Accounting Metering & Settlement of Transactions System (SAMAST)

This notification shall come into force on the the date of its publication in the official Gazette of the Govt. of Himachal Pradesh.

By order,

R.D. DHIMAN,
Chief Secretary (Power).

पावर सिस्टम ऑपरेशन कॉर्पोरेशन लिमिटेड
(भारत सरकार उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Government of India Enterprise)

केन्द्रीय कार्यालय : 61, आई एफ सी आई टावर, 8 एवं 9वी मंजिल, नेहरू प्लेस, नई दिल्ली–110019
Corporate Office : 61, IFCI Tower, 8 & 9th Floor, Nehru Place, New Delhi - 110019
CIN : U40105DL2009GOI188682, Website : www.posoco.in, E-mail : posococc@posoco.in, Tel.: 011-40234672

संदर्भ/Ref: CC/Engineering/Sep2022/GERT-GO/NewDPR **दिनांक/Date**: 19th Sep 2022

सेवा में/To

As per Distribution List-1

विषय/ Subject: Provision for Implementation of Security Operations Center (SOC) through PSDF

महोदया/ महोदय / Madam/ Sir,

During the 18th meeting of Monitoring committee of PSDF, held on 26th July 2022, it was decided that 100% of the project cost for the implementation of Security Operations Center at SLDCs for real time cyber security monitoring may be funded through PSDF for the period from 2021-22 to 2025-26. Letter from PSDF Secretariat, POSOCO mentioning the same is attached for kind reference.

In this regard, SLDCs willing to implement, may prepare and submit DPR to the respective nodal agency on the SOC implementation project for evaluation for funding through PSDF.

सादर एवं आभार,
के मुरलीकृष्णा
के मुरलीकृष्णा /K Muralikrishna
सीसो, पोसोको

Copy for kind information:

1. CMD, POSOCO, Katwaria Sarai, New Delhi – 110016
2. General Manager (PSDF), NLDC, New Delhi – 110016
3. As per Distribution List -2

POWER SYSTEM OPERATION CORPORATION LIMITED
National Load Despatch Centre
(Designated as Nodal Agency in accordance with Regulation 5 of CERC (PSDF) Regulations, 2014)
(PSDF-Secretariat)

Office Address: B-9, 1st Floor, Qutab Institutional Area, Katwaria Sarai, New Delhi - 16
Tel: 011-26524821, 26536959 Fax: 011-26524525, 26536901
Website: https://psdfindia.in/ Email: psdf@posoco.in ; nldc.psdf2020@gmail.com

Ref: NLDC-PSDF/18th MoC/2022/13 **Dated: 10th August 2022**

To,

As per the distribution list

Subject: Regarding submission of new DPRs for PSDF Funding-reg.

Sir,

During the 18th meeting of the Monitoring Committee of PSDF held on 28th July 2022, the following category of projects were identified for funding through PSDF for the period from 2021-22 to 2025-26.

Sr. No	Identified Project type	Remarks
1	Pilot Project for Dynamic Line rating in each region.	50% may be funded
2	Development / converting Islanding scheme with adaptive load management	50% may be funded
3	Security Operation Centre at SLDCs for real-time cyber monitoring	100% may be funded
4	Communication for AMR and Real-time Telemetry & 100% visibility of Grid.	50% may be funded
5	Capacity Building for central/state utilities	100% may be funded

Accordingly, the DPRs on the above-identified projects are invited from the Entities for evaluation for funding through PSDF. The DRPs can be submitted by the individual entity or by SLDC/RLDC/NLDC/Central utility.

In view of the above, it is requested that the entities may submit the DPRs to Nodal Agency at the earliest.

Thanking You,

Yours faithfully
17/8/2022
(Suhas Dambhare)
General Manager- PSDF
NLDC-POSOCO

Encls: a/a

Copy for Kind Information to:

1. **CMD-POSOCO**
2. **ED-NLDC, POSOCO**

Distribution List:

All PSDF Project entities

Bill of Quantity for the Proposed SOC Establishment

Sr No.	Description	Unit	Qty	Unit Rate(in Rs.)	Total Cost including GST @ 18%(in Rs.)
A	**Cost of the Software & Hardware including 5 years Back-to-Back OEM Warranty / Support & Product Update(Considering 3000 EPS Count)**				
1	Next Generation Security Information and Event Management (NG SIEM)	**Lot**	**1**	1,58,47,458/-	1,87,00,000.00
2	Security Orchestration, Automation and Response (SOAR)	**Lot**	**1**	89,83,051/-	1,06,00,000.00
3	Network Behaviour Anomaly Detection (NBAD)	**Lot**	**1**	92,37,288/-	1,09,00,000.00
4	User and Entity Behaviour Analytics (UEBA)	**Lot**	**1**	83,05,085/-	98,00,000.00
5	Database Activity Monitoring (DAM)	**Lot**	**1**	1,00,00,000/-	1,18,00,000.00
6	2x2, 55-inch Video Wall with CPU	**No.**	**1**	60,00,000/-	70,80,000.00
7	24x7 Workstation	**Nos.**	**4**	1,50,000/-	7,08,000.00
8	Log Collectors in HA (in active-passive Pair mode of operation)	**Pair**	**6**	8,00,000/-	56,64,000.00
9	Necessary Server & storage infrastructure / Hyper Converged Infrastructure for complete SOC Solution (working in HA mode at DC with minimum N-1 redundancy) along with necessary Licensing for hypervisor kernel and Server OS platform	**Lot**	**1**	85,49,763/-	1,00,88,720.00
10	Firewall on HA (in active-passive mode pair of operation) with 5 year support & subscription	**Pair**	**1**	45,76,271/-	54,00,000.00
11	Server Rack	**Nos.**	**2**	6,00,000/-	14,16,000.00
12	Switches & Router	**Lot**	**1**	26,00,000/-	30,68,000.00
13	Cable & accessories	**Lot**	**1**	4,00,000/-	4,72,000.00

14	Installation, configuration and training	**Lot**	**1**	55,96,000/-	66,03,280.00
B	**SOC Operational Cost**				
1	Comprehensive Operation and Maintenance cost along with deputation of outsourced technical experts for operating the SOC 24x7 (1 Level 1and 1 Level 2 resources round the clock)	**Months**	**24**		1,70,00,000.00
Total					**11,93,00,000**

Technical Specification for SOC

1. SIEM Technical Specification

Sr. No	Specifications
	General Requirement
1	SIEM solution must be dedicated on premise solution.
2	Bidder should ensure OEM support for the solution and the escalation matrix in regard to 24*7 support is also required to be submitted.
3	The solution must support automated identification and classification for type of assets (i.e. servers, network devices, mail servers, data base servers etc.,)
4	The solution must provide the ability to encrypt communications on the network between SIEM components and SIEM.
5	The solution must ensure all distributed system components continue to operate when few parts of the NG-SOC solution fails or loses connectivity (i.e. management engine goes off-line all separate collectors continue to capture logs).
6	The solution can be software based with hardened OS or big data- based platform or equivalent technology. Clearly elaborate the components constituting SIEM. Mention in detail associated infrastructure expected from Owner for effective functioning of SIEM.
7	High-Level Diagram to be submitted for SIEM solution ensuring no data loss and optimal bandwidth utilization in WAN and LAN.
8	The solution should demonstrate 'ease of use'. Ease of use is critical to the successful deployment and on- going use of the solution.
9	The solution should allow a wizard-based interface for rule creation. The solution should support logical operations and nested rules for creation of complex rules.
10	Collection, Co-relation and Console layer should be physically and logical separate.
11	The solution should support log collection, correlation and alerts for the number of devices mentioned in scope. SIEM Solution should have an OOTB bidirectional integration with Threat Intel Platform . SIEM Soltuion should have a common interface with NBAD and UEBA solution to give analyst a consolidated view of investigation. All the components should be able to managed from a single GUI driven console.
	Log Management
12	The SIEM should support a Sustained EPS of 3000 EPS / 150 GB per day considering a byte size of 500 bytes at all layers from day one. It should be able to handle a burst of 1.5 times of the sustained EPS in real time at any given point in time without any drop or queuing of events. Solution should have 3000 EPS /150 GB per day capacity across all layers of the solution i.e. log collection, core Netflow logs, correlation and management respectively. Architecture, licensing and hardware & software sizing must be designed and planned accordingly. There should be no limitation on number of devices to be integrated. Scalability :Solution should also support future expansion of 30000 EPS/ 1500 GB per day by only adding software license and underlying hardware(Compute and Storage). There should not be any restriction forcing buying of new stack from scratch to support expansion upto 30000 EPS/1500 GB per day .

13	Raw and normalized Logs should be handled and stored in tamper proof way across SIEM solution. alter/modify tamper rights w.r.t Raw logs. SIEM should support syslog over TLS to ensure that logs can be transported in a confidential manner
14	The solution must provide a complete audit trail and accountabilityduring the incident handling for forensic investigations. The system should have ability to perform event forensics to determine what really happened before, during, and after the event.
15	The solution should be customizable to accept and process unknown log formats.
16	The solution must provide capabilities for time stamping, efficient storage and compression (minimum 20%) of collected data.
17	The solution must support/normalize event time stamps across multiple time zones.
18	The system should provide the ability to write a custom parser or filter for an unknown new event and a new log source.
19	The solution shall allow bandwidth management, rate limiting, at the log collector level.
20	SIEM should have the ability to natively collect logs from logstash.
21	The solution must have an automated backup/archival/ recovery process. Please mention expected downtime for backup/ archival/ recovery process.
22	The solution must provide near-real-time analysis of events. Mention lag, if any, between the actual event and its reporting with analysis
23	The solution should provide the ability to aggregate and analyze events based on a user specified filter. Give the list of in-built filters (IP addresses, usernames, MAC address, log source, correlation rules, user defined, etc.) available. Also explain the ease of use of filters.
24	Log Management Automation: The proposed solution must provide a log management solution and must retain minimum of latest 3 (Three) Months of Online logs (RAW + Normalized) and rest of 6 (Six) Months. Minimum 9 Months log must be available at any point of time.However, if Owner wish to store online/offline logs for more duration, it shall be possible without any cost implication. Owner will provide required hardware to store the Online and Offline logs.
25	Universal Log Analysis: The proposed solution must contain system content that can be used for cyber-security, compliance, application and IT & OT operations monitoring and must support additional content specific to regulations like ISO27001, IT-Act etc..
26	Log Data Integrity: The proposed solution must provide audit quality integrity and alerting mechanisms in case of any access/change.
27	Search Performance – Structured Data: The proposed solution search performance must be capable of searching through millions of structured (indexed) events
28	Search Performance – Unstructured Data: The proposed solution search performance must be capable of searching through millions of unstructured (raw) log messages
29	Saved Search Filters: The proposed solution must provide a simple, intuitive way of allowing users to save search filters for later use and to be shared with other authorized users.
30	Historical Analysis: The proposed solution must be capable of processing and storing large volumes of historical log data that can be restored and analyzed for forensic investigation purposes.
31	**Remote File System**: The proposed solution must provide a web interface for mapping to remote file systems using NFS or CIFS to backup log data or read raw log files into the system.
32	Retention Policies: The proposed solution must provide the ability to define multiple retention policies based on time periods, storage allocation, device type, governance, etc.
33	Retention Enforcement: The proposed solution must enforce data retention policies automatically without necessitating manual data disposition or clean –up efforts.
34	Retention Policy Suspension: The proposed solution must provide

	the ability to suspend the retention policy manually and allow administrators to increase the retention period dynamically for the purpose of evidence preservation in the event of pending litigation.
35	All data including logs, alerts etc. should be extractable & exportable without OEM dependent tools & techniques.
36	Shall support vulnerability scanning, management and reporting.
	Event & Log Collection
37	The proposed SOLUTION must provide the following capabilities: Incident review framework to facilitate incident tracking, investigation, pivoting and closure.
38	Solution should support the collection application log data from custom / in-house developed web applications, with or without explicit custom parser development.
39	The solution should provide time based and forward feature at each log collection point.
40	The solution should be able to collect and process raw logs in real- time from any IP Device including Networking devices (router/switches/voice gateways), Security devices (IDS/IPS, AV, Patch Mgmt, Firewall/DB Security solutions), Operating systems (Windows (all flavors), Unix, LINUX (all flavors), AIX etc), Mainframe(z/196), Virtualization platforms, Databases (Oracle, SQL, DB2 etc.), Storage systems, and Enterprise Management systems etc.
41	The solution should be able to conduct agent less collection of logs except for those which cannot publish native audit logs. SIEM should have the ability to natively parse JSON formatted logs. SIEM should have the ability to natively collect logs from logstash
42	The system should support, not restricted to, the following log and event collection methods: ▪ Syslog – UDP and TCP ▪ Flat file logs such as from DNS, DHCP, Mail servers, web servers etc. ▪ Windows events logs – Agent-based or agent- less. ▪ FTP, S/FTP, SNMP, ODBC
43	Distributed Event Processing: The proposed solution must collect logs in a distributed manner, offloading the processing requirements of the log management system for tasks such as filtering, aggregation, compression and encryption.
44	Custom Collection API: The proposed solution must have a software tool to allow customers to create integration with unsupported legacy or internally developed event sources. The software tool must allow customers to integrate with Syslog, log files, databases etc. and support the ability to parse multi -line log files.
45	Categorized Event Data: The proposed solution must categorize log data into an easy-to-understand humanly-readable format that does not require knowledge of OEM-specific event IDs to conduct investigation, define new correlation rules, and/or create new reports/dashboards.

46	Secure Transport: The proposed solution must provide encrypted transmission of log data from device to SIEM system. Solution should support data obfuscation and masking to support privacy requirements
47	Collection Health Monitoring: Any failures of the event collection infrastructure must be detected immediately and operations personnel must be notified via various communication mediums such as e -mail, ticket etc. Health monitoring must include the ability to validate that original event sources are still sending events.
48	Event Aggregation: Aggregation must be flexible in which normalized fields can be aggregated and provide the ability to aggregate in batches or time windows.
49	Compression: Proposed solution should allow compression to conserve bandwidth.
50	Raw Event Data: proposed solution must support the option of collecting raw event data using Syslog, FTP, SCP, SNMP protocols, and any other protocol required for collection of logs etc. This ensures original audit quality data is available for forensics.
51	Windows Event Logs: The proposed solution must be able to integrate with a Windows Domain in an agent-less fashion and collect the event logs from multiple systems without requiring any agents to be installed on the end devices.
52	Time Correction: The proposed solution must be capable of collecting event time for systems along with collection time and alerting time. This allows integrity for forensic analysis to determine the original time of the event source and what the system time was for each system component processing the event.
53	Centralized Management: The proposed solution must be managed centrally to configure all features, backup configurations and push software updates etc. using one centralized interface.
54	The solution proposed should collect and analyse audit trails logs and Netflow information (all types of logs – ODBC, SDEE, Syslog, Checkpoint etc.) to detect malicious or abnormal events and raise the alerts for any suspicious events that may lead to security breach in the scoped environment.
55	SIEM should have the ability to integrate/leverage technologies like Apache's Kafka and/or NiFi for data collection and enrichment.
56	***Support for operational technology (OT) and Internet of Things (IoT) technologies and environments (e.g., ICS/SCADA).***
57	The EPS burst should be processed in real time without dropping or queuing to ensure real time analysis of threat.
58	A template for each application should be made consisting of format of log and type (IIS, https, transaction log, login/logout audit log for each application etc..) , future applications(NOAR etc..)should be be able to send log data to SIEM through log collection APIs.
	Correlation
59	Correlation Rules: The proposed solution must provide many correlations rules out-of-the-box to automate the incident detection and workflow process. SIEM Correlation engine should have feature to configure memory threshold for each rule created to avoid a bad rule taking too much memory and causing performance issue

60	Cross-Device Correlation: The proposed solution must be capable of correlating activity across multiple devices out-of-the-box to detect authentication failures, perimeter security, worm outbreaks and operational events in real -time without the need to specify particular device types.
61	The solution should have intelligence to minimize false positives alerts, correlate and deliver accurate alerts. SIEM Correlation engine should have the ability to test the correlation rule with old logs before putting the rule in production
62	The solution must support the ability to correlate against vulnerability assessment tool. The solution should have ability to correlate logs and packet data together in a singular rule for alerting to support real time correlation and detection in a single console.It should have the ability to correlate network flows and network payload to support real time detection.
63	The solution must monitor and alert when there is a disruption in log collection from a device. In other words, if logs are not seen from a server in five minutes then generate an alert.
64	The solution must support correlated incidents for applications, databases, servers, networks etc. based on feed from other solutions like PAM, WAF, VAPT, NBAD, TIP, Threat hunting Centre and UEBA.
65	The solution must provide many correlations rules out-of-the-box.Again, option of reating/configuring new rules must be available. Please provide the complete list/count of rules which are available out of the box from the system
66	The solution should have out-of-box rules for popular IDS,firewalls, antivirus, operating systems, etc. Documentation of the correlation rules should also be provided.
67	The solution should have intelligence to extract Information from leading global intelligence sources, proposed threat intelligence platform and use it for valid correlation.
68	The system should provide the capability for correlate and identify zero-day threats on the network.
69	The system should have ability to perform multiple event correlation to process all time and transaction- based events to provide actionable data and incident awareness.
70	The system/solution should have the ability to correlate all the fields in a log.
71	Events should not be dropped if its exceeding the EPS limitation for the period of 48 Hrs.
72	The solution must provide a mechanism to capture all relevant aspects of a security incident in a single logical view. This view should include relevant events, network activity data, correlated alerts, vulnerability data, etc.
73	Future Proofing: The proposed solution must provide a level of confidence that reporting will continue to work and not have to be modified if a particular technology, such as a Firewall or IDS product, is replaced with a newer product or OEM. The reports should continue to run and include the new technology into the report criteria automatically.
74	Custom Dashboards: The proposed solution must provide the framework to create custom visual displays for any business group using user provided images and backgrounds to support security operations, business workflow, risk management and branding use cases.
75	Dashboard Drill-Down: The proposed solution must provide the

	ability to allow analysts to drill -down from graphical dashboards to the underlying event data.
76	Correlation Flexibility: solution must be capable of running cross device correlation, real time correlation, and historical correlation at the same time.
77	Session Correlation: The proposed solution must provide the ability to correlate DHCP, VPN and Active Directory events to provide session tracking for every user in the enterprise. This is essential for pinpointing who was using a particular workstation historically during an incident investigation.
78	Correlation Performance: The proposed solution must be capable of efficiently presenting categorized data to the correlation engine to allow real -time detection and response.
79	Rule Chains: The system must provide the ability to allow rules to be triggered in a series, matching various correlation activity before an alert is generated.
80	Alert Thresholds: The proposed solution must provide the ability to aggregate and suppress alerting with granular options and use conditional logic to determine if an alert should be generated.
81	Re-Usable Content: The solution must allow users to create objects such as filters or search queries that are reusable throughout the system.
82	Content Editor: The proposed solution must provide a common interface to create or modify resources within the system. All aspects of this editor must apply to the development of rules, reports, dashboards and any other resource that will be created in the system.
	Alerting
83	The solution must provide real time alerting based on observed security threats. The critical alerts should be transmitted using multiple protocols and mechanisms such as email, SMS, voice call etc. based on agreed policies.It should have a single console for Logs, Packets, UEBA to allow an analyst to do real time analysis and correlation for faster detection and investigation
84	The solution should have option to assign priority against the alerts to allow prioritization based on multiple configurable characteristics such as asset type, protocol, application, etc.
85	**Real-Time Alerts:** The proposed solution must be capable of generating alerts based on filter pattern matches for operational health monitoring.
86	**Alert Filters**: The proposed solution must provide pre - defined alerts and provide the ability to re-use pre-defined filters and own created filters as alert criteria.
87	**Alert Delivery**: The proposed solution must provide options of how alerts are delivered to operations or security personnel. At a minimum the options must include reporting to the web console, send an email, generate an SNMP trap to an external management system, and send alert on mobiles. The solution must be capable of doing all these concurrently for each alert.
88	The solution must provide a mechanism to capture all relevant aspects of a security incident in a single logical view. This view should include relevant events, network activity data, correlated alerts, vulnerability data, etc.

	Reporting
89	The centralized web based/console user interface should drill down on reports and incident alerts on real time basis with full filtering Capabilities
90	The solution must provide reporting engine for out-of- box reports, customized reports, ability to schedule reports, compliance reports, historical trend reports with the following options: 1. Detailed reports of non-compliant activities and policy violations in the network. 2. Historical system-based, user-based and network-based event data for compliance auditing. 3. Information about threat response and mitigation measures carried out to prevent attacks. 4. The solution must provide reporting engine for out-of-box reports,customized reports, ability to schedule reports, compliance reports, historical trend reports etc. 5. The solution should provide out of box templates for reports on ISO, PCI, SOX and other standards. 6. The solution must support direct drill-down from the reports and charts to the underlying session traffic. 7. The system should allow scheduling reports. 8. Reports should be available in pdf/csv format.
91	Reports should be possible to be scheduled and mailed across to the requisite person.
92	All out of box content should be made available for use as and when published by the OEM
93	The solution should provide out of box templates for reports on ISO 27001 standards at no additional cost.
94	**Pre-Defined Reports**: The proposed solution must provide pre-defined, out-of-the-box reports for Operations, Security and Compliance that can easily be modified.
95	**Customized Reports**: The proposed solution must provide the ability for customers to create their own reports with report templates, reporting wizard as well as an advanced interface for power users to create their own custom report queries.
96	**Report Export**: The proposed solution reporting function must be capable of exporting reports in various formats. Report formats should be, excel, csv, Adobe Acrobat (.pdf) etc. The reporting function should also allow the reports to be run and viewed ad - hoc by user as well.
97	**Report Scheduling**: The proposed solution must provide the ability for customers to schedule and email reports to run hourly, daily, weekly or monthly as an attachment. There must be numerous output formats and delivery options for scheduled reports.
98	**Run-Time Report Options**: The proposed solution reporting engine must provide the ability to filter, highlight, and modify variousreport functions at runtime. This should include the ability to selectively define which device group or storage partition to report upon.
99	The solution should provide an integrated case management system which should ensure independent investigation eliminating the risk of possible intervention of administrator.
	Dashboard

100	The SIEM solution must provide central management of all components and administrative functions from a single web based /console user interface. It must have out of the box ready to use dashboards (25+) from day one.
101	The centralized dashboard to monitor the alerts and events from all devices at its locations and from the tools provided as a part of NG-SOC solution.
102	The solution should provide customizable management console/dashboard which can be provided to different Teams. Access to the solution should be restricted based on role of that team/user, which should be configurable.
103	The solution dashboard should be in the form of a unified portal that can show correlated alerts/ events from multiple disparate sources such as security devices, network devices, enterprise management systems, servers, applications, databases, etc.
104	Events should be presented in a manner that is independent of device specific syntax and easy to understand for all users.
105	The dashboard should show the status of all the tools deployed as part of the SOC, including availability, bandwidth consumed, system resources consumed (including database usage)
106	It should be possible to categorize events while archiving for example, events for network devices, antivirus, servers etc.
107	**Customizable Dashboards**: The proposed solution should provide dashboards specific to each user and should be user configurable. The dashboards must be capable of displaying multiple daily reports specific to each users job function.
108	Solution should provide Dashboard not limited to Audit Dashboard, Security Dashboard, Risk Dashboard, Analytics Dashboard, Asset Dashboard, User Activity Monitoring dashboard, User/ Identity Dashboard, Threat Intelligence Dashboard. Etc.
109	Solution should have dashboards to identify and investigate security incidents, reveal insights in our events, accelerate incident investigations, monitor the status of various security domains, and audit the incident investigations.
110	Solution should help to investigate incidents with specific types of intelligence. a. Threat intelligence dashboards use the threat intelligence sources and custom sources that is configured to provide context to your security incidents and identify known malicious actors in our environment. b. User intelligence dashboards allow you to investigate and monitor the activity of users and assets in our environment. c. Web intelligence dashboards help you analyse web traffic in our network and identify notable HTTP categories, user agents, new domains, and long URLs
111	**Dashboard Integration**: The proposed solution must be accessed through web interface so that display dashboards, queries and reports can be executed and viewed.
112	The dashboard should drill down on events and find the IP addresses and geo-locations from the sources of suspicious or malicious IPs.
113	SIEM solution should be able to map correlation rules/use cases with MITRE tactics and techniques to get better visibility of incidents and shall be a part of the proposed solution.
	Integration
114	NG-SIEM must be integrable with all other proposed solutions part of the RFP and existing VM Solution.

115	The solution should have connectors to support the listed devices / applications, wherever required the Bidder should develop customized connectors for all standard devices at no extra cost
116	The solution must normalize common event fields (i.e. usernames, IP addresses, hostnames, and log source device etc.) from disparate devices across a multi- Bidder network. Solution to provide the ability to normalize and aggregate event fields that are not represented by the out-of-the-box normalized fields.
117	The solution must support information collected from File Integrity / Activity Monitoring (FIM / FAM) Security software and tools.
118	The system should be able to support integration with proposed threat hunting Centre and other Security Analytics tools
119	Solution should integrate with IDS, IPS, Firewall etc to consume alert data and based on that perform investigative and remediation actions.
120	NG-SIEM should be able to perform Deep packet inspection from Layer-4 & Layer-7 flow inspection
121	In case the connectivity with SIEM management system is lost, the collector should be able to store the data in its own repository. The retention, deletion, synchronization with SIEM database should be automatic but it should be possible to control the same manually.
121	Alerting: The proposed solution should provide the ability to integrate with enterprise-class network management systems through SNMP.
122	Syslog Forwarding: The proposed solution must be able to receive raw (i.e. unprocessed) event data in the form of syslog messages or text log files, in addition to receive the raw original event data from collectors.
123	Threat Intelligence feed should be a part of the proposed SIEM solution by bidder for identifying new global threats.
124	Solution should have an integration with Threat Intel Platform.
125	The system should receive feeds from a threat intelligence repository maintained by the OEM which consists of inputs from various threat sources and security devices across the globe.
126	The system should be capable to consume Threat Intelligence from Third Party sources as well.
	Administration
127	The Solution should provide web-based administration user interface for device management and monitoring.
128	The system should support Network Time Protocol for time synchronization.
129	The solution should be able to continue to collect log data during database backup, de-fragmentation and other management scenarios, without any disruption to service.
130	In case the connectivity with SIEM management system is lost, the collector should be able to store the data in its own repository. The retention, deletion, synchronization with SIEM database should be automatic but it should be possible to control the same manually.
131	There should be an automated switch over to secondary collector in

	case of failure on the primary collector. No performance degradation is permissible even in case of collector failure.
132	SIEM Solution should have a common interface/native integration with Deep Packet Inspection, UEBA, SOAR solution.
133	The monitoring capabilities to ensure that the proposed system is functioning under optimal parameters e.g. CPU/storage etc.
134	**Administrative Interface**: The proposed solution must provide a web / thick client interface used for administrative tasks including but not limited to initial configuration, updates, patches, backups, restores, content creation, analysis, user management and all other tasks.
135	**Administration Dashboard**: The proposed solution must provide a single administrative dashboard to analyze the system load, event flow and storage performance trends. The solution should provide pre-defined report templates. The reports should also provide reports out of the box such as PCI-DSS, HIPAA, SOX, NERC, FISMA, ISO, GLBA, GPG13, SANS Critical Controls
136	**No Database Administrator**: The proposed solution must not require a Database Administrator to perform implementation, tuning or other DB administrative tasks.
137	**Simple System Backup**: The proposed solution must provide a simple method for automatically and manually backing up and restoring system configuration data.
138	**Device Discovery**: The proposed solution must automatically accept log data from any system that is reporting through system. All log data, once received and indexed should be available for searches, alerts, and reports.
139	**System Process Status**: The proposed solution must provide administration page that allows viewing underlying system process status and resetting application components without having to restart the entire system. This should be provided through the same web interface along with all other administrative tasks.
140	**SSL Administration**: Solution should have Self-signed certificate generation features so that accessing of appliance from client for monitoring and administration purposes can be done in encrypted manner.
141	**Administration Audit Trail**: The proposed solution must log all administrative access and activities and provide access to the audit logs through the same web interface.
142	**Administration Alerting**: The proposed solution must provide the ability to alert on system state activity such as low disk space, component failures, high resource utilization, etc. The transport for these alerts must be simple to configure and support SMTP, SNMP, Syslog, and/or direct SIEM integration.
143	The solution should provide intuitive mechanisms for troubleshooting such as proactive notifications, command line utilities etc.
144	The solution should support the automatic update of configuration information with minimal user intervention. For example, security
	taxonomy updates, Bidder rule updates, device support, etc.
145	**Threat Hunting Features:**
a.	The solution should have in-built searches to perform threat hunting on 24x7 basis/real time
b.	The solution should give ability to perform open searches with simple and complex queries and enable threat hunting

c.	The solution should give ability to store queries and execute queries on a periodic basis/as per requirement.
d.	The solution must give capability to perform threat hunting
e.	The solution must have at least 25+ out of the box machine learning algorithms for Threat hunting which will execute queries on 24x7 basis
f.	All the Event, Alerts and other information pertaining to NG-SOC must remain within premises only. Any information moving out of premises shall be reviewed and approved by stakeholders on need basis.

2. SOAR Technical Specification

Sr. No	Specifications
	General Requirement
1	SOAR Solution should have all the capabilites of Security Orchestration & Automation (SOA), Security Incident Response Platform (SIRP) and Threat Intel Plaform (TIP) as part of single or multiple license The solution must be a fully on-premise solution deployed in house. The OEM to recommend the sizing for the hardware/VM for the proposed solution
2	SOAR should be able to integrate bi-directionally with SIEM solution being proposed from day 1.
3	SOAR platform must have out-of-box or ready integration with thevarious technologies used in Owner environment to consume alert data, perform investigative and remediation actions.
4	The solution must be able to support creation of incidents via API,Web URL, SIEM, Ticketing system, manually etc.
5	The solution must retain all incident related files not limited tomalware specimens, logs, artefacts and screenshots for minimum of Twelve (12) months. However, if Owner desire to keep for further period same shall be retained without any additional cost.
6	The solution must have capability to design workflow to provide fully automated action for the detected incident.
7	The solution must have the capability to notify user based on detected/ identified incidents.
8	Solution shall have the capability of providing independent threat intelligence against threats.
9	Solution should support 2 security admin analysts and unlimited read only users from day one and provide Role Based Access Control (RBAC) to differentiate between analysts and administrators for restricting access to investigations, Jobs, Scripts, playbooks and admin tasks
10	Solution should support deployment for access remote networks which are behind the firewall or isolated from Internet
11	Solution should be able to integrate with security devices like Firewall, IDS/IPS, endpoint Security solution, APT solution, WAF,PIM etc from day one and the other proposed NG-SOC tools.

12	The solution should provide for Threat Intelligence and Threat hunting capability via integration with the proposed TIP and Threat hunting platform.
13	The solution must be web based without the need for installing an additional client software for administration and routine day to day usage requirements.
14	All the Event, Alerts and other information pertaining to NG-SOC must remain within premises only.
15	Any information moving out of HPSLDC premises shall be reviewed and approved on need basis.
16	Solution should support at least 2 admin analysts with support for storing upto 5 million indicators in database from day 1. Scalability :Solution should also support future expansion to 3 admin analysts by only adding software license and underlying hardware(Compute and Storage). There should not be any restriction forcing buying of new stack from scratch to support expansion to 3 admin analysts.
17	Solution should support backup / restore and provision for creating a HOT backup/standby server.
19	The system should support a graphic UI for creations of playbooks
	Integration
20	Solution should support integration with min 100 third party OEM products including but not limited to the following technologies. > Forensic tools > IT tools (AD, ISE, NOC tools) > Specify all products IT e.g. (AD, SAML) Communication tools (e.g. Emails, SMS) SIEM tools. > Endpoint Security Solution > Network Security Solution > Threat Intelligence. > Dynamic malware analysis
21	Solution should support adding of new product integrations and custom integrations.
22	The solution should integrate with partner products using any of the standard protocols and interfaces including REST API, SOAP, SSH/CLI interface, and custom APIs. Solution should have no limitations on number of device integration for automation
23	The solution must providethe capability to integrate multiple threat intelligence feeds from various providers to enrich incident artefacts.
	Automation and Response
24	The solution should provide a simple, comprehensive, fully automated approach to detect and stop the threats that matter, for on premise deployments from internal & external attacks . There should not be any restriction in number of remedial or response actions in the provisioned license
25	The solution should support both human and machine-basedautomation for various tasks related to security investigations.
26	Solution should support addition of automation scripts to existing Integration
27	For secure operations, the solution must run various scripts,

	commands, application functions, playbooks etc without the need of running with elevated privileges on a host OS.
28	Solution should use playbooks/runbooks with a visual editor/canvas which supports visual creation of playbooks without the need to code by native integration to third party tools and processes.
29	Solution should auto remediate the problem without causing a huge impact to the organization. Some of the examples such remediation could be: • Push policies to prevent an external IP • Isolate an internal desktop/Server • Disabling user accounts used for malicious purposes • Patch automation in case tool finds vulnerability
30	Solution should be configured with the used cases with automation for response to the minimum basic threats like: • Blacklisted IP Communication • Possible Penetration Testing Activity • Connection to Known Malicious Actor in Published Host List • DDOS Attack • Vulnerability scan detection • Phishing detection • Brute force attack • Malware /threat activity monitoring • Ransomware • Port & vulnerability Scans • Password cracking • Worm/virus outbreak • File access failures • Unauthorized server/service restarts • Unauthorized changes to firewall rules • Unauthorized Bidder access to systems
31	Solution should have min 150+ built in reusable playbooks for well-known Incident types (Phishing, Malware, IOC Hunt etc) from day 1 . Also there should not be any restriction in creating number of playbooks i.e. out of box and customized playbooks in the provisioned license. Solution should support complex playbooks which involve nested playbooks without any additional license requirement
32	Solution should allow creating new playbooks to map out the CIRT processes. Provision for building min 10 custom playbooks should be factored within the solution.
33	Solution should support re-use of playbooks in bigger playbooks
34	Solution Should allow creation of Manual Tasks, Automated Tasks and Conditional Tasks in Playbooks
35	Solution should allow a single playbook to have Automated and Manual Tasks within the same playbook
36	Solution should allow a complete playbook to be run automatically or manually and list out any exceptions
37	Solution must support step by step debugging of the running playbooks with provision of starting from where it stopped on error
38	Solution should record all manual and automated entries during execution of a playbook

39	The solution must have an integrated versioning mechanism to save and maintain multiple versions for the playbooks.
40	The solution should allow for viewing version history for all or selected playbook and provide option for restoring to an older version.
41	Solution should be able to do incident analysis on the data received and should be an input for subsequent playbooks. The collected data can be used for incident analysis, and also as input for subsequent playbook tasks.
42	Solution should support updates for Playbooks, Integrations and should specify the procedure to update each of them.
43	The system should support parsing all the SIEM message fields including but not limited to: creation time; update time; source/dest IP; source country; category; system; rule-name; severity; dest IP
44	The system should support automatic reporting back to ticketing solution for example for closing cases state. These actions will be added to the audit trail.
45	The solution should be able to consume security alerts/incidents from SIEM or directly from any other IT security solutions.
46	Solution should support email or text notifications, along with functionality to email comprehensive periodic reports and dashboards.
47	Solution should provide content for threat descriptions as well as remediation advice.
48	Solution should provide necessary integration with the IT/cybersecurity systems for keeping the forensics artefacts from the integrated sources of the incident before taking remedial actions.
49	SOAR platform maybe positioned as end to end incident management, Incident response, incident remediation, investigation platform and single evidence repository by the bidder and OEM. Platform should be capable to provide detailed post incident documentation about all the actions taken, root cause, controls implemented etc.
	Correlation & Analytics
50	Solution should provide an integrated incident management platform for Security and IR team
51	Solution should support assigning of incident to a User or a group
52	Solution should maintain SLA for incident
53	The solution must have a provision to remove duplicate incidents and merge all duplicate ones in a single incident
54	Solution should support highlighting of active incidents to quickly identify and access them.
55	Solution should document all artifacts related to an incident
56	Solution should support searching of Data/artifacts associated with historical incidents
57	Solution should highlight if any external products are required for Collaboration. It should provide an exhaustive list of such products currently supported.
58	Solution should provide an interface to drive High priority Security Incidents by Security teams and provide access and visibility of this incident to management, legal etc without any additional cost to Licenses

59	Solution should support key entities/IOCs for every incidents whichcan be auto extracted and presented in a graphical/ tabular form foranalysts to view relationship between key entities for an incident.
60	System should allow, more than 1 playbook to run on any incident. All execution logs should be retained and available for the reference.
61	Solution should allow differentiation between alerts and incidents (incident could be made of multiple alerts.)
62	The SOAR vendor should have In-built Automated Queue Management facility - Ability to create dedicated assignment queues and automated assignment and case progress with ease. Also helps in SOCs shift management.
63	The solution must provide periodic updates of playbooks, OEM supplied Integrations and threat intelligence for incident artefacts.
64	The solution must support the ability to take-action related to an incident. For example, the solution should support the ability to block an intruder.
65	The solution must support the ability to correlate against 3rd party security data feeds (i.e. geographic mapping, known botnet channels, known hostile networks, etc.). These 3rd party data feeds should be updated automatically by the solution.
66	The system should be able to extract IOCs from PDF/csv/other formats and search for those IOCs within the organization raw data. In case IOC is found, the system should trigger a new alert and save the indicator information in the local IOC Database.
67	The system should support creation of an incident based on an email input (e.g. analyse all emails from a dedicated phishing mailbox)
68	The system should have an option to edit and change the event properties (for example its severity).
69	The solution must allow users to take remedial steps directly from within the visualization of incident correlation enabling a rapid and efficient response.
	Reporting
70	Solution should support creation of reports in formats like csv, doc and pdf with custom logo of the organization
71	Solution should support Dashboards which can provide high level view of Platforms KPI's to the management
72	Solution should have documentation readily available for using automation and creation of custom automation
73	Should support Custom Dashboards, Charts, Workflow and case management-Out-of-the-box Workflow templates for managing cases, Full-featured case management platform that can integrate with external systems, Automated tasks within cases such as executing playbooks, Workflow Playbook Apps.
	Administration and Configuration
74	The solution must deliver customizable dashboard widgets that can present relevant incident information to the users.
75	The solution must support a web-based GUI for management, analysis and reporting.
76	The solution must provide central management of incidents and administrative functions from a single web-based user interface.

77	Case Management: The proposed solution must provide complete process framework for integrating security monitoring and investigations with existing workflow procedures. Workflow should involve escalating an incident to other users within the same team or within other teams etc.
78	Workflow: The proposed solution should allow for assigning security analysts to specific security incident investigations. The proposed solution must provide a complete audit trail and accountability during the incident handling or forensic investigations. It should support the retrieval of relevant packets to a cyber-security incident.
79	The solution should provide an web based tool for incident management and the same should follow industry best practices
80	The administrator must be able to define role-based access to various functional areas of the solution. This includes being able to restrict a users access to specific functions of the solution that is not within the scope of a users role including, but not limited to, administration, reporting, incident assignment, playbook creation.
81	The solution must provide the ability to deliver multiple dashboards that can be customized to meet the specific requirements of different users of the system.
	Threat Intel Platform
82	SOAR should have an integrated Threat Intelligence Platform (TIP) and should Facilitate importing and parsing structured and unstructured intelligence documents-Structured/finished intelligence analysis reports (.txt, .PDF); Automatically ingest email lists with threat information; Formatted CSV Files, XML-based structured intelligence – STIX
83	TIP should De-duplicate indicator input data when imported from multiple sources; Provide features to add context to and enrich threat intelligence-Ability to rank or assign severity of risk to intelligence and IOCs
84	Solution must provide out of the box at-least 25 open source threat intel feeds and at-least 1 Premium feed. There should be no limitation on number of threat feeds to collect threat intel and no limitation on distribution of threat intel on number of security devices.
85	Support Integrations with Security Products-Native support for STIX/TAXII integrations, Export threat intel data with secure API, Integrate with additional tools and information sources via RESTful API
86	The proposed SIEM Solution should have an OOTB bidirectional integration with Threat Intel Platform . OEM should provide threat feeds as part of SIEM/SOAR solution
87	SOAR Solution should have all the capabilites of Security Orchestration & Automation (SOA), Security Incident Response Platform (SIRP) and Threat Intel Plaform (TIP) as part of single or multiple license.
88	Solution should have the ability to collect real time multiple threat intel feeds, de-duplicate, aggregate, process, index, enrich and distribute the threat intelligence IOC's.
89	Solution must provide out of the box threat feed from OEM and at least 50+ open-source threat intel feeds and support integration of threat feeds from regulatory authoraties such as CERT-India, RBI, NPCI etc.
90	Solution should provide capability to process structured and unstructured threat intel data, at least from TXT, PDF, DOC, DOCX, PPT, PPTX, XLS, XLSX, MSG, EML etc.
91	Solution should support continous reputation check for IOC on a numeric scale or risk priority scale to prioritize and triage decision-making for captured threat intel. . Solution should also give additional contextual intelligence on the latest threat actor tactics, techniques, and procedures to help in identifying malicious activity faster.

92	Solution should provide insights on data reputation, network activity (observations), false positive counts, and status
93	Solution should support for creating custom indicator types such as ASN, CIDR, Mutex, Registry Key, User Agent
94	Solution should have no limitations on number of device integration for automation, no limitation on number of threat feeds to collect threat intel and no limitation on distribution of threat intel on number of security devices.

3. NBAD Technical Specification

Sr. No	Specifications
1	NBAD should be capable of monitoring and managing separate zone like (DMZ, INFINET MZ and Cloud MZ)
2	The solution should have single centralized dashboard. The solution should support high rate of packet capture without compromising on ability to read the data for correlation, reporting and threat hunting. This requires the solution to have a modular architecture with separate components for collection, data storage, reporting and correlation
3	Demonstrate the ability to detect the presence of an Internet worm on the network based on propagation behavior on a particular service port. Solution should support data obfuscation and masking to support privacy requirements
4	The tool should be able to perform Network Traffic Pattern Analysis based on IP addresses, groups of IP addresses, source/destination IP pairs etc.
5	The tool should be able to perform Real time monitoring of Network traffic analysis to identify threats.
6	The tool should detect common events like DDoS / Do S, Scanning, Worms, Unexpected application services. (e.g., tunneled protocols, backdoors, use of forbidden application Protocols), Policy violations, etc.
7	The tool should be able to identify from where the attack originated.
8	Bidder shall suggest mitigation measures for security events like
9	Should detect applications running on non-standard port numbers.
10	The tool should be able to identify ports and services not necessary for normal business operations.
11	The events generated by the system should be classified at various risk level like High, Medium, Low etc.
12	The tool should have the capability to analyze physical and virtual network environments.
13	The tool should be able to do Centralized and non-intrusive traffic and flow-based network monitoring.
14	The solution should be able to Detect Anomalous Security Events
15	The tool should have customized rule creation options
16	The solution should identify network traffic from potentially risky applications (e.g. file sharing, peer- to-peer) etc.
17	The solution should support traffic profiling associated with logical network design (e.g., Subnet/CIDR).

18	The solution should be compatible with industry leading appliances (like Firewall, IPS, VPN, routers, etc. for network flow analysis)
19	The solution must support and be scalable to cover assets catering to distributed deployment.
20	The solution must be capable of identifying suspicious or hitherto undiscovered communication patterns.
21	The solution should be integrable with other components viz. SIEM,VM, AD, LDAP, Firewalls, IPS, VPN, Routers, Switches, Internet Proxy, etc. List of supported technology and products and products/technologies not supported if any.
22	The system should be able to capture NetFlow and Packets.
23	The solution should identify applications using ports other than the well-known, and applications tunneling themselves on other ports (e.g., HTTP as transport for MS-Instant Messenger should be detected as Instant messenger - not HTTP).
24	The solution should profile traffic by TCP and UDP Port
25	The solution shall provide application bandwidth utilization graph.
26	The solution should display traffic profiles in terms of packet rate.
27	The solution should profile and present information in multiple timeframes. Profiles should be available for week, day and hour
28	The solution shall be able to display the new hosts coming into the Network. It should be able to take inputs from other systems (like, vulnerability scanners) and alert about the new hosts that are vulnerable.
29	The solution should display the type of data being transported via HTTP into and out of the network (i.e. text, image, video etc.)
30	Should be able to get regular feed from global threat intelligence for proactive monitoring and alerting.
31	All the Event, Alerts and other information pertaining to NG- SOC must remain within premises only. Any information moving out of premises shall be reviewed and approved on need basis.
32	The solution must do full session reconstruction at the point of Capture. It should have the ability to reconstruct the traffic.
33	The solution should support session reconstruction and object extractions from sessions like files and pcaps. It should have ability to recover files which are in the payload of network traffic such as PDF, exe, etc
34	The solution must have the ability to capture network traffic and import PCAP files using the same infrastructure
35	Solution should allow investigation of logs and raw packets data from a single console
36	Proposed solution should help the analysis in various Network Threat Detection use cases as listed below, but not limited to a. Continuous Monitoring: Ability to capture network traffic, index and play back all network data, and to provide Analyst with timely, targeted and prioritized information b. Detect Suspicious traffic to an Unknown Country: Meta should provide all details in terms of Country name, Business context, IP -From and To Information. Analyst should be able to isolate such traffic swiftly and investigate the payload for any malicious egress or ingress. It should also have provision for analysts to integrate with Sandboxing environment for malware analysis.

	c. Remote Access / Web Shells: Full session reconstruction gives visibility into a common artifact left by attackers communicating with Web Shells (HTTP POST, no GET, no Referrer). After initial detection of suspicious activity, Proposed Solution should allow an analyst to see what the threat actor was doing on the compromised host, reconstruct exfiltrated data, and track lateral movement. d. Spear Phishing: Proposed Solution should reconstruct network protocols on the wire and can extract and analyze files being transferred. Combining this with deep file inspection, file anomalies signifying potentially malicious executable delivery can be alerted on and investigated. Spear phishing is a common delivery mechanism employed by attackers, often carrying malicious files (e.g. Encrypted executables, weaponized PDFs). e. Dynamic DNS - Data Exfiltration: Proposed Solution should reconstruct network protocols on the wire and can extract and analyze files being transferred. A common data exfiltration technique used by threat actors involves uploading archive files to external hosts using dynamic DNS domains. Proposed Solution can extract the root domain for dynamic DNS providers and detect uploads (e.g. HTTP upload) of data and uncover the impact to business. f. Malicious Protocols - Gh0st RAT: Many commonly used remote access tools (RATs) have been programmed with custom network protocols to evade detection by traditional tools. g. Proposed solution should support through full session reconstruction and deep inspection into network traffic, is able to detect the Ghost RAT protocol in real-time
37	Solution should store RAW packet DATA for 7 days and normalized packet data for 15 days for forensics.
38	Should Capture at-least 100 Mbps of internet traffic at DC from day 1. Scalability :Solution should also support future expansion of 2 Gbps by only adding software license and underlying hardware(Compute and Storage). There should not be any restriction forcing buying of new stack from scratch to support expansion upto 2 Gbps .

4. UEBA Technical Specification

Sr. No	Specification
1	Support for creation of Watch Lists for suspicious users
2	On-premise deployment
3	Said UEBA tool should be able to integrate with proposed SOAR & SIEM solution for monitoring users and reporting anomalies
4	The solution should be able to highlight risky and potentially abnormal user
5	It should take input from solutions such as SIEM, SOAR
6	The solution should have permission for device admin, subnet admin, audit log, edit model and advanced search, etc
7	Should be able to show us RAW and Normalized packet headers, or relevant data basis on which anomalous behavior was observed
8	Integration with enterprise Active Directory for simplified access for SOC admins and Analysts.
9	Availability of out-of-the-box administrative dashboards and reports
10	Identity based threat plane behavior analysis for account hijacking and abuse
11	Proactive and actionable alerting for anomalous behavior and risk scores

12	High privilege access anomaly detection for misuse, sharing, or takeover
13	Uses self-learning behavioural analysis to dynamically model each user, probabilistically identifying any anomalous activity that falls outside of the user normal pattern of life.
	approved on need basis.
14	Unusual Credential use - models the times and devices normally used by each username, and alerts when there is an unusual combination
15	Flexibility to configure rolling window of period for behaviour Profiling
16	Dashboards for different roles and access levels
17	Customizable dashboards, configurable for SOC analyst
18	Provide various visualization options for deep-dive investigation, compliance and reporting
19	Ability to perform detailed search on raw and enriched data
20	Support natural language search capability without requiring to learn a custom search query language
21	Intelligent search providing auto-complete, auto-suggest capabilities based on contextual data
22	The solution should allow network data ingestion including Layer 2 SPAN, Layer 3 SPAN and Network taps or support ingestion from log collectors for Netflows to provide Network Traffic Analysis
23	The solution should be installed passively into infrastructure
24	The solution should be able to automatically identify and classify their activities.
25	Exporting and report generation capabilities
26	Availability of out of the box data models for analysts to make investigation decisions
27	The solution should provide coverage into virtual environment
28	Usage changes over time: User activity deviates from normal over a short period of time or a gradual change over an extended period of time
29	Change in account privileges: User attempts to change privileges on existing account or open new accounts on other systems
30	Should identify Account used for the first time in a long time
31	Should identify User involved in previously malicious or threatening behaviour
32	Detect insider threats, account hijacking and abuse, plus data exfiltration
33	The solution should be able to administer from a web browser
34	The solution's UI should be able to provide a real-time, operational overview of an organization's entire network and the threat level it faces at any given time
35	The solution's UI should allow displaying threat by user, and model with sorting and selected period
36	The solution's UI should be able to display particular events in a graphical way
37	The solution's UI should provide a Google-like search bar to search a device by Hostname, Mac Address, Username of userlogged into that device, IP Address, Nickname.
38	Allows us to create Incidents out of Events/alerts onto which analysts will collaborate inputs and for which, reports can be exported
39	Multiple elements can be corelated into an incident, from metric graphs to device log entries.
40	System and application logs show who did what, at what time, within the UEBA application
41	The solution should support model which are interconnected or chaining feature to incorporate output from one ML model to be provided as input to another ML model. This is required for correlation of multiple user-based attacks.

42	All the Event, Alerts and other information pertaining to CSPDCL's NG-SOC must remain within premises only. Any information moving out of premises shall be reviewed and
43	Platform should be able to create profiles and monitor all 500 Users in AD from day 1. Scalability :Solution should also support future expansion to 1000 users by only adding software license and underlying hardware(Compute and Storage). There should not be any restriction forcing buying of new stack from scratch to support expansion upto 1000 users .

5. DAM (Database Activity Monitoring)

	Technical Specs
1	The proposed DAM solution must support the following databases. 1. Relational Databases e.g - Greenplum, MariaDB, MSSQL, My SQL, Oracle, Postgre SQL, Progress Open Edge,Teradata. 2. Big Database types e.g Aerospike, Apache Ambari, Cloudera, Apache Cassandra, Couchbase, Hortonworks, MarkLogic, Mongo DB, MapR . 3. In Memory Database - Redis , SAP HANA, Gridgain Ignite
2	Additionally the solutiuon must support the following Cloud Databases. 1. Amazon - Amazon Athena, Amazon Aurora MySQL, Amazon Aurora PostgreSQL, Amazon Document DB, Amazon Lake Formation, Amazon RDS (MariaDB,MSSQL,MySQL, Oracle and PostgreSQL) , Amazon S3. 2. Azure - Blob Storage, Azure SQL Server, Azure SQL Managed Instance, Azure Data Lake Storage, Azure Cosmos DB, Azure SQL Data Warehouse 3. Google - Google Cloud Big Query, Google Cloud Big Table, Google Cloud MySQL, Google Cloud Spanner 4. Alibaba - Alibaba Cloud ApsaraDB RDS (MySQL, PostgreSQL, MongoDB) , Alibaba Cloud MaxCompute
3	The solution must also support Sosftware as a Service Databases like MongoDB Atlas, Snowflake, Datastax etc.
4	The solution must have a central Dashboard which shows Activities of all the databases i.e On Prem Databases, Cloud Databases, Software as a Service Databases.
5	The solution should help organistions in meeting regulatory compliance such as SOX, PCI DSS, Data Privacy Law, GDPR, Industry best practices, Organization specific security policies etc.
6	Solution should capture and analyze all database activities by Database users and/or privileged user accounts, providing detailed audit trails that shows the "Who, What, When, Where, and How" of each database transaction.
	The solution should monitor DDL, DML, DCL, TCL, commands in real-time and It should also monitor user management, privilege management etc. and monitor for any policy violations.
7	The proposed solution should support both agent based mode and agentless mode to capure Database Activities.
8	In case of agent based monitoring, the solution should not use the native audit functionality of DB Server. In case of Agentless Collection, the native logs of the DB Server must be forwarded to the DAM Solution.
9	The proposed solution should integrate with 3rd party technologies SIEM, SOAR, Service Management, Ticketing system etc to provide holistic security posture.

10	The proposed solution must not use sampling and must capture every log either through Agent or through Native Logs.
11	The solution must have playbook which could be used to automate workflows.
12	The solution must have the option to define palybooks where a certain action is perfromed by DAM based on nature of DAM query, e.g locking a user if the user tries to exfiltrate large amont of data.
13	The playbook must provide ability to open a service now ticket or a Jira ticket.
14	In case of Agents, each Gateway/Collector must support 60K TPS irrespective of the type of query. The ability of gateway to suport 60K TPS must not depend on whether the query is privileged query or a generic SQL Query.
15	The Proposed Solution should support automatic updates to the signature database and based on global threat intelligence, ensuring complete protection against the latest threats.
16	The solution should also discover if any new/rogue database created within the monitored network/systems and alert the respective stakeholders
17	The solution should be capable of auto discovering sensitive/confidential data like credit card Numbers, Email address, or any PII in the database.
18	The solution should be able to auto discover privilege users in the database and should support user entitlement reviews on database accounts
19	The solution must have the ability to create pipelines and use those pipelines in creating custom granular reports, feed data into SIEM , Data Enrichment etc.
20	The solution should support creation of policies/rules for enforcing access control and proper rights management on databases.
21	Solution should have capability to track execution of any Database Objects stored procedures, including who executed a procedure, what procedure name and when, which tables were accessed.
22	The solution should provide facilities for scheduling of reports with respect to time, type of activity, nature of event, violation of specific rules, user, source of origin, DB instance etc.
23	Proposed solution should maintain the directory of known IDS/IPS Signatures to be used in policies and detect and exploits in near real-time
24	The solution must be able to be used to measure compliance with industry standards and benchmarks such as DISA STIG and CIS.
25	The solution should discover misconfigurations in the database and its platform and suggest remedial measures.
26	The solution should be able to virtually patch the know vulnerabilities automatically till a patch is installed for the same.
27	The solution should verify that default database accounts do not have a "default" password.
28	The Solution must provide behavior analytics algorithm to establish behavioral baseline and find deviations
29	The Solution must be able to differiate between suspicious behavior from risky/abusive behavior .
30	The Solution should be able to access user's risk potential (compare user suspicious behavior rate to the rest of the organization and etc)
31	**The Solution should automatically detect the following** a) Nature of accounts which connect to the database (Service Account, DBA User Account.. etc) b) Purpose of database tables (Business Critical Tables, System Tables, and etc) c) Data access habits (working hours, amount of data retrieved)

Approval of SOC in 15th General Body Meeting

HIMACHAL PRADESH LOAD DESPATCH AUTHORITY

(An Apex Body)

Government of HP, Totu, Shimla-171011.

MINUTES

15TH GENERAL BODY MEETING

VENUE :: OFFICE CHAMBER OF THE SECRETARY (POWER), TO THE GOVT. OF HP, HP GOVT. SECRETARIAT, SHIMLA-171002.

DATE & TIME :: 27th October, 2023 (From 04:00 PM to 05:00 PM)

Present:

The following members of the General Body of HP Load Despatch Authority (HPLDA) were present in the meeting.

1.	Sh. Rajeev Sharma, Secretary (MPP & Power), to the Govt. of HP, Shimla-02.	Chairman
2.	Sh. Harikesh Meena, Director (Energy), Directorate of Energy, Govt. of HP, New Shimla-09.	Member
3.	Sh. Harikesh Meena, Managing Director, HPPCL, Himfed Building, BCS, New Shimla-09.	Member
4.	Sh. Harikesh Meena, Managing Director, HPSEBL, Vidyut Bhawan, Shimla-04.	Member
5.	Er. A.K. Khanotia, Director (P&C), representative on behalf of the Managing Director, HPPTCL, Old Panjari, Tuti Kandi, Shimla-04.	Member
6.	Sh. Kultar Singh Rana, Deputy Secretary (MPP & Power), representative on behalf of Special Secretary (MPP & Power), to the Govt. of HP, Shimla-02.	Member
7.	Er. Praveen Kumar, Deputy Chief Engineer, HPSLDC, Govt. of HP, Totu, Shimla-11.	Member Secretary

A-0 OPENING OF THE MEETING

A-0.1 At the outset the Chairman, HPLDA-Cum- Secretary (Power), to the Govt. of HP welcomed all the Members present for the General Body Meeting and called the meeting to order.

A-0.2 Thereafter Item wise Agenda (Part-A & Part-B) were taken up and following is gist of the discussion and decision taken;

PART-A

ITEM NO. A-1 CONFIRMATION OF THE MINUTES

The General Body considered and confirmed the Minutes of 14th General Body Meeting (GBM) of the H.P. Load Despatch Authority held on dated 24.02.2023.

ITEM NO. A-2 ACTION TAKEN REPORT ON THE VARIOUS DECISIONS TAKEN IN THE 14TH GENERAL BODY MEETING OF HP LOAD DESPATCH AUTHORITY.

A-2.1	Construction of staff colony for HPSLDC staff.	The General Body perused the agenda item and noted the progress achieved by the HPSLDC.

ITEM: A-3 **ITEMS FOR DELIBERATION AND APPROVAL.**

A-3.1 **FILING OF MYT PETITION OF HPSLDC FOR THE 5TH MYT CONTROL PERIOD. (FY: 2024-25 TO FY: 2028-29)**

A-3.1.1 **Filing of Multi-Year Tariff Petition of the HPSLDC for the 5th MYT Control Period i.e. FY: 2024-25 to FY: 2028-29 before the HP Electricity Regulatory Commission and approval for depositing processing fee amounting to Rs. 40.00 Lakhs to the Hon'ble HPERC as per HPERC (Conduct of Business) (13th Amendment) Regulations, dated: 31.03.2023.**

The General Body noted and ratified the action taken by the HPSLDC regarding engagement of a tariff consultant M/s World Institute of Sustainable Energy (WISE), Pune after exhausting a fair e-Tendering process through e-Procurement portal of the HP State Govt. i.e. www.hptenders.gov.in

After due Deliberations and discussion on the agenda item, the General Body approved the proposal of HPSLDC to deposit an application fee amounting to **Rs. 40.00 Lakhs** to the HPERC, Kasumpti, Shimla as per HPERC (Conduct of Business) (13th Amendment) Regulations, dated: 31.03.2023 for determination of SLDC charges / ARR of the HPSLDC and to file the MYT Petition of the HPSLDC for the 5th MYT Control Period to the Hon'ble Commission on or before 30.11.2023.

A-3.1.2 **Approval of CAPEX (Capital Expenditure) plan of the HPSLDC for the 5th MYT Control Period i.e. FY: 2024-25 to FY: 2028-29 and submission of CAPEX plan to the HPERC on 30.11.2023 along with MYT Petition for the 5th MYT Control Period.**

After due deliberations and discussion on the agenda item, the General Body approved the proposal of HPSLDC for execution of below mentioned Capital Expenditure Plan (CAPEX) during the 5th MYT Control Period (FY: 2024-25 to FY: 2028-29).

Sr. No.	Name of Scheme and work proposed for execution during 5th MYT Control Period	Estimated cost (Rs. Lakhs)
A	**Enhancement of Real Time Data Acquisition System**	6,397.00
1	**Replacement/ up-gradation of existing SCADA & EMS system installed at HPSLDC Control Centre and establishment of new Backup control centre of HPSLDC at Hamirpur Under ULDC Phase-III Scheme (Funded through the World bank).**	6,397.00
B	**Scheme proposed under State PSDF**	1,671.82
1	Cyber security and Data security	120.00
2	Development of software for [illegible] demand forecasting (As per mandate given to LDCs in the IEGC-2023)	583.00
3	Disaster Recovery (DR) for IT System	540.00
4	Installation and commissioning of Interface Energy Meters (IEMs) along with Automatic Meter Reading (AMR) equipment at the new inter-state interfacing locations (HPPTCL-HPSEBL, HPPTCL-HPPCL, HPSEBL-OAC, HPSEBL-OAG etc.) within the HP State, proposed to be funded through State PSDF.	325.00
5	Procurement of 2 Nos. of Internal Firewall & subscription of 01 Nos existing external firewall and Antivirus for existing SCADA/ EMS system	36.82
C	**Schemes funded through Central PSDF, Govt. of India**	1,870.00
1	Establishment of Security Operation Centre (SOC)	1,870.00

Order

on

True Up for the Period FY 2020-21 to FY 2022-23,

Provisional True-up for FY 2023-24

&

Business Plan and Multi Year Tariff for

FY 2024-25 to FY 2028-29

For

Himachal Pradesh State Load Despatch Centre (HPSLDC)

Himachal Pradesh Electricity Regulatory Commission

15 March 2024

Accordingly, the Commission directs the petitioner to undertake the works for these schemes under the Cap-ex, for review at the time of MTR. The petitioner is directed to provide the details of the funding, considering available depreciation, the depreciated values of the assets and depreciation amount to be taken out from the GFA and accumulated depreciation, etc. The Capitalisation of these schemes shall be considered by the Commission at the time of MTR of 5th Control Period based on the details submitted by the petitioner at that time.

V. **Payment done towards implementation of IT Solutions:** The booking entry for an amount of Rs. 12.36 lakhs for this element has been shifted from R&M expenses to the GFA in the FY 2024-25, as these works are of Capex nature. The Commission approves this expense as Cap-ex and capitalises the same in FY 2024-25.

VI. **Liability towards cost of Building:** The booking entry for an amount of Rs. 165.49 lakhs towards transfer of depreciated value of the building of the HPSEBL, conveyed by the HPSEBL as per its letter dated 22 November 2023 has been considered by the Commission as Cap-ex towards the addition to the GFA, as building asset is of Capex nature. In the absence of any details regarding the transferred assets, the Commission has considered this liability towards cost of Building to be funded through grant. The Commission in its MYT Order dated 29 June 2019, had approved the cost of building asset as Rs. 121 lakhs, as a part of grant, which the Commission in this Order has reviewed the said approval, as new details have been submitted by the HPSLDC in supersession to the earlier one. Now, in this Order, the Cost of the Building has been reinstated as Rs. 165.49 lakhs w.e.f 2024-25, which is considered as grant. The Commission shall review the same at the time of MTR for 5th control period duly considering the accounting entries and other factors as per the HPSLDC submissions.

4.2.8 Based on the above observations and considerations, the Cap-ex and capitalisation approved by the Commission for the 5th Control Period is as below:

Table 43: Approved Capital Expenditure for FY25 to FY29 (Rs. Lakhs)

Sr. No.	Capital Expenditure	Total	Phasing (Capital Expenditure)				
			FY25	FY26	FY27	FY28	FY29
A	**Enhancement of Real Time Data Acquisition System (World Bank funded)**	**6,397.00**	-	**3,198.50**	**3,198.50**	-	-
1	Replacement/ up-gradation of existing SCADA & EMS system installed at HPSLDC Control Centre and establishment of new Backup control centre of HPSLDC at Hamirpur Under ULDC Phase-III Scheme.	6,397.00		3,198.50	3,198.50		
B	**Scheme Proposed Under State PSDF**	**1,768.09**	**116.54**	**956.54**	**695.00**	-	-
1	Cyber security and Data security	120.00		120.00			

Sr. No.	Capital Expenditure	Total	Phasing (Capital Expenditure)				
			FY25	FY26	FY27	FY28	FY29
2	Development of Software for demand Forecasting (As per mandate given to LDCs in the IEGC-2023)	550.00		300.00	250.00		
3	Disaster Recovery (DR) for IT system	*640.00*		320.00	320.00		
4	Installation & Commissioning of Interface Energy Meters (IEM) along with AMR equipment at the new intra-state interfacing locations (HPPTCL-HPSEBL, HPPTCL-HPPCL, HPSEBL-OAC, HPSEBL-OAG etc.) within the HP State, proposed to be funded through State PSDF.	325.00		200.00	125.00		
5	Procurement of 2 Internal firewalls & subscription of 1 existing external firewall and antivirus for existing SCADA/EMS system.	33.09	16.54	16.54			
6	Provisioning of CERC (GNA) Regulations-2022 in scheduling, Billing and Reporting software modules of the existing integrated IT Solution/ Software Applications, upgradation of the website of the HPSLDC and provision of HPX and PXIL in the software modules.	100.00	100.00				
7	Scheme for implementation of Information Security Management System (ISMS) and ISO: 27001 certification.	-	-				
C	**Schemes funded through PSDF, Govt. of India**	**1,237.00**	**-**	**922.79**	**105.84**	**105.84**	**102.53**
1	Establishment of Cyber Security Operations Centre (Cyber-SOC)	1,237.00		922.79	105.84	105.84	102.53
D	**Infrastructure Development**	**128.87**	**128.87**	-	-	-	-
1	Additional & Alteration of Office Building						
2	Installation and commissioning of 20 kWp grid connected solar roof top plant	12.00	12.00				
3	Office Equipment (PCs, Printers, Laptop, Xerox m/c, Routers, LAN Components, cables, switches etc.)						
4	CCTV, Security System, Audio Recording, Biometric system in the proposed additional building						
5	Furniture for Office (for proposed additional building)						
6	**Staff Recreation & Rejuvenation Facilities**						
	Cafeteria/Pantry						
	Gymnasium						
7	Fire Alarm/Fire Fighting System for proposed additional building						
8	Purchase of new vehicle						
9	Renewal & Replacement of obsolete/defective 4x15 Ton Centralized AC System by providing 12 Nos. Split type Air Conditioning (AC) units of different capacity in the HPSLDC Control Centre Shimla.	24.47	24.47				

DIEVAS

To,
Himachal Pradesh State Load Despatch Centre
Shimla Himachal Pradesh [illegible]

Dated [illegible] January [illegible]

Sub: Budgetary Techno Commercial offer for Next Gen SOC with Five year support

Dear Sir,

This has reference to our discussion and as per CEA SOC guidelines we Dievas Technologies Pvt. Ltd excel into setting up Security Operation Centre (SOC) and would like to submit the commercials accordingly.

Commercials for SOC Project						
S.No.	Description/Item	UoM	Qty.	Unit Price without GST	Total Price excluding GST	Total Price including GST @ 18%
A	Cost of the Software & Hardware including 5 years Back-to-Back OEM Warranty / Support & Product Update					
1	Next Generation Security Information and Event Management (NG SIEM)	Lot	1	15847458	15847458	18700000
2	Security Orchestration, Automation and Response (SOAR)	Lot	1	8983051	8983051	10600000
3	Network Behaviour Anomaly Detection (NBAD)	Lot	1	9237288	9237288	10900000
4	User and Entity Behaviour Analytics (UEBA)	Lot	1	[illegible]	[illegible]	9500000
5	Database Activity Monitoring (DAM)	Lot	1	10000000	10000000	11800000
	Total cost of the Software					61800000
6	2x2 55 inch Video Wall with CPU	Nos	1	6000000	6000000	7080000
7	24x7 Workstation including OS & 21' Monitor	Nos	4	150000	600000	708000
8	Log Collectors in HA (in active passive mode of operation)	Nos	6	800000	4800000	5664000

Dievas Technologies
A1524- Tower 1.5, NX- Byte, Plot No 17, Sector – Tech Zone-IV, Greater Noida, UP - 201308, India
CIN: [illegible]

+91 [illegible]
sales@dievastechnologies.com
www.dievastechnologies.com

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9	Necessary Server & Storage infrastructure (Hyper converged infrastructure for complete SOC solution along with necessary Licensing for Hypervisor Kernel and OS	Lot	1	85,49,763	85,49,763	100,88,720
10	Firewall on HA with 5 year support	[illegible]	1	45,76,271	45,76,271	54,00,000
	Associated Peripherals					
11	Server Rack	Nos	2	6,00,000	12,00,000	14,16,000
12	Switches & Routers	Lot	1	26,00,000	26,00,000	30,68,000
13	Cables & Accessories	Lot	1	4,00,000	4,00,000	4,72,000
14	Installation, configuration and training	Lot	1	55,96,000	55,96,000	66,03,280
	Total cost of the Hardware					4,05,00,000
B	SOC Operation Cost					
1	Comprehensive Operation and Maintenance cost along with deputation of outsourced technical experts for operating the SOC 24 x 7 (Level 1 and 1 Level 2 resources round the clock)	Month	24			170,00,000
	Total SOC Operational Cost					170,00,000
	Total SOC Cost					11,93,00,000

Terms & Conditions:

1. Above SOC Solution offered is with [illegible] warranty & support including Software [illegible] and hardware support
2. On-Prem implementation cost is included above @HP SLDC
3. Man Power is considered for 2 Years only
4. Customer is required to provide necessary space for hardware deployment
5. Estimate time of Project go live & Monitoring would be 8-12months including Supply, Installation & configuration of the hardware, testing and validation
6. GST is calculated @18% as applicable

Dievas Technologies
A1524- Tower T3, NX- Byte, Plot No 17, Sector – Tech Zone-IV, Greater Noida, UP - 201308, India
CIN: U7110MH1973PLC038783

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7. 24x7 SIEM services for 5 years duration including hardware and software support
8. Storage sizing is included having capability of storing 3 months log on the fly and balance 6 months log in archive /compressed mode.
9. Above offer is valid for 30 days.
10. Payment terms as per Govt. standard terms.

Kindly do let us know in case of any clarification required.

For Dievas Technologies Pvt. Ltd.

Anubhav Bansal
DGM-Sales
+91 [illegible]

Format A1

SUMMARY OF PROPOSAL

For Official Use - To be filled by the Nodal Agency	
Project Proposal Number : _____	Date of Receipt :

To be filled by the Requesting Organization / Project Entity	
1. Name of the requesting Organization / Utility :	Himachal Pradesh State Load Dispatch Centre
2. Short Summary of Project / Scheme / Activity	
a. Name and location of the Project / Scheme / Activity :	Establishment of Cyber Security Operation Centre (C-SOC) in Himachal Pradesh State Load Dispatch Centre Totu Shimla-11
b. Objective of the Project / Scheme / Activity :	The main objective of establishment of Security Operation Centre is to monitor the network traffic and user behaviour for security threats and vulnerabilities, & further prevention by appropriate actions in the security solutions.
c. Authorized Person For this Project / Scheme / Activity	Name : Er. Rakesh Chand Negi E-mail ID : sehpsldc@gmail.com Land line No : 01772838662 Mobile No. : 9418025280
d. Nature of the Project / Scheme / Activity: Inter – State / Intra – State (Please Specify)	Intra state
e. Identified Beneficiaries	Himachal Pradesh State Load Despatch Centre, HPPTCL, HPPCL, HPSEBL, Govt. of HP, Independent Power Producers/ Captive Power Plants, Renewable Energy Generating Stations & all other Intra/Inter-State OA generators & consumers and other constituents of Northern Region.

f. Merits of the scheme	• Monitoring of the network traffic of all the network equipments, servers etc. and taking appropriate action upon detection of treats. • Prevention of the IT/OT system from the cyber threats and vulnerabilities. • Threat information integration and mitigation. • Mitigation of any financial loss occurred due to cyber threat.
g. Limitations, if any	No limitation envisaged.
h. Time frame for Implementation	12 Months
i. Estimated Cost of Project / Scheme / Activity	**Rs. 11.93 Crores**
j. Category under which the project is classified (Please refer Para 5.1 of the Guidelines/Procedure)	As per the directions issued from GRID INDIA (Erstwhile POSOCO) vide their office letter no:CC/Engineering/Sep 2022/CERT-GO /NewDPR dated 13th September 2022 , this project for implementation of SOC in HPSLDC is eligible for 100 % grant from PSDF funding

Date: 04 Feb 25

Signature: _____

Name: Er Rakesh Chand Negi

Designation: Superintending Engineer

Format A2

DETAILED PROPOSAL (DP)

1. Details of the Requesting Organization / Project Entity

1.1 Details of Organization / Entity

Name of Organization / Entity	Himachal Pradesh State Load Dispatch Centre
Acronym or Abbreviation (if applicable)	HPSLDC

1.2 Details of Head of the Organization

Name (Mr / Ms / Mrs)	Er B.L. Thakur
Designation	Managing Director
E-mail Address	mdhpsldc@gmail.com
Landline No.	01772837649
Address	HP State Load Despatch Centre, GoHP, Totu, Shimla.
City	Shimla
Postal Code	171011

1.3 Details of Project Incharge / Project Manager (Authorized Person) for this project/ scheme/ activity (Not below the rank of Dy. General Manager / Superintending Engineer)

Name (Mr / Ms / Mrs)	Er. Rakesh Chand Negi
Designation	Superintending Engineer
E-mail Address	sehpsldc@gmail.com
Landline No.	01772838662
Mobile No.	9418025280
Address	O/o Managing Director HPSLDC GoHP Totu Shimla-11
City	Shimla
Postal Code	171011

2. Justification of the Proposal

As per the IT Act 2018 the organisation having protected system shall establish a Cyber Security Operation Centre (C-SOC) using tools and technologies to implement preventive, detective and corrective controls to secure against advanced and emerging cyber threats.

2.1 Analysis of the Objective

SLDC has automated the business process for ease in carrying out its functions, increased productivity, knowledge-based work environment and improved decision-making. In the present scenario cyber security has become a major issue in the organisations because of intrusions by the hackers in automated system. In order to prevent these attacks from hackers a system i.e. Security Operation Centre has been proposed which has the functions to provide insight into the network system and monitoring of the traffic for probable threats and vulnerabilities, and further controlling by appropriate actions in the security solutions deployed in the system. The solution for SOC is to be financed under the Central PSDF fund as a grant in aid scheme.

2.2 Identified Beneficiaries of the Project

Implementation of the Security Operation Centre will prevent the SLDC protected system against the advanced and emerging threats. Further it will enhance the confidence among the business entities/Stakeholders dealing with the SLDC for their business in respect of security in cyber domain.

2.3 Identified Source of Funding

The project for Establishment of Security Operation Centre is to be funded 100% under Central PSDF Fund as a grant in aid.

2.4 Details of Activities for Project / Scheme / Activity

After getting approval of the DPR from PSDF funding having 100% grant the following activities will be done

- The tender document for solution of Cyber Security Centre (C-SOC) will be prepared and published for tendering.
- Evaluation of tenders and awarding of the tender to the successful bidder.
- Site survey for installation of SOC, project engineering road map and drawings for execution.
- Factory Acceptance Test
- Supply, Installation, Integration, Commissioning and stabilisation of the C-SOC solution.
- Operation and Maintenance of the C-SOC project for two years.
- AMC of the complete solution hardware and software from OEM for five years.

2.5 Executing Agency

Himachal Pradesh State Load Despatch Centre (HPSLDC)

Timeline of Activities																
S.No.	Description	Year	2025-26												2026-28	
		Month	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M 11	M12	M13-M24	M-25-36
1	Project Approval															
2	Bid Preparation															
3	Bidding Period															
4	Evaluation, Contract Award and Mobilization															
5	Supply of solutions															
6	Installation Integration Commissioning Testing of the Solution															
7	Documentation Testing and Training															
8	Go Live															
9	Stabilisation of SOC															
10	AMC															

2.6 Time line for Implementation of Project / Scheme / Activity

The proposed time line taken for execution of Establishment of Security Centre in HPSLDC is one year.

Timeline of the Project / Scheme / Activity	
Duration of Project (in Months)	**12 Months (after the Letter Of Award)**
Likely Start Date	**01.07.2025**
Likely Completion Date	**31.06.2026**

Date: 04 Feb 25

Signature: _____

Name: Er. Rakesh Chand Negi

Designation: Superintending Engineer

Format A3

Summary of Detailed Project Report (DPR)

Summary of DPR given - Yes **Copy of the DPR attached. – Yes**

Particular	Total(Qty)	Quarter-1	Quarter-2	Quarter-3	Quarter-4	Two Years
Implementation of Cyber Security Operation Centre	**LS**	Bid preparation & Biding period	Evaluation of Contract, Award & supplies of materials	Installation, Integration, commissioning, testing of solution	Testing, Training & Tuning of SOC	Operation and Maintenance of SOC Solution

Target of Financial Milestone (Rs. Crore)

Description of amount required	Total Cost (Rs. Crores)	Quarter-1	Quarter-2	Quarter-3	Quarter-4	Two Years
11.93 Crores	11.93	0	3.39	6.18	.66	1.70 Crore

Date: 04 Feb 2025

Signature: _____

Name: Er. Rakesh Chand Negi

Designation: Superintending Engineer

Format A4

Financial Implication of the Scheme

1. Summary

S.No.	Item	Amount in (Rs. Crores).
1.	Total Cost Estimate	11.93
2.	Funding Proposed from PSDF	11.93
3.	Contribution from Internal Sources	Nil
4.	External Borrowings	Nil

2. Details

2.1 Cost Estimate

The Estimated Cost for Establishment of Cyber Security Operation Centre (C-SOC) has been worked out on the basis of the Budgetary offer taken from M/s Dievas Technologies, Greater Noida, UP.

3. Funding

3.1 Funding Proposed from PSDF as grant

The estimated cost of Rs.11.93 Crores is proposed for funding from PSDF as 100% grant in aid.

3.2 Contribution from Internal Sources

NIL

3.3 External Borrowings

NIL

Date: 04 Feb 2025

Signature: _____

Name: Er. Rakesh Chand Negi

Designation: Superintending Engineer

UNDERTAKING

(On a Non-judicial Stamp paper of Rs. 50 only duly notarized and attested)

I, **Er Rakesh Chand Negi** son of **Sh. D S Negi** resident of **Village Dhanoti, P.O. Samra, Tehsil Tikkar, Distt. Shimla (HP)-171203** and presently working in the capacity of **Superintending Engineer** in **Himachal Pradesh State Load Dispatch Authority, Govt. of HP, Totu, Shimla (HP)** hereby undertake to comply with the following terms and conditions with regard to funding of the "**Establishment of Cyber Security Operation Centre (C-SOC) in Himachal Pradesh State Load Dispatch Centre Totu Shimla-11** "with disbursement from PSDF:

- **No tariff shall be claimed for the portion of the scheme funded from PSDF Scheme of MoP, Govt. of India.**
- **Amount of grant shall be refunded in case of transfer/disposal of the facility being created under this proposal to any other scheme for funding.**
- **The grant for the scheme is not taken/or proposed to be taken from any other agency.**
- **The grant shall be refunded back to PSDF in case of non-utilisation of the grant within one year of release of installment.**
- **The space is available for installation of equipment of SOCs.**
- **There is no duplicity of work under this proposal to any other previously sanctioned project under PSDF scheme.**

Date: 04 Feb 25

Signature: _____

Name: Er. Rakesh Chand Negi

Designation: Superintending Engineer

Cost-Benefit Analysis

The execution of the scheme for " **Establishment of Cyber Security Operation Centre (C-SOC) in Himachal Pradesh State Load Dispatch Centre Totu Shimla-11"** shall lead to tangible and intangible benefits. The direct benefits to detects and prevents cyber threats, ensuring seamless operations and peace of mind.The indirect benefit shall accrue by minimizing downtime, operational disruption, reputational damage, time and internal resources, and legal and non-compliance fees.

The cyber threat to critical infrastructure continues to grow and represents one of the most serious national security challenges we must confront. The national and economic security of the State depends on the reliable functioning of the State's critical infrastructure in the face of such threats. It is the policy of the Ministry of Power, GoI to secure and resilience of the Nation's critical infrastructure and to maintain a cyber environment that encourages efficiency, innovation, and economic prosperity while promoting safety, security and business confidentiality of the State/Nation's Grid. The Framework is not a one-size fits-all approach in managing cybersecurity risk for critical infrastructure. Organizations will continue to have unique risks — different threats, different vulnerabilities, different risk tolerances. Ultimately, the Framework is aimed at reducing and better managing cybersecurity risks. Indeed, in today's interconnected digital world, managing cybersecurity risk has become a critical component of an organization's enterprise risk management program.

HPSLDC Control Centre is equipped with critical ICT's (Information and Communication Technology) system comprising of SCADA& EMS system. The digitization of OT & IT systems has unlocked many new efficiencies and capabilities but has also brought with it new risks with respect to cyber security. The critical role these devices play in interfacing between the `cyber world' and the 'physical world' makes them a target for threats for those who want to cause the greatest interruptions to a nation's electricity supplies. This moves the power system from a maturity driven and checklist-based approach towards a risk driven one based on an understanding of cyber security threat. In recent years, the numbers of cyber-attacks are increasing rapidly. It has been well established that cyber-attacks can result in a large number of negative impacts on the secure, reliable and economic operation of a system exploiting Grid technologies. Thereafter, effects can result in blackout, brownout, instability, unreliability, failure and economic losses.

Recently potential threats to the critical power systems has been observed particularly from China in Indian Power Grid such threats are vulnerable that could cut off power for hours, days, weeks or even months

The proposed scheme would have tremendous benefit to HPSLDC as the scheme provide the security from possible cyber threats/attacks for reliable and safe Grid operation.

Date: 04 Feb 25

Signature:

Name: Er. Rakesh Chand Negi

Designation: Superintending Engineer

HIMACHAL PRADESH ELECTRICITY REGULATORY COMMISSION
Vidyut Aayog Bhawan, SDA Complex, Block No.- 37, Kasumpti - 171009
Tel No.0177-2627263,2627907,2627908 Fax.No.0177-2627162
E-mail: hperc@rediffmail.com Website:http://www.hperc

NO.HPERC-ED (T)/ARR/D(TE)/ 110/ Vol -II - 1107 Dated: 05.07.2024

To

The Chief Engineer,
HPSLDC, Govt of HP,
SLDC Complex, Totu, Shimla-11

Subject: Detailed Project Report for the Work "Establishment of Security Operation (SOC) Centre at HPSLDC Shimla" for in principle approval.

Sir,

Please refer to your letter No. HPSLDC/SLDC SOC 98/2024-25-2654 dated 27.06.2024 on the subject cited above, under cover of which you have requested the Commission to grant in principle approval for the said DPR, so that further request for approval of Grant under the central PSDF may be made to the NLDC.

2. May kindly note that the Commission has in its MYT Order for the period from FY 2024-2025 to FY 2028-2029 dated 15 March 2024 at Para 4.2.7 III has considered and taken note of this scheme, and, directed the Petitioner to prepare the DPR and take approval of the scheme from Central PSDF Monitoring Committee expeditiously preferably before the Mid Term Review (MTR). The Commission shall review the scheme at the time of MTR and the Capitalization of this scheme accordingly would be considered at the time of MTR for the 5th Control Period.

3. In view of the above as requested by the HPSLDC, I am directed to convey the in principle approval of the Commission to take up this CAPEX Scheme as per the mandate of the Central Government, to be entirely funded through the Central PSDF of MoP, GoI. The HPSLDC shall manage within the existing manpower.

4. The HPSLDC is directed to keep the Commission informed about the latest status of approval and execution of this project on regular basis.

MD (HPSLDC), Totu
MS
CE
SE-I
SE-II
FO/S/AO
HR/US
PS
9/7/24

Xen(IT)

Yours sincerely,

(Er. Yashwant Singh)
Executive Director (Technical

No. 15/3/2018-Trans-Part(5)
Government of India
Ministry of Power
Shram Shakti Bhawan, Rafi Marg, New Delhi- 110001

Date: 18th February, 2025

OFFICE ORDER

Subject: Amendment in the composition of the "National Committee on Transmission" (NCT) - reg.

The undersigned is directed to state that the composition of the existing National Committee on Transmission (NCT), issued vide this Ministry's Office Order No. 15/3/2018-Trans-Pt(5) dated 28.10.2021 (copy enclosed), is hereby amended as follows:

Composition of NCT:

1	Chairperson, CEA	Chairman
2	Member (Power System), CEA	Member
3	Member (Economic & Commercial), CEA	Member
4	Joint Secretary level officer looking after transmission in M/O of New & Renewable Energy, Govt. of India	Member
5	Director (Trans), M/o Power, Govt. of India	Member
6	Chief Operating Officer, Central Transmission Utility	Member
7	CMD, GRID-INDIA	Member
8	Advisor (Energy), NITI Aayog	Member
9	Two Experts from Power Sector to be nominated by MoP *	Members
10	Nominee of each of the five Regional Power Committees (RPCs)	Members
11	Chief Engineer (from Power System Wing), CEA	Member Secretary

*will be nominated for a maximum period of two years from the date of their nomination.

2. The Terms of Reference (ToR) of the NCT and other conditions shall remain the same as mentioned in this Ministry's Office Order No. 15/3/2018-Trans-Pt(5) dated 28.10.2021.

3. This issues with the approval of the Minister of Power.

18/2/25

(Naorem Indrakumar Singh)
Under Secretary (Trans)
Tele-Fax: 2332 5242
Email: transdesk-mop@nic.in

To

1. All Members of NCT.
2. Secretary, Ministry of New & Renewable Energy, Govt. of India.
3. Chairperson, CEA, New Delhi.
4. Secretary, CERC
5. Chairperson of all five Regional Power Committees (RPCs)
6. CMDs of all CPSUs under the Ministry of Power, Govt. of India.
7. Heads of all autonomous bodies under the Ministry of Power, Govt. of India
8. Finance/ Budget Section, Ministry of Power.
9. Power/ Energy Secretaries of all States/UTs.
10. Chief Executives of all State Power Transmission Utilities.
11. CEO, NITI Aayog, New Delhi.

Copy to:

i. PS to Hon'ble MoP/ PS to Hon'ble MoSP/Sr PPS/ PPS/ PS to Secretary(Power)/ AS(T)/AS(IC)/ all Joint Secretaries/ Economic Advisor/ All Chief Engineers/ all Directors/ Dy. Secretaries, Ministry of Power.
ii. Technical Director, NIC, M/o Power, for publishing this order on the website of M/o Power.

18/2/25

पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)

Reference: CC/HRD/NRPC/2024-25 **Date**: 19th Feb 2025

To,

The Executive Engineer (Protection),
Northern Regional Power Committee Secretariat,
Ministry of Power, Government of India
New Delhi.

Sub: 5-days residential training on "Protection of Power System" for officials of NRPC's Constituent members at PAL, Manesar.

Reference: Letter dated 06 February 2025.

Dear Sir,

This is in reference to your communication regarding the subject matter. We are glad to present our offer with details as below:

1. **Program:** 5-days residential training on "Protection of Power System" for officials of NRPC's Constituent members at PAL, Manesar.
2. **Duration/Dates:** 05 Days, dates will be mutually finalized.
3. **Nature of Program:** Residential
4. **Scope of services:**
    - Designing of Module
    - Delivery of sessions
    - Boarding & Lodging of Participants at PAL
    - Training Kit
    - Study Material

5. **Program Fee (Excluding GST):**
    - Program fees for one batch (for a batch size up to 25 participants): **INR 10,00,000/-**
    - Per participant program fee for additional participants above 25: **INR 40,000/-**

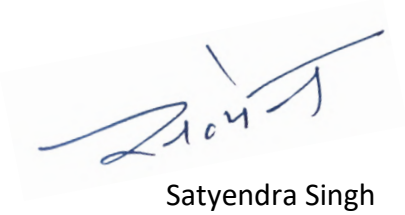
6. **Payment Terms:**
    a) Minimum Billing will be done for a batch of 25 participants.
    b) 100% program fee along with applicable GST will be payable within 15 days after completion of program and against GST invoice raised to NRPC.
    c) TDS, if deducted will have to be supported by TDS certificate and will be the responsibility of NRPC to provide it to POWERGRID.
    d) TDS (GST) is not applicable for payment between two government/PSU entities.

7. Validity of offer: FY 2025-26

Kindly acknowledge the offer and convey your acceptance.

Thanking you and assuring you our best services at all times,

Yours faithfully,
For and on behalf of
Power Grid Corporation of India Limited



Satyendra Singh
Manager (HRD)
Mob.- 7042713037,
E-Mail- satsingh1101@powergrid.in

Annexure-XIV

सत्यमेव जयते

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
विद्युत संचार विकास प्रभाग
Power System Communication Development Division
****

Subject: Comprehensive guidelines for the usage and sharing of optical fibers of OPGW/UGFO cables for power system applications - reg

महोदय / Sir,

The rapid expansion and modernization of the power sector necessitate a robust, secure and efficient communication infrastructure. Optical Ground Wire (OPGW)/Underground Fiber Optic Cable (UGFO) plays a crucial role in ensuring seamless data exchange, real-time monitoring, and reliable operation of power systems. However, with increasing demands and multiple stakeholders involved in fiber usage, it became essential to establish a structured framework governing the sharing and utilization of fiber cores of OPGW/UGFO cable.

A Committee was constituted under the chairmanship of Member (Power System), CEA tasked with formulating comprehensive guidelines for the usage and sharing of fiber cores of Optical Ground Wire (OPGW)/ Under Ground Fiber Optic (UGFO) Cable for power system applications.

With the collective efforts of the Committee, CEA has formulated Comprehensive guidelines for the usage and sharing of fiber cores of Optical Ground Wire (OPGW)/ Under Ground Fiber Optic (UGFO) Cable for power system applications. The list of nominated members and the Terms of Reference of the Committee are attached as Annexure to the guidelines.

It is requested that all utilities/TSPs, power system stakeholders, and users to adopt and adhere to these guidelines.

भवदीय,
Signed by Suman Kumar Maharana
Date: 03-03-2025 13:13:55
(S K Maharana)
Chief Engineer,
Power System Communication Development Division,
Central Electricity Authority

Comprehensive guidelines for the usage and sharing of fiber cores of Optical Ground Wire (OPGW)/ Under Ground Fiber Optic (UGFO) Cable for power system applications

भारत सरकार
Government of India

केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority

विद्युत मंत्रालय
Ministry of Power

February 2025

Acknowledgement

The rapid expansion and modernization of the power sector necessitate a robust, secure and efficient communication infrastructure. Optical Ground Wire (OPGW)/Underground Fiber Optic Cable (UGFO) plays a crucial role in ensuring seamless data exchange, real-time monitoring, and reliable operation of power systems. However, with increasing demands and multiple stakeholders involved in fiber usage, it became essential to establish a structured framework governing the sharing and utilization of OPGW fibers.

The formulated guidelines establish a structured approach to fiber allocation, safeguarding power system communication needs and mitigating future conflicts. These guidelines also ensure that commercial leasing of fiber cores is managed in a way that does not hinder the grid's operational efficiency and reliability.

A committee was constituted with the approval of the Chairperson, CEA, to formulate comprehensive guidelines for the usage and sharing of fiber cores of OPGW/UGFO cable for power system applications. The complete list of the nominated members of the Committee as well as Terms of Reference of the Committee has been annexed with the guidelines.

As the Convenor of the Committee, I express my deepest gratitude to all committee members for their invaluable contributions in shaping these guidelines. Their collective efforts have resulted in a standardized framework that will ensure transparency and efficiency in the usage and sharing of OPGW fiber infrastructure. The technical insights and dedication of all Committee members have played a crucial role in developing these comprehensive guidelines, which will significantly mitigate conflicts and enhance the reliability of grid communications.

I extend special thanks to Shri Ghanshyam Prasad, Chairperson, CEA, for his vision and leadership in constituting this Committee. I am also grateful to Shri A K Rajput, Member (Power Systems), CEA, for chairing the Committee and steering discussions towards a balanced and effective outcome.

Furthermore, I would like to acknowledge the specific contribution made by the officers of Power System Communication Development Division, CEA namely Ms. Priyam Srivastava, Deputy Director; Shri Akshay Dubey, Deputy Director and Shri Arjun Agarwal, Assistant Director. The guidelines have been brought out by the dedicated and sincere efforts of these officers.

Shri S K Maharana,
Chief Engineer, PSCD Division & Convenor of the Committee

Table of Contents

Abbreviations:

1.	AGC - Automatic Generation Control
2.	CERC - Central Electricity Regulatory Commission
3.	CTU - Central Transmission Utility
4.	FOTE - Fiber Optic Terminal Equipment
5.	GSS - Grid Substation
6.	IEEE - Institute of Electrical and Electronics Engineers
7.	IEC - International Electrotechnical Commission
8.	InSTS - Intra-State Transmission System
9.	IPPs - Independent Power Producers
10.	ISGS - Inter-State Generating Station
11.	ISTS - Inter-State Transmission System
12.	LILO - Loop-in-Loop-Out
13.	NLDC - National Load Dispatch Center
14.	NoC - No Objection Certificate
15.	OPGW - Optical Ground Wire
16.	PMU - Phasor Measurement Unit
17.	PSCD - Power System Communication and Development
18.	RLDC - Regional Load Dispatch Center
19.	RoW - Right of Way
20.	SCADA - Supervisory Control and Data Acquisition
21.	SERC - State Electricity Regulatory Commission
22.	SLDC - State Load Dispatch Center
23.	STU - State Transmission Utility
24.	TSP - Transmission Service Provider
25.	UGFO – Under Ground Fiber Optic Cable
26.	VoIP - Voice over Internet Protocol

Comprehensive guidelines for the usage and sharing of fiber cores of Optical Ground Wire (OPGW)/ Under Ground Fiber Optic (UGFO) Cable for power system applications

---

1. Introduction

1.1. These guidelines have been formulated to establish a uniform procedure for the sharing of fiber cores of Optical Ground Wire (OPGW)/ Under Ground Fiber Optic (UGFO) Cable deployed across the power transmission network, ensuring reliable, secure, and continuous monitoring and operation of the grid. They provide a comprehensive framework for fiber allocation, addressing the diverse needs of grid operations, system protection, as well as authorized commercial use. It establishes principles for effective resource allocation, maintaining sufficient redundancy to support future requirements, such as Loop-in-Loop-Out (LILO) expansions, network reconfiguration and scalability to accommodate evolving operational demands.

1.2. In alignment with the *Central Electricity Authority (Technical Standards for Communication System in Power System Operations) Regulations, 2020*, and the *Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022*, these guidelines have been formulated to support seamless communication needs for power system at national level, regional level, inter-state and intra-state level. By fostering a consistent approach to fiber sharing and allocation, these guidelines intends to promote interoperability and efficiency across multiple entities and users within the power system, ensuring reliable and uninterrupted communication system, which is critical for grid stability and operations.

2. Allocation Requirements

2.1. On any transmission line, minimum of 6 fibers are always in use for critical grid communication, supporting Supervisory Control and Data Acquisition (SCADA), Phasor Measurement Unit (PMU), Voice over Internet Protocol (VoIP), Automatic Generation Control (AGC), and other real-time operations (2 Main, 2 Hot Standby, 2 Spares).

Additionally, for transmission lines requiring line differential protection:

- **4 fibers** are used for reliable differential protection of single feeder (S/c line).
- **8 fibers** are used for reliable differential protection of a double circuit (D/c) line.

2.2. Over and above these fibers which are already in use, the fibers that shall be spared for future grid communication requirements, based on need, is tabulated below:

Type of Future Grid Communication Requirements	**Fiber Allocation**	**Remarks**
Alternate Communication Path/Future expansion/Reconfiguration/LILO requirement/Inter-Utility Communication etc.	Upto 6 Fibers	Shall be spared as and when required for future grid communication requirements of ISTS/In-STS/ISGS/Radial feeders etc.

Type of Future Grid Communication Requirements	Fiber Allocation	Remarks
Line Differential Protection with future reconfiguration, if applicable.	Upto 4 Fibers per circuit	Shall be spared in case new differential protection schemes are required due to system expansion, reconfiguration or LILO additions.
Technology Migration/Centralised Asset Management & Control.	Upto 4 Fibers	Shall be spared for simultaneous transition to next-generation communication networks (e.g., packet-based systems).

Additional Considerations:

1. The actual number of healthy fiber cores to be spared free of cost for future grid telemetry requirements, within the limits stipulated in table above, shall be decided as and when the need arises.
2. **Commercial Utilisation of Fiber cores** –

   - While leasing excess fibers for **non-grid applications**, utilities/Transmission Service Providers (TSPs) must **reserve the right to intervene, seek withdrawal, or cease utilization of leased fibers** to address any emerging grid requirements. The contract to include flexibility for renewal or termination based on evolving needs.

   - The **number of fiber cores to be leased** and the **duration of leasing** must be planned in a rational way, such that, whenever the need arises to spare fibers for grid applications, their availability cannot be denied on the premise that the spare fibers are already leased out for commercial purpose. Additionally, under no circumstances should the routing of grid application data to the SLDC/RLDC (State/Regional Load Dispatch Centers) be adversely affected.

3. Commercial Utilization of OPGW Fibers for other purposes

3.1. While Optical Ground Wire (OPGW) is primarily implemented on transmission assets for telemetering power system parameters and ensuring reliable grid communication, spare fiber cores may be commercially utilized under the following conditions:

3.1.1. **Grid Applications Take Priority** – Spare fibers can be leased for commercial purposes, provided that whenever the need arises for grid applications, the number of cores within the limits stipulated in the Allocation Requirements, is made available without exception.

3.1.2. **Assessment of Future Grid Communication Needs –** Before leasing fiber cores, STUs/TSPs must conduct an assessment of impending grid communication requirements for atleast next five years. This assessment shall be holistic considering state/regional/national level requirements for routing of the data to SLDCs/RLDCs. STUs/TSPs intending to lease fiber cores to collaborate with CTU to discuss:

- Upcoming **grid expansion plans** and their communication requirements.
- Possible dependencies where **ISTS/STU networks need mutual data routing support**.
- The spare fiber capacity that should be **retained for future grid needs** before considering commercial leasing.

Based on this assessment, entities must determine **how many cores can be leased** and the **duration of leasing**, without affecting the availability for future grid applications.

3.1.3. **Termination Clause in Leasing Contracts** – All leasing contracts must include a termination clause, mandating at max 18 month notice period for making the fiber cores available for grid applications whenever required. This ensures that grid operator can reclaim the necessary fibers for critical grid operations with adequate notice. However, it is always advisable to retain some spare fibers for emergency or future grid communication needs in advance, rather than having to invoke the termination clause of the contract when the need arises.

3.1.4. **Regulatory Compliance** – Any commercial utilization of spare fibers must adhere to applicable CERC/SERC regulations pertaining to the 'Sharing of Revenue Derived from Utilization of Transmission Assets for Other Business.'

3.1.5. **Intimation to RPCs for ISTS Fiber Leasing** –

Any ISTS licensee/TSPs proposing to lease fiber cores on a commercial basis must provide prior intimation to the concerned Regional Power Committees (RPCs) regarding:

i. The number of fiber cores proposed for commercial utilization.
ii. The duration of the lease.
iii. The mechanism incorporated in the contract to ensure fiber availability in case of future grid requirements.

3.2. It must be emphasized that the primary purpose of fibers in OPGW/UGFO implemented as part of a transmission scheme is reliable telemetering of power system parameters. Commercial utilization of these transmission assets can only be done after a prudent evaluation of future grid communication needs, ensuring that grid operations are never compromised.

3.3. Proper planning and foresight are necessary to ensure that the commercial use of spare fibers does not jeopardize the security, reliability, and expansion needs of the power system communication network.

4. Sharing Scenarios

The table below outlines fiber-sharing arrangements across different transmission line ownership scenarios, ensuring that:

- Fibers essential for grid operations are spared free of cost, irrespective of whether they are required for Intra-State (InSTS) or Inter-State (ISTS) communication needs.
- Entities to spare healthy fibers, within the limits stipulated in the Allocation Requirements, whenever grid needs arise.

Scenario	**Entity to manage the allocation for grid operation purposes.**	**Fiber Sharing**
i) OPGW Laid Under ULDC Scheme on ISTS Lines	Owned and maintained by POWERGRID. Allocation to be managed by CTU.	Fibers to be **spared free of cost** as per Allocation Requirements outlined in Clause 2, whenever required by **STUs, ISTS Licensees/TSPs** for any type of future grid communication requirements.
ii) OPGW Laid Under ULDC Scheme on Intra-State Lines (InSTS)	Owned and maintained by POWERGRID. Allocation to be managed by STU with CTU coordination.	Fibers to be **spared free of cost** as per Allocation Requirements outlined in Clause 2, whenever required by **STUs, ISTS Licensees/TSPs** for any type of future grid communication requirements.
iii) OPGW Laid by STUs on Intra-State Lines	Owned and maintained by STU. Allocation to be managed by STU.	Fibers to be **spared free of cost** as per Allocation Requirements outlined in Clause 2, whenever required by **STUs, ISTS Licensees/TSPs** for any future grid communication requirements.
iv) OPGW Laid by CTU/POWERGRID on Intra-State Lines	Owned and maintained by POWERGRID. Allocation to be managed by CTU with STU coordination.	50% fibers allocated for **ISTS operations**, 50% for **Intra-State operations**. If more than 50% is required by either, fibers to be **spared free of cost**, for any type of future grid communication requirements.
v) OPGW Laid by TSPs on ISTS Lines under TBCB/RTM Projects	Owned and maintained by TSP. Allocation to be managed by CTU	Fibers to be **spared free of cost** as per Allocation Requirements outlined in Clause 2, whenever required by **STUs, ISTS Licensees/TSPs** for any type of

Scenario	Entity to manage the allocation for grid operation purposes.	Fiber Sharing
		future grid communication requirements.
vi) OPGW Laid by TSPs on Intra-State Lines through TBCB	Owned and maintained by TSP. Allocation to be managed by STU	Fibers to be **spared free of cost** as per Allocation Requirements outlined in Clause 2, whenever required by **STUs, ISTS Licensees/TSPs** for any type of future grid communication requirements.
vi) OPGW Laid by POWERGRID/STU's on Deemed ISTS Lines	Owned and maintained by POWERGRID/STU. Allocation to be managed by CTU with STU coordination.	50% fibers allocated for **ISTS operations**, 50% for **Intra-State operations**. If more than 50% is required by either, fibers to be **spared free of cost** for any type of future grid communication requirements.
vi) OPGW Laid by TSPs at their own cost, utilizing the ISTS asset/RoW, with necessary approvals from CERC.	Owned and maintained by TSP. Allocation to be managed by CTU, as the OPGW now, is forming integral part of backbone ISTS Communication network. It is assumed that: • No OPGW was included in the originally approved scheme for the transmission line. • The TSP obtained necessary approvals from the competent authority prior to laying the OPGW.	Fibers to be **spared free of cost** as per Allocation Requirements outlined in Clause 2, whenever required by **STUs, ISTS Licensees/TSPs** for any type of future grid communication requirements.

5. Integration of FOTE for Differential Protection

5.1. Differential teleprotection is a vital component of power system protection, ensuring rapid and selective fault clearance. The choice of communication medium, whether IEEE C37.94 (herein after referred as C37.94) protocol over a shared fiber or separate optical fibers, significantly impacts the reliability and performance of this protection scheme.

5.2. The choice between C37.94 compliant FOTE and separate fiber cores for differential teleprotection depends on a variety of factors, including line length, voltage level, criticality, and network conditions. While C37.94 can be a cost-effective solution for certain applications, separate fibers offer superior reliability and faster fault clearance, making them the preferred choice for critical transmission lines, especially at higher voltage levels.

5.3. The Regional Power Committees (RPCs) generally prioritize a **reliable and dedicated communication link for line differential protection** to ensure the integrity and security of protection signals, especially given the criticality of fast and accurate fault detection for power system stability.

5.4. While specific practices may vary depending on the line's voltage level, length, and criticality, however, in order to guarantee reliable communication for line differential protection systems, the Committee recommends the following provisions:

Condition	**Recommendation**	**Reason**
High-Criticality and High-Voltage Lines (220 kV and above) requiring line differential protection	Preference to dedicated or separate fiber cores for line differential protection rather than shared fibers.	As per IEC 60834, which governs teleprotection equipment, the RPCs lean towards using communication setups that meet high reliability and availability standards, favoring separate fibers to reduce signal attenuation and improve reliability for critical protection.
Lower-Criticality or lines with Voltage below 220 kV requiring line differential protection	Line differential protection may be allowed on shared fibers via Fiber Optic Terminal Equipment (FOTE) using the C37.94 protocol	Multiplexing protection signals over a shared fiber can be a cost-effective solution, particularly when the risk of latency and interference is lower due to shorter transmission distances and moderate fault current levels.
High-Criticality and High-Voltage Lines (220 kV and Above) requiring line differential protection. However, having constraint in availability of dedicated Optical fibers.	Line differential Protection using C37.94-compliant FOTE over shared fiber may be allowed with the following condition: • The setup must meet the provisions of IEC 60834 regarding speed, security, and dependability standards under real-time conditions.	By ensuring reliable and timely communication, C37.94-compliant FOTEs can contribute to meeting the requirements of IEC 60834.

6. Routing of OPGW Fibers during LILO

6.1. In case of Loop-In-Loop-Out (LILO) of transmission lines, routing OPGW fibers must be done in a way that preserves the operational integrity of the grid's communication infrastructure. Key recommendations are elucidated in table below:

Main Line and LILO Configuration	**LILO Tower Type**	**OPGW Installation Requirement**	**Fiber Routing/Splicing in New Substation**	**Configuration Adjustments in Existing Substations**
Main Line: D/c, 24-Fiber OPGW; S/c LILO	M/c Or D/c Tower (Single Tower for Loop In and Out) with two Earth wire peaks	Install 24 F OPGW on both earthwire peaks i.e same Nos. of OPGW as that of main line on both earth wire peaks.	Route required no. of fibers only through the new substation. Splice the required number of fibers for the LILO section at the appropriate point.	Configure protection schemes and data transfer systems to accommodate the new line and substation Ensure fiber continuity for main line traffic.
Main Line: D/c, 24-Fiber OPGW; D/c LILO	Two Separate D/c Towers (Separate Loop In and Out)	Install 24F OPGW i.e same Nos. of fiber cores as that of main line on one earthwire peak per tower.	Route all fibers of OPGW from the main line through the new substation. Splice the required number of fibers for the LILO line at the new substation, if the new S/stn is of different entity.	Configure protection schemes and data transfer systems to accommodate the new line and substation Ensure fiber continuity for main line's traffic through the new S/stn
Main Line: D/C, 24-Fiber OPGW; D/c LILO	Multi-Circuit Tower	Install 24 F OPGW on both earthwire peaks i.e same Nos. of OPGW as that of main line on both earth wire peaks.	Route all fibers of OPGW from the main line through the new substation. Splice the required number of fibers for the LILO line at the new substation, if the new S/stn is of different entity.	Configure protection schemes and data transfer systems to accommodate the new line and substation Ensure fiber continuity for main line's traffic through the new S/stn

Main Line and LILO Configuration	LILO Tower Type	OPGW Installation Requirement	Fiber Routing/Splicing in New Substation	Configuration Adjustments in Existing Substations
Main Line: D/c (220 kV/132 kV), 24-Fiber OPGW; S/c LILO	Tower with Singe Earth wire peak	Install 48F OPGW i.e., double the number of fiber cores as that of main line on single peak available in LILO portion	Route half number of fibers (12F) of OPGW from the main line through the new substation Splice the required number of fibers for the LILO section at the appropriate point.	Configure protection schemes and data transfer systems to accommodate the new line and substation. Ensure fiber continuity for main line traffic.
Main Line: S/C (220kV/132 kV), 24-Fiber OPGW; S/c LILO	Tower with Singe Earth wire peak	Install 48F OPGW i.e., double the number of fiber cores as that of main line on single peak available in LILO portion	Route all fibers (24F) of main line OPGW through the new substation to maintain continuity between the existing stations. Splicing of all the fibers at the new S/stn to be done to integrate LILO traffic.	Configure protection schemes and data transfer systems to accommodate the new line and substation. Ensure fiber continuity for main line's traffic through the new S/stn.

6.2. Whenever a Transmission Licensee implements a Loop-In-Loop-Out (LILO) arrangement on an existing transmission line, adjustments must be made in the **existing Substations**, including **Fiber Optic Terminal Equipment (FOTE)**, **relays**, and **other protection equipment** to ensure seamless integration and reliable protection.

Table summarizing LILO adjustments in existing Substations

Equipment	Adjustments Required	Details
Fiber Optic Terminal Equipment (FOTE)	Signal reconfiguration, routing modifications, capacity upgrades, synchronization, integration with new FOTE, supply of necessary optical	Ensure compatibility with new LILO traffic, enhance capacity if required, and synchronization with relays.

Equipment	Adjustments Required	Details
	interfaces to meet link budget requirement.	
Relays	Reconfiguration of protection schemes, distance zone adjustments, differential protection tuning.	Modify relay settings for fault detection across LILO, adjust impedance settings, and back-up coordination.
SCADA and Telemetry	Data routing, alarm configuration, SCADA system updates.	Integrate new LILO substation data into SCADA, configure additional alarms for LILO events.
Amplifiers/Signal Boosters	Installation if required, signal quality testing.	Ensure strong signal levels across LILO paths, perform attenuation checks.
Protection Redundancy	Ensure redundancy, perform testing and commissioning.	Verify that no single point of failure exists, conduct fault simulations, and document updated settings.

6.3. The entity undertaking the LILO installation and commissioning of the new substation shall ensure that all necessary adjustments, interfaces, and configuration support are implemented to maintain seamless data communication and reliable operation of protection schemes without signal degradation or loss. It is incumbent upon this entity to provide comprehensive support to the owner of the existing substation, facilitating integration and ensuring that all configuration and interoperability requirements are met to uphold continuous, high-integrity signal transmission and effective protection functionality across the network.

6.4. When the LILO is performed at the substation, the leased fiber cores, if any, by the main line owner must be routed continuously through the LILO section. Entity undertaking LILO cannot commercialize fibers routed for main line owner's use to prevent potential disputes.

7. Maintenance of Database:

7.1. CTU for ISTS/ STUs for InSTS shall be responsible for monitoring the utilization of OPGW fibers and ensuring compliance with the established conditions. The CTU/STU shall maintain a comprehensive database that clearly segregates:

1. **Total number of OPGW fiber cores:** The total number of fiber cores available on the OPGW of the transmission lines.
2. **Number of cores utilized for grid applications:** The number of fiber cores currently being used for essential grid operations
3. **Spare cores reserved for grid applications:** The number of fiber cores specifically retained for future grid applications.

4. **Number of fiber cores already being shared for grid applications:** The number of fiber cores shared with other grid entities (e.g., other TSPs, STUs, DISCOMs) for grid-related purposes. This should include details of the entities involved in each sharing arrangement.
5. **Number of cores leased on a commercial basis:** The number of fiber cores leased to entities for non-grid applications (e.g., telecom providers, internet service providers). This should include details of the lease agreements, including the lessee, lease period, and terms of termination.

7.2. CTU/STU shall prepare a standardized format/procedure for the TSPs/Licensees to furnish the above data pertaining to OPGW fibers. CTU/STU shall display the data on its website.

8. OPGW Implementation in New Transmission Projects and Upgradation Schemes

8.1. In all the new transmission projects and upgradation schemes, the Planning agency should ensure that any decision regarding deployment of fiber cores considers both present needs and future expansions, balancing the infrastructure's capability with associated costs.

8.2. Planning of OPGW with a minimum of 48 fiber cores to be done, as per feasibility and requirement. For installations within city limits, OPGW may be equipped with 96 fiber cores to also facilitate usage by DISCOMs, SLDCs, RLDCs, and NLDC for last-mile connectivity, contingent upon the load-bearing capacity of the line. This approach will accommodate any additional future requirements, including Loop-In-Loop-Out (LILO) configurations or increased capacity utilizing the same Right of Way (ROW).

8.3. Additionally, since OPGW fibers can also support long-distance telecommunications network across India, the planning exercise should also take into account the dynamics of the telecom industry while determining the number of fibers to be deployed.

8.4. This strategy will facilitate the establishment of a robust, scalable communication network while maintaining efficiency and responsiveness to evolving operational needs across all areas.

9. Implementation Strategy for Existing ISTS/ InSTS Lines

9.1. Any ISTS TSP/In-STS utility/entity planning to lease out spare fiber cores of its OPGW on existing lines on commercial basis shall adhere to all the provisions and framework for fiber sharing and usage, as outlined in these guidelines.

9.2. For TSPs/utilities that have already leased out fiber cores before the issuance of these guidelines, it is expected that, as and when the need arises to spare fibers for grid applications, they will explore all possible means to make available the minimum no. spare fibers that can serve the purpose, free of cost. In cases where conflicts or stalemate arises regarding the availability of requisite number of fibers, a resolution committee shall be formed. This committee will include representatives from the RPCs, PSCD Division of CEA, CTU, concerned STUs /TSPs , with the goal of resolving the issue in a fair and balanced manner.

10. Conclusion

10.1. These guidelines aim to establish a standardized approach to the allocation and sharing of Optical Ground Wire (OPGW) fibers across power sector, ensuring secure, reliable, and scalable communication infrastructure that meets both present and future grid requirements. By implementing uniform principles for fiber allocation and usage, entities across the power sector—including CTU, STU, TSPs, DISCOMs, SLDCs, RLDCs, and NLDCs—can achieve consistent and efficient communication system for grid operations, protection, and commercial applications. These guidelines provide a clear and standardized framework for the allocation and sharing of Optical Ground Wire (OPGW) fibers, balancing the commercial prospects of fiber usage with the imperative of maintaining secure, reliable, and scalable grid operations.

11. Brief of Recommendations for Adoption

11.1. Uniform Fiber Allocation

Entities should adhere to this fiber allocation guidelines/framework for grid operations, ensuring designated fibers for essential communication and protection. Excess fibers may be designated for commercial use, subject to periodic review and regulatory oversight, thereby maximizing resource utilization without compromising the grid stability.

11.2. Compliance with CEA Regulations

All implementations should align with the CEA (Technical Standards for Communication System in Power System Operations) Regulations, 2020 , CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022, CERC Interface Requirements and CEA Cyber Security Guidelines, to promote standardized, high-quality communication infrastructures across the power transmission networks.

11.3. Scalability for Future Needs

In areas with high potential for future growth or within city limits, entities are encouraged to install OPGW with 48/96 fiber cores to provide sufficient capacity for last-mile connectivity, future expansions, and LILO requirements, leveraging the Right of Way (ROW) effectively.

11.4. Commercial Usage Protocol

Any commercial usage should adhere to the applicable CERC/SERC Regulations. All leasing contracts must include a termination clause, mandating at max of 18-month notice period for making the fiber cores available for grid applications whenever required. This ensures that grid operator can reclaim the necessary fibers for critical grid operations with adequate notice. However, it is always advisable to retain spare fibers for emergency or future grid communication needs in advance, rather than having to invoke the termination clause of the contract when the need arises.

11.5. **Coordination and Monitoring**

For LILO implementations and OPGW installations in new and upgraded transmission schemes, the entity responsible for installation of the same must provide continuous support to existing substations, facilitating configuration adjustments and ensuring reliable data transfer. Continuous monitoring by CTU is recommended to assess the impact of commercial use and maintain high standards of operational reliability.

These recommendations will ensure that all stakeholders in power system communication can operate within a unified framework, promoting efficiency, compliance, and grid security.

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Composition of the Committee constituted under the chairmanship of Member (Power System), CEA tasked with formulating comprehensive guidelines for the usage and sharing of optical fibers (OPGW) for power system applications:

S.no	Members	Organisation/Association
1.	Member (Power System) (Chair)	CEA
2.	Chief Engineer, PCD	CEA
3.	Chief Engineer, NPC	CEA
4.	Chief Engineer, ET & I	CEA
5.	Member Secretary, RPCs	RPCs
6.	Executive Director, CTU	CTU
7.	Executive Director, Grid India	GridIndia
8.	Executive Director, Powergrid	Powergrid
9.	Representative of Electric Power Transmission Association – 2 TSPs	EPTA
10.	Representative from STUs (at the level of Chief Engineer or equivalent)	• Northern Region: UPPCL, RRVPNL • Western Region: GETCO, MPPTCL •Southern Region: KSEBL,TANTRANSCO • Eastern Region: WBSETCL, OPTCL • North Eastern Region: AEGC

The Terms of Reference (ToR) of the Committee is as follows:

1) **Scope and Purpose:** Define the need to develop guidelines that address the unique requirements and challenges associated with the sharing of OPGW fibers among CTU, STUs, and Private Transmission Licensees.

2) **Allocation Requirements:** Define/determine the number of fibers required for catering to varied applications/services for grid management such as data, speech, protection etc., including minimum spare fibres to be earmarked for grid applications/requirements.

3) **Sharing Scenarios**: Analyse the scenarios wherein the spare fibers in the OPGW laid by an entity is to be shared amongst several entities (CTU, STU, TSPs) to facilitate real time grid monitoring. Formulating the uniform mechanism governing the access, usage, or other aspects of the shared fibers in following scenarios:

(i) Sharing of OPGW laid under ULDC scheme on the ISTS lines.
(ii) Sharing of OPGW laid under ULDC scheme on the Intra-State lines.
(iii) Sharing of OPGW laid by STUs on the Intra State lines.
(iv) Sharing of OPGW laid by CTU/Powergrid on the Intra State lines.
(v) Sharing of OPGW on the ISTS lines laid by TSPs under TBCB and RTM projects.

Identify and define the role and responsibilities of Centre, State, and Private Transmission Licensees in the sharing of OPGW fibers.

4) Investigate the integration of Fiber Optic Terminal Equipment (FOTE) for differential protection in accordance with the C37.94 protocol and bring out recommendations.

5) Define the uniform mechanism of routing of OPGW fibers in case of LILO taken up on any transmission line.

6) Recommend the scenarios/limit of OPGW fibers beyond which it can be utilized for other commercial purposes.

7) Formulate recommendations for seamless adoption of these guidelines.

Nominated Members of the Committee

S. No.	Nominated Member's Name	Designation	Division & Organisation
1.	Shri A K Rajput	Member (Power Systems)	Central Electricity Authority
2.	Shri V K Singh	Member Secretary	NRPC, CEA
3.	Shri Asit Singh	Member Secretary	SRPC, CEA
4.	Shri N S Mondal	Member Secretary	ERPC, CEA
5.	Shri Deepak Kumar	Member Secretary	WRPC, CEA
6.	Shri K B Jagtap	Member Secretary	NERPC, CEA
7.	Smt Rishika Sharan	Chief Engineer	NPC, CEA
8.	Shri Surata Ram	Chief Engineer	ET&I, CEA
9.	Shri S K Maharana	Chief Engineer	PSCD, CEA
10.	Shri J B Len	SE	SRPC, CEA
11.	Shri Shiv K Gupta	Sr. DGM	Comm, CTUIL
12.	Shri Ankur Gulati	DGM	GRID-INDIA
13.	Shri. Doman Yadav	Executive Director	Grid Automation & Communication (GA&C), Powergrid
14.	Smt S.Kannika Parameswari	Chief Engineer	P&C, TANTRANSCO
15.	Shri. Viju Rajan John	Chief Engineer	Transmission System Operation, KSEBL
16.	Shri Binaya Ku Mallick	DGM(Telecom)	E & Q, OPTCL,HQRS
17.	Shri N. K Patel	SE (Telecom)	TR Department, Corporate Office, GETCO, Vadodara
18.	Shri R. B Kathiria	EE (Telecom),	Telecom Unit, 220kV S/s, GETCO, Gondal
19.	Shri Jayesh A Mehta	DE (Telecom)	Telecom Unit, 220kV S/s, GETCO, Ranasan
20.	Shri Arup Sarmah	AGM	LA Communication Division, Kahilipara, AEGCL
21.	Smt. Punam Biswakarma	AGM	CA Communication Division, Samaguri, AEGCL
22.	Shri Ashutosh Bhattacharjee	GM	(T&C and Comm.)
23.	Shri Rajesh Gupta	SE (SLDC)	MPPTCL
24.	Shri Sudhir Nema	SE (Planning)	MPPTCL

S. No.	Nominated Member's Name	Designation	Division & Organisation
25.	Smt. Kshama Shukla	EE (P&D)	MPPTCL
26.	Shri Debasis Sarkar	Chief Engineer	Communication Department, WBSETCL
27.	Shri Vivek Dixit	Chief Engineer	Sanchar and Niyantran, UPPTCL
28.	Shri Sanjay Johari	VP	Business Development & Adani Energy Solutions Ltd.
29.	Shri Tarun Tayal	Head- Govt. Alliances and Partnerships	Sterlite Power

Special Invitee - Power System Technology Development Division, CEA

Annexure-XV

Subject- Methodology for declaration of Intrastate Transmission lines as ISTS under Regulation 93 of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024

Background:

CERC has notified **Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 on 15th March, 2024.** As per the **regulation 93** of instant regulations following provision has been kept for Approval Process of Non-ISTS Lines carrying Inter-State Power-

"Existing intra-state transmission lines other than Natural ISTS lines, as certified by CEA based on the recommendations of the STU and RPC, shall be considered as ISTS systems.

Provided that these transmission lines are being used for evacuation and transfer of inter-state power on a regular basis as identified by CTU in consultation with the concerned RPC and RLDC;
Provided further that such transmission system is under operation and appropriate metering system is in place to record flow of power;
Provided further that a proper mechanism is in place for the maintenance of such a transmission system after its COD;
Provided that such lines have not been developed for the sole purpose of the beneficiary(ies) of a single State.
……."
Keeping in line with the provisions of the Hon'ble CERC **(Terms and Conditions of Tariff) Regulations, 2024** regulation 93, proposal for certification of Intrastate assets as ISTS were submitted to NRPC and a meeting was held on 03.05.2024 to discuss the nature of lines as dedicated/ ISTS/Not ISTS status. After deliberations in the meeting following was agreed **(MoM attached as Annexure-I)** –
"Under clause 93 of Tariff Regulation-2024, CEA has to certify the ISTS status for intra-state transmission lines based on recommendations of the

STU and RPC. Therefore, CEA may devise a uniform philosophy for the same along with definition of various related terms mentioned in the clause"

In continuation to above decision HPPTCL submitted following Transmission schemes for declaration as ISTS to CEA vide letter dated- 02.07.2024 **(Annexure-II)** and 13.08.2024 **(Annexure-III)**. The Transmission system submitted for certification as ISTS areas follows-

1. 400/220/66 kV GIS Substation at Wangtoo
2. 400/220/33 kV Lahal Substation, 400 kV D/C Lahal - Chamera line and 220 kV D/C Bajoli Holi Lahal line.

The methodology for certification is yet to be framed even after lapse of one year from the effectiveness of CERC regulations. The delay in framing of methodology is affecting the cashflow of utilities/HPPTCL as the recovery is stayed on account of lack of decision on nature of lines/Substations. The state regulator while deciding the petitions of assets has directed HPPTCL to get the assets included in ISTS pool as the assets have beneficiaries outside the state and are carrying ISTS power. Petitions have been also filed with Hon'ble CERC as per directions of Hon'ble HPERC. It is therefore requested that the forum should pass a resolution to request CEA to expedite the framing CEA of methodology at the earliest so that transmission assets can be made part of regional pool and recovery of investment made can be ensured.

Point for consideration-

In view of the above CEA may be requested to finalize and adopt the methodology for certification of non ISTS lines as ISTS as per provisions of **regulation 93 of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 at the earliest please without any further delays**.

सत्यमेव जयते

भारत सरकार

Government of India

विद्युत मंत्रालय

Ministry of Power

उत्तर क्षेत्रीय विद्युत समिति

Northern Regional Power Committee

दिनांकः 18.05.2024

विषय: **MoM of meeting held on 03.05.2024 to discuss the nature of lines as dedicated/ISTS/Not ISTS status -reg.**

महोदय / महोदया,

Kindly find attached minutes of the meeting held on **03.05.2024** at **11:00Hrs.** via **video conferencing** to discuss the nature of ISTS/Not ISTS status for the following cases as given below-

I. Karcham Wangtoo - N.Jhakri portion of Baspa – N.Jhakri D/c transmission line (agenda enclosed as **Annexure-I**).

II. GMR Bajoli Holi Hydropower Pvt. Ltd vide for existing IaSTS system in the state of Himachal starting from the GMR Bajoli Holi Bus till Chamera_II (PS) including 630MVA Lahal Pooling Station (STU-PS)(agenda enclosed as **Annexure-II**).

Enclosure: As above

Signed by Dharmendra Kumar Meena
Date: 19-05-2024 17:08:03

डी. के. मीणा

अधीक्षण अभियंता (संरक्षण)

सेवा मे:

1. Chief Engineer, PSPA-I, CEA (cea-pspa1@gov.in)
2. Executive Director, NRLDC (nroy@grid-india.in)
3. Chief Operating Officer, CTUIL (pcgarg@powergrid.in)
4. MD, HPPTCL (md.tcl@hpmail.in)
5. MD, HPSLDC (mdhpsldc@gmail.com)
6. MD, HPSEB (md@hpseb.in)
7. Plant Head, M/s GMR Bajoli Holi Hydropower Pvt. Ltd

Minutes of meeting held on 03.05.2024 to discuss the nature of ISTS/Not ISTS status

The meeting was held on 03.05.2024 at 11:00 Hrs. via video conferencing. MS, NRPC welcomed all participants of PSPA-I division CEA, NRLDC, CTUIL, HPPTCL, HPSLDC, HPSEB and GMR Bajoli Holi Hydropower Pvt. Ltd. List of participants is attached as **Annexure-III**.

A. The case for Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line was discussed as below-

A.1 NRPC representative apprised that CTUIL has requested discussion on the matter to file a reply in Hon'ble CERC relating to a petition for grant of Transmission License for Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line.

A.2 Member Secretary, NRPC opined that the matter is sub-judice and any decision at this meeting level may not be appropriate. CTU may file reply based on their views as NRPC has not been made respondent in petition.

A.3 CTUIL representative highlighted that in Tariff Regulation-2024, there is no provision given for granting ISTS status to a dedicated line. In view of above, CTUIL requested for discussion so that a decision may be arrived for this case.

A.4 CTUIL representative briefed the connectivity of transmission lines as mentioned in **Annexure-I.** She conveyed that based on HPERC's direction, M/s JSWHEL filed application for the grant of an Inter-state transmission license to CERC for Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line.

A.5 CTUIL was of view that line, LILo portion onwards Karcham Wangtoo to N.Jhakri is being utilised for multi generators power flow i.e. Karcham Wangtoo and Baspa.

A.6 CGM, NRLDC commented that NRLDC has already shared the power flow data to CTUIL. CTUIL acknowledged the same. However, CTU stated that only data is not sufficient, its interpretation and decision on flow of power is to be identified.

A.7 CGM, NRLDC highlighted that in Tariff Regulation-2024, there are terms such as 'regular power flow', 'transfer of inter-state power', 'ISTS power' which require uniform definition for interpretation of power flow data.

A.8 CTUIL representative mentioned that at present, during peak hydro conditions power of about 400-450 MW flows through the Karcham Wangtoo- N.Jhakri portion of Baspa – N.Jhakri D/c transmission line. She also added that power from other future hydro projects in the upper Sutluj basin (like Shongtong HEP & Tidong HEP) shall also be pooled at Wangtoo Substation of HPPTCL, which was implemented through LILO of K.Wangtoo-Abdullapur 400 kV D/c line. Some portion of this additional power is also to be wheeled through the Karcham Wangtoo- N.Jhakri portion of

Baspa – N.Jhakri D/c transmission line under different seasonal/load-generation scenarios.

A.9 CGM, NRLDC replied that this is seasonal and futuristic condition. This should not solely be considered for finalization of power flow scenario.

A.10 MS, NRPC conveyed that earlier NRPC secretariat used to certify the conversion of intra state to ISTS status but it is not applicable for secretariat to decide as of now. Now, CEA will certify under clause 93 of Tariff Regulation-2024. Accordingly, there is need to discuss this issue at CEA level for formulation of procedure (nature/ period of power flow) for conversion of intra state (including dedicated) to ISTS.

A.11 HPPTCL representative submitted that Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line may be granted transmission licensee as there is no intra state involvement with the bus of Baspa and Karcham Wangtoo.

A.12 PSPA-I division, CEA representative commented that transmission licensee for Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line may not be granted based on the clause 93 of CERC tariff regulation -2024 as it does not cover the provision for dedicated lines. However, CTUIL may use the precedence adopted in finalization of ISTS status to LiLo portion of Karcham Wangtoo line and Karcham Wangtoo- Abdullapur line.

A.13 CTUIL representative conveyed that there is power flow of multi generators in the portion of Karcham Wangtoo – N.Jhakri of Baspa - N.Jhakri.

A.14 MS, NRPC highlighted that based on data submitted by NRLDC, CTUIL may provide technical recommendation to honourable commission.

A.15 SE (O), NRPC mentioned that CTUIL may also include nature of status of line envisaged at the time of commissioning of line. NRLDC representative highlighted that past case of charor- banala line and ADHPL case may be explored by CTUIL.

A.16 After deliberation followings were decided-

a. CTUIL may submit reply based on data of power flow provided by NRLDC.
b. Under clause 93 of Tariff Regulation-2024, CEA has to certify the ISTS status for intra-state transmission lines based on recommendations of the STU and RPC. Therefore, CEA may devise a uniform philosophy for the same along with definition of various related terms mentioned in the clause.

B. The case for existing IaSTS system in the state of Himachal starting from the GMR Bajoli Holi Bus till Chamera_II (PS) including 630MVA Lahal Pooling Station (STU-PS) was discussed as below-

B.1 Plant head, GMR Bajoli Holi Hydropower Pvt. Ltd briefed the connectivity of lines as mentioned in **Annexure-II**. He requested for granting ISTS connectivity under clause

93 of Tariff regulation-2024 for the whole system carrying inter-state power starting from GMR Bajoli Holi Bus till Chamera_II (PS) including 630MVA Lahal Pooling Station (STU-PS) with transmission lines 220kV Bajoli-Holi D/C and 400kV Lahal-chamera-II D/C.

B.2 He mentioned about the LTA and GNA connectivity of GMR Bajoli Holi Hydropower Pvt. Ltd that plant has been granted 178.2 MW LTA connectivity from HPSTU and 155 MW GNA connectivity from CTU. In this 33 MW Power is allocated to Delhi International Airport, 60 MW to UPPCL and remaining is being sold in the market. He submitted that there is regular inter-state power flow and it fulfils conditions of Tariff regulation for conversion to ISTS.

B.3 CTUIL representative asked HPPTCL comment on the power flow.

B.4 HPPTCL commented that there will be power injection from upcoming 220/66kV Heiling S/s of HPSTU also.

B.5 CTUIL representative mentioned that GMR bajoli holi to Lahal PS is dedicated nature of line. Further, he mentioned that 400kV Lahal to chamera PS may be discussed for ISTS grant based on its integration.

B.6 HPPTCL representative added that JSW is going to implement the 240 MW kuther generating station and will be connected by Liloing of one circuit of 400kV lahal Pooling Station to chamera PS. There will be power in the lines from HPSEB generator, JSW Kuther and GMR Bajoli Holi Hydropower Pvt. Ltd. He added that most of power will be available of JSW kuther and GMR Bajoli Holi Hydropower Pvt. In present scenario, power is going out the HP state. Therefore, the ISTS status may be granted in this case under discussion of GMR bajoli holi.

B.7 CTUIL representative commented that JSW kuther has not applied for the connectivity to CTUIL as of now.

B.8 PSPA-I division, CEA representative highlighted that this case comes under purview of clause 93 of Tariff regulation-2024. Therefore, after finalization of philosophy, CEA will certify the ISTS status.

B.9 CGM, NRLDC asked HPPTCL regarding beneficiaries mandated for the transmission system. HPPTCL representative replied that the system was constructed for multiple beneficiaries for Ravi basin. Plant head, GMR Bajoli Holi Hydropower Pvt. Ltd added that it was part of green corridor.

B.10 Further, CGM, NRLDC desired to have a clarification on the definition of regular and ISTS power. Plant head, GMR Bajoli Holi Hydropower Pvt. Ltd highlighted that they have PPA for more than 25 years with Delhi International Airport (33 MW RTC) & UPPCL (60 MW continuous power from May to October).

B.11 HPPTCL conveyed that such cases may be examined considering all hydro basins areas, corridors and load centres connectivity and availability in the corresponding areas.

B.12 MS, NRPC conveyed that this case will be examined after the formulation of philosophy for certification of ISTS by CEA.

B.13 After deliberation followings were decided-

a. Under clause 93 of Tariff Regulation-2024, CEA has to certify the ISTS status for intra-state transmission lines based on recommendations of the STU and RPC. In view of above, CEA may devise a uniform philosophy for the same along with definition of various terms mentioned in the clause.

b. This case may be examined after the formulation of policy by CEA for granting ISTS status to intra state lines/ dedicated lines.

Meeting ended with a vote of thanks.

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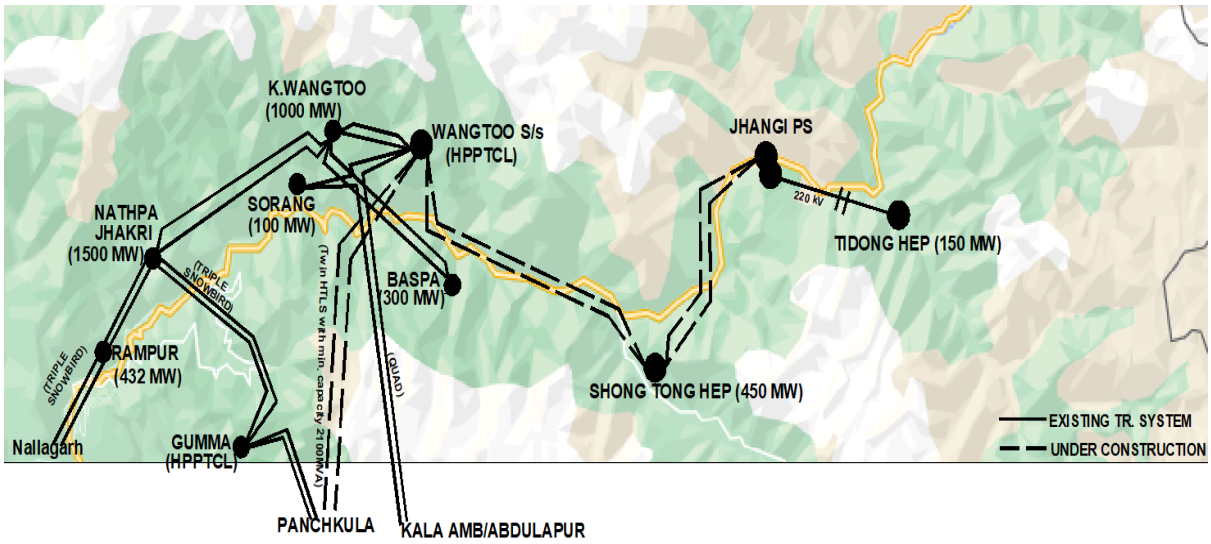
Agenda: ISTS status for Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line



M/s JSW Hydro Energy Limited (JSWHEL) before Hon'ble Commission has filed a petition for grant of Transmission License for Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line. Background about the transmission scheme is as below:

- Baspa II HEP (300 MW), a deemed GNA grantee is connected to the Grid through Baspa – Nathpa Jhakri 400 kV D/c dedicated transmission line. The generation tariff of Baspa-II HEP is being determined by the Himachal Pradesh Electricity Regulatory Commission (HPERC).
- Further, for evacuation of power from Karcham Wangtoo HEP (1045 MW), following transmission system was agreed and implemented:
    1) LILO of 400 kV Baspa – Nathpa Jhakri D/c line at K.Wangtoo generation switchyard
    2) K.Wangtoo - Abdullapur 400 kV D/c transmission line
- Beyond, N.Jhakri HEP (1500 MW), evacuation is being carried out through 400 kV D/c lines to Nallagarh & Abdullapur ISTS Stations. M/s JSW Hydro Energy Ltd. was granted Connectivity & LTA for 1045 MW & 880 MW respectively for K.Wangtoo HEP under CERC Connectivity Regulations,2009. The above transmission system was implemented to evacuate power in a reliable manner to the different beneficiaries. Subsequently, total 1045 MW Connectivity quantum of K.Wangtoo was also transitioned under CERC GNA Regulations.
- For evacuation of power from Karcham Wangtoo HEP, LILO of Baspa – N.Jhakri 400 kV D/c line at K.Wangtoo HEP and K.Wangtoo – Abdullapur (PG) 400 kV D/c line was executed by Joint venture company viz. M/s Jaypee Power Grid Ltd. (a joint venture company of POWERGRID and Jaiprakash Hydro Power Ltd.)

- The transmission system associated with K.Wangtoo HEP was agreed in the minutes of Long Term Open access meeting held along with Standing Committee meeting of Northern Region Constituents on 3/11/2006 & 12/03/2007 (copy enclosed).
- Subsequently, M/s Jaypee Power Grid Ltd. applied for inter-state transmission license to CERC. Hon'ble CERC vide order dated 17/8/2007 in Petition No. 44/2007 granted the transmission license to M/s Jaypee Power Grid Ltd stating that as the following transmission system shall be required for evacuation of power from other generating stations located in the Satluj river basin, the same shall not be treated as the "dedicated" transmission system:
    - LILO of Baspa – Nathpa Jhakri 400 KV D/c Line at Karcham Wangtoo
    - Karcham Wangtoo – Abdullapur 400 kV D/c line (Quad)
- Now, based on HPERC's direction, M/s JSWHEL filed application for the grant of a Inter-state transmission license to CERC for Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line. Further, Hon'ble CERC vide RoP dated 8/04/2024 directed CTUIL to submit its specific recommendations for the grant of a transmission license to the Petitioner along with other relevant details within two weeks.
- At present, during peak hydro conditions power of about 400-450 MW flows through the Karcham Wangtoo- N.Jhakri portion of Baspa – N.Jhakri D/c transmission line. Grid-India to confirm the Pattern.
- In addition to above, power from other future hydro projects in the upper Sutluj basin (like Shongtong HEP & Tidong HEP) shall also be pooled at Wangtoo Substation of HPPTCL, which was implemented through LILO of K.Wangtoo-Abdullapur 400 kV D/c line. Some portion of this additional power is also to be wheeled through the Karcham Wangtoo- N.Jhakri portion of Baspa – N.Jhakri D/c transmission line under different seasonal/load-generation scenarios.
- Further, in the CERC (Terms and Conditions of Tariff) Regulations, 2024, it has been mentioned that "Existing intra-state transmission lines other than Natural ISTS lines, as certified by CEA based on the recommendations of the STU and RPC, shall be considered as ISTS systems, provided that these transmission lines are being used for evacuation and transfer of inter-state power on a regular basis as identified by CTU in consultation with the concerned RPC and RLDC."
- However, the subject transmission scheme (Karcham Wangtoo - N.Jhakri portion of Baspa – N.Jhakri D/c transmission line) was originally dedicated in nature and later, part transmission system (LILO part associated with K.Wangtoo HEP) was given ISTS status.
- Accordingly, the matter may be deliberated regarding nature of above line section ie. Karcham Wangtoo - N.Jhakri portion of Baspa – N.Jhakri D/c transmission line, (whether ISTS or not ISTS), as per earlier philosophy/methodology of NRPC/Grid India in Consultation with CEA, HPPTCL & CTU, so that CTU may provide its recommendation on Transmission License for the subject line section.

पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)
पावरग्रिड

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संदर्भ संख्या/Ref. Numbe C/ENG/SEF/00/LTOA

Date : 26-12-2006

To
As per list enclosed.

Sub: Minutes for Long Term Open Access Meeting held on 03/11/2006 at New Delhi

Sir,

Following proposals of Long Term Open Access were discussed during the meeting held on 03/11/2006 at New Delhi

i. Proposal of M/s NTPC for transfer of 600 MW Loharinag Pala generation at Uttaranchal to the constituents of NR
ii. Proposal of M/s PTC for transfer of 704MW of power from 1000 MW Karcham Wangtoo generation project to the constituents of NR
iii. Proposal of M/s Reliance Energy Generation Limited (REGL) for transfer of 5600MW of power from REGL's Dadri generation to the constituents of NR
iv. Proposal of DTL for transfer of 100-2500MW of power from DVC generation to DTL
v. Proposal of Maithon Power Ltd for transfer of 1000MW of power from generation to the constituents of NR and DVC
vi. Proposal of OTPCL for transfer of 700MW of power from Pallatana generation to the constituents of NR and NER

Please find enclosed herewith the Minutes for the subject meeting.

Thanking You,

Yours Faithfully

(Y.K.Sehgal)
Addl General Manager(ENGG-SEF)

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Minutes for Long term Open Access Meeting with Northern Region Constituents held on 03/11/2006 at NRPC Conference hall, New Delhi

List of Participants is enclosed at **Annexure-I**

POWERGRID welcomed all the participants to the long term open access meeting of Northern region and informed that the following Long Term Open Access Applications have been received and needs to be discussed for resolution:

i. Proposal of M/s NTPC for transfer of 600 MW power of Loharinag Pala generation at Uttaranchal to the constituents of NR.
ii. Proposal of M/s PTC for transfer of 704MW of power from 1000 MW Karcham Wangtoo generation project to the constituents of NR.
iii. Proposal of M/s Reliance Energy Generation Limited (REGL) for transfer of 5600MW of power from REGL's Dadri generation to the constituents of NR.
iv. Proposal of DTL for transfer of 100-2500MW of power from DVC generation to DTL.
v. Proposal of Maithon Power Ltd for transfer of 1000MW of power from generation to the constituents of NR and DVC.
vi. Proposal of OTPCL for transfer of 700MW of power from Pallatana generation to the constituents of NR and NER.

Details of the discussions held are as below.

i. Transfer of 600 MW Loharinag Pala at Uttaranchal to the constituents of NR

POWERGRIID informed that NTPC has applied for Long Term Open Access for transfer of 592.8 MW from their 600 MW Loharinag Pala HEP in Uttaranchal. As per the requirement long-term Open Access Applicant need to inform the firm beneficiaries. However NTPC did not indicate firm beneficiaries and mentioned that tentative targeted allocation of power to different beneficiaries is as follows:

Uttaranchal	:	102MW
Uttar Pradesh	:	153 MW
Punjab	:	74 MW
DTL	:	102MW

Haryana	:	44MW
Rajasthan	:	74MW
Jammu & Kashmir	:	51MW

In the application, the injection point for the power has been indicated as Tehri Pooling point. The duration of long-term open Access is for a period of 25 years from October, 2010. It was informed that under the composite transmission scheme of Tehri HEP, Koteshwar HEP, Loharinag Pala and Pala Maneri HEPs, charging of Tehri – Meerut line at 765 kV along with LILO of Bareilly-Mandaula 400kV D/c line at Meerut is required either with Tehri PSP or with Loharinag Pala, whichever is coming up earlier. As per the information presently available, Tehri PSP is likely to be commissioned by July 2010 i.e. before Loharinag Pala time frame i.e. October 2010 and the transmission system for Tehri PSP would have been commissioned before the materialization of Loharinag Pala HEP. Accordingly the system for Loharinag Pala would include:

- Loharinag Pala – Tehri Pooling Point 400 kV D/c (Triple Conductor)

It was further explained that the above transmission system, including the bays at Tehri Pooling station, would be the dedicated transmission system and the cost and the implementation of the same would be the responsibility of the long-term open access applicant i.e. M/s NTPC.

NTPC informed that allocation of power to the home state i.e. Uttaranchal is 102 MW. Regarding the sharing of transmission charges allocated to Uttaranchal, PTCUL confirmed that that they would bear the transmission charges and sign the BPTA for their share of free power. POWERGRID further explained that in case Tehri PSP gets delayed, the full transmission charges for part of transmission system associated with Tehri PSP, which includes the following elements, would be borne by NTPC / PTCUL.

<u>Part of the Tehri-PSP transmission system:</u>

1. LILO of Bareilly – Mandaula 400 kV D/c at Meerut
2. Charging of Tehri Pooling – Meerut line at 765 kV by establishment of 765/400 kV, 3x1500 MVA substations at Tehri GIS Pooling station & Meerut.

3. Modification of Series Capacitors for operation at 765 kV level

This was agreed by NTPC and PTCUL. (Estimated Cost of Tehri PSP transmission system is about Rs 1600 Crs at 2nd Qtr 2006 PL)

While continuing the discussion on transmission charges, Chief Engineer, CEA stated that although the NTPC has applied for the Long Term Open Access of 592.8 MW, however the pooled transmission charges should be for full 600 MW as per the present practice. Participants agreed for the same.

Concluding the discussion following was agreed

- Power from Loharinag Pala would be pooled at Pooling station being established by POWERGRID as a part of Koteshwar Transmission system near Koteshwar generation project by a 400kV D/c triple conductor line. The line and associated bays at both ends would be part of dedicated system and shall be born and implemented by NTPC.
- NTPC and PTCUL would sign the requisite BPTA for Northern regional transmission system as well as for the dedicated system corresponding to full capacity of 600MW for a period of 25 years

  Incase Tehri PSP gets delayed, the NTPC & PTCUL to bear the full transmission charges for part of transmission system associated with Tehri PSP, which includes the following elements, till the time Tehri PSP is commissioned.

<u>Part of the Tehri-PSP transmission system:</u>

1. LILO of Bareilly – Mandaula 400 kV D/c at Meerut.
2. Charging of Tehri Pooling – Meerut line at 765 kV by establishment of 765/400 kV, 3x1500 MVA substations at Tehri GIS Pooling station & Meerut.
3. Modification of Series Capacitors for operation at 765 kV level.

- Long term Open Access has been permitted for the beneficiaries as indicated by M/s NTPC. In case, there is any change in allocation of power/

beneficiaries, there may be constraints in transfer of power under certain operating conditions.

- Further, no additional transformation capacity in various existing/new substations has been planned, however, the same may be added based on request of beneficiaries as per the requirement.
- The applicable transmission charges shall be as per CERC norms.
- The Long Term Open Access to NTPC Ltd may be granted subject to the conditions mentioned above.

ii. Application for transfer of power from Karcham Wangtoo HEP

It was informed that M/s Power Trading Corporation Ltd has applied for long term Open Access for transfer of 704 MW power from the proposed Karcham Wangtoo HEP of 1000 MW capacity of M/s Jaypee Karcham Hydro Corporation Ltd (JKHCL) located in Himachal Pradesh for a period of 35 years. The commissioning schedule of the first unit has been indicated as August 2011 and the beneficiaries of 704 MW (after considering 2% aux consumption) of the project are Punjab (196 MW), Haryana (196 MW), Uttar Pradesh (196 MW) and Rajasthan (101.92 MW).

A brief presentation on the requirement of transmission system was made by POWERGRID. It was informed that to evolve transmission system for Karcham Wangtoo detailed studies have been carried out simulating peak hydro conditions. Based on the studies following scheme was proposed

i. LILO of Nathpa Jhakri- Baspa 400kV D/ c at Karcham Wangtoo
ii. Karcham Wangtoo – Abdullapur 400k D/c (Quad).
iii. Abdullapur- Bahdurgarh 400k D/c (Triple).
iv. LILO of Bawana- Hissar 400kV s/c at Bahdurgarh.
v. Augmentation of transformation capacity at Lucknow(POWERGRID) (315MVA), Greater Noida(315MVA), Maharanibagh(500MVA), Mandaula(500MVA), Bhiwadi(500MVA), Gurgaon(500MVA), Bahdurgarh(315MVA), Patiala(315MVA) and Moga(500MVA).

HVPNL requested a 400kV dispersal point at Sonepat as the load is about 200-300MW and may increase substantially in future. CEA suggested that as Sonepat

400/220kV substation along with its interconnection of 400kV D/c to Bahdurgarh may be constructed as regional strengthening scheme therefore in place of Abdullapur-Bahdurgarh 400kV line, Abdullapur-Sonepat 400kV line with triple conductor line can be considered as a part of Karcham Wangtoo transmission system. The transformer augmentation as indicated above may also be taken up as a separate regional strengthening scheme.

Accordingly following elements was proposed for transfer of power from Karcham Wangtoo generation project

a) Karcham Wangtoo transmission system :

i. LILO of Nathpa Jhakri- Baspa 400kV D/ c at Karcham Wangtoo

ii. Karcham Wangtoo – Abdullapur 400k D/c (Quad).

iii. Abdullapur-Sonepat 400kV D/c(triple conductor)

b) Northern Region system strengthening scheme :

i. 400/220kV new substation with 2 x 315 MVA transformation capacity at Sonepat.

ii. Bahdurgarh-Sonepat 400kV D/c(triple conductor)

c) Northern Region system strengthening scheme :

i. Augmentation of transformation capacity at Lucknow(POWERGRID) (315MVA), Greater Noida(315MVA), Maharanibagh(500MVA), Mandaula(500MVA), Bhiwadi(500MVA), Gurgaon(500MVA), Bahdurgarh(315MVA), Patiala(315MVA) and Moga(500MVA).

Transmission elements a)-(i) LILO of Nathpa Jhakri-Baspa 400kV D/c at Karcham Wangtoo and (a)-ii) Karcham Wangtoo–Abdullapur 400k D/c (Quad) alongwith the associated bays at both ends would be part of dedicated system and all the costs towards this would be borne and implemented by the project developer. To evacuate power beyond Abdullapur in a reliable manner to different beneficiaries a)-(iii) Abdullapur-Sonepat 400kV D/c (triple Conductor) has been considered. This element shall be a regional scheme associated with Karcham Wangtoo HEP. All the members agreed for the same.

HPSEB mentioned that in the upstream of Karcham Wangtoo many hydro projects would be developed and there is Right–of-Way constraints and while developing the transmission system these projects should also be considered. Chief Engineer, CEA clarified that the proposed 400kV D/c Quad line is the technically optimal alternative considering Right-of-way constraints.

POWERGRID informed that as per application for Long Term Open Access 704 MW is allocated to M/s PTC and out of remaining 296 MW, Govt of HP has a free power of 120 MW during first 12 years and 180 MW thereafter. Balance 176 MW power would be taken up by M/s Jaypee Karcham Hydro Corporation Ltd (JKHCL) for first 12 years and 116 MW thereafter. M/s Jaypee Karcham Hydro Corporation Ltd (JKHCL) agreed to sign BPTA for this quantum of power.

All the participants were of the view that as 1000MW power would be injected into the Grid, the applicable pooled transmission charges should be for the full 1000MW. The issue of transmission charges for the free power to Govt. of Himachal Pradesh needs to be resolved. Accordingly it was agreed that issue would need to be resolved between M/s PTC, M/s Jaypee Karcham Hydro Corporation Ltd (JKHCL) and Govt. of Himachal. Long term Open Access would be given to PTC once the BPTA is signed for full power of 1000MW by PTC, JKHCL and Govt of Himachal Pradesh. It was decided that M/s PTC /JKHCL shall revert back on this issue shortly to enable POWERGRID to permit Long Term Open Access to M/s PTC/JKHCL.

Concluding the discussion following was agreed

- LILO of Nathpa Jhakri – Baspa 400 kV D/c line at Karcham Wangtoo and Karcham Wangtoo – Abdullapur 400 kV D/c (Quad) including bays at both ends would be the dedicated transmission system and all the costs towards this would be borne and implemented by the project developer. Beyond Abdullapur, a 400kV D/c (Triple Conductor) would be constructed to Sonepat substation for reliable transfer of Karcham Wangtoo power to beneficiaries. Abdullapur-Sonepat 400kV D/c (Triple Conductor) shall be a regional scheme.

- As full generation capacity (1000MW) would be injected into the Grid the applicable pooled transmission charges should be for the full generation capacity as per the present practice. The issue of sharing of transmission charges for free power needs to be resolved between M/s PTC, M/s Jaypee Karcham Hydro Corporation Ltd (JKHCL) and HPSEB. It was decided that M/s PTC/JKHCL shall revert back
- Requisite agreement needs to be signed for payment of transmission charges by M/s PTC India Ltd and JKHCL.
- The applicable transmission charges shall be as per CERC norms.
- The Long Term Open Access can be granted subject to the conditions mentioned above.

iii. **Transfer of 5600MW of power from Reliance Dadri generation**

POWERGRID informed that M/s Reliance Energy Generation Limited (REGL) applied for long-term open access to transfer power from their proposed Dadri generation project (3740 MW) to various NR constituents. Subsequently M/s Reliance Energy Generation Limited, revised the generation capacity to 5600 MW. The commissioning schedule as indicated by M/s REGL is December-2008 with different generation units added in a phased manner till Dec-2009. The beneficiaries of the project are as below

- Delhi ; 2250 MW
- Uttar Pradesh : 2240 MW
- Haryana : 500 MW
- Punjab : 500 MW
- Rajasthan : 500 MW*

* Including trading under off-peak

POWERGRID explained that it has carried out studies corresponding to 2009-10 time frame considering various transmission systems likely to come up in the time frame. To simulate maximum loading conditions, peak thermal scenario have been simulated when the power flow from Thermal project in Eastern part of Northern region is maximum and power tends to flow towards Punjab and Haryana i.e Western part of Northern region. Studies have been carried out on the basis of beneficiaries indicated by applicant and system has been evolved accordingly. Studies indicate

that Short Circuit level in most of the 400 kV buses in and around Delhi are almost touching the rated level of 40 kA. Hence, while developing the transmission system for generation from REGL, due care has been taken to limit the fault level. Accordingly transmission lines from the generation project are not connected at 400 kV level with existing Delhi 400kV ring for supply of power to Delhi. System is integrated at 220 kV level. However fault level is still more than the 40 kA limit for various 400kV S/s in Delhi ring. Therefore adequate measures need to be taken for reducing the short circuit level.

Chief Engineer, CEA also mentioned that Delhi already has short circuit problems and direct connection at 400kV level would further aggravate the condition. Hence the power supply to load centers in Delhi must be in radial manner.

PSEB representative mentioned that there had been continuous change in the capacity of the REGL generation project as earlier the capacity was 3740 MW, which is changed to 5600 MW. Under such scenario they are not in a position to firm up the power to be taken up from the generation project. Participants were of the opinion that M/s REGL should confirm the capacity and also the availability of gas for the capacity of generation station, as supply of gas is a major issue.

M/s DTL indicated that it has tied up with other projects of DVC and Jhajjar of NTPC and therefore Delhi shall not be requiring power from M/s REGL project as indicated by applicant. Haryana and Punjab also informed that they have not been approached by M/s REGL. M/s REGL informed that the beneficiaries are indicative and they would be approaching the beneficiaries to firm up the allocation of power.

Participants were of the view that the requirement of the transmission system needs to be relooked as M/s DTL, which was a major beneficiary of the project is not willing to take power. Chief Engineer, CEA indicated that M/s REGL may submit a fresh application indicating the firm capacity of the plant, details of beneficiaries alongwith allocation of power. However in case if beneficiaries are not firmed, M/s REGL may indicate tentative allocation of power. Under such scenario M/s REGL in addition to implement the dedicated transmission system from their generation project to grid points would also agree to pay the regional transmission charges. In view of the

above, it was decided that the application of M/s REGL may not be processed further as the generation capacity and allocation of power are not yet firmed up. M/s REGL may submit a fresh application with the firm generation capacity, commissioning schedule and allocation of power to different beneficiaries.

Concluding the discussion following was agreed

- As the major beneficiary of the project i.e M/s DTL is not taking power, the transmission system indicated in the POWERGRID agenda needs to be relooked based on the firm generation capacity and revised allocation of power. Therefore it was decided that since there had been continuous change in the capacity of the generation status and allocation of power, the present application of M/s REGL may not be processed further
- M/s REGL may submit a fresh application for Long Term Open Access indicating the firm capacity, commissioning schedule and allocation of power

iv. Transfer of 100-2500MW of power from DVC generation to DTL

POWERGRID) informed that Delhi Transco Ltd has applied for long term Open Access to Inter-State Transmission System (ISTS) for transfer of power from various generating projects of Damodar Valley Corporation. The amount of power to be transferred to DTL from different generation projects increases in a phased manner starting from December, 2006. M/s DTL indicated that the time period of Open Access is 25 years. The time period, quantum of power, duration, and unit wise generation as indicated by M/s DTL is as follows:

	Period	Quantum of power	Duration	Commissioning Schedule
1	Dec'06 to Sep'07	100	25 years from surplus power of existing stations	
2	Oct'07 to Nov'07	230	25 years from date of commercial operation	(1) +Chandrapura TPS Unit-7
3	Dec'07 to Mar'2010	400	-- do--	(2) + Chandrapura TPS Unit-
4	Apr'10 to August'10	800	-- do--	(3) + Mejia TPS 'B Unit-1
5	Sept'10 to Oct' 10	1000	-- do--	(4) + Mejia TPS 'B Unit-2

	Period	Quantum of power	Duration	Commissioning Schedule
6	Nov '10 to Mar '11	1975	-- do--	(5) + Koderma Unit –1 & Durgapur Unit-1
7	April '11 Onwards	2500	-- do--	(6) + Koderma Unit –2 & Durgapur Unit-2

POWERGRID informed that Muzaffarpur-Gorakhpur 400kV (Quad) D/c line with TCSC, part of Tala transmission system, had been planned for transfer of Tala power and surplus power of Eastern region, Sikkim and NER. CEA also indicated in the past that Tala Transmission System would be utilized for transfer of equivalent Tala power, surplus of ER and NER and including Teesta-V project in Sikkim. It was mentioned that at present there already exists long-term open access for transfer of about 400MW power over the existing ER-NR inter-regional links. In the next 2-3 months all the Tala machines would be commissioned and by June 2007 Teesta-V generation would also come up. DTL is asking 100 MW long term long term open access for 25 years from December 2006 onwards. Considering that Tala generating station and Teesta-V HEP would come up shortly, it would not be possible to give long-term open Access to DTL until some additional inter-regional link between ER and NR is implemented. In view of the above it was decided that M/s DTL would be provided for long-term Open Access to 100 MW/230 MW after the commissioning of Kahalgaon-II transmission system, which will provide additional inter-regional link between ER and NR. However, till the time full generation from Tala and Teesta gets materialized, the capacity margins available on the Tala transmission system can be utilized for transferring 100 MW to DTL under short term open access.

It was further informed that for transfer of 400MW and above, beyond November 2007, detailed study needs to be carried out separately for identifying transmission-strengthening requirement.

Concluding the discussion following was agreed

- DTL would be provided long-term open Access for 100 MW and 230 MW for 25 years after commissioning of Kahalgaon-II transmission system.

- As the power transfer would utilize ISTS of Eastern region, Northern region and East-North interconnection, M/s DTL needs to share the transmission charges (as per CERC norms). For this DTL needs to sign BPTA for 25 years with POWERGRID for sharing the transmission charges of Eastern, Northern and East-North inter-regional transmission system.
- DVC to ensure that there shall not be any constraint in injection of above power into the Eastern regional Grid
- For transfer of 400MW and above beyond November 2007, detailed study needs to be carried out separately for identifying transmission-strengthening requirement.

v. Transfer of 1000MW of power from Maithon generation to the constituents of Northern Region

POWERGRID informed that M/s Maithon Power Ltd. applied for Long Term open access for transfer of 1000MW from their power plant at Maithon. The transfer of power is expected to commence by 2009-10. The First unit is proposed to be commissioned in Sept 2009 and second in Dec 2009. M/s Maithon Power Limited (MPL) proposed to inject the power at its 400kV switchyard. Out of this, 400MW power would be taken by M/s NDPL, Delhi at its Gopalpur & Narela 220kV sub-station, 200MW of power by Rajasthan at 400kV Heerapura sub-station and 300MW power by DVC at its Kalyaneshwari substation. For the balance power of 100MW, it is indicated that they are in the process to tie up with the customer. It was mentioned that a combined transmission system for transfer of power from Maithon RB(1000 MW) and North Karanpura (1980 MW) has been discussed by the constituents in the 18th SCM of Northern Region. Studies have been carried to evolve transmission scheme for transfer of power from Maithon RB project to different beneficiary as per allocation indicated by applicant. It was mentioned that the transmission system identified in the above referred standing committee meeting is adequate for evacuation of power from Maithon-RB TPS, however to maximize the utilizstion of the high capacity links between ER and NR like Biharsharif-Balia and Barh-Balia 400kV D/c (quad) lines, it is proposed to install 40% fixed series compensation in these lines. The proposed transmission system for Maithon RB project is given below

- Maithon-RB – Maithon 400kV D/c
- Maithon-RB – Ranchi 400kV D/c
- Biharsharif – Sasaram 400kV D/c
- Sasaram – Fatehpur – Agra 765kV S/c to be charged at its rated voltage with 2x1500 MVA, 765/400kV & 2x315 MVA, 400/220kV sub-station at Fatehpur and 2x1500 MVA, 765/400kV sub-station at Agra
- LILO of Allahabad-Mainpuri 400kV D/c at Fatehpur
- 40% fixed series compensation in Biharsharif – Balia 400kV D/c line
- 40% fixed series compensation in Barh – Balia 400kV D/c line

It was informed to the constituents that while proposing the above system, it is assumed that North Karanpura transmission system would be commissioned before Maithon RB generation. In case, North Karanpura project gets delayed, the transmission system under Maithon RB would be as given below:

- Maithon-RB – Maithon 400kV D/c
- Maithon-RB – Ranchi 400kV D/c
- Biharshariff – Sasaram 400kV D/c
- Sasaram – Fatehpur – Agra 765kV S/c to be charged at 400kV with 2x315 MVA, 400/220kV sub-station at Fatehpur
- LILO of Singrauli – Kanpur and one ckt of Allahabad – Kanpur at Fatehpur
- Sasaram – Balia 400kV D/c (Quad)
- Agra – Gurgaon 400kV D/c
- 40% fixed series compensation in Biharsharif – Balia 400kV D/c line
- 40% fixed series compensation in Barh – Balia 400kV D/c line

Northern region constituents agreed to the proposed system and to bear the transmission charges for above transmission scheme beyond Biharshariff including 40% fixed series compensation in Biharsharif – Balia & Barh – Balia 400kV D/c line

Concluding the discussion following was agreed

- The interconnection arrangement of Maithon RB generation with Maithon and Ranchi substation through Maithon-Ranchi and Maithon-Maithon 400kV D/c lines

would be in the scope of M/s Maithon Power Ltd. and they shall bear all costs towards this and also it's implementation.

- For supply of power to DVC, the necessary transmission system along with cost shall be carried out by M/s Maithon Power Ltd.
- Northern region constituents agreed bear the transmission charges for above transmission scheme beyond Biharshariff including 40% fixed series compensation in Biharsharif – Balia & Barh – Balia 400kV D/c line
- M/s Maithon Power Ltd. would be entering into suitable agreement for payment of transmission charges for Northern Region and Eastern Region transmission system of POWERGRID as per CERC /SERC norms.

vi. Transfer of 700MW of power from Pallatana generation to the constituents of Northern Region

POWERGRID informed that M/s Tripura Power Development Company Private Ltd. (TPDC) applied for long term open access for transfer of 1000 MW power from Pallatana generating station to the constituents in North eastern and Northern regions vide letter dated 23/05/2005. M/s TPDC vide their letter dated 27/06/2005 informed that the capacity of the generation plant is revised to 700 MW. The proposal for transfer of 700 MW was discussed with the Northern Regional constituents on 16/12/2005. Further, the name of the company has been changed from TPDC to ONGC Tripura Power Company Private Limited (OTPC) vide letter dated 03/01/2006. M/s OTPC vide their letter dated 31/01/2006 informed that the capacity of the generation project has been revised to 1110 MW, with an ex-bus generation of 1050 MW. For evacuation of power from the proposed project and following transmission system was identified.

- Power project (Pallatana) - Silchar 400 kV D/C line with twin Lapwing conductor
- Silchar – Bongaigaon 400 kV D/C line with twin Lapwing conductor and 40% series compensation
- New 2x200 MVA, 400/132 kV sub-station at Silchar (Assam)
- Extension of Bongaigaon substation with 400/220kV, 315MVA ICT
- Bongaigaon - Siliguri 400 kV D/C line with quad Moose conductor
- Purnea – Biharsharif 400 kV D/C line with quad Moose conductor

In the meanwhile, OTPC proposed to avail the viability gap funding for the transmission lines from Pallatana(generating Switchyard) to Bongaigaon S/s of POWERGRID which was discussed in a meeting chaired by Secretary(Power) on 13-03-2006 wherein representative of CEA, POWERGRID, ONGC and IL&FS were present. It was decided in the meeting that the conditional viability gap funding for the transmission project can be recommended by Ministry of Power for the transmission system from Pallatana to Siliguri.

The above proposed transmission system for long term open access was discussed with the NR beneficiaries in a meeting held on 22.04.06 at Nainital wherein CEA and POWERGRID were also present. During the discussion, it emerged that as decided in Ministry of Power for Viability Gap Funding, the transmission elements from Pallatana to Siliguri would be a part of generation project cost and transmission charges for Purnea – Biharshariff shall be borne by NR constituents. In the event Viability Gap Funding is not available, constituents were of the view that transmission line from Pallatana to Bongaigaon may be constructed as a part of generation project, while the transmission system beyond Bongaigaon should be developed by CTU as a regional scheme. However, the above was subject to the approval of Ministry of Power.

The matter was further discussed in a meeting taken by Secretary (Power) on 06-06-2006 wherein Secretary (Power) indicated that the transmission system to be developed under private-public partnership should include a transmission system from Pallatana upto Biharsharif including Bongaigaon-Siliguri and Purnea-Biharsharif lines. Subsequently, OTPC vide its letter dated 30-06-2006 to Ministry of Power informed that its request for Viability Gap Funding for the transmission project is being withdrawn.

Further, M/s OTPC vide its letter dated 11/07/2006 informed that the project capacity has been downsized from 1100 MW to 740 MW in phase-I, having net exportable capacity of 700 MW. OTPC vide another letter dated 11/07/2006 had requested that in view of revision of plant capacity, the immediate evacuation system from Pallatana

to Bongaigaon, via Silchar may be revised as 400kV D/c line with twin Moose conductor. Further OTPC vide its letter dated 21/07/2006 informed that it has no future plans for expansion.

The matter was further discussed in a meeting taken by Joint Secretary (Transmission), Ministry of Power on 10-10-2006 wherein following was observed:

- The 400kV transmission lines from Pallatana GBPP to Bongaigaon, via Silchar, would be constructed by the generating agency and the balance transmission system i.e. Bongaigaon - Siliguri and Purnea - Biharsharif 400 kV D/c lines has to be taken up as regional scheme with Northern region constituents as the beneficiaries.
- It was also mentioned that as 500 MW power has been allocated to NR constituents from this project, it is expected that a large quantum of power would flow out of North-Eastern region. Though the generating agency has downsized the generation capacity to 740 MW, there will be no change in the transmission system.
- Though the scheme was discussed and agreed by Northern region constituents, the matter needs to be discussed again due to downsizing of project capacity.

In view of the above, following transmission system has been proposed.

A. Immediate Evacuation to be taken up by generating agency

- Power project (Pallatana) - Silchar 400 kV D/C line with twin moose conductor
- Silchar – Bongaigaon 400 kV D/C line with twin moose conductor and 40% series compensation
- New 2x200 MVA, 400/132 kV sub-station at Silchar (Assam)
- Extension of Bongaigaon substation by 400/220kV, 315MVA transformer.

B. Regional Scheme for power transfer to Northern Region

- Bongaigaon - Siliguri 400 kV D/C line with quad Moose conductor
- Purnea – Biharsharif 400 kV D/C line with quad Moose conductor

The system was discussed by the members and agreed to the above mentioned scheme.

POWERGRID enquired the commissioning schedule of the project. Representative from OTPC informed that the revised schedule of the generation is December 2009.

Concluding the discussion following was agreed

- Members agreed that to transfer 700MW power from Pallatana generation project (500MW to NR and 200MW to NER), following transmission system would be required :

1. Power project (Pallatana) - Silchar 400kV D/C line with twin moose conductor
2. Silchar-Bongaigaon 400kV D/C line with twin moose conductor and 40% series compensation
3. New 2x200 MVA, 400/132 kV sub-station at Silchar (Assam)
4. Extension of Bongaigaon substation by 400/220kV, 315MVA transformer.
5. Bongaigaon - Siliguri 400 kV D/C line with quad Moose conductor
6. Purnea – Biharsharif 400 kV D/C line with quad Moose conductor

Items 1 to 4 are part of the interconnection arrangement of OTPC generation upto Bongaigaon would be in the scope of M/s OTPC. The transmission charges for item 5 & 6 i.e. the transmission system beyond Bongaigaon would have to be borne by NR constituents.

- OTPC should also make sure of the execution of the 132kV interconnection of the new substation at Silchar with the existing transmission system. This is essential as the proposed transmission system from power plant to Bongaigaon can not be operated without proper anchoring arrangement at Silchar.
- For supply of power to Tripura, the necessary arrangement along with cost at the Pallatana switchyard shall be carried out by the generating company and the transmission line would require to be tied up.
- M/s OTPC would be entering into suitable agreements including BPTA with POWERGRID/STU's for payment of transmission charges of the respective system as per CERC /SERC norms.

The meeting ended with a vote of thanks

Annexure-I

List of Participants

CEA	
1. Sh. A.K.Asthana	Chief Engineer (SP&PA)
2. Sh.Gautam Roy	Dy.Director, CEA.
3. Sh.Rajeev Kumar	Asst.Dorector, CEA.
POWERGRID	
1. Sh. R.N.Nayak	Executive Director(Engg,QA&I & HR)
2. Sh. Y.K.Sehgal	AGM(Engg)
3. Sh. Ashok Pal	Chief Design Engineer(Engg)
DTL	
1. Sh. A.K.Kaul	GM(SLDC)
2. Sh.Raj Bhatia	GM(Pllg)
HVPNL	
1. Sh. T.K.Dhingra	SE(planning)
2. Sh.S.K.Bansal	Exec.Engineer
RRVPNL	
1. Sh Y.K.Raizada	Director(Trans)
2. Sh.Umesh Gupta	CE(PPM)
3. Sh. L.N.Nimawat	Addl.S.E(PSS)
J&K,PDD	
1. Sh.R.K.Seli	CE(S&O), Jammu
PSEB	
1. Sh. K.S.Jolly	CE(SO&C)
2. Sh. I.S.Anand	Director(Planning)
3. Sh.Padmjit	Advisor
PTCUL	
1. Sh. Mohan Ram	MD
2. Sh.J.P.Tomar	DGM
3. Sh.V.K.Gupta	Consultant
UPPCL	
1. Sh. V.K.Aggarwal	SE(T&C)
2. Sh.V.P.Tewari	EE(Planning)
BBMB	
1. Sh.Niraj Gulati	Dy.Chief Engineer
NTPC Ltd	
1. Sh.Ajit Kumar	AGM(Elect)
2. Sh. Pramod Kumar	DGM(E)

NHPC

1.	Sh. Raj kumar	GM(T&RE)

NRPC

1.	Sh.S.P.Singh	Member Secretary
2.	Sh.R.P.Aggarwal	SE(O)
3.	Sh.Pralad Meena	Xen(O)

PTC

1.	Sh.S.S.Sharma	Sr.V.P.
2.	Sh.Harish Saran	V.P.

HPSEB

1.	Sh.S.K.Chanana	CE(SP)
2.	Sh.R.L.Gupta	Dir(SP)
3.	Sh.R.N.Kaul	Dir(I/S)

NPCIL

1.	Sh.Sandeep sarwate	S.O./F.

IL&FS

1.	S.C.Misra	Advisor(T)
2.	Haziq Beg	VP

Maithon Power Ltd

1.	R.K.Agarwal	CEO & ED
2.	G.R.Nagengdran	Company Secretary

REGL

1.	S.K.Deb	Sr.V.P
2.	P.Srinivasan	Head Project
3.	Rakesh Raman	Chief Project Manager
4.	Mukesh Paliwal	Head Network study

NTPC-Lohari Nagpala

1.	Sh Vinod Padha	AGM (Comml)
2.	Sh.A.Basu	Ch Manager (Comml)

पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)
पावरग्रिड

केन्द्रीय कार्यालय : "सौदामिनी" प्लॉट सं. 2, सैक्टर–29, गुड़गॉव–122 001, हरियाणा
फोन : 2571700 - 719 फैक्स : 2571760, 2571761 तार 'नेटग्रिड'
Corporate office : "Saudamini" Plot No. 2, Sector-29, Gurgaon-122 001 Haryana
Tel. : 2571700 - 719, Fax : 2571760, 2571761 Gram : 'NATGRID'

संदर्भ संख्या /Ref. Number

C/ENG/SEF/N/ LTOA

April 9, 2007

To

As per the List Attached

Sub: Minutes for Long Term Open Access Application of M/s PTC for evacuation of power from Karcham Wangtoo HEP in Northern region

Sir,

We write with reference to the Long Term Open Access Meeting held on 12/03/2007 at Udaipur, wherein the application from M/s PTC for transfer of power from Karcham Wangtoo which was discussed. Please find enclose the Minutes for the same.

Thanking You,

Yours faithfully

(Y.K.Sehgal)
Addl. General Manager (Engg-SEF)

1. Sh. V.Ramakrishna
Member(PS), CEA,
Sewa Bhawan, R.K. Puram,
New Delhi –66

2. Sh. S.P.Singh Gaharwal
Member Secretary,NREB
18A, Shaheed Jit Singh Sansawal Marg, Katwaria Sarai, New Delhi – 110 016

3. Director (Projects),HVPNL,
Shakti Bhawan, Sector-6,
Panchkula-134109 Haryana,

4. Chief General Manager (Trans.),
UPPCL, Shakti Bhawan Extn.3rd floor, 14, Ashok Marg,
Lucknow - 226001

5. Executive Director (E&M),
National Hydroelectric Power Corporation
N.H.P.C. Office Complex,
Sector-33, Faridabad-121003.

6. Director (Operations)
NTPC Bhawan, Core-7, Scope complex, Lodhi road New Delhi-110003

7. Director (Operation)
PTC India Ltd,2nd Floor,
15NBCC Tower, Bhikaji Cama Place,
New Delhi – 110 066

8. Director (Operations)
Delhi Transco Ltd.,Shakti Sadan,
Kotla Road, New Delhi-110 002

9. Managing Director
PTCUL, Urja Bhawan,
Kanwali Road, Dehradun,
Uttaranchal-248001

10. Director(Transmission)
RRVPNL, Vidyut Bhawan,
Janpath, Jyoti Nagar, Jaipur,
Rajasthan.

11. Chief Engineer (Operation),
Electricity Department,
UT Sectt, Sector-9D
Chandigarh.-161009

12. GM(Transmission)
Nuclear Power Corporation of India Ltd. 9-s-30,12th Floor, North Wing, VS Bhawan
Anushaktinagar, Mumbai 400 094

13. Member(Operation)
Punjab State Electricity Board,
Mall Road, Patiala,-147001, Punjab.

14. Member(Technical),
HPSEB,
Vidyut Bhawan, Shimla-171004

15. Power Development Commissioner,
Power Development Department, J&K,
Janipur, Jammu.

16. Member(Power),BBMB,
Sector 19-B, Madhya Marg,
Chandigarh.- 160019

17. Shri Rajiv Bhardwaj
Director,
Jaypee Karcham Hydro Corporation Ltd.
JA House, 63, Basant Lok,
Vasant Vihar, New Delhi

Minutes of Meeting for Long Term Open Access Application of M/s Power Trading Corporation Ltd for transfer of 689.92MW from Karcham Wangtoo HEP held on 12/03/2007 at Udaipur

List of Participants is enclosed at **Annexure-I**

POWERGRID welcomed the participants to the long-term open access meeting of Northern Region and informed that application from M/s Power Trading Corporation Limited for transfer of power from Karcham Wangtoo HEP was discussed in the long-term open access meeting held on 03/11/2006 for Northern region. During the discussion HPSEB informed that in the upstream of Karcham Wangtoo many hydro projects would be developed and there is a serious Right-of Way constraint and while developing the transmission system these should also be considered and accordingly the following was agreed:

- LILO of Nathpa Jhakri – Baspa 400 kV D/c line at Karcham Wangtoo and Karcham Wangtoo – Abdullapur 400 kV D/c (Quad) including bays at both ends would be the dedicated transmission system and all the costs towards this would be borne and implemented by the project developer. Beyond Abdullapur, a 400kV D/c (Triple Conductor) would be constructed to Sonepat substation for reliable transfer of Karcham Wangtoo power to beneficiaries. Abdullapur-Sonepat 400kV D/c (Triple Conductor) shall be a regional scheme.

- As full generation capacity (1000MW) would be injected into the Grid the applicable pooled transmission charges should be for the full generation capacity as per the present practice. The issue of sharing of transmission charges for free power needs to be resolved between M/s PTC, M/s Jaypee Karcham Hydro Corporation Ltd (JKHCL) and HPSEB.

- Requisite agreement needs to be signed for payment of transmission charges by M/s PTC India Ltd and JKHCL. The applicable transmission charges shall be as per CERC norms.

- The Long Term Open Access can be granted subject to the conditions mentioned above.

POWERGRID further informed that M/s Jaypee Karcham Hydro Power Ltd have now raised the issue that as their generation project is of only 1000MW capacity, a 400kV D/c line with triple conductor would be adequate from Karcham Wangtoo to Abdullapur and this is increasing their cost & affecting competitiveness.

HPSEB representative mentioned they are planning to implement the Shongtog Karcham, Jhangi Thopan and Thopan Powari hydro projects, totaling to about 1350 MW, in the upstream of Karcham Wangtoo HEP and these should be considered while finalizing the transmission system of Karcham Wangtoo.

In this regard Mr. Bhardwaj from JKHCL brought out that there is a cost increase in 400 kV Quad D/c line in place of constructing the line with triple conductor. It was further informed by Mr. Bhardwaj of JKHCL that cost of the dedicated system would be approximately Rs. 900 Crores. CEA and all the constituents / beneficiaries of

Northern region noted the increase and reiterated the requirement of Quad D/c line. Further no objection was raised by any of the participant.

In regard to the sharing of regional transmission charges POWERGRID informed that during the last meeting CEA & Constituents were of the opinion that the it should be corresponding to full 1000 MW generation capacity of Karcham Wangtoo as the full power from the project would be injected into the Northern region Grid. As there is a allocation of 12% free power to Govt of Himachal Pradesh the sharing of regional charges for this free power was to be resolved by PTC / JKHCL with Himachal Pradesh. Representative of JKHCL informed that as per the allocation 704 MW has been allocated to PTC, 176 MW power has been reserved for Merchant sale and balance 120 MW is the free power to Govt of Himachal Pradesh and they are ready for sharing the regional transmission charges for 176 MW of their power. PTC also confirmed that they are also ready to bear the transmission charges for 704 MW. It was further opined by the members that POWERGRID should grant the open access for the desired quantum of power i.e. 880 MW (704 MW of PTC and 176 MW by JKHCL) and pooled transmission charges of Northern Region shall be recovered in proportion to 880 MW. All the constituents agreed for the same.

Member (PS), CEA directed HPSEB that system development in their state is their responsibility and they should convene a meeting of the concerned parties and discuss the matter.

Concluding the discussions following was agreed:

- The dedicated transmission system of Karcham Wangtoo would include the LILO of Nathpa Jhakri – Baspa 400 kV D/c line at Karcham Wangtoo and Karcham Wangtoo – Abdullapur 400 kV D/c (Quad) including bays at both ends & line reactors. Dedicated transmission system shall be implemented by the project developer and all the costs towards implementation as well as for O&M shall be borne by them.

- CEA and all the constituents / beneficiaries of Northern region noted that there is cost increase for the construction of 400 kV Quad D/c line in place of 400 kV Triple conductor D/c line and reiterated the requirement of Quad D/c line. Further no objection was raised by any of the participant.

- It was also agreed that the PTC and JKHCL shall pay the Northern regional transmission charges corresponding to the allocation of power i.e. 704 MW to PTC and 176 MW to JKHCL from the generation project from the beneficiaries of the project.

- Requisite agreement needs to be signed for payment of transmission charges by M/s PTC India Ltd and JKHCL with POWERGRID. The applicable transmission charges shall be as per CERC norms.

- The Long Term Open Access can be granted subject to the signing of the desired agreements.

Annexure-I

List of Participants

CEA	
1. Sh. V Ramakrishna	Member (PS)
2. Sh. A.K.Asthana	Chief Engineer (SP&PA)
POWERGRID	
1. Sh. Y.K.Sehgal	AGM(Engg-SEF)
2. Sh. Mukesh Khanna	Chief Design Engineer(Engg-SEF)
DTL	
1. Sh. Raj Bhartiya	GM(Plg)
2. Sh.Bhupinder Nath	DGM(Plg)
HVPNL	
1. Sh. A S Chugh	Director (Projects)
2. Sh. T.K.Dhingra	SE(Planning)
RRVPNL	
1. Sh Y.K.Raizada	Director(Trans)
2. Sh.Umesh Gupta	CE(PPM)
3. Sh. M K Kasliwal	S.E
4. Sh. L.N.Nimawat	Addl.S.E(PSS)
J&K,PDD	
1. Sh.R.K.Seli	CE(S&O), Jammu
PSEB	
1. Sh. K.S.Jolly	CE(SO&C)
2. Sh. I.S.Anand	CE(Planning)
PTCUL	
1. Sh. Mohan Ram	MD
2. Sh.J.P.Tomar	GM
UPPCL	
1. Sh. A Guha Roy	SE(Planning)
2. Sh.V.P.Tewari	EE(Planning)
BBMB	
1. Sh.Niraj Gulati	Dy.Chief Engineer
NTPC Ltd	
1. Sh.Ajit Kumar	HOD (Elect)
2. Sh. Pramod Kumar	AGM
PTC	
1. Sh.Kunal Yadav	Manager.
HPSEB	
1. Sh.R.L.Gupta	Dir(SP)

NPCIL

1. Sh. K P Singh — Addl. CE

Jaypee Karcham Hydro Corporation Ltd.

1. Rajiv Bhardwaj — Dir

Annexure-II

GMR Bajoli Holi Hydropower Private Limited

GMR

Corporate Office:
New Shakti Bhawan, Building No. 302,
New Udaan Bhawan Complex
Near Terminal 3, IGI Airport
New Delhi-110037
CIN U40101HP2008PTC030971
T +91 11 4988 2200
F +91 11 4988 2227
W www.gmrgroup.in

Ref: GMR/Bajoli Holi/NRPC/2024/4800
Date: 22.03.2024

उ.क्षे.वि.स. डायरी सं./No. 363 दिनांक/Date 3/4/2024 NRPC Diary

The Member Secretary
Northern Regional Power Committee
18-A, Qutab Institutional Area
Shaheed Jeet Singh Marg
Katwaria Sarai,
New Delhi 110016,

Pl examine, SE(O) 01/04/24

EE(P) 02/4/24.

8/4/24 A meeting may be planned with all stakeholders.

Sub: ***Request from GMR Bajoli Holi Hydropower Pvt. Ltd for approval of existing IaSTS system in the state of Himachal Pradesh to ISTS System .***

Dear Sir,

Shri ... AEE

1. GMR Bajoli Holi Hydropower Private Limited (GBHHPL) established a 180 MW Hydropower Project at Village Holi- District Chamba, Himachal Pradesh, which has been operational since 28.3.2022.

2. GBHHPL is a HP State embedded generator and evacuating their generated power over Transmission system established by Himachal Pradesh Power Transmission corporation Limited (The HP STU). The Transmission System being utilized by GBHHPL comprises of 3 elements as 220 KV D/c Bajoli Holi – Lahal Transmission Line, 630 MVA- 400/220/33 KV Lahal PS and 400 KV D/C Lahal- Chamera-II (Rajera-CTU PS at Chamba).

3. GBHHPL is a having granted 178.2 MW LTA from HP STU and GNA Connectivity for 155 MW from CTU. Where in the LTA has been operationalized by HP STU on 11.1.2023.

4. As the Tariff for the STU system is yet to be determined, GBHHPL is paying Transmission Charges in the tune of Rs 45 Cr/Annum towards LTA as an Interim, which is mutually agreed between GBHHPL and HPPTCL.

5. it is noteworthy that all the 3 Transmission elements, mentioned above, were developed to evacuate power of GBHHL along with other HEPs to Chamera Pooling Station (under purview of Central Transmission Utility) and are being utilised to transmit power outside the state of Himachal Pradesh over ISTS network. As, by virtue, this IaSTS is terminating to CTU PS at Chamera -II to connect ISTS through the last leg of said STU system i.e. 400 KV Lahal Chamera (Rajera).

6. It is also pertinent to mention that "The beneficiaries of GMR Bajoli Holi are the Delhi International Airport (DIAL) and Uttar Pradesh Power Corporation Limited (UPPCL) in NR.

Registred Office:
GMR Office
Village DEOL, PO HOLI, Sub-Tehsil-Holi
Tehsil Bharmour, District: Chamba,
Himachal Pradesh - 176326.

7. Further, the Transmission system comprising the Lahal SS and Lahal-Chamera Line caters to various HEPs (including GBHHPL) in the State of Himachal Pradesh wherein power is not supplied within the State of Himachal Pradesh. It is reiterated that GMR BHHP's 100 % power (discount 12% Free power to the state) is getting evacuated through this Evacuation System and such flow of power is permanent in nature due to the PPA executed with the Delhi International Airport and UPPCL located in NR.

8. It is also confirm from above that proper maintenance of these IaSTS is being carried out by HPPTCL (currently under the supervision of HPPTCL (HP STU)) & would be utilised by JSW Kuther (240 MW) where power will also be evacuated outside the state of Himachal Pradesh as they have a PPA with Haryana Discoms. The JSW Kuther project is expected to commission in the coming financial year of 2024-2025. Pertinently, this evacuation will also utilise the 630 MVA Lahal Pooling station and 400 KV D/C Transmission Line from Lahal to Chamera _II.

9. It is relevant to note that these above-mentioned Transmission Line and substation are non ISTS and carrying Inter- State Power on regular basis, under operation & appropriate metering system is in place on them.

10. In view of the above as explained, that the above system falls under the category of a Non ISTS system as per the Cl 93 of the CERC Tariff Regulation -24-29.

Therefore, you are requested to put up your recommendations under the prevailing Tariff Regulation and endorse that the exiting IaSTS system in the state of Himachal starting from the GMR Bajoli Holi Bus till Chamera _II (PS) including 630 MVA Lahal Pooling Station (STU-PS) is a non ISTS system and shall be considered as ISTS system.

Thanking you,

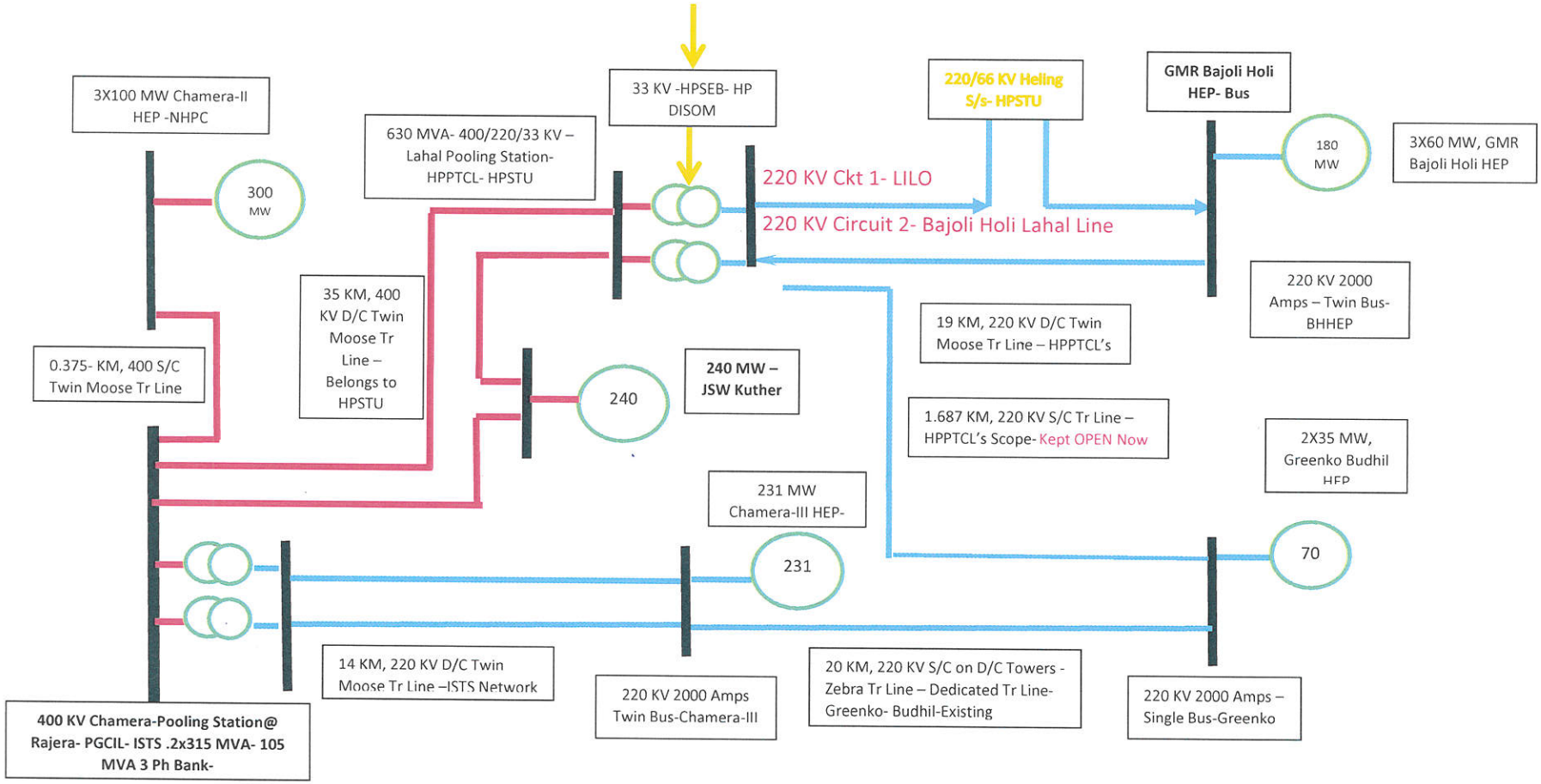
Yours sincerely,

For and on behalf of GMR Bajoli Holi Hydropower Pvt. Ltd.

22/2/2024

Gopendra Saraswat
Plant Head

Schematic of Transmission Lines, Substations and HEP's at a Glance- The Tr System from Bajoli Holi Bus including Lahal PS till Chamera-II PS (Rajera) is a Radial System



Name	Organization	Attendee Email
V K Singh, MS, NRPC	NRPC	ms-nrpc@nic.in
DK Meena NRPC	NRPC	dharmendra.cea@gov.in
Reeturaj Pandey	NRPC	pandeyr.cea@gov.in
Lokesh Agrawal	NRPC	seo-nrpc@nic.in
Nitin Deswal	PSPA-I, CEA	nitindeswal@nic.in
Ankita Singh CTUIL	CTUIL	ankita88380@gmail.com
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Ashok Pal	CTUIL	ashok@powergrid.in
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Mahavir Prasad Singh	NRLDC	mahavir@grid-india.in
Gopendra Saraswat Bajoli Holi	GMR	gopendra.saraswat@gmrgroup.in
GM CD HPPTCL	HPPTCL	gmcd.tcl@hpmail.in
HP SLDC	HP SLDC	sehpsldc@gmail.com
PC HPSLDC	HP SLDC	sehpsldc@gmail.com

H.P. POWER TRANSMISSION CORPORATION LIMITED

(A State Government Undertaking)
Regd. Office: Himfed Bhawan, Panjari, Tutikandi, Shimla-171005.
(CIN): U40101HP2008SGC030950
Ph: -0177-2633284, **FAX**: -0177-2832384
Email :gmcd.tcl@hpmail.in; dgmcomm.tcl@hpmail.in **Web:** hpptcl.com

No.: HPPTCL/C&M/Lahal Petition /2024 -433346 Dated: - 02-07-2024

To

Chief Engineer,
Power System Planning & Appraisal-I Division,
Central Electricity Authority, Sewa Bhawan R K Puram,
New Delhi -110066.

Reference: Certification Process for Non-ISTS Lines carrying Inter-State Power as specified under Regulation 93 of CERC (Terms and Conditions of Tariff) Regulations, 2024.

Subject: Regarding recommendation as a part of the Inter-State Transmission System in line with the CERC (Terms and Conditions of Tariff) Regulations, 2024 for Certification of following transmission assets: -

1. 400 kV D/C Lahal-Chamera Transmission line.
2. 400/220/33kV GIS Substation (400/220kV, 2×315 MVA + 220/33kV, 50/63MVA) at Lahal alongwith 220kV Lahal-Budhil S/C Transmission Line in District Chamba, Himachal Pradesh.
3. 220 kV D/C Bajoli Holi - Lahal Transmission line.

Sir,

Hon'ble CERC, under Regulation 93 of the CERC (Terms and Conditions of Tariff) Regulations, 2024, has specified the procedure to be followed for certification of intra-state transmission systems as ISTS Systems that are being developed or that have already been developed by State Transmission Licensee and are being utilized for evacuation & transfer of inter-state power.

In context to above, a meeting was scheduled by NRPC on 03.05.2024 to discuss the nature of assets as ISTS/non-ISTS wherein in the agenda at annexure-II, the existing IaSTS system in the state of Himachal starting from the GMR Bajoli Holi Bus till Chamera_II (PS) including 630MVA Lahal Pooling Station (STU-PS) consisting of subject cited transmission assets of HPPTCL was also included. After deliberations in presence of NRPC, CEA, NRLDC, CTUIL, HPPTCL, HPSLDC, HPSEBL and GMR Bajoli Holi Hydropower Pvt. Ltd., as per the minutes of meeting following was decided (MoM enclosed as **Annexure-1**): -

"a. Under clause 93 of Tariff Regulations-2024, CEA has to certify the ISTS status for intra-state transmission lines based on recommendations of STU

and RPC. In view of above, CEA may devise a uniform philosophy for the same alongwith definition of various terms mentioned in the clause.
b. This case may be examined after the formulation of policy by CEA for granting ISTS status to intra state lines/dedicated lines."

HPPTCL being a deemed Transmission Licensee of Himachal Pradesh has commissioned following assets for evacuation of power generated from the Hydro Generation in the Rabi Basin within the State of Himachal Pradesh:

1. 400 kV D/C Lahal-Chamera Transmission line.
2. 400/220/33kV GIS Substation (400/220kV, 2×315 MVA + 220/33kV, 50/63MVA) at Lahal alongwith 220kV Lahal-Budhil S/C Transmission Line in District Chamba, Himachal Pradesh.
3. 220 kV D/C Bajoli Holi - Lahal Transmission line.

The date of commissioning of the subject assets is as specified in the following table: -

S.No.	Asset Details	COD
1.	400 kV D/C Lahal-Chamera Transmission line.	11.01.2023
2.	400/220/33kV GIS Substation (400/220kV, 2×315 MVA + 220/33kV, 50/63MVA) at Lahal alongwith 220kV Lahal-Budhil S/C Transmission Line in District Chamba, Himachal Pradesh	11.01.2023 *
3.	220 kV D/C Bajoli Holi - Lahal Transmission line	19.11.2021#

** COD of 400/220/33kV GIS Substation has been considered on 11.01.2023 after charging of 400/220kV portion of Lahal Substation upon charging/commissioning of 400kV D/C Lahal-Chamera Transmission line on 11.01.2023.*
 # In the interest of green energy HPPTCL commissioned 220/33kV portion of Substation alongwith 220kV Lahal-Budhil S/C Line as an interim power evacuation arrangement on 19.11.2021 during FY 2020-21 which in case of contingency, shall remain an alternative route of power evacuation from various HEPs.

It is humbly submitted that the abovementioned assets have been developed by HPPTCL in accordance with the Master Plan developed by CEA. It is further submitted that the said assets meet the criteria specified under Regulation 93 and hence HPPTCL as State Transmission Licensee (STU) recommends that abovementioned assets be certified as a part of the Inter-State Transmission (ISTS) System in accordance with Regulation 93 of CERC Tariff Regulations, 2024:

Regulation 93 of CERC Tariff Regulations, 2024 specifies as follows:

"93. Approval Process of Non-ISTS Lines carrying Inter-State Power:

...

(1) Existing Intra State lines which were planned as ISTS System shall also be considered as ISTS lines;

Provided that such lines have not been developed for the sole purpose of the beneficiary (ies) of a single State;

Provided further that such transmission system is under operation and appropriate metering system is in place to record flow of power;

Provided further that a proper mechanism is in place for the maintenance of such a transmission system after its COD.

(2) CTU, in consultation with RLDC, shall identify all such non-ISTS lines which are utilized for ISTS power transfer after ascertaining that such nature of flow of power has become permanent.

..."

(Emphasis provided)

It is humbly submitted that since the inception stage, these Assets have been planned primarily to evacuate power from upcoming generating stations in the Ravi Basin to outside the State of Himachal Pradesh. The Master Plan approved by CEA is attached herewith as **Annexure-2**. It is further submitted that the assets have been subsequently discussed and agreed in the 3rd meeting of NRPC (Transmission Planning) dated 19.02.2021 (circulated vide letter dated 09.05.2021) as well as in the 27th meeting of Standing Committee dated 30.05.2009 (circulated vide letter dated 11.06.2009) on Power System Planning of Northern Region. A copy of the MoM is attached herewith as **Annexure-3**.

It is further submitted that currently the assets under consideration are being used to evacuate and supply power from Bajoli Holi HEP (180 MW) and other SHPs (34MW) having PPA with HPSEBL (DISCOM) located in Ravi Basin of the State of Himachal Pradesh. The power is being supplied to the States of Delhi (GMR- 120 MW) and Uttar Pradesh (GMR- 60MW) as well as Himachal Pradesh (34MW).

It is also submitted that HPPTCL has also granted connectivity to Kuteher HEP (240 MW) and LTA in this regard has been signed on dated 22.03.2022.

The detailed summary of the Beneficiaries along with the PPA capacity of the abovementioned assets is as following:

S. No.	Name of Beneficiary	State of Beneficiary	Contracted Demand (MW)	Period	LTA/TSA
1.	GMR	Delhi	120	20 years till 03.05.2037 as per PPA dated 11.09.2017	178.2 MW as per LTA dated 03.09.2015
2.	GMR	Uttar Pradesh	60	25 years as per PPA dated 17.05.2021	
3.	HPSEBL	Himachal	34		SHPs of the capacity

	(DISCOM)	Pradesh		----------	34 MW as per Supplementary TSA dated 14.07.2022 in continuation to main TSA dated 10.02.2012.
4.	Kutehr HEP	Haryana	240	25 years w.e.f. 30.06.2023	LTA dated 22.03.2022

The copy of the PPAs/LTAs with the Beneficiaries along with TSA executed with HPSEBL are attached herewith as **Annexure-4** for reference.

In view of the above, and in terms of detailed justification provided in the following section the subject transmission assets fully meets the criteria specified under Regulation 93 of the CERC Tariff Regulations, 2024.

Condition 1: Such lines have not been developed for the sole purpose of the beneficiary (ies) of a single State:

The assets under consideration were part of the Master Plan prepared by CEA for evacuation of power from various hydro projects in Himachal Pradesh. These specific assets form the part of Rabi Basin. The relevant extracts of the Master Plan are summarized below:

> *"**Rabi basin***
>
> *Major projects existing in Rabi Basin are Chamera-I (540MW) and Chamera-II (300MW). For evacuation of power 400 kV D/C line from Chamera-I to Jullendher and 400kV S/C from Chamera-I to Kishenpur LILOed to Chamera-II are existing.*
>
> *Chamera-III (231MW) and Budhil (70MW) are under construction and Kuther (260 MW), Bajoli Holi (200 MW), Bara Bhangal (200 MW), Bharmor (45 MW), Hudsar (60 MW) and Kugti (45 MW) are planned.*
>
> *For evacuation of power from the projects upstream of Chamera-II, a 400/220kV pooling station is planned near Chamera-II which is required matching with Budhil HEP which would be the next project in the valley. This pooling station would be connected to Chamera-II through a 400kV S/C line and to Jullundhar through 400kV D/C line. The line to Jullundhar would be needed with the next generation project which is Chamera-III.*
>
> *A 220kV pooling station at a suitable location upstream of Chamera III is also proposed where power is proposed to be pooled and transmitted to Chamera-II 400/220kV pooling station through three numbers of 220kV D/C lines with 1xMoose conductors. These would be optimum solution for phased development. However, if there are physical constraints in constructing three of 220 kV D/C lines through the valley, it may be required to build two nos. of 220 D/C lines with 2x Moose conductors."*
>
> *(Emphasis provided)*

The Write-up for the Master Plan is attached herewith as Annexure-2.

Further, the development of the said assets was also discussed in the 27th Standing Committee on power system planning of Northern Region held on 30th May 2009 at Nainital, Uttarakhand. The relevant extracts are summarized as below:

"4. Evacuation of power from Kutehr HEP (260 MW) in the upstream of Chamera- III HEP

Member (PS) informed that for evacuation of power from various hydro projects in Himachal Pradesh, a master plan was prepared. In line with the master plan during the 23rd Meeting of the Standing Committee for planning of transmission system in NR, it was decided that in phased development, pooling station upstream of Chamera-III would be constructed by PGCIL as a regional pooling station. It was also agreed that power from Kutehar would be injected at 220 kV level at this new pooling station.

Further for evacuation of power from Budhil project it was agreed to LILO one circuit of Chamera-III – Chamera Pooling station 220 kV D/C line (with Twin Moose conductor) at Budhil. It was further informed that HP has changed the master plan and now proposed two nos. of 220 kV D/C lines instead of 3 nos. of 220 kV D/C lines and also they intend to establish 220 kV pooling station at Lahal which is close to Kutehar HEP. Member (PS) explained that considering the overall power flow requirement of about 1000-1100 MW, 2 nos. of 220 kV D/c lines would not be adequate and proposed that line from Lahal to Chamera pooling station should be a 400 kV D/C line, this would optimize ROW – the requirement of Forest Department of HP. For connectivity of Kutehar it was proposed that a 220 kV D/C line can be constructed by the project developer upto Lahal Pooling station.

For evacuation of power from Budhil, two options were discussed i.e. either they should carry out the LILO of Chamera-III – Chamera Pooling station 220 kV D/C line with Twin Moose conductor or they can construct 220 kV S/C line up to Chamera-III utilizing one 220 kV bay at Chamera-III, space for which is available at Chamera-III. It was also informed that second option would not provide any reliability; however it was to be decided by the generation developer.

Further it was also informed that above issue had already been discussed in a meeting held in CEA on 18.5.2009 wherein representatives from HP, Lanco, and Kutehar & Powergrid were present.

Powergrid informed that they have received Long Term Open Access Application from the developer of Kutehar HEP & beneficiaries of the project are Northern Region Constituents and since system has already been decided, it was proposed to grant the LTOA. It was agreed by the constituents.

Concluding the discussions, following were agreed:

i) Lanco to confirm about the connectivity of Budhil HEP to Chamera III transmission.

ii) HP would establish a 400/220 kV substation at Lahal in the time frame of Kutehar HEP which would be connected to Chamera Pooling Station by a 400 kV D/C line. Initially this line would be charged at 220 kV level and subsequently with the coming up of more generation this line can be charged at 400 kV level ensuring that the ICTs (2×315 MVA) at Chamera II Pooling station are not overloaded.

iii) CTU can grant LTOA to M/s JSW (developer of Kutehar HEP)"

(Emphasis provided)

The Minutes of the Meeting of the 27th Standing Committee on power system planning of Northern Region is attached herewith as **Annexure-3**.

The assets under consideration were also discussed in the 3rd Meeting of Northern Regional Power Committee (Transmission Planning) held on 19.02.2021. The relevant extracts are summarized below:

"17.0 Construction of 220/400kV, 2×315 MVA PS at Lahal & 400 kV D/C (Twin Moose) line from 400/220 kV, 2×315 MVA, Lahal Sub-Station to 400/220 kV Chamera P.S. of PGCIL

17.1 HPPTCL stated that in the 27th meeting of SCPSPNR held on 30th May 2009, following was approved for evacuation of power from Hydro Electric Projects in Ravi Basin:

"HP would establish a 400/220 kV Sub-Station at Lahal in the time frame of Kutehar HEP which would be connected to Chamera Pooling Station by a 400 kV D/C line. Initially this line would be charged at 220 kV level and subsequently with the coming up of more generation, this line can be charged at 400 kV level ensuring that the ICTs (2×315MVA) at Chamera-II Pooling station are not overloaded"

It was further mentioned that instead of 2 No. of 220 kV D/C Lines, a 400 kV D/C Line considering the overall power flow requirement of about 1000-1100 MW shall be constructed in order to conserve R.O.W.

HPPTCL had accordingly taken up the execution of the following Transmission Elements:

1. 400/220 kV, 2×315 MVA & 220/33 kV, 63 MVA Sub-Station at Lahal.

2. 400 kV D/C (Twin Moose) line from 400/220 kV, 2×315 MVA, Lahal Sub-Station to 400/220 kV Chamera P.S. of PGCIL.

The work of construction of 400/220kV Sub-Station has been completed. The 220/33kV portion of the Sub-Station has already been commissioned to provide interim power evacuation path to SHEPs via construction of 220 kV S/C line on D/C towers from Lahal to Budhil HEP till completion of 400 kV D/C (Twin Moose) line from 400/220 kV, 2×315MVA, Lahal Sub-Station to 400/220 kV Chamera P.S. of PGCIL.

17.2 HPPTCL further stated that in order to charge the 400/220 kV S/s, HPPTCL had approached NRLDC for no load charging of 400/220kV Sub-Station through 220/400kV ICT from 220 kV side. However, NRLDC had observed that the

transformation capacity of 400/220 kV Substation has not been mentioned in the Standing Committee approval accorded in the 27th meeting which is required before according approval for charging.

17.3 The matter was accordingly taken up with CEA vide letter dated 05.11.2020 to clarify on the capacity of S/Stn. Accordingly, CEA convened a meeting of all concerned stakeholders through VC on 11.11.2020, wherein following was decided:

(i) POSOCO to provide permission to HPPTCL for charging of 400/220 kV, 2×315MVA Lahal substation.

(ii) Transformation capacity of 2×315 MVA at 400/220 kV Lahal substation would be ratified in the next standing committee meeting.

(iii) HPPTCL to explore the possibility of installation of Bus Reactor at Lahal S/Stn.

17.4 In view of above, HPPTCL requested members to consider & approve the following-

(i) The capacity of Lahal S/S as 400/220 kV, 2×315MVA.

(ii) Construction of 400 kV D/C (Twin Moose) line from 400/220 kV, 2×315 MVA Lahal Sub-Station to 400/220 kV Chamera P.S. of PGCIL

17.5 Members agreed to the proposal of HPPTCL. HPPTCL was again requested to explore the possibility of installation of Bus Reactor at Lahal S/Stn. HPPTCL agreed for the same and to revert with the details."

(Emphasis provided)

The Minutes of the 3rd Meeting of Northern Regional Power Committee (Transmission Planning) held on 19.02.2021 is attached herewith as **Annexure-3**.

Further, as discussed earlier, the transmission assets under consideration were envisioned to supply power outside the State of Himachal Pradesh by CEA and subsequently have been developed by HPPTCL for evacuating power from hydro power plants in the Rabi Basin to beneficiaries that are located in the Delhi, Uttar Pradesh and Himachal Pradesh. Hence, the stipulated condition is satisfied.

Condition 2: Such transmission system is under operation and appropriate metering system is in place to record flow of power;

Condition 3: A proper mechanism is in place for the maintenance of such a transmission system after its COD.

It is to confirm that HPPTCL has already established the assets under consideration along with all the requisite system for metering as per the Central Electricity Authority (Installation and Operation of meters) Regulations, 2006 read with all subsequent amendments and is operating these assets since their CoD in accordance with the standards specified under the Central Electricity Authority (Safety requirements for construction, operation and maintenance of electrical plants and electric lines) Regulations 2011 read with all subsequent amendments. A copy of Single

Line Diagram depicting the metering arrangement is also attached herewith as **Annexure-5**. Thus Conditions 2 & 3 under Regulation 93 of the CERC Tariff Regulations, 2024 are also fulfilled.

In light of the discussions made above and considering that the subject assets have satisfied all the pre-requisite conditions for certification as Inter-State Transmission Assets, HPPTCL (STU) recommends that CEA may kindly initiate the process for certification of the subject assets in accordance to the Regulation 93 of the CERC Tariff Regulations, 2024.

Yours faithfully,

(Er. Manoj Kumar)
General Manager (C&D),
HPPTCL, Shimla-05.

Copy of above is forwarded to following for kind information in the matter please: -

1. The Managing Director, HPPTCL, Shimla-05.
2. The Director (Projects), HPPTCL, Shimla-05.
3. The Director (P&C), HPPTCL, Shimla-05.
4. The General Manager (Projects), HPPTCL, Shimla-05.
5. The Dy. General Manager(C&M), HPPTCL, Shimla-05.
6. The Dy. General Manager (Planning & IT), HPPTCL, Shimla-05.

Sd/-
General Manager (C&D),
HPPTCL, Shimla-05.

ANNEXURE - 1

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

दिनांकः 18.05.2024

विषय: **MoM of meeting held on 03.05.2024 to discuss the nature of lines as dedicated/ISTS/Not ISTS status -reg.**

महोदय / महोदया,

Kindly find attached minutes of the meeting held on **03.05.2024** at **11:00Hrs.** via **video conferencing** to discuss the nature of ISTS/Not ISTS status for the following cases as given below-

I. Karcham Wangtoo - N.Jhakri portion of Baspa – N.Jhakri D/c transmission line (agenda enclosed as **Annexure-I**).

II. GMR Bajoli Holi Hydropower Pvt. Ltd vide for existing laSTS system in the state of Himachal starting from the GMR Bajoli Holi Bus till Chamera_II (PS) including 630MVA Lahal Pooling Station (STU-PS)(agenda enclosed as **Annexure-II**).

Enclosure: As above

Signed by Dharmendra Kumar Meena
Date: 19-05-2024 17:08:03

डी. के. मीणा
अधीक्षण अभियंता (संरक्षण)

सेवा मे:

1. Chief Engineer, PSPA-I, CEA (cea-pspa1@gov.in)
2. Executive Director, NRLDC (nroy@grid-india.in)
3. Chief Operating Officer, CTUIL (pcgarg@powergrid.in)
4. MD, HPPTCL (md.tcl@hpmail.in)
5. MD, HPSLDC (mdhpsldc@gmail.com)
6. MD, HPSEB (md@hpseb.in)
7. Plant Head, M/s GMR Bajoli Holi Hydropower Pvt. Ltd

Minutes of meeting held on 03.05.2024 to discuss the nature of ISTS/Not ISTS status

The meeting was held on 03.05.2024 at 11:00 Hrs. via video conferencing. MS, NRPC welcomed all participants of PSPA-I division CEA, NRLDC, CTUIL, HPPTCL, HPSLDC, HPSEB and GMR Bajoli Holi Hydropower Pvt. Ltd. List of participants is attached as **Annexure-III**.

A. The case for Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line was discussed as below-

A.1 NRPC representative apprised that CTUIL has requested discussion on the matter to file a reply in Hon'ble CERC relating to a petition for grant of Transmission License for Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line.

A.2 Member Secretary, NRPC opined that the matter is sub-judice and any decision at this meeting level may not be appropriate. CTU may file reply based on their views as NRPC has not been made respondent in petition.

A.3 CTUIL representative highlighted that in Tariff Regulation-2024, there is no provision given for granting ISTS status to a dedicated line. In view of above, CTUIL requested for discussion so that a decision may be arrived for this case.

A.4 CTUIL representative briefed the connectivity of transmission lines as mentioned in **Annexure-I.** She conveyed that based on HPERC's direction, M/s JSWHEL filed application for the grant of an Inter-state transmission license to CERC for Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line.

A.5 CTUIL was of view that line, LILo portion onwards Karcham Wangtoo to N.Jhakri is being utilised for multi generators power flow i.e. Karcham Wangtoo and Baspa.

A.6 CGM, NRLDC commented that NRLDC has already shared the power flow data to CTUIL. CTUIL acknowledged the same. However, CTU stated that only data is not sufficient, its interpretation and decision on flow of power is to be identified.

A.7 CGM, NRLDC highlighted that in Tariff Regulation-2024, there are terms such as 'regular power flow', 'transfer of inter-state power', 'ISTS power' which require uniform definition for interpretation of power flow data.

A.8 CTUIL representative mentioned that at present, during peak hydro conditions power of about 400-450 MW flows through the Karcham Wangtoo- N.Jhakri portion of Baspa – N.Jhakri D/c transmission line. She also added that power from other future hydro projects in the upper Sutluj basin (like Shongtong HEP & Tidong HEP) shall also be pooled at Wangtoo Substation of HPPTCL, which was implemented through LILO of K.Wangtoo-Abdullapur 400 kV D/c line. Some portion of this additional power is also to be wheeled through the Karcham Wangtoo- N.Jhakri portion of

Baspa – N.Jhakri D/c transmission line under different seasonal/load-generation scenarios.

A.9 CGM, NRLDC replied that this is seasonal and futuristic condition. This should not solely be considered for finalization of power flow scenario.

A.10 MS, NRPC conveyed that earlier NRPC secretariat used to certify the conversion of intra state to ISTS status but it is not applicable for secretariat to decide as of now. Now, CEA will certify under clause 93 of Tariff Regulation-2024. Accordingly, there is need to discuss this issue at CEA level for formulation of procedure (nature/ period of power flow) for conversion of intra state (including dedicated) to ISTS.

A.11 HPPTCL representative submitted that Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line may be granted transmission licensee as there is no intra state involvement with the bus of Baspa and Karcham Wangtoo.

A.12 PSPA-I division, CEA representative commented that transmission licensee for Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line may not be granted based on the clause 93 of CERC tariff regulation -2024 as it does not cover the provision for dedicated lines. However, CTUIL may use the precedence adopted in finalization of ISTS status to LiLo portion of Karcham Wangtoo line and Karcham Wangtoo- Abdullapur line.

A.13 CTUIL representative conveyed that there is power flow of multi generators in the portion of Karcham Wangtoo – N.Jhakri of Baspa - N.Jhakri.

A.14 MS, NRPC highlighted that based on data submitted by NRLDC, CTUIL may provide technical recommendation to honourable commission.

A.15 SE (O), NRPC mentioned that CTUIL may also include nature of status of line envisaged at the time of commissioning of line. NRLDC representative highlighted that past case of charor- banala line and ADHPL case may be explored by CTUIL.

A.16 After deliberation followings were decided-

a. CTUIL may submit reply based on data of power flow provided by NRLDC.
b. Under clause 93 of Tariff Regulation-2024, CEA has to certify the ISTS status for intra-state transmission lines based on recommendations of the STU and RPC. Therefore, CEA may devise a uniform philosophy for the same along with definition of various related terms mentioned in the clause.

B. The case for existing IaSTS system in the state of Himachal starting from the GMR Bajoli Holi Bus till Chamera_II (PS) including 630MVA Lahal Pooling Station (STU-PS) was discussed as below-

B.1 Plant head, GMR Bajoli Holi Hydropower Pvt. Ltd briefed the connectivity of lines as mentioned in **Annexure-II**. He requested for granting ISTS connectivity under clause

93 of Tariff regulation-2024 for the whole system carrying inter-state power starting from GMR Bajoli Holi Bus till Chamera_II (PS) including 630MVA Lahal Pooling Station (STU-PS) with transmission lines 220kV Bajoli-Holi D/C and 400kV Lahal-chamera-II D/C.

B.2 He mentioned about the LTA and GNA connectivity of GMR Bajoli Holi Hydropower Pvt. Ltd that plant has been granted 178.2 MW LTA connectivity from HPSTU and 155 MW GNA connectivity from CTU. In this 33 MW Power is allocated to Delhi International Airport, 60 MW to UPPCL and remaining is being sold in the market. He submitted that there is regular inter-state power flow and it fulfils conditions of Tariff regulation for conversion to ISTS.

B.3 CTUIL representative asked HPPTCL comment on the power flow.

B.4 HPPTCL commented that there will be power injection from upcoming 220/66kV Heiling S/s of HPSTU also.

B.5 CTUIL representative mentioned that GMR bajoli holi to Lahal PS is dedicated nature of line. Further, he mentioned that 400kV Lahal to chamera PS may be discussed for ISTS grant based on its integration.

B.6 HPPTCL representative added that JSW is going to implement the 240 MW kuther generating station and will be connected by Liloing of one circuit of 400kV lahal Pooling Station to chamera PS. There will be power in the lines from HPSEB generator, JSW Kuther and GMR Bajoli Holi Hydropower Pvt. Ltd. He added that most of power will be available of JSW kuther and GMR Bajoli Holi Hydropower Pvt. In present scenario, power is going out the HP state. Therefore, the ISTS status may be granted in this case under discussion of GMR bajoli holi.

B.7 CTUIL representative commented that JSW kuther has not applied for the connectivity to CTUIL as of now.

B.8 PSPA-I division, CEA representative highlighted that this case comes under purview of clause 93 of Tariff regulation-2024. Therefore, after finalization of philosophy, CEA will certify the ISTS status.

B.9 CGM, NRLDC asked HPPTCL regarding beneficiaries mandated for the transmission system. HPPTCL representative replied that the system was constructed for multiple beneficiaries for Ravi basin. Plant head, GMR Bajoli Holi Hydropower Pvt. Ltd added that it was part of green corridor.

B.10 Further, CGM, NRLDC desired to have a clarification on the definition of regular and ISTS power. Plant head, GMR Bajoli Holi Hydropower Pvt. Ltd highlighted that they have PPA for more than 25 years with Delhi International Airport (33 MW RTC) & UPPCL (60 MW continuous power from May to October).

B.11 HPPTCL conveyed that such cases may be examined considering all hydro basins areas, corridors and load centres connectivity and availability in the corresponding areas.

B.12 MS, NRPC conveyed that this case will be examined after the formulation of philosophy for certification of ISTS by CEA.

B.13 After deliberation followings were decided-

a. Under clause 93 of Tariff Regulation-2024, CEA has to certify the ISTS status for intra-state transmission lines based on recommendations of the STU and RPC. In view of above, CEA may devise a uniform philosophy for the same along with definition of various terms mentioned in the clause.

b. This case may be examined after the formulation of policy by CEA for granting ISTS status to intra state lines/ dedicated lines.

Meeting ended with a vote of thanks.

******

In the meanwhile, OTPC proposed to avail the viability gap funding for the transmission lines from Pallatana(generating Switchyard) to Bongaigaon S/s of POWERGRID which was discussed in a meeting chaired by Secretary(Power) on 13-03-2006 wherein representative of CEA, POWERGRID, ONGC and IL&FS were present. It was decided in the meeting that the conditional viability gap funding for the transmission project can be recommended by Ministry of Power for the transmission system from Pallatana to Siliguri.

The above proposed transmission system for long term open access was discussed with the NR beneficiaries in a meeting held on 22.04.06 at Nainital wherein CEA and POWERGRID were also present. During the discussion, it emerged that as decided in Ministry of Power for Viability Gap Funding, the transmission elements from Pallatana to Siliguri would be a part of generation project cost and transmission charges for Purnea – Biharshariff shall be borne by NR constituents. In the event Viability Gap Funding is not available, constituents were of the view that transmission line from Pallatana to Bongaigaon may be constructed as a part of generation project, while the transmission system beyond Bongaigaon should be developed by CTU as a regional scheme. However, the above was subject to the approval of Ministry of Power.

The matter was further discussed in a meeting taken by Secretary (Power) on 06-06-2006 wherein Secretary (Power) indicated that the transmission system to be developed under private-public partnership should include a transmission system from Pallatana upto Biharsharif including Bongaigaon-Siliguri and Purnea-Biharsharif lines. Subsequently, OTPC vide its letter dated 30-06-2006 to Ministry of Power informed that its request for Viability Gap Funding for the transmission project is being withdrawn.

Further, M/s OTPC vide its letter dated 11/07/2006 informed that the project capacity has been downsized from 1100 MW to 740 MW in phase-I, having net exportable capacity of 700 MW. OTPC vide another letter dated 11/07/2006 had requested that in view of revision of plant capacity, the immediate evacuation system from Pallatana

to Bongaigaon, via Silchar may be revised as 400kV D/c line with twin Moose conductor. Further OTPC vide its letter dated 21/07/2006 informed that it has no future plans for expansion.

The matter was further discussed in a meeting taken by Joint Secretary (Transmission), Ministry of Power on 10-10-2006 wherein following was observed:

- The 400kV transmission lines from Pallatana GBPP to Bongaigaon, via Silchar, would be constructed by the generating agency and the balance transmission system i.e. Bongaigaon - Siliguri and Purnea - Biharsharif 400 kV D/c lines has to be taken up as regional scheme with Northern region constituents as the beneficiaries.
- It was also mentioned that as 500 MW power has been allocated to NR constituents from this project, it is expected that a large quantum of power would flow out of North-Eastern region. Though the generating agency has downsized the generation capacity to 740 MW, there will be no change in the transmission system.
- Though the scheme was discussed and agreed by Northern region constituents, the matter needs to be discussed again due to downsizing of project capacity.

In view of the above, following transmission system has been proposed.

A. Immediate Evacuation to be taken up by generating agency

- Power project (Pallatana) - Silchar 400 kV D/C line with twin moose conductor
- Silchar – Bongaigaon 400 kV D/C line with twin moose conductor and 40% series compensation
- New 2x200 MVA, 400/132 kV sub-station at Silchar (Assam)
- Extension of Bongaigaon substation by 400/220kV, 315MVA transformer.

B. Regional Scheme for power transfer to Northern Region

- Bongaigaon - Siliguri 400 kV D/C line with quad Moose conductor
- Purnea – Biharsharif 400 kV D/C line with quad Moose conductor

The system was discussed by the members and agreed to the above mentioned scheme.

POWERGRID enquired the commissioning schedule of the project. Representative from OTPC informed that the revised schedule of the generation is December 2009.

Concluding the discussion following was agreed

- Members agreed that to transfer 700MW power from Pallatana generation project (500MW to NR and 200MW to NER), following transmission system would be required :
  1. Power project (Pallatana) - Silchar 400kV D/C line with twin moose conductor
  2. Silchar-Bongaigaon 400kV D/C line with twin moose conductor and 40% series compensation
  3. New 2x200 MVA, 400/132 kV sub-station at Silchar (Assam)
  4. Extension of Bongaigaon substation by 400/220kV, 315MVA transformer.
  5. Bongaigaon - Siliguri 400 kV D/C line with quad Moose conductor
  6. Purnea – Biharsharif 400 kV D/C line with quad Moose conductor

  Items 1 to 4 are part of the interconnection arrangement of OTPC generation upto Bongaigaon would be in the scope of M/s OTPC. The transmission charges for item 5 & 6 i.e. the transmission system beyond Bongaigaon would have to be borne by NR constituents.
- OTPC should also make sure of the execution of the 132kV interconnection of the new substation at Silchar with the existing transmission system. This is essential as the proposed transmission system from power plant to Bongaigaon can not be operated without proper anchoring arrangement at Silchar.
- For supply of power to Tripura, the necessary arrangement along with cost at the Pallatana switchyard shall be carried out by the generating company and the transmission line would require to be tied up.
- M/s OTPC would be entering into suitable agreements including BPTA with POWERGRID/STU's for payment of transmission charges of the respective system as per CERC /SERC norms.

The meeting ended with a vote of thanks

Annexure-I

List of Participants

CEA	
1. Sh. A.K.Asthana	Chief Engineer (SP&PA)
2. Sh.Gautam Roy	Dy.Director, CEA.
3. Sh.Rajeev Kumar	Asst.Dorector, CEA.
POWERGRID	
1. Sh. R.N.Nayak	Executive Director(Engg,QA&I & HR)
2. Sh. Y.K.Sehgal	AGM(Engg)
3. Sh. Ashok Pal	Chief Design Engineer(Engg)
DTL	
1. Sh. A.K.Kaul	GM(SLDC)
2. Sh.Raj Bhatia	GM(Pllg)
HVPNL	
1. Sh. T.K.Dhingra	SE(planning)
2. Sh.S.K.Bansal	Exec.Engineer
RRVPNL	
1. Sh Y.K.Raizada	Director(Trans)
2. Sh.Umesh Gupta	CE(PPM)
3. Sh. L.N.Nimawat	Addl.S.E(PSS)
J&K,PDD	
1. Sh.R.K.Seli	CE(S&O), Jammu
PSEB	
1. Sh. K.S.Jolly	CE(SO&C)
2. Sh. I.S.Anand	Director(Planning)
3. Sh.Padmjit	Advisor
PTCUL	
1. Sh. Mohan Ram	MD
2. Sh.J.P.Tomar	DGM
3. Sh.V.K.Gupta	Consultant
UPPCL	
1. Sh. V.K.Aggarwal	SE(T&C)
2. Sh.V.P.Tewari	EE(Planning)
BBMB	
1. Sh.Niraj Gulati	Dy.Chief Engineer
NTPC Ltd	
1. Sh.Ajit Kumar	AGM(Elect)
2. Sh. Pramod Kumar	DGM(E)

NHPC

1. Sh. Raj kumar	GM(T&RE)

NRPC

1. Sh.S.P.Singh	Member Secretary
2. Sh.R.P.Aggarwal	SE(O)
3. Sh.Pralad Meena	Xen(O)

PTC

1. Sh.S.S.Sharma	Sr.V.P.
2. Sh.Harish Saran	V.P.

HPSEB

1. Sh.S.K.Chanana	CE(SP)
2. Sh.R.L.Gupta	Dir(SP)
3. Sh.R.N.Kaul	Dir(I/S)

NPCIL

1. Sh.Sandeep sarwate	S.O./F.

IL&FS

1. S.C.Misra	Advisor(T)
2. Haziq Beg	VP

Maithon Power Ltd

1. R.K.Agarwal	CEO & ED
2. G.R.Nagengdran	Company Secretary

REGL

1. S.K.Deb	Sr.V.P
2. P.Srinivasan	Head Project
3. Rakesh Raman	Chief Project Manager
4. Mukesh Paliwal	Head Network study

NTPC-Lohari Nagpala

1. Sh Vinod Padha	AGM (Comml)
2. Sh.A.Basu	Ch Manager (Comml)

पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)
पावरग्रिड

केन्द्रीय कार्यालय "सौदामिनी" प्लॉट सं. 2, सैक्टर–29, गुड़गॉव–122 001, हरियाणा
फोन : 2571700 - 719 फैक्स : 2571760, 2571761 तार 'नेटग्रिड'
Corporate office : "Saudamini" Plot No. 2, Sector-29, Gurgaon-122 001 Haryana
Tel. : 2571700 - 719, Fax : 2571760, 2571761 Gram : 'NATGRID'

संदर्भ संख्या /Ref. Number

C/ENG/SEF/N/ LTOA

April 9, 2007

To

As per the List Attached

Sub: Minutes for Long Term Open Access Application of M/s PTC for evacuation of power from Karcham Wangtoo HEP in Northern region

Sir,

We write with reference to the Long Term Open Access Meeting held on 12/03/2007 at Udaipur, wherein the application from M/s PTC for transfer of power from Karcham Wangtoo which was discussed. Please find enclose the Minutes for the same.

Thanking You,

Yours faithfully

(Y.K.Sehgal)
Addl. General Manager (Engg-SEF)

1. Sh. V.Ramakrishna
Member(PS), CEA,
Sewa Bhawan, R.K. Puram,
New Delhi –66

2. Sh. S.P.Singh Gaharwal
Member Secretary,NREB
18A, Shaheed Jit Singh Sansawal Marg, Katwaria Sarai, New Delhi – 110 016

3. Director (Projects),HVPNL,
Shakti Bhawan, Sector-6,
Panchkula-134109 Haryana,

4. Chief General Manager (Trans.),
UPPCL, Shakti Bhawan Extn.3rd floor, 14, Ashok Marg,
Lucknow - 226001

5. Executive Director (E&M),
National Hydroelectric Power Corporation
N.H.P.C. Office Complex,
Sector-33, Faridabad-121003.

6. Director (Operations)
NTPC Bhawan, Core-7, Scope complex, Lodhi road New Delhi-110003

7. Director (Operation)
PTC India Ltd,2nd Floor,
15NBCC Tower, Bhikaji Cama Place,
New Delhi – 110 066

8. Director (Operations)
Delhi Transco Ltd.,Shakti Sadan,
Kotla Road, New Delhi-110 002

9. Managing Director
PTCUL, Urja Bhawan,
Kanwali Road, Dehradun,
Uttaranchal-248001

10. Director(Transmission)
RRVPNL, Vidyut Bhawan,
Janpath, Jyoti Nagar, Jaipur,
Rajasthan.

11. Chief Engineer (Operation),
Electricity Department,
UT Sectt, Sector-9D
Chandigarh.-161009

12. GM(Transmission)
Nuclear Power Corporation of India Ltd. 9-s-30,12th Floor, North Wing, VS Bhawan
Anushaktinagar, Mumbai 400 094

13. Member(Operation)
Punjab State Electricity Board,
Mall Road, Patiala,-147001, Punjab.

14. Member(Technical),
HPSEB,
Vidyut Bhawan, Shimla-171004

15. Power Development Commissioner,
Power Development Department, J&K,
Janipur, Jammu.

16. Member(Power),BBMB,
Sector 19-B, Madhya Marg,
Chandigarh.- 160019

17. Shri Rajiv Bhardwaj
Director,
Jaypee Karcham Hydro Corporation Ltd.
JA House, 63, Basant Lok,
Vasant Vihar, New Delhi

Minutes of Meeting for Long Term Open Access Application of M/s Power Trading Corporation Ltd for transfer of 689.92MW from Karcham Wangtoo HEP held on 12/03/2007 at Udaipur

List of Participants is enclosed at **Annexure-I**

POWERGRID welcomed the participants to the long-term open access meeting of Northern Region and informed that application from M/s Power Trading Corporation Limited for transfer of power from Karcham Wangtoo HEP was discussed in the long-term open access meeting held on 03/11/2006 for Northern region. During the discussion HPSEB informed that in the upstream of Karcham Wangtoo many hydro projects would be developed and there is a serious Right-of Way constraint and while developing the transmission system these should also be considered and accordingly the following was agreed:

- LILO of Nathpa Jhakri – Baspa 400 kV D/c line at Karcham Wangtoo and Karcham Wangtoo – Abdullapur 400 kV D/c (Quad) including bays at both ends would be the dedicated transmission system and all the costs towards this would be borne and implemented by the project developer. Beyond Abdullapur, a 400kV D/c (Triple Conductor) would be constructed to Sonepat substation for reliable transfer of Karcham Wangtoo power to beneficiaries. Abdullapur-Sonepat 400kV D/c (Triple Conductor) shall be a regional scheme.

- As full generation capacity (1000MW) would be injected into the Grid the applicable pooled transmission charges should be for the full generation capacity as per the present practice. The issue of sharing of transmission charges for free power needs to be resolved between M/s PTC, M/s Jaypee Karcham Hydro Corporation Ltd (JKHCL) and HPSEB.

- Requisite agreement needs to be signed for payment of transmission charges by M/s PTC India Ltd and JKHCL. The applicable transmission charges shall be as per CERC norms.

- The Long Term Open Access can be granted subject to the conditions mentioned above.

POWERGRID further informed that M/s Jaypee Karcham Hydro Power Ltd have now raised the issue that as their generation project is of only 1000MW capacity, a 400kV D/c line with triple conductor would be adequate from Karcham Wangtoo to Abdullapur and this is increasing their cost & affecting competitiveness.

HPSEB representative mentioned they are planning to implement the Shongtog Karcham, Jhangi Thopan and Thopan Powari hydro projects, totaling to about 1350 MW, in the upstream of Karcham Wangtoo HEP and these should be considered while finalizing the transmission system of Karcham Wangtoo.

In this regard Mr. Bhardwaj from JKHCL brought out that there is a cost increase in 400 kV Quad D/c line in place of constructing the line with triple conductor. It was further informed by Mr. Bhardwaj of JKHCL that cost of the dedicated system would be approximately Rs. 900 Crores. CEA and all the constituents / beneficiaries of

Northern region noted the increase and reiterated the requirement of Quad D/c line. Further no objection was raised by any of the participant.

In regard to the sharing of regional transmission charges POWERGRID informed that during the last meeting CEA & Constituents were of the opinion that the it should be corresponding to full 1000 MW generation capacity of Karcham Wangtoo as the full power from the project would be injected into the Northern region Grid. As there is a allocation of 12% free power to Govt of Himachal Pradesh the sharing of regional charges for this free power was to be resolved by PTC / JKHCL with Himachal Pradesh. Representative of JKHCL informed that as per the allocation 704 MW has been allocated to PTC, 176 MW power has been reserved for Merchant sale and balance 120 MW is the free power to Govt of Himachal Pradesh and they are ready for sharing the regional transmission charges for 176 MW of their power. PTC also confirmed that they are also ready to bear the transmission charges for 704 MW. It was further opined by the members that POWERGRID should grant the open access for the desired quantum of power i.e. 880 MW (704 MW of PTC and 176 MW by JKHCL) and pooled transmission charges of Northern Region shall be recovered in proportion to 880 MW. All the constituents agreed for the same.

Member (PS), CEA directed HPSEB that system development in their state is their responsibility and they should convene a meeting of the concerned parties and discuss the matter.

Concluding the discussions following was agreed:

- The dedicated transmission system of Karcham Wangtoo would include the LILO of Nathpa Jhakri – Baspa 400 kV D/c line at Karcham Wangtoo and Karcham Wangtoo – Abdullapur 400 kV D/c (Quad) including bays at both ends & line reactors. Dedicated transmission system shall be implemented by the project developer and all the costs towards implementation as well as for O&M shall be borne by them.

- CEA and all the constituents / beneficiaries of Northern region noted that there is cost increase for the construction of 400 kV Quad D/c line in place of 400 kV Triple conductor D/c line and reiterated the requirement of Quad D/c line. Further no objection was raised by any of the participant.

- It was also agreed that the PTC and JKHCL shall pay the Northern regional transmission charges corresponding to the allocation of power i.e. 704 MW to PTC and 176 MW to JKHCL from the generation project from the beneficiaries of the project.

- Requisite agreement needs to be signed for payment of transmission charges by M/s PTC India Ltd and JKHCL with POWERGRID. The applicable transmission charges shall be as per CERC norms.

- The Long Term Open Access can be granted subject to the signing of the desired agreements.

Annexure-I

List of Participants

CEA	
1. Sh. V Ramakrishna	Member (PS)
2. Sh. A.K.Asthana	Chief Engineer (SP&PA)
POWERGRID	
1. Sh. Y.K.Sehgal	AGM(Engg-SEF)
2. Sh. Mukesh Khanna	Chief Design Engineer(Engg-SEF)
DTL	
1. Sh. Raj Bhartiya	GM(Plg)
2. Sh.Bhupinder Nath	DGM(Plg)
HVPNL	
1. Sh. A S Chugh	Director (Projects)
2. Sh. T.K.Dhingra	SE(Planning)
RRVPNL	
1. Sh Y.K.Raizada	Director(Trans)
2. Sh.Umesh Gupta	CE(PPM)
3. Sh. M K Kasliwal	S.E
4. Sh. L.N.Nimawat	Addl.S.E(PSS)
J&K,PDD	
1. Sh.R.K.Seli	CE(S&O), Jammu
PSEB	
1. Sh. K.S.Jolly	CE(SO&C)
2. Sh. I.S.Anand	CE(Planning)
PTCUL	
1. Sh. Mohan Ram	MD
2. Sh.J.P.Tomar	GM
UPPCL	
1. Sh. A Guha Roy	SE(Planning)
2. Sh.V.P.Tewari	EE(Planning)
BBMB	
1. Sh.Niraj Gulati	Dy.Chief Engineer
NTPC Ltd	
1. Sh.Ajit Kumar	HOD (Elect)
2. Sh. Pramod Kumar	AGM
PTC	
1. Sh.Kunal Yadav	Manager.
HPSEB	
1. Sh.R.L.Gupta	Dir(SP)

NPCIL

1. Sh. K P Singh — Addl. CE

Jaypee Karcham Hydro Corporation Ltd.

1. Rajiv Bhardwaj — Dir

GMR Bajoli Holi Hydropower Private Limited

GMR

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New Shakti Bhawan, Building No. 302,
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W www.gmrgroup.in

Ref: GMR/Bajoli Holi/NRPC/2024/4800
Date: 22.03.2024

The Member Secretary
Northern Regional Power Committee
18-A, Qutab Institutional Area
Shaheed Jeet Singh Marg
Katwaria Sarai,
New Delhi 110016,

pl examine
SE(O)
01/04/24

EE(P)
02/4/24.

सं./No. 363
दिनांक/Date 3/4/20

8/4/24
A meeting may be planned with all stakeholders.

Sub: ***Request from GMR Bajoli Holi Hydropower Pvt. Ltd for approval of existing IaSTS system in the state of Himachal Pradesh to ISTS System .***

Dear Sir,

1. GMR Bajoli Holi Hydropower Private Limited (GBHHPL) established a 180 MW Hydropower Project at Village Holi- District Chamba, Himachal Pradesh, which has been operational since 28.3.2022.

2. GBHHPL is a HP State embedded generator and evacuating their generated power over Transmission system established by Himachal Pradesh Power Transmission corporation Limited (The HP STU). The Transmission System being utilized by GBHHPL comprises of 3 elements as 220 KV D/c Bajoli Holi – Lahal Transmission Line, 630 MVA- 400/220/33 KV Lahal PS and 400 KV D/C Lahal- Chamera-II (Rajera-CTU PS at Chamba).

3. GBHHPL is a having granted 178.2 MW LTA from HP STU and GNA Connectivity for 155 MW from CTU. Where in the LTA has been operationalized by HP STU on 11.1.2023.

4. As the Tariff for the STU system is yet to be determined, GBHHPL is paying Transmission Charges in the tune of Rs 45 Cr/Annum towards LTA as an Interim, which is mutually agreed between GBHHPL and HPPTCL.

5. it is noteworthy that all the 3 Transmission elements, mentioned above, were developed to evacuate power of GBHHL along with other HEPs to Chamera Pooling Station (under purview of Central Transmission Utility) and are being utilised to transmit power outside the state of Himachal Pradesh over ISTS network. As, by virtue, this IaSTS is terminating to CTU PS at Chamera -II to connect ISTS through the last leg of said STU system i.e. 400 KV Lahal Chamera (Rajera).

6. It is also pertinent to mention that "The beneficiaries of GMR Bajoli Holi are the Delhi international Airport (DIAL) and Uttar Pradesh Power Corporation Limited (UPPCL) in NR.

4

7. Further, the Transmission system comprising the Lahal SS and Lahal-Chamera Line caters to various HEPs (including GBHHPL) in the State of Himachal Pradesh wherein power is not supplied within the State of Himachal Pradesh. It is reiterated that GMR BHHP's 100 % power (discount 12% Free power to the state) is getting evacuated through this Evacuation System and such flow of power is permanent in nature due to the PPA executed with the Delhi International Airport and UPPCL located in NR.

8. It is also confirm from above that proper maintenance of these laSTS is being carried out by HPPTCL (currently under the supervision of HPPTCL (HP STU)) & would be utilised by JSW Kuther (240 MW) where power will also be evacuated outside the state of Himachal Pradesh as they have a PPA with Haryana Discoms. The JSW Kuther project is expected to commission in the coming financial year of 2024-2025. Pertinently, this evacuation will also utilise the 630 MVA Lahal Pooling station and 400 KV D/C Transmission Line from Lahal to Chamera _II.

9. It is relevant to note that these above-mentioned Transmission Line and substation are non ISTS and carrying Inter- State Power on regular basis, under operation & appropriate metering system is in place on them.

10. In view of the above as explained, that the above system falls under the category of a Non ISTS system as per the Cl 93 of the CERC Tariff Regulation -24-29.

Therefore, you are requested to put up your recommendations under the prevailing Tariff Regulation and endorse that the exiting laSTS system in the state of Himachal starting from the GMR Bajoli Holi Bus till Chamera _II (PS) including 630 MVA Lahal Pooling Station (STU-PS) is a non ISTS system and shall be considered as ISTS system.

Thanking you,

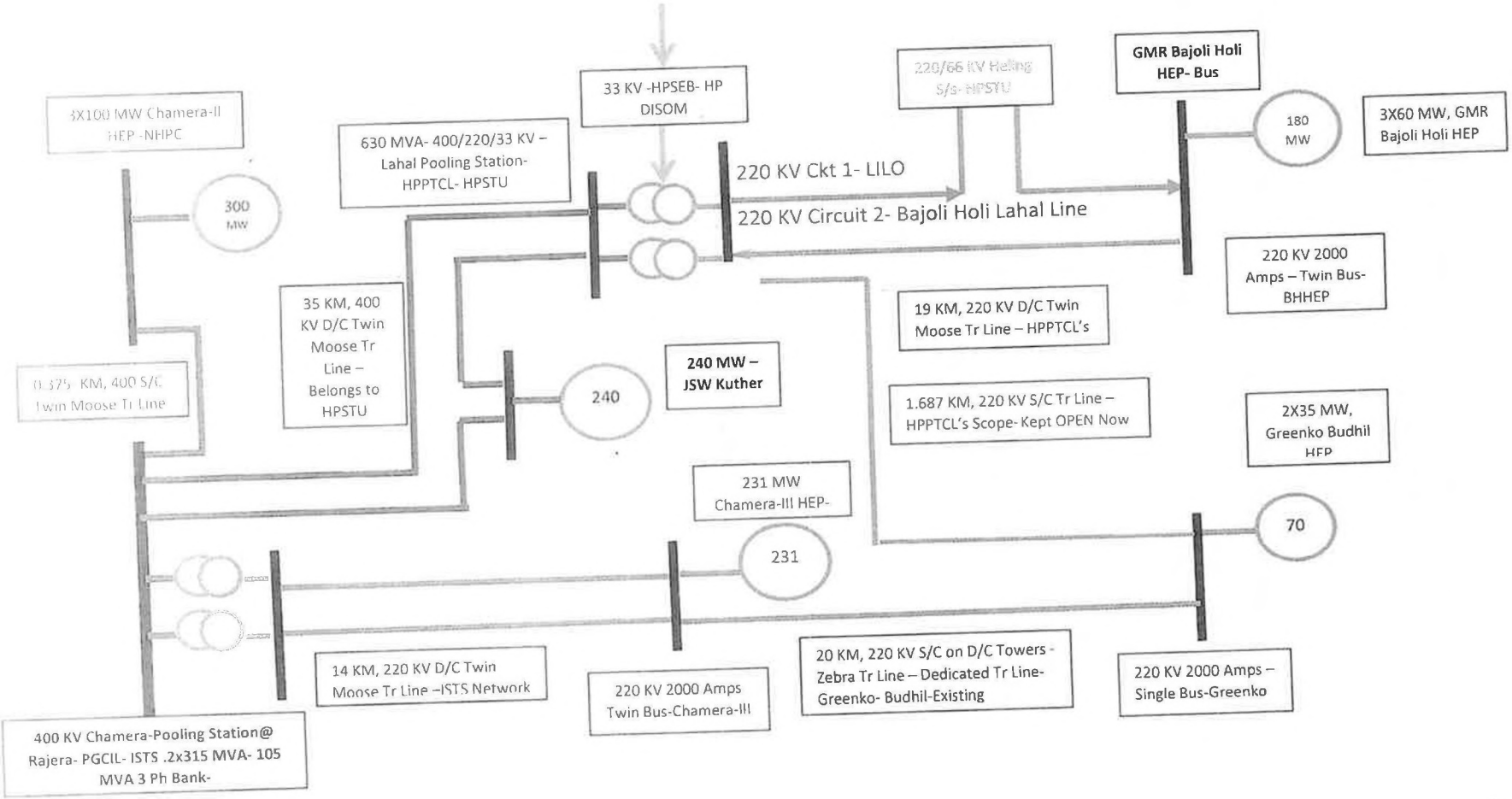
Yours sincerely,

For and on behalf of GMR Bajoli Holi Hydropower Pvt. Ltd.

22/3/2024

Gopendra Saraswat
Plant Head

Schematic of Transmission Lines, Substations and HEP's at a Glance- The Tr System from Bajoli Holi Bus including Lahal PS till Chamera-II PS (Rajera) is a Radial System



ANNEXURE -2

UPPER PART OF SATLUJ BASIN & SPITI VALLEY (SATLUJ BASIN)

The list of identified hydro projects in the Upper Part is given below:

S.No.	Project	MW	Time Frame	Developer	Status of Application for Access to Grid as per CERC regulations
1	SHPs	142	2014		
2	Shongtong Karcham	450	2017	HPPCL	Received
3	Kashang-I	65	2013	HPPCL	Received
4	Kashang-II & III	65 & 65	2015 2017	HPPCL	Received
5	Kashang-IV	48	-	HPPCL	
6	Tidong-I	100	2015	Nagarjuna Constructions Group	Received
7	Chango Yangthang	140	2017	Bhilwara Group	Received
8	Yangthang Khab	261			X
9	Ropa	60			X
10	Khab	636			X
11	Tidong-II	90			X
12	Jhangi Thopan	480			X
13	Thopan Powari	480			X
14	Sumte Khatang	130			X
15	Lara Sumte	104			X
16	Mane-Nadang	70			X
17	Lara	60			X
18	Killing-Lara	40			X
	Total	**3486**			

CHANDRABHAGA BASIN (LAHAUL & SPITI AREA)

The list of identified projects in the upper part is given below:

S.No.	Project	MW	Time Line	Developer	Status of Application for Connectivity / Access to Grid as per CERC regulations
1	Chhatru	120	2018	DCM Sriram	X
2	Teling	94			X
3	Shangling	44		Reliance Power	X
4	Jispa	300		HPPCL	X
5	Tandi	104		ABG Shipyard	X
6	Rashil	130		ABG Shipyard	X
7	Bardang	126		ABG Shipyard	X
8	Tignet	81		Amar-Mitra JV	X
9	Pattam	60			X
10	Seli	400	2017-18	Moser Baer	Connectivity Application Received
11	Miyar	120	2016-17	Moser Baer	Connectivity Application Received
12	Reoli Dugli	420	2018	L&T	X
13	Sach Khas	149	2018	L&T	X
14	Purthi	300		Reliance Power	X
15	Duggar	236		Tata + SN Power	X
16	SHPs	300			
17	Other	500			
	Total	**3500**			

Planned Transmission System alongwith phased development for upper part of Satluj Basin and Spiti Valley (Satluj Basin)

- **SHPs** : Establishment of 66/220/400 kV GIS Pooling Station at Wangtoo by Mid 2014 to match commissioning of SHPs in Bhaba Khad (57 MW) and Sangla Valley (40 MW) + LILO of 220 kV Kashang- Bhaba D/c Line and LILO of both circuits of 400 kV Karcham Wangtoo-Abdullapur D/c line at Wangtoo. – ***Proposed Implementation through STU.***

  HPPTCL proposed to implement this substation by Mid 2014 and they have tied up the funds from ADB. The switchgear rating and bus capacity etc. at Wangtoo substation should be equivalent to 4000 Amps.

- **Kashang-I (65 MW), Kashang-II (65 MW) and Tidong-I (100 MW)** : During the meeting HPPTCL stated that Kashang-I is likely to be commissioned by 2013. For evacuation of power from Kashang-I, HP is constructing a 220 kV D/c line from Bogtu to Kashang. Accordingly, power can be evacuated through Bogtu - Bhabha 220 kV D/c line. HPPTCL stated that Tidong-I is under construction and is likely to be commissioned by December 2014. Since, Tidong-I (100 MW) is due for commissioning in December, 2014 and Jangi Pooling station may not come up by that time, Tidong-I power shall be temporarily evacuated by LILO of one circuit of 220 kV D/C Kashang- Bhaba line at Tidong-I HEP. These works shall be carried out by HPPTCL. Later on when Jangi P.S. is commissioned, Tidong-I - Jangi line shall be constructed and also Kashang – Jangi 220 kV D/c line with ingle HTLS conductor shall be established. These works are proposed to be carried out by HPPTCL.

  HPPTCL further informed that works for Kashang-II (65 MW) has also been awarded and commissioning is expected by 2015. It was suggested that Kashang-II is also evacuated through 220 kV system as Jangi pooling station may not be available in that time frame, however some constraints may be faced during contingency of outage of one circuit. POWERGRID stated that establishment of Jangi Pooling station may be taken up with further stages of Kashang.

- **Shongtong Karcham** : During the meeting it was informed that Shongtong Karcham HEP (450 MW) is likely to be commissioned by 2017. For transfer of power from this project, following is proposed:
  - Shongtong Karcham – Wangtoo 400 kV D/c Line (Quad HTLS Conductor –Equivalent to about 3000MW) – 18 km - ***Proposed Implementation as ISTS***
  - Switchyard Capacity etc. must be able to handle about 2800-3000MW power planned in the upstream of the generation project. It is proposed that the GIS switchyard may be designed with 4000 Amps switchgear. However, the cable capacity from Pot head yard to GIS switchyard may be augmented with generation addition in the upstream projects.

- **Kashang-III (65 MW) & Kashang-IV (48 MW) and Tidong-II (90 MW) HEP**: Evacuation of power from Kashang –I (65 MW), Kashang –II (65 MW) and Tidong-I (100 MW) is discussed above. With the commissioning of other stages of Kashang and Tidong, the power shall be injected at Jangi pooling station. The

Jangi Pooling station shall be established by this time frame. Transmission scheme for Kashang & Tidong shall be as given as below:

- Kashang-Jangi Pooling Station 220 kV D/c line (Single HTLS- Equivalent to 300 MW capacity) - ***Proposed Implementation as STU network***
-
- 2x315 MVA (7x105 MVA units) 220/400 kV GIS Pooling Station at Jangi (with 4000 Amps. switchgear) (with space provision for 3rd ICT) - ***Proposed Implementation as ISTS***
- LILO of one ckt. of Shongtong –Wangtoo 400 kV Line at Jangi - ***Proposed Implementation as ISTS***
- Tidong – Jangi Pooling Station 220 kV D/c line - ***Proposed Implementation as STU network***

Note: After coming up of Kashang III & Tidong-II and its inter-connection with Jangi Pooling Station, the Kashang-Bogtu 220kV line has to be kept in open condition.

- **Chango Yangthang (140 MW)**: Chango Yangthang is envisaged to be commissioned by 2017. Following transmission system is proposed matching with Chango Yangthang:
  - Chango Yangthang – Proposed site of Ka Dogri Pooling Station 220 kV D/c line – 18 km - ***Proposed Implementation by developer***
  - Proposed Site of Ka Dogri – Jangi Pooling Station 400 kV D/c line (Twin Moose) to be initially charged at 220 kV – 50 km ***Proposed Implementation as ISTS***
  - Provision of 3rd 400/220 kV ICT (3 nos. of 105 MVA Single Phase units) at Jangi Pooling Station - ***Proposed Implementation as ISTS***

- **Yangthang Khab (261 MW)**:
  - 220 kV Yangthang Khab- Ka Dogri D/c Line with HTLS conductor - adequate for 300 MW capacity – 4 km - ***Proposed Implementation as ISTS***
  - 2x315 MVA (7x105 MVA units) 220/400 kV GIS Pooling Station at Ka Dogri - ***Proposed Implementation as ISTS***
  - Charging of Ka Dogri – Jangi line at 400 kV level - ***Proposed Implementation as ISTS***
  - Direct termination of Chango Yangthang at Ka Dogri Pooling Station - ***Proposed Implementation by generation developer***

- **Khab (636 MW)**:
  - Khab – Jangi Pooling Station 400 kV D/c line – 20 km - ***Proposed Implementation as ISTS***

- **Jangi Thopan (480 MW) & Thopan Powari (480 MW) :**
  - LILO of one circuit of Jangi Pooling Station – Wangtoo 400 kV D/c (Quad HTLS) line at generation project - ***Proposed Implementation as ISTS***
  - Switchgear Capacity at Generation switchyard must be equivalent to 4000 Amps.

- **Ropa (60 MW)**

- Direct injection to Jangi Pooling station by a 220 kV D/c line - ***Proposed Implementation by generation developer***
- The generation of SHPs in the area may be injected at Ropa Generation Switchyard

- **Other Projects of Spiti Valley (Satluj Basin)**
  - The generation of these projects can be injected at Ka Dogri Pooling Station.
  - From Killing Lara (40 MW), Lara (60 MW) & Mane Nadang (70 MW), a combined 220 kV D/c line can be constructed upto Lara Sumte HEP. From Lara Sumte HEP(104MW), a high capacity 220 kV line (with twin Moose conductor) can be constructed upto Ka Dogri Pooling Station - ***Proposed Implementation as ISTS except for the generators below 50 MW.***
  - Augmentation of transformation capacity would be required at Ka Dogri. Space for 2 additional ICTs of 315 MVA (105 MVA single phase units) would be required. These transformers can be provided progressively matching with the generation addition. - ***Proposed Implementation as ISTS***

NOTE :

Present / Planned system beyond Wangtoo station would be capable of handling about 500-600 MW of power (to be confirmed with the development of the generation proejcts). One more additional high capacity line (400 kV Quad) from Wangtoo towards Haryana/Punjab shall be required which can be constructed through the right bank of the river.

B

Planned Tr. System alongwith Phased development for Chandrabhaga Basin

The total power in this area is about 3850 MW (considering 10% overload). Out of these projects, two projects namely, Miyar & Seli are expected to come up by 2017 and three projects Chhatru, Reoli Dugli & Sach Khas are expected by 2018. The next project expected in this area would be Jispa. The status and time frame of other projects are not yet clear.

Based on the progress of generation, availability of corridors, severe R-o-W constraints near Seli, quantum of power, it was considered prudent to develop two transmission corridors, one towards Hamirpur and the other towards J&K. It is proposed that the corridor to start from Seli HEP would go towards Hamirpur and the other corridor to start from Reoli Dugli would go towards J&K. The corridor capacity towards Hamirpur would be of the order of 2500 MW and corridor capacity towards J&K would be about 1500 MW.

Keeping above observations in view, following transmission system is proposed which is matched with the sequence of commissioning of generation projects:

CHANDRABHAGA CORRIDOR-I

Seli HEP (400 MW): Earlier the Project size was 320 MW, however with the detailed investigations, the project size is revised to 400 MW.

- 400 kV D/c Line (Twin HTLS-Adequate for about 2000 MW) from Seli to the site of 400 kV Pooling Station near Sissu /Gramphu (Pooling Station shall not be constructed during this time frame) - ***Proposed Implementation as ISTS***
- From site proposed near Sissu/Gramphu Pooling Station – Hamirpur 400 kV D/c (Triple HTLS – adequate for 2500 MW capacity) – For this line section, Rohtang Pass is to be crossed. There is about 8-10 feet of snow at Rohtang Pass during winters and working season is very less. For implementation of overhead line, SASE and some international expert would have to be involved. Special design with pole type towers may be required which can be firmed up during detailed engineering. - ***Proposed Implementation as ISTS***

Miyar HEP(120 MW) :

- Step up of Miyar generation at 400 kV level
- LILO of one circuit of Seli – Hamirpur (via Rohtang) 400 kV D/c line (Twin HTLS) at Miyar - ***Proposed Implementation as ISTS***

Note : During the meeting it was informed that Miyar would come up earlier than Seli, the line from Miyar to Hamirpur (configuration explained under Seli system) may be taken up initially and the same can be extended to Seli.

Chhatru HEP (120 MW) : With the coming of Chhatru HEP, following is proposed:

- Establishment of 2x315 MVA (7x105 Single Phase units) 400/220 kV GIS Pooling station near Sissu / Gramphu - ***Proposed Implementation as ISTS***
- Chhatru – Sissu / Gramphu GIS Pooling Station 220 kV D/c line (HTLS adequate for 300 MW per circuit) - ***Proposed Implementation as ISTS***
- LILO of both circuits of Seli - Hamirpur line at Sissu/ Gramphu GIS Pooling Station.- ***Proposed Implementation as ISTS***

Teling & Shangling HEP (94 & 44 MW) : For evacuation of power from these projects, following is proposed:

- LILO of one circuit of Chhatru – Sissu / Gramphu Pooling Station 220 kV D/c (HTLS) at Teling - ***Proposed Implementation as ISTS***
- LILO of one circuit of Chhatru – Sissu / Gramphu Pooling Station 220 kV D/c (HTLS) at Shangling - ***Proposed Implementation by STU or developer***

Note: The capacity of generation switchyards at Chhatru, Teling & Shangling HEPs must be equal to power handling capacity of 300 MW otherwise there would be constraints during contingency of outage of one circuit.

Jispa (300 MW): For evacuation of power from Jispa HEP, following is proposed:

- Jispa – Sissu / Gramphu Pooling Station 400 kV D/c line - ***Proposed Implementation as ISTS***

Bardang HEP (126 MW) : Following is proposed for Bardang HEP

- Step up at 400 kV
- LILO of one circuit of Seli – Sissu / Gramphu Pooling Station 400 kV D/c (Twin HTLS) - ***Proposed Implementation as ISTS***

Rasil HEP (130 MW)

- Step up at 400 kV
- LILO of one circuit of Seli – Sissu / Gramphu Pooling Station 400 kV D/c (Twin HTLS) - ***Proposed Implementation as ISTS***

Tandi HEP (104 MW)

- Step up at 400 kV
- LILO of one circuit of Seli – Sissu / Gramphu Pooling Station 400 kV D/c (Twin HTLS) - ***Proposed Implementation as ISTS***

Pattam HEP (60 MW) :

- Step up at 220 kV
- Pattam – Miyar 220 kV D/c - ***Proposed Implementation as ISTS***
- Provision of 1x250 MVA(4 nos. of 83.3MVA Single Phase units), 220/400 kV GIS Pooling Station at Miyar. Incase of space constraints at Miyar switchyard, a separate pooling station would be required.- ***Proposed Implementation as ISTS***

Tignet HEP (81 MW)

- Step up at 220 kV
- LILO of one circuit of Pattam – Miyar 220 kV D/c - ***Proposed Implementation as ISTS***

For Pattam & Tignet HEP transmission systems, it is assumed that Pattam would be coming up prior to Tignet. In case Tignet HEP materializes before Pattam, 220 kV D/c line and provision of ICTs shall have to be matched with Tignet HEP.

NOTE: (Additional system beyond Hamirpur would be planned based on the requirement / commissioning of new projects.) - ***Proposed Implementation as ISTS***

CHANDRABHAGA CORRIDOR-II

It was proposed that the generation projects in the downstream of Seli HEP i.e. Reoli Dugli (420 MW), Sach Khas (149 MW), Purthi (300 MW) and Duggar (236 MW) may be evacuated through Jammu region as these projects are close to that region, there are severe R-o-W constraints from Seli to Reoli Dugli and it may not be feasible / reliable to evacuate full 3850 MW through single corridor.

Reoli Dugli HEP (420 MW) & Sach Khas (149 MW): Both these projects are allocated to L&T and investigations for preparation of DPR are in progress. As per preliminary discussions, these projects are expected to come up by 2018. Following transmission scheme is proposed for evacuation of power from these projects:

- Generation step up at 400 kV level (for both projects)
- Reoli Dugli– Kishtwar 400 kV D/c (Twin HTLS-Adequate for 1500 MW) - ***Proposed Implementation as ISTS***
- Establishment of 400 kV switching station at Kishtwar - ***Proposed Implementation as ISTS***

- LILO of Dulhasti / Ratle – Kishenpur 400 D/c (Quad) line at Kishtwar - ***Proposed Implementation as ISTS***
- LILO of one circuit of Reoli – Kishtwar at Sach Khas - ***Proposed Implementation as ISTS***
- Generating Switchyard capacity to be kept for 1500 MW at each Power House.

Purthi HEP (300 MW) : Following transmission system is proposed with Purthi HEP

- Generation step up at 400 kV level
- LILO of one circuit of Reoli – Kishtwar 400 kV D/c at Generating station - ***Proposed Implementation as ISTS***
- Generating Switchyard capacity to be kept for 1500 MW at Power House.

Duggar HEP (236 MW): Following is proposed for transfer of power from Duggar

- Generation step up at 400 kV level
- LILO of one circuit of Reoli – Kishtwar 400 kV D/c at Generating station - ***Proposed Implementation as ISTS***
- Generating Switchyard capacity to be kept for 1500 MW at Power House.

Note: Initially some margins may be available beyond Kishtwar, however system strengthening would be required depending on the generation addition. - ***Proposed Implementation as ISTS***

Rabi basin

Major projects existing in Rabi Basin are Chamera-I (540MW) and Chamera-II (300MW).For evacuation of power 400 kV D/C line from Chamera-I to Jullendher and 400kV S/Cfrom Chamera-I to Kishenpur LILOed to Chamera-II are existing. Chamera-III (231MW)and Budhil (70MW) are under construction and Kuther(260 MW), Bijoli holi (200 MW),Bara Bengal (200 MW), Burmur (45 MW), Hudsar (60 MW) and Kugti (45 MW) are planned.

For evacuation of power from the projects upstream of Chamera-II, a 400/220kV pooling station is planned near Chamera-II which is required matching with Budhil HEP with would be the next project in the valley. This pooling station would be connected toChamer-II through a 400kV S/C line and to Jullundhar through 400kV D/C line. The line to Jullundhar would be needed with the next generation project which is Chamera-III.

A 220kV pooling station at a suitable location upstream of Chamera III is also proposed where power is proposed to be pooled and transmitted to Chamera-II 400/220kV pooling station through three numbers of 220kV D/C lines with 1xMoose conductors. These would be optimum solution for phased development. However, if there are physical constraints in constructing three of 220 kV D/C lines through the valley, it may be required to built two nos. of 220 D.C lines with 2x Moose conductors

Beas Basin

The existing major projects in Beas basin are Malana-I (87MW) and Larji (126 MW). Power from both these projects is being evacuated through 132 kV HPSEB system. The other major projects in Beas/Parbati basin are Allain Duhangan (192 MW), Malana-II(100MW), Koldam (800MW) Parbati-II (800 MW), Parbati III (501 MW) and Sainj (100 MW).Evacuation from Koldam, Parbati-II and Parbati-III is planned through 400kV system. The transmission lines are:

Koldam-Nalagarh 400kV D/C Quad conductor
Parbati-II-Koldam 400kV 2xS/C Quad conductor
Koldam-Ludhiana 400kV D/C Triple conductor

With Parbati-III, a pooling station at Panarsa is proposed and Panarsa-Amritsar 400kV D/C twin Moose line has been planned.

The Panarsa 400/220kV pooling station was required in the time frame of Allain Duhangan and Malana-II. However, as the time schedule did not match, a direct 220kV D/C line from Allain Duhangan to Nalagarh has been taken-up for construction by ADHPL. This line with 1xZebra conductor has a capacity of 400 MW through which Malana-II power can also be evacuated.

Power from Sainj is proposed to be evacuated through 400kV via Parbati-III. For this, either Sainj may adopt direct step-up to 400kV or have its own 400/132kV substation.

The 400/220kV pooling station at Panarsa would still be needed to pool the power to be received from Tandi 220kV pooling station proposed in Chenab basin. As the line from Tandi would be at high altitude, and there may also be need of cables in some portion,220kV line would be a better option rather that 400kV. The 220kV lines would have to be with higher conductor specification say 220kV D/C line with quad Moose conductors.

ANNEXURE - 3

Central Electricity Authority
Government of India
System Planning & Project Appraisal Division
Sewa Bhawan R K Puram,
New Delhi -110066

No.1/9/06-SP&PA/ Dated: 11.06.2009

-As per List enclosed-

Sub: Minutes of the 27th meeting of the Standing Committee on Transmission System Planning of Northern Region held on 30th May, 2009 at 1000 Hrs. in Nainital, Uttarakhand.

Sir,

Please find enclosed the minutes of the 27th meeting of the Standing Committee on Transmission System Planning of Northern Region held on 30th May, 2009 at 1000 Hrs in Nainital, Uttarakhand. This is for your kind information and further necessary action at your end please. **The minutes is also be available on CEA website under PS wing/standing committee meeting/NR.**

Yours faithfully

(Naresh Bhandari)
Director (SP&PA)

List of Addresses-

1	Member Secretary NREB, 18-A Shajeed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi - 110016	2	Director (Projects) NTPC, NTPC Bhawan, Core 7 Scope complex – 6, Institutional Area, Lodhi Road, New Delhi - 110003
3	Director (Technical) NHPC Office Complex, Sector – 33, NHPC, Faridabad - 121 003	4	Director (Projects) POWERGRID, Saudamini, Plot no. 2, Sector - 29, Gurgaon-122 001
5	Sr. Vice President, PTC Ltd, 2nd floor, 15 NBCC Tower, Bhikaji Cama Place, New Delhi - 66	6	Member (Transmission) HPSEB, Vidyut Bhawan, Shimla - 171 004
7	Director (Transmission) UPPCL, Shakti Bhawan Extn, 3rd floor, 14, Ashok Marg, Lucknow - 226 001	8	Director (Transmission) Urja Bhawan, Kawali Road Dehradun, Uttaranchal - 248 001
9	Director (Projects) DTL, Shakti Sadan. Kotla Road New Delhi - 110 002	10	Member (Transmission) PSEB, Mall road, Patiala - 147 001
11	Director (Projects) HVPNL Shakti Bhawan, Sector -6 Panchkula - 134 109	12	Director (Transmission) RVPNL, Vidyut Bhawan, Janpath, Jyoti Nagar, Jaipur, Rajasthan
13	Development Commissioner (Power), J&K, Exhibition Ground, Near New Secretariat, Srinagar - 190 001	14	Member (Power) BBMB, Sectot-19 B Madya Marg, Chandigarh-160019
15	Chief Engineer (Transmission) NPCIL, 9- S-30 Vikram Sarabhai Bhawan, Anushakti Nagar, Mumbai - 400 094	16	Chief Engineer (Operation) Ministry of Power, UT Secretariat Sector - 9 D Chandigarh - 161 009

Member (PS) stated that CERC is looking into transmission pricing afresh and discussion paper on apportioning of transmission charges has been issued and public comments have been sought. The proposed approach is broadly towards National Pool and if implemented would result in major shift in payment of transmission charges. He said that PSEB should look into its requirement in the time frame as nearly 24 months are required to complete 220 kV bays. PSEB stated that they would revert back in one month.

RRVPNL stated that requirement of 220 kV bays are going to increase and therefore decision taken in 23rd SCM should be implemented in standard design of S/S. Member (PS) agreed to keep provision but implementation can be done if requirement is indicated in advance.

4. Evacuation of power from Kutehr HEP (260 MW) in the upstream of Chamera III HEP

Member (PS) informed that for evacuation of power from various hydro projects in Himachal Pradesh a master plan was prepared. In line with the master plan during the 23rd Meeting of the Standing Committee for planning of transmission system in NR, it was decided that in phased development, pooling station upstream of Chamera-III would be constructed by PGCIL as a regional pooling station. It was also agreed that power from Kutehar would be injected at 220 kV level at this new pooling station.

Further for evacutation of power from Budhil project it was agreed to LILO one circuit of Chamera-III – Chamera Pooling station 220 kV D/c line (with Twin Moose conductor) at Budhil. It was further informed that HP has changed the mater plan and now proposed two nos. of 220 kV D/c lines instead of 3 nos. of 220 kV D/c lines and also they intend to establish 220 kV pooling station at Lahal which is close to Kutehar HEP. Member (PS) explained that considering the overall power flow requirement of about 1000-1100 MW, 2 nos. of 220 kV D/c lines would not be adequate and proposed that line from Lahal to Chamera pooling station should be a 400 kV D/c line, this would optimize ROW – the requirement of Forest Department of HP. For connectivity of Kutehar it was proposed that a 220 kV D/c line can be constructed by the project developer upto Lahal Pooling station.

For evacuation of power from Budhil two options were discussed i.e. either they should carry out the LILO of Chamera-III – Chamera Pooling station 220 kV D/c line with Twin Moose conductor or they can construct 220 kV S/c line upto Chamera-III utilizing one 220 kV bay at Chamera-III, space for which is available at Chamera-III. It was also informed that second option would not provide any reliability, however it was to be decided by the generation developer.

Further it was also informed that above issue had already been discussed in a meeting held in CEA on 18.5.2009 wherein representatives from HP, Lanco, Kutehar & Powergrid were present.

Powergrid informed that they have received Long Term Open Access Application from the developer of Kutehar HEP & beneficiaries of the project are Northern Region Constituents and since system has already been decided, it was proposed to grant the LTOA. It was agreed by the constituents.

Concluding the discussions, following were agreed:

i) Lanco to confirm about the connectivity of Budhil HEP to Chamera III transmission.

ii) HP would establish a 400/220 kV substation at Lahal in the time frame of Kutehar HEP which would be connected to Chamera Pooling Station by a 400 kV D/c line. Initially this line would be charged at 220 kV level and subsequently with the coming up of more generation this line can be charged at 400 kV level ensuring that the ICTs (2x315 MVA) at Chamera II Pooling station are not overloaded.

iii) CTU can grant LTOA to M/s JSW (developer of Kutehar HEP)

5. Modification of 220 kV transmission line from NTPC Faridabad to Samaypur S/S of BBMB – Regarding power evacuation constraint

Member (PS) informed to the constituents that NTPC has requested that one of the 220 kV Samaypur- Ballabgarh line be bypassed at Samaypur and connected directly to one of the 220 kV Faridabad - Samaypur line, thus creating a alternative route for power evacuation from Faridabad GPP as Faridabad GPP has witnessed several station blackouts on account of major failure at Samaypur S/S.

भारत सरकार

Government of India

विद्युत मंत्रालय

Ministry of Power

केन्द्रीय विद्युत प्राधिकरण

Central Electricity Authority

विद्युत प्रणाली योजना एवं मूल्यांकन–I प्रभाग

Power System Planning & Appraisal-I Division

सेवा में/**To**

-As per list enclosed-

विषय/Subject: Minutes of 3rd Meeting of Northern Regional Power Committee (Transmission Planning) [NRPC(TP)].

Sir/ Madam,

Please find enclosed the minutes of the 3rd meeting of Northern Regional Power Committee (Transmission Planning) [NRPC(TP)] held on 19.02.2021 through VC. The minutes are also available on CEA's website: www.cea.nic.in (path to access: Home Page - Wing - Power System-PSPA-I- Standing Committee on Power System Planning- Northern Region).

Yours faithfully,

Signature Not Verified
Digitally signed by ISHAN SHARAN
Date: 2021.05.09 22:26:37 IST

(ईशान शरण/ Ishan Sharan)

मुख्य अभियन्ता/ Chief Engineer

1.	Chairperson, CEA, Sewa Bhawan, New Delhi-110066	2.	Member (Power System), CEA, Sewa Bhawan, New Delhi-110066	3.	Member Secretary, NRPC, 18-A Shajeed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi - 110016 (Fax-011-26865206)
4.	MD, SECI, Prius Platinum, D-3, District Centre, Saket, New Delhi - 17	5.	COO (CTU) POWERGRID, Saudamini, Plot no. 2, Sector -29, Gurgaon-122 001 (Fax-0124-2571809)	6.	Chief GM(C&SO), SJVNL, Corporate Office Complex, Shanan, Shimla- 171006
7.	Director (PP&D) RVPN, 3rd Floor, Room no 330, Vidhyut Bhawan, Janpath, Jaipur-302005.	8.	Director (Technical) HVPNL Shakti Bhawan, Sector-6 Panchkula-134109	9.	Director (Technical) HPSEB Ltd. VidutBhawan, Shimla -171004 Fax-0177-2813554
10.	Managing Director, HPPTCL, Barowalias, Khalini Shimla-171002 Fax-0177-2623415	11.	Chief Engineer (Operation) Ministry of Power, UT Secretariat, Sector-9 D Chandigarh -161009 Fax-0172-2637880	12.	Director (W &P) UPPTCL, Shakti Bhawan Extn,3rd floor, 14, Ashok Marg, Lucknow - 226 001 (Fax:0522-2287822)
13.	Director (Projects), PTCUL, Vidhyut Bhawan, Near ISBT Crossing, Saharanpur Road, Majra, Dehradaun-248002	14.	Director (System Operation), POSOCO B-9, Qutab Institutional Area, Katwaria Sarai New Delhi – 110010	15	Chief Engineer (System & Operation Wing), JKPDD, Grid Substation Complex, Janipur, Jammu-180006
16.	Director (Technical), Punjab State Transmission Corporation Ltd. (PSTCL)Head Office The Mall Patiala - 147001	17.	Development Commissioner (Power), JKPDD, Jehangir Complex, Exhibition Grounds, Srinagar		

(iv) POSOCO to give charging permission for LILO of one circuit of 400kV Jhakri – Panchkula transmission line at Gumma S/s after implementation of revised SPS by HPPTCL.

16.3 HPPTCL informed that after attending to the above points, NRLDC accorded the permission for charging the LILO of one circuit and the 400/220 kV Transformer ICT-I on 31.10.2020 & 01.11.2020 respectively and vide their email dated 05.11.2020 requested CEA to get the system ratified in the forthcoming Standing Committee.

16.4 Members agreed and noted the same.

16.5 CTU and POSOCO suggested HPPTCL to examine space for installation of a 125 MVAR bus reactor at Gumma substation as issue of high voltage has been observed at Gumma specially during winter night when generations at Nathpa-Jhakri and Rampur is down. HPPTCL agreed for the same and to revert with the details.

17.0 Construction of 220/400kV, 2x315 MVA PS at Lahal & 400 kV D/C (Twin Moose) line from 400/220 kV, 2 x 315 MVA, Lahal Sub-Station to 400/220 kV Chamera P.S. of PGCIL

17.1 HPPTCL stated that in the 27th meeting of SCPSPNR held on 30th May 2009, following was approved for evacuation of power from Hydro Electric Projects in Ravi Basin:

"HP would establish a 400/220 kV Sub-Station at Lahal in the time frame of Kutehar HEP which would be connected to Chamera Pooling Station by a 400 kV D/C line. Initially this line would be charged at 220 kV level and subsequently with the coming up of more generation, this line can be charged at 400 kV level ensuring that the ICTs (2x315MVA) at Chamera-II Pooling station are not overloaded"

It was further mentioned that instead of 2 no. of 220 kV D/C Lines, a 400 kV D/C Line considering the overall power flow requirement of about 1000-1100 MW shall be constructed in order to conserve R.O.W.

HPPTCL had accordingly taken up the execution of the following Transmission Elements:

1. 400/220 kV, 2 x315 MVA & 220/33 kV, 63 MVA Sub-Station at Lahal.
2. 400 kV D/C (Twin Moose) line from 400/220 kV, 2 x315 MVA, Lahal Sub-Station to 400/220 kV Chamera P.S. of PGCIL.

The work of construction of 400/220kV Sub-Station has been completed. The 220/33kV portion of the Sub-Station has already been commissioned to provide interim power evacuation path to SHEPs via construction of 220 kV S/C line on D/C towers from Lahal to Budhil HEP till completion of 400 kV D/C (Twin Moose) line from 400/220 kV, 2x315 MVA, Lahal Sub-Station to 400/220 kV Chamera P.S. of PGCIL.

17.2 HPPTCL further stated that in order to charge the 400/220 kV S/s, HPPTCL had approached NRLDC for no load charging of 400/220kV Sub-Station through 220/400kV ICT from 220 kV side. However, NRLDC had observed that the transformation capacity of 400/220 kV Substation has not been mentioned in the Standing Committee approval accorded in the 27th meeting which is required before according approval for charging.

17.3 The matter was accordingly taken up with CEA vide letter dated 05.11.2020 to clarify on the capacity of S/Stn. Accordingly, CEA convened a meeting of all concerned stakeholders through VC on 11.11.2020, wherein following was decided:

(i) POSOCO to provide permission to HPPTCL for charging of 400/220 kV, 2x315 MVA Lahal substation.

(ii) Transformation capacity of 2x315 MVA at 400/220 kV Lahal substation would be ratified in the next standing committee meeting.

(iii) HPPTCL to explore the possibility of installation of Bus Reactor at Lahal S/Stn.

17.4 In view of above, HPPTCL requested members to consider & approve the following -

(i) The capacity of Lahal S/S as 400/220 kV, 2x315MVA.

(ii) Construction of 400 kV D/C (Twin Moose) line from 400/220 kV, 2x315 MVA Lahal Sub-Station to 400/220 kV Chamera P.S. of PGCIL

17.5 Members agreed to the proposal of HPPTCL. HPPTCL was again requested to explore the possibility of installation of Bus Reactor at Lahal S/Stn. HPPTCL agreed for the same and to revert with the details.

18.0 Establishment of 400/220kV Nange Pooling Station for proposed SJVN Hydro Power Plant Luhri Stage-I, II & Sunni Dam:

18.1 Director (PSPA-I) stated that in the 2nd NRSCT meeting held on 13.11.18, transmission system for connectivity to Luhri-I (210 MW), Luhri-II (172 MW) & Sunni Dam (382 MW) HEP were agreed. It was decided during the meeting that power from all the three stages of Luhri HEP would be evacuated at 220 kV level and would be pooled at 400/220 kV proposed ISTS Nange pooling station located near Luhri-II HEP and further evacuated to Koldam through 400 kV D/c line (along with associated bays at both ends). In the 3rd NRSCT meeting also, information of connectivity granted for above projects was recorded.

However, transformation capacity of 400/220 kV Nange Pooling Station (315 MVA) has been missed inadvertently in the minutes of 2nd NRSCT meeting. Accordingly, it is proposed that transformation capacity at 400/220 kV Nange Pooling Station (2x315 MVA) may be included. Further, CTU is in receipt of Connectivity & LTA application from SJVN for Luhri-I and Connectivity applications for Luhri-II & Sunni Dam. Accordingly, 2nd 315 MVA ICT at Nange PS shall be considered with grant of LTA to Luhri Stage-I in order to meet n-1 contingency criteria.

18.2 Accordingly, connectivity system for Luhri-I, Luhri-II & Sunni Dam HEP is as under:

(i) Establishment of 2x315MVA, 400/220 kV Nange GIS Pooling Station (tentatively Identified near Luhri Stage-II HEP).

(ii) Nange GIS Pooling Station – Koldam 400kV D/c line along with associated bays at both ends (GIS bays at Koldam).

(iii) 125 MVAR Bus Reactor at Nange GIS PS.

Identified transmission system each from Luhri-I/Luhri-II/Sunni Dam upto Nange Pooling station shall be under the scope of SJVN/generation developer. Further LTA system for Luhri-I shall include 2nd 315 MVA ICT at Nange GIS Pooling Station.

ANNEXURE-4

हिमाचल प्रदेश HIMACHAL PRADESH

A 609110

FORMAT-LTA-6B

Agreement for Long Term Access

(Applicable for One party / Multi party developers requiring transmission system strengthening)

BETWEEN

H. P. POWER TRANSMISSION CORP. LTD.

AND

GMR BAJOLI HOLI HYDROPOWER PRIVATE LIMITED

This Bulk Power Transmission Agreement entered into on the 3rd day of Sept Two Thousand fifteen between H. P. POWER TRANSMISSION CORP. LTD, a company incorporated under the Companies Act, 1956, having its registered office at Barowalias House Khalini, Shimla -2 (hereinafter called "HPPTCL" which expression shall unless repugnant to the H.P.POWERTRANSMISSION CORPORATION LIMITED context or meaning thereof include its successors and assigns) as party of the first part; and

Company- A, GMR Bajoli Holi Hydropower private Limited, a company incorporated under the companies Act 1956, having its registered office at 302, New Shakti Bhawan, IGI airport, New Delhi-110037 and

Company- B, a company incorporated under the Companies Act, 1956 having its registered office at ...--NOT APPLICABLE--... and

Company –Z , a company incorporated under the Companies Act, 1956 having its registered office at ...--NOT APPLICABLE--... and (hereinafter collectively referred to as Long Term Transmission Customers and individually referred to as Company- A, B,.....Z respectively) which expression shall unless repugnant to the context or meaning thereof include its successors and assigns as party of the second part.

GMR Bajoli Holi Hydropower Pvt. Ltd.

DGM (C&M)
HPPTCL Barowalia
House, Khalini, Shimla-2

A. Whereas Long Term Transmission Customer is the Power Project Developer and is desirous to avail Long Term Open Access in accordance with State Electricity Regulatory Commission (Grant of Connectivity, Long-term Access and Medium-term Open Access in Intra-State Transmission and related matters) Regulations, 2010 hereinafter referred to as "Regulations" and Electricity Act 2003 (including their amendments if any) to the Transmission System of HPPTCL for transfer of power from the respective places of generation to the places of delivery as per the details contained in the Annexure-1.

B. Whereas the comprehensive transmission system for above Long Term Open Access was evolved by CEA, developers , constituents and HPPTCL which was discussed in the meeting held at Power Grid Office, Gurgaon on 29.12.2010.

C. The transmission system required for direct evacuation of power from respective generating units to the pooling points of HPPTCL has been finalized in consultationwith CEA, developers and Constituents and shall be built, owned, operated and maintained by respective Long Term Transmission Customers as indicated at Annexure-2. –NOT APPLICABLE--

D. The common transmission system to evacuate and dispatch power to respectivebenefici aries from the generation projects, has been finalized in consultation with CEA , developers and constituents and shall be built, owned, operated and maintained by HPPTCL as indicated at Annexure-3.

E. Each of the project developers i.e., the long term transmission customer has agreed to share and bear the applicable transmission charges as decided by H.P. State Electricity regulatory Commission of the total transmission scheme as per Annexure-3 from the scheduled date of commissioning of respective generating units, corresponding to the capacity of power contracted from the said generation project through Open Access as indicated at Annexure-1 irrespective of their actual date of commissioning. The sharing mechanism for these transmission charges has been agreed to be as per Annexure-4 of this agreement.

F. AND WHEREAS in accordance with State Electricity Regulatory Commission Regulations 2010 and Electricity Act 2003(including their amendment if any) and inaccordance with the term mentioned above, H.P.POWER TRANSMISSION CORPORATION LTD has agreed to provide such open access required by these Long Term Transmission Customers from the date of availability of evacuation transmission system for the transfer of power as mentioned in Annexure-2 and Annexure-3 of this agreement.

G. AND WHEREAS the parties have agreed that in case any of the asset mentioned atAnnex ure 3 are executed, owned and operated by any agency (ies) other than HPPTCL, as per the directives of competent authority (for which HPPTCL wouldimmediately inform all the parties) then the tariff of the same would be payable by the long term customer directly to the concerned agency (ies) through a separateAgreement to be entered by the Long term customer with the c oncerned agency (ies).

H. AND WHEREAS Long term transmission customers have agreed to share and pay all the transmission charges of HPPTCL in accordance with the regulation/tariff order issued by State Electricity Regulatory Commission from time to time for the use of its Transmission System of the concerned Regions including inter State links /ULDC/NLDC charge and any additions thereof in proportion to their proposedcapacity addition as

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indicated at Annexure-
1 of this Agreement. These charges wouldbe shared and paid from the scheduled date o f commissioning of respective generatingunits as indicated at Annexure-1.

J. AND WHEREAS it has become incumbent upon Long term Transmission Customers and HPPTCL to enter into Bulk Power Transmission Agreement as envisaged under the H.P. State Electricity Regulatory Commission Regulations,2010 (including their amendments if any) for payment of above transmission charges.

K. AND WHEREAS the Bulk Power Transmission Agreement has already been entered intob etween HPPTCL and Bulk Power Beneficiaries of all the regions. A copy of BPTAentered i nto with constituents of Northern Region dated ----NIL----------, Western Region dated ---- -NIL----------, Eastern Region dated ...NIL....., Northern Region dated ..... and Southern Region
dated...NIL..... are enclosed at Annexure A, Annexure B,Annexure C , Annexure D and Annexure E respectively.These agreements arelikely to be replaced on its renewal. The r enewed/modified agreements would begenerally in line with the Transmission Service A greement (TSA) issued by Ministry ofPower as part of standard bid documents for comp etitive bidding for transmissioninaccordance with Section63 of the Act. Accordingly, on replacement of renewed/ modified agreement in line with TSA, the same would become part of this agreement. –NOT APPLICABLE--

L. AND WHEREAS the Long term transmission customer is desirous of wheeling its power to its consumers through long term open access on the same terms and conditions as contained in the Bulk Power Transmission Agreement of the respective region. Words and expressions used in the Bulk Power Transmission agreement at Annexure A, B, C, D and E shall have the same meaning assigned to them under the Electricity Act, 2003 or Grid Code or H.P. State electricity Regulatory commission Regulations, 2010 as the case may be (including their amendments , if any). Now, therefore in consideration of the premises and mutual Agreements, covenants and conditions set forth herein, and in the Agreement as contained in Annexure A, B, C, D and E attached hereto which shall form an integral part of this agreement, it is hereby agreed by and between the parties as follows:

1.0 In accordance with H.P. State Electricity Regulatory Commission Regulations, 2010 a nd Electricity Act, 2003 (including their amendment, if any) and in accordance with the term mentioned above HPPTCL agrees to provide such open access required by this long term transmission customers from the date and in the manner mentioned in the Annexure 1, Annexure 2, Annexure 3 and Annexure 4 of this agreement for a period of 12 Years from the schedule date of generation of individual long term open access customers.

2.0 (a) Long term transmission customers shall share and pay the transmission charges in accordance with in accordance with the regulation/tariff order issued by State Electricity Regulatory commission from time to time of HPPTCL transmission system of concerned applicable Region i.e. Northern Region including charges for interstate links/SLDC/NLDC charges and any additions thereof.
These charges would be applicable corresponding to the capacity of power contracted from the said generation project through Open Access from scheduled date of commissioning of generating projects as indicated at Annexure-1 irrespective of their actual date of commissioning.
(b) Long term transmission customer shall share and pay the transmission charges of the transmission system as indicated as detailed in annexure-3 in accordance with the sharing mechanism detailed in Annexure-4. In case, in future, any other long-

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term transmission customer(s) is/are granted open access through the transmission system detailed at Annexure-3 (subject to technical feasibility), he /they would also share the applicable transmission charges.

(c) Each Long term transmission customer its successor/assignee shall pay the applicable transmission charges from the date of commissioning of the respective transmission system which would not be prior to the scheduled commissioning date of generating units as indicated by of the respective developer as per Annexure -1. The commissioning of transmission system would be proponed only if the same is agreed mutually by concerned parties.

(d) In addition to opening of LC for 105% of estimated average monthly billing forcha rges mentioned at 2(a) and 2(b) above, Long-

Term Transmission customerwould provide security in the form of irrevocable Bank Guarantee (BG), in favor of HPPTCL, equivalent to two months estimated average monthly billing, three months prior to the scheduled date of commissioning of generating units as indicated at Annexure-1. Initially the security mechanism shall be valid for a minimum period of three (3) years and shall be renewed from time to time till the expiry of the open access.

(e) The estimated average transmission charges would be reviewed every six months and accordingly the amount of security would be enhanced /reduced by long term transmission customers.

(f) In case the long term transmission customer defaults in payment of the monthly chargesofH .P. POWER TRANSMISSION CORPORATION LTD. bills then,H. P.POWER TRANSMISSION CORPORATION LTD shall be entitled to encash/adjust the BG immediately.

(g) In case of encashment / adjustment of the BG by H. P.POWER TRANSMISSIONCO RPORATION LTD against non-payment of monthly charge bylong-termtransmission customer, the same should be immediately replenished/ recouped by long-term transmission customers before the next billing cycle.

(h) The format for bank guarantee is enclosed as Annexure-X. The Bank Guarantee shall be issued by

iv) A Public Sector Bank or

i) Scheduled Indian Bank having paid up capital (net of accumulated losses) of Rs. 100 Crores or above (duly supported by Latest Annual Report) and also satisfying the minimum capital adequacy requirement or

ii) Any foreign Bank with overall International corporate rating or rating of longt erm debt not less than A –(A minus) or equivalent by reputed rating agency.

3.0 H. P. POWER TRANSMISSION CORPORATION LTD provide Long term Open Access required by Long Term transmission customer as per the details mentioned above and in accordance with the regulations under H.P. State Electricity Regulatory Commission Regulations, 2010 and conditions specified the HPERC from time to time. However, during the tenure of this agreement if any of the covenants and conditions recited in this agreement including agreements at Annexure-A,B,C and D found inconsistent with the provisions of the Electricity Act 2003 and or applicable notifications/rules/regulations issues either by HPERC or by HP as per the provisions of the Electricity Act , then not withstanding anything contained in the agreement referred to above, the said rules and regulations shall prevail.

4.0 Copy of the Agreements entered with Northern Region dated -----NIL-------

(Annexure

A shall form part and parcel of this Agreement and accordingly, allterms and conditi

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ons of Agreements dated ----NIL------, ---NIL-------, ----NIL---- and...NIL.....
Shall mutatis mutandis apply to the Long Term Transmission Customer. Any revision, replacement, modification and extension of these Agreements shall also apply to the Long term Transmission Customer.

5.0 (a) The Long term transmission customer shall not relinquish or transfer its rights an d Obligations specified in the Bulk Power Transmission Agreement, without prior approval of HPPTCL and HPERC and subject to payment of compensation in accordance with the HPERC Regulations issued from time to time.

6.0 (a) In case any of the developers fail to construct the generating station/dedicated transmission system or makes an exit or abandon its project, HPPTCL shall have the right to collect the transmission charges and or/damages as the case may be in accordance with the notification/regulation issued by HPERC time to time. The Developer shall furnish a Bank Guarantee from a nationalized Bank for an amount which shall be equivalent to Rs 5 (five) lakhs/MW to compensate such damages. The bank guarantee format is enclosed as Annexure-Y. The details and categories of bank would be in accordance with clause 2(h) above, the Bank Guarantee would be furnished in favor of HPPTCL within 3(three) months of signing the agreement.

(b) This Bank Guarantee would be initially valid for a period of six months after the expected date of commissioning schedule of generating units mentioned at Annexure-1 or actual date of commissioning whichever is earlier. The bank guarantee would be en-cashed by HPPTCL in case of adverse progress of individual generating unit(s) assessed during the coordination meeting as para 7 below. However, the validity should be extended by concerned Long Term transmissioncust omer(s) as per the requirement to be indicated during coordination meeting.

(c) The HPPTCL shall build transmission system included at Annexure-3 keeping view of various commissioning schedules; however, till the completion of identified transmission elements the transfer of power will be based on the availability of the system on short term basis.

(d) In the event of delay in commissioning of concerned transmission system from its schedule, as indicated at Annexure-4, HPPTCL shall pay proportionate transmission charges to concerned long tern Open Access customer (s) proportionate to its commissioned capacity (which otherwise would have been paid by the concerned Long term Open access Customer(s) to HPPTCL provided generation is ready and HPPTCL fails to make alternate arrangement for dispatch of power.

7.0 In order to monitor/ review the progress of generating units along with its directeva cuation lines and also the common transmission system, Joint coordination meeting with the representative of each developers and HPPTCL shall be held at regular interval **(preferably quarterly)**after signing of this Agreement.

8.0 All differences/ disputes between the parties arising out of or in connection withthis Agreement shall be resolved in terms of the Redressal Mechanism provided underRe gulation 33 & 37 of the HPERC Regulations, 2010 and under Electricity Act 2003.

9.0 The parties shall ensure due compliance with the terms of this Agreement. However, no party shall be liable for any claim for any loss or damage whatsoever arising out of failure to carry out the terms of the Agreement to the extent that such a failure is due to force majeure events such as war, rebellion, mutiny, civil commotion, riot, strike, lock out, fire, flood, forces of nature, major accident, act of God, change of law and any other causes beyond the control of the defaulting party.

But any party claiming the benefit of this clause shall satisfy the other party of the existence of such an event and give written notice of 30 days to the other party to

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this effect. Transmission/drawl of power shall be started as soon aspracticable by the parties concerned after such eventuality has come to an end or ceased to exist.

10.0 In the event of finalization of beneficiaries by the developers the applicabletrans mission charges and other charges covered under this agreement would be payable by the concerned beneficiary. These charges would be effective only from the date of signing of agreement by concerned beneficiary with HPPTCL for the validity period of open access.

11.0 This Agreement shall be valid from the date of signing of this agreement till the validity of open access subject to its revision as may be made by the parties to this agreement provided that this agreement may be mutually extended, renewed or replaced by another Agreement on such terms and for such further period as the parties may mutually agree. In case Long term Transmission customers continue to get transmission services from HPPTCL even after expiry of this agreement without further renewal or formal extension thereof , then all the provisions of this agreement shall continue to operate till this agreement is formally renewed, extended or replaced.

In witness whereof both the parties have executed this Agreement through their authorized representative.

Witness For and on behalf of company	For and on behalf of HPPTCL
1. Signature:	1.Signature: .....
Name: AJAYA KUMAR NATHANI	Name : Ashwani Kumar Khaatria
Designation Head Transmission	Designation .....
	DGM (C&M) HPPTCL Barowalia House, Khalini, Shimla-2

Annexure-1

List of Gen Projects and their beneficiaries
Details of Generation Projects – GMR Bajoli Holi Hydropower private Limited

Sl. No	Applicant	Gen. Project Capacity (MW)	LTOA Applied for (MW)	Location	Time Frame (Unit wise)	Long Term Access granted				
						WR	SR	NR	ER	NER
1.	GMR Bajoli Holi Hydropower private Limited	180 MW	178.2	Chamba District, Himachal Pradesh (Plant Bus)	Unit 1: June2018 Unit 2: July 2018 Unit 3: Aug 2018			178.2		

GMR Bajoli Holi Hydropower Pvt. Ltd.

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Annexure-2

Transmission system to be implemented by Generation project developers and its Schedule of commissioning

Sr.No.	Name of Scheme & Elements
1.	
2.	---NOT APPLICABLE---
3.	
4.	

Note:

c) The termination of the line as well as location of pooling station is subject to minor changes depending upon final survey and physical constraint, if any.

d) In case of any major development, if there is any change in the transmission system to achieve overall optimization of the system, then, above details would be modified on mutual consent.

e) In case, in future, any other long-term transmission customer(s) is/are granted open access through the transmission system detailed at Annexure-3 (subject to technical feasibility), he/they would also share the applicable transmission charges.

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Annexure-3

Transmission System under the Scope of H. P.POWER TRANSMISSION CORPORATION LTD.

Sr. No. Name of Scheme & Elements

1. 400/220/33 KV, 2*315 MVA, Lahal GIS-Substation
2. 220 KV, Double Circuit (D/C), Twin Moose Transmission Line from Project to Lahal Substation
3. 400 KV D/C Transmission Line from Lahal Pooling Station to Chamera Pooling Station

Note:

1 The termination of the line as well as location of pooling station is subject to minor changes depending upon final survey and physical constraint, if any.

2. In case of any major development, if there is any change in the transmission system to achieve overall optimization of the system, then, above details would be modified on mutual consent.

3. In case, in future, any other long-term transmission customer(s) is/are granted open access through the transmission system detailed at Annexure-3 (subject to technical feasibility), he/they would also share the applicable transmission charges.

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Annexure-4

Transmission Charges for the transmission system of respective Generation Projects

The transmission charges for different stages of the transmission system would be borne by the generation developers / beneficiaries as given below:

- The dedicated transmission system indicated at Annexure-2 i.e. from the generation switchyard up to various pooling points/substations shall be built, owned and operated by the generation project developer.
- However, some of the dedicated transmission system indicated at Annexure-3 i.e. from the generation switchyard up to various pooling points/substations shall be built, owned and operated by H. P.POWER TRANSMISSION CORPORATION LTD. The transmission charges for these dedicated transmission system shall be paid by the concerned generation developers.
- The charges for the transmission system (other than the dedicated system) indicated at Annexure-3 would be borne by the generation developers in proportion to capacity for which long term open access has been sought. The transmission charges will be corresponding to phased development of transmission system and in each time frame, charges should be shared by all the generation developer whose generation projects are scheduled to come up in that time frame or earlier.
- The long term Open Access Applicants would also have to share the applicable State transmission charges in proportion to the Long term capacity sought by them as per HPERC norm.
- As the transmission system has been evolved considering target beneficiaries and tentative allocation indicated by the developer(s) in their application, some transmission strengthening may be required in the receiving end/region once the beneficiaries/quantum of allocation is finalized. The cost/tariff of such system strengthening would also have to be borne by the developer(s) as and when identified.
- In the event of default by any developer under Clause 5 and 6 of this Agreement, the transmission charges for the system mentioned at Annexure-3 would be shared by balance developers. However, the damages collected (if any) from the defaulting developer(s) under clause 5 & 6 of this agreement shall be adjusted for the purpose of claiming transmission charges from the balance (remaining) developers.

The composite transmission scheme would be developed in phases keeping in view the commissioning schedule of generation project. Depending upon the status of various generation projects as informed by different generation developers, the details of phasing of development of transmission system has been evolved. Details of staging are described as follows –

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1.0 Stage-I

1.1 Generation project and its schedule

GMR Bajoli Holi Hydropower private Limited (180 MW)

Unit 1 : June 2018

Unit 2 : July 2018

Unit 3 : August 2018

1.2 Transmission System

1.2.1 Transmission system to be developed by the generation developer and its Schedule ---NOT APPLICABLE--

.....

.....

1.2.2 Transmission system to be developed by H. P. POWER TRANSMISSION CORPORATION LTD. and its schedule

1. 400/220/33 KV, 2*315 MVA, Lahal GIS Substation : 30th April 2018
2. 220 KV, Double Circuit (D/C), Twin Moose Transmission Line from Project to Lahal Substation: 31st December 2017
3. 400 KV D/C Transmission Line from Lahal Pooling Station to Chamera Pooling Station : 31st March 2018

Sharing of transmission charges by above developers.

2.0 Stage-II

2.1 Generation project and its schedule

---NOT APPLICABLE--

2.2 Transmission System

2.2.1 Transmission system to be developed by the generation developer and its schedule

---NOT APPLICABLE--

2.2.2 Transmission system to be developed by H. P.POWER TRANSMISSION CORPORATION LTD. and its schedule

---NOT APPLICABLE--

Sharing of transmission charges by above developers.

Note: In case, in future, any other long term transmission customer(s) is/are granted open access through the transmission system detailed at Annexure 3 (subject to technical feasibility), he/they would also share the applicable transmission charges.

GMR Bajoli Holi Hydropower Pvt. Ltd.

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House, Khalini, Shimla-2

हिमाचल प्रदेश HIMACHAL PRADESH C 647051

SUPPLEMENTARY TRANSMISSION SERVICE AGREEMENT

This Supplementary Agreement is executed on this 14th day of July 2022, at Shimla between H.P. Power Transmission Corporation Ltd., a State Government owned Transmission Utility incorporated under the Companies Act, 1956, having its register office at HIMFED Bhawan, Panjari, Shimla-171005 (hereinafter called "HPPTCL" which expression shall unless repugnant to the context or meaning thereof, includes its successors, administrators and permitted assigns) on the **First Part**.

AND

Himachal Pradesh State Electricity Board Ltd., a State Government owned Distribution Utility incorporated by Government of Himachal Pradesh under the Companies Act 1956, having its registered office at Kumar House, Vidyut Bhawan, Shimla-171004 (hereinafter called "HPSEBL" which expression shall unless repugnant to the context or meaning thereof, includes its successors, administrators and permitted assigns) on the **Second Part**.

AND WHEREAS, HPPTCL is transmitting the power of HPSEBL through its system mentioned in original Transmission Service Agreement executed between parties on dated-10.02.2012, supplementary transmission agreement dated- 29.05.2018 and a separate Agreement signed between parties on dated 12.04.2021. The revised list of HPPTCL system used by HPSEBL whose Transmission Service Agreement has been signed till date is placed at revised **Annexure-A of this agreement**.

General Manager (C&D)
HPPTCL, Totu Kandi Shimla-5

Chief Engineer (SO)
Shimla-4

AND WHEREAS, in accordance with Clause 5.2 of the Transmission Service Agreement dated 10.02.2012 executed between parties, a Supplementary Agreement is required to be signed as and when new transmission element owned by HPPTCL comes in operation and is being utilized by HPSEBL. Accordingly, the supplementary Transmission Service Agreement (TSA) is required to be signed between the parties to include Transmission assets mentioned under revised **Annexure-B** of this Agreement.

AND WHEREAS, HPPTCL and HPSEBL signed addendum to Transmission Service Agreement (TSA) on dated 18.04.2017, wherein following points were agreed between the parties:

(i) *The Transmission losses of Intra-state Transmission system (IaSTS) were determined by HPPTCL as 0.75% on actual basis and both parties agreed to said loss figure of 0.75%.*

(ii) *The maximum capacity utilization of HPPTCL system was agreed as 1060MW i.e. 670MW on Intra-state lines mentioned at* ***Annexure-A of agreement dated-18.04.2017*** *and 390MW on interstate lines mentioned in* ***Annexure-B of agreement dated-18.04.2017****.The agreed figure of 1060MW is the sum of drawls on HPPTCL lines at the time of occurrence of maximum demand of the State during FY 2015 and FY 2016.*

AND WHEREAS, HPPTCL has signed Long Term Open Access (LTOA) Agreement with other beneficiaries for usage of STU system. As per Clause (33) of HPERC (Terms and Conditions for determination of Transmission Tariff) Regulations, 2011 and subsequent amendments thereof, Annual Transmission Service Charge (ATSC) shall be shared between long and medium term customers of Transmission system on monthly basis based on the allotted transmission capacity or contracted capacity, as the case may be. The maximum capacity utilization of HPPTCL system for HPSEBL after addition/inclusion of following assets mentioned at Sr. No. 1 to 7 shall remain 670 MW on intra-state system.

However, the methodology to ascertain the contracted capacity of HPSEBL in future on the HPPTCL's Transmission lines shall be as under:

"The contracted capacity of HPSEBL will be ascertained on the basis of the average of 'A' for the last three financial years.

Where,
'A'= {0.5 x maximum of HPSEBL drawl in a time block during the year} + {0.5 x [average of (maximum HPSEBL drawl in a time block in a day) during the year]}.

AND WHEREAS, HPPTCL has commissioned the following Transmission assets **(Annexure-B)** which are being used by HPSEBL as per the contracted capacity or allotted capacity as such it is agreed between the parties as under: -

1. **<u>133/33kV Pandoh Substation:-</u>**

   HPPTCL has commissioned 33/132kV Substation at Pandoh on dated 24.08.2019 by LILO of 132 kV Larji-Bijni line and second 33/132kV Transformer at Pandoh Substation was energized on dated 08.10.2020 to pool in and evacuate power from SHPs in Pandoh Valley. Presently, HPSEBL is using this system for evacuation of power of Patikari HEP (16 MW).This system isensuring reliable and quality power supply to the consumers of Thunag and Siraj areas. The filing of Tariff petition of this asset before Hon'ble HPERC is in process and upon determination of tariff, ARR (Aggregate Revenue Requirement) approved for the instant asset will be recovered from the beneficiaries of the asset in line with the tariff order approved by the Commission.

2. **<u>132/33kV Chambi Substation:-</u>**

   HPPTCL has commissioned 33/132kV Chambi Substation on dated 24.08.2019 and LILO portion of 132kV Dehra-Kangra line was commissioned on 06.08.2020 to pool in and evacuate power from small HEPs in Shahpur area. The 132kV Dehra-Kangra Transmission line has been LILOed at 132kV Chambi Substation alongwith Gaj-Shahpur line and is providing constraint free evacuation to SHEP's from Shahpur and Gaj area alongwith increase in reliability of power

General Manager (C&D)
HPPTCL, Tutikandi Shimla-5

supply to Shahpur area. The filing of Tariff petition of this asset before Hon'ble HPERC is in process and upon determination of tariff, ARR (Aggregate Revenue Requirement) approved for the instant asset will be recovered from the beneficiaries of the asset in line with the tariff order approved by the Commission.

3. **400/220/66kV Wangtoo Substation:-**

HPPTCL has commissioned 400/220/66kV Wangtoo Substation on dated 29.09.2019. Presently, Wangtoo Substation is evacuating power of Rala HEP (13MW), Kashang HEP (65MW) and small HEPs having PPA with HPSEBL. This Substation is meant for evacuating power of HEP's pooling their power in the instant asset and will also ensure reliable & quality power supply. The filing of Tariff petition of this asset before Hon'ble HPERC is in process and upon determination of tariff, ARR (Aggregate Revenue Requirement) approved for instant asset will be recovered from beneficiaries of asset in line with the tariff order approved by the Commission. However, this asset may form part of interstate Transmission system based on petition to be filed before CERC, in case of declaration as ISTS, the transmission charges for this asset will be recovered as per CERC Sharing of Transmission Charges Regulations, 2020 as amended from time to time.

4. **33/220kV Phozal Substation:-**

HPPTCL has commissioned 33/220kV Phozal Substation on dated 05.06.2016. Presently, HPPTCL is evacuating power of Baragaon HEP (24MW) and HPSEBL through Phozal Substation. HPPTCL has entered into IPTA with M/s Kanchanjunga Power Company Pvt. Ltd. and HPSEBL for contracted capacity of 24MW and 27MW respectively. As per IPTA, tariff rate agreed is Rs 40,000/MW/month. Charges collected as per IPTA are subject to adjustment based on tariff determined by Hon'ble HPERC. As per Hon'ble APTEL order dated 20.07.2020, APTEL has stayed for Tariff determination of Phozal Substation. The filing of Tariff petition of this asset before Hon'ble HPERC is in process and upon determination of tariff, ARR (Aggregate Revenue Requirement) approved for instant asset will be recovered from beneficiaries of asset in line with the tariff order approved by the Commission. However, this asset may form part of interstate Transmission system based on petition to be filed before CERC, in case of declaration as ISTS, the transmission charges for this asset will be recovered as per CERC Sharing of Transmission Charges Regulations, 2020 as amended from time to time.

5. **66kV Switching Station at Urni& 66 kV D/C Urni to Wangtooline:-**

HPPTCL has commissioned 66 kV Urni Substation on dated 26.09.2020 for evacuating power of HEP's pooling their power in the instant asset.Upon commissioning of 66KV Urni-Wangtoo Transmission line, Brua HEP (9MW), Shaung HEP (3MW) and Raura HEP (12MW) which are presently evacuating their power through 220kV Kashang-Bhaba Transmission line under an interim arrangement, will start evacuating their power through Urni Sub-station via 66KV Urni-Wangtoo line to Wangtoo station. The filing of Tariff petition of this asset (66 kV Line + 66 kV switching station) before Hon'ble HPERC is in process and upon determination of tariff, ARR (Aggregate Revenue Requirement) approved for instant asset will be recovered from beneficiaries of asset in line with the tariff order approved by the Commission. However, in the case, this asset may form part of interstate Transmission system based on petition to be filed before CERC, in case of declaration as ISTS, the transmission charges for this asset will be recovered as per CERC Sharing of Transmission Charges Regulations, 2020 as amended from time to time.

6. **220kV Kashang-Bhaba Transmission Line:-**

HPPTCL has commissioned 220kV Kashang-Bhaba Transmission line on dated 01.06.2016. Hon'ble HPERC vide its order dated 26.08.2020 passed in Petition No. 3/2020 has approved tariff of instant Transmission line. In the order, Hon'ble HPERC has stated as under: -

"In view of the dedicated nature of line, the approved ARR of Kashang-Bhaba line has to be recovered from HPPCL irrespective of LTOA. However, any charges recovered from other beneficiaries/generators as a result of IPTA agreement during FY 2018-19 for FY 2018-19 shall be adjusted from the charges payable by LTOA/MTOA".

General Manager (C&D)
HPPTCL, Totikandi Shimla-5

Presently, Kashang-Bhaba Transmission line is being used for evacuation of power of Kashang HEP(65MW) and in accordance with Tariff Order dated 26.08.2020, Transmission charges irrespective of LTOA have to be recovered from HPPCL. Free power share of GoHP in Kashang HEP is being availed by HPSEBL and is one of the beneficiaries of this line.In addition to above, Shyang HEP (3MW) and Tangling HEP (5MW) have signed connectivity at Bhoktoo Substation and are presently evacuating their power through Bhoktoo station. These generators have also signed PPA with HPSEBL and surplus/deficit power after being utilized through local feeders also flows through Kashang-Bhaba Transmission line. The HPSEBL shall be billed for the use of this line as per the capacity utilization to be decided between HPPTCL and HPSEBL. Though HPERC in its order dated 02.05.2022 of Petition No. 12 of 2021has rejected the claim of the HPPCL in Petition No. 48/2021 that Kashang Bhaba Transmission line is dedicated line for IKHEP.The issue regarding dedicated nature of line is pending before Hon'ble APTEL. In case, subsequently, the line is considered as STU line then the recovery of tariff shall be as per Clause (33) of HPERC (Terms and Conditions for determination of Transmission Tariff) Regulations, 2011 and subsequent amendments thereof.

7. **400/220/33kV Lahal Substation& 220 kV Lahal to Budhil Transmission line:-**

HPPTCL has commissioned 400/220/33kV Lahal Substation in November 2020 and 220 kV Lahal to Budhil line. Small HEPs having PPA with HPSEBL have signed Connection agreement with HPPTCL. Further, Bajoli Holi HEP (180 MW) has also signed LTOA with HPPTCL for evacuation of their power. Presently, Lahal Substation is evacuating power of Kuwarsi HEP (15 MW), Salun HEP (9 MW), Kiunar (5MW), Chirchind (5MW) &Bajoli Holi HEP (180MW) under interim arrangement. As an interim arrangement till completion of 400 kV Lahal to Rajera line the power is being evacuated through 220 kV S/C Lahal to Budhil line. This Substation and 220 kV Transmission line from Lahal to Budhil is meant for evacuating power of HEP's pooling their power in the instant asset and will also ensure reliable & quality power supply. The filing of Tariff petition of this asset before Hon'ble HPERC is in process and upon determination of tariff, ARR (Aggregate Revenue Requirement) approved for instant asset will be recovered from beneficiaries of asset in line with the tariff order approved by the Commission. However, this asset may form part of interstate Transmission system based on petition to be filed before CERC, in case of declaration as ISTS, the transmission charges for this asset will be recovered as per CERC Sharing of Transmission Charges Regulations, 2020 as amended from time to time.

AND WHEREAS, the HPPTCL transmission asset(s) earlier not included in HPPTCL common ARR whose ARR have been got approved separately, shall be included in the HPPTCL common ARRand shall be shared among all the beneficiaries of the assets to the extent of utilization of these assets. The petition to this effect shall be filed before HPERC by HPPTCL.

AND WHEREAS, if Transmission Asset(s) included in Transmission Service Agreement are declared as interstate asset(s) in future, transmission tariff of such asset will be recovered in accordance with CERC Sharing of Transmission Charges Regulations, 2020 as amended from time to time.

AND WHEREAS, the tariff and its sharing for above mentioned assets is yet to be determined by Hon'ble HPERC and therefore HPPTCL will approach/has approached Hon'ble HPERC for determination of the transmission charges. The system built/to be built upto interconnection points by the IPPs as per the provisions in the IAs/PPAs will not be considered for determination of the transmission charges to be paid by HPSEBL/other user(s)/beneficiary(ies). HPPTCL will charge HPSEBL/user(s) of the system as per the contracted capacity or approved capacity & their sharing approved by the HPERC.

General Manager (C&D)
HPPTCL, Tutikandi Shimla-5

AND WHEREAS, this Supplementary Transmission Service Agreement (TSA) is hereby entered into and the revised **Annexure-A & B of this agreement** shall form part of this supplementary agreement. All other terms and conditions of the **Original TSA dated 10.02.2012** shall remain unaltered and in the full force.

IN WITNESS whereof the parties have executed these presents through their Authorized Representatives on the dated mentioned above.

For and on the behalf of HPPTCL

Signature:

Name: General Manager (C&D) HPPTCL, Tutikandi Shimla-5
Er. Rajneesh Kumar

Designation: GM (C&D)

Witness

Signature:

Name: Er. S.K. SHARMA

Designation: DGM (Plg. & IT) HPPTCL

For and on the behalf of HPSEBL

Signature:

Name: Chief Engineer (System Operation) H.P. State Electricity Board Ltd. Vidyut Bhawan, Shimla-171004
CHIEF ENGINEER

Designation: CE(SO)

Witness

Signature:

Name: RAJIV KUMAR VERMA

Designation: SE (I/S)

ANNEXURE-A

Sr.No.	Name of the Line	Line Length (Kms)	Commercial Operation Date
A.	**220 kV Lines:**		
1.	220kV D/C Bairasuil Pong line (one circuit LILO at Jassure)	0.240	09/1985
2.	220kV D/C Nalagarh (PGCIL) to Nalagarh line	3.500	07/2010
3.	220kV S/C line on D/C towers Dehar to Kangoo line	4.177	06/1999
4.	220 kV S/C line on D/C towers from Karian to Rajera.	3.7	05/2018
	Sub Total (A)	**7.917**	
B	**132 kV Lines:**		
1.	132kV S/C Dehar-Kangoo line	2.992	12/1998
2.	132kV D/C Giri-Abdullapur line	16.220	08/1982
3.	132kV Giri-kulhal Line	17.40	04/1978
4.	132kV D/C Shanan-Bassi Line	5.00	03/1970
5.	132kV S/C Kangra Tap	0.135	02/1979
	Sub Total (B)	**41.747**	
C.	**66 kV Lines:**		
1.	66kV Shanan-Bijni Line	35.00	10/1969
2.	66kV S/C Pong-Sansarpur Terrace Line	6.300	10/1990
3.	66kV S/C Bhakra-Una LILO Gwalthai Line	16.724	12/1985
4.	66kV Pinjore-Parwanoo Line	8.230	04/1956
	Sub Total (C)	**66.254**	
	Grand Total (A+B+C)	**115.918**	

Sr. No.	Name of Substation	Transmission Capacity (MVA)	Commercial Operation date
1.	22/66/220 kV Bhoktoo Substation along with S/C LILO of Kashang-Wangtoo line	1. 220/66 kV = 31.5 2. 66/22kV=2x10	23.03.2017
2.	33/220 KV Karian Substation	63	05/2018
	Total	**114.5 MVA**	

General Manager (C&D)
HPPTCL, Tutikandi Shimla-5

Chief Engineer (SO) Shimla-4

ANNEXURE-B

Sr.No	Name of Substation	Capacity(MVA)	Commercial Operation Date
1.	132/33kV Pandoh Substation alongwith LILO of one circuit of 132kV Larji-Bijni Transmission line	2x31.5	24.08.2019
2.	132/33kV Chambi Substation alongwith LILO of 132kV S/C Dehra-Kangra Transmission Line	2x 31.5	28.08.2019
3.	66/220/400kV Wangtoo Substation	400/220 = 2x315 220/66 = 2x100	29.09.2019
4.	33/220kV Phozal Substation	100	05.06.2016
5	66kV Urni Substation	NA	26.09.2020
6	400/220/33 kV Lahal Substation	400/220= 630 220/33= 63	Nov.2020
	TOTAL	**1749 MVA**	

Sr.No	Name of Transmission Line	Line Length (kms.)	Commercial Operation Date
1.	220kV D/C Kashang–Bhaba Transmission line	38.79	01.06.2016
2.	220 kV S/C line on D/C Tower from Lahal to Budhil	1.895	07.07.2020
3.	S/C LILO of 220 kV Prini to Nalagarh line of ADHPL at Phojal	6.8	05.06.2016
4.	66 kV D/C Urni to Wangtoo line	13.38	July 2022
	Total	**54.065**	

General Manager (C&D)
HPPTCL, Tutikandi Shimla-5

Chief Engineer (S.O.)
HPPTCL, Tutikandi, Shimla-5

हिमाचल प्रदेश HIMACHAL PRADESH C 858441

FORMAT-LTA-6A

(Applicable for One party requiring NO transmission system strengthening)

BULK POWER TRANSMISSION AGREEMENT

BETWEEN

H. P. POWER TRANSMISSION CORP. LTD.

This Bulk Power Transmission Agreement entered into on the 22nd day of March Two thousand Twenty Two between H. P. POWER TRANSMISSION CORP. LTD., incorporated under the Companies Act, 1956 and wholly owned by Government of H. P. having its registered office at Himfed Bhawan Shimla-05. (hereinafter called "HPPTCL." which expression shall unless repugnant to the context or meaning thereof include its successors and assigns) as party of the first part;

AND

M/s JSW Energy (Kutehr) Ltd. (JSWEKL) a Long-Term transmission Customer incorporated under the companies Act, 1956 having its registered office at Kutehr HEP (240 MW), Village Machhettar, P.O. Chanhouta, Tehsil- Bharmour, Distt: Chamba, Himachal Pradesh-176309 (hereinafter called "Long Term transmission Customer" which expression shall unless repugnant to the context or meaning thereof include its successors, and assigns) as party of the second part.

JSW Energy (Kutehr) Limited

General Manager (C&D)
HPPTCL Tutikandi Shimla-5

And Whereas the Long-Term transmission customer is a generating company/licensee/ consumer/others permitted by State Commission and is desirous to avail Long Term Open Access in accordance with "H.P. State Electricity Regulatory Commission (Grant of Connectivity, Long-term Access and Long-term Open Access in Intra-State Transmission and related matters) Regulations, 2010 and Electricity Act 2003 to the Transmission System of HPPTCL.

And Whereas in accordance with "State Electricity Regulatory Commission (Grant of Connectivity, Long-term Access and Medium-term Open Access in Intra-State Transmission and related matters) Regulations, 2010 and Electricity Act 2003 open access shall be allowed by HPPTCL to Long Term open access customer.

And Whereas the Long Term access is required by the Long Term transmission customer as per the following details:

Injection Utility
Name – Kutehr HEP
Location Distt: Chamba
Region – NR
Capacity (MW) 240 MW

Drawee Utility (ies)
Name Haryana Power Purchase Center
Location Region(s) : NR
Capacity (MW) 240 MW

Date from which the open access is granted is 30.06.2023 for a period of 25 years
And Whereas in accordance with the system studies carried out by HPPTCL, following transmission system is required to facilitate operationalization of above Long term access.

1. S/C LILO of 400 kV D/C Lahal to Rajera line at Kutehr HEP. (dedicated line being constructed by HPPTCL as per Approved procedure of HPERC)
2. 400 kV D/C Lahal to Rajera line . (Under construction)

And whereas the implementation of above transmission system is to be undertaken by Long Term Transmission Customer.

And whereas Long Term transmission customer has agreed to share and pay all the transmission charges of Intra State Transmission System (IaSTS) for the use of IaSTS of Northern Region and including system strengthening scheme and any addition thereof.

And whereas it has become incumbent upon both the parties to enter in to Bulk Power Transmission Agreement as envisaged under the "State Electricity Regulatory Commission (Grant of Connectivity, Long-term Access and Medium-term Open Access in Intra-State Transmission and related matters) Regulations, 2010

AND Whereas the Long term transmission customer is desirous of wheeling its power through Long term access on the same terms and conditions as contained in the Bulk Power Transmission Agreement.

Now, therefore in consideration of the premises and mutual agreements, covenants and conditions set forth herein, it is hereby agreed by and between the parties as follows :

1.0 (a) Long Term transmission customer shall share and pay the transmission charges of IaSTS of Himachal Pradesh (as applicable) including charges for inter State links and system strengthening scheme and any addition thereof.
(b) Long Term Transmission customer would provide security in the form of or irrevocable Bank Guarantee (BG) in favor of HPPTCL, equivalent to Two (2) months estimated average transmission charges of concerned Region(s) applicable to the long-term transmission customer. The security mechanism

JSW Energy (Kutehr) Pvt. Ltd.

General Manager (C&D)
HPPTCL, Tutikandi Shimla-5

shall be valid till One month after the validity of the open access.

(c) The estimated average transmission charges would be reviewed every six months and accordingly the amount of security would be enhanced / reduced by Long Term transmission customers.

(d) In case the Long Term transmission customer defaults in payment of the monthly charges of HPPTCL bills then, HPPTCL shall be entitled to encash/adjust the FDR/ deposit/ BG immediately.

(e) In case of encashment/ adjustment of the / BG by H. P.POWER TRANSMISSION CORPORATION LTD. against non-payment of monthly charges by Long-term transmission customer, the same should be immediately replenished/recouped by Long term transmission customer before the next billing cycle.

(f) The format for bank guarantee is enclosed as Annexure-X. The Bank Guarantee shall be issued by

i) A Public Sector Bank or

ii) Scheduled Indian Bank having paid up capital (net of accumulated losses) of Rs.100 crore or above (duly supported by latest annual report) and also satisfying the minimum capital adequacy requirement or

iii) Any foreign Bank with overall International corporate rating or rating of Medium Term debt not less than A –(A minus) or equivalent by reputed rating agency.

2.0 H. P. POWER TRANSMISSION CORPORATION LTD. agrees to provide Long Term Open Access required by Long term transmission customer as per the details mentioned above and in accordance with the Regulations under the H.P. State Electricity Regulator y Commission, Regulations 2010 and conditions specified by the HPERC from time to time.

3.0 The Long Term transmission customer shall not relinquish or transfer its rights and obligations specified in the Bulk Power Transmission Agreement, without prior approval of HPPTCL and HPERC and subject to payment of compensation as may be determined by the HPERC.

4.0 All differences/ disputes between the parties arising out of or in connection with this Agreement shall be resolved in terms of the Redressal Mechanism provided under Regulation 33 & 37 of the HPERC Regulations 2010 .

5.0 This Agreement shall be valid from the date of signing of this Agreement till the validity of open access. In witness whereof both the parties have executed this Agreement through their authorized representative.

Witness For and on behalf of JSWEKL

JSW Energy (Kutehar) Limited

Head Corporate Affairs
JSW Energy (Kutehar) Ltd

2.

(AJAY NATH)

For and on behalf of HPPTCL

General Manager (C&D)
HPPTCL, Shimla-05

1. Er. Rajneesh Kumar
General Manager (C&D)
HPPTCL, Shimla -05

2.

Assistant Engineer
HPPTCL

उत्तर प्रदेश पावर कारपोरेशन लिमिटेड

(उ० प्र० सरकार का उपक्रम)

U.P. POWER CORPORATION LIMITED

(Govt. of Uttar Pradesh Undertaking)

CIN No. U32201UP1999SGC024928

Planning Wing
3rd Floor, Shakti Bhawan Extension,
14-Ashok Marg, Lucknow 226001.
Phone: (0522) 2218297
Fax : (0522) 2288484/2287343
E mail : cgm2plg@yahoo.co.in

नियोजन स्कन्ध
ततीय तल, शक्ति भवन विस्तार,
14–अशोक मार्ग, लखनऊ 226001
दूरभाष : (0522) 2218297
फैक्स : (0522) 2288484/2287343
ई–मेल : cgm2plg@yahoo.co.in

No. 390- Plg/UMPP-I/400 MW Hydro

Date: 18.05.2021

M/s GMR Bajoli Holi Hydropower Pvt. Ltd.
New Shakti Bhawan, Building No. 302,
New Udaan Bhawan Complex,
Opp. Terminal-3, IGI Airport,
New Delhi 110037

Subject- Signing of PPA for procurement of 400 MW Hydro Power for 25 years by UPPCL against Tender Specification no. 01/PLG/UMPP/Hydro/400 MW/2020

Dear Sir,

Please refer to your authorization letter no. GBHHPL/UPPCL/2021-22/4172 dated 18-05-2021. In reference to letter dated 18.05.2021, a copy of PPA(in original), signed by all parties i.e. M/s GMR Bajoli Holi Hydropower Pvt. Ltd., UP DISCOMs i.e DVVNL, MVVNL, PuVVNL & PVVNL(beneficiaries) and U.P Power Corporation Limited (Signatory) is being handed over to Ms. Shrutika Prabind, Associate Manager(GMR).

Thanking you,

Encl. As above(in original)

Your's Sincerely

(Sanjiv Shukla)
Chief Engineer (Planning)

INDIA NON JUDICIAL

Government of National Capital Territory of Delhi

e-Stamp

सत्यमेव जयते

Certificate No.	:	IN-DL77577340711821T
Certificate Issued Date	:	13-May-2021 07:31 PM
Account Reference	:	IMPACC (IV)/ dl877103/ DELHI/ DL-DLH
Unique Doc. Reference	:	SUBIN-DLDL87710354561863854737T
Purchased by	:	GMR BAJOLI HOLI HYDROPOWER PRIVATE LIMITED
Description of Document	:	Article 5 General Agreement
Property Description	:	Not Applicable
Consideration Price (Rs.)	:	0 (Zero)
First Party	:	GMR BAJOLI HOLI HYDROPOWER PRIVATE LIMITED
Second Party	:	DISTRIBUTION COMPANIES OF UTTAR PRADESH
Stamp Duty Paid By	:	GMR BAJOLI HOLI HYDROPOWER PRIVATE LIMITED
Stamp Duty Amount(Rs.)	:	100 (One Hundred only)

Please write or type below this line

HYDRO POWER PURCHASE AGREEMENT
BETWEEN

The Pashchimanchal Vidyut Vitran Nigam Limited (PVVNL) (the "**Procurer 1**"),
The Purvanchal Vidyut Vitaran Nigam Limited (PuVVNL) (the "**Procurer 2**"),
The Madhyanchal Vidyut Vitran Nigam Limited (MVVNL) (the "**Procurer 3**"),
The Dakshinanchal Vidyut Vitran Nigam Limited (DVVNL) (the "**Procurer 4**")
The Uttar Pradesh Power Corporation Limited (UPPCL)

And

GMR Bajoli Holi Hydropower Private Limited (GBHHPL)

GBHHPL | PVVNL | PuVVNL | MVVNL | DVVNL | UPPCL

Executive Engineer DVVNL AGRA
Head Office: VIDYUT BHAWAN, 220KV Sub Station
NAUTHURA BYPASS ROAD
AGRA-282007

Statutory Alert
1. The authenticity of this Stamp certificate should be verified at www.shcilestamp.com or using e-Stamp Mobile App of Stock Holding. Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.

HYDRO POWER PURCHASE AGREEMENT

For 25 years

Issued by:

Chief Engineer (Planning)
UP Power Corporation Limited
3rd Floor, Shakti Bhawan Extn,
14 Ashok Marg, Lucknow; Phone: 0522-2218297
Email: cgm2plg@yahoo.co.in; cgm2plg@gmail.com

Date of issue of HPPA: 17.05.2021

Contents

Executive Engineer (Commercial),DVVNL AGRA
Head Office: URJA BHAWAN, 220kV Sub Station
AGRA-MATHURA BYPASS ROAD
SIKANDRA - AGRA-282007

मुख्य अभियन्ता (नियोजन)
उ.प्र.पा.को.लि.
लखनऊ

Part I

Preliminary

AGREEMENT FOR PROCUREMENT OF POWER

THIS AGREEMENT is entered into on this the 17th day of May 2021.

BETWEEN

1. The Pashchimanchal Vidyut Vitran Nigam Limited (PVVNL) represented by its Managing Director and having its principal/registered office at Urja Bhawan, Pashchimanchal Vidyut Vitran Nigam Ltd., Victoria Park, Meerut, 250001 (hereinafter referred to as the "**Procurer 1**" which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns) of One Part;

2. The Purvanchal Vidyut Vitaran Nigam Limited (PuVVNL) represented by its Managing Director and having its principal/registered office at Vidyut Nagar, Bhikharipur, DLW, Varanasi, 221010 (hereinafter referred to as the "**Procurer 2**" which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns) of Second Part;

3. The Madhyanchal Vidyut Vitran Nigam Limited (MVVNL) represented by its Managing Director and having its principal/registered office at Madhyanchal Vidyut Vitran Nigam Limited Head Office 4-A, Gokhale Marg, Lucknow, 226001 (hereinafter referred to as the "**Procurer 3**" which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns) of Third Part;

4. The Dakshinanchal Vidyut Vitran Nigam Limited (DVVNL) represented by its Managing Director and having its principal/registered office at Urja Bhavan, NH-2 (Agra – Delhi Bypass Road), Sikandra, Agra – 282002 (hereinafter referred to as the "**Procurer 4**" which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns) of Four Part;

5. The Uttar Pradesh Power Corporation Limited (UPPCL) represented by its Managing Director and having its principal/registered office at Shakti Bhawan 14 Ashok Marg, Lucknow, 226001 (hereinafter referred to as the "**UPPCL**" which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns) of Fifth Part;

AND

6. GMR Bajoli Holi Hydropower Private Limited, a company incorporated under the provisions of the Companies Act, 1956/2013 represented by its Authorised Signatory, Mr. Rajib Misra and having its principal office at New Shakti Bhawan, Building No. – 302, New Udaan Bhawan Complex, Near Terminal 3, IGI Airport New Delhi - 110037 and having its registered office at GMR Office, Village Deol, PO – Holi, Sub Tehsil – Holi, Tehsil – Bharmour, District – Chamba, Himachal Pradesh - 176326, (hereinafter referred to as the "**Supplier**" which expression shall, unless repugnant to the context or meaning thereof, include its successors and permitted assigns and substitutes) of the Other Part.

Executive Engineer (Commercial), DVVNL, AGRA
Head Office: URJA BHAWAN, 220kV Sub Station
AGRA-MATHURA ROAD

WHEREAS:

A. The PVVNL, PuVVNL, MVVNL, DVVNL and UPPCL (the "Procurer"), has decided to procure electricity from the ***Run off the River/ Pondage/ Pumped Storage*** hydro power generating station(s) (the "Power Station") that would dedicate a capacity for supply of Electricity thereof for a specified period and time (the **"Supply of Electricity"**) and has, therefore, decided to carry out the bidding process for selection of the Bidder to whom the contract may be awarded for production of electricity and supply thereof as per the terms and conditions specified in the Bidding Document.

B. The Procurer had invited bids from the Bidders in accordance with the Standard Bidding Documents issued on 24.01.2014 under and including the Guidelines issued by the Central Government under Section 63 of the Act vide Notification No. 23/17/2013-R&R (Vol-II) dated 10.02.2014 which were modified by the Procurer to accommodate long term procurement of power from hydro power stations and approved by the Hon'ble Uttar Pradesh Electricity Regulatory Commission vide orders in petition nos 1343/2018 dated 14.01.2019, 1456/2019 dated 10.06.2019 and 1553/2020 dated 12.02.2020.

C. After completion of the Bidding Process, the Procurer had accepted the Bid of the Selected Bidder and issued its Letter of Award No. 350 Plg/ UMPP-I/400 MW Hydro dated 16.04.2021 (hereinafter called the "**LOA**") to the Selected Bidder requiring, *inter alia*, the execution of this Agreement for Procurement of Hydro Power within 30 (thirty) days of the date of issue thereof.

D. In pursuance of the LOA, the Parties have agreed to enter into this Agreement for Procurement of Hydro Power on the terms and conditions set forth hereinafter.

NOW, THEREFORE, in consideration of the foregoing and the respective covenants and agreements set forth in this Agreement for Procurement of Hydro Power for 25 years the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound hereby, the Parties agree as follows:

Executive Engineer (Commercial) DVVNL AGRA
Head Office: URJA BHAWAN, 220KV Sub Station
AGRA-MATHURA BYPASS ROAD
KHANDORA, AGRA-282007

ARTICLE 1

DEFINITIONS AND INTERPRETATION

1.1 Definitions

The words and expressions beginning with capital letters and defined in this Agreement (including those in Article 26) shall, unless the context otherwise requires, have the meaning ascribed thereto herein, and the words and expressions defined in the Schedules and used therein shall have the meaning ascribed thereto in the Schedules.

1.2 Interpretation

1.2.1 In this Agreement, unless the context otherwise requires,

(a) references to any legislation or any provision thereof shall include amendment or re-enactment or consolidation of such legislation or any provision thereof so far as such amendment or re-enactment or consolidation applies or is capable of applying to any transaction entered into hereunder;

(b) references to laws of the State, laws of India or Indian law or regulation having the force of law shall include the laws, acts, ordinances, rules, regulations, bye laws or notifications which have the force of law in the territory of India and as from time to time may be amended, modified, supplemented, extended or re-enacted;

(c) references to a "**person**" and words denoting a natural person shall be construed as a reference to any individual, firm, company, corporation, society, trust, government, state or agency of a state or any association or partnership (whether or not having separate legal personality) of two or more of the above and shall include successors and assigns;

(d) the table of contents, headings or sub-headings in this Agreement are for convenience of reference only and shall not be used in, and shall not affect, the construction or interpretation of this Agreement;

(e) the words "**include**" and "**including**" are to be construed without limitation and shall be deemed to be followed by "**without limitation**" or "**but not limited to**" whether or not they are followed by such phrases;

(f) references to "**construction**" or "**building**" include, unless the context otherwise requires, investigation, design, engineering, procurement, delivery, transportation, installation, processing, fabrication, testing, commissioning and other activities incidental to the construction, and "**construct**" or "**build**" shall be construed accordingly;

(g) references to "**development**" include, unless the context otherwise requires, construction, renovation, refurbishing, augmentation, upgradation and other activities incidental thereto, and "**develop**" shall be construed accordingly;

(h) any reference to any period of time shall mean a reference to that according to Indian Standard Time;

(i) any reference to "**hour**" shall mean a period of 60 (sixty) minutes commencing either on the hour or on the half hour of the clock, which by way of illustration means 5.00 (five), 6.00 (six), 7.00 (seven) and so on being hours on the hour of the clock and 5.30 (five thirty), 6.30 (six thirty), 7.30 (seven thirty) and so on being hours on the half hour of the clock;

(j) any reference to day shall mean a reference to a calendar day;

(k) reference to a "**business day**" shall be construed as reference to a day (other than a Sunday) on which banks in the State where the Power Station is situate are generally open for business;

(l) any reference to month shall mean a reference to a calendar month as per the Gregorian calendar;

(m) references to any date, period or Project Milestone shall mean and include such date, period or Project Milestone as may be extended pursuant to this Agreement;

(n) any reference to any period commencing "**from**" a specified day or date and "**till**" or "**until**" a specified day or date shall include both such days or dates; provided that if the last day of any period computed under this Agreement is not a business day, then the period shall run until the end of the next business day;

(o) the words importing singular shall include plural and vice versa;

(p) references to any gender shall include the other and the neutral gender;

(q) "**kWh**" shall mean kilowatt hour;

(r) "**lakh**" shall mean a hundred thousand (100,000) and "**crore**" shall mean ten million (10,000,000);

(s) "**indebtedness**" shall be construed so as to include any obligation (whether incurred as principal or surety) for the payment or repayment of money, whether present or future, actual or contingent;

(t) references to the "**winding-up**", "**dissolution**", "**insolvency**", or "**reorganisation**" of a company or corporation shall be construed so as to include any equivalent or analogous proceedings under the law of the jurisdiction in which such company or corporation is incorporated or any jurisdiction in which such company or corporation carries on business including the seeking of liquidation, winding-up, reorganisation, dissolution, arrangement, protection or relief of debtors;

(u) save and except as otherwise provided in this Agreement, any reference, at any time, to any agreement, deed, instrument, licence or document of any

description shall be construed as reference to that agreement, deed, instrument, licence or other document as amended, varied, supplemented, modified or suspended at the time of such reference; provided that this Sub-clause (u) shall not operate so as to increase liabilities or obligations of the Procurer hereunder or pursuant hereto in any manner whatsoever;

(v) any agreement, consent, approval, authorisation, notice, communication, information or report required under or pursuant to this Agreement from or by any Party shall be valid and effective only if it is in writing under the hand of a duly authorised representative of such Party, in this behalf and not otherwise;

(w) the Schedules and Recitals to this Agreement form an integral part of this Agreement and will be in full force and effect as though they were expressly set out in the body of this Agreement;

(x) references to Recitals, Articles, Clauses, Sub-clauses, Provisos or Schedules in this Agreement shall, except where the context otherwise requires, mean references to Recitals, Articles, Clauses, Sub-clauses, Provisos and Schedules of or to this Agreement; reference to an Annex shall, subject to anything to the contrary specified therein, be construed as a reference to an Annex to the Schedule in which such reference occurs; and reference to a Paragraph shall, subject to anything to the contrary specified therein, be construed as a reference to a Paragraph of the Schedule or Annex, as the case may be, in which such reference appears;

(y) the damages payable by either Party to the other of them, as set forth in this Agreement, whether on per diem basis or otherwise, are mutually agreed genuine pre-estimated loss and damage likely to be suffered and incurred by the Party entitled to receive the same and are not by way of penalty (the "**Damages**");

(z) time shall be of the essence in the performance of the Parties' respective obligations. If any time period specified herein is extended, such extended time shall also be of the essence; and

(za) capitalised terms used in the Agreement, but not defined herein, shall have the meaning ascribed to such terms in the Electricity Act, 2003.

1.2.2 Unless expressly provided otherwise in this Agreement, any Documentation required to be provided or furnished by the Supplier to the Procurer shall be provided free of cost and in three copies, and if the Procurer is required to return any such Documentation with its comments and/or approval, they shall be entitled to retain two copies thereof.

1.2.3 The rule of construction, if any, that a contract should be interpreted against the parties responsible for the drafting and preparation thereof, shall not apply.

1.2.4 Any word or expression used in this Agreement shall, unless otherwise defined or construed in this Agreement, bear its ordinary English meaning and, for these purposes, the General Clauses Act, 1897 shall not apply.

1.3 Measurements and arithmetic conventions

All measurements and calculations shall be in the metric system and calculations done to 2 (two) decimal places, with the third digit of 5 (five) or above being rounded up and below 5 (five) being rounded down.

1.4 Priority of agreements, clauses and schedules

1.4.1 This Agreement, and all other agreements and documents forming part of or referred to in this Agreement are to be taken as mutually explanatory and, unless otherwise expressly provided elsewhere in this Agreement, the priority of this Agreement and other documents and agreements forming part hereof or referred to herein shall, in the event of any conflict between them, be in the following order:

(a) this Agreement; and

(b) all other agreements and documents forming part hereof or referred to herein,

i.e. the Agreement at (a) above shall prevail over the agreements and documents at (b) above.

1.4.2 Subject to the provisions of Clause 1.4.1, in case of ambiguities or discrepancies within this Agreement, the following shall apply:

(a) between two or more Clauses of this Agreement, the provisions of a specific Clause relevant to the issue under consideration shall prevail over those in other Clauses;

(b) between the Clauses of this Agreement and the Schedules, the Clauses shall prevail and between Schedules and Annexes, the Schedules shall prevail;

(c) between any two Schedules, the Schedule relevant to the issue shall prevail;

(d) between the written description on the drawings and the Specifications and Standards, the latter shall prevail;

(e) between the dimension scaled from the drawing and its specific written dimension, the latter shall prevail; and

(f) between any value written in numerals and that in words, the latter shall prevail.

Part II

The Procurement Contract

ARTICLE 2

SCOPE OF THE PROJECT

2.1 Scope of the Project

The scope of the Agreement (the "**Scope of the Agreement**") shall mean and include, during the Contract Period:

(a) ensure the operation and maintenance of the Power Station(s), situated at the Site(s) described in Schedule-A and having the principal features stated therein, in accordance with the provisions of this Agreement;

(b) supply of electricity to the Procurer in accordance with the provisions of this Agreement; and

(c) performance and fulfilment of all other obligations of the Supplier and the Procurer, as the case may be, in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Supplier under this Agreement.

ARTICLE 3

GRANT OF PROCUREMENT CONTRACT

3.1 The Grant of Procurement Contract

3.1.1 Subject to and in accordance with the provisions of this Agreement, Applicable Laws and the Applicable Permits, the Procurer hereby awards to the Supplier the procurement contract set forth herein for generating electricity at the Power Station(s)" for supply thereof to the Procurer for a period of 25 years commencing from the Appointed Date (the "**Procurement Contract**"), and the Supplier hereby accepts the Procurement Contract and agrees to implement the same subject to and in accordance with the terms and conditions set forth herein.

Provided that at any time 3 (three) months, prior to the expiry of the Contract Period specified hereinabove, the Parties may with mutual agreement extend the Contract Period for such further period for five year with same terms and conditions set forth herein.

3.1.2 Subject to and in accordance with the provisions of this Agreement, the Procurement Contract hereby awarded shall oblige or entitle (as the case may be) the Supplier to:

(a) Finance, own, operate and maintain the Power Station(s) in accordance with this Agreement", or ensure that the Developer finances, owns, operates and maintains the Power Station(s) in accordance with this Agreement";

(b) procure if Supplier Supply of the Capacity for generation of electricity and Supply of Electricity thereof to the Procurer under and in accordance with the provisions of this Agreement, save and except as expressly provided in the Agreement;

(c) to receive Fixed Charge from the Procurer in accordance with the provisions of this Agreement;

(d) to receive Variable Charge in accordance with the provisions of this Agreement;

(e) perform and fulfil all of the Supplier's obligations under and in accordance with this Agreement;

(f) save as otherwise expressly provided in this Agreement, bear and pay all costs, expenses and charges in connection with or incidental to the performance of the obligations of the Supplier under this Agreement; and

(g) neither assign, transfer or sub-let or create any lien or Encumbrance on this Agreement, or the Procurement Contract hereby granted or on the whole or any part of the Power Station nor sell, transfer, exchange, lease or part possession thereof, save and except as expressly permitted by this Agreement", or neither assign, transfer or sub-let or create any lien or

Encumbrance on this Agreement, or the Procurement Contract hereby granted or allow the Developer to assign, transfer or sub-let or create any lien or Encumbrance on the whole or any part of the Power Station nor sell, transfer, exchange, lease or part possession thereof, save and except as expressly permitted by this Agreement.

3.2 Substitution of the Procurer

The Parties expressly agree that the Procurer may, in pursuance of any re-organisation or restructuring undertaken in pursuance of Applicable Laws, or if it is unable to discharge its liabilities and obligations under this Agreement, substitute itself by another **PVVNL, PuVVNL, MVVNL, DVVNL** and **UPPCL** and upon such substitution, all the functions, rights and obligations of the Procurer under this Agreement shall be deemed to be transferred to the substituted entity in accordance with and subject to Applicable Laws. Provided, however, that prior to any substitution hereunder, the Parties shall, on a best endeavour basis, make such arrangements and enter into such further agreements as may be necessary for performance of their respective obligations hereunder, including the rights and obligations arising out of the provisions of Article 13. Provided further that the creditworthiness of the substituted entity shall be substantially similar or greater as compared to the Procurer and in the event of any shortfall therein, credit enhancement shall be provided by the substituted entity to bridge the gap.

ARTICLE 4

CONDITIONS PRECEDENT

4.1 Conditions Precedent

4.1.1 Save and except as expressly provided in Articles 4, 5, 6, 7, 8, 9, 17, 19, 23 and 25, or unless the context otherwise requires, the respective rights and obligations of the Parties under this Agreement shall be subject to the satisfaction in full of the conditions precedent specified in this Clause 4.1 (the "**Conditions Precedent**"). Provided, however, that a Party may grant waiver from satisfaction of any Condition Precedent by the other Party in accordance with the provisions of Clauses 4.1.2 or 4.1.3, as the case may be, and to the extent of such waiver, that Condition Precedent shall be deemed to be fulfilled for the purposes of this Clause 4.1.1.

4.1.2 The Supplier may, upon providing the Performance Security to the Procurer in accordance with Article 9, at any time within 30 (Thirty) days from the date of this Agreement or on an earlier day acceptable to the Procurer, by notice require the Procurer to satisfy any or all of the Conditions Precedent set forth in this Clause 4.1.2 within a period of 30 (thirty) days of the notice, and the Conditions Precedent required to be satisfied by the Procurer shall be deemed to have been fulfilled when the Procurer shall have:

(a) executed and procured execution of the Default Escrow Agreement in accordance with the provisions of Clause 13.1;

(b) executed the Deed of Hypothecation in accordance with the provisions of Clause 13.1.2;

(c) procured adoption of the Tariff from the Appropriate Commission for payment of Tariff by the Procurer to the Supplier in accordance with the provisions of this Agreement;

Provided that upon request in writing by the Procurer, the Supplier may, in its discretion, grant extension of time, not exceeding 180 (one hundred and eighty) days, for fulfilment of the Conditions Precedent set forth in this Clause 4.1.2.

4.1.3 The Conditions Precedent required to be satisfied by the Supplier within a period of 90 (ninety) days from the date of this Agreement shall be deemed to have been fulfilled when the Supplier shall have:

a. provided Performance Security to the Procurer to be provided within 30 days;

b. deposited a certified true copy of this Agreement with the RLDC and SLDC having jurisdiction and obtained a receipt thereof, in accordance with the provisions of Clauses 14.3.3 and 19.4.1; and

c. procured access to the transmission system required for carrying electricity from the Power Station to the Delivery Point.

Provided that upon request in writing by the Supplier, the Procurer may, in its discretion, waive any of the Conditions Precedent set forth in this Clause 4.1.3 or grant extension of time, not exceeding 90 (ninety) days, for fulfilment thereof, as the case may be. For the avoidance of doubt, the Procurer may, in its sole discretion, grant any waiver hereunder, with such conditions as it may deem fit.

4.1.4 Each Party shall make all reasonable endeavours to satisfy the Conditions Precedent within the time stipulated and shall provide the other Party with such reasonable cooperation as may be required to assist that Party in satisfying the Conditions Precedent for which that Party is responsible.

4.1.5 The Parties shall notify each other in writing at least once a fortnight on the progress made in satisfying the Conditions Precedent. Each Party shall promptly inform the other Party when any Condition Precedent for which it is responsible has been satisfied.

4.2 Damages for delay by the Procurer

In the event that (i) the Procurer does not procure fulfilment or waiver of any or all of the Conditions Precedent set forth in Clause 4.1.2 within the period specified in respect thereof, and (ii) the delay has not occurred as a result of breach of this Agreement by the Supplier or due to Force Majeure, the Procurer shall pay to the Supplier Damages in an amount calculated at the rate of 0.1% (zero point one per cent) of the Performance Security for each day's delay until the fulfilment of such Conditions Precedent, subject to a maximum of 20% (twenty per cent) of the Performance Security.

If Performance Security is not provided within 30 Days, the Bid Security of the Supplier shall be encashed and appropriated by the Procurer.

4.3 Damages for delay by the Supplier

In the event that (i) the Supplier does not procure fulfilment or waiver of any or all of the Conditions Precedent set forth in Clause 4.1.3 within the period specified in that Clause and (ii) the delay has not occurred as a result of failure to fulfil the obligations under Clause 4.1.2 or other breach of this Agreement by the Procurer or due to Force Majeure, the Supplier shall pay to the Procurer Damages in an amount calculated at the rate of 0.3% (zero point three per cent) of the Performance Security for each day's delay until the fulfilment of such Conditions Precedent, subject to a maximum amount equal to the Bid Security, and upon reaching such maximum, the Procurer may, in its sole discretion, terminate the Agreement. Provided that in the event of delay by the Procurer in procuring fulfilment of the Conditions Precedent specified in Clause 4.1.2, no Damages shall be due or payable by the Supplier under this Clause 4.3 until the date on which the Procurer shall have procured fulfilment of the Conditions Precedent specified in Clause 4.1.2.

4.4 Deemed Termination upon delay

Without prejudice to the provisions of Clauses 4.2 and 4.3, and subject to the provisions of Clause 9.2, the Parties expressly agree that in the event the

Appointed Date does not occur, for any reason whatsoever, 120 (one hundred twenty) days from the date of this Agreement or the extended period provided in accordance with this Agreement, all rights, privileges, claims and entitlements of the Supplier under or arising out of this Agreement shall be deemed to have been waived by, and to have ceased with the concurrence of the Supplier, and the Hydro Power Purchase Agreement shall be deemed to have been terminated by mutual agreement of the Parties. Provided, however, that in the event the delay in occurrence of the Appointed Date is for reasons attributable to the Supplier, the Performance Security of the Supplier shall be encashed and appropriated by the Procurer as Damages thereof.

Executive Engineer (Commercial) DVVNL AGRA
Head Office: URJA BHAWAN, 220KV Sub Station
AGRA-MATHURA BYPASS ROAD
AGRA - AGRA-282007

GBHHPL	PVVNL	PuVVNL	MVVNL	DVVNL	UPPCL

मुख्य अभियन्ता (वाणिज्यिक)
उ.प्र.प.स.लि.
लखनऊ

ARTICLE 5

OBLIGATIONS OF THE SUPPLIER

5.1 Obligations of the Supplier

5.1.1 Subject to and on the terms and conditions of this Agreement, the Supplier shall, at its own cost and expense", undertake the operation and maintenance of the Power Station(s) and observe, fulfil, comply with and perform all its obligations set out in this Agreement or arising hereunder.

5.1.2 The Supplier shall comply with all Applicable Laws and other Applicable Permits (including renewals as required) in the performance of its obligations under this Agreement.

5.1.3 Save and except as otherwise provided in this Agreement or Applicable Laws, as the case may be, the Supplier shall, in discharge of all its obligations under this Agreement, conform with and adhere to Good Industry Practice at all times.

5.1.4 The Supplier shall operate and maintain the Power Station in accordance with the Specifications, Standards and the Maintenance Requirements such that the monthly supply of the Contracted Capacity of the Power Station in terms of million units is at least [***Run off the River - /Pondage – 90% (Ninety percent) without silt & 85% (Eight Five Percent) with silt/ Pumped Storage/ any other to be specified***] thereof during the peak hours pertaining to Procurers specified 6 hours during the Contract Period (the "**Contracted Supply**").

Explanation:

Supply in respect of any day shall be actual supply of power in terms of million units pertaining to the Contracted Capacity during peak hours pertaining to Procurers specified 6 hours during the Contract Period up to the Delivery Point.

The bidders shall have to provide CEA approved/certified monthly design energy for the power station for the 6 months from May to Oct during the contract period along with already tied-up firm commitments.

The Parties further agree that if the Power Station is not supplying electricity to its full capacity during any hour pertaining to the Procurer specified Peak Hours, or part thereof, not being less than a quarter of an hour, such hour or part thereof shall, in the computation of supply, be reduced proportionate to the non-supply during that hour. The Parties also agree that the determination of Supply hereunder shall be solely for the purposes of this Agreement and shall not in any manner affect the rights and obligations of the Supplier for and in respect of scheduling and despatch of electricity under Applicable Laws and the rules and regulations thereunder.

5.1.5 The Supplier shall, at its own cost and expense, in addition to and not in derogation of its obligations elsewhere set out in this Agreement:

(a) make, or cause to be made, necessary applications to the relevant Government Instrumentalities with such particulars as may be required for

obtaining Applicable Permits, and obtain and keep in force and effect such Applicable Permits in conformity with Applicable Laws; Non-grant of long term open access shall be mutually decided by the Procurer and Supplier;

(b) procure, or cause to be procured, as required, the appropriate proprietary rights, licences, agreements and permissions for materials, methods, processes, know-how and systems used or incorporated into the Power Station;

(c) ensure and procure that its comply with all Applicable Permits and Applicable Laws in the performance by them of any of the Supplier's obligations under this Agreement;

(d) always act in a manner consistent with the provisions of this Agreement and not cause or fail to do any act, deed or thing, whether intentionally or otherwise, which may in any manner be violative of any of the provisions of this Agreement or Applicable Laws;

(e) support, cooperate with and facilitate the Procurer in the implementation of this Agreement;

(f) comply with the provisions of Applicable Laws with regard to metering of supply of electricity;

(g) comply with the directions of the Commission issued from time to time under the Act.

5.2 Obligations relating to Project Agreements

It is expressly agreed that the Supplier shall, at all times, be responsible and liable for all its obligations under this Agreement notwithstanding anything contained in the Project Agreements or any other agreement, and no default under any Project Agreement or agreement shall excuse the Supplier from its obligations or liability hereunder.

5.3 Obligations relating to Change in Ownership

The Supplier shall not undertake or permit any Change in Ownership, except with the prior written approval of the Procurer.

5.4 Obligations relating to operation of the Power Station

5.4.1 The Supplier shall at all times operate the Power Station in accordance with Applicable Laws and the provisions of the Grid Code and shall comply with such directions as the RLDC/SLDC may give from time to time in accordance with the provisions of the Act.

5.4.2 The Supplier shall comply with agreements for interconnection of the Power Station to the grid, sub-stations, licensees or consumers, as the case may be, under and in accordance with Applicable Laws.

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5.5 Obligations relating to transmission charges

The Supplier shall be liable for payment of all charges, due and payable under Applicable Laws, for inter-state and intra-state transmission of electricity from the Point of Grid Connection to the Delivery Point. For the avoidance of doubt, the Parties expressly agree that inter-state and intra-state transmission of electricity shall be undertaken solely at the risk and cost of the Supplier and all liabilities arising out of any failure of inter-state and intra-state transmission shall, subject to the provisions of Clause 11.4.4, be borne by the Supplier. The Parties further agree that the obligation of the Supplier to pay the regulated charges for transmission of electricity shall be restricted to the tariffs and rates applicable on the Bid Date for and in respect of the Contracted Capacity and any differential arising from revision of the regulated tariffs and rates thereafter shall be payable or recoverable, as the case may be, by the Procurer. The Parties also agree that the regulated charges applicable for transmission of electricity referred to hereinabove as on the Bid Date shall be deemed to be Rs. 0.7160/kWh for and in respect of the Contracted Capacity, which charges shall at all times be due and payable by the Supplier.

5.6 Obligations relating to transmission losses

5.6.1 The Supplier shall be liable for the transmission losses in all inter-state and intra-state transmission of electricity from the Point of Grid Connection to the Delivery Point. For the avoidance of doubt, the Parties expressly agree that transmission of electricity shall be undertaken solely at the risk and cost of the Supplier and all liabilities arising out of any transmission losses on inter-state and intra-state transmission lines shall be borne by the Supplier. The Parties further agree that the obligation of the Supplier to bear the transmission losses shall be restricted to the level of losses determined by the Central Commission as on the Bid Date for this Project and any differential (higher or lower) arising from revision in the level of losses thereafter by the Central Commission shall be borne by the Procurer.

5.6.2 The Supplier represents and warrants that it has ascertained and assessed the applicable transmission losses from the Point of Grid Connection to the Delivery Point as determined by the Appropriate Commission for and in respect of the Bid Date, and expressed in the form of their proportion to the electricity supplied hereunder at the Point of Grid Connection. The Supplier acknowledges, agrees and undertakes that the product of such transmission losses (expressed in kWh) and the Tariff shall be due and payable by the Supplier to the Procurer and shall be adjusted in the relevant Monthly Invoice in case of reduction in Transmission Loss but Procurer has already paid to the Supplier as per the prevailing order of the Commission. For the avoidance of doubt and by way of illustration, the Parties agree that if the transmission losses in any month are equivalent to 1 (one) lakh units and the Tariff payable for that month is Rs. 3 (Rupees three) per kWh, an amount of Rs. 3,00,000/- (Rupees three lakh) shall be due and payable by the Supplier to the Procurer and shall be adjusted in the Monthly Invoice for that month.

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5.7 Obligations relating to SLDC and RLDC charges

The Supplier shall be liable for payment of all the charges, due and payable under Applicable Laws by the Supplier to the SLDC and RLDC for and in respect of all its supplies to the Procurer.

5.8 Obligations relating to taxes

The Supplier shall pay, at all times during the subsistence of this Agreement, all taxes, levies, duties, cesses and all other statutory charges payable in respect of the Power Station. Provided, however, that all payments made by the Supplier with respect to service tax, value added tax, general sales tax or electricity duty, if any, levied on or in respect of the supply of electricity to the Procurer under this Agreement shall be reimbursed by the Procurer upon receipt of particulars thereof.

5.9 Obligations relating to reporting requirements

All information provided by the Supplier to the SLDC and RLDC as a part of its operating and reporting requirements under Applicable Laws, including the Grid Code, shall also be provided by it to the Procurer simultaneously.

ARTICLE 6

OBLIGATIONS OF THE PROCURER

6.1 Obligations of the Procurer

6.1.1 The Procurer shall, at its own cost and expense undertake, comply with and perform all its obligations set out in this Agreement or arising hereunder.

6.1.2 The Procurer agrees to provide support to the Supplier and undertakes to observe, comply with and perform, subject to and in accordance with the provisions of this Agreement and Applicable Laws, the following:

(a) upon written request from the Supplier, and subject to the Supplier complying with Applicable Laws, provide reasonable support and assistance to the Supplier in procuring the Applicable Permits required from any Government Instrumentality for operation of the Project; Non-grant of long term open access shall be mutually decided by the Procurer and Supplier;

(b) not do or omit to do any act, deed or thing which may in any manner be violative of any of the provisions of this Agreement;

(c) support, cooperate with and facilitate the Supplier in the implementation and operation of the Project in accordance with the provisions of this Agreement and Applicable Laws.

6.1.3 The Procurer shall provide and facilitate non-discriminatory open access to its network for enabling the Supplier to supply electricity to Buyers in the licence area of the Procurer in accordance with the provisions of sections 42 and 49 of the Act.

Executive Engineer (Commercial) DVVNL AGRA
Head Office: JR. BHAWAN, 220KV Sub Station
AGRA-MATHURA BYPASS ROAD
[illegible] AGRA-282007

मुख्य अभियन्ता (वित्त एवं)
उ.प्र.पा.को.लि.,
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ARTICLE 7

REPRESENTATIONS AND WARRANTIES

7.1 Representations and warranties of the Supplier

The Supplier represents and warrants to the Procurer that:

(a) it is duly organised and validly existing under the laws of India, and has full power and authority to execute and perform its obligations under this Agreement and to carry out the transactions contemplated hereby;

(b) it has taken all necessary corporate and other actions under Applicable Laws to authorise the execution and delivery of this Agreement and to validly exercise its rights and perform its obligations under this Agreement;

(c) this Agreement constitutes its legal, valid and binding obligation, enforceable against it in accordance with the terms hereof, and its obligations under this Agreement will be legally valid, binding and enforceable obligations against it in accordance with the terms hereof;

(d) it is subject to the laws of India, and hereby expressly and irrevocably waives any immunity in any jurisdiction in respect of this Agreement or matters arising thereunder including any obligation, liability or responsibility hereunder;

(e) the information furnished in the Bid and as updated on or before the date of this Agreement is true and accurate in all respects as on the date hereof;

(f) the execution, delivery and performance of this Agreement will not conflict with, result in the breach of, constitute a default under, or accelerate performance required by any of the terms of its Memorandum and Articles of Association or any Applicable Laws or any covenant, contract, agreement, arrangement, understanding, decree or order to which it is a party or by which it or any of its properties or assets is bound or affected;

(g) there are no actions, suits, proceedings, or investigations pending or, to its knowledge, threatened against it at law or in equity before any court or before any other judicial, quasi-judicial or other authority, the outcome of which may result in the breach of this Agreement or which individually or in the aggregate may result in any material impairment of its ability to perform any of its obligations under this Agreement;

(h) it has no knowledge of any violation or default with respect to any order, writ, injunction or decree of any court or Government Instrumentality which may result in any material adverse effect on its ability to perform its obligations under this Agreement and no fact or circumstance exists which may give rise to such proceedings that would adversely affect the performance of its obligations under this Agreement;

(i) it has complied with Applicable Laws in all material respects and has not been subject to any fines, penalties, injunctive relief or any other civil or criminal liabilities which in the aggregate have or may have a material adverse effect on its ability to perform its obligations under this Agreement;

(j) it shall at no time undertake or permit any Change in Ownership except in accordance with the provisions of Clause 5.3; and that its promoters together, hold not less than 51% (fifty one per cent) of its issued and paid up Equity as on the date of this Agreement;

(k) the Selected Bidder and have the financial standing and resources to fund the required Equity and to raise the debt necessary for undertaking and implementing the Project in accordance with this Agreement;

(l) the Selected Bidder is duly organised and validly existing under the laws of the jurisdiction of its incorporation or registration, as the case may be, and has requested the Procurer to enter into this Agreement with pursuant to the Letter of Award, and has agreed to and unconditionally accepted the terms and conditions set forth in this Agreement;

(m) no representation or warranty by it contained herein or in any other document furnished by it to the Procurer or to any Government Instrumentality in relation to Applicable Permits contains or will contain any untrue or misleading statement of material fact or omits or will omit to state a material fact necessary to make such representation or warranty not misleading;

(n) no sums, in cash or kind, have been paid or will be paid, by it or on its behalf, to any person by way of fees, commission or otherwise for securing the Supply Contract or entering into this Agreement or for influencing or attempting to influence any officer or employee of the Procurer in connection therewith;

(o) all information provided by the Selected Bidder in response to the Request for Qualification and Request for Proposals or otherwise, is to the best of its knowledge and belief, true and accurate in all material respects; and

(p) all undertakings and obligations of the Supplier arising from the Request for Qualification and Request for Proposals or otherwise shall be binding on the Supplier as if they form part of this Agreement.

7.2 Representations and warranties of the Procurer

The Procurer represents and warrants to the Supplier that:

(a) it has full power and authority to execute, deliver and perform its obligations under this Agreement and to carry out the transactions contemplated herein and that it has taken all actions necessary to execute this Agreement, exercise its rights and perform its obligations, under this Agreement;

(b) it has taken all necessary actions under Applicable Laws to authorise the execution, delivery and performance of this Agreement;

(c) it has the financial standing and capacity to perform its obligations under this Agreement;

(d) this Agreement constitutes a legal, valid and binding obligation enforceable against it in accordance with the terms hereof;

(e) it has no knowledge of any violation or default with respect to any order, writ, injunction or any decree of any court or any legally binding order of any Government Instrumentality which may result in any material adverse effect on the Procurer's ability to perform its obligations under this Agreement; and

(f) it has complied with Applicable Laws in all material respects.

7.3 Disclosure

In the event that any occurrence or circumstance comes to the attention of either Party that renders any of its aforesaid representations or warranties untrue or incorrect, such Party shall immediately notify the other Party of the same. Such notification shall not have the effect of remedying any breach of the representation or warranty that has been found to be untrue or incorrect nor shall it adversely affect or waive any right, remedy or obligation of either Party under this Agreement.

ARTICLE 8

DISCLAIMER

8.1 Disclaimer

8.1.1 The Supplier acknowledges that prior to the execution of this Agreement, the Supplier has, after a complete and careful examination, made an independent evaluation of the Bidding Document, Scope of the Agreement, Specifications and Standards, transmission network, Site, existing structures, local conditions, and any information provided by the Procurer or obtained, procured or gathered otherwise, and has determined to its satisfaction the accuracy or otherwise thereof and the nature and extent of difficulties, risks and hazards as are likely to arise or may be faced by it in the course of performance of its obligations hereunder. The Procurer makes no representation whatsoever, express, implicit or otherwise, regarding the accuracy, adequacy, correctness, reliability and/or completeness of any assessment, assumption, statement or information provided by it and the Supplier confirms that it shall have no claim whatsoever against the Procurer in this regard.

8.1.2 The Supplier acknowledges and hereby accepts the risk of inadequacy, mistake or error in or relating to any of the matters set forth in Clause 8.1.1 above and hereby acknowledges and agrees that the Procurer shall not be liable for the same in any manner whatsoever to the Supplier, or any person claiming through or under any of them.

8.1.3 The Parties agree that any mistake or error in or relating to any of the matters set forth in Clause 8.1.1 above shall not vitiate this Agreement, or render it voidable.

8.1.4 In the event that either Party becomes aware of any mistake or error relating to any of the matters set forth in Clause 8.1.1 above, that Party shall immediately notify the other Party, specifying the mistake or error; provided, however, that a failure on part of the Procurer to give any notice pursuant to this Clause 8.1.4 shall not prejudice the disclaimer of the Procurer contained in Clause 8.1.1 and shall not in any manner shift to the Procurer any risks assumed by the Supplier pursuant to this Agreement.

8.1.5 Except as otherwise provided in this Agreement, all risks relating to the Project shall be borne by the Supplier and the Procurer shall not be liable in any manner for such risks or the consequences thereof.

INDIA NON JUDICIAL

Government of National Capital Territory of Delhi

e-Stamp

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Certificate No.	:	**IN-DL26732940153554P**
Certificate Issued Date	:	04-Sep-2017 08:16 PM
Account Reference	:	IMPACC (IV)/ dl942203/ DELHI/ DL-DLH
Unique Doc. Reference	:	SUBIN-DLDL94220354013111672434P
Purchased by	:	DELHI INTERNATIONAL AIRPORT LIMITED
Description of Document	:	Article 5 General Agreement
Property Description	:	Not Applicable
Consideration Price (Rs.)	:	0 (Zero)
First Party	:	DELHI INTERNATIONAL AIRPORT LIMITED
Second Party	:	Not Applicable
Stamp Duty Paid By	:	DELHI INTERNATIONAL AIRPORT LIMITED
Stamp Duty Amount(Rs.)	:	150 (One Hundred And Fifty only)

Please write or type below this line

This Stamp Paper forms part and parcel of the Power Purchase Agreement dated September 11, 2017 entered by and between Delhi International Airport Limited and GMR Kajala Hob Hydropower Private Limited.

Delhi International Airport Ltd

GMR Baloji Hob Hydropower Pvt. Ltd.

POWER PURCHASE AGREEMENT

FOR THE PROCUREMENT OF POWER FROM A POWER STATION

AS A

CAPTIVE USER

BETWEEN

DELHI INTERNATIONAL AIRPORT LIMITED

(formerly known as Delhi International Airport Private Limited)

AND

GMR BAJOLI HOLI HYDROPOWER PRIVATE LIMITED

Contents

Part I

Preliminary

POWER PURCHASE AGREEMENT

THIS POWER PURCHASE AGREEMENT is entered into and made at New Delhi on this 11th day of September, 2017

BY AND BETWEEN

(1) **Delhi International Airport Limited** (formerly known as Delhi International Airport Private Limited), a company incorporated under the Companies Act, 1956 and having its registered office at New Udaan Bhawan, Opposite Terminal - 3, Indira Gandhi International Airport, New Delhi 110 037 (hereinafter referred to as "**DIAL**", which expression shall, unless repugnant to or inconsistent with the context, mean and include its successors and assigns) of the **First Part**;

AND

(2) **GMR Bajoli Holi Hydropower Private Limited** , a company incorporated under the provisions of the Companies Act, 1956 / 2013 and having its registered office at Rattan Chand Building, VPO Kuleth, Sub-Tehsil Holi, Distt. Bharmour, Chamba, Himachal Pradesh - 176236, (hereinafter referred to as the "**Supplier**" which expression shall, unless repugnant to the context or meaning thereof, include its successors and permitted assigns and substitutes) of the **Second Part**.

Each of DIAL and Supplier are individually referred to as a "**Party**" and collectively referred to as the "**Parties**".

WHEREAS:

(A) DIAL being a large consumer of electricity on account of operating, managing and developing the Airport and for the purpose of reducing the cost of electricity, intends to procure/consume electricity as a captive user on a long term basis from the Power Station to meet its Annual Energy Requirement in accordance with the terms and conditions to be set forth in a power purchase agreement and the provisions of the Electricity Act, 2003.

(B) DIAL further wishes to procure equity stake in the Supplier such that the Power Station will be regarded as a "Captive Generating Plant" as defined in the Electricity Rules, 2005.

(C) DIAL had accordingly invited proposals by its request for proposal dated 08.12.2016 (as amended by way of an addendum on February 9, 2017) (the "**Request For Proposal**" or "**RFP**") for selection of Bidders who offer to supply electricity from a Captive Generating Plant, as per terms of the Project

Agreements.

(D) DIAL had prescribed the technical and commercial terms and conditions by its Request for Proposal and invited Bids pursuant to the RFP for undertaking the Project (as defined herein below).

(E) After evaluation of the Bids received, DIAL had accepted the Bid of the Selected Bidder and upon completion of the due diligence process carried out by DIAL issued the Letter of Award Ref. No. DIAL/2017-18/Fin/780 dated August 31, 2017 (hereinafter called the **"LOA")** to the Selected Bidder requiring, *inter alia,* the execution of this long term power purchase agreement (the **"Power Purchase Agreement"** or **"PPA").**

(F) Pursuant to the (i) issuance of LOA dated August 31, 2017 by DIAL, (ii) confirmation by the Supplier of the completion of the CP's as mentioned in the LOA, the Parties have agreed to enter into this Power Purchase Agreement on the terms and conditions set forth hereinafter.

NOW, THEREFORE, in consideration of the foregoing, the respective covenants, terms and conditions and understandings set forth in this Power Purchase Agreement, the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound hereby, the Parties agree as follows:

(Intentionally left blank)

ARTICLE 1

1. DEFINITIONS AND INTERPRETATION

1.1 Definitions

The words and expressions beginning with capital letters and defined in this Agreement shall, unless the context otherwise requires, have the meaning ascribed thereto herein, and the words and expressions defined in the Schedules and used therein shall have the meaning ascribed thereto in the Schedules.

"Accounting Year" or **"Financial Year"** means the financial year commencing from the first day of April of any calendar year and ending on the thirty-first day of March of the next calendar year;

"Acquisition Price of Equity" shall mean the consideration in Rs.108.33,33,340/- (Rupees One Hundred Eight Crore Thirty Three Lacs Thirty Three Thousand Three Hundred and Forty only) in lieu of the equity stake offered by the Bidder in the special purpose vehicle (SPV) to DIAL;

"Act" means the Electricity Act, 2003;

"Additional Surcharge" shall mean the surcharge payable by open access consumers in accordance with Section 42 of the Electricity Act, 2003, and as determined by the Appropriate Commission through regulations and tariff orders, from time to time;

"Adjustment Amount" shall have the meaning as set forth in Clause 12.3;

"Affected Party" shall have the meaning as set forth in Clause 16.1;

"Agreement" or **"Power Purchase Agreement"** means this Agreement, its Recitals, the Schedules hereto and any amendments thereto made in accordance with the provisions contained in this Agreement;

"Agreement Date" shall mean the date of signing of the Power Purchase Agreement and the Share Subscription cum Shareholders' Agreement, which shall be signed together on same day, between the Supplier and DIAL;

Airport shall mean the Indira Gandhi International Airport at Delhi;

"Annual Energy Requirement" shall have the meaning as set forth in Clause 11.1.1;

"Applicable Laws" means all applicable laws in force and effect as of the date hereof and which may be promulgated or brought into force and effect hereinafter in India including bye-laws, statutes, rules, regulations, orders, ordinances, protocols, codes, guidelines, policies, notices, directions, judgments, decrees or other requirements or official directive of any Governmental Authority or person acting under the authority of any governmental authority and/or of any statutory authority in the Republic of India, and

specifically including the AAI , Bureau of Civil Aviation Security ("**BCAS**"), the authorities concerned under the Electricity Act, 2003 read with rules made thereunder and the rules, regulations and guidelines (including policies and circulars) framed by DIAL from time to time as the airport operator, whether in effect on the execution date or thereafter;

"Applicable Permits" means all clearances, licences, permits, authorisations, no objection certificates, consents, approvals and exemptions required to be obtained or maintained under Applicable Laws in connection with the construction, operation and maintenance of the Power Station during the subsistence of this Agreement;

"Appointed Date" means the date on which all the Conditions Precedent are achieved, and every Condition Precedent is either satisfied or waived, as the case may be, in accordance with the provisions of this Agreement, and such date shall be the date of commencement of the Contract Period;

"Appropriate Commission" shall mean the CERC, or the SERC or the Joint Commission referred to in Section 83 of the Electricity Act 2003, as the case may be;

"Arbitration Act" means the Arbitration and Conciliation Act, 1996 and shall include modification/amendment to or any re-enactment thereof, as in force from time to time;

"Associate" or **"Affiliate"** means, a company that either directly or indirectly

i. controls or
ii. is controlled by or
iii. is under common control with

a bidding company and "control" shall mean ownership by one company of at least twenty six percent (26%) of the voting rights of the other company. "Controlling" and "Controlled by" shall be construed accordingly;

"Availability Based Tariff" or **"ABT"** shall mean all the regulations contained in the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2004, as amended or revised from time to time, to the extent applied as per the terms of this Agreement;

"Bank Rate" means the rate of interest specified by the Reserve Bank of India from time to time in pursuance of section 49 of the Reserve Bank of India Act, 1934 or any replacement of such Bank Rate for the time being in effect;

"Base Year" means the Accounting Year in which the Bid Date occurred;

"Bid" means the documents in their entirety comprised in the Bid submitted by the Interested Parties in response to the Request for Proposal in accordance with the provisions thereof and **"Bids"** shall mean the Bids submitted by any and all Bidders;

"Bid Date" means the last date on which the Bid may have been submitted in accordance with the provisions of the Request for Proposal;

"Bid Security" means the security provided by the Supplier to DIAL along with the Bid, in a sum of Rs. 5,00,000 (Rupees Five Lacs only) in accordance with the Request for Proposal, and which is to remain in force until substituted by the Performance Security;

"Buy Back" shall have the meaning as defined in the Share Subscription cum Shareholders' Agreement;

"Buy Back Price" shall have the meaning as defined in the Share Subscription cum Shareholders' Agreement;

"Buyer(s)" shall mean the third parties buying electricity from the Power Station, in accordance with the provisions of this Agreement and Applicable Laws;

"Carrying Cost of Equity per Unit" shall mean the product of aggregate Acquisition Price of Equity and fourteen percent (14%), of this aggregate amount shall be the Carrying Cost of Equity for any Accounting Year. The Carrying Cost of Equity per Unit shall be computed by dividing the Carrying Cost of Equity by the total units of energy consumed in any Accounting Year;

"Change in Law" means the occurrence of any of the following after the Bid Date:

(a) the enactment of any new Indian law;

(b) the repeal, modification or re-enactment of any existing Indian law;

(c) the commencement of any Indian law which has not entered into effect until the Bid Date;

(d) a change in the interpretation or application of any Indian law by a judgement of a court of record which has become final, conclusive and binding, as compared to such interpretation or application by a court of record prior to the Bid Date; or

(e) any change in the rates of any of the Taxes that have a direct effect on the Project;

"Change in Ownership" means a transfer of the direct and/or indirect legal or beneficial ownership of any shares, or securities convertible into shares, that causes the aggregate holding of the Existing Shareholders in the total Equity to decline below 26% (twenty six per cent) thereof during the term of the PPA or the period of 10 (ten) years following COD, whichever is earlier, or such lower proportion as may be permitted by DIAL upon substitution of the promoters of the Supplier by an entity having sufficient financial and technical capacity to discharge the obligations of the Supplier under this Agreement;

"Commission" means the Appropriate Commission or any successor thereof duly constituted under the Act;

"Company" means the company acting as the Supplier under this Agreement;

"Conditions Precedent" shall have the meaning as set forth in Clause 4.1.1;

"Construction Period" means the period beginning from the Appointed Date and ending on date of declaration of commercial operation;

"Contract Capacity" shall have the meaning as set forth in Clause 11.2.1;

"Contract Period" means the period starting on and from the Appointed Date and ending on 3rd May 2036 in accordance with Clause 3.1.1;

"Council" shall have meaning as ascribed in Clause 16.7;

"Cost of RPO" shall mean the cost incurred by DIAL in meeting renewable purchase obligations applicable on DIAL for any Financial Year as per relevant regulations and orders of the DERC;

"Cross Subsidy Surcharge" shall mean the surcharge payable by open access consumers in accordance with Section 38, Section 39 and Section 42 of the Electricity Act, 2003, and as determined by the Appropriate Commission through regulations and tariff orders, from time to time;

"Cure Period" means the period specified in this Agreement for curing any breach or default of any provision of this Agreement by the Party responsible for such breach or default and shall:

(a) commence from the date on which a notice is delivered by one Party to the other Party requiring the latter to cure the breach or default specified in such notice;

(b) not relieve any Party from liability to pay damages or compensation under the provisions of this Agreement; and

provided that if the cure of any breach by the Supplier requires any reasonable action by the Supplier that must be approved by DIAL hereunder, the applicable Cure Period shall be extended by the period taken by DIAL or to accord their approval;

"Damages" shall have the meaning as set forth in Sub-clause (w) of Clause 1.2.1;

"Decommissioning due to Emergency or Forced Outage" shall mean de-commissioning or shut down of the whole or any part of the Power Station due to an Emergency or Forced Outage situation, as the case may be. The Supplier shall be entitled to de-commission or shut down the whole or any part of the Power Station for so long as such Emergency or Forced Outage and the consequences thereof warrant; provided that such de-commissioning or shut down and particulars thereof shall be notified by the Supplier to DIAL, the RLDC and the SLDC without any delay, and the Supplier shall diligently carry out and abide by any reasonable directions that DIAL, the

RLDC or the SLDC may give for dealing with such Emergency or Forced Outage;

"Delivery Points" means the receiving substations of DIAL as per Schedule -F where the electricity supplied under this Agreement will be received by DIAL;

"Despatch" shall have the meaning as set forth in Clause 14.2.1;

"Deviation" in a time-block for a seller means its total actual injection minus its total scheduled generation and for a procurer means its total actual drawal minus its total scheduled drawal (as per DSM Regulations);

"DIAL's Default" shall have the meaning as set forth in Clause 18.2.1;

"DIAL's Representative" means such person or persons as may be authorised in writing by DIAL to act on its behalf under this Agreement and shall include any person or persons having authority to exercise any rights or perform and fulfil any obligations of DIAL under this Agreement;

"Dispute" shall have the meaning as set forth in Clause 22.1.1;

"Disputed Amounts" shall have the meaning as set forth in Clause 12.4.3;

"Dispute Resolution Procedure" means the procedure for resolution of Disputes as set forth in Article 22;

"Distribution Licensee" or **"DISCOM"** means a person who has been granted a license under section 14 of the Electricity Act, 2003 to distribute electricity as a distribution licensee and includes **"BSES Rajdhani Private Limited"** or **"BRPL"** as the existing distribution licensee;

"Document" or **"Documentation"** means documentation in printed or written form, or in tapes, discs, drawings, computer programmes, writings, reports, photographs, films, cassettes, or expressed in any other written, electronic, audio or visual form;

"DSM Regulations" means the Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) Regulations 2014;

"Emergency" means a condition or situation that is likely to endanger the security of the individuals on or about the Power Station, including Buyers thereof, or which poses an immediate threat of material damage to any of the Project Assets;

"Encumbrances" means, in relation to the Power Station, any encumbrances such as mortgage, charge, pledge, lien, hypothecation, security interest, assignment, privilege or priority of any kind having the effect of security or other such obligations, and shall include any designation of loss payees or beneficiaries or any similar arrangement under any insurance policy pertaining to the Power Station, where applicable herein but excluding utilities;

"Equity" means the sum expressed in Indian Rupees representing the paid up equity share capital of the Supplier for meeting the equity component of the Total Project Cost;

Existing Shareholders shall mean such shareholders of the Selected Bidder cumulatively holding 100% of the issued and paid up equity share capital of the Bidder as on date of execution of the Project Agreements;

"Financial Close" means the fulfilment of all conditions precedent to the initial availability of funds under the Financing Agreements;

"Financial Model" means the financial model adopted by Lenders, setting forth the capital and operating costs of the Project and revenues therefrom on the basis of which financial viability of the Project has been determined by the Lenders, and includes a description of the assumptions and parameters used for making calculations and projections therein;

"Financial Package" means the financing package indicating the total capital cost of the Power Station and the means of financing thereof, as set forth in the Financial Model and approved by the Lenders, and includes Equity, all financial assistance specified in the Financing Agreements and subordinated debt, if any;

"Financing Agreements" means the agreements executed by the Supplier in respect of financial assistance to be provided by the Lenders by way of loans, guarantees, subscription to non-convertible debentures and other debt instruments including loan agreements, guarantees, notes, debentures, bonds and other debt instruments, security agreements, and other documents relating to the financing (including refinancing) of the Total Project Cost, and includes amendments or modifications as per provisions of this Agreement;

"Fixed Charges" shall mean the fixed monthly charges payable by DIAL to the DISCOM for maintaining the connection for supply of power, in case it so decides;

"Force Majeure" or **"Force Majeure Event"** shall have the meaning ascribed to it in Clause **Error! Reference source not found.**;

"Forced Outage" means an outage of the Power Station due to a fault or any other reason which was not anticipated and includes any tripping's, breakdown or unscheduled shutdown and an Emergency;

"GOI" means the Government of India;

"Good Industry Practice" means the practices, methods, techniques, designs, standards, skills, diligence, efficiency, reliability and prudence which are generally and reasonably expected from a reasonably skilled and experienced operator engaged in the same type of undertaking as envisaged under this Agreement and which would be expected to result in the performance of its obligations by the Supplier in accordance with this Agreement,

Applicable Laws and Applicable Permits in reliable, safe, economical and efficient manner, and includes prudent DIAL practices generally accepted by electricity generating stations for ensuring safe, economic and efficient construction, operation and maintenance of the Power Station and for providing safe, economic, reliable and efficient supply of electricity;

"Government" means the Government of India or the Government of the State, as the case may be;

"Government Instrumentality" means any department, division or sub-division of the Government of India or the State Government and includes any commission, board, authority, agency or municipal and other local authority or statutory body, including Panchayat, under the control of the Government of India or the State Government, as the case may be, and having jurisdiction over all or any part of the Power Station or the performance of all or any of the services or obligations of the Supplier under or pursuant to this Agreement;

"Grid" means the high voltage backbone system of inter-connected transmission lines and sub-stations;

"Grid Code" means the India Electricity Grid Code, 2010 or any substitute thereof

"Indemnified Party" means the Party entitled to the benefit of an indemnity pursuant to Article 21;

"Indemnifying Party" means the Party obligated to indemnify the other Party pursuant to Article 21;

"Insurance Cover" means the aggregate of the maximum sums insured under the insurances taken out by the Supplier pursuant to Article 15, and includes all insurances required to be taken out by the Supplier under Clause 15.2 but not actually taken, and when used in the context of any act or event, it shall mean the aggregate of the maximum sums insured and payable or deemed to be insured and payable in relation to such act or event;

"Interested Parties" shall mean the person who are engaged in the business of generation of electricity including Affiliate thereof, to whom the RFP has been issued;

"Late Payment Surcharge" shall have the meaning as set forth in Clause 12.6 of this Agreement;

"LOA" or **"Letter of Award"** means the letter of award referred to in Recital (D);

"Lenders" means one or more financial institutions, banks, multilateral lending agencies, trusts, funds and agents or trustees of debenture holders, including their successors and assignees, who have agreed to guarantee or provide finance to the Supplier under any of the Financing Agreements for meeting all or any part of the Total

Project Cost;

"Lenders' Representative" means the person duly authorised by the Lenders to act for and on behalf of the Lenders with regard to matters arising out of or in relation to this Agreement, and includes his successors, assigns and substitutes;

"Letter of Credit" shall have the meaning as set forth in Clause 13.1.1;

"Material Adverse Effect" means a material adverse effect of any act or event on the ability of either Party to perform any of its obligations under and in accordance with the provisions of this Agreement and which act or event causes a material financial burden or loss to either Party;

"Meters" or "Metering System" shall mean meters used for accounting and billing of electricity in accordance with Central Electricity Authority (Installation and Operations of Meters) Regulations, 2006, Grid Code and ABT, as amended from time to time;

"Minimum Monthly Payment" shall have the meaning as set forth in Clause 13.1.1;

"Minimum Guaranteed Offtake" shall have the meaning as ascribed in Clause 11.1.2.

"Monthly Invoice" shall have the meaning as set forth in Clause 12.4.1;

"Notice Shortfall Period" shall have the meaning set forth in Clause 18.5.1;

"OMDA" shall mean the Operation Management and Development Agreement dated April 4th, 2006, entered into between AAI and DIAL;

"O&M" means the operation and maintenance of the Power Station and includes all matters connected with or incidental to such operation and maintenance, and provision of generating and transmission services and facilities in accordance with the provisions of this Agreement;

"O&M Contract" means the contract, if any, which the Supplier has entered into with any person for discharging O&M obligations for and on behalf of the Supplier;

"O&M Expenses" means expenses incurred by or on behalf of the Supplier or by DIAL, as the case may be, for all O&M including (a) cost of salaries and other compensation to employees, (b) cost of materials, supplies, utilities and other services, (c) premia for insurance, (d) all taxes, duties, cess and fees due and payable for O&M, (e) all repair, replacement, reconstruction, reinstatement, improvement and maintenance costs, (f) payments required to be made under the O&M Contract or any other contract in connection with or incidental to O&M, and (g) all other expenditure required to be incurred under Applicable Laws, Applicable Permits or this Agreement;

"Operation Period" means the period commencing from Scheduled Supply Commencement Date and ending on 3rd May 2036;

"Operations Agreements" means the documents and agreement relating to fuel tie up and agreements relating to operations and maintenance including O&M Contract, if any, for the period as specified by the power procurer;

"Parties" means the parties to this Agreement collectively and "Party" shall mean any of the parties to this Agreement individually;

"Payment Due Date" shall have the meaning as set forth in Clause 12.4.3;

"Performance Security" shall have the meaning as set forth in Clause 9.1.1;

"Point of Grid Connection" means the point of interconnection at which the electricity generated by the Power Station is transferred to the Grid;

"Power Station" shall have the meaning as set forth in Clause 2.3;

"Power Purchase Cost' shall have the meaning as set forth in Clause 12.1.1;

"Project" shall have the meaning as set forth in Clause 2.1;

"Project Agreements" shall collectively refer to the Power Purchase Agreement and the Shareholder's Agreement;

"Project Assets" means all physical and other assets relating to and forming part of the Project including:

a. rights over the Site in the form of licence, Line ROW or otherwise; tangible assets such as civil works and equipment including foundations, embankments, pavements, electrical systems, communication systems, administrative offices and Sub-stations;
b. all rights of the Supplier under the Project Agreements;
c. financial assets, such as receivables, security deposits etc.;
d. insurance proceeds; and
e. Applicable Permits and authorisations relating to or in respect of the Power Station;

"RLDC" means the Regional load Despatch Centre as specified in the Act;

"Reactive Energy Charge" shall mean the charge for "non-working" power, or power that has to be made up due to inefficiencies at the customer's load source and the charge shall be as determined by the Appropriate Commission through regulations and tariff orders, from time to time for open access customers.;

"Re.", **"Rs."** or **"Rupees"** or **"Indian Rupees"** means the lawful currency of the Republic of India;

"Request For Proposal" or **"RFP"** shall have the meaning as set forth in Recital (B);

"Revenues" means all of the present and future funds, payment obligations, monies, claims, bills and any other property whatsoever which may from time to time be derived from or accrue to or be offered or due to DIAL in the form of cash receipts or receivables from any and all sources, save and except any capital receipts of DIAL for and in relation to any capital expenditure for creation of assets;

"Sale Shares" shall have the meaning as ascribed in the Share Subscription cum Shareholders' Agreement;

"SLDC" means the State Load Despatch Centre as specified in the Act;

"SLDC/RLDC Charges" shall have the meaning as ascribed in Clause 12.1.1;

"Scheduled Maintenance" shall mean any maintenance carried out by the Supplier as notified to DIAL no later than 15 (fifteen) days prior to the beginning of each Accounting Year during the Operation Period, as the case may be, regarding its proposed annual programme of preventive, urgent and other scheduled maintenance;

"Scheduled Supply Commencement Date" shall mean 1st April, 2019, the date of start of supply of electricity to DIAL, under this Agreement;

"Scope of the Project" shall have the meaning as set forth in Clause 2.2;

"Special Purpose Vehicle" or "SPV" shall mean a company incorporated under the Companies Act 1956/2013 owning the Power Station;

"Standby Charges" shall mean the charges payable by the open access consumers to the Distribution Licensee for availing standby power backup facilities, as determined in the tariff orders by Appropriate Commission from time to time;

"State" means the National Capital Territory of Delhi, in which DIAL is situated;

"Statement of Expenses" shall have the meaning as set forth in Clause 12.3;

"State Transmission Utility or STU" shall mean the Board or the Government Company specified as such by the State Government under sub-section (1) of section 39;

"Sub-station" means a station for transforming or converting electricity for the transmission thereof and includes transformers, converters, switchgears, capacitors, synchronous condensers, structures, cable and other appurtenant equipment and any buildings used for that purpose and the site thereof;

"Supplier" shall have the meaning attributed thereto in the array of Parties as set forth in the Recitals;

"Supplier Default" shall have the meaning as set forth in Clause 18.1.1;

"Supply Contract" shall have the meaning as set forth in Clause 3.1.1;

"Tariff" shall have the meaning as set forth in Clause 12.1.1 and as elaborated in Clause 12.1.2;

"Taxes" means any Indian taxes including goods and services tax local taxes, cess and any impost or surcharge of like nature (whether Central, State or local) on the goods, materials, equipment and services incorporated in and forming part of the Power Station and which is charged, levied or imposed by any Government Instrumentality, but excluding any interest, penalties and other sums in relation thereto imposed on any account whatsoever. For the avoidance of doubt, Taxes shall not include taxes on corporate income;

"Termination" means the expiry or termination of this Agreement and the Supply Contract hereunder;

"Termination Notice" means the communication issued in accordance with this Agreement by one Party to the other Party terminating this Agreement;

"Termination Payment" means the amount payable, by the defaulting party to the other party, under and in accordance with the provisions of this Agreement, upon Termination thereof;

"Total Project Cost" means the capital cost incurred on construction and financing of the Power Station and shall be limited to the lower of:

(a) the capital cost of the Power Station as set forth in the Financial Package; and
(b) the actual capital cost of the Power Station upon completion of Construction;

"Transfer Date" means the date on which this Agreement and the Supply Contract hereunder expires pursuant to the provisions of this Agreement or is terminated by a Termination Notice;

"Unit Closure" shall mean shut down or de-commission any Unit of the Power Station for undertaking maintenance or repair works, not forming part of the Maintenance Programme, with the prior written intimation to DIAL at least 7 (seven) days before the proposed closure of such Unit and which shall be accompanied by particulars thereof;

"Unscheduled Maintenance" shall mean any maintenance or repair of the Power Station not forming part of Scheduled Maintenance. For the avoidance of doubt, the Parties agree that any decommissioning or shut down of the whole or any part of the Power Station shall be deemed to be Unscheduled Maintenance;

"Wheeling Charges" shall mean the charges payable by the open access consumer to the DISCOM for transmission of electricity in the distribution network of the DISCOM as determined in the tariff orders by Appropriate Commission from time to time;

"Unit" means a unit of the Power Station which is equipped with a turbine and associated facilities for generation of electricity independently of other units at the Power Station.

1.2 Interpretation

1.2.1 In this Agreement, unless the context otherwise requires,

(a) references to any legislation or any provision thereof shall include amendment or re-enactment or consolidation of such legislation or any provision thereof so far as such amendment or re-enactment or consolidation applies or is capable of applying to any transaction entered into hereunder;

(b) references to laws of the State, laws of India or Indian law or regulation having the force of law shall include the laws, acts, ordinances, rules, regulations, bye laws or notifications which have the force of law in the territory of India and as from time to time may be amended, modified, supplemented, extended or re-enacted;

(c) references to a **"person"** and words denoting a natural person shall be construed as a reference to any individual, firm, company, corporation, society, trust, government, state or agency of a state or any association or partnership (whether or not having separate legal personality) of two or more of the above and shall include successors and assigns;

(d) the table of contents, headings or sub-headings in this Agreement are for convenience of reference only and shall not be used in, and shall not affect, the construction or interpretation of this Agreement;

(e) the words **"include"** and **"including"** are to be construed without limitation and shall be deemed to be followed by **"without limitation"** or **"but not limited to"** whether or not they are followed by such phrases;

(f) any reference to any period of time shall mean a reference to that according to Indian Standard Time;

(g) any reference to "hour" shall mean a period of 60 (sixty) minutes commencing either on the hour or on the half hour of the clock, which by way of illustration means 5.00 (five), 6.00 (six), 7.00 (seven) and so on being hours on the hour of the clock and 5.30 (five thirty), 6.30 (six thirty), 7.30 (seven thirty) and so on being hours on the half hour of the clock;

(h) any reference to day shall mean a reference to a calendar day;

(i) reference to a **"business day"** shall be construed as reference to a day (other than a Sunday) on which banks in the State where the Power Station is situate are generally open for business;

(j) any reference to month shall mean a reference to a calendar month as

per the Gregorian calendar;

(k) references to any date or period shall mean and include such date or period as may be extended pursuant to this Agreement;

(l) any reference to any period commencing **"from"** a specified day or date and **"till"** or **"until"** a specified day or date shall include both such days or dates; provided that if the last day of any period computed under this Agreement is not a business day, then the period shall run until the end of the next business day;

(m) the words importing singular shall include plural and vice versa;

(n) references to any gender shall include the other and the neutral gender;

(o) **"kWh"** shall mean kilowatt hour and **"kCal"** shall mean kilo calories;

(p) **"lakh"** shall mean a hundred thousand (100,000) and **"crore"** shall mean ten million (10,000,000);

(q) **"indebtedness"** shall be construed so as to include any obligation (whether incurred as principal or surety) for the payment or repayment of money, whether present or future, actual or contingent;

(r) references to the **"winding-up"**, **"dissolution"**, **"insolvency"**, or **"reorganisation"** of a company or corporation shall be construed so as to include any equivalent or analogous proceedings under the law of the jurisdiction in which such company or corporation is incorporated or any jurisdiction in which such company or corporation carries on business including the seeking of liquidation, winding-up, reorganisation, dissolution, arrangement, protection or relief of debtors;

(s) save and except as otherwise provided in this Agreement, any reference, at any time, to any agreement, deed, instrument, licence or document of description shall be construed as reference to that agreement, deed, instrument, licence or other document as amended, varied, supplemented, modified or suspended at the time of such reference; provided that this sub-clause shall not operate so as to increase liabilities or obligations of DIAL hereunder or pursuant hereto in any manner whatsoever;

(t) any agreement, consent, approval, authorisation, notice, communication, information or report required under or pursuant to this Agreement from or by any Party shall be valid and effective only if it is in writing under the hand of a duly authorised representative of such Party or in this behalf and not otherwise;

(u) the schedules and recitals to this Agreement form an integral part of this

Agreement and will be in full force and effect as though they were expressly set out in the body of this Agreement;

(v) references to recitals, articles, clauses, sub-clauses, provisos or schedules in this agreement shall, except where the context otherwise requires, mean references to recitals, articles, clauses, sub-clauses, provisos and schedules of or to this agreement; reference to an annex shall, subject to anything to the contrary specified therein, be construed as a reference to an annex to the schedule in which such reference occurs; and reference to a paragraph shall, subject to anything to the contrary specified therein, be construed as a reference to a paragraph of the schedule or annex, as the case may be, in which such reference appears;

(w) the damages payable by either Party to the other of them, as set forth in this Agreement, whether on per diem basis or otherwise, are mutually agreed genuine pre-estimated loss and damage likely to be suffered and incurred by the Party entitled to receive the same and are not by way of penalty (the "**Damages**");

(x) time shall be of the essence in the performance of the Parties' respective obligations. If any time period specified herein is extended, such extended time shall also be of the essence; and

(y) capitalised terms used in the Agreement, but not defined herein, shall have the meaning ascribed to such terms in the Electricity Act, 2003.

1.2.2 Unless expressly provided otherwise in this Agreement, any documentation required to be provided or furnished by the Supplier shall be provided free of cost and in three copies, and if DIAL is required to return any such documentation with their comments and/or approval, they shall be entitled to retain two copies thereof.

1.2.3 The rule of construction, if any, that a contract should be interpreted against the parties responsible for the drafting and preparation thereof, shall not apply.

1.2.4 Any word or expression used in this Agreement shall, unless otherwise defined or construed in this Agreement, bear its ordinary English meaning and, for these purposes, the General Clauses Act, 1897 shall not apply.

1.3 **Measurements and arithmetic conventions**

All measurements and calculations shall be in the metric system and calculations done to 2 (two) decimal places, with the third digit of 5 (five) or above being rounded up and below 5 (five) being rounded down.

1.4 Priority of agreements, clauses and schedules

1.4.1 This Agreement, and all other agreements and documents forming part of or referred to in this Agreement are to be taken as mutually explanatory and, unless otherwise expressly provided elsewhere in this Agreement, the priority of this Agreement and other documents and agreements forming part hereof or referred to herein shall, in the event of any conflict between them, be in the following order:

(a) this Agreement; and
(b) all other agreements and documents forming part hereof or referred to herein,

i.e. the Agreement at (a) above shall prevail over the agreements and documents at (b) above.

1.4.2 Subject to the provisions of Clause 1.4.1, in case of ambiguities or discrepancies within this Agreement, the following shall apply:

(a) between two or more clauses of this agreement, the provisions of a specific clause relevant to the issue under consideration shall prevail over those in other clauses;
(b) between the clauses of this agreement and the schedules, the clauses shall prevail and between schedules and annexes, the schedules shall prevail;
(c) between any two schedules, the schedule relevant to the issue shall prevail;
(d) between any value written in numerals and that in words, the latter shall prevail.

Part II

The Supply Contract

ARTICLE 2

2. SCOPE OF THE PROJECT

2.1 Project

The Supplier agrees to supply electricity to DIAL on a long term basis (the **"Project"**) from the Power Station to meet the Annual Energy Requirement in accordance with the provisions of this Agreement.

2.2 Scope of the Project

The scope of the project (the **"Scope of the Project"**) shall mean and include, during the Contract Period:

(a) production and supply of electricity to DIAL in accordance with the provisions of this Agreement starting from 1st April, 2019 (the "**Scheduled Supply Commencement Date**"); and

(b) performance and fulfilment of all other obligations of the Supplier in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Supplier under this Agreement.

The issuance of the LOA dated August 31, 2017 or Project Agreements pursuant hereto does not restrict or limit any / all rights of DIAL to enter into a similar arrangement with any party / person / entity whomsoever, at any location for additional energy requirement, over and above the Annual Energy Requirement.

2.3 Power Station

The Power Station is the generating station of the Supplier selected in pursuance to RFP dated 08.12.2016 located at Village Holi, District Chamba, Himachal Pradesh (the "**Power Station**").

The technical details of the Power Station have been provided at Schedule -A.

ARTICLE 3

3. GRANT OF SUPPLY CONTRACT

3.1 The Supply Contract

3.1.1 Subject to and in accordance with the provisions of this Agreement, Applicable Laws and the Applicable Permits, DIAL hereby awards to the Supplier the supply contract set forth herein for supply of electricity at the Power Station for supply thereof to DIAL to meet the Annual Energy Requirement throughout the Contract Period (the "**Supply Contract**") and the Supplier hereby accepts the Power Purchase Agreement and agrees to implement the same subject to and in accordance with the terms and conditions set forth herein.

The Parties may mutually agree to extend the term, subject to AAI approval and other necessary approvals as may be required.

3.1.2 Subject to and in accordance with the provisions of this Agreement, the Supply Contract hereby awarded shall oblige, require or entitle (as the case may be) the Supplier to:

(a) operate and maintain the Power Station to ensure supply of power to DIAL to meet the Annual Energy Requirement in accordance with this Agreement;

(b) receive from DIAL, the Power Purchase Cost applicable at DIAL's Receiving Sub-station as per the provisions of this Agreement in respect of the electricity supplied to DIAL;

(c) perform and fulfil all of the obligations of the Supplier's under and in accordance with this Agreement;

(f) save as otherwise expressly provided in this Agreement, bear and pay all costs, expenses and charges in connection with or incidental to the performance of the obligations of the Supplier under this Agreement; and

(g) not assign, transfer or sub-let or create any lien or Encumbrance on this Agreement, or the Supply Contract hereby granted.

3.2 Commencement of Supply

3.2.1 The Parties agree that the supply of power to DIAL under this Agreement shall commence on or before 00:00 hours of the Scheduled Supply Commencement Date.

3.2.2 Either Party may, in writing, make a request to the other Party to pre-pone or post-pone the date of commencement of supply by a period not exceeding six months from the Scheduled Supply Commencement Date. In case of request for preponement of commencement of supply, the request may be made at least 180 days prior to the proposed supply commencement date and in case of request for postponement of commencement of supply, the request may be made at least 180 days prior to the Scheduled Supply Commencement Date. The acceptance of the request for such preponement or postponement of commencement of supply shall be at the sole discretion of DIAL.

3.2.3 If the Supplier is unable to commence supply of power to DIAL on the Scheduled Supply Commencement Date or the proposed date of commencement of supply pursuant to Clause 3.2.2, then provisions of Clause 5.12 and Clause 5.13 shall apply.

ARTICLE 4

4. CONDITIONS PRECEDENT

4.1 Conditions Precedent

4.1.1 Save and except as expressly provided in Articles 4, 5, 6, 7, 8, 9, 16, 22 and 24, or unless the context otherwise requires, the respective rights and obligations of the Parties under this Agreement shall be subject to the satisfaction in full of the conditions precedent specified in this Clause 4.1 (the **"Conditions Precedent"**). Provided, however, that a Party may grant waiver from satisfaction of any Condition Precedent by the other Party in accordance with the provisions of Clauses 4.1.2 or 4.1.3, as the case may be, and to the extent of such waiver, that Condition Precedent shall be deemed to be fulfilled for the purposes of this Clause 4.1.1.

4.1.2 DIAL shall satisfy the Conditions Precedent set forth in this Clause 4.1.2 within a period of 180 (One hundred and Eighty) days from the Agreement Date. The Conditions Precedent required to be satisfied by DIAL shall be deemed to have been fulfilled when DIAL shall:

(a) Nominate the member from DIAL for the Council and assist in appointment of third member of the Council.

Provided that upon request in writing by DIAL, the Supplier may, in its discretion, grant extension of time, not exceeding 180 (one hundred and eighty) days, for fulfilment of the Conditions Precedent set forth in this Clause 4.1.2.

4.1.3 The Conditions Precedent required to be satisfied by the Supplier within a period of 180 (one hundred and eighty) days from the Agreement Date, shall be deemed to have been fulfilled when the Supplier shall have:

(a) deleted;

(b) procured No-objection Certificate from Licensed Distributor regarding procurement of power through open access using the distribution network of the Licensed Distributor for the entire Contract Period;

(c) obtained long term access of transmission system from the Power Station till the Receiving Sub-station of DIAL and submitted all approval documents in this regard to DIAL;

(d) provided construction and commissioning plan to DIAL proving the ability to supply power to DIAL from the date of commencement of, in case the plant is under construction;

(d) delivered to DIAL 3 (three) true copies of the Financial Model, duly

attested by a Director of the Supplier, along with 3 (three) soft copies of the Financial Model in MS Excel version or any substitute thereof, which is acceptable to the Lenders;

(e) nominated the member from the Supplier for the Council and assisting in appointment of third member of the Council; and

(g) deposited a certified true copy of this Agreement with the RLDC and SLDC having jurisdiction and obtained a receipt thereof.

Provided that upon request in writing by the Supplier, DIAL may, in its sole discretion, waive any of the Conditions Precedent set forth in this Clause 4.1.3 or provide a suitable and reasonable extension of time, in writing, to the Supplier to satisfy any of the Conditions Precedent set forth in this Clause 4.1.3.

4.1.4 Each Party shall make all reasonable endeavors to satisfy the Conditions Precedent within the time stipulated and shall provide the other Party with such reasonable cooperation as may be required to assist that Party in satisfying the Conditions Precedent for which that Party is responsible.

4.1.5 The Parties shall notify each other in writing at least once a fortnight on the progress made in satisfying the Conditions Precedent. Each Party shall promptly inform the other Party when any Condition Precedent for which it is responsible has been satisfied.

4.2 Damages for delay by the Supplier

In the event that (i) the Supplier does not procure fulfilment or waiver of any or all of the Conditions Precedent set forth in Clause 4.1.3 within the period specified in that Clause, and (ii) the delay has not occurred as a result of failure to fulfil the obligations under Clause 4.1.2 by DIAL or due to Force Majeure, the Supplier shall pay to DIAL Damages in an amount calculated at the rate equivalent to 0.25% (zero point two five per cent) of the Performance Security for each day's delay until the fulfilment of such Conditions Precedent, subject to a maximum amount equal to thirty three percent (33%) of the Performance Security, and upon reaching such maximum, DIAL may, in its sole discretion and subject to the provisions of Clause 9.2, terminate the Agreement.

4.3 Commencement of Contract Period

The date on which all the Conditions Precedent specified in Clause 4.1 are satisfied or waived, as the case may be, shall be the Appointed Date which shall be the date of commencement of the Contract Period.

4.4 Deemed Termination upon delay

Without prejudice to the provisions of Clauses 4.1 and 4.2, the Parties expressly

agree that in the event the Appointed Date does not occur, for any reason whatsoever, before 330 days of the Agreement Date or the extended period provided in accordance with this Agreement, all rights, privileges, claims and entitlements of the Supplier under or arising out of this Agreement shall be deemed to have been waived by, and to have ceased with the concurrence of the Supplier, and the Power Purchase Agreement shall be deemed to have been terminated by mutual agreement of the Parties. Provided, however, that in the event the delay in occurrence of the Appointed Date is for reasons attributable to the Supplier, the Performance Security of the Supplier or part of the Performance Security already furnished by the Supplier may be encashed and appropriated by DIAL as Damages thereof.

ARTICLE 5

5. OBLIGATIONS OF THE SUPPLIER

5.1 General Obligations of the Supplier

5.1.1 Subject to and on the terms and conditions of this Agreement, the Supplier shall, undertake the design, development, construction (for projects under construction/ to be constructed), finance, operation, maintenance and management of the Power Station to ensure the production and supply of Annual Energy Requirement to DIAL and observe, fulfill, comply with and perform all its obligations set out in this Agreement or arising hereunder.

5.1.2 The Supplier shall comply with all Applicable Laws and other Applicable Permits (including renewals as required) in the performance of its obligations under this Agreement.

5.1.3 Save and except as otherwise provided in this Agreement or Applicable Laws, as the case may be, the Supplier shall, in discharge of all its obligations under this Agreement, conform with and adhere to Good Industry Practice at all times.

5.1.4 The Supplier shall, in addition to and not in derogation of its obligations elsewhere set out in this Agreement:

(a) furnish Performance Security in accordance with the terms set out in this PPA;

(b) make, or cause to be made, necessary applications to the relevant Government Instrumentalities with such particulars as may be required for obtaining Applicable Permits and obtain and keep in force and effect such Applicable Permits in conformity with Applicable Laws.

(c) Procure and maintain open access to the transmission networks from the Power Station bus till the point of interconnection of Delhi Transco Limited with the DISCOM and open access to the distribution network of the DISCOM till the Receiving Sub-station.

(d) procure, as required, the appropriate proprietary rights, licences, agreements and permissions for materials, methods, processes, know-how and systems used or incorporated into the Power Station.

(e) ensure and procure that its contractors comply with all Applicable Permits and Applicable Laws in the performance by them of any of the Supplier's obligations under this Agreement.

(f) comply with/regularly maintain statutory compliances under the Applicable Laws;.

(g) ensure that the units of the Power Station identified for supply of power to DIAL are commissioned before the Scheduled Date of Commencement of Supply.

(h) always act in a manner consistent with the provisions of this Agreement and not cause or fail to do any act, deed or thing, whether intentionally or otherwise, which may in any manner be violative of any of the provisions of this Agreement or Applicable Laws.

(i) procure that all equipment and facilities comprising the Power Station are operated and maintained in accordance with the specifications and standards, maintenance requirements, safety requirements and Good Industry Practice.

(j) support, cooperate with and facilitate DIAL in the implementation of this Agreement.

(k) comply with the provisions of Applicable Laws with regard to metering of supply of electricity.

(l) comply with the directions of the Commission issued from time to time under the Act.

5.2 Obligations relating to Operations Agreements

5.2.1 It is expressly agreed that the Supplier shall, at all times, be responsible and liable for all its obligations under this Agreement notwithstanding anything contained in the Operations Agreements or any other agreement, and no default under any Operations Agreement or agreement shall excuse the Supplier from its obligations or liability hereunder.

5.2.2 The Supplier shall submit to DIAL the drafts of all Operations Agreements or any amendments or replacements thereto for its review and comments, and DIAL shall have the right but not the obligation to undertake such review and provide its comments, if any, to the Supplier within 30 (thirty) days of the receipt of such drafts. Within 7 (seven) days of execution of any Operations Agreement or amendment thereto, the Supplier shall submit to DIAL a true copy thereof, duly attested by a Director of the Supplier, for its record. It is further agreed that any failure or omission of DIAL to review and/ or comment hereunder shall not be construed or deemed as acceptance of any such agreement or document by DIAL. No review and/ or observation of DIAL and/ or its failure to review and/ or convey its observations on any document shall relieve the Supplier of its obligations and liabilities under this Agreement in any manner nor shall DIAL be liable for the same in any manner whatsoever. In case the Power Station is a hydro-electric generating station, the Supplier must submit to DIAL, a techno-Economic concurrence from the Central Electricity Authority (CEA) mentioning the design energy of the Power Station.

5.3 Obligations relating to Change in Ownership

Change in ownership shall be governed by the Share Subscription cum Shareholders' Agreement.

5.4 Obligations relating to operation of the Power Station

5.4.1 The Supplier shall at all times operate the Power Station in accordance with Applicable Laws and the provisions of the Grid Code and shall comply with such directions as the RLDC/SLDC may give from time to time in accordance with the provisions of the Act.

5.4.2 The Supplier shall enter into and comply with agreements for interconnection of the Power Station to the grid, sub-stations, licensees or consumers, as the case may be, under and in accordance with Applicable Laws.

5.5 Obligations relating to transmission charges

5.5.1 The transmission charges applicable for the period of supply in respect of transmission of electricity from the Power Station to the Receiving Sub-station shall be paid by the Supplier, due and payable, as per the order of the Appropriate Commission and Applicable Laws, for inter-state and intra-state transmission of electricity.

5.5.2 The Parties also agree that the regulated charges applicable for transmission of electricity referred to hereinabove for the period of supply of electricity for and in respect of the electricity sold to DIAL, as per the order of the Appropriate Commission, which charges shall at all times be payable by the Supplier. For the avoidance of doubt, the Parties expressly agree that the transmission charges mentioned hereinabove shall constitute part of the Power Purchase Cost.

5.6 Obligations relating to transmission losses

5.6.1 The cost of transmission losses applicable for the period of supply in respect of transmission of electricity from the Power Station to the Receiving Sub-station shall be paid by the Supplier, due and payable, as per the order of the Appropriate Commission and Applicable Laws, for inter-state and intra-state transmission of electricity.

5.6.2 The Parties also agree that the regulated costs of transmission losses applicable for transmission of electricity referred to hereinabove for the period of supply of electricity for and in respect of the electricity sold to DIAL, as per the order of the Appropriate Commission, which charges shall at all times be payable by the Supplier. For the avoidance of doubt, the Parties expressly agree that the costs of transmission losses mentioned hereinabove shall constitute part of the Power Purchase Cost.

5.6.3 The Supplier must ensure that the energy injected at the Point of Grid Connection is equal to the aggregate of the energy required at the Delivery Point and the applicable transmission losses from the point of Grid Connection to the Delivery Point. In case of any revision in transmission losses from the point of Grid Connection to the Delivery point with reference to the Bid Date, the Supplier shall inject more or less energy, as the case may be, to ensure that the energy required by DIAL at the Delivery point is met.

Obligations relating to Wheeling Charges for open access of distribution network

The Supplier shall be liable for payment of all charges, due and payable under Applicable Laws, for intra-state wheeling of electricity from the point of Grid Connection to the Delivery Point through the distribution network of the DISCOM. For the avoidance of doubt, the Parties expressly agree that the Wheeling Charges mentioned hereinabove shall constitute part of the Power

Purchase Cost.

5.8 **Obligations relating to SLDC and RLDC charges**

The Supplier shall be liable for payment of all the charges, due and payable under Applicable Laws to the SLDC and RLDC for and in respect of all its supplies to DIAL. For the avoidance of doubt, the Parties expressly agree that the SLDC/RLDC Charges mentioned hereinabove shall constitute part of the Power Purchase Cost.

5.9 **Obligations relating to taxes**

The Supplier shall pay, at all times during the subsistence of this Agreement, all Taxes and all other statutory charges payable in respect of the Power Station.

5.10 **Obligations relating to reporting requirements**

All information provided by the Supplier to the SLDC and RLDC as a part of its operating and reporting requirements under Applicable Laws, including the Grid Code, shall also be provided by it to DIAL simultaneously.

5.11 **Obligations relating to Cross Subsidy-Surcharges**

In case the electricity procured by DIAL at the Receiving Sub-station during any year is less than the Minimum Guaranteed Offtake, DIAL shall make payment of the Power Purchase Cost for the differential quantum of electricity between the Minimum Guaranteed Offtake and actual electricity procured during such year, to the Supplier. Moreover, if the electricity procured by DIAL is less than the Minimum Guaranteed Offtake during any year and Cross Subsidy Surcharge is applicable thereon, then DIAL shall bear the cost of applicable Cross Subsidy Surcharge as payable to the Licensed Distributor entity for such year.

In case the electricity procured by DIAL during a year is more than the Minimum Guaranteed Offtake, the Supplier shall bear the entire cost on account of applicable Cross Subsidy Surcharge, payable to the Licensed Distributor entity for that year.

However, the Supplier has the flexibility of adopting any measure, permitted under Applicable Laws including Rule 3 of the Electricity Rules 2005, to qualify the generating station as Captive Generating Plant.

The Cross Subsidy Surcharge shall be determined in accordance with the relevant order of the appropriate commission applicable for the period of supply.

5.12 **Obligations relating to alternate power source**

5.12.1 As Airport is operational 24 hours and 7 days in a week and has various equipment installed which are sensitive to safety of ATM's and Airport operations, therefore, the Supplier shall provide/ensure continued and

uninterrupted power supply to DIAL. If the Supplier fails to supply power from the Power Station per the provisions of the Agreement for any reason including Scheduled Maintenance, Unscheduled Maintenance, Unit Closure and Decommissioning due to Emergency or Forced Outage, then it has to ensure that power is available from any other alternative source fulfilling energy requirement of DIAL on a day to day basis in accordance with Clause 14.2. DIAL shall not bear any additional cost implications on account of supply from alternate power source and the Supplier shall solely bear all direct and indirect charges, taxes and duties relating but not limited to cross subsidy, wheeling and any other charges in excess of Power Purchase Cost.

5.12.2 The Parties expressly agree that in the event the Supplier fails to arrange any alternate source for fulfilling the energy requirements of DIAL as per provisions of this Clause 5.12, the provisions of Clause 5.13 of this agreement shall apply.

5.12.3 The Parties expressly agree that supply of power from alternate power source shall only be availed if it is not possible to supply power from the Power Station.

5.12.4 The Cross Subsidy Surcharges payable by DIAL for supply of power from alternate power source shall be shall be reimbursed by the Supplier as an adjustment in the next Monthly Invoice.

5.13 **Obligations relating to Standby Charges**

If the Supplier fails to supply power from the Power Station per the provisions of the Agreement and also fails to arrange supply of power from any alternate power source as per Clause 5.12, then DIAL will have to procure power from the DISCOM through DSM mechanism or through Standby power mechanism in accordance with applicable open access regulations of the DERC. The entire cost incurred by DIAL on account of procurement of power from the DISCOM under provisions of this Clause 5.13 shall be reimbursed by the Supplier as an adjustment in the Monthly Invoice.

5.14 Obligation to comply with cap on Tariff for each year

5.14.1 During the entire term of the contract period, the Applicable Cost of Electricity must be less than the prevailing DISCOM tariff applicable for the financial year, as determined by DERC and applicable to airport. For this purpose, the prevailing DISCOM tariff applicable for the financial year, as determined by DERC and applicable to airport shall always mean and include all charges, taxes, duties, surcharges, etc. and any other incidental charges as applicable till the receiving sub-station of DIAL.

5.14.2 The applicable cost of electricity for any year (the "**Applicable Cost of Electricity**") for any financial year shall comprise of the following components:

(a) the Power Purchase Cost; plus
(b) the Carrying Cost of Equity; plus
(c) Cross Subsidy Surcharge if applicable; plus
(d) Additional Surcharge, if applicable; plus
(e) Reactive Energy Charges; plus
(f) Standby Charges, if applicable; plus
(g) Fixed Charges for maintaining connection with the DISCOM, if applicable, plus
(h) Charges applicable on DIAL as per DSM Regulations, if applicable; plus
(i) Electricity duty and any other statutory taxes as applicable; plus
(j) the Cost of RPO for DIAL; plus
(k) any other associated charges as per DERC (Terms and conditions of Open Access) Regulations 2005 and its tariff orders thereunder; minus
(l) dividend received for the financial year

5.14.3 If at any time during the Contract Period, the Applicable Cost of Electricity is higher than the DISCOM tariff applicable for the year, as determined by DERC and applicable to airport, the Supplier will be required to reduce the Power Purchase Cost such that the Applicable Cost of Electricity must be less than the prevailing DISCOM tariff applicable for the year, as determined by DERC and applicable to airports. Non adherence of the same shall entitle DIAL to terminate the agreement as per the provisions of Article 18 of the PPA.

In case DERC discontinues the separate tariff category as applicable to airport in its tariff order(s) for any year(s) during the Contract Period, then the difference between the tariff as applicable to non-domestic (commercial) tariff category and the last applicable tariff category for the airport, as available on the date on which it is withdrawn ("**Tariff Difference**"), shall always remain and be counted/adjusted from the DISCOM tariff for non-domestic category as applicable for any financial year(s), such that the Applicable Cost of Electricity is always less than the adjusted DISCOM tariff for non-domestic (commercial) tariff category (post giving effect to the above stated difference).

For illustration, the following methodology shall be applied to calculate the adjusted DISCOM tariff:

Tariff Difference= Tariff as applicable to non-domestic (commercial) category - tariff as applicable to airport

The Applicable Cost of Electricity for any subsequent year(s) shall be less than the prevailing tariff for non-domestic category in respective financial years minus the Tariff Difference calculated above.

Illustration: For example, in 2020-21, tariff category for airport is discontinued, then from the date on which it is withdrawn the Applicable Cost of Electricity shall be calculated as below:

FY 2020-21
(A) Tariff as applicable to airport in FY 2020-21: Rs. 12.50/ unit
(B) Tariff for non-domestic category in FY 2020-21: Rs. 14.00/ unit

Tariff Difference (B-A): Rs. 1.50/ unit
Hence, for FY 2020-21, the adjusted DISCOM tariff shall be Rs. 14.00/unit minus Rs. 1.50/unit = Rs. 12.50/unit

FY 2021-22
Tariff Difference: Rs. 1.50/ unit

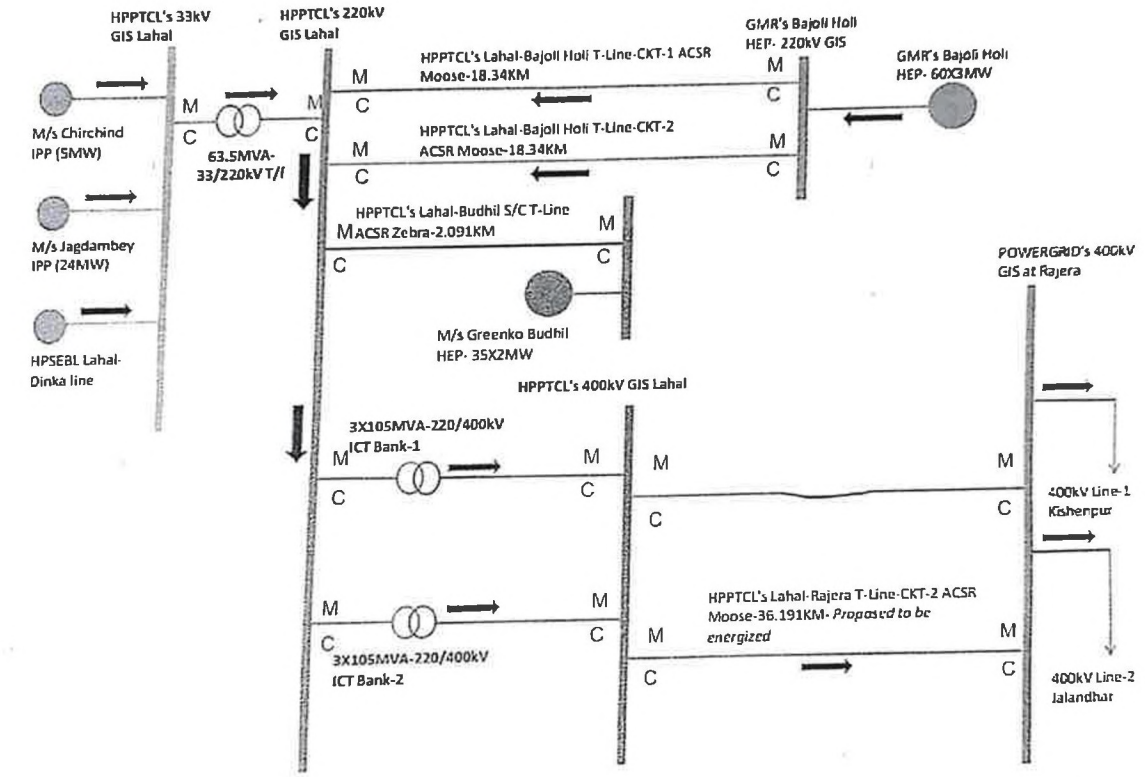
Tariff for non-domestic category in FY 2021-22: Rs. 16.00/ unit
Hence, for FY 2021-22, the adjusted DISCOM tariff shall be Rs. 16.00/unit minus Rs. 1.50/unit = Rs. 14.50/unit.

5.15 Obligations relating to scheduling and despatch of electricity

The Supplier shall be responsible for scheduling and despatch of electricity in accordance with Article 14. Respective Parties shall bear the charges on account of difference in the daily scheduling as per the DSM Regulations. However, the provisions of Applicable Cost of Tariff as given in Clause 5.14.2 of PPA shall apply and the Supplier has to reduce the Power Purchase Cost as per Clause 5.14.3.

ANNEXURE-5

Single Line Diagram Depicting Meter arrangement



Indicates Power Flow Direction

M= Main Meter

C=Check meter

Meter detail is attached as Annexure-A

Senior Manager (P)
HPPTCL, PIU Lahal

Annexure-A

Sr. No.	Element	Element description/Bay No.	Lahal End		Remote End	
			Main Meter	Check Meter	Main Meter	Check Meter
1	400kV D/C Lahal-Rajera T.L.	400kV D/C Lahal-Rajera T.L. ckt-1(Bay-407)	NS1555A	HPU07931	NS1556A	NS1553A
		400kV D/C Lahal-Rajera T.L. ckt-2(Bay-405)	NS1554A	HPU7929	NS1558A	NS1557A
2	400/220/33kV Lahal Substation alongwith 220kV Lahal-Budhil Transmission line	LV side 33/220kV,63.5MVA Power Trafo(Bay-301)	HPU07919	HPU07920	NA	NA
		HV side 33/220kV,63.5MVA Power Trafo(Bay-209)	HPU06813	HPU06814		
		LV side ICT bank -2(Bay-202)	HPU07924	HPU07922		
		LV side ICT bank -1(Bay-203)	HPU07921	HPU07923		
		HV side ICT bank -2(Bay-402)	HPU07928	HPU07927		
		LV side ICT bank -1(Bay-404)	HPU07926	HPU07925		
		220kV Lahal-Budhil line(Bay-206)	NR3246A	HPU06815	NP8575A	NP8844A
3	220kV D/C Bajoli Holi-Lahal T.L.	220kV Lahal-Bajoli Holi line Ckt-1(Bay-207)	HPU06822	HPU06820	21003565	21003567
		220kV Lahal-Bajoli Holi line Ckt-2(Bay-208)	HPU06821	HPU06819	21003559	21003566

Senior Manager (P)
HPPTCL, PIU Lahal

H.P. POWER TRANSMISSION CORPORATION LIMITED

(A State Government Undertaking)
Regd. Office: Himfed Bhawan, Panjari, Tutikandi, Shimla-171005.
(CIN): U40101HP2008SGC030950
Ph: -0177-2633284, **FAX**: -0177-2832384
Email: -gmcd.tcl@hpmail.in; dgmcomm.tcl@hpmail.in **Web**: - hpptcl.com

No.: HPPTCL/C&M/Wangtoo Petition /2024-5396-5402 Dated: 13/8/2024

To

The Chief Engineer,
Power System Planning & Appraisal-I Division,
Central Electricity Authority, Sewa Bhawan R K Puram,
New Delhi -110066.

Ref: Certification Process for Transmission System carrying Inter-State Power as specified under Regulation 93 of the CERC (Terms and Conditions of Tariff) Regulations, 2024.

Subject: STU recommendation for Certification of 400/220/66 kV GIS (400/220kV, 2×315 MVA + 220/66kV, 2×80/100 MVA) Pooling Station at Wangtoo as part of ISTS system in line with Regulation 93 of the CERC (Terms and Conditions of Tariff) Regulations, 2024.

Sir,

HPPTCL being a deemed Transmission Licensee of Himachal Pradesh has commissioned 400/220/66 kV (400/220kV, 2×315 MVA + 220/66kV, 2×80/100 MVA) GIS Pooling Station at Wangtoo on 29.09.2019.

It is humbly submitted that since the inception stage, the said asset has been planned primarily to evacuate power from upcoming generating stations in the Satluj Basin and to facilitate integration of ISTS power with existing ISTS infrastructure i.e. 400 kV Karcham Wangtoo-Abdullapur line. The subsequent system is also being developed incidental to this 400kV Substation by CTUIL due to severe ROW constraints and land availability issue in the narrow valley. The Master Plan approved by CEA is attached herewith as **Annexure-1**. In this context, it is requested to consider the following submissions: -

1. In the LTA meeting held on 29.12.2010 (MoM Attached) while discussing Connectivity and Long-Term Access (LTA) to Himachal Pradesh Power Corporation Limited (HPPCL), for connectivity and transfer of 195 MW power from Kashang HEP and 450 MW power from Shongtong Karcham HEP it was agreed as under: -

   "It is proposed to establish a 400kV substation at Sherpa colony by LILO of one circuit of Karcham Wangtoo – Abdullapur 400 kV D/c (quad) line, matching with generation schedule (March'15). The works of establishing

400kV Sherpa colony substation and providing connectivity from the generation project by 400kV D/C can be carried out by CTU / transmission licensee as per provisions of the CERC regulations. With the commissioning of Sherpa colony, power from Kashang, in accordance with CEA master plan, would be pooled at Sherpa colony by LILO of Kashang-Bhabha-Kunihar 220kV line and establishment of transformation capacity of 2×500 MVA. The works (LILO and its bays and provision of ICT & associated bays) would be carried out as a depository work on behalf of HPPCL/HPPTCL"

2. A copy of the Minutes of the Connectivity/Long Term Access Meeting held on 29.12.2010 is attached herewith and marked as **Annexure-2**. It is evident from above that 400 kV Pooling Station/Switching station to integrate with existing ISTS system i.e., Karcham Wangtoo-Abdullapur and evacuate power of Shongtong Karcham HEP (450 MW) was to be constructed by CTU under ISTS and 400/220 kV Transformers and LILO of 220 kV line at proposed 400/220 kV Substation were proposed to be carried out as deposit work of HPPTCL by CTU.

3. It is submitted that HPPTCL proposed for approval of DPR of 400/220 kV Substation at Wangtoo with interlinking 400 kV line with proposed 400 kV Switching/ Pooling Station at Wangtoo/ Sherpa Colony wherein CEA vide letter dated 06.04.2011 advised as under with respect to the Subject Asset: -

"It is mentioned that in LTA meeting held on 29.12.2010 it was decided that a 400-kV switching station would be created at Sherpa Colony by LILO of one circuit of 400 kV Karcham Wangtoo-Abdullapur D/C line and a 400 KV D/C line from Shongtong -Karcham HEP (450 MW) to Sherpa colony switching station would be constructed for evacuation of power from Shongtong Karcham HEP. These works were approved to be constructed as ISTS System. It was also agreed that HPPTCL may provide requisite 400/220 kV ICTs and 220 kV line bays as per the requirement of HPPTCL would be provided at this station at the cost of HPPTCL.

It is observed that HPPTCL now proposed to construct a separate 400/220/66 kV GIS substation at Wangtoo which is at a distance of 1 km and interconnect this station with 400 kV switching station of ISTS System.

In this context, it is felt that creation of two 400 kV GIS substations within the proximity of 1 km is sub-optimal planning and therefore HPPTCL may keep space provision for Wangtoo accommodating 4 Nos. 400 kV lines at proposed 400/220/66 kV Wangtoo substation for terminating LILO of one circuit of 400 kV Karcham Wangtoo-Abdullapur D/C line and 400 kV D/C line from Shongtong Karcham HEP. In addition, space provision of 2 Nos. of 220 kV line bays may also be kept

for terminating additional 220KV D/C line from Kashang to Wangtoo in future when full generation of Tidong and Kashang HEPs materialises. The earlier planned 400 kV switching for evacuation of power from Shongtong Karcham would not be required in this case.

In view of the above, HPPTCL is advised to revise the scope of works of above lines for substation accordingly. HPPTCL may also furnish a proposal on above lines for consideration of Standing Committee Meeting of power system planning for Northern Region."

A copy of the letter dated 06.04.2011 issued by CEA to HPPTCL is attached herewith and marked as **Annexure-3**.

4. Subsequently in the 30th meeting of the Standing Committee on Power System Planning of Northern Region held on 19.12.2011, as per the report submitted by task force consisting of Government of Himachal Pradesh, HPPCL, HPPTCL, CEA, and Powergrid, it was decided to establish the Subject Asset at Wangtoo by mid of 2014 to match commissioning of SHPs in Bhaba Khad (57 MW) and Sangla Valley (40 MW) plus LILO of 220 kV Kashang- Bhaba D/c Line and LILO of both circuits of 400 kV Karcham Wangtoo-Abdullapur D/c line. A copy of the Minutes of Meeting dated 20.01.2012 of the 30th meeting of the Standing Committee on Power System Planning of Northern Region held on 19.12.2011 is attached herewith and marked as **Annexure-4**.

5. It is submitted that CEA vide letter dated 14.03.2012 approved the revised DPR of the Subject Asset with future scope of 2 Nos. 400 kV bays for D/C line from Shongtong Karcham HEP in future (which is to be utilized for power evacuation under ISTS). A copy of the letter dated 14.03.2012 from CEA to HPPTCL is attached herewith and marked as **Annexure-5**.

6. It is further submitted that the matter of "Declaration of 400/220/66kV Pooling Sub-Station Wangtoo of HPPTCL as integral part of ISTS system" was discussed in the MoM of 74th Northern Regional Power Committee (NRPC) & 50th Technical Co-ordination Committee (TCC) meeting dated 28.06.2024 & 29.06.2024 whrein HPPTCL has stated the following: -

   A.16.10 In the facts and circumstances mentioned above STU is of firm view that the subject asset needs to be declared as an ISTS to be included in the ISTS pool. NRPC is requested to validate the key role being played by 400/220/66 kV Wangtoo substation to integrate the upcoming and existing ISTS system in the upper Satluj valley and thereby ensuring high reliability of ISTS system and declare the said item integral part of ISTS system.

7. Further in the said meeting, in context to above, regarding the matter of "Declaration of 400/220/66kV Pooling Sub-Station Wangtoo of HPPTCL as

integral part of ISTS system", the following was stated by NRPC (MoM enclosed as **Annexure-6**): -

"A.16.11 MS, NRPC mentioned that a separate meeting was held 03.05.2024 to discuss the nature of Dedicated/ISTS/Not ISTS status. In the meeting, it was gathered that CEA may devise a uniform philosophy for the same along with definition of various related terms mentioned in the clause. Further, as per the CERC Tariff Regulation (2024-29), CEA will certify the same. HPPTCL was suggested to take up this matter with CEA.

.....

A.16.16 Forum was in line with TCC discussion.
Decision of Forum
i) As per CERC Tariff Regulation (2024-29), forum conveyed HPPTCL to approach CEA for the deemed ISTS status.
ii) CEA may devise a uniform philosophy for certification of the same along with
definition of various related terms mentioned in the clause 93 of CERC Tariff Regulation (2024-29)"

8. Also, in the meeting dated 03.05.2024 by NRPC to discuss the nature of assets as ISTS/non-ISTS, as per the minutes of meeting following was decided (MoM enclosed as **Annexure-7**): -

"a. Under clause 93 of Tariff Regulations-2024, CEA has to certify the ISTS status for intra-state transmission lines based on recommendations of STU and RPC. In view of above, CEA may devise a uniform philosophy for the same alongwith definition of various terms mentioned in the clause.
b. This case may be examined after the formulation of policy by CEA for granting ISTS status to intra state lines/dedicated lines."

It is humbly submitted that the abovementioned asset has been developed by HPPTCL in accordance with the Master Plan developed by CEA. It is further submitted that the said asset meets the criteria specified under Regulation 93 and hence HPPTCL as State Transmission Utility (STU) recommends that abovementioned asset be certified as a part of the Inter-State Transmission (ISTS) System in accordance with Regulation 93 of CERC Tariff Regulations, 2024.

Regulation 93 of CERC Tariff Regulations, 2024 specifies as follows:

"93. Approval Process of Non-ISTS Lines carrying Inter-State Power:

...

(1) Existing Intra State lines which were planned as ISTS System shall also be considered as ISTS lines;

Provided that such lines have not been developed for the sole purpose of the beneficiary (ies) of a single State;

Provided further that such transmission system is under operation and appropriate metering system is in place to record flow of power;

Provided further that a proper mechanism is in place for the maintenance of such a transmission system after its COD.

..."

(Emphasis provided)

The detailed submission substantiating that the asset meets the criteria specified above is as follows: -

Condition 1: Such lines have not been developed for the sole purpose of the beneficiary (ies) of a single State:

The asset under consideration was part of the Master Plan prepared by CEA for evacuation of power from various hydro projects in Himachal Pradesh and outside the State of Himachal Pradesh. This specific asset forms the part of satluj Basin. The relevant extracts of the Master Plan are summarized below:

"Planned Transmission System alongwith phased development for upper part of Satluj Basin and Spiti Valley (Satluj Basin)

• SHPs: Establishment of 66/220/400 kV GIS Pooling Station at Wangtoo by Mid 2014 to match commissioning of SHPs in Bhaba Khad (57 MW) and Sangla Valley (40 MW) + LILO of 220 kV Kashang- Bhaba D/c Line and LILO of both circuits of 400 kV Karcham Wangtoo-Abdullapur D/c line at Wangtoo. – Proposed Implementation through STU.

HPPTCL proposed to implement this substation by Mid 2014 and they have tied up the funds from ADB. The switchgear rating and bus capacity etc. at Wangtoo substation should be equivalent to 4000 Amps.

• Kashang-I (65 MW), Kashang-II (65 MW) and Tidong-I (100 MW) : During the meeting HPPTCL stated that Kashang-I is likely to be commissioned by 2013. For evacuation of power from Kashang-I, HP is constructing a 220 kV D/c line from Bogtu to Kashang. Accordingly, power can be evacuated through Bogtu - Bhabha 220 kV D/c line. HPPTCL stated that Tidong-I is under construction and is likely to be commissioned by December 2014. Since, Tidong-I (100 MW) is due for commissioning in December, 2014 and Jangi Pooling station may not come up by that time, Tidong-I power shall be temporarily evacuated by LILO of one circuit of 220 kV D/C Kashang- Bhaba line at Tidong-I HEP. These works shall be carried out by HPPTCL. Later on when Jangi P.S. is commissioned, Tidong-I - Jangi line shall be constructed and also Kashang – Jangi 220 kV D/c line with ingle HTLS conductor shall be established. These works are proposed to be carried out by HPPTCL.

HPPTCL further informed that works for Kashang-II (65 MW) has also been awarded and commissioning is expected by 2015. It was suggested that Kashang- II is also evacuated through 220 kV system as Jangi pooling station may not be available in that time frame, however some

constraints may be faced during contingency of outage of one circuit. POWERGRID stated that establishment of Jangi Pooling station may be taken up with further stages of Kashang.

• Shongtong Karcham: During the meeting it was informed that Shongtong Karcham HEP (450 MW) is likely to be commissioned by 2017. For transfer of power from this project, following is proposed:

- *Shongtong Karcham – Wangtoo 400 kV D/c Line (Quad HTLS Conductor –Equivalent to about 3000MW) – 18 km - Proposed Implementation as ISTS.*
- *Switchyard Capacity etc. must be able to handle about 2800-3000MW power planned in the upstream of the generation project. It is proposed that the GIS switchyard may be designed with 4000 Amps switchgear. However, the cable capacity from Pot head yard to GIS switchyard may be augmented with generation addition in the upstream projects.*

Kashang-III (65 MW) & Kashang-IV (48 MW) and Tidong-II (90 MW) HEP: Evacuation of power from Kashang –I (65 MW), Kashang –II (65 MW) and Tidong-I (100 MW) is discussed above. With the commissioning of other stage of Kashang and Tidong, the power shall be injected at Jangi pooling station. The Jangi Pooling station shall be established by this time frame. Transmission scheme for Kashang & Tidong shall be as given as below: -

- *Kashang-Jangi Pooling Station 220 kV D/c line (Single HTLS-Equivalent to 300 MW capacity) - Proposed Implementation as STU network.*
- *2x315 MVA (7x105 MVA units) 220/400 kV GIS Pooling Station at Jangi (with 4000 Amps. switchgear) (with space provision for 3rd ICT) - Proposed Implementation as ISTS.*
- *LILO of one ckt. of Shongtong –Wangtoo 400 kV Line at Jangi - Proposed Implementation as ISTS.*
- *Tidong – Jangi Pooling Station 220 kV D/c line – Proposed Implementation as STU network*

.....

Note:

Present / Planned system beyond Wangtoo station would be capable of handling about 500-600 MW of power (to be confirmed with the development of the generation projects). One more additional high capacity line (400 kV Quad) from Wangtoo towards Haryana/Punjab shall be required which can be constructed through the right bank of the river."

(Emphasis provided)

The Write-up for the Master Plan is attached herewith as Annexure-1.

In view of above facts and circumstances it is crystal clear to conclude that establishment of the Subject Asset by HPPTCL has facilitated integration of ISTS power

with existing ISTS infrastructure i.e. 400 kV Karcham Wangtoo- Abdullapur line. The subsequent system is also being developed incidental to this 400 kV Substation by CTUIL due to severe ROW constraints and land availability issue in the narrow valley. Considering the above it is submitted that the Subject Asset ought to be declared as ISTS asset considering the following: -

a) 400 kV side shall be permanently used to provide ISTS connectivity in the upper Satluj region and shall facilitate evacuation of power outside the State. HPPTCL has invested funds to facilitate this integration of ISTS power of present projects as well as upcoming projects upon request of CEA/Powergrid/CTUIL.

b) Tidong HEP which has to ultimately evacuate power outside the State through 400/220 kV Jhangi Pooling station, has been facilitated at the Subject Asset as per LTA signed between HPPTCL and M/s Tidong Power Generation Pvt. Ltd. on dated 03.06.2022.

In the facts and circumstances mentioned above HPPTCL submits that the asset has not been planned or commissioned to only serve the State of Himachal Pradesh and as such there are more than one beneficiary and hence meets the Condition 1.

Condition 2: Such transmission system is under operation and appropriate metering system is in place to record flow of power;

Condition 3: A proper mechanism is in place for the maintenance of such a transmission system after its COD.

It is to confirm that HPPTCL has already established the assets under consideration along with all the requisite system for metering as per the Central Electricity Authority (Installation and Operation of meters) Regulations, 2006 read with all subsequent amendments and is operating these assets since their CoD in accordance with the standards specified under the Central Electricity Authority (Safety requirements for construction, operation and maintenance of electrical plants and electric lines) Regulations 2011 read with all subsequent amendments. A copy of Single Line Diagram depicting the metering arrangement is also attached herewith as **Annexure-8.** Thus, the Conditions 2 & 3 under Regulation 93 of the CERC Tariff Regulations, 2024 are also fulfilled.

In light of the discussions made above and considering that the subject asset has satisfied all the pre-requisite conditions for certification as Inter-State Transmission Assets, HPPTCL (STU) recommends that CEA may kindly certify the subject asset in accordance to the Regulation 93 of the CERC Tariff Regulations, 2024.

Yours faithfully,

(Er. Manoj Kumar)
General Manager (C&D),
HPPTCL, Shimla-05.

Copy of above is forwarded to following for kind information in the matter please: -

1. The Managing Director, HPPTCL, Shimla-05.
2. The Director (Projects), HPPTCL, Shimla-05.
3. The Director (P&C), HPPTCL, Shimla-05.
4. The General Manager (Projects), HPPTCL, Shimla-05.
5. The Dy. General Manager(C&M), HPPTCL, Shimla-05.
6. The Dy. General Manager (Planning & IT), HPPTCL, Shimla-05.

General Manager (C&D),
HPPTCL, Shimla-05.

ANNEXURE – 1

UPPER PART OF SATLUJ BASIN & SPITI VALLEY (SATLUJ BASIN)

The list of identified hydro projects in the Upper Part is given below:

S.No.	Project	MW	Time Frame	Developer	Status of Application for Access to Grid as per CERC regulations
1	SHPs	142	2014		
2	Shongtong Karcham	450	2017	HPPCL	Received
3	Kashang-I	65	2013	HPPCL	Received
4	Kashang-II & III	65 & 65	2015 2017	HPPCL	Received
5	Kashang-IV	48	-	HPPCL	
6	Tidong-I	100	2015	Nagarjuna Constructions Group	Received
7	Chango Yangthang	140	2017	Bhilwara Group	Received
8	Yangthang Khab	261			X
9	Ropa	60			X
10	Khab	636			X
11	Tidong-II	90			X
12	Jhangi Thopan	480			X
13	Thopan Powari	480			X
14	Sumte Khatang	130			X
15	Lara Sumte	104			X
16	Mane-Nadang	70			X
17	Lara	60			X
18	Killing-Lara	40			X
	Total	**3486**			

CHANDRABHAGA BASIN (LAHAUL & SPITI AREA)

The list of identified projects in the upper part is given below:

S.No.	Project	MW	Time Line	Developer	Status of Application for Connectivity / Access to Grid as per CERC regulations
1	Chhatru	120	2018	DCM Sriram	X
2	Teling	94			X
3	Shangling	44		Reliance Power	X
4	Jispa	300		HPPCL	X
5	Tandi	104		ABG Shipyard	X
6	Rashil	130		ABG Shipyard	X
7	Bardang	126		ABG Shipyard	X
8	Tignet	81		Amar-Mitra JV	X
9	Pattam	60			X
10	Seli	400	2017-18	Moser Baer	Connectivity Application Received
11	Miyar	120	2016-17	Moser Baer	Connectivity Application Received
12	Reoli Dugli	420	2018	L&T	X
13	Sach Khas	149	2018	L&T	X
14	Purthi	300		Reliance Power	X
15	Duggar	236		Tata + SN Power	X
16	SHPs	300			
17	Other	500			
	Total	**3500**			

Planned Transmission System alongwith phased development for upper part of Satluj Basin and Spiti Valley (Satluj Basin)

- **SHPs** : Establishment of 66/220/400 kV GIS Pooling Station at Wangtoo by Mid 2014 to match commissioning of SHPs in Bhaba Khad (57 MW) and Sangla Valley (40 MW) + LILO of 220 kV Kashang- Bhaba D/c Line and LILO of both circuits of 400 kV Karcham Wangtoo-Abdullapur D/c line at Wangtoo. – ***Proposed Implementation through STU***.

  HPPTCL proposed to implement this substation by Mid 2014 and they have tied up the funds from ADB. The switchgear rating and bus capacity etc. at Wangtoo substation should be equivalent to 4000 Amps.

- **Kashang-I (65 MW), Kashang-II (65 MW) and Tidong-I (100 MW)** : During the meeting HPPTCL stated that Kashang-I is likely to be commissioned by 2013. For evacuation of power from Kashang-I, HP is constructing a 220 kV D/c line from Bogtu to Kashang. Accordingly, power can be evacuated through Bogtu - Bhabha 220 kV D/c line. HPPTCL stated that Tidong-I is under construction and is likely to be commissioned by December 2014. Since, Tidong-I (100 MW) is due for commissioning in December, 2014 and Jangi Pooling station may not come up by that time, Tidong-I power shall be temporarily evacuated by LILO of one circuit of 220 kV D/C Kashang- Bhaba line at Tidong-I HEP. These works shall be carried out by HPPTCL. Later on when Jangi P.S. is commissioned, Tidong-I - Jangi line shall be constructed and also Kashang – Jangi 220 kV D/c line with ingle HTLS conductor shall be established. These works are proposed to be carried out by HPPTCL.

  HPPTCL further informed that works for Kashang-II (65 MW) has also been awarded and commissioning is expected by 2015. It was suggested that Kashang-II is also evacuated through 220 kV system as Jangi pooling station may not be available in that time frame, however some constraints may be faced during contingency of outage of one circuit. POWERGRID stated that establishment of Jangi Pooling station may be taken up with further stages of Kashang.

- **Shongtong Karcham** : During the meeting it was informed that Shongtong Karcham HEP (450 MW) is likely to be commissioned by 2017. For transfer of power from this project, following is proposed:
  - Shongtong Karcham – Wangtoo 400 kV D/c Line (Quad HTLS Conductor –Equivalent to about 3000MW) – 18 km - ***Proposed Implementation as ISTS***
  - Switchyard Capacity etc. must be able to handle about 2800-3000MW power planned in the upstream of the generation project. It is proposed that the GIS switchyard may be designed with 4000 Amps switchgear. However, the cable capacity from Pot head yard to GIS switchyard may be augmented with generation addition in the upstream projects.

- **Kashang-III (65 MW) & Kashang-IV (48 MW) and Tidong-II (90 MW) HEP**: Evacuation of power from Kashang –I (65 MW), Kashang –II (65 MW) and Tidong-I (100 MW) is discussed above. With the commissioning of other stages of Kashang and Tidong, the power shall be injected at Jangi pooling station. The

Jangi Pooling station shall be established by this time frame. Transmission scheme for Kashang & Tidong shall be as given as below:

- Kashang-Jangi Pooling Station 220 kV D/c line (Single HTLS- Equivalent to 300 MW capacity) - ***Proposed Implementation as STU network***
-
- 2x315 MVA (7x105 MVA units) 220/400 kV GIS Pooling Station at Jangi (with 4000 Amps. switchgear) (with space provision for 3rd ICT) - ***Proposed Implementation as ISTS***
- LILO of one ckt. of Shongtong –Wangtoo 400 kV Line at Jangi - ***Proposed Implementation as ISTS***
- Tidong – Jangi Pooling Station 220 kV D/c line - ***Proposed Implementation as STU network***

Note: After coming up of Kashang III & Tidong-II and its inter-connection with Jangi Pooling Station, the Kashang-Bogtu 220kV line has to be kept in open condition.

- **Chango Yangthang (140 MW)**: Chango Yangthang is envisaged to be commissioned by 2017. Following transmission system is proposed matching with Chango Yangthang:
  - Chango Yangthang – Proposed site of Ka Dogri Pooling Station 220 kV D/c line – 18 km - ***Proposed Implementation by developer***
  - Proposed Site of Ka Dogri – Jangi Pooling Station 400 kV D/c line (Twin Moose) to be initially charged at 220 kV – 50 km ***Proposed Implementation as ISTS***
  - Provision of 3rd 400/220 kV ICT (3 nos. of 105 MVA Single Phase units) at Jangi Pooling Station - ***Proposed Implementation as ISTS***

- **Yangthang Khab (261 MW)**:
  - 220 kV Yangthang Khab- Ka Dogri D/c Line with HTLS conductor - adequate for 300 MW capacity – 4 km - ***Proposed Implementation as ISTS***
  - 2x315 MVA (7x105 MVA units) 220/400 kV GIS Pooling Station at Ka Dogri - ***Proposed Implementation as ISTS***
  - Charging of Ka Dogri – Jangi line at 400 kV level - ***Proposed Implementation as ISTS***
  - Direct termination of Chango Yangthang at Ka Dogri Pooling Station - ***Proposed Implementation by generation developer***

- **Khab (636 MW)**:
  - Khab – Jangi Pooling Station 400 kV D/c line – 20 km - ***Proposed Implementation as ISTS***

- **Jangi Thopan (480 MW) & Thopan Powari (480 MW) :**
  - LILO of one circuit of Jangi Pooling Station – Wangtoo 400 kV D/c (Quad HTLS) line at generation project - ***Proposed Implementation as ISTS***
  - Switchgear Capacity at Generation switchyard must be equivalent to 4000 Amps.

- **Ropa (60 MW)**

- Direct injection to Jangi Pooling station by a 220 kV D/c line - ***Proposed Implementation by generation developer***
- The generation of SHPs in the area may be injected at Ropa Generation Switchyard

- **Other Projects of Spiti Valley (Satluj Basin)**
  - The generation of these projects can be injected at Ka Dogri Pooling Station.
  - From Killing Lara (40 MW), Lara (60 MW) & Mane Nadang (70 MW), a combined 220 kV D/c line can be constructed upto Lara Sumte HEP. From Lara Sumte HEP(104MW), a high capacity 220 kV line (with twin Moose conductor) can be constructed upto Ka Dogri Pooling Station - ***Proposed Implementation as ISTS except for the generators below 50 MW.***
  - Augmentation of transformation capacity would be required at Ka Dogri. Space for 2 additional ICTs of 315 MVA (105 MVA single phase units) would be required. These transformers can be provided progressively matching with the generation addition. - ***Proposed Implementation as ISTS***

NOTE :

Present / Planned system beyond Wangtoo station would be capable of handling about 500-600 MW of power (to be confirmed with the development of the generation proejcts). One more additional high capacity line (400 kV Quad) from Wangtoo towards Haryana/Punjab shall be required which can be constructed through the right bank of the river.

B

Planned Tr. System alongwith Phased development for Chandrabhaga Basin

The total power in this area is about 3850 MW (considering 10% overload). Out of these projects, two projects namely, Miyar & Seli are expected to come up by 2017 and three projects Chhatru, Reoli Dugli & Sach Khas are expected by 2018. The next project expected in this area would be Jispa. The status and time frame of other projects are not yet clear.

Based on the progress of generation, availability of corridors, severe R-o-W constraints near Seli, quantum of power, it was considered prudent to develop two transmission corridors, one towards Hamirpur and the other towards J&K. It is proposed that the corridor to start from Seli HEP would go towards Hamirpur and the other corridor to start from Reoli Dugli would go towards J&K. The corridor capacity towards Hamirpur would be of the order of 2500 MW and corridor capacity towards J&K would be about 1500 MW.

Keeping above observations in view, following transmission system is proposed which is matched with the sequence of commissioning of generation projects:

CHANDRABHAGA CORRIDOR-I

Seli HEP (400 MW): Earlier the Project size was 320 MW, however with the detailed investigations, the project size is revised to 400 MW.

- 400 kV D/c Line (Twin HTLS-Adequate for about 2000 MW) from Seli to the site of 400 kV Pooling Station near Sissu /Gramphu (Pooling Station shall not be constructed during this time frame) - ***Proposed Implementation as ISTS***
- From site proposed near Sissu/Gramphu Pooling Station – Hamirpur 400 kV D/c (Triple HTLS – adequate for 2500 MW capacity) – For this line section, Rohtang Pass is to be crossed. There is about 8-10 feet of snow at Rohtang Pass during winters and working season is very less. For implementation of overhead line, SASE and some international expert would have to be involved. Special design with pole type towers may be required which can be firmed up during detailed engineering. - ***Proposed Implementation as ISTS***

Miyar HEP(120 MW) :

- Step up of Miyar generation at 400 kV level
- LILO of one circuit of Seli – Hamirpur (via Rohtang) 400 kV D/c line (Twin HTLS) at Miyar - ***Proposed Implementation as ISTS***

Note : During the meeting it was informed that Miyar would come up earlier than Seli, the line from Miyar to Hamirpur (configuration explained under Seli system) may be taken up initially and the same can be extended to Seli.

Chhatru HEP (120 MW) : With the coming of Chhatru HEP, following is proposed:

- Establishment of 2x315 MVA (7x105 Single Phase units) 400/220 kV GIS Pooling station near Sissu / Gramphu - ***Proposed Implementation as ISTS***
- Chhatru – Sissu / Gramphu GIS Pooling Station 220 kV D/c line (HTLS adequate for 300 MW per circuit) - ***Proposed Implementation as ISTS***
- LILO of both circuits of Seli - Hamirpur line at Sissu/ Gramphu GIS Pooling Station.- ***Proposed Implementation as ISTS***

Teling & Shangling HEP (94 & 44 MW) : For evacuation of power from these projects, following is proposed:

- LILO of one circuit of Chhatru – Sissu / Gramphu Pooling Station 220 kV D/c (HTLS) at Teling - ***Proposed Implementation as ISTS***
- LILO of one circuit of Chhatru – Sissu / Gramphu Pooling Station 220 kV D/c (HTLS) at Shangling - ***Proposed Implementation by STU or developer***

Note: The capacity of generation switchyards at Chhatru, Teling & Shangling HEPs must be equal to power handling capacity of 300 MW otherwise there would be constraints during contingency of outage of one circuit.

Jispa (300 MW): For evacuation of power from Jispa HEP, following is proposed:

- Jispa – Sissu / Gramphu Pooling Station 400 kV D/c line - ***Proposed Implementation as ISTS***

Bardang HEP (126 MW) : Following is proposed for Bardang HEP

- Step up at 400 kV
- LILO of one circuit of Seli – Sissu / Gramphu Pooling Station 400 kV D/c (Twin HTLS) - ***Proposed Implementation as ISTS***

Rasil HEP (130 MW)

- Step up at 400 kV
- LILO of one circuit of Seli – Sissu / Gramphu Pooling Station 400 kV D/c (Twin HTLS) - ***Proposed Implementation as ISTS***

Tandi HEP (104 MW)

- Step up at 400 kV
- LILO of one circuit of Seli – Sissu / Gramphu Pooling Station 400 kV D/c (Twin HTLS) - ***Proposed Implementation as ISTS***

Pattam HEP (60 MW) :

- Step up at 220 kV
- Pattam – Miyar 220 kV D/c - ***Proposed Implementation as ISTS***
- Provision of 1x250 MVA(4 nos. of 83.3MVA Single Phase units), 220/400 kV GIS Pooling Station at Miyar. Incase of space constraints at Miyar switchyard, a separate pooling station would be required.- ***Proposed Implementation as ISTS***

Tignet HEP (81 MW)

- Step up at 220 kV
- LILO of one circuit of Pattam – Miyar 220 kV D/c - ***Proposed Implementation as ISTS***

For Pattam & Tignet HEP transmission systems, it is assumed that Pattam would be coming up prior to Tignet. In case Tignet HEP materializes before Pattam, 220 kV D/c line and provision of ICTs shall have to be matched with Tignet HEP.

NOTE: (Additional system beyond Hamirpur would be planned based on the requirement / commissioning of new projects.) - ***Proposed Implementation as ISTS***

CHANDRABHAGA CORRIDOR-II

It was proposed that the generation projects in the downstream of Seli HEP i.e. Reoli Dugli (420 MW), Sach Khas (149 MW), Purthi (300 MW) and Duggar (236 MW) may be evacuated through Jammu region as these projects are close to that region, there are severe R-o-W constraints from Seli to Reoli Dugli and it may not be feasible / reliable to evacuate full 3850 MW through single corridor.

Reoli Dugli HEP (420 MW) & Sach Khas (149 MW): Both these projects are allocated to L&T and investigations for preparation of DPR are in progress. As per preliminary discussions, these projects are expected to come up by 2018. Following transmission scheme is proposed for evacuation of power from these projects:

- Generation step up at 400 kV level (for both projects)
- Reoli Dugli– Kishtwar 400 kV D/c (Twin HTLS-Adequate for 1500 MW) - ***Proposed Implementation as ISTS***
- Establishment of 400 kV switching station at Kishtwar - ***Proposed Implementation as ISTS***

- LILO of Dulhasti / Ratle – Kishenpur 400 D/c (Quad) line at Kishtwar - ***Proposed Implementation as ISTS***
- LILO of one circuit of Reoli – Kishtwar at Sach Khas - ***Proposed Implementation as ISTS***
- Generating Switchyard capacity to be kept for 1500 MW at each Power House.

Purthi HEP (300 MW) : Following transmission system is proposed with Purthi HEP

- Generation step up at 400 kV level
- LILO of one circuit of Reoli – Kishtwar 400 kV D/c at Generating station - ***Proposed Implementation as ISTS***
- Generating Switchyard capacity to be kept for 1500 MW at Power House.

Duggar HEP (236 MW): Following is proposed for transfer of power from Duggar

- Generation step up at 400 kV level
- LILO of one circuit of Reoli – Kishtwar 400 kV D/c at Generating station - ***Proposed Implementation as ISTS***
- Generating Switchyard capacity to be kept for 1500 MW at Power House.

Note: Initially some margins may be available beyond Kishtwar, however system strengthening would be required depending on the generation addition. - ***Proposed Implementation as ISTS***

Rabi basin

Major projects existing in Rabi Basin are Chamera-I (540MW) and Chamera-II (300MW).For evacuation of power 400 kV D/C line from Chamera-I to Jullendher and 400kV S/Cfrom Chamera-I to Kishenpur LILOed to Chamera-II are existing. Chamera-III (231MW)and Budhil (70MW) are under construction and Kuther(260 MW), Bijoli holi (200 MW),Bara Bengal (200 MW), Burmur (45 MW), Hudsar (60 MW) and Kugti (45 MW) are planned.

For evacuation of power from the projects upstream of Chamera-II, a 400/220kV pooling station is planned near Chamera-II which is required matching with Budhil HEP with would be the next project in the valley. This pooling station would be connected toChamer-II through a 400kV S/C line and to Jullundhar through 400kV D/C line. The line to Jullundhar would be needed with the next generation project which is Chamera-III.

A 220kV pooling station at a suitable location upstream of Chamera III is also proposed where power is proposed to be pooled and transmitted to Chamera-II 400/220kV pooling station through three numbers of 220kV D/C lines with 1xMoose conductors. These would be optimum solution for phased development. However, if there are physical constraints in constructing three of 220 kV D/C lines through the valley, it may be required to built two nos. of 220 D.C lines with 2x Moose conductors

Beas Basin

The existing major projects in Beas basin are Malana-I (87MW) and Larji (126 MW). Power from both these projects is being evacuated through 132 kV HPSEB system. The other major projects in Beas/Parbati basin are Allain Duhangan (192 MW), Malana-II(100MW), Koldam (800MW) Parbati-II (800 MW), Parbati III (501 MW) and Sainj (100 MW).Evacuation from Koldam, Parbati-II and Parbati-III is planned through 400kV system. The transmission lines are:

Koldam-Nalagarh 400kV D/C Quad conductor
Parbati-II-Koldam 400kV 2xS/C Quad conductor
Koldam-Ludhiana 400kV D/C Triple conductor

With Parbati-III, a pooling station at Panarsa is proposed and Panarsa-Amritsar 400kV D/C twin Moose line has been planned.

The Panarsa 400/220kV pooling station was required in the time frame of Allain Duhangan and Malana-II. However, as the time schedule did not match, a direct 220kV D/C line from Allain Duhangan to Nalagarh has been taken-up for construction by ADHPL. This line with 1xZebra conductor has a capacity of 400 MW through which Malana-II power can also be evacuated.

Power from Sainj is proposed to be evacuated through 400kV via Parbati-III. For this, either Sainj may adopt direct step-up to 400kV or have its own 400/132kV substation.

The 400/220kV pooling station at Panarsa would still be needed to pool the power to be received from Tandi 220kV pooling station proposed in Chenab basin. As the line from Tandi would be at high altitude, and there may also be need of cables in some portion,220kV line would be a better option rather that 400kV. The 220kV lines would have to be with higher conductor specification say 220kV D/C line with quad Moose conductors.

ANNEXURE - 2

C/ENG/SEF/N/LTOA

Date: 18/01/2011

To

As per list attached

Sub: Minutes for Connectivity/Long Term Access Meeting held on 29/12/10 at POWERGRID, Gurgaon

Sir,

The Connectivity/Long Term Access Meeting was held on 29/12/2010 at POWERGRID, Gurgaon along with 29th Standing Committee Meeting of Northern Region on Transmission Planning. Various Long Term Access applications for transfer of power to Northern Region & Connectivity of generation to Northern regional grid were discussed. Please find enclosed the minutes for the same.

Thanking You,

Yours Faithfully

(Y K Sehgal)
Executive Director (SEF, CE & IT)

Copy for kind information:

- Director (Projects)
- ED (Commercial)

List of Addresses

1. Shri. S.M Dhiman Member(Power system),CEA , Sewa Bhawan, R.K. Puram, New Delhi –66	2. Shri. Ravinder, Chief Engineer (SP&PA),CEA , Sewa Bhawan, R.K. Puram, New Delhi –66
3. Member Secretary, NRPC 18A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi – 110 016	4. Director (Technical) NHPC, NHPC Office Complex, Sector 33, Faridabad – 121003
5. Director (Operation) Delhi Transco Ltd., Shakti Sadan, Kotla Road, New Delhi-110 002	6. Member (Transmission) HPSEB, Vidyut Bhawan, Shimla-171004.
7. Chief Engineer (Transmission) UP Transmission Corporation, 11th Floor, Shakti Bhawan Extn. 14, Ashok Marg, Lucknow-226001	8. Director(Technical) PSTCL Head Office, Mall Road, Patiala,-147001, Punjab.
9. Director (Transmission), RRVPNL, Vidyut Bhawan, Janpath, Jyoti Naga Jaipur, Rajasthan.	10. Chief Engineer (OP), Electricity Department, UT Sectt, Sector-9D,Chandigarh.-1610(
11. Director (Transmission) HVPNL, Shakti Bhawan, Sector-6, Panchkula-134109, Haryana	12. Development Commissioner (Power) J&K Exhibition Ground, Near New Secretariat, Srinagar-19001
13. Executive Director (Projects) PTCUL, PTCUL H/Q Building, Saharanpur Road, Near 132 kV S/s Majra, Dehradun, Uttarakhand- 248001	14. Member (Electricity), BBMB, Flat No:1400, Sector-35B, Madhya Marg, Chandigarh.
15. Executive Director (Engg) NTPC Ltd, Engineering Office Complex, Plot No.A-8A, Sector-24, Post Box No.13, Noida (U.P.)-201301.	16. Shri. M. Krishanmoorthy, Associate Vice President, GMR Hydro Power Pvt. Ltd. Old Udhan Bhawan, IGI Airport, Palam New Delhi-110037.
17. Shri. V K Sharma, Head- Hydro (Projects), GMR Hydro Power Pvt. Ltd. Old Udhan Bhawan, IGI Airport, Palam, New Delhi-110037.	18. Er. V.K Misra, DGM (EC), Himachal Pradesh Power Corp. Ltd. Shanti Kutir, Kamna Nagar,Chakkar, Shimla-171005
19. Shri. D.D Chowdhury, DGM, Sunflag Power Ltd. 11th Floor, 116A-1119B, E-Block, International trade Tower, Nehru Place, New Delhi-1100019.	20. Shri. D.V. Rao Director, Sravanthi energy Pvt. Ltd., 136, Rider House, 3rd Floor, Sector-44, Gurgaon-122002.
21. Shri. A.K Jain, Director, Beta Infratech Private Limited, B-4/45, Safdarjung Enclave, New Delhi-110029	22. Shri. Rahul Goyal, Director, Gama Infraprop (P) Ltd M-3, First Floor, Hauz Khas, Aurbindo Marg, New Delhi-110016
23. Shri G. Amudhan, Director, Rosa Power Supply Company Ltd 3rd Floor, Trade Tower, 94, Mahatma Gandhi Marg, Lucknow-226001	24. Shri S.K Goyal, Director, Shri Bajrang Power & Ispat Ltd C-15, Lane-1, Sector-I, New Shimla, Himachal Pradesh-171009

their cost. Injection of power at this substation shall be at 220 D/c kV line to be constructed by HPPTCL.

- The applicant shall abide by all provisions of the Electricity Act, 2003, the CERC regulation 2009 (Grant of Connectivity, Long-term Access and Medium-term Open Access in inter-State Transmission and related matters) Central Electricity Authority (Technical Standards for connectivity to the Grid) and Indian Electricity Grid Code as amended from time to time.
- The connectivity shall be as per the detailed procedures of Central Transmission Utility (POWERGRID) for Grant of Connectivity, Long-term Access and Medium-term Open Access to Inter-State Transmission and all provisions regarding connectivity would have to be met.
- The applicant shall furnish additional details for signing Connection Agreement for the same and would sign the Connection Agreement as per the provisions of Connectivity.
- For any additional power injection at this new S/s, application as per CERC regulations would be required.
- Considering the less available time for implementation of 400 kV line, some alternative evacuation arrangement need to be evolved by HPPTCL

Long term Access

- Applicant shall have to firm up exact destination at least 3 years prior to the intended date of availing LTA at least for a capacity equivalent to 50% of the quantum of power for which LTA has been sought for through signing of PPA with such grid connected entities/STUs as per CERC Regulations 2009. As the Long Term access is required before three years the applicant may finalize and intimate the beneficiaries immediately.
- Signing the requisite BPTA for Northern Regional Transmission system charges and submitting of required Bank Guarantee within 6 months. *(Normally time given is one month, however on a specific request time period of six months was agreed).*
- The applicant, shall coordinate with HPPTCL for dedicated transmission line/Substation and bear all applicable transmission charges as decided by appropriate agencies for transfer of power upto regional grid point.
- Signing the requisite BPTA for Northern Regional Transmission system charges from Dec'2012 for 25 years.
- The applicant shall abide by all provisions of the Electricity Act, 2003, CERC (Grant of Connectivity, Long-term Access and Medium-term Open Access in inter-State transmission and related matters) Regulations, 2009, Approved Detailed procedure of CTU, CEA (Technical Standards for connectivity to the Grid) and Indian Electricity Grid Code as amended from time to time.
- The Long term Access shall be as per the detailed procedures of Central Transmission Utility (POWERGRID) for Grant of Connectivity, Long-term Access and Medium-term Open Access to Inter-State Transmission and all provisions regarding LTA would have to be met.

5.0 Connectivity and Long Term Access (LTA) to Himachal Pradesh Power Corporation Limited, for connectivity and transfer of 195 MW power from Kashang HEP

POWERGRID informed that Himachal Pradesh Power Corporation Ltd.(HPPCL) had applied for Connectivity & Long Term Access for their 195 MW Kashang Generation project at Kinnaur, H.P. As per the application, the connectivity and LTA for the project is required by January, 2013. Commissioning schedules as indicated by HPPCL for

Unit-1 is Jan, 2013, for Unit-2 it is Feb,2013, Unit-3 it is October,2014. Beneficiary for power is Northern Region.

Connectivity and Long Term Access

POWERGRID stated that as per the connectivity application, the nearest substation to Kashang HEP are Bhabha Substation (27 km), Kotla Substation (52 km) and Kunihar Substation (190km). As per the master plan evolved by CEA, for evacuation of power from Satluj basin, it envisages a 400/220kV Substation at Sherpa colony where power from various hydro projects is to be pooled.

POWERGRID informed that Tidong-I (100MW) which is in the vicinity had already applied for Long Term Access and while granting Long term Access it was intimated that initially power was to be evacuated by Tidong-I - Kashang – Bhabha – Kunihar 220 kV D/c line of STU and when the 400 kV substation at Jangi and pooling station at Sherpa colony would be commissioned, the Tidong power could be injected at Jangi and be evacuated as envisaged in the Master Plan for Sutluj Basin project. Further, it was informed that HPPCL in addition to Kashang HEP has also applied LTA for Shong Tong HEP (450 MW) which is close to Sherpa Colony.

As about 645 MW needs to be evacuated (Kashang -195MW & Shong Tong Karcham 450 MW), a 400/220kV Substation at Sherpa colony by LILO of one ckt. of Karcham Wangtoo- Abdullapur D/c line at a 400/220 kV substation at Sherpa colony may be established alongwith Shongtong. The substation would be commissioned matching with Shong Tong time frame and till then power from the project would be evacuated via extending Bhabha – Kunihar 220 kV D/c. Since the line shall carry 415 MW power, from Bhabha(120 MW), Kashang(195 MW) and Tidong-I(100MW), it would be loaded to its full capacity and would not be able to sustain contingency.

With the commissioning of Karcham Wangtoo system, about 1000 MW shall be available for future projects, out of which already 100 MW has been allotted for Sorang HEP. The proposed Tidong-I, Kashang and Shongtong Karcham can also be evacuated over the above corridor upto Abdullapur. It was agreed that beyond Abdullapur, additional transmission system would be required with commissioning of proposed generation projects. The additional transmission system shall be evolved based on progress of generation and network orientation. HPPCL would be required to share transmission charges for the additional transmission system, alongwith other generations, if any.

After the discussions it was agreed that Connectivity and Long term Access for 195MW generation of Kashang HEP of HPPCL be granted, subject to following:

Connectivity

- As Kashang (195 MW) HEP, is scheduled to commissioned by January 2013, it was agreed that applicant may evacuate power from the project by extending Bhabha-Kunihar 220kV line initially till the commissioning of Sherpa colony. It was stated that the line shall carry power 415 MW, from Bhabha(120 MW), Kashang (195 MW) and Tidong-I(100MW), The line would be loaded to its full capacity and would not be able to sustain contingency.
- For evacuation of Shongtong Karcham (450 MW), a 400kV substation at Sherpa colony by LILO of one circuit of Karcham Wangtoo – Abdullapur line, matching with generation schedule (March'15) was proposed. The works of establishing 400kV Sherpa colony substation and providing connectivity from the generation project by 400kV D/c can be carried out under ISTS as per provisions of the CERC regulations

and approved procedure of CTU. With the commissioning of Sherpa colony, power from Kashang, in accordance with CEA master plan, may be pooled at Sherpa colony by LILO of Kashang-Bhabha-Kunihar 220kV line and establishment transformation capacity of 2x500 MVA. The works (LILO bays and provision of ICT & associated bays) may be carried out by can be carried out by CTU / transmission licensee as per provisions of the CERC regulations as a depository work on behalf of applicant/HPPTCL. LILO of 220kV line of HPPTCL at proposed Sherpa colony would have to be carried out by HPPTCL.

- To provide reliability HPPTCL may provide additional Kashang- Sherpa colony 220 kV D/c line in the time frame of Sherpa substation in line with master plan of CEA. In case of constraint in ROW, the capacity of 220kV D/c section between Kashang and Sherpa colony may be upgraded by reconductoring with high capacity conductor.
- HPPTCL/HPPCL would discuss for vacation of land presently being held by M/s Jaypee Ltd. for Sherpa Colony substation or else assist the CTU/transmission licensee for identifying/acquisition of the land for substation at Sherpa colony.
- The applicant shall abide by all provisions of the Electricity Act, 2003, the CERC regulation 2009 (Grant of Connectivity, Long-term Access and Medium-term Open Access in inter-State Transmission and related matters) Central Electricity Authority (Technical Standards for connectivity to the Grid) and Indian Electricity Grid Code as amended from time to time..
- The connectivity shall be as per the detailed procedures of Central Transmission Utility (POWERGRID) for Grant of Connectivity, Long-term Access and Medium-term Open Access to Inter-State Transmission and all provisions regarding connectivity would have to be met.
- The applicant shall furnish additional details for signing Connection Agreement for the same and would sign the Connection Agreement as per the provisions of Connectivity.

Long term Access

- The Long term Access was granted subject to the condition that the applicant shall coordinate with HPPTCL for dedicated transmission line and bear all applicable transmission charges as decided by appropriate agencies.
- Applicant shall have to firm up exact destination at least 3 years prior to the intended date of availing LTA at least for a capacity equivalent to 50% of the quantum of power for which LTA has been sought for through signing of PPA with such grid connected entities/STUs as per CERC Regulations 2009. As the Long Term access is required before three years the applicant may finalize and intimate the beneficiaries immediately.
- Signing the requisite BPTA for Northern Regional Transmission system charges from Dec'2013 for 25 years within six months.
- The applicant shall abide by all provisions of the Electricity Act, 2003, CERC (Grant of Connectivity, Long-term Access and Medium-term Open Access in inter-State transmission and related matters) Regulations, 2009, Approved Detailed procedure of CTU, CEA (Technical Standards for connectivity to the Grid) and Indian Electricity Grid Code as amended from time to time.
- The Long term Access shall be as per the detailed procedures of Central Transmission Utility (POWERGRID) for Grant of Connectivity, Long-term Access and Medium-term Open Access to Inter-State Transmission and all provisions regarding LTA would have to be met.

6.0 Connectivity and Long term Access (LTA) to Himachal Pradesh Power Corporation Limited, for connectivity and transfer of 450 MW power from Shongtong Karcham HEP

POWERGRID informed that Himachal Pradesh Power Corporation Ltd.(HPPCL) has applied for Connectivity and Long Term Access of their Shongtong Karcham (450) MW Generation project in Satluj Basin at Kinnaur, H.P. As per the application, the connectivity and LTA for the project is required by March, 2015 (Unit-1 : March,2015, Unit-2 : April,2015 & Unit-3 : May,2015). The beneficiary for the power is Northern Region.

Connectivity and Long Term Access

POWERGRID informed that HPPCL had proposed to LILO of one circuit of Baspa-II – Jhakri D/c line at Shongtong Karcham HEP. As per their connectivity application, the generation project is located about 2 km (during the meeting it was informed that it is about 20 km) from proposed Sherpa colony 400kV S/s. As per the master plan evolved by CEA for evacuation of power from Satluj basin, it envisages pooling of power from the project in 400/220kV Substation at Sherpa colony.

It was informed that Tidong-I (100MW) had already applied for Long Term Access and while granting Long term Access it was decided that initially power to be evacuated by Tidong-I - Kashang – Bhabha – Kunihar 220 kV D/c line of STU and when the 400 kV substation at Jhangi and pooling station at Sherpa colony would be commissioned, the Tidong power could be injected at Jhangi and be evacuated as envisaged in the Master Plan for Sutluj Basin project. Further, HPPCL has also applied LTA for Kashang HEP. Since 400/220kV substation of Jhangi will materialize in a later time frame, it was agreed that injection of power be at Sherpa colony.

Keeping above in view, presently about 750 MW needs to be evacuated from the basin, Kashang (195MW), Tidong-I (100 MW) and Shong Tong Karcham (450 MW) and to evacuate the power, a 400/220kV Substation at Sherpa colony by LILO of one circuit of Karcham Wangtoo- Abdullapur at Sherpa colony was agreed. The substation would be commissioned matching with Shong Tong time frame. It was agreed that the Shongtong Karcham HEP would be connected to Sherpa colony by a 400kV D/c line. With the commissioning of Karcham Wangtoo system, about 1000 MW shall be available for future projects, out of which already 100 MW has been allotted for Sorang HEP. Tidong-I, Kashang and Shongtong Karcham can also be evacuated over the corridor upto Abdullapur.

Beyond Abdullapur additional transmission system would be required with commissioning of proposed generation projects. The additional transmission system shall be evolved based on progress of generation and network orientation. HPPCL would be required to share transmission charges for additional transmission system, alongwith other generations, if any.

After the discussions, it was agreed that Connectivity and Long term Access for 450MW generation of Shongtong Karcham HEP of HPPCL be granted subject to following:

Connectivity:

- For evacuation of Shongtong Karcham (450 MW) it is proposed to establish a 400kV substation at Sherpa colony by LILO of one circuit of Karcham Wangtoo – Abdullapur 400 kV D/c (quad) line, matching with generation schedule (March'15). The works of establishing 400kV Sherpa colony substation and providing connectivity from the

generation project by 400kV D/c can be carried out by CTU / transmission licensee as per provisions of the CERC regulations. With the commissioning of Sherpa colony, power from Kashang, in accordance with CEA master plan, would be pooled at Sherpa colony by LILO of Kashang-Bhabha-Kunihar 220kV line and establishment of transformation capacity of 2x500 MVA. The works (LILO and its bays and provision of ICT & associated bays) would be carried out as a depository work on behalf of HPPCL/HPPTCL.

- HPPTCL/HPPCL would discuss for vacation of land presently being held by M/s Jaypee Ltd. for Sherpa Colony substation or else assist the CTU/transmission licensee for identifying/acquisition of the land for substation at Sherpa colony.
- The applicant shall abide by all provisions of the Electricity Act, 2003, the CERC regulation 2009 (Grant of Connectivity, Long-term Access and Medium-term Open Access in inter-State Transmission and related matters) Central Electricity Authority (Technical Standards for connectivity to the Grid) and Indian Electricity Grid Code as amended from time to time.
- The connectivity shall be as per the detailed procedures of Central Transmission Utility (POWERGRID) for Grant of Connectivity, Long-term Access and Medium-term Open Access to Inter-State Transmission and all provisions regarding connectivity would have to be met.
- The applicant shall furnish additional details for signing Connection Agreement for the same and would sign the Connection Agreement as per the provisions of Connectivity.
- Further, HPPCL shall have to sign separate Transmission Agreement with CTU /transmission licensee for bearing transmission charges of Sherpa colony S/s alongwith LILO & 400kV D/c shall also be required to submit Bank Guarantee @ Rs. 2.5 Lakhs per MW if required line is less than 20 kms else @ Rs. 5 Lakhs per MW of connectivity applied/granted.

Long term Access

- Applicant shall have to firm up exact destination at least 3 years prior to the intended date of availing LTA at least for a capacity equivalent to 50% of the quantum of power for which LTA has been sought for through signing of PPA with such grid connected entities/STUs as per CERC Regulations 2009.
- The Long term access is being granted subject to the condition that the applicant will bear all applicable transmission charges for transfer of power as decided by appropriate agencies
- Signing the requisite BPTA for Northern Regional Transmission system charges from Dec'2015 for 25 years.
- Additional strengthening would be required for transfer of power beyond Abdullapur. The system would be evolved looking into progress of the generating stations in the basin. The system cost shall be shared by the applicant, along with other beneficiaries, if any.
- The applicant shall abide by all provisions of the Electricity Act, 2003, CERC(Grant of Connectivity, Long-term Access and Medium-term Open Access in inter-State transmission and related matters) Regulations, 2009, Approved Detailed procedure of CTU, CEA (Technical Standards for connectivity to the Grid) and Indian Electricity Grid Code as amended from time to time.
- The Long term Access shall be as per the detailed procedures of Central Transmission Utility (POWERGRID) for Grant of Connectivity, Long-term Access and Medium-term Open Access to Inter-State Transmission and all provisions regarding LTA would have to be met.

ANNEXURE -3

Central Electricity Authority
Government of India
System Planning & Project Appraisal Division
Power system wing, Sewa Bhawan
R K Puram, New Delhi -110066

No. 8/20/SP&PA-11/ 327

Dated: 6th April, 2011

Director (Projects)
HPPowerTransmission Corporationl .td.
Barowalias House, Khalini,
Shimla-171002

Subject: Examination of DPRs of ADB Financed Transmission Projects

Sir.

This is in reference to your letter no. HPPTCL/ADBTA/2010/5898-99 dated 17.02.2011 vide which DPRs of following transmission projects to be executed with the assistance of ADB funding were submitted for examination:-

Sr. No.	Name of Transmission Scheme
1	400/220/66 kV GIS substation at Wangtoo (Sherpa Colony)
2	220 kV D/c Hatkoti – Gumma(Kothai)(Twin Moose) line
3	400/220 kV Pooling Sub-Station at Gumma(Kotkhai)
4	220/66 kV Pooling Station at Bhoktoo

The DPRs of above works have been examined and our comments are enclosed in Annexure for taking further necessary action at your end.

(B.K.Sharma) 6/4/2011
Director

Annexure

Comments on Transmission Projects DPRs to be implemented by HPPTCL with financial assistance of ADB

HPPTCL have proposed for taking up following transmission works with ADB financing. These projects are located in Pabbar and Satluj basins.

Sr. No.	Name of Transmission Scheme	Estimated cost (crores)
1	400/220/66 kV GIS substation at Wangtoo (Sherpa Colony)	276.97
2	220 kV D/c Hatkoti – Gumma(Kothai)(Twin Moose) line	84.44
3	400/220 kV Pooling Sub-Station at Gumma(Kotkhai)	140.94
4	220/66 kV Pooling Station at Bhoktoo	62.30
	TOTAL	564.65

The total estimated cost on these works has been worked out to be Rs.564.65 crores including IDC. Brief detail of each of the projects and our comments are given below:

1. **400/220/66 kV GIS substation at Wangtoo (Sherpa Colony)**

It is mentioned that in LTA meeting held on 29.12.2010 it was decided that a 400 kV switching station would be created at Sherpa Colony by LILO of one circuit of 400 kV Karcham Wangtoo-Abdullapur D/c line and a 400 KV D/c line from Shongtong Karcham HEP(450 MW) to Sherpa colony switching station would be constructed for evacuation of power from Shongtong Karcham HEP. These works were approved to be constructed as ISTS system. It was also agreed that HPPTCL may provide requisite 400/220 kV ICTs and 220 kV line bays as per the requirement of HPPTCL would be provided at this station at the cost of HPPTCL.

It is observed that HPPTCL now proposed to construct a separate 400/220/66 kV GIS substation at wangtoo which is at a distance of 1 km and interconnect this station with 400 kV switching station of ISTS system.

In this context, it is felt that creation of two 400 kV GIS substations within the proximity of 1 km, is sub-optimal planning and therefore HPPTCL may keep space provision for accommodating 4 nos. 400 kV lines at proposed 400/220/66 kV Wangtoo substation for terminating LILO of one circuit of 400 kV Karcham Wangtoo-Abdullapur D/c line and 400 kV D/c line from Shongtong Karcham HEP. In addition space provision of 2nos of 220 kV line bays may also be kept for terminating additional 220 kV D/c line from Kashang to Wangtoo in future when full generation of Tidong and Kashang HEPs materialises. The earlier planned 400 kV switching station for evacuation of power from Shongtong Karcham would not be required in this case.

In view of the above, HPPTCL is advised to revise the scope of works of proposed Wangtoo substation accordingly. HPPTCL may also furnish a proposal on above lines for consideration of Standing Committee Meeting of power system planning for Northern Region.

2. 220 kV D/c Hatkoti – Gumma(KotKhai)(Twin Moose) line

It has been observed that HPPTCL is constructing a 220 kV switching station at Hatkoti where the power from Sawara Kuddu (111 MW), Tangnu Romai HEP(44 MW) Chirgaon Majhgaon(45 MW), Paudital Lassa(24 MW),Dhamwari Sunda(70 MW), Andhra (68 MW),Rupin(45 MW) and other SHPs will be pooled. The total power of 346 MW is proposed to be evacuated on proposed 220 kV D/c Hatkoti – Gumma(Kothai)(Twin Moose) line. The line length is approx 28 Km. The above work is a part of proposed system approved during 29th meeting of standing committee for power system planning of northern region under Long Term Access (LTA) to HPPCL for evacuation of power from Sawara Kuddu HEP(111 MW). As such, the proposal for 220 kV D/c Hatkoti – Gumma(Kotkhai) twin moose line is found to be generally in order.

3. 400/220 kV Pooling Sub-Station at Gumma(Kotkhai)

It is mentioned that in LTA meeting held on 29.12.2010 it was decided that a 400/220 kV substation would be created by HPPTCL for evacuation of power of Sawara Kuddu HEP (111 MW) and other HEPs of Pabbar Valley basin (235 MW). This substation is to be created by LILO of one ckt of 400 kV Naphtha Jhakri-Abdullapur inter-state line. Accordingly HPPTCL has proposed to construct 400/220 kV,1x315 MVA substation at Gumma (Kotkhai) with a provision of installing 2nd 400/220 kV,315 ICT in future when other generations materialise. As such, the proposal for 400/220 kV Gumma(Kotkhai) GIS substation is found to be generally in order.

4. 220/66 kV, 31.5 MVA Pooling Station at Bhoktoo

HPPTCL has informed that several small HEP's are identified in Kinnaur area near Bhoktoo totaling to 50 MW. For evacuation of this power it is proposed to create a 220/66 kV GIS substation at Bhoktoo by LILO of one circuit of 220 kV Bhaba – Kashang D/c line. This will provide connectivity for transfer of 50 MW power to ISTS system at Wangtoo substation. As Himachal Pradesh is predominantly hilly state and availability of land for substation is limited, GIS S/S is proposed in place of conventional AIS S/S. Initially one 31.5 MVA 220/66 kV ICT is proposed at this S/s for transfer of 13 MW power and 2nd ICT will be installed matching with the commissioning of remaining SHPs. The above works is as per comprehensive master plan evolved for evacuation of power from Hydro Projects located in Satluj basin.

In view of the above the construction of proposed 220/66 kV pooling substation at Bhoktoo is agreed.

COST ASPECT

The total estimated cost of the above works as indicated in the DPR is around Rs.564.65 crores. This includes IDC and other charges. The estimated cost for 400/220/66 kV substation, 220/66 kV substation and 220 kV D/c line are generally in order. HPPTCL has indicated that the works would be awarded through competitive bidding process. As such the price of works may be restricted to the actual bid price.

ANNEXURE -4

Government of India
Central Electricity Authority
System Planning &Project Appraisal Division
Power System Wing, Sewa Bhawan
R.K. Puram, New Delhi - 110 606.

F.No. 1/9/SP&PA-11/ **Dated: 01/12/11**

-As per list enclosed-

Sub: The 30th meeting of the Standing Committee on Power System Planning of Northern Region

Sir,

The 30th meeting of the Standing Committee on Power System Planning of Northern Region is scheduled to be held on **19th December 2011(Monday) at 10:30 A.M. at NRPC Conference Room, Katwaria Sarai, New Delhi**. It may be noted that the meeting is expected to continue till late in the evening.

The agenda for the meeting has been uploaded on CEA website: www.cea.nic.in (*path to access- wing specific document/power system related reports/ standing committee on power system planning/northern region*). Additional issues, if any, may be intimated.

You are requested to make it convenient to attend the meeting.

Yours faithfully,

(B.K.Sharma)
Director (SP&PA)

-List of Addresses-

1. Member Secretary NREB, 18-A Shajeed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi – 110016 (Fax-011-26865206)	7. Director (Transmission) UPPTCL, Shakti Bhawan Extn,3rd floor, 14, Ashok Marg, Lucknow - 226 001 (Fax-0522-2288410)	13. Development Commissioner (Power), Civil Secretariat, JAMMU - 180 001 (Fax-0191-2545447, 2530265)
2. Director (Projects) NTPC, NTPC Bhawan, Core 7, Scope complex– 6, Institutional Area, Lodhi Road, New Delhi – 110003 (Fax-011-24361018)	8. Director (Transmission) Urja Bhawan, Kawali Road, Dehradun, Uttaranchal - 248 001 (Fax-0135-2762460)	14. Member (Power) BBMB, Sectot-19 B Madya Marg, Chandigarh-160019 (Fax-0172-2549857)
3. Director (Technical) NHPC Office Complex, Sector – 33, NHPC, Faridabad - 121 003 (Fax-0129-2277941)	9. Director (Operations) Delhi Transco Ltd. Shakti Sadan, Kotla Marg, New Delhi - 110 002 (Fax-011-23234640)	15. Chief Engineer (Transmission) NPCIL,9- S-30 Vikram Sarabhai Bhawan, Anushakti Nagar, Mumbai - 400 094 (Fax-022-25993570, 25563350)
4. Director (Projects) POWERGRID, Saudamini, Plot no. 2, Sector - 29, Gurgaon-122 001 (Fax-0124-2571932)	10. Director(Technical) Punjab State Transmission corporation Ltd. (PSTCL), Head Office The Mall, Patiala - 147 001 (Fax-0175-2304017)	16. Chief Engineer (Operation) Ministry of Power, UT Secretariat,Sector-9 D Chandigarh - 161 009 (Fax-0172-2637880)
5. Sr. Vice President, PTC Ltd, 2nd floor, 15 NBCC Tower, Bhikaji Cama Place, New Delhi – 110066 (Fax-011-41659145)	11. Director (Projects) HVPNL Shakti Bhawan, Sector -6 Panchkula - 134 109 (Fax-0172-2560640)	17. Managing Director, HP PowerTransmission Corporation Ltd. Himfed Bhawan, Panjari, old MLA Quarters, SHIMLA-171004 (Fax-0177-2626284, 2626283)
6. Director(Technical) HPSEB Ltd. Vidyut Bhawan, SHIMLA-171004 (Fax-0177-2813554)	12. Director(Technical) THDC Ltd. Pragatipuram, Bypass Road, Rishikesh- 249201 Uttaranchal (Fx-0135-2431519)	

availability. Space is not available at Tehri Pooling station and from preliminary discussions with THDC it has been observed that space is available at THDC 400kV Koteshwar HEP Switchyard. Accordingly, 125 MVAR Bus Reactor at 400kV Koteshwar HEP Switchyard is proposed. Incase there are space constraint or transportation limitation, 80 MVAR reactor may be provided instead of 125 MVAR.

Members may discuss & concur the proposal.

9. Two Nos. of 220kV bays at Pithoragarh S/s

PTCUL has requested POWERGRID for 2 Nos. of 220kV bays at Pithoragarh substation for terminating their proposed 220kV Almora- Pithoragarh D/c line. At Pithoragarh substation, POWERGRID has already provided 4 nos. of 132 kV line bays, however it is proposed that POWERGRID may provide the requisite space and 220 kV bays can be implemented by PTCUL at their own cost.

Members may discuss & concur the proposal.

10. Evacuation of power from HEPs in Satluj Basin & Chandrabhaga Basin:

A lot of new hydro generation projects are planned in the upper region of State of Himachal Pradesh which mainly covers upper part of Satluj Basin including Spiti Valley and Chandrabhaga Basin. For implementation of transmission system, there are severe Right-of-Way constraints, the terrain is very tough and the area is snow bound. The issue of transmission system for upper part of Satluj Basin, Spiti Valley(Satluj Basin), Chandrabhaga Basin and Beas Basin in Himachal Pradesh was discussed during the 29th Standing Committee Meeting of Northern Regional Transmission Planning held on 29/12/2010, wherein it was decided that a Task Force having representatives from Govt. of HP, HPPCL, HPPTCL, CEA and POWERGRID would be constituted to study and revise the Master Plan. Keeping above in view, a site visit was undertaken by the Task Force from 19/09/2011 to 29/09/2011 to identify the availability of corridors, location of proposed pooling stations, feasibility of construction of lines, progress of generation projects etc.

There is an identified hydro potential of about 3500 MW in upper part of Satluj basin & Spiti valley(Satluj basin) and about 3500 MW in Chandrabhaga Basin. During site visit, the Task Force identified the corridor constraints, suitability of proposed pooling stations, progress of generations etc.

Based on the above as well as power transfer requirement, transmission system alongwith the phasing of the works was finalized. The proposed transmission system includes implementation of various pooling stations and high capacity common transmission corridors. Details of transmission system alongwith the phasing of works is given in Annexure-IV. The transmission lines shall involve many new technologies like adoption of HTLS conductor, construction of lines through high snow / avalanche areas etc. Considering the difficulties in implementation of the lines, it is proposed to involve SASE (Snow and Avalanche Study Establishment) and some international consultants for reliable operation.

There are many challenges in implementation of transmission system like tough mountainous terrain, heavy snow during winters, short working season, land acquisition, transportation problems, selection of conductor etc. which need to be addressed before implementation of the identified transmission system. The power handling capacity at generating & pooling stations has also to be decided based on power flow requirement to avoid any bottlenecks. Further, in many areas, there are loose rocks and almost vertical mountains. A lot of benching and revetment would be required. In many areas, avalanche protection measures would also be required.

It is also to be mentioned that the generation plant size varies from as low as about 40 MW to as high as about 650 MW and there would be a wide variation in the commissioning schedule of the generation projects. However, due to tough terrain, only one/two high capacity common transmission corridors can be constructed. Here, it is also to be mentioned that applications for transmission access for most of the projects have not been received. For upper part of Satluj Basin, applications have been received for about 885 MW out of 3500 MW and similarly for Chandrabhaga Basin, applications have been received only for 520 MW out of 3500 MW.

As per the load generation scenario of Himachal Pradesh, most of the power generated from these projects would have to be transmitted out of the state, therefore the identified transmission system needs to be developed as ISTS system. Further, as there are uncertainties, the system strengthening beyond the proposed pooling points shall be identified as per the power transfer requirement.

Members may discuss and approve the following:

a) Proposed Transmission scheme alongwith the phasing of works for evacuation of power from HEPs located in Satluj Basin & Chandrabhaga Basin of Himachal Pradesh.

b) Out of the above planned transmission scheme, the transmission elements which may be taken up as ISTS elements is also proposed at Annexure-IV. Generally the high capacity common transmission corridors, which are to be used for more than one generator, have been proposed as ISTS.

c) The generation would be coming up in a diversified time frame, however due to limited corridor availability, provision has to be kept for future projects also. Accordingly high capacity common corridors have to be developed and initially these corridors would be under utilised.

d) The implementation of corridor shall start after the grant of connectivity and submission of BG from 1st applicant in the corridor. In this regard it is to mention that for Chandrabhaga Basin, Connectivity Applications have been received for Miyar (120 MW) and Seli (now changed to 400 MW from 320 MW). In order to evacuate the generation from these two projects, implementation of high capacity corridor from these generation projects upto Hamirpur S/s (detailed system alongwith phasing is given in Annexure-IV), would be necessary. Similarly in upper part of Satluj and Spiti valley, applications of connectivity and LTA have been received from Kashang, Shongtong and Chango Yangthang HEPs. In order to evacuate the generation from these hydro projects, implementation of high capacity corridor from Ka Dogri Pooling station to Wangtoo Pooling station (detailed system alongwith phasing is given in Annexure-IV) would be necessary. A reconfirmation about the commissioning date would be taken at the time of submission of BG and attempts would be made to commission the transmission scheme matching with commissioning schedule of generation as declared by developer.

e) A senior level meeting of the project developers may be convened by Govt of HP / HPPTCL wherein the developers should be impressed upon to apply for connectivity / LTA as per CERC regulations.

ANNEXURE-IV

A. UPPER PART OF SATLUJ BASIN & SPITI VALLEY (SATLUJ BASIN)

The list of identified hydro projects in the Upper Part is given below:

S.No.	Project	MW	Time Frame	Developer	Status of Application for Access to Grid as per CERC regulations	Remarks
1	SHPs	142	2014			
2	Shongtong Karcham	450	Mar' 2015	HPPCL	Received	Site activities in progress.
3	Kashang-I	65	2013	HPPCL	Received	Site activities in progress. Time Frame as per application is Jan' 13-Jan' 14
4	Kashang-II & III	130	2015	HPPCL	Received	
5	Kashang-IV	48		HPPCL		
6	Tidong-I	100	2015	Nagarjuna Constructions Group	Received	Site activities in progress.
7	Chango Yangthang	140	2016	Bhilwara Group	Received	Investigation in progress. Site office opened two years back.
8	Yangthang Khab	261	2017		X	No physical progress
9	Ropa	60			X	No physical progress
10	Khab	636			X	No physical progress
11	Tidong-II	90			X	No physical progress
12	Jhangi Thopan	480			X	No physical progress
13	Thopan Powari	480			X	No physical progress
14	Sumte Khatang	130			X	No physical progress
15	Lara Sumte	104			X	No physical progress
16	Mane-Nadang	70			X	No physical progress
17	Lara	60			X	No physical progress
18	Killing-Lara	40			X	No physical progress
	Total	**3486**				

A.1 Planned Transmission System alongwith phased development for upper part of Satluj Basin and Spiti Valley (Satluj Basin)

- **SHPs** : Establishment of 66/220/400 kV GIS Pooling Station at Wangtoo by Mid 2014 to match commissioning of SHPs in Bhaba Khad (57 MW) and Sangla Valley (40 MW) + LILO of 220 kV Kashang- Bhaba D/c Line and LILO of both circuits of 400 kV Karcham Wangtoo-Abdullapur D/c line at Wangtoo. – ***Proposed Implementation through STU.***

  HPPTCL proposed to implement this substation by Mid 2014 and they have tied up the funds from ADB. The switchgear rating and bus capacity etc. at Wangtoo substation should be equivalent to 4000 Amps.

- **Shongtong Karcham** : Next project envisaged to be commissioned is Shongtong Karcham HEP (450 MW) by end of 2014. For transfer of power from this project, following is proposed:
  - Shongtong Karcham – Wangtoo 400 kV D/c Line (Quad HTLS Conductor –Equivalent to about 3000MW) – 18 km - ***Proposed Implementation as ISTS***
  - Switchyard Capacity etc. must be able to handle about 2800-3000MW power planned in the upstream of the generation project. It is proposed that the GIS switchyard may be designed with 4000 Amps switchgear. However, the cable capacity from Pot head yard to GIS switchyard may be augmented with generation addition in the upstream projects.

- **Tidong-I (100 MW) & Tidong-II (90 MW) HEP** : Following transmission system may be implemented matching with the commissioning of these projects:
  - 2x315 MVA (7x105 MVA units) 220/400 kV GIS Pooling Station at Jangi (with 4000 Amps. switchgear) (with space provision for 3rd ICT) - ***Proposed Implementation as ISTS***
  - LILO of one ckt. of Shongtong –Wangtoo 400 kV Line at Jangi - ***Proposed Implementation as ISTS***
  - Tidong – Jangi Pooling Station 220 kV D/c line - ***Proposed Implementation as ISTS***

- **Kashang-I (65 MW), Kashang-II (65 MW), Kashang-III (65 MW) & Kashang-IV (48 MW) HEP**: Kashang –I (65 MW) HEP is under construction and is likely to be commissioned during 2013. For evacuation of power from Kashang-I, HP is constructing a 220 kV D/c line from Bogtu to Kashang. Accordingly, power can be evacuated through Bogtu-Wangtoo-Bhabha 220 kV D/c line. With the commissioning of other stages of Kashang, the power shall be injected at Jangi pooling station. The Transmission scheme for Kashang shall be as given as below:
  - Kashang-Jangi Pooling Station 220 kV D/c line (Single HTLS- Equivalent to 300 MW capacity) - ***Proposed Implementation as ISTS***

  Note: In case Kashang HEP (Stage II & III) materialize earlier than Tidong, Jangi Pooling Station along with LILO of Shongtong-Wangtoo 400kV line would have to be implemented along with Kashang. After coming up of Kashang II & III and its inter-connection with Jangi Pooling Station, the Kashang-Bogtu 220kV line has to be kept in open condition.

- **Chango Yangthang (140 MW)**: Next project envisaged to be commissioned is Chango Yangthang. Following transmission system is proposed matching with Chango Yangthang:
  - Chango Yangthang – Proposed site of Ka Dogri Pooling Station 220 kV D/c line – 18 km - ***Proposed Implementation by developer***
  - Proposed Site of Ka Dogri – Jangi Pooling Station 400 kV D/c line (Twin Moose) to be initially charged at 220 kV – 50 km ***Proposed Implementation as ISTS***
  - Provision of 3rd 400/220 kV ICT (3 nos. of 105 MVA Single Phase units) at Jangi Pooling Station - ***Proposed Implementation as ISTS***

- **Yangthang Khab (261 MW)**:
  - 220 kV Yangthang Khab- Ka Dogri D/c Line with HTLS conductor - adequate for 300 MW capacity – 4 km - ***Proposed Implementation as ISTS***

- 2x315 MVA (7x105 MVA units) 220/400 kV GIS Pooling Station at Ka Dogri - ***Proposed Implementation as ISTS***
- Charging of Ka Dogri – Jangi line at 400 kV level - ***Proposed Implementation as ISTS***
- Direct termination of Chango Yangthang at Ka Dogri Pooling Station - ***Proposed Implementation by generation developer***

- **Khab (636 MW)**:
  - Khab – Jangi Pooling Station 400 kV D/c line – 20 km - ***Proposed Implementation as ISTS***

- **Jangi Thopan (480 MW) & Thopan Powari (480 MW) :**
  - LILO of one circuit of Jangi Pooling Station – Wangtoo 400 kV D/c (Quad HTLS) line at generation project - ***Proposed Implementation as ISTS***
  - Switchgear Capacity at Generation switchyard must be equivalent to 4000 Amps.

- **Ropa (60 MW)**
  - Direct injection to Jangi Pooling station by a 220 kV D/c line - ***Proposed Implementation by generation developer***
  - The generation of SHPs in the area may be injected at Ropa Generation Switchyard

- **Other Projects of Spiti Valley (Satluj Basin)**
  - The generation of these projects can be injected at Ka Dogri Pooling Station.
  - From Killing Lara (40 MW), Lara (60 MW) & Mane Nadang (70 MW), a combined 220 kV D/c line can be constructed upto Lara Sumte HEP. From Lara Sumte HEP(104MW), a high capacity 220 kV line (with twin Moose conductor) can be constructed upto Ka Dogri Pooling Station - ***Proposed Implementation as ISTS except for the generators below 50 MW.***
  - Augmentation of transformation capacity would be required at Ka Dogri. Space for 2 additional ICTs of 315 MVA (105 MVA single phase units) would be required. These transformers can be provided progressively matching with the generation addition. - ***Proposed Implementation as ISTS***

NOTE :

Present / Planned system beyond Wangtoo station would be capable of handling about 500-600 MW of power (to be confirmed based on the system studies). One more additional high capacity line (400 kV Quad) from Wangtoo towards Haryana/Punjab shall be required which can be constructed through the right bank of the river.

Based on above, the Master Plan has been reviewed and a sketch showing the revised Master Plan for this area is enclosed at **Exhibit-I.**

B CHANDRABHAGA BASIN (LAHAUL & SPITI AREA)

The list of identified projects in the upper part is given below:

S.No.	Project	MW	Time Line	Developer	Status of Application for Access to Grid as per CERC regulations	Remarks
1	Chhatru	120	2018	DCM Sriram	X	Site Investigation in progress
2	Teling	94	2015		X	No physical progress
3	Shangling	44	2015	Reliance Power	X	No physical progress
4	Jispa	300		HPPCL	X	No physical progress
5	Tandi	104		ABG Shipyard	X	No physical progress
6	Rashil	130		ABG Shipyard	X	No physical progress
7	Bardang	126		ABG Shipyard	X	No physical progress
8	Tignet	81		Amar-Mitra JV	X	No physical progress
9	Pattam	60			X	No physical progress
10	Seli	400	2016	Moser Baer	Received	Site investigation under progress.
11	Miyar	120	2016	Moser Baer	Received	Site investigation nearing completion.
12	Reoli Dugli	420	2018	L&T	X	Investigation in progress.
13	Sach Khas	149	2018	L&T	X	Investigation in progress.
14	Purthi	300		Reliance Power	X	No physical progress
15	Duggar	236		Tata + SN Power	X	No physical progress
16	SHPs	300				No physical progress
17	Other	500				No physical progress
	Total	**3500**				

B.1 Planned Tr. System alongwith Phased development for Chandrabhaga Basin

The total power in this area is about 3850 MW (considering 10% overload). Out of these projects, two projects namely, Miyar & Seli are expected to come up by 2016 and three projects Chhatru, Reoli Dugli & Sach Khas are expected by 2018. The next project expected in this area would be Jispa. The status and time frame of other projects are not yet clear.

Based on the progress of generation, availability of corridors, severe R-o-W constraints near Seli, quantum of power i.e. about 3850 MW, it was considered prudent to develop two transmission corridors, one towards Hamirpur and the other towards J&K. It is proposed that the corridor to start from Seli HEP would go towards Hamirpur and the other corridor to start from Reoli Dugli would go towards J&K. The corridor capacity towards Hamirpur would be of the order of 2500 MW and corridor capacity towards J&K would be about 1500 MW.

Keeping above observations in view, following transmission system is proposed which is matched with the sequence of commissioning of generation projects:

B.1.1 CHANDRABHAGA CORRIDOR-I

Seli HEP (400 MW): Earlier the Project size was 320 MW, however with the detailed investigations, the project size is being revised to 400 MW.

- 400 kV D/c Line (Twin HTLS-Adequate for about 2000 MW) from Seli to the site of 400 kV Pooling Station near Sissu /Gramphu (Pooling Station shall not be constructed during this time frame) - ***Proposed Implementation as ISTS***
- From site proposed near Sissu/Gramphu Pooling Station – Hamirpur 400 kV D/c (Triple HTLS – adequate for 2500 MW capacity) – For this line section, Rohtang Pass is to be crossed. For crossing Rohtang, 2 options are:-
  - Over Head 400 kV Line or - ***Proposed Implementation as ISTS***
  - Tunnel of about 4 km length with 3 m diameter at about 3000 m elevation and laying of 400 kV GIL. - ***Proposed Implementation as ISTS***

  Considering the environmental issues, geological issues for construction of tunnel and disposal of excavated material etc., it was considered that first preference should be for overhead line. There is about 8-10 feet of snow at Rohtang Pass during winters and working season is very less. For implementation of overhead line, SASE and some international expert would have to be involved.

Miyar HEP(120 MW) :

- Step up of Miyar generation at 400 kV level
- LILO of one circuit of Seli – Hamirpur (via Rohtang) 400 kV D/c line (Twin HTLS) at Miyar - ***Proposed Implementation as ISTS***

Note : Incase Miyar comes earlier than Seli, the line from Miyar to Hamirpur (configuration explained under Seli system) may be taken up initially and the same can be extended to Seli.

Chhatru HEP (120 MW) : With the coming of Chhatru HEP, following is proposed:

- Establishment of 2x315 MVA (7x105 Single Phase units) 400/220 kV GIS Pooling station near Sissu / Gramphu - ***Proposed Implementation as ISTS***
- Chhatru – Sissu / Gramphu GIS Pooling Station 220 kV D/c line (HTLS adequate for 300 MW per circuit) - ***Proposed Implementation as ISTS***
- LILO of both circuits of Seli - Hamirpur line at Sissu/ Gramphu GIS Pooling Station.- ***Proposed Implementation as ISTS***

Teling & Shangling HEP (94 & 44 MW) : For evacuation of power from these projects, following is proposed:

- LILO of one circuit of Chhatru – Sissu / Gramphu Pooling Station 220 kV D/c (HTLS) at Teling - ***Proposed Implementation as ISTS***
- LILO of one circuit of Chhatru – Sissu / Gramphu Pooling Station 220 kV D/c (HTLS) at Shangling - ***Proposed Implementation by STU or developer***

Note: The capacity of generation switchyards at Chhatru, Teling & Shangling HEPs must be equal to power handling capacity of 300 MW otherwise there would be constraints during contingency of outage of one circuit.

Jispa (300 MW) : For evacuation of power from Jispa HEP, following is proposed:

- Jispa – Sissu / Gramphu Pooling Station 400 kV D/c line - ***Proposed Implementation as ISTS***

Bardang HEP (126 MW) : Following is proposed for Bardang HEP

- Step up at 400 kV
- LILO of one circuit of Seli – Sissu / Gramphu Pooling Station 400 kV D/c (Twin HTLS) - ***Proposed Implementation as ISTS***

Rasil HEP (130 MW)

- Step up at 400 kV
- LILO of one circuit of Seli – Sissu / Gramphu Pooling Station 400 kV D/c (Twin HTLS) - ***Proposed Implementation as ISTS***

Tandi HEP (104 MW)

- Step up at 400 kV
- LILO of one circuit of Seli – Sissu / Gramphu Pooling Station 400 kV D/c (Twin HTLS) - ***Proposed Implementation as ISTS***

Pattam HEP (60 MW) :

- Step up at 220 kV
- Pattam – Miyar 220 kV D/c - ***Proposed Implementation as ISTS***
- Provision of 1x250 MVA(4 nos. of 83.3MVA Single Phase units), 220/400 kV GIS Pooling Station at Miyar. Incase of space constraints at Miyar switchyard, a separate pooling station would be required.- ***Proposed Implementation as ISTS***

Tignet HEP (81 MW)

- Step up at 220 kV
- LILO of one circuit of Pattam – Miyar 220 kV D/c - ***Proposed Implementation as ISTS***

For Pattam & Tignet HEP transmission systems, it is assumed that Pattam would be coming up prior to Tignet. In case Tignet HEP materializes before Pattam, 220 kV D/c line and provision of ICTs shall have to be matched with Tignet HEP.

NOTE: (Additional system beyond Hamirpur would be planned based on the requirement / commissioning of new projects.) - ***Proposed Implementation as ISTS***

B.2.2 CHANDRABHAGA CORRIDOR-II

It is proposed that the generation projects in the downstream of Seli HEP i.e. Reoli Dugli (420 MW), Sach Khas (149 MW), Purthi (300 MW) and Duggar (236 MW) may be evacuated through Jammu region as these projects are close to that region, there are severe R-o-W constraints from Seli to Reoli Dugli and it may not be feasible / reliable to evacuate full 3850 MW through single corridor.

Reoli Dugli HEP (420 MW) & Sach Khas (149 MW): Both these projects are allocated to L&T and investigations for preparation of DPR are in progress. As per preliminary discussions, these projects are expected to come up by 2018. Following transmission scheme is proposed for evacuation of power from these projects:

- Generation step up at 400 kV level (for both projects)
- Reoli Dugli– Kishtwar 400 kV D/c (Twin HTLS-Adequate for 1500 MW) - ***Proposed Implementation as ISTS***
- Establishment of 400 kV switching station at Kishtwar - ***Proposed Implementation as ISTS***
- LILO of Dulhasti / Ratle – Kishenpur 400 D/c (Quad) line at Kishtwar - ***Proposed Implementation as ISTS***

- LILO of one circuit of Reoli – Kishtwar at Sach Khas - ***Proposed Implementation as ISTS***
- Generating Switchyard capacity to be kept for 1500 MW at each Power House.

Purthi HEP (300 MW) : Following transmission system is proposed with Purthi HEP

- Generation step up at 400 kV level
- LILO of one circuit of Reoli – Kishtwar 400 kV D/c at Generating station - ***Proposed Implementation as ISTS***
- Generating Switchyard capacity to be kept for 1500 MW at Power House.

Duggar HEP (236 MW) : Following is proposed for transfer of power from Duggar

- Generation step up at 400 kV level
- LILO of one circuit of Reoli – Kishtwar 400 kV D/c at Generating station - ***Proposed Implementation as ISTS***
- Generating Switchyard capacity to be kept for 1500 MW at Power House.

Note: 1) Initially some margins may be available beyond Kishtwar, however system strengthening would be required depending on the generation addition. - ***Proposed Implementation as ISTS***
2) Feasibility of the option of taking a line to Kishtwar, needs to be ascertained as Task Force visited only upto the State border of Himachal Pradesh.

C. BEAS BASIN

Further there were certain issues for evacuation of power for Beas Basin, these issues were also discussed and analysed. A brief summary of those issues is given below:

Task force visited 400 kV switching station (under construction) at Banala. Corridor constraints for additional 400 kV lines were discussed and it was observed that it may not be possible to bring additional new 400 kV lines at Banala Pooling Station. POWERGRID informed that there is a proposal from Everest Power Private Limited(EPPL) to delink their Malana-II HEP (100 MW) from 220 kV D/c line of AD Hydro. Once approved, Malana-II shall be delinked and connected with Banala Pooling Station through 220 kV D/c Line. The proposal to delink Malana-II from AD Hydro 220kV D/c line is subject to approval of Standing Committee and the consent of the Malana-II HEP developer.

HPPTCL proposed that the capacity available in the 220 kV line of AD Hydro shall be utilized by HPPTCL to evacuate 100 MW of Small Hydel potential by LILO of 220 kV AD Hydro Line at Fozal. It was opined by CEA and POWERGRID that this is a dedicated line of AD Hydro, however, if desired, HPPTCL may take up the matter directly with AD Hydro.

HPPTCL proposed that 45 MW of Small Hydel potential upstream of Malana-II shall be evacuated through independent 220 kV Chhaur - Banala line. It was informed by CEA and POWERGRID that the line would be a dedicated line of Malana-II, however HPPTCL may take up the matter directly with EPPL.

HPPTCL requested for two nos. of 220 kV bays at Banala Pooling Station. POWERGRID informed that there is space for four nos. of 220 kV bays at Banala out of which two can be utilized for Malana-II and balance two, be utilized for HPPTCL.

Nakhtan HEP (520 MW) – Nakhtan HEP is located in the upstream of Parbati-II (earlier it was identified as Parbati-I with a capacity of 750 MW. Due to environmental issues, the project capacity has been

revised to 520 MW and named as Nakhtan). Regarding evacuation of power from Nakhtan HEP, some new Pooling Station in the vicinity of Parbati-II or Parbati-III or Parbati Pooling Station would have to be developed and system would be integrated with Parbati/Koldam system. While finalizing the scheme, the constraint in switchyard capacity of Parbati/Koldam HEP is to be taken into account.

D. ISSUES / CHALLENGES TO BE ADRESSED:

1. **Generation Switchyard Capacity**: As most of generations shall be connected through LILO of high capacity common corridors, therefore the generation switchyard should have capacity equivalent to the capacity of the line and generation switchyard should not become a bottleneck for utilization of line.

2. **Switchyard capacity of Pooling Stations**: The major Pooling Stations are proposed at Wangtoo, Jangi, Ka Dogri and Sissu / Gramphu. The switchgear & bus rating of the pooling stations should be equivalent to 3150 / 4000 Amps depending upon the power handling requirement.

3. **Challenges / Issues in Implementation**: For evacuation of power from above basins, the lines would have to traverse through high altitude, tough mountainous terrain, snow bound areas, glacier prone areas etc. Broadly, following issues would have to be considered:
   a. Tough / Snow Bound terrain : Due to Tough / Snow Bound terrain, special design would required.
   b. Short Working Season: Due to high snow during winters, the working season in these areas is very less i.e. about 5-6 months in a year. Further, these areas generally remain cut off from mainland during heavy snow period. Considering these factors, the total period required for construction would increase substantially. It would also be very difficult to firm up the exact time frame for the transmission project.
   c. Avalanche / Glacier prone area: Most of the area in Lahaul / Spiti valley is glacier / avalanche prone. Hence, for tower spotting, help from SASE, Ministry of Defence and local population would be required. Avalanche protection measure would also be required.
   d. Design of transmission line: At Rohtang Pass, there is a snow of about 8-10 feet and there are high speed winds. In addition, lines would be traversing through very high altitude and snow bound regions. For design of transmission lines, especially for crossing Rohtang Pass, services of some international consultant might be required.
   e. Environmental Issues: In some areas there is lot of forest involvement. Advance action for addressing environmental issues should be taken up.
   f. Land Acquisition: Land acquisition process may be initiated after site selection of location of various Pooling Stations.
   g. Transportation Problems: Most of the roads are 'Kutcha' roads and there are many bridges with a maximum load bearing capacity of 9 tonnes. While implementation, this may create a bottleneck. This issue needs to be analyzed in advance.
   h. Estimation of Cost of Project: Due to the uncertainties & challenges involved, the cost estimation of the project would be very difficult.

4. **HTLS Conductor Selection**: Most of the lines are proposed with HTLS conductor to keep the weight of tower to the minimum and to have maximum power transfer capacity. The conductor would also be facing ice loading and heavy winds. Conductor selection is to be carried out with extra care. Further to avoid high MVAR loss and to restrict transmission losses under contingency conditions, it is proposed to select the conductor considering maximum conductor temperature as 130° C.

5. **High Initial Cost**: The generators would be coming up in a phased manner. The cost of the transmission system would be very high, as it has to keep the margins for future capacity addition. Here, it is also to be mentioned that applications for transmission access for most of the projects have not been received.

6. **Difficult assessment of civil works**: In many areas, there are loose rocks and almost vertical mountains. A lot of benching and revetment would be required. In many areas avalanche protection measures would also be required. Considering these aspects, it would be very difficult to assess the exact quantities of civil works for lines.

7. **LILO of Alternate circuits for balanced loading**: Evacuation of many of the generation projects is proposed through LILO of one circuit of high capacity common corridor line at the generation projects. It would be preferable that LILO of alternate circuit is carried out to have balanced loadings on both the circuits to the possible extent.

8. **Other Issues**:

- The generation plant size varies from as low as about 40 MW to as high as about 650 MW. However, due to tough terrain only one / two high capacity transmission corridors can be constructed. There would be a wide variation in the commissioning schedule of the generation projects.
- Long term open access applications for most of the projects have not been received, however as per the load generation scenario of Himachal Pradesh most of the power generated from these projects would have to be transmitted out of the state. The transmission systems need to be developed as ISTS system.
- The transmission system of the generation projects, which are proposed to be connected through LILO of high capacity corridor or through shared corridor, should be implemented as ISTS system as the transmission line would be having a specialized design and use new technologies. This is also required considering that a large amount of generation would be transferred through corridor and the reliability of the corridor would be very important.
- System strengthening beyond the proposed pooling points shall be identified as per the power transfer requirement.

EXHIBIT-I

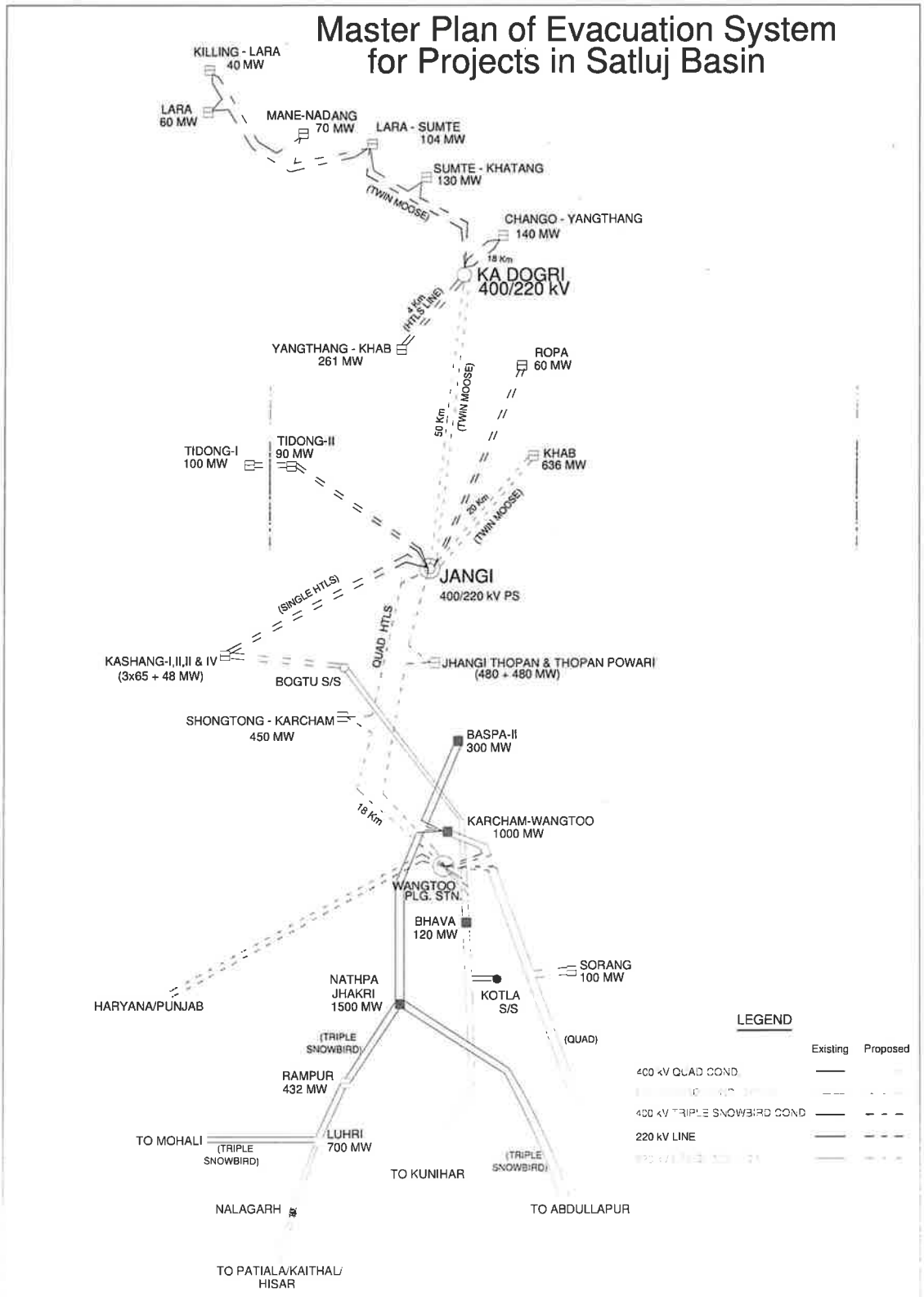
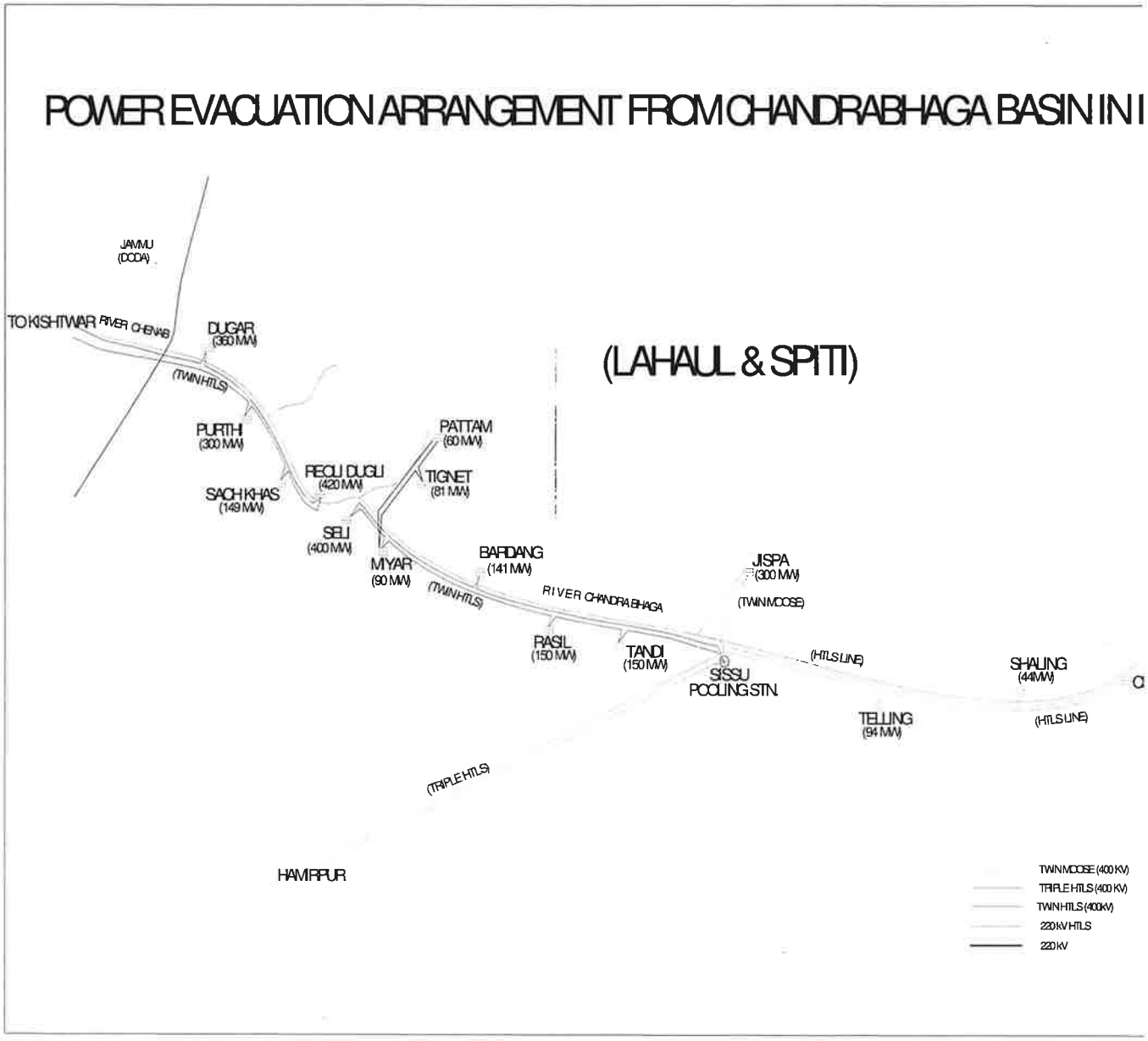

Master Plan of Evacuation System
for Projects in Satluj Basin
KILLING - LARA
40 MW
LARA
60 MW
MANE-NADANG
70 MW
LARA - SUMTE
104 MW
SUMTE - KHATANG
130 MW
(TWIN MOOSE)
CHANGO - YANGTHANG
140 MW
18 Km
KA DOGRI
400/220 kV
4 KM
(HTLS LINE)
YANGTHANG - KHAB
261 MW
ROPA
60 MW
50 Km
(TWIN MOOSE)
TIDONG-I
100 MW
TIDONG-II
90 MW
KHAB
636 MW
20 Km
(TWIN MOOSE)
JANGI
400/220 kV PS
(SINGLE HTLS)
QUAD HTLS
KASHANG-I,II,II & IV
(3x65 + 48 MW)
BOGTU S/S
JHANGI THOPAN & THOPAN POWARI
(480 + 480 MW)
SHONGTONG - KARCHAM
450 MW
BASPA-II
300 MW
18 Km
KARCHAM-WANGTOO
1000 MW
WANGTOO
PLG. STN.
BHAVA
120 MW
SORANG
100 MW
NATHPA
JHAKRI
1500 MW
KOTLA
S/S
HARYANA/PUNJAB
(TRIPLE
SNOWBIRD)
(QUAD)
RAMPUR
432 MW
TO MOHALI
(TRIPLE
SNOWBIRD)
LUHRI
700 MW
TO KUNIHAR
(TRIPLE
SNOWBIRD)
NALAGARH
TO ABDULLAPUR
TO PATIALA/KAITHAL/
HISAR
LEGEND
Existing
Proposed
400 kV QUAD COND
400 kV TRIPLE SNOWBIRD COND
220 kV LINE

EXHIBIT-II



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ANNEXURE-V

H.P. Power Transmission Corporation Limited
(A State Govt. Undertaking)
Barowalias House, Khalini, Shimla-171002
(Telefax: 0177-2626284)

NO. HPPTCL/CEA/2011/-6643 Dated:- 26/3/11

To

Executive Director (SEF & CE),
Power Grid Corporation of India Limited,
Saudamini, Plot No. 2, Sector-29, Near IFFCO Chowk,
Gurgaon-122001.
(Fax No. 0124-2571809)

Subject: - Minutes of the 29th meeting of the Standing Committee on Transmission System Planning of Northern Region and Long Term Access meeting held on 29th December, 2010 at POWERGRID, Gurgaon.-Providing 2 Nos. 220 kV bays at 400/220 kV P.S of PGCIL under construction near Chamera-II HEP

Sir,

Kindly refer our letter No. 5929 dated 21.2.2011 regarding availability of 2 Nos. 220 kV bays (1 No. in the Ist Instance) at 400/220 kV, 2x315 MVA P.S of PGCIL under construction near Chamera-II HEP for facilitating connectivity of 220 kV P.S of HPPTCL under construction at Karian. By September, 2012. In this context, we are pleased to inform that Work for construction of the 220 kV P.S at Karian has been awarded and the site for the P.S is in our possession. Notification under Telegraph Act for acquisition of land for 220 kV Karian- Chamera-P.S (Less than 5 Kms) has been issued and the Forest Clearance case is at an advanced stage of being cleared.

Since all the activities are on schedule, availability of 1 No. 220 kV bay at 220/400 kV P.S at Chamera may kindly be ensured by September, 2012.

Yours faithfully,

General Manager

Members
Pl discuss and
take up with
CMG
Jee

H.P. Power Transmission Corporation Limited
(A State Govt. Undertaking)
Barowalias House, Khalini, Shimla-171002
(Telefax: 0177-2626284)

HPPTCL

NO. HPPTCL/CEA/2011/- 5929 Dated:- 21/2/11

To

Executive Director (SEF & CE),
Power Grid Corporation of India Limited,
Saudamini, Plot No. 2,
Sector-29, Near IFFCO Chowk,
Gurgaon-122001.

Subject: - **Minutes of the 29th meeting of the Standing Committee on Transmission System Planning of Northern Region and Long Term Access meeting held on 29th December, 2010 at POWERGRID, Gurgaon.**

Sir,

Kindly refer Minutes of Meeting of 29th Standing Committee held on 29.12.2010 at PGCIL, Gurgaon circulated vide Director (SP & PA) letter No. 1/9/10- SP &PA/ 89-105 Dated 20.1.2011. As decided in the meeting (Refer Item 12 (ii)), it was agreed that 2 Nos, 220 kV bays shall be provided to HPPTCL at 400/200 kV Chamera Pooling Station for connecting its 220/132/33 kV P.S at Karian. In this context, it is to intimate that Karian P.S is targeted for completion in September, 2012 and in the Ist instance1 No. 220 kV bay shall be required for connecting Karian with 400/220 kV Chamera P.S through 220 kV S/C line on D/C towers.

This is for you information and necessary action please.

Yours faithfully,

General Manager

Mukesh
What is our schedule for bays
(Inform to CEA)

C:\Documents and Settings\Administrator\Desktop\sandeep\Karian bays PGCIL Feb11.doc

ANNEXURE -5

Central Electricity Authority
Government of India
System Planning & Project Appraisal Division
Power system wing, Sewa Bhawan
R K Puram, New Delhi -110066

No. 8/20/SP&PA-12/244

Dated: 14th March, 2012

Director (Projects)
HPPTCL,
Barowalias House, Khalini,
Shimla-171002

Subject: Examination of revised DPRs of ADB Financed Transmission Projects:- 66/22/400 kV GIS station at Wangtoo(Sherpa Colony) in Distt. Kinnaur of H.P.

Sir,

This is in reference to your letter no. HPPTCL/Tranche-1/2012/7291 dated 17.02.2011 vide which revised DPRs of following transmission project to be executed with the assistance of ADB funding were submitted for examination:-

Sr. No.	Name of Transmission Scheme
i	400/220/66 kV GIS substation at Wangtoo (Sherpa Colony)

The revised DPRs of above works have been examined and our comments are enclosed on Annexure for taking necessary action at your end.

(B.K.Sharma) 14/3/2012
Director

Central Electricity Authority
Government of India
System Planning & Project Appraisal Division
Power system wing, Sewa Bhawan
R K Puram, New Delhi -110066

DPRs for construction of transmission system in Himachal Pradesh under ADB package

HPPTCL have proposed for taking up following transmission works with ADB financing.

Sr. No.	Name of Transmission Scheme	Estimated cost (crores)
1	400/220/66 kV GIS substation at Wangtoo (Sherpa Colony)	356.00

The total estimated cost on these works has been worked out to be Rs 356 crores including IDC. Brief detail of each of the projects and our comments are given below:

1. **400/220/66 kV GIS substation at Wangtoo (Sherpa Colony)**

It has been indicated that 400/220/66 kV GIS substation at Wangtoo (Sherpa Colony) cater to evacuate power from Kashang(I) &Tidong(I) HEPs ,Raura, Seti and other SHEPs in Satulaj Basin of Himachal Pradesh. Total approx power evacuated through this substation is around 328 MW. Two no of 80/100 MVA, 66/220 kV Transformers and two numbers 220/400 kV Transformer Banks of 315 MVA(3x105 MVA 1-phase units) will be installed. Due to space constraints, 400/220 kV & 220/66 kV GIS substations will be constructed at separate locations 200 meter apart. These two substations will be interconnected by a 220 kV D/c line.

In the 30th meeting of Standing Committee on Power System Planning of Northern Region it was decided that establishment of 66/220/400 kV GIS pooling station at Wangtoo by mid 2014 to match commissioning of SHPs in Bhaba Khad (57 MW) and Sangla valley(40 MW) + LILO of 220 kV Kashang – Bhaba D/c line LILO of both circuits of 400 kV Karcham Wangtoo – Abdullapur D/c line at Wangtoo. Switchgear rating and bus capacity etc. at Wangtoo stations should be equivalent to 4000 Amps. Space for 4 nos. line bays, 2 nos for terminating 400 kV D/c from Shongtong Karcham HEP and 2 nos for future 400 kV D/c line from Wangtoo shall be kept. HPPTCL agreed to revised scope of works in DPR 400 kV from Double busbar protection scheme to one and half breaker scheme for improving the reliability.

Final Scope of works of 66/220/400 kV GIS pooling station at Wangtoo are:-

a) 220/400 kV, 2x315 MVA substation

400 kV Bays

Tie Bay Module – 3
Transformer Bays - 2
Line Bays- 4

b) 66/220 kV, 2x 80/100 MVA sub station

220 kV bays	
Line Bays	4
Bus Coupler	1
Transformer Bays	4
66 kV bays	
Line Bays	4
Bus Coupler	1
Transformer Bays	2

The above scope of works of 66/220/400 kV GIS pooling station at Wangtoo as agreed by CEA and is as per comprehensive master plan evolved for evacuation of power from different river valley projects in Himachal Pradesh.

COST ASPECT

The total estimated cost of the above works as indicated in the DPRof 66/220/400 kV GIS pooling station at Wangtoo is around 356 crores. This includes IDC and other charges. HPPTCL has indicated that works would be awarded through competitive bidding process. As such the price of works may be restricted to the actual bid price.

CEA-GO-17-14(13)/1/2023-NRPC

I/41934/2024

ANNEXURE -6

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

दिनांक: 30 जुलाई, 2024

सेवा में/To,
एनआरपीसी एवं टीसीसी के सभी सदस्य एवं विशेष आमंत्रित (संलग्न सूचीनुसार)
Members of NRPC & TCC & Special Invitees (As per List)

विषय: उत्तर क्षेत्रीय विद्युत समिति की 74 वीं और तकनीकी समन्वय समिति (टीसीसी) की 50 वीं बैठक का कार्यवृत।

Subject: MoM of 74th Northern Regional Power Committee (NRPC) & 50th Technical Co-ordination Committee (TCC)-reg

महोदय/महोदया,

तकनीकी समन्वयन समिति (टीसीसी) की 50 वीं बैठक दिनाँक 28.06.2024 (सुबह 10:00 बजे) एवं उत्तर क्षेत्रीय विद्युत समिति की 74 वीं बैठक दिनांक 29.06.2024 (सुबह 10:00 बजे) को रायपुर, छत्तीसगढ़ में आयोजित की गयी थी। बैठक का कार्यवृत संलग्न है। यह उ.क्षे.वि.स. की वेबसाइट (http://164.100.60.165/) पर भी उपलब्ध है।

50th meeting of Technical Co-ordination Committee (TCC) was held on 28.06.2024 (10:00 AM) and 74th meeting of Northern Regional Power Committee (NRPC) was held on 29.06.2024 (10:0 AM) at Raipur, Chhattisgarh. MoM of the same is attached herewith. The same is also available on NRPC Sectt. website (http://164.100.60.165/).

भवदीय
Yours faithfully

Signed by Vijay Kumar Singh
Date: 30-07-2024 17:36:19

(वी.के. सिंह)
(V.K. Singh)
सदस्य सचिव
Member Secretary

18-ए, शहीद जीत सिंह मार्ग, कटवारिया सराय, नई दिल्ली-110016 फोन: 011-26513265 ई-मेल: ms-nrpc@nic.in वेबसाइट:
18-A, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110016 Phone: 011-26513265 e- mail: ms-nrpc@nic.in Website: www.nrpc.gov.in

प्रतिलिपि: Chairperson, NRPC & MD, HPPTCL (md.tcl@hpmail.in)

18-ए, शहीद जीत सिंह मार्ग, कटवारिया सराय, नई दिल्ली-110016 फोन: 011-26513265 ई-मेल: ms-nrpc@nic.in वेबसाइट:
18-A, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110016 Phone: 011-26513265 e- mail: ms-nrpc@nic.in Website: www.nrpc.gov.in

A.15.25 Further, he highlighted that there are number of such cases in Haryana, Punjab Uttar Pradesh, Rajasthan, Himachal Pradesh and even PGCIL/CTUIL is facing such issues in construction/execution of transmission line. It was emphasized that the monthly liability for non-commissioning of 220kV STU lines is very high as compared to cost of construction of their 220kV Bays and requested to take up the matter to Hon'ble CERC to review the very high liability charges for delay in commissioning of down line system by STUs so that financial burden on STUs/ consumers of electricity could be avoided.

A.15.26 MS, NRPC emphasized that utilities may adhere to the timelines for submission of documents. CTUIL and GRID-INDIA may follow their procedure for proper scrutiny.

NRPC Deliberation

A.15.27 MD, HPPTCL and Chairperson, NRPC stressed that all utilities should always try to avoid such delay. All stakeholders need to perform the works in coordinated way.

A.15.28 Member (GO&D), CEA also highlighted that all regulations must be complied at the time of connectivity. It is imperative to take time in scrutiny of all documents by NRLDC and CTUIL.

A.15.29 CGM, NRLDC conveyed that NRLDC has been performing the duties as per defined guideline.

A.15.30 Sr.GM, CTUIL mentioned that the various communications aspects are required to be followed by utilities as cyber security has become major issue to be taken care.

A.15.31 Forum concurred the deliberation held in the TCC meeting.

Decision of Forum

All stakeholders were advised to adhere to timelines of their approval procedure and try to avoid any delay during grid connectivity and first-time energization/charging.

A.16 Declaration of 400/220/66kV Pooling Sub-Station Wangtoo of HPPTCL as integral part of ISTS system (agenda by HPPTCL)

TCC Deliberation

A.16.1 HPPTCL representative apprised that Hon'ble CERC, under Regulation 93 of the CERC (Terms and Conditions of Tariff) Regulations, 2024, has specified the procedure to be followed for certification of intra-state transmission systems as ISTS Systems that are being

developed or that have already been developed by state transmission licensee and are carrying interstate power.

A.16.2 In the LTA meeting held on 29.12.2010 while discussing Connectivity and Long Term Access (LTA) to Himachal Pradesh Power Corporation Limited (HPPCL), for connectivity and transfer of 195 MW power from Kashang HEP and 450 MW power from Shongtong Karcham HEP it was agreed as under:

"It is proposed to establish a 400kV substation at Sherpa colony by LILO of one circuit of Karcham Wangtoo – Abdullapur 400 kV D/c (quad) line, matching with generation schedule (March'15). The works of establishing 400kV Sherpa colony substation and providing connectivity from the generation project by 400kV D/C can be carried out by CTU / transmission licensee as per provisions of the CERC regulations. With the commissioning of Sherpa colony, power from Kashang, in accordance with CEA master plan, would be pooled at Sherpa colony by LILO of Kashang-Bhabha-Kunihar 220kV line and establishment of transformation capacity of 2x500 MVA. The works (LILO and its bays and provision of ICT & associated bays) would be carried out as a depository work on behalf of HPPCL/HPPTCL".

A.16.3 As such the 400 kV Pooling Station/Switching station to integrate with existing ISTS system i.e., Karcham Wangtoo-Abdullapur and evacuate power of Shongtong Karcham HEP (450 MW) was to be planned by CTUIL under ISTS.

A.16.4 HPPTCL had proposed for approval of DPR from CEA for 400/220 kV Substation at Wangtoo with interlinking 400 kV line with proposed 400 kV Switching/ Pooling Station at Wangtoo/ Sherpa Colony wherein CEA vide letter dated 06.04.2011 advised to revise the scope of works to avoid 2 Nos. 400kV GIS sub-stations within the proximity of 1 km by HPPTCL as well as CTUIL.

A.16.5 CEA vide letter dated 14.03.2012 approved the revised DPR of the Subject Asset with future scope of 4 No. 400 kV bays for D/C line from Shongtong Karcham HEP and downstream 400 kV line towards Panchkula in future (which is to be evacuated under ISTS).

A.16.6 HPPTCL has accordingly constructed 400/220/66 kV, 2X315 MVA Substation with a capital cost of INR 405 Crores. As per CEA Master Plan and approval of DPRs the space has been kept for 4 No. of 400 kV bays to ensure seamless integration of upcoming ISTS system.

A.16.7 Hon'ble HPERC vide Order dated 28.09.2022 had approved the Capital Cost and determined the tariff from COD to FY 2023-24 for 400/220/66kV Pooling Station at Wangtoo. In said Tariff Order, under Section 4.8.7 Hon'ble HPERC had also directed IIPPTCL to approach Hon'ble CERC for appropriate recovery of transmission charges through POC mechanism in

line with CERC (Sharing of InterState Transmission charges and losses) Regulations,2020. In compliance to Hon'ble HPERC directions, HPPTCL vide Affidavit dated 07.01.2023 has filed Petition bearing No. 38/MP/2023 on subject matter.

A.16.8 In light of the above facts and circumstances, it is evident that establishment of the Subject Asset by HPPTCL has facilitated integration of ISTS power with existing ISTS infrastructure i.e., 400 kV Karcham Wangtoo - Abdullapur line. The subsequent system is also being developed incidental to this 400 kV Substation by CTUIL due to severe ROW constraints, land availability issue in the narrow valley and master plan framed by CEA for Satluj Basin. The same has been reiterated by CTUIL in 18th Consultation Meeting. The relevant extract is reproduced as follows-

"……Further HPPTCL informed that they have already filed a petition in Hon'ble CERC for declaring Wangtoo 400/220 kV S/s as an ISTS asset, as it is envisaging the ISTS power of regional entities. Further, many of the hydro projects in Satluj basin area may seek connectivity through ISTS for which above proposed system incl. Wangtoo S/s shall be utilized. In view of this, it was agreed that as the 400 kV side of Wangtoo S/s shall be used for evacuation of power under ISTS, accordingly, HPPTCL may take up the matter with CERC for urgent hearing……."

A.16.9 The Transmission system approved for Shongtong HEP and Tidong HEP and notified on recommendation of NCT (National Committee on Transmission) in Gazette dated-13.04.2023 is as follows

Phase-I with Tidong HEP [Schedule: 01st July 2026]

i) Establishment of 2x315 MVA (7x105 MVA 1-ph units including a spare unit) at 400/220 kV GIS Pooling Station at Jhangi

ii) 420 kV Bus reactor -1 No. (4x 41.66 MVA 1-ph units including one spare unit) at Jhangi

iii) 400 kV Jhangi PS – Wangtoo (Quad) D/c line (Line capacity shall be 2500 MVA per circuit at Nominal voltage)

iv) 400 kV bays (GIS) at Wangtoo for termination of 400kV Jhangi PS – Wangtoo D/c line

Phase-II with Shongtong HEP [Schedule: 31st July, 2026]

v) LILO of one circuit of Jhangi PS – Wangtoo (HPPTCL) 400 kV D/c (Quad) line[$] at generation switchyard of Shongtong HEP: LILO route length- 1 km (2 ckm)

vi) Panchkula- Point PW** 400 kV D/c line (Twin HTLS*,) along with 80 MVAr switchable line reactor at Panchkula end on each circuit – 90 km & Point PW** - Wangtoo (HPPTCL) 400 kV D/c line (Quad AL 59/Quad ACSR Moose/Quad AAAC) - 85 km

vii) 400 kV Line bays- 4 Nos. (2 Nos.GIS bays at Wangtoo and 2 Nos.AIS bays at Panchkula) for termination of 400kV Wangtoo (HPPTCL) - Panchkula (PG) D/c line

***** Point PW : First point of 2000 m altitude of Panchkula-Wangtoo line from Panchkula end***

$ Line capacity shall be 2500 MVA per circuit at nominal voltage

**** with minimum capacity of 2100 MVA on each circuit at nominal voltage and Min. 8 Diameter of 31.77 mm for HTLS conductor***

A.16.10 In the facts and circumstances mentioned above STU is of firm view that the subject asset needs to be declared as an ISTS to be included in the ISTS pool. NRPC is requested to validate the key role being played by 400/220/66 kV Wangtoo substation to integrate the upcoming and existing ISTS system in the upper Satluj valley and thereby ensuring high reliability of ISTS system and declare the said item integral part of ISTS system.

A.16.11 MS, NRPC mentioned that a separate meeting was held 03.05.2024 to discuss the nature of Dedicated/ISTS/Not ISTS status. In the meeting, it was gathered that CEA may devise a uniform philosophy for the same along with definition of various related terms mentioned in the clause. Further, as per the CERC Tariff Regulation (2024-29), CEA will certify the same. HPPTCL was suggested to take up this matter with CEA.

NRPC Deliberation

A.16.12 MS, NRPC conveyed that CEA has to prepare the guidelines in this regard as per the CERC Tariff Regulation (2024-29). However, the same is yet to be started. Therefore, a separate letter will be sent to Chairperson, CEA from NRPC to direct the concern divisions in this matter and get it expedited.

A.16.13 Member (GO&D), CEA was also of the same view and suggested that the deliberation of this meeting may be quoted in the letter.

A.16.14 Chairperson, NRPC and HPPTCL emphasized that after finalization of the modalities by CEA, such issues should be resolved immediately and no need to place this agenda again.

A.16.15 Further, SE, Rajasthan SLDC informed that the huge RE power evacuate from the Intra state transmission lines out of the Rajasthan state. However, the deemed ISTS declaration is not being given for these lines now. Forum suggested Rajasthan SLDC to write the letter to CEA in this matter.

A.16.16 Forum was in line with TCC discussion.

Decision of Forum

i) As per CERC Tariff Regulation (2024-29), forum conveyed HPPTCL to approach CEA for the deemed ISTS status.

ii) CEA may devise a uniform philosophy for certification of the same along with definition of various related terms mentioned in the clause 93 of CERC Tariff Regulation (2024-29)

A.17 Shifting of NTPC Rihand stage-III generating station to northern region and opening of 400 kV Singrauli-Anpara line (agenda by NRLDC)

TCC Deliberation

A.17.1 NRLDC representative apprised that as per the recommendations of the 1st Meeting of Northern Regional Power Committee (Transmission Planning) (NRPCTP) held on 24.1.2020, 400 kV Singrauli – Anpara has to be opened to control the high fault levels in Anpara – Singrauli – Rihand complex.

A.17.2 Extract from the MoM are shown below:

A.17.3 The

6.13. After deliberations, following was agreed:

(i) The transmission system for evacuation of power from Singrauli III:

I. LILO of both circuits of Tie line (Vindhyachal Stage-IV to Vindhyachal Stage-V 400kV D/C Twin Moose line) at Singrauli Stage-III- under the scope of NTPC.

II. Reconductoring of Singrauli Stage-III - Vindhyachal stage-IV 400 kV D/C TM line (formed after above proposed LILO) with HTLS conductor - under the scope of NTPC

III. Singrauli-III–Rihand-III 400kV D/c line- under ISTS scope

IV. 2x125 MVAR Bus Reactor at Singrauli-III generation switchyard- under scope of NTPC

(ii) Singrauli- Anpara 400 kV line will be kept normally open (can be closed in emergency conditions) after commissioning of Anpara D –Unnao 765kV line to restrict high short circuit level in Singrauli-Anpara complex.

(iii) The short circuit level in Singrauli will again be studied by CEA and CTU and accordingly, would be discussed in the next NRPCTP meeting.

The above scheme may also be rectified in next NRPCTP meeting.

agenda was then discussed in 210, 211 & 212 NR-OCC meetings. In 212 OCC meeting, NRLDC representative requested UP SLDC to provide their comments after discussion with stakeholders. UP SLDC representative stated that based on above study and concerns raised by Executive

ANNEXURE-7

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

दिनांकः 18.05.2024

विषय: **MoM of meeting held on 03.05.2024 to discuss the nature of lines as dedicated/ISTS/Not ISTS status -reg.**

महोदय / महोदया,

Kindly find attached minutes of the meeting held on **03.05.2024** at **11:00Hrs.** via **video conferencing** to discuss the nature of ISTS/Not ISTS status for the following cases as given below-

I. Karcham Wangtoo - N.Jhakri portion of Baspa – N.Jhakri D/c transmission line (agenda enclosed as **Annexure-I**).

II. GMR Bajoli Holi Hydropower Pvt. Ltd vide for existing IaSTS system in the state of Himachal starting from the GMR Bajoli Holi Bus till Chamera_II (PS) including 630MVA Lahal Pooling Station (STU-PS)(agenda enclosed as **Annexure-II**).

Enclosure: As above

Signed by Dharmendra Kumar Meena
Date: 19-05-2024 17:08:03

डी. के. मीणा
अधीक्षण अभियंता (संरक्षण)

सेवा मे:

1. Chief Engineer, PSPA-I, CEA (cea-pspa1@gov.in)
2. Executive Director, NRLDC (nroy@grid-india.in)
3. Chief Operating Officer, CTUIL (pcgarg@powergrid.in)
4. MD, HPPTCL (md.tcl@hpmail.in)
5. MD, HPSLDC (mdhpsldc@gmail.com)
6. MD, HPSEB (md@hpseb.in)
7. Plant Head, M/s GMR Bajoli Holi Hydropower Pvt. Ltd

Minutes of meeting held on 03.05.2024 to discuss the nature of ISTS/Not ISTS status

The meeting was held on 03.05.2024 at 11:00 Hrs. via video conferencing. MS, NRPC welcomed all participants of PSPA-I division CEA, NRLDC, CTUIL, HPPTCL, HPSLDC, HPSEB and GMR Bajoli Holi Hydropower Pvt. Ltd. List of participants is attached as **Annexure-III**.

A. The case for Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line was discussed as below-

A.1 NRPC representative apprised that CTUIL has requested discussion on the matter to file a reply in Hon'ble CERC relating to a petition for grant of Transmission License for Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line.

A.2 Member Secretary, NRPC opined that the matter is sub-judice and any decision at this meeting level may not be appropriate. CTU may file reply based on their views as NRPC has not been made respondent in petition.

A.3 CTUIL representative highlighted that in Tariff Regulation-2024, there is no provision given for granting ISTS status to a dedicated line. In view of above, CTUIL requested for discussion so that a decision may be arrived for this case.

A.4 CTUIL representative briefed the connectivity of transmission lines as mentioned in **Annexure-I.** She conveyed that based on HPERC's direction, M/s JSWHEL filed application for the grant of an Inter-state transmission license to CERC for Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line.

A.5 CTUIL was of view that line, LILo portion onwards Karcham Wangtoo to N.Jhakri is being utilised for multi generators power flow i.e. Karcham Wangtoo and Baspa.

A.6 CGM, NRLDC commented that NRLDC has already shared the power flow data to CTUIL. CTUIL acknowledged the same. However, CTU stated that only data is not sufficient, its interpretation and decision on flow of power is to be identified.

A.7 CGM, NRLDC highlighted that in Tariff Regulation-2024, there are terms such as 'regular power flow', 'transfer of inter-state power', 'ISTS power' which require uniform definition for interpretation of power flow data.

A.8 CTUIL representative mentioned that at present, during peak hydro conditions power of about 400-450 MW flows through the Karcham Wangtoo- N.Jhakri portion of Baspa – N.Jhakri D/c transmission line. She also added that power from other future hydro projects in the upper Sutluj basin (like Shongtong HEP & Tidong HEP) shall also be pooled at Wangtoo Substation of HPPTCL, which was implemented through LILO of K.Wangtoo-Abdullapur 400 kV D/c line. Some portion of this additional power is also to be wheeled through the Karcham Wangtoo- N.Jhakri portion of

Baspa – N.Jhakri D/c transmission line under different seasonal/load-generation scenarios.

A.9 CGM, NRLDC replied that this is seasonal and futuristic condition. This should not solely be considered for finalization of power flow scenario.

A.10 MS, NRPC conveyed that earlier NRPC secretariat used to certify the conversion of intra state to ISTS status but it is not applicable for secretariat to decide as of now. Now, CEA will certify under clause 93 of Tariff Regulation-2024. Accordingly, there is need to discuss this issue at CEA level for formulation of procedure (nature/ period of power flow) for conversion of intra state (including dedicated) to ISTS.

A.11 HPPTCL representative submitted that Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line may be granted transmission licensee as there is no intra state involvement with the bus of Baspa and Karcham Wangtoo.

A.12 PSPA-I division, CEA representative commented that transmission licensee for Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line may not be granted based on the clause 93 of CERC tariff regulation -2024 as it does not cover the provision for dedicated lines. However, CTUIL may use the precedence adopted in finalization of ISTS status to LiLo portion of Karcham Wangtoo line and Karcham Wangtoo- Abdullapur line.

A.13 CTUIL representative conveyed that there is power flow of multi generators in the portion of Karcham Wangtoo – N.Jhakri of Baspa - N.Jhakri.

A.14 MS, NRPC highlighted that based on data submitted by NRLDC, CTUIL may provide technical recommendation to honourable commission.

A.15 SE (O), NRPC mentioned that CTUIL may also include nature of status of line envisaged at the time of commissioning of line. NRLDC representative highlighted that past case of charor- banala line and ADHPL case may be explored by CTUIL.

A.16 After deliberation followings were decided-

a. CTUIL may submit reply based on data of power flow provided by NRLDC.
b. Under clause 93 of Tariff Regulation-2024, CEA has to certify the ISTS status for intra-state transmission lines based on recommendations of the STU and RPC. Therefore, CEA may devise a uniform philosophy for the same along with definition of various related terms mentioned in the clause.

B. The case for existing IaSTS system in the state of Himachal starting from the GMR Bajoli Holi Bus till Chamera_II (PS) including 630MVA Lahal Pooling Station (STU-PS) was discussed as below-

B.1 Plant head, GMR Bajoli Holi Hydropower Pvt. Ltd briefed the connectivity of lines as mentioned in **Annexure-II**. He requested for granting ISTS connectivity under clause

93 of Tariff regulation-2024 for the whole system carrying inter-state power starting from GMR Bajoli Holi Bus till Chamera_II (PS) including 630MVA Lahal Pooling Station (STU-PS) with transmission lines 220kV Bajoli-Holi D/C and 400kV Lahal-chamera-II D/C.

B.2 He mentioned about the LTA and GNA connectivity of GMR Bajoli Holi Hydropower Pvt. Ltd that plant has been granted 178.2 MW LTA connectivity from HPSTU and 155 MW GNA connectivity from CTU. In this 33 MW Power is allocated to Delhi International Airport, 60 MW to UPPCL and remaining is being sold in the market. He submitted that there is regular inter-state power flow and it fulfils conditions of Tariff regulation for conversion to ISTS.

B.3 CTUIL representative asked HPPTCL comment on the power flow.

B.4 HPPTCL commented that there will be power injection from upcoming 220/66kV Heiling S/s of HPSTU also.

B.5 CTUIL representative mentioned that GMR bajoli holi to Lahal PS is dedicated nature of line. Further, he mentioned that 400kV Lahal to chamera PS may be discussed for ISTS grant based on its integration.

B.6 HPPTCL representative added that JSW is going to implement the 240 MW kuther generating station and will be connected by Liloing of one circuit of 400kV lahal Pooling Station to chamera PS. There will be power in the lines from HPSEB generator, JSW Kuther and GMR Bajoli Holi Hydropower Pvt. Ltd. He added that most of power will be available of JSW kuther and GMR Bajoli Holi Hydropower Pvt. In present scenario, power is going out the HP state. Therefore, the ISTS status may be granted in this case under discussion of GMR bajoli holi.

B.7 CTUIL representative commented that JSW kuther has not applied for the connectivity to CTUIL as of now.

B.8 PSPA-I division, CEA representative highlighted that this case comes under purview of clause 93 of Tariff regulation-2024. Therefore, after finalization of philosophy, CEA will certify the ISTS status.

B.9 CGM, NRLDC asked HPPTCL regarding beneficiaries mandated for the transmission system. HPPTCL representative replied that the system was constructed for multiple beneficiaries for Ravi basin. Plant head, GMR Bajoli Holi Hydropower Pvt. Ltd added that it was part of green corridor.

B.10 Further, CGM, NRLDC desired to have a clarification on the definition of regular and ISTS power. Plant head, GMR Bajoli Holi Hydropower Pvt. Ltd highlighted that they have PPA for more than 25 years with Delhi International Airport (33 MW RTC) & UPPCL (60 MW continuous power from May to October).

B.11 HPPTCL conveyed that such cases may be examined considering all hydro basins areas, corridors and load centres connectivity and availability in the corresponding areas.

B.12 MS, NRPC conveyed that this case will be examined after the formulation of philosophy for certification of ISTS by CEA.

B.13 After deliberation followings were decided-

a. Under clause 93 of Tariff Regulation-2024, CEA has to certify the ISTS status for intra-state transmission lines based on recommendations of the STU and RPC. In view of above, CEA may devise a uniform philosophy for the same along with definition of various terms mentioned in the clause.

b. This case may be examined after the formulation of policy by CEA for granting ISTS status to intra state lines/ dedicated lines.

Meeting ended with a vote of thanks.

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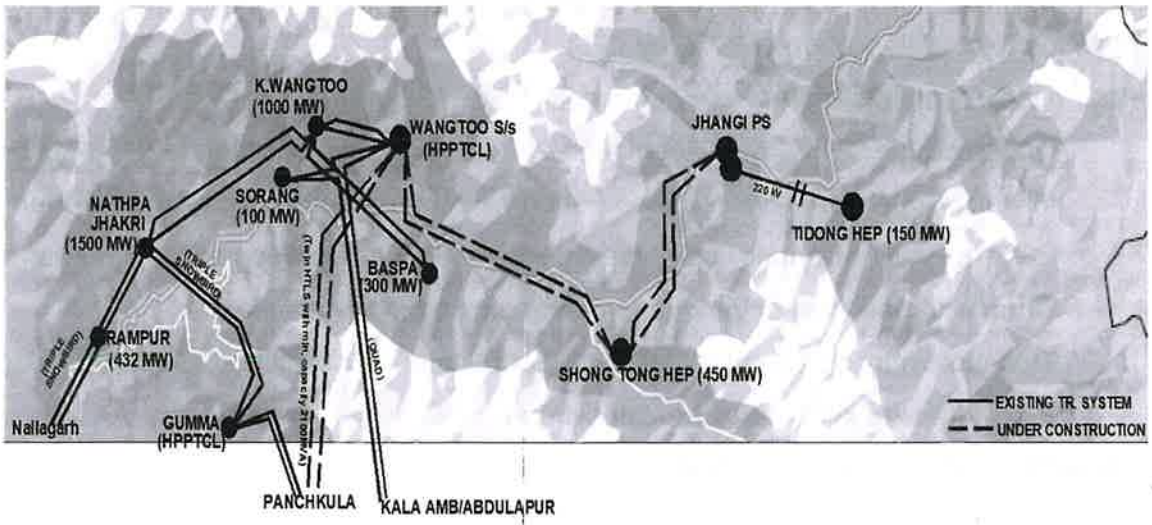
Agenda: ISTS status for Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line



M/s JSW Hydro Energy Limited (JSWHEL) before Hon'ble Commission has filed a petition for grant of Transmission License for Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line. Background about the transmission scheme is as below:

- Baspa II HEP (300 MW), a deemed GNA grantee is connected to the Grid through Baspa – Nathpa Jhakri 400 kV D/c dedicated transmission line. The generation tariff of Baspa-II HEP is being determined by the Himachal Pradesh Electricity Regulatory Commission (HPERC).
- Further, for evacuation of power from Karcham Wangtoo HEP (1045 MW), following transmission system was agreed and implemented:
    1) LILO of 400 kV Baspa – Nathpa Jhakri D/c line at K.Wangtoo generation switchyard
    2) K.Wangtoo - Abdullapur 400 kV D/c transmission line
- Beyond, N.Jhakri HEP (1500 MW), evacuation is being carried out through 400 kV D/c lines to Nallagarh & Abdullapur ISTS Stations. M/s JSW Hydro Energy Ltd. was granted Connectivity & LTA for 1045 MW & 880 MW respectively for K.Wangtoo HEP under CERC Connectivity Regulations,2009. The above transmission system was implemented to evacuate power in a reliable manner to the different beneficiaries. Subsequently, total 1045 MW Connectivity quantum of K.Wangtoo was also transitioned under CERC GNA Regulations.
- For evacuation of power from Karcham Wangtoo HEP, LILO of Baspa – N.Jhakri 400 kV D/c line at K.Wangtoo HEP and K.Wangtoo – Abdullapur (PG) 400 kV D/c line was executed by Joint venture company viz. M/s Jaypee Power Grid Ltd. (a joint venture company of POWERGRID and Jaiprakash Hydro Power Ltd.)

- The transmission system associated with K.Wangtoo HEP was agreed in the minutes of Long Term Open access meeting held along with Standing Committee meeting of Northern Region Constituents on 3/11/2006 & 12/03/2007 (copy enclosed).
- Subsequently, M/s Jaypee Power Grid Ltd. applied for inter-state transmission license to CERC. Hon'ble CERC vide order dated 17/8/2007 in Petition No. 44/2007 granted the transmission license to M/s Jaypee Power Grid Ltd stating that as the following transmission system shall be required for evacuation of power from other generating stations located in the Satluj river basin, the same shall not be treated as the "dedicated" transmission system:
    - LILO of Baspa – Nathpa Jhakri 400 KV D/c Line at Karcham Wangtoo
    - Karcham Wangtoo – Abdullapur 400 kV D/c line (Quad)
- Now, based on HPERC's direction, M/s JSWHEL filed application for the grant of a Inter-state transmission license to CERC for Karcham Wangtoo – N.Jhakri portion of Baspa - N.Jhakri 400 kV D/c transmission line. Further, Hon'ble CERC vide RoP dated 8/04/2024 directed CTUIL to submit its specific recommendations for the grant of a transmission license to the Petitioner along with other relevant details within two weeks.
- At present, during peak hydro conditions power of about 400-450 MW flows through the Karcham Wangtoo- N.Jhakri portion of Baspa – N.Jhakri D/c transmission line. Grid-India to confirm the Pattern.
- In addition to above, power from other future hydro projects in the upper Sutluj basin (like Shongtong HEP & Tidong HEP) shall also be pooled at Wangtoo Substation of HPPTCL, which was implemented through LILO of K.Wangtoo-Abdullapur 400 kV D/c line. Some portion of this additional power is also to be wheeled through the Karcham Wangtoo- N.Jhakri portion of Baspa – N.Jhakri D/c transmission line under different seasonal/load-generation scenarios.
- Further, in the CERC (Terms and Conditions of Tariff) Regulations, 2024, it has been mentioned that "Existing intra-state transmission lines other than Natural ISTS lines, as certified by CEA based on the recommendations of the STU and RPC, shall be considered as ISTS systems, provided that these transmission lines are being used for evacuation and transfer of inter-state power on a regular basis as identified by CTU in consultation with the concerned RPC and RLDC."
- However, the subject transmission scheme (Karcham Wangtoo - N.Jhakri portion of Baspa – N.Jhakri D/c transmission line) was originally dedicated in nature and later, part transmission system (LILO part associated with K.Wangtoo HEP) was given ISTS status.
- Accordingly, the matter may be deliberated regarding nature of above line section ie. Karcham Wangtoo - N.Jhakri portion of Baspa – N.Jhakri D/c transmission line, (whether ISTS or not ISTS), as per earlier philosophy/methodology of NRPC/Grid India in Consultation with CEA, HPPTCL & CTU, so that CTU may provide its recommendation on Transmission License for the subject line section.

पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)
पावरग्रिड

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संदर्भ संख्या/Ref. NumbeC/ENG/SEF/00/LTOA

Date : 26-12-2006

To
As per list enclosed.

Sub: Minutes for Long Term Open Access Meeting held on 03/11/2006 at New Delhi

Sir,

Following proposals of Long Term Open Access were discussed during the meeting held on 03/11/2006 at New Delhi

i. Proposal of M/s NTPC for transfer of 600 MW Loharinag Pala generation at Uttaranchal to the constituents of NR
ii. Proposal of M/s PTC for transfer of 704MW of power from 1000 MW Karcham Wangtoo generation project to the constituents of NR
iii. Proposal of M/s Reliance Energy Generation Limited (REGL) for transfer of 5600MW of power from REGL's Dadri generation to the constituents of NR
iv. Proposal of DTL for transfer of 100-2500MW of power from DVC generation to DTL
v. Proposal of Maithon Power Ltd for transfer of 1000MW of power from generation to the constituents of NR and DVC
vi. Proposal of OTPCL for transfer of 700MW of power from Pallatana generation to the constituents of NR and NER

Please find enclosed herewith the Minutes for the subject meeting.

Thanking You,

Yours Faithfully

(Y.K.Sehgal)
Addl General Manager(ENGG-SEF)

पंजीकृत कार्यालय : बी-9, कुतब इंस्टीट्यूशनल एरिया, कटवारिया सराय, नई दिल्ली-110016 दूरभाष : 26560121 फैक्स : 011-26560039 तार 'नेटग्रिड'
Registered Office : B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi-110016 Tel. : 26560121 Fax : 011-26560039 Gram : 'NATGRID'

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New Delhi –66

2. Sh. S.P.Singh Gaharwal
Member Secretary,NREB
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3. Director (Transmission),HVPNL,
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5. Director (Technical),
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6. Executive Director (Engg)
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14. Sh. B.C.Katoch,
Member(Technical), HPSEB,
Vidyut Bhawan, Shimla-171004

15. Power Development Commissioner,
Power Development Department, J&K,
Janipur, Jammu.

16. Member(Power),BBMB,
Sector 19-B, Madhya Marg,
Chandigarh.- 160019

Minutes for Long term Open Access Meeting with Northern Region Constituents held on 03/11/2006 at NRPC Conference hall, New Delhi

List of Participants is enclosed at **Annexure-I**

POWERGRID welcomed all the participants to the long term open access meeting of Northern region and informed that the following Long Term Open Access Applications have been received and needs to be discussed for resolution:

i. Proposal of M/s NTPC for transfer of 600 MW power of Loharinag Pala generation at Uttaranchal to the constituents of NR.
ii. Proposal of M/s PTC for transfer of 704MW of power from 1000 MW Karcham Wangtoo generation project to the constituents of NR.
iii. Proposal of M/s Reliance Energy Generation Limited (REGL) for transfer of 5600MW of power from REGL's Dadri generation to the constituents of NR.
iv. Proposal of DTL for transfer of 100-2500MW of power from DVC generation to DTL.
v. Proposal of Maithon Power Ltd for transfer of 1000MW of power from generation to the constituents of NR and DVC.
vi. Proposal of OTPCL for transfer of 700MW of power from Pallatana generation to the constituents of NR and NER.

Details of the discussions held are as below.

i. Transfer of 600 MW Loharinag Pala at Uttaranchal to the constituents of NR

POWERGRIID informed that NTPC has applied for Long Term Open Access for transfer of 592.8 MW from their 600 MW Loharinag Pala HEP in Uttaranchal. As per the requirement long-term Open Access Applicant need to inform the firm beneficiaries. However NTPC did not indicate firm beneficiaries and mentioned that tentative targeted allocation of power to different beneficiaries is as follows:

Uttaranchal	:	102MW
Uttar Pradesh	:	153 MW
Punjab	:	74 MW
DTL	:	102MW

Haryana	:	44MW
Rajasthan	:	74MW
Jammu & Kashmir	:	51MW

In the application, the injection point for the power has been indicated as Tehri Pooling point. The duration of long-term open Access is for a period of 25 years from October, 2010. It was informed that under the composite transmission scheme of Tehri HEP, Koteshwar HEP, Loharinag Pala and Pala Maneri HEPs, charging of Tehri – Meerut line at 765 kV along with LILO of Bareilly-Mandaula 400kV D/c line at Meerut is required either with Tehri PSP or with Loharinag Pala, whichever is coming up earlier. As per the information presently available, Tehri PSP is likely to be commissioned by July 2010 i.e. before Loharinag Pala time frame i.e. October 2010 and the transmission system for Tehri PSP would have been commissioned before the materialization of Loharinag Pala HEP. Accordingly the system for Loharinag Pala would include:

- Loharinag Pala – Tehri Pooling Point 400 kV D/c (Triple Conductor)

It was further explained that the above transmission system, including the bays at Tehri Pooling station, would be the dedicated transmission system and the cost and the implementation of the same would be the responsibility of the long-term open access applicant i.e. M/s NTPC.

NTPC informed that allocation of power to the home state i.e. Uttaranchal is 102 MW. Regarding the sharing of transmission charges allocated to Uttaranchal, PTCUL confirmed that that they would bear the transmission charges and sign the BPTA for their share of free power. POWERGRID further explained that in case Tehri PSP gets delayed, the full transmission charges for part of transmission system associated with Tehri PSP, which includes the following elements, would be borne by NTPC / PTCUL.

<u>Part of the Tehri-PSP transmission system:</u>

1. LILO of Bareilly – Mandaula 400 kV D/c at Meerut
2. Charging of Tehri Pooling – Meerut line at 765 kV by establishment of 765/400 kV, 3x1500 MVA substations at Tehri GIS Pooling station & Meerut.

3. Modification of Series Capacitors for operation at 765 kV level

This was agreed by NTPC and PTCUL. (Estimated Cost of Tehri PSP transmission system is about Rs 1600 Crs at 2nd Qtr 2006 PL)

While continuing the discussion on transmission charges, Chief Engineer, CEA stated that although the NTPC has applied for the Long Term Open Access of 592.8 MW, however the pooled transmission charges should be for full 600 MW as per the present practice. Participants agreed for the same.

Concluding the discussion following was agreed

- Power from Loharinag Pala would be pooled at Pooling station being established by POWERGRID as a part of Koteshwar Transmission system near Koteshwar generation project by a 400kV D/c triple conductor line. The line and associated bays at both ends would be part of dedicated system and shall be born and implemented by NTPC.
- NTPC and PTCUL would sign the requisite BPTA for Northern regional transmission system as well as for the dedicated system corresponding to full capacity of 600MW for a period of 25 years

  Incase Tehri PSP gets delayed, the NTPC & PTCUL to bear the full transmission charges for part of transmission system associated with Tehri PSP, which includes the following elements, till the time Tehri PSP is commissioned.

Part of the Tehri-PSP transmission system:

1. LILO of Bareilly – Mandaula 400 kV D/c at Meerut.
2. Charging of Tehri Pooling – Meerut line at 765 kV by establishment of 765/400 kV, 3x1500 MVA substations at Tehri GIS Pooling station & Meerut.
3. Modification of Series Capacitors for operation at 765 kV level.

- Long term Open Access has been permitted for the beneficiaries as indicated by M/s NTPC. In case, there is any change in allocation of power/

beneficiaries, there may be constraints in transfer of power under certain operating conditions.

- Further, no additional transformation capacity in various existing/new substations has been planned, however, the same may be added based on request of beneficiaries as per the requirement.
- The applicable transmission charges shall be as per CERC norms.
- The Long Term Open Access to NTPC Ltd may be granted subject to the conditions mentioned above.

ii. **Application for transfer of power from Karcham Wangtoo HEP**

It was informed that M/s Power Trading Corporation Ltd has applied for long term Open Access for transfer of 704 MW power from the proposed Karcham Wangtoo HEP of 1000 MW capacity of M/s Jaypee Karcham Hydro Corporation Ltd (JKHCL) located in Himachal Pradesh for a period of 35 years. The commissioning schedule of the first unit has been indicated as August 2011 and the beneficiaries of 704 MW (after considering 2% aux consumption) of the project are Punjab (196 MW), Haryana (196 MW), Uttar Pradesh (196 MW) and Rajasthan (101.92 MW).

A brief presentation on the requirement of transmission system was made by POWERGRID. It was informed that to evolve transmission system for Karcham Wangtoo detailed studies have been carried out simulating peak hydro conditions. Based on the studies following scheme was proposed

i. LILO of Nathpa Jhakri- Baspa 400kV D/ c at Karcham Wangtoo
ii. Karcham Wangtoo – Abdullapur 400k D/c (Quad).
iii. Abdullapur- Bahdurgarh 400k D/c (Triple).
iv. LILO of Bawana- Hissar 400kV s/c at Bahdurgarh.
v. Augmentation of transformation capacity at Lucknow(POWERGRID) (315MVA), Greater Noida(315MVA), Maharanibagh(500MVA), Mandaula(500MVA), Bhiwadi(500MVA), Gurgaon(500MVA), Bahdurgarh(315MVA), Patiala(315MVA) and Moga(500MVA).

HVPNL requested a 400kV dispersal point at Sonepat as the load is about 200-300MW and may increase substantially in future. CEA suggested that as Sonepat

400/220kV substation along with its interconnection of 400kV D/c to Bahdurgarh may be constructed as regional strengthening scheme therefore in place of Abdullapur-Bahdurgarh 400kV line, Abdullapur-Sonepat 400kV line with triple conductor line can be considered as a part of Karcham Wangtoo transmission system. The transformer augmentation as indicated above may also be taken up as a separate regional strengthening scheme.

Accordingly following elements was proposed for transfer of power from Karcham Wangtoo generation project

a) Karcham Wangtoo transmission system :

i. LILO of Nathpa Jhakri- Baspa 400kV D/ c at Karcham Wangtoo

ii. Karcham Wangtoo – Abdullapur 400k D/c (Quad).

iii. Abdullapur-Sonepat 400kV D/c(triple conductor)

b) Northern Region system strengthening scheme :

i. 400/220kV new substation with 2 x 315 MVA transformation capacity at Sonepat.

ii. Bahdurgarh-Sonepat 400kV D/c(triple conductor)

c) Northern Region system strengthening scheme :

i. Augmentation of transformation capacity at Lucknow(POWERGRID) (315MVA), Greater Noida(315MVA), Maharanibagh(500MVA), Mandaula(500MVA), Bhiwadi(500MVA), Gurgaon(500MVA), Bahdurgarh(315MVA), Patiala(315MVA) and Moga(500MVA).

Transmission elements a)-(i) LILO of Nathpa Jhakri-Baspa 400kV D/c at Karcham Wangtoo and (a)-ii) Karcham Wangtoo–Abdullapur 400k D/c (Quad) alongwith the associated bays at both ends would be part of dedicated system and all the costs towards this would be borne and implemented by the project developer. To evacuate power beyond Abdullapur in a reliable manner to different beneficiaries a)-(iii) Abdullapur-Sonepat 400kV D/c (triple Conductor) has been considered. This element shall be a regional scheme associated with Karcham Wangtoo HEP. All the members agreed for the same.

HPSEB mentioned that in the upstream of Karcham Wangtoo many hydro projects would be developed and there is Right–of-Way constraints and while developing the transmission system these projects should also be considered. Chief Engineer, CEA clarified that the proposed 400kV D/c Quad line is the technically optimal alternative considering Right-of-way constraints.

POWERGRID informed that as per application for Long Term Open Access 704 MW is allocated to M/s PTC and out of remaining 296 MW, Govt of HP has a free power of 120 MW during first 12 years and 180 MW thereafter. Balance 176 MW power would be taken up by M/s Jaypee Karcham Hydro Corporation Ltd (JKHCL) for first 12 years and 116 MW thereafter. M/s Jaypee Karcham Hydro Corporation Ltd (JKHCL) agreed to sign BPTA for this quantum of power.

All the participants were of the view that as 1000MW power would be injected into the Grid, the applicable pooled transmission charges should be for the full 1000MW. The issue of transmission charges for the free power to Govt. of Himachal Pradesh needs to be resolved. Accordingly it was agreed that issue would need to be resolved between M/s PTC, M/s Jaypee Karcham Hydro Corporation Ltd (JKHCL) and Govt. of Himachal. Long term Open Access would be given to PTC once the BPTA is signed for full power of 1000MW by PTC, JKHCL and Govt of Himachal Pradesh. It was decided that M/s PTC /JKHCL shall revert back on this issue shortly to enable POWERGRID to permit Long Term Open Access to M/s PTC/JKHCL.

Concluding the discussion following was agreed

- LILO of Nathpa Jhakri – Baspa 400 kV D/c line at Karcham Wangtoo and Karcham Wangtoo – Abdullapur 400 kV D/c (Quad) including bays at both ends would be the dedicated transmission system and all the costs towards this would be borne and implemented by the project developer. Beyond Abdullapur, a 400kV D/c (Triple Conductor) would be constructed to Sonepat substation for reliable transfer of Karcham Wangtoo power to beneficiaries. Abdullapur-Sonepat 400kV D/c (Triple Conductor) shall be a regional scheme.

- As full generation capacity (1000MW) would be injected into the Grid the applicable pooled transmission charges should be for the full generation capacity as per the present practice. The issue of sharing of transmission charges for free power needs to be resolved between M/s PTC, M/s Jaypee Karcham Hydro Corporation Ltd (JKHCL) and HPSEB. It was decided that M/s PTC/JKHCL shall revert back
- Requisite agreement needs to be signed for payment of transmission charges by M/s PTC India Ltd and JKHCL.
- The applicable transmission charges shall be as per CERC norms.
- The Long Term Open Access can be granted subject to the conditions mentioned above.

iii. **Transfer of 5600MW of power from Reliance Dadri generation**

POWERGRID informed that M/s Reliance Energy Generation Limited (REGL) applied for long-term open access to transfer power from their proposed Dadri generation project (3740 MW) to various NR constituents. Subsequently M/s Reliance Energy Generation Limited, revised the generation capacity to 5600 MW. The commissioning schedule as indicated by M/s REGL is December-2008 with different generation units added in a phased manner till Dec-2009. The beneficiaries of the project are as below

- Delhi ; 2250 MW
- Uttar Pradesh : 2240 MW
- Haryana : 500 MW
- Punjab : 500 MW
- Rajasthan : 500 MW*

* Including trading under off-peak

POWERGRID explained that it has carried out studies corresponding to 2009-10 time frame considering various transmission systems likely to come up in the time frame. To simulate maximum loading conditions, peak thermal scenario have been simulated when the power flow from Thermal project in Eastern part of Northern region is maximum and power tends to flow towards Punjab and Haryana i.e Western part of Northern region. Studies have been carried out on the basis of beneficiaries indicated by applicant and system has been evolved accordingly. Studies indicate

that Short Circuit level in most of the 400 kV buses in and around Delhi are almost touching the rated level of 40 kA. Hence, while developing the transmission system for generation from REGL, due care has been taken to limit the fault level. Accordingly transmission lines from the generation project are not connected at 400 kV level with existing Delhi 400kV ring for supply of power to Delhi. System is integrated at 220 kV level. However fault level is still more than the 40 kA limit for various 400kV S/s in Delhi ring. Therefore adequate measures need to be taken for reducing the short circuit level.

Chief Engineer, CEA also mentioned that Delhi already has short circuit problems and direct connection at 400kV level would further aggravate the condition. Hence the power supply to load centers in Delhi must be in radial manner.

PSEB representative mentioned that there had been continuous change in the capacity of the REGL generation project as earlier the capacity was 3740 MW, which is changed to 5600 MW. Under such scenario they are not in a position to firm up the power to be taken up from the generation project. Participants were of the opinion that M/s REGL should confirm the capacity and also the availability of gas for the capacity of generation station, as supply of gas is a major issue.

M/s DTL indicated that it has tied up with other projects of DVC and Jhajjar of NTPC and therefore Delhi shall not be requiring power from M/s REGL project as indicated by applicant. Haryana and Punjab also informed that they have not been approached by M/s REGL. M/s REGL informed that the beneficiaries are indicative and they would be approaching the beneficiaries to firm up the allocation of power.

Participants were of the view that the requirement of the transmission system needs to be relooked as M/s DTL, which was a major beneficiary of the project is not willing to take power. Chief Engineer, CEA indicated that M/s REGL may submit a fresh application indicating the firm capacity of the plant, details of beneficiaries alongwith allocation of power. However in case if beneficiaries are not firmed, M/s REGL may indicate tentative allocation of power. Under such scenario M/s REGL in addition to implement the dedicated transmission system from their generation project to grid points would also agree to pay the regional transmission charges. In view of the

above, it was decided that the application of M/s REGL may not be processed further as the generation capacity and allocation of power are not yet firmed up. M/s REGL may submit a fresh application with the firm generation capacity, commissioning schedule and allocation of power to different beneficiaries.

Concluding the discussion following was agreed

- As the major beneficiary of the project i.e M/s DTL is not taking power, the transmission system indicated in the POWERGRID agenda needs to be relooked based on the firm generation capacity and revised allocation of power. Therefore it was decided that since there had been continuous change in the capacity of the generation status and allocation of power, the present application of M/s REGL may not be processed further
- M/s REGL may submit a fresh application for Long Term Open Access indicating the firm capacity, commissioning schedule and allocation of power

iv. Transfer of 100-2500MW of power from DVC generation to DTL

POWERGRID) informed that Delhi Transco Ltd has applied for long term Open Access to Inter-State Transmission System (ISTS) for transfer of power from various generating projects of Damodar Valley Corporation. The amount of power to be transferred to DTL from different generation projects increases in a phased manner starting from December, 2006. M/s DTL indicated that the time period of Open Access is 25 years. The time period, quantum of power, duration, and unit wise generation as indicated by M/s DTL is as follows:

	Period	Quantum of power	Duration	Commissioning Schedule
1	Dec'06 to Sep'07	100	25 years from surplus power of existing stations	
2	Oct'07 to Nov'07	230	25 years from date of commercial operation	(1) +Chandrapura TPS Unit-7
3	Dec'07 to Mar'2010	400	-- do--	(2) + Chandrapura TPS Unit-
4	Apr'10 to August'10	800	-- do--	(3) + Mejia TPS 'B Unit-1
5	Sept'10 to Oct' 10	1000	-- do--	(4) + Mejia TPS 'B Unit-2

	Period	Quantum of power	Duration	Commissioning Schedule
6	Nov '10 to Mar '11	1975	-- do--	(5) + Koderma Unit –1 & Durgapur Unit-1
7	April '11 Onwards	2500	-- do--	(6) + Koderma Unit –2 & Durgapur Unit-2

POWERGRID informed that Muzaffarpur-Gorakhpur 400kV (Quad) D/c line with TCSC, part of Tala transmission system, had been planned for transfer of Tala power and surplus power of Eastern region, Sikkim and NER. CEA also indicated in the past that Tala Transmission System would be utilized for transfer of equivalent Tala power, surplus of ER and NER and including Teesta-V project in Sikkim. It was mentioned that at present there already exists long-term open access for transfer of about 400MW power over the existing ER-NR inter-regional links. In the next 2-3 months all the Tala machines would be commissioned and by June 2007 Teesta-V generation would also come up. DTL is asking 100 MW long term long term open access for 25 years from December 2006 onwards. Considering that Tala generating station and Teesta-V HEP would come up shortly, it would not be possible to give long-term open Access to DTL until some additional inter-regional link between ER and NR is implemented. In view of the above it was decided that M/s DTL would be provided for long-term Open Access to 100 MW/230 MW after the commissioning of Kahalgaon-II transmission system, which will provide additional inter-regional link between ER and NR. However, till the time full generation from Tala and Teesta gets materialized, the capacity margins available on the Tala transmission system can be utilized for transferring 100 MW to DTL under short term open access.

It was further informed that for transfer of 400MW and above, beyond November 2007, detailed study needs to be carried out separately for identifying transmission-strengthening requirement.

Concluding the discussion following was agreed

- DTL would be provided long-term open Access for 100 MW and 230 MW for 25 years after commissioning of Kahalgaon-II transmission system.

- As the power transfer would utilize ISTS of Eastern region, Northern region and East-North interconnection, M/s DTL needs to share the transmission charges (as per CERC norms). For this DTL needs to sign BPTA for 25 years with POWERGRID for sharing the transmission charges of Eastern, Northern and East-North inter-regional transmission system.
- DVC to ensure that there shall not be any constraint in injection of above power into the Eastern regional Grid
- For transfer of 400MW and above beyond November 2007, detailed study needs to be carried out separately for identifying transmission-strengthening requirement.

v. **Transfer of 1000MW of power from Maithon generation to the constituents of Northern Region**

POWERGRID informed that M/s Maithon Power Ltd. applied for Long Term open access for transfer of 1000MW from their power plant at Maithon. The transfer of power is expected to commence by 2009-10. The First unit is proposed to be commissioned in Sept 2009 and second in Dec 2009. M/s Maithon Power Limited (MPL) proposed to inject the power at its 400kV switchyard. Out of this, 400MW power would be taken by M/s NDPL, Delhi at its Gopalpur & Narela 220kV sub-station, 200MW of power by Rajasthan at 400kV Heerapura sub-station and 300MW power by DVC at its Kalyaneshwari substation. For the balance power of 100MW, it is indicated that they are in the process to tie up with the customer. It was mentioned that a combined transmission system for transfer of power from Maithon RB(1000 MW) and North Karanpura (1980 MW) has been discussed by the constituents in the 18th SCM of Northern Region. Studies have been carried to evolve transmission scheme for transfer of power from Maithon RB project to different beneficiary as per allocation indicated by applicant. It was mentioned that the transmission system identified in the above referred standing committee meeting is adequate for evacuation of power from Maithon-RB TPS, however to maximize the utilizstion of the high capacity links between ER and NR like Biharsharif-Balia and Barh-Balia 400kV D/c (quad) lines, it is proposed to install 40% fixed series compensation in these lines. The proposed transmission system for Maithon RB project is given below

- Maithon-RB – Maithon 400kV D/c
- Maithon-RB – Ranchi 400kV D/c
- Biharsharif – Sasaram 400kV D/c
- Sasaram – Fatehpur – Agra 765kV S/c to be charged at its rated voltage with 2x1500 MVA, 765/400kV & 2x315 MVA, 400/220kV sub-station at Fatehpur and 2x1500 MVA, 765/400kV sub-station at Agra
- LILO of Allahabad-Mainpuri 400kV D/c at Fatehpur
- 40% fixed series compensation in Biharsharif – Balia 400kV D/c line
- 40% fixed series compensation in Barh – Balia 400kV D/c line

It was informed to the constituents that while proposing the above system, it is assumed that North Karanpura transmission system would be commissioned before Maithon RB generation. In case, North Karanpura project gets delayed, the transmission system under Maithon RB would be as given below:

- Maithon-RB – Maithon 400kV D/c
- Maithon-RB – Ranchi 400kV D/c
- Biharshariff – Sasaram 400kV D/c
- Sasaram – Fatehpur – Agra 765kV S/c to be charged at 400kV with 2x315 MVA, 400/220kV sub-station at Fatehpur
- LILO of Singrauli – Kanpur and one ckt of Allahabad – Kanpur at Fatehpur
- Sasaram – Balia 400kV D/c (Quad)
- Agra – Gurgaon 400kV D/c
- 40% fixed series compensation in Biharsharif – Balia 400kV D/c line
- 40% fixed series compensation in Barh – Balia 400kV D/c line

Northern region constituents agreed to the proposed system and to bear the transmission charges for above transmission scheme beyond Biharshariff including 40% fixed series compensation in Biharsharif – Balia & Barh – Balia 400kV D/c line

Concluding the discussion following was agreed

- The interconnection arrangement of Maithon RB generation with Maithon and Ranchi substation through Maithon-Ranchi and Maithon-Maithon 400kV D/c lines

would be in the scope of M/s Maithon Power Ltd. and they shall bear all costs towards this and also it's implementation.

- For supply of power to DVC, the necessary transmission system along with cost shall be carried out by M/s Maithon Power Ltd.
- Northern region constituents agreed bear the transmission charges for above transmission scheme beyond Biharshariff including 40% fixed series compensation in Biharsharif – Balia & Barh – Balia 400kV D/c line
- M/s Maithon Power Ltd. would be entering into suitable agreement for payment of transmission charges for Northern Region and Eastern Region transmission system of POWERGRID as per CERC /SERC norms.

vi. **Transfer of 700MW of power from Pallatana generation to the constituents of Northern Region**

POWERGRID informed that M/s Tripura Power Development Company Private Ltd. (TPDC) applied for long term open access for transfer of 1000 MW power from Pallatana generating station to the constituents in North eastern and Northern regions vide letter dated 23/05/2005. M/s TPDC vide their letter dated 27/06/2005 informed that the capacity of the generation plant is revised to 700 MW. The proposal for transfer of 700 MW was discussed with the Northern Regional constituents on 16/12/2005. Further, the name of the company has been changed from TPDC to ONGC Tripura Power Company Private Limited (OTPC) vide letter dated 03/01/2006. M/s OTPC vide their letter dated 31/01/2006 informed that the capacity of the generation project has been revised to 1110 MW, with an ex-bus generation of 1050 MW. For evacuation of power from the proposed project and following transmission system was identified.

- Power project (Pallatana) - Silchar 400 kV D/C line with twin Lapwing conductor
- Silchar – Bongaigaon 400 kV D/C line with twin Lapwing conductor and 40% series compensation
- New 2x200 MVA, 400/132 kV sub-station at Silchar (Assam)
- Extension of Bongaigaon substation with 400/220kV, 315MVA ICT
- Bongaigaon - Siliguri 400 kV D/C line with quad Moose conductor
- Purnea – Biharsharif 400 kV D/C line with quad Moose conductor

In the meanwhile, OTPC proposed to avail the viability gap funding for the transmission lines from Pallatana(generating Switchyard) to Bongaigaon S/s of POWERGRID which was discussed in a meeting chaired by Secretary(Power) on 13-03-2006 wherein representative of CEA, POWERGRID, ONGC and IL&FS were present. It was decided in the meeting that the conditional viability gap funding for the transmission project can be recommended by Ministry of Power for the transmission system from Pallatana to Siliguri.

The above proposed transmission system for long term open access was discussed with the NR beneficiaries in a meeting held on 22.04.06 at Nainital wherein CEA and POWERGRID were also present. During the discussion, it emerged that as decided in Ministry of Power for Viability Gap Funding, the transmission elements from Pallatana to Siliguri would be a part of generation project cost and transmission charges for Purnea – Biharshariff shall be borne by NR constituents. In the event Viability Gap Funding is not available, constituents were of the view that transmission line from Pallatana to Bongaigaon may be constructed as a part of generation project, while the transmission system beyond Bongaigaon should be developed by CTU as a regional scheme. However, the above was subject to the approval of Ministry of Power.

The matter was further discussed in a meeting taken by Secretary (Power) on 06-06-2006 wherein Secretary (Power) indicated that the transmission system to be developed under private-public partnership should include a transmission system from Pallatana upto Biharsharif including Bongaigaon-Siliguri and Purnea-Biharsharif lines. Subsequently, OTPC vide its letter dated 30-06-2006 to Ministry of Power informed that its request for Viability Gap Funding for the transmission project is being withdrawn.

Further, M/s OTPC vide its letter dated 11/07/2006 informed that the project capacity has been downsized from 1100 MW to 740 MW in phase-I, having net exportable capacity of 700 MW. OTPC vide another letter dated 11/07/2006 had requested that in view of revision of plant capacity, the immediate evacuation system from Pallatana

to Bongaigaon, via Silchar may be revised as 400kV D/c line with twin Moose conductor. Further OTPC vide its letter dated 21/07/2006 informed that it has no future plans for expansion.

The matter was further discussed in a meeting taken by Joint Secretary (Transmission), Ministry of Power on 10-10-2006 wherein following was observed:

- The 400kV transmission lines from Pallatana GBPP to Bongaigaon, via Silchar, would be constructed by the generating agency and the balance transmission system i.e. Bongaigaon - Siliguri and Purnea - Biharsharif 400 kV D/c lines has to be taken up as regional scheme with Northern region constituents as the beneficiaries.
- It was also mentioned that as 500 MW power has been allocated to NR constituents from this project, it is expected that a large quantum of power would flow out of North-Eastern region. Though the generating agency has downsized the generation capacity to 740 MW, there will be no change in the transmission system.
- Though the scheme was discussed and agreed by Northern region constituents, the matter needs to be discussed again due to downsizing of project capacity.

In view of the above, following transmission system has been proposed.

A. <u>Immediate Evacuation to be taken up by generating agency</u>

- Power project (Pallatana) - Silchar 400 kV D/C line with twin moose conductor
- Silchar – Bongaigaon 400 kV D/C line with twin moose conductor and 40% series compensation
- New 2x200 MVA, 400/132 kV sub-station at Silchar (Assam)
- Extension of Bongaigaon substation by 400/220kV, 315MVA transformer.

B. <u>Regional Scheme for power transfer to Northern Region</u>

- Bongaigaon - Siliguri 400 kV D/C line with quad Moose conductor
- Purnea – Biharsharif 400 kV D/C line with quad Moose conductor

The system was discussed by the members and agreed to the above mentioned scheme.

POWERGRID enquired the commissioning schedule of the project. Representative from OTPC informed that the revised schedule of the generation is December 2009.

Concluding the discussion following was agreed

- Members agreed that to transfer 700MW power from Pallatana generation project (500MW to NR and 200MW to NER), following transmission system would be required :
  1. Power project (Pallatana) - Silchar 400kV D/C line with twin moose conductor
  2. Silchar-Bongaigaon 400kV D/C line with twin moose conductor and 40% series compensation
  3. New 2x200 MVA, 400/132 kV sub-station at Silchar (Assam)
  4. Extension of Bongaigaon substation by 400/220kV, 315MVA transformer.
  5. Bongaigaon - Siliguri 400 kV D/C line with quad Moose conductor
  6. Purnea – Biharsharif 400 kV D/C line with quad Moose conductor

  Items 1 to 4 are part of the interconnection arrangement of OTPC generation upto Bongaigaon would be in the scope of M/s OTPC. The transmission charges for item 5 & 6 i.e. the transmission system beyond Bongaigaon would have to be borne by NR constituents.
- OTPC should also make sure of the execution of the 132kV interconnection of the new substation at Silchar with the existing transmission system. This is essential as the proposed transmission system from power plant to Bongaigaon can not be operated without proper anchoring arrangement at Silchar.
- For supply of power to Tripura, the necessary arrangement along with cost at the Pallatana switchyard shall be carried out by the generating company and the transmission line would require to be tied up.
- M/s OTPC would be entering into suitable agreements including BPTA with POWERGRID/STU's for payment of transmission charges of the respective system as per CERC /SERC norms.

The meeting ended with a vote of thanks

Annexure-I

List of Participants

CEA	
1. Sh. A.K.Asthana	Chief Engineer (SP&PA)
2. Sh.Gautam Roy	Dy.Director, CEA.
3. Sh.Rajeev Kumar	Asst.Dorector, CEA.
POWERGRID	
1. Sh. R.N.Nayak	Executive Director(Engg,QA&I & HR)
2. Sh. Y.K.Sehgal	AGM(Engg)
3. Sh. Ashok Pal	Chief Design Engineer(Engg)
DTL	
1. Sh. A.K.Kaul	GM(SLDC)
2. Sh.Raj Bhatia	GM(Pllg)
HVPNL	
1. Sh. T.K.Dhingra	SE(planning)
2. Sh.S.K.Bansal	Exec.Engineer
RRVPNL	
1. Sh Y.K.Raizada	Director(Trans)
2. Sh.Umesh Gupta	CE(PPM)
3. Sh. L.N.Nimawat	Addl.S.E(PSS)
J&K,PDD	
1. Sh.R.K.Seli	CE(S&O), Jammu
PSEB	
1. Sh. K.S.Jolly	CE(SO&C)
2. Sh. I.S.Anand	Director(Planning)
3. Sh.Padmjit	Advisor
PTCUL	
1. Sh. Mohan Ram	MD
2. Sh.J.P.Tomar	DGM
3. Sh.V.K.Gupta	Consultant
UPPCL	
1. Sh. V.K.Aggarwal	SE(T&C)
2. Sh.V.P.Tewari	EE(Planning)
BBMB	
1. Sh.Niraj Gulati	Dy.Chief Engineer
NTPC Ltd	
1. Sh.Ajit Kumar	AGM(Elect)
2. Sh. Pramod Kumar	DGM(E)

NHPC

1. Sh. Raj kumar	GM(T&RE)

NRPC

1. Sh.S.P.Singh	Member Secretary
2. Sh.R.P.Aggarwal	SE(O)
3. Sh.Pralad Meena	Xen(O)

PTC

1. Sh.S.S.Sharma	Sr.V.P.
2. Sh.Harish Saran	V.P.

HPSEB

1. Sh.S.K.Chanana	CE(SP)
2. Sh.R.L.Gupta	Dir(SP)
3. Sh.R.N.Kaul	Dir(I/S)

NPCIL

1. Sh.Sandeep sarwate	S.O./F.

IL&FS

1. S.C.Misra	Advisor(T)
2. Haziq Beg	VP

Maithon Power Ltd

1. R.K.Agarwal	CEO & ED
2. G.R.Nagengdran	Company Secretary

REGL

1. S.K.Deb	Sr.V.P
2. P.Srinivasan	Head Project
3. Rakesh Raman	Chief Project Manager
4. Mukesh Paliwal	Head Network study

NTPC-Lohari Nagpala

1. Sh Vinod Padha	AGM (Comml)
2. Sh.A.Basu	Ch Manager (Comml)

पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)
पावरग्रिड

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Corporate office : "Saudamini" Plot No. 2, Sector-29, Gurgaon-122 001 Haryana
Tel. : 2571700 - 719, Fax : 2571760, 2571761 Gram : 'NATGRID'

संदर्भ संख्या /Ref. Number
C/ENG/SEF/N/ LTOA

April 9, 2007

To

As per the List Attached

Sub: Minutes for Long Term Open Access Application of M/s PTC for evacuation of power from Karcham Wangtoo HEP in Northern region

Sir,

We write with reference to the Long Term Open Access Meeting held on 12/03/2007 at Udaipur, wherein the application from M/s PTC for transfer of power from Karcham Wangtoo which was discussed. Please find enclose the Minutes for the same.

Thanking You,

Yours faithfully

(Y.K.Sehgal)
Addl. General Manager (Engg-SEF)

1. Sh. V.Ramakrishna
Member(PS), CEA,
Sewa Bhawan, R.K. Puram,
New Delhi –66

2. Sh. S.P.Singh Gaharwal
Member Secretary,NREB
18A, Shaheed Jit Singh Sansawal Marg, Katwaria Sarai, New Delhi – 110 016

3. Director (Projects),HVPNL,
Shakti Bhawan, Sector-6,
Panchkula-134109 Haryana,

4. Chief General Manager (Trans.),
UPPCL, Shakti Bhawan Extn.3rd floor, 14, Ashok Marg,
Lucknow - 226001

5. Executive Director (E&M),
National Hydroelectric Power Corporation
N.H.P.C. Office Complex,
Sector-33, Faridabad-121003.

6. Director (Operations)
NTPC Bhawan, Core-7, Scope complex, Lodhi road New Delhi-110003

7. Director (Operation)
PTC India Ltd,2nd Floor,
15NBCC Tower, Bhikaji Cama Place,
New Delhi – 110 066

8. Director (Operations)
Delhi Transco Ltd.,Shakti Sadan,
Kotla Road, New Delhi-110 002

9. Managing Director
PTCUL, Urja Bhawan,
Kanwali Road, Dehradun,
Uttaranchal-248001

10. Director(Transmission)
RRVPNL, Vidyut Bhawan,
Janpath, Jyoti Nagar, Jaipur,
Rajasthan.

11. Chief Engineer (Operation),
Electricity Department,
UT Sectt, Sector-9D
Chandigarh.-161009

12. GM(Transmission)
Nuclear Power Corporation of India Ltd. 9-s-30,12th Floor, North Wing, VS Bhawan
Anushaktinagar, Mumbai 400 094

13. Member(Operation)
Punjab State Electricity Board,
Mall Road, Patiala,-147001, Punjab.

14. Member(Technical),
HPSEB,
Vidyut Bhawan, Shimla-171004

15. Power Development Commissioner,
Power Development Department, J&K,
Janipur, Jammu.

16. Member(Power),BBMB,
Sector 19-B, Madhya Marg,
Chandigarh.- 160019

17. Shri Rajiv Bhardwaj
Director,
Jaypee Karcham Hydro Corporation Ltd.
JA House, 63, Basant Lok,
Vasant Vihar, New Delhi

Minutes of Meeting for Long Term Open Access Application of M/s Power Trading Corporation Ltd for transfer of 689.92MW from Karcham Wangtoo HEP held on 12/03/2007 at Udaipur

List of Participants is enclosed at **Annexure-I**

POWERGRID welcomed the participants to the long-term open access meeting of Northern Region and informed that application from M/s Power Trading Corporation Limited for transfer of power from Karcham Wangtoo HEP was discussed in the long-term open access meeting held on 03/11/2006 for Northern region. During the discussion HPSEB informed that in the upstream of Karcham Wangtoo many hydro projects would be developed and there is a serious Right-of Way constraint and while developing the transmission system these should also be considered and accordingly the following was agreed:

- LILO of Nathpa Jhakri – Baspa 400 kV D/c line at Karcham Wangtoo and Karcham Wangtoo – Abdullapur 400 kV D/c (Quad) including bays at both ends would be the dedicated transmission system and all the costs towards this would be borne and implemented by the project developer. Beyond Abdullapur, a 400kV D/c (Triple Conductor) would be constructed to Sonepat substation for reliable transfer of Karcham Wangtoo power to beneficiaries. Abdullapur-Sonepat 400kV D/c (Triple Conductor) shall be a regional scheme.

- As full generation capacity (1000MW) would be injected into the Grid the applicable pooled transmission charges should be for the full generation capacity as per the present practice. The issue of sharing of transmission charges for free power needs to be resolved between M/s PTC, M/s Jaypee Karcham Hydro Corporation Ltd (JKHCL) and HPSEB.

- Requisite agreement needs to be signed for payment of transmission charges by M/s PTC India Ltd and JKHCL. The applicable transmission charges shall be as per CERC norms.

- The Long Term Open Access can be granted subject to the conditions mentioned above.

POWERGRID further informed that M/s Jaypee Karcham Hydro Power Ltd have now raised the issue that as their generation project is of only 1000MW capacity, a 400kV D/c line with triple conductor would be adequate from Karcham Wangtoo to Abdullapur and this is increasing their cost & affecting competitiveness.

HPSEB representative mentioned they are planning to implement the Shongtog Karcham, Jhangi Thopan and Thopan Powari hydro projects, totaling to about 1350 MW, in the upstream of Karcham Wangtoo HEP and these should be considered while finalizing the transmission system of Karcham Wangtoo.

In this regard Mr. Bhardwaj from JKHCL brought out that there is a cost increase in 400 kV Quad D/c line in place of constructing the line with triple conductor. It was further informed by Mr. Bhardwaj of JKHCL that cost of the dedicated system would be approximately Rs. 900 Crores. CEA and all the constituents / beneficiaries of

Northern region noted the increase and reiterated the requirement of Quad D/c line. Further no objection was raised by any of the participant.

In regard to the sharing of regional transmission charges POWERGRID informed that during the last meeting CEA & Constituents were of the opinion that the it should be corresponding to full 1000 MW generation capacity of Karcham Wangtoo as the full power from the project would be injected into the Northern region Grid. As there is a allocation of 12% free power to Govt of Himachal Pradesh the sharing of regional charges for this free power was to be resolved by PTC / JKHCL with Himachal Pradesh. Representative of JKHCL informed that as per the allocation 704 MW has been allocated to PTC, 176 MW power has been reserved for Merchant sale and balance 120 MW is the free power to Govt of Himachal Pradesh and they are ready for sharing the regional transmission charges for 176 MW of their power. PTC also confirmed that they are also ready to bear the transmission charges for 704 MW. It was further opined by the members that POWERGRID should grant the open access for the desired quantum of power i.e. 880 MW (704 MW of PTC and 176 MW by JKHCL) and pooled transmission charges of Northern Region shall be recovered in proportion to 880 MW. All the constituents agreed for the same.

Member (PS), CEA directed HPSEB that system development in their state is their responsibility and they should convene a meeting of the concerned parties and discuss the matter.

Concluding the discussions following was agreed:

- The dedicated transmission system of Karcham Wangtoo would include the LILO of Nathpa Jhakri – Baspa 400 kV D/c line at Karcham Wangtoo and Karcham Wangtoo – Abdullapur 400 kV D/c (Quad) including bays at both ends & line reactors. Dedicated transmission system shall be implemented by the project developer and all the costs towards implementation as well as for O&M shall be borne by them.

- CEA and all the constituents / beneficiaries of Northern region noted that there is cost increase for the construction of 400 kV Quad D/c line in place of 400 kV Triple conductor D/c line and reiterated the requirement of Quad D/c line. Further no objection was raised by any of the participant.

- It was also agreed that the PTC and JKHCL shall pay the Northern regional transmission charges corresponding to the allocation of power i.e. 704 MW to PTC and 176 MW to JKHCL from the generation project from the beneficiaries of the project.

- Requisite agreement needs to be signed for payment of transmission charges by M/s PTC India Ltd and JKHCL with POWERGRID. The applicable transmission charges shall be as per CERC norms.

- The Long Term Open Access can be granted subject to the signing of the desired agreements.

Annexure-I

List of Participants

CEA	
1. Sh. V Ramakrishna	Member (PS)
2. Sh. A.K.Asthana	Chief Engineer (SP&PA)
POWERGRID	
1. Sh. Y.K.Sehgal	AGM(Engg-SEF)
2. Sh. Mukesh Khanna	Chief Design Engineer(Engg-SEF)
DTL	
1. Sh. Raj Bhartiya	GM(Plg)
2. Sh.Bhupinder Nath	DGM(Plg)
HVPNL	
1. Sh. A S Chugh	Director (Projects)
2. Sh. T.K.Dhingra	SE(Planning)
RRVPNL	
1. Sh Y.K.Raizada	Director(Trans)
2. Sh.Umesh Gupta	CE(PPM)
3. Sh. M K Kasliwal	S.E
4. Sh. L.N.Nimawat	Addl.S.E(PSS)
J&K,PDD	
1. Sh.R.K.Seli	CE(S&O), Jammu
PSEB	
1. Sh. K.S.Jolly	CE(SO&C)
2. Sh. I.S.Anand	CE(Planning)
PTCUL	
1. Sh. Mohan Ram	MD
2. Sh.J.P.Tomar	GM
UPPCL	
1. Sh. A Guha Roy	SE(Planning)
2. Sh.V.P.Tewari	EE(Planning)
BBMB	
1. Sh.Niraj Gulati	Dy.Chief Engineer
NTPC Ltd	
1. Sh.Ajit Kumar	HOD (Elect)
2. Sh. Pramod Kumar	AGM
PTC	
1. Sh.Kunal Yadav	Manager.
HPSEB	
1. Sh.R.L.Gupta	Dir(SP)

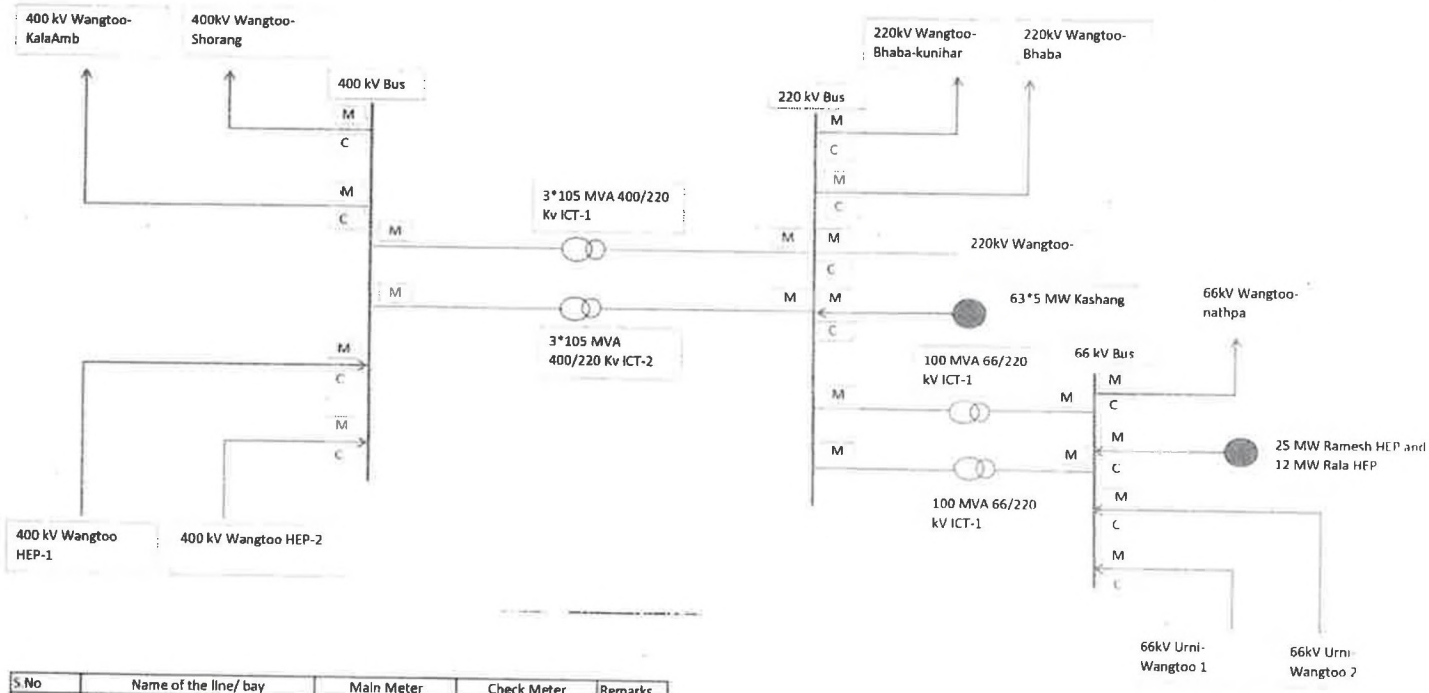
NPCIL

1. Sh. K P Singh — Addl. CE

Jaypee Karcham Hydro Corporation Ltd.

1. Rajiv Bhardwaj — Dir

ANNEXURE -8



S.No	Name of the line/ bay	Main Meter	Check Meter	Remarks
1	Wangtoo -Nathpa (601)	HPU06765	HPU06768	
2	220/66 kv,100 MVA Trafo -1 (602)	HPU06761	NA	
3	220/66 kv,100 MVA Trafo -2 (608)	HPU06760	NA	
4	Wangtoo-Rala-Panchor (603)	HPU06763	HPU06766	
5	Urni -Wangtoo ckt-1 (606)	HPU06762	HPU06769	
6	Urni -Wangtoo ckt-2 (607)	HPU06767	HPU06764	
7	220/66 kv,100 MVA Trafo -1 (201)	HPU06777	NA	
8	220/66 kv,100 MVA Trafo -2 (202)	HPU06776	NA	
9	Wangtoo-Bhaba-Kunihar (203)	HPU06778	HPU06779	
10	Wangtoo-Bhaba (204)	HPU06773	NA	
11	400/220/33 kv,315MVA Ict-1 (207)	HPU06772	NA	
12	400/220/33 kv,315MVA Ict-2 (209)	HPU06780	NA	
13	Wangtoo-Kashang (210)	HPU06774	HPU06775	
14	Wangtoo-Bhoktoo (211)	HPU06770	HPU06781	
15	Karcham -Wangtoo-1 (409)	NP-7080-A	HPU06785	
16	Karcham -Wangtoo-2 (407)	NP-7155-A	HPU06782	
17	Wangtoo-Kala Amb (410)	NP-8843-A	HPU06791	
18	Wangtoo-Shorang (412)	NP-8593-A	HPU06783	
19	400/220/33 kv,315MVA Ict-1 (413)	HPU06788	NA	
20	400/220/33 kv,315MVA Ict-2 (415)	HPU06787	NA	

Sr. Manager (Project)
H.P.P.T.C.L. Division
Bhaba Nagar (Kinnaur)

Annexure-XVI

Subject- Implementation of Transmission System for Shongtong-Karcham HEP (450 MW)

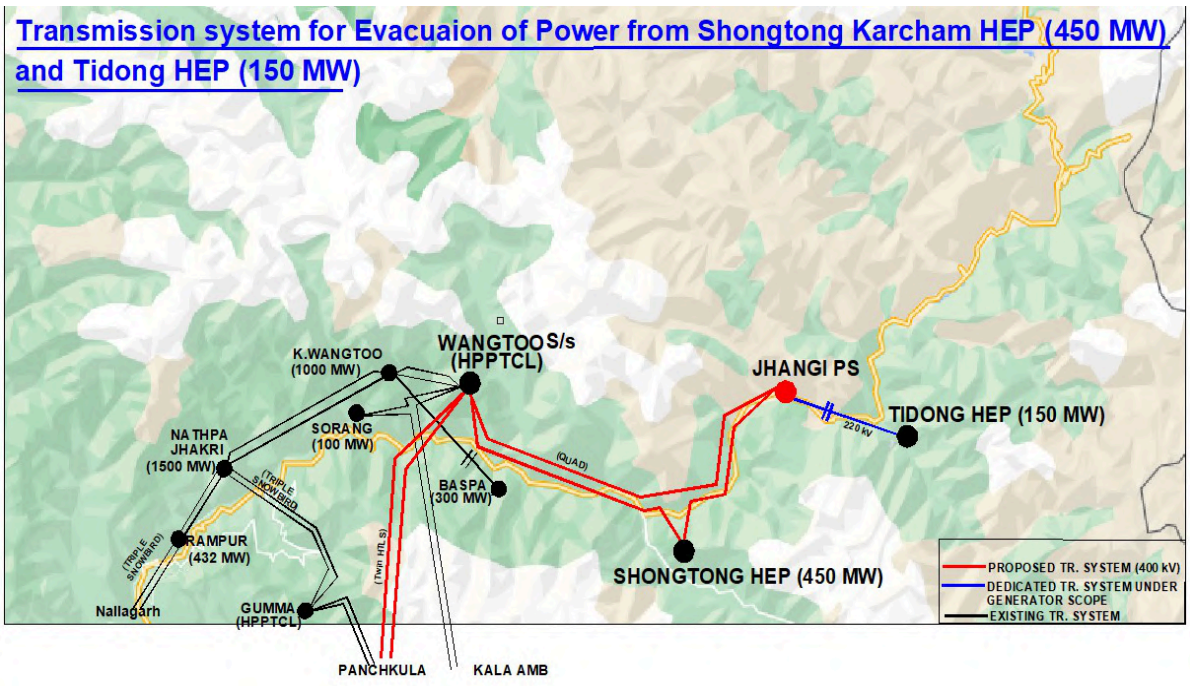
Background:

The evacuation arrangement for Shongtong and Tidong HEP has been finalized and notified by the Ministry of Power, GoI in April 2023 **(Annexure-A).** The evacuation arrangement is Common Transmission System for Shongtong HEP (450 MW) and Tidong HEP (150 MW) and includes the following elements:

Sl. No.	Scope of the Transmission Scheme
1	**Phase-I with Tidong HEP [Schedule: 01st July 2026]** Establishment of 2x315 MVA (7x105 MVA 1-ph units including a spare unit) 400/220 kV GIS Pooling Station at Jhangi ● 400/220 kV ICTs- 2x315 MVA (7x105 MVA 1-ph units including a spare unit) ● 400kV ICT bays- 2nos. ● 220kV ICT bays- 2nos. ● 400kV line bays (GIS) -2 nos. (for Jhangi PS – Wangtoo D/c line) ● 420 kV Bus reactor -1 No. (4x 41.66 MVA 1-ph units including one spare unit) ● 420kV Reactor bay-1 No. ● 220kV Bus coupler- 1 No. **Future space provision for:** ● 5 nos. of 400 kV line bays ● 6 nos. of 220 kV line bays for future projects (space for 2 bays to be utilized for connectivity to Tidong generation) ● 2 no. of 400/220 kV Transformer ● 1 no. 420 kV Bus Reactor along with bay ● 220 kV Sectionalization bay: 1 set ● Bus Coupler: 1 no.
2	400 kV Jhangi PS – Wangtoo (Quad) D/c line
3	400kV bays at Wangtoo for termination of 400 kV Jhangi PS – Wangtoo D/c line 400 kV bays – 2nos. (GIS)
	Phase-II with Shongtong HEP [Schedule: 31st July, 2026]
1	LILO of one circuit of Jhangi PS - Wangtoo (HPPTCL) 400 kV D/c

Sl. No.	Scope of the Transmission Scheme
	(Quad) line[$] at generation switchyard of Shongtong HEP
2	Wangtoo (HPPTCL) - Panchkula (PG) 400 kV D/c (Twin HTLS*) line along with 80 MVAr switchable line reactor at Panchkula end on each circuit 420 kV 80 MVAr SLR along with switching equipments – 2 Nos.
3	400kV bays at Wangtoo S/s (2 nos.) and Panchkula S/s (2 nos.) for termination of 400 kV Wangtoo (HPPTCL) - Panchkula (PG) D/c line 400 kV Line bays- 4 nos. (2 nos. GIS bays at Wangtoo and 2 nos. AIS bays at Panchkula)

The SLD for the proposed evacuation arrangement through TBCB mode is as follows:



RECPDCL was appointed as BPC for the execution of above Transmission system under TBCB. As of now the bids called under TBCB mode by RECPDCL for execution of above transmission system have been recommended for cancellation due to the high price discovered over and above the estimated price. Given the timeframe of **July 2026** for execution

of above system with only 15 months remaining as per earlier agreed timelines under ISTS is not feasible. HPPCL vide their letter dated-05.12.2024 **(Annexure-B)** has informed HPPTCL that they are expecting a mismatch between the Scheduled Generation of Project (Shongtong HEP) and the proposed Transmission system under ISTS as they envisage completion of Project **in November, 2026.** HPPTCL accordingly took up the matter with CEA **(Annexure-C)** to ensure that any possible mismatch between Generation and Evacuation system could be avoided. HPPTCL proposed the following two options under ISTS to ensure completion of Transmission system matching with November 2026 timeline of Shongtong HEP-

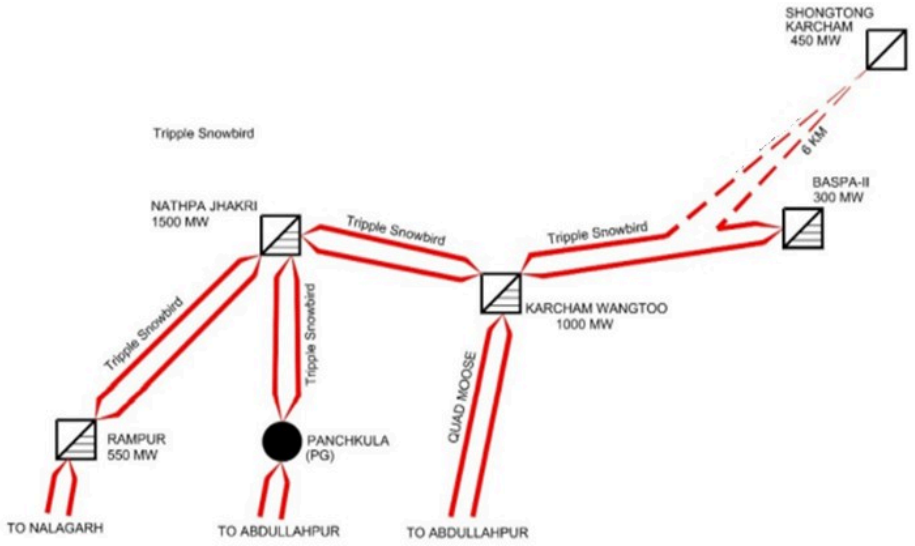
1. Construction of S/C LILO of 400 kV D/C Baspa - Karcham Wangtoo line at Shongtong HEP under Regulated Tariff Mechanism by PGCIL which will later on become part of final plan approved by CTUIL.
2. HPPTCL has given willing to construct the Interim arrangement in case it is declared as deemed ISTS.

HPPTCL also highlighted the fact that the development of HEPs other than Shongtong and Tidong in Upper Satluj basin will take considerable time, therefore considering the availability of various corridors downstream to Karcham Wangtoo HEP, the construction of additional 400 kV D/C Twin HTLS line from Wangtoo to Panchkula be dropped till development of additional generation in upper Satluj Basin. The projects like Jangi Thopan, Khab and Solar Projects envisaged in upper Satluj Basin shall take significant time to kick off and HPPTCL shall inform the CTUIL 3 to 4 years in advance so that downstream system can be developed matching their timeframe. The uprating of terminal equipments needs to be done on priority as per recommendation of meeting held under chairmanship of Member Secretary NRPC subsequent to discussions held in 51st Protection Sub Committee (MOM of meeting attached as **Annexure-D).**

"It was agreed that PowerGrid and the Generators in this complex shall provide their study/inputs for upgradation of terminal equipment at

various substations to remove constraints for evacuation of power from Himachal Pradesh. NRLDC shall study the inputs in consultation with CTU and matter for upgradation of terminal equipment shall be discussed further in OCC meetings."

As such requirement of new 400 kV D/C Twin HTLS corridor from Wangtoo to Panchkula needs to be reconsidered.



Interim Arrangement

CEA upon receipt of HPPTCL request had conducted a meeting on 30.01.2025 of all stakeholders (MoM of the meeting attached as **Annexure-E**) wherein following was agreed-

(i) HPPTCL is requested to take the matter in the coming meeting of NRPC for

consultation with all the stakeholders.

(ii) Decision on the interim arrangement would be taken based on the timeline of commissioning of the planned transmission scheme and the timeline of commissioning of Shongtong Karcham HEP.

HPPTCL placed the issue as agenda in 228th OCC meeting of NRPC held on 14.02.2025 wherein HPPCL again confirmed their scheduled commisong of Shongtong HEP by November 2026. Further NRPC has also provided its comments on the proposal to CEA wherein it has been agreed in principle that interim arrangement if required needs to be constructed to ensure constraint free evacuation of power from Shongtong HEP. A team of officers from CEA were requested to visit and assess the progress of Shongtong HEP for the requirement of interim evacuation arrangement and the report was to be submitted by 7th March 2025. Correspondence received from NRPC is placed at **Annexure-F.**

Point for consideration-

In view of the above the agenda item is placed for consideration and approval of following by the forum-

1. Since timeframe of only 20 months is left for commissioning of Shongtong HEP, S/C LILO of 400 kV D/C Baspa to Karcham Wangtoo line at Shongtong HEP be approved for execution matching with timeline of Shongtong HEP i.e. November 2026 as an interim arrangement.
2. Approval for execution of element in Sr. No. 1 under RTM by PGCIL to ensure timely execution of project.
3. Reassessment of requirement of 400 kV D/C twin HTLS line from Wangtoo to Panchkula in view of availability of capacity in existing 400 kV corridors after uprating of terminal equipment.
4. Implementation of balance scheme on priority under TBCB.

रजिस्ट्री सं. डी.एल.- 33004/99 REGD. No. D. L.-33004/99

भारत का राजपत्र
The Gazette of India

सी.जी.-डी.एल.-अ.-15042023-245170
CG-DL-E-15042023-245170

असाधारण
EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)
PART II—Section 3—Sub-section (ii)

प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

सं. 1644] नई दिल्ली, बृहस्पतिवार, अप्रैल 13, 2023/चैत्र 23, 1945
No. 1644] NEW DELHI, THURSDAY, APRIL 13, 2023/CHAITRA 23, 1945

विद्युत मंत्रालय

अधिसूचना

नई दिल्ली, 13 अप्रैल, 2023

का.आ. 1723(अ).—केंद्र सरकार, विद्युत अधिनियम, 2003 (2003 की संख्या 36) की धारा 63 के अंतर्गत परिचालित दिशा-निर्देशों के पैरा 3 के उप-पैरा 3.2 द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, पारेषण संबंधी राष्ट्रीय समिति की 11वीं बैठक की सिफारिशों पर, पारेषण स्कीमों के लिए पारेषण स्कीमों के नाम के सामने दर्शाए अनुसार निम्नलिखित बोली-प्रक्रिया समन्वयकों (बीपीसी) की नियुक्ति करती है:

<table>
<tr><th>क्र.सं.</th><th>पारेषण स्कीमों के नाम एवं कार्यक्षेत्र</th><th>बोली प्रक्रिया समन्वयकर्ता</th></tr>
<tr><td>1</td><td>चरण-III भाग क के अंतर्गत खावड़ा आरई पार्क से अतिरिक्त 7 गीगावॉट आरई विद्युत की निकासी के लिए पारेषण प्रणाली
कार्य-क्षेत्र:
<table>
<tr><th>क्रम सं.</th><th>पारेषण स्कीम का कार्य-क्षेत्र</th><th>क्षमता/कि.मी.</th></tr>
<tr><td>1</td><td>765 केवी, 2x330 एमवीएआर बस रिएक्टरों के साथ 765 केवी हलवड़ स्विचिंग स्टेशन की स्थापना
भावी कार्य-क्षेत्र:
निम्नलिखित के लिए जगह
• बे सहित 765/400 केवी आईसीटी - 6</td><td>• 330 एमवीएआर, 765 केवी बस रिएक्टर - 2 (7x110 एमवीएआर सिंगल फेज रिएक्टर यूनिट जिसमें 1 अतिरिक्त यूनिट शामिल है)
• 765 केवी बस रिएक्टर बे - 2
• 765 केवी लाइन बे - 6 (क्रम</td></tr>
</table></td><td>पीएफसी कंसल्टिंग लि.</td></tr>
</table>

	• स्विचेबल लाइन रिएक्टरों के साथ 765 केवी लाइन बे - 6 • बे सहित 765 केवी बस रिएक्टर: 2 • 765 केवी सेक्शनलाइज़र बे: 1 सेट • स्विचेबल लाइन रिएक्टर के साथ 400 केवी लाइन बे - 12 • बे सहित 400/220 केवी आईसीटी - 8 • बे सहित 400 केवी बस रिएक्टर: 2 • 400 केवी सेक्शनलाइज़र बे: 1 सेट • 220 केवी लाइन बे: 16 • 220 केवी सेक्शनलाइज़र बे: 2 सेट • 220 केवी बीसी और टीबीसी: 3 • संबद्ध बे के साथ एमएससी (2x125 एमवीएआर) और एमएसआर (1x125 एमवीएआर) सहित स्टेटकॉम (±300 एमवीएआर): 1	सं.2 और 5 की लाइनों के लिए)	
2	केपीएस2 (जीआईएस) – हलवड़ 765 केवी डी/सी लाइन	रूट की लंबाई: 220 किमी	
3	केपीएस2- हलवड़ 765 केवी डी/सी लाइन के दोनों सिरों पर प्रत्येक सर्किट पर 240 एमवीएआर स्विचेबल लाइन रिएक्टर	• 240 एमवीएआर, 765 केवी स्विचेबल लाइन रिएक्टर- 4 [केपीएस2 (जीआईएस) में 2 और हलवड़ में 2] • 765 केवी लाइन रिएक्टरों के लिए स्विचिंग उपकरण - 4 [केपीएस 2 (जीआईएस) पर 2 और हलवड़ में 2] • 80 एमवीएआर, 765 केवी, केपीएस2 (जीआईएस) में सिंगल फेज अतिरिक्त रिएक्टर यूनिट • हलवड़ सब-स्टेशन में 80 एमवीएआर, 765 केवी, सिंगल फेज अतिरिक्त रिएक्टर यूनिट	
4	केपीएस 2 – हलवड़ 765 केवी डी/सी लाइन की समाप्ति के लिए केपीएस2 पर 2 765 केवी जीआईएस लाइन बे	• 765 केवी लाइन बे (जीआईएस) - 2 [केपीएस2 (जीआईएस) सिरे के लिए]	
5	हलवड़ में लकड़िया-अहमदाबाद 765 केवी डी/सी लाइन का एलआईएलओ	एलआईएलओ रूट की लंबाई: 30 किमी (120 सीकेएम)	

टिप्पणी:

i. केपीएस2 का विकासकर्ता केपीएस2 (जीआईएस) - हलवड़ 765 केवी डी/सी लाइन की समाप्ति के लिए स्विचेबल लाइन रिएक्टरों के साथ-साथ 2 765 केवीलाइन बे के कार्यान्वयन के लिए जगह प्रदान करेगा।

ii. **कार्यान्वयन समय-सीमा**: एसपीवी अंतरण की तारीख से 24 माह

2. चरण-III भाग ख के अंतर्गत खावड़ा आरई पार्क से अतिरिक्त 7 गीगावॉट आरई विद्युत की निकासी के लिए पारेषण प्रणाली — पीएफसी कंसल्टिंग लि.

कार्य-क्षेत्र

क्रम सं.	*पारेषण स्कीम का कार्य-क्षेत्र*	*क्षमता/कि.मी.*
1	वातमन के निकट 2x330 एमवीएएआर, 765 केवी बस रिएक्टरों के साथ 765 केवी स्विचिंग स्टेशन की स्थापना **भावी कार्य-क्षेत्र** निम्नलिखित के लिए जगह • बे सहित 765/400 केवी आईसीटी - 6 • स्विचेबल लाइन रिएक्टरों के साथ 765 केवी लाइन बे - 6 • बे के साथ 765 केवी बस रिएक्टर: 2 • 765 केवी सेक्शनलाइजर बे: 1-सेट • स्विचेबल लाइन रिएक्टर के साथ 400 केवी लाइन बे - 12 • बे सहित 400/220 केवी आईसीटी-8 • बे सहित 400 केवी बस रिएक्टर: 2 • 400 केवी सेक्शनलाइज़ेशन बे: 1-सेट • 220 केवी लाइन बे: 16 • 220 केवी सेक्शनलाइज़ेशन बे: 2 सेट • 220 केवी बीसी और टीबीसी: 3 • संबद्ध बे सहित एमएससी (2x125 एमवीएआर) और एमएसआर (1x125 एमवीएआर) के साथ स्टेटकॉम (±300 एमवीएआर): 1	• 330 एमवीएआर 765 केवी बस रिएक्टर-2 (लाइन/बस रिएक्टर के लिए 1 अतिरिक्त यूनिट सहित 7x110 एमवीएआर सिंगल फेज रिएक्टर यूनिटें) • 765 केवी बस रिएक्टर बे - 2 • 765 केवी लाइन बे - 8 (क्रम 2, 5 और 7 की लाइनों के लिए)
2	हलव़ड़-वातमन 765 केवी डी/सी लाइन	रूट की लंबाईः 170 km
3	हलवड़-वातमन 765 केवी डी/सी लाइन के वातमन सिरे पर प्रत्येक सर्किट पर 1x330 एमवीएआर स्विचेबल लाइन रिएक्टर	• 330 एमवीएआर, 765 केवी स्विचेबल लाइन रिएक्टर- 2 (6 x 110 एमवीएआर सिंगल फेज रिएक्टर यूनिट) [110 एमवीएआर सिंगल फेज अतिरिक्त बस रिएक्टर यूनिट को लाइन रिएक्टर के अतिरिक्त के रूप में प्रयोग किया जाएगा] • 765 केवी लाइन रिएक्टर के लिए स्विचिंग उपकरण - 2
4	हलवड़-वातमन 765 केवी डी/सी लाइन की समाप्ति के लिए हलवड़ सिरे पर 2 765 केवी लाइन बे	• 765 केवी लाइन बे- 2 (हलवड़ सिरे के लिए)

5	वातमन 765 केवी स्विचिंग स्टेशन पर लकाड़िया-वड़ोदरा 765 केवी डी/सी लाइन का एलआईएलओ	एलआईएलओ रूट की लंबाईः 10 कि.मी. (40 सीकेएम)
6	लकाड़िया-वातमन 765 केवी डी/सी लाइन के वातमन सिरे पर प्रत्येक सर्किट पर एनजीआर बायपास व्यवस्था के साथ 240 एमवीएआर 765 केवी स्विचेबल लाइन रिएक्टर	• 240 एमवीएआर, 765 केवी स्विचेबल लाइन रिएक्टर- 2 (7x 80 एमवीएआर सिंगल फेज रिएक्टर यूनिट जिसमें 1 अतिरिक्त यूनिट शामिल है) • 765 केवी लाइन रिएक्टरों के लिए स्विचिंग उपकरण - 2
7	वातमन स्विचिंग स्टेशन - नवसारी (नई) (जीआईएस) 765 केवी डी/सी लाइन	रूट की लंबाईः 200 कि.मी.
8	वातमन स्विचिंग स्टेशन- नवसारी (नई) (जीआईएस) 765 केवी डी/सी लाइन के नवसारी (नई) (जीआईएस) सिरे पर प्रत्येक सर्किट पर 330 एमवीएआर स्विचेबल लाइन रिएक्टर	• 330 एमवीएआर, 765 केवी स्विचेबल लाइन रिएक्टर- 2 (6 x 110 एमवीएआर सिंगल फेज रिएक्टर यूनिट) [पीजीसीआईएल द्वारा कार्यान्वित की जा रही नवसारी में 110 एमवीएआ रअतिरिक्त रिएक्टर यूनिट, जिसका अतिरिक्त के रूप में प्रयोग किया जाएगा।] • 765 केवी लाइन रिएक्टरों के लिए स्विचिंग उपकरण - 2
9	वातमान स्विचिंग स्टेशन - नवसारी (नई) (जीआईएस) 765 केवी डी/सी लाइन की समाप्ति के लिए नवसारी (नई) में 2 765 केवी जीआईएस लाइन बे	• 765 केवी लाइन बे (जीआईएस) - 2 (नवसारी (नई) सिरे के लिए 2)

टिप्पणी:

i. हलवड़ सब-स्टेशन के विकासकर्ता हलवड़-वातामन 765 केवी डी/सी लाइन की समाप्ति के लिए 2 765 केवी लाइन बे के कार्यान्वयन के लिए जगह प्रदान करेंगे।

ii. नवसारी (नई) (जीआईएस) सब-स्टेशन के विकासकर्ता, वातमन स्विचिंग स्टेशन - नवसारी (नई) (जीआईएस) 765 केवी डी/सी लाइन की समाप्ति के लिए स्विचेबल लाइन रिएक्टरों सहित 2 765 केवी लाइन बे के कार्यान्वयन के लिए जगह प्रदान करेंगे। इसके साथ-साथ, नवसारी (नई) (जीआईएस) सब-स्टेशन के विकासकर्ता, वातमान स्विचिंग स्टेशन-नवसारी (नई) (जीआईएस) 765 केवी डी/सी लाइन के नवसारी (नई) (जीआईएस) सिरे में प्रत्येक सर्किट पर 330 एमवीएआर एसएलआर के लिए 110 एमवीएआर सिंगल फेज अतिरिक्त रिएक्टर यूनिट के उपयोग की अनुमति देंगे।

iii. डेढ़ ब्रेकर स्कीम में व्यास (जीआईएस) को पूरा करने के लिए आवश्यक बे (बेज़) को भी टीएसपी द्वारा निष्पादित किया जाएगा।

iv. वातमन 765 केवी स्विचिंग स्टेशन पर लकाड़िया-वड़ोदरा 765 केवी डी/सी लाइन के एलआईएलओ के बाद, वातामन 765 केवी स्विचिंग स्टेशन पर लकाड़िया - वडोदरा 765 केवी डी/सी लाइन के एलआईएलओ के बाद लकड़िया और वडोदरा सिरे पर मुख्य लाइन ब्रेकर के

<table>
<tr><td></td><td>साथ-साथ स्विचेबल लाइन रिएक्टर की इंटर-ट्रिपिंग के लिए लॉजिक का लाइन के वर्तमान स्वामी (अर्थात मैसर्स एलवीटीपीएल) द्वारा सक्षमीकरण किया जाएगा।

v. कार्यान्वयन समय-सीमा: एसपीवी अंतरण की तारीख से 24 माह</td><td></td></tr>
<tr><td>3</td><td>धुले 2 गीगावॉट आरईजेड से विद्युत की निकासी के लिए पारेषण स्कीम
कार्य-क्षेत्र
<table>
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<tr><td>1.</td><td>धुले के पास 2x125 एमवीएआर (420 केवी) बस रिएक्टरों सहित 4x500 एमवीए, 400/220 केवी पूलिंग स्टेशन की स्थापना।
भावी प्रावधान
निम्नलिखित के लिए जगह
• स्विचेबल लाइन रिएक्टर सहित 400 केवी लाइन बे - 8
• बे सहित 400/220 केवी आईसीटी-6
• बे सहित 400 केवी बस रिएक्टर: 2
• 400 केवी बस सेक्शनलाइज़ेशन बे: 1-सेट
• 220 केवी लाइन बे: 9
• 220 केवी सेक्शनलाइज़ेशन बे: 1 सेट
• 220 केवी बीसी और टीबीसी: 1</td><td>• 400/220 केवी, 500 एमवीए आईसीटी - 4
• 400 केवी आईसीटी बे - 4
• 220 केवी आईसीटी बे - 4 (220 केवी बस सेक्शन 1 पर 2 और 220 केवी बस सेक्शन 2 पर 2)
• 400 केवी लाइन बे - 2
• 125 एमवीएआर, 420 केवी बस रिएक्टर - 2
• बस रिएक्टर बे: 2
• 220 केवी बस कपलर बे- 2
• 220 केवी ट्रांसफर बस कपलर (टीबीसी) बे - 2
• 220 केवी लाइन बे - 7 (आरई इंटरकनेक्शन के लिए जिसमें से 4 220 केवी बस सेक्शन 1 और 3 220 केवी बस सेक्शन 2 पर होगा)
• 220 केवी बस सेक्शनलाइज़र - 1 सेट</td></tr>
<tr><td>2.</td><td>धुले पीएस - धुले (बीडीटीसीएल) 400 केवी डी/सी लाइन (क्वाड एसीएसआर/ एएएसी/ एएल59 मूस समतुल्य)</td><td>रूट की लंबाई: 60 कि.मी.</td></tr>
<tr><td>3.</td><td>धुले पीएस-धुले (बीडीटीसीएल) 400केवी डी/सी लाइनके लिए धुले (बीडीटीसीएल) में 2 400केवी लाइन बे</td><td>400 केवी लाइन बे– 2</td></tr>
</table>
टिप्पणी:
i. बीडीटीसीएल, (i) धुले पीएस-धुले (बीडीटीसीएल) 400 केवी डी/सी लाइन की समाप्ति के लिए 2 400 केवी लाइन बे के लिए जगह प्रदान करेगा।
(ii) कार्यान्वयन समय-सीमा: एसपीवी अंतरण की तारीख से 24 माह</td><td>आरईसी पावर डेवलपमेंट एंड कंसल्टेंसी लिमिटेड</td></tr>
<tr><td>4.</td><td>पश्चिमी क्षेत्र विस्तार स्कीम X X X III (डब्ल्यूआरईएस-X X X III): भाग ख
कार्य-क्षेत्र
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<tr><td>1</td><td>करेरा (दतिया के पास) में 1x330 एमवीएआर 765 केवी बस रिएक्टर और 1x125 एमवीएआर, 420केवी बस रिएक्टर के साथ-</td><td>• 765/400 केवी, 1500 एमवीए आईसीटी - 2 (7x500 एमवीए सिंगल</td></tr>
</table></td><td>आरईसी पावर डेवलपमेंट एंड कंसल्टेंसी लिमिटेड</td></tr>
</table>

		साथ 2x1500 एमवीए, 765/400 केवी, 2x500 एमवीए, 400/220 केवी सब-स्टेशन की स्थापना **भावी प्रावधान:** निम्नलिखित के लिए जगह • बे सहित 765/400 केवी आईसीटी- 4 • स्विचेबल लाइन रिएक्टरों के साथ 765 केवी लाइन बे –8 • बे सहित 765 केवी बस रिएक्टर: 3 • 765 केवी सेक्शनलाइज़र: 1 सेट • स्विचेबल लाइन रिएक्टर के साथ 400 केवी लाइन बे - 10 • बेसहित 400/220 केवी आईसीटी-6 • बे सहित 400 केवी बस रिएक्टर- 3 • 400 केवी सेक्शनलाइज़ेशन बे: 1 सेट • 220 केवी लाइन बे: 10 • 220 केवी सेक्शनलाइज़ेशन बे: 1 सेट • 220 केवी बीसी और टीबीसी: 1	फेज यूनिट जिसमें एक अतिरिक्त आईसीटी यूनिट शामिल है) • 400/220 केवी, 500 एमवीए आईसीटी - 2 • 765 केवी आईसीटी बे - 2 • 400 केवी आईसीटी बे - 4 • 220 केवी आईसीटी बे - 2 • 765 केवी लाइन बे - 2 • 330 एमवीएआर, 765 केवी बस रिएक्टर - 1 (4x110 एमवीएआर सिंगल फेज यूनिट जिसमें एक अतिरिक्त यूनिट शामिल है) • 125 एमवीएआर, 420 केवी बस रिएक्टर - 1 • 765 केवी बस रिएक्टर बे: 1 • 400 केवी बस रिएक्टर बे: 1 • 220 केवी बस कपलर बे- 2 • 220 केवी ट्रांसफर बस कपलर (टीबीसी) बे - 2 • 220 केवी लाइन बे - 8 (220 केवी लाइन के लिए एमपीपीटीसीएल द्वारा कार्यान्वित किया जाएगा#) • 220 केवी बस सेक्शनलाइजर- 1 सेट	
	2	करेरा में सतना-ग्वालियर 765 केवी एस/सी लाइन का एलआईएलओ	एलआईएलओ रूट की लंबाईः 70 कि.मी (140 सीकेएम)	
	3	करेरा-सतना 765 केवी लाइन के करेरा सिरे पर 1x330 एमवीएआर, स्विचेबल लाइन रिएक्टर की संस्थापना	स्विचिंग उपकरण के साथ 765 केवी, 330 एमवीएआर एसएलआर - 1 (3x110 एमवीएआर) [बस रिएक्टर के लिए 110 एमवीएआर सिंगल फेज रिएक्टर यूनिट को लाइन रिएक्टर के अतिरिक्त के रूप में भी इस्तेमाल किया जाएगा]	

#करेरा में बीना-दतिया 220केवी डी/सी लाइन के दोनों सर्किटों का एलआईएलओ, करेरा तक पिछोरे 220केवी के लिए 220 केवी दतिया- बीना लाइन के एलआईएलओ भाग का तथा करेरा औरकरेरा - सियोंधा 220केवी डी/सी लाइन तक विस्तार

<table>
<tr><td></td><td>टिप्पणी:
कार्यान्वयन समय-सीमा:एसपीवी अंतरण की तारीख से 24 माह</td><td></td></tr>
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<tr><td>1</td><td>ईशानगर (नया) में 1x330 एमवीएआर, 765 केवी और 1x125 एमवीएआर, 420 केवी बस रिएक्टर के साथ 2x1500 एमवीए, 765/400 केवी और 2x500 एमवीए, 400/220 केवी सब-स्टेशन की स्थापना
भावी प्रावधान:
निम्नलिखित के लिए जगह
• बे सहित 765/400 केवी आईसीटी- 4
• स्विचेबल लाइन रिएक्टरों के साथ 765 केवी लाइन बे - 8
• बे सहित 765 केवी बस रिएक्टर: 3
• 765 केवी सेक्शनलाइज़र: 1 सेट
• स्विचेबल लाइन रिएक्टर के साथ 400 केवी लाइन बे - 10
• बे सहित 400/220 केवी आईसीटी-7
• बे सहित 400 केवी बस रिएक्टर: 3
• 400 केवी सेक्शनलाइज़ेशन बे: 1-सेट
• 220 केवी लाइन बे: 12
• 220 केवी सेक्शनलाइज़ेशन बे: 2 सेट
• 220 केवी बीसी और टीबीसी: 3</td><td>• 765/400 केवी, 1500 एमवीए आईसीटी - 2 (7x500 एमवीए 1-फेज यूनिट जिसमें एक अतिरिक्त आईसीटी यूनिट शामिल है)
• 400/220 केवी, 500 एमवीए आईसीटी - 2
• 765 केवी आईसीटी बे - 2
• 400 केवी आईसीटी बे - 4
• 220 केवी आईसीटी बे - 2
• 765 केवी लाइन बे - 2
• 330 एमवीएआर, 765 केवीबस रिएक्टर - 1 (4x 110 एमवीएआर जिसमें एक अतिरिक्त यूनिट शामिल है)
• 125 एमवीएआर, 420 केवी बस रिएक्टर - 1
• 765 केवी बस रिएक्टर बे: 1
• 400 केवी बस रिएक्टर बे: 1
• 220 केवी बस कपलर बे- 1
• 220 केवी ट्रांसफर बस कपलर (टीबीसी) बे - 1
• 220 केवी लाइन बे - 6 (220 केवी लाइन के लिए एमपीपीटीसीएल द्वारा कार्यान्वित की जाएगी#)</td></tr>
<tr><td>2</td><td>ईशानगर 765 केवी सब-स्टेशन (नया) में जबलपुर - उरई 765 केवी डी/सी लाइन के एक सर्किट का एलआईएलओ</td><td>एलआईएलओ रूट की लंबाई – 5 कि. मी. (10 सीकेएम)</td></tr>
</table>
टिप्पणी:
#220 केवी ईशानगर 765/400/220 केवी – जतारा 220 केवी डी/सी लाइन और 765/400/220 केवी ईशानगर में छतरपुर-टीकमगढ़ 220 केवी 2xएस/सी लाइन का एलआईएलओ (छतरपुर-टीकमगढ़ 220 केवी का दूसरा सर्किट वर्तमान में कार्यान्वयनाधीन है)
अंतः-राज्य के अधीन (एमपीपीटीसीएल द्वारा):
• जतारा 220 केवी सब-स्टेशन में 220/132 केवी, 2x200 एमवीए आईसीटी और 132/33 केवी 2x50 एमवीए आईसीटी की स्थापना</td><td>आरईसी पावर डेवलपमेंट एंड कंसल्टेंसी लिमिटेड</td></tr>
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220 केवी ईशानगर 765/400/220 केवी – जतारा 220 केवी डी/सी लाइन
छतरपुर-टीकमगढ़ 220 केवी डीसीएसएस लाइन की दूसरी सर्किट की स्ट्रिंगिंग
765/400/220 केवी ईशानगर में छतरपुर-टीकमगढ़ 220 केवी डीसीडीएस लाइन के दोनों सर्किटों का एलआईएलओ
132 केवी जतारा 220 केवी – जतारा 132 केवी डी/सी लाइन (उच्च क्षमता कंडक्टर सहित)
132 केवी जतारा 220 केवी – नौगांव 132 केवी डी/सी लाइन
जतारा 132केवी - पृथ्वीपुर डीसीएसएस लाइन की दूसरे सर्किट की स्ट्रिंगिंग
जतारा 132 केवी - टीकमगढ़ डीसीएसएस लाइन की दूसरे सर्किट की स्ट्रिंगिंग

एमपीपीटीसीएल उपरोक्त कार्यों को आईएसटीएस प्रणाली की समान समय-सीमा में निष्पादित करेगा।

कार्यान्वयन समय-सीमा: एसपीवी अंतरण की तारीख से 24 माह
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<tr>
<td>6.</td>
<td>
शोंगटोंग करछम एचईपी (450 मेगावाट) और टिडोंग एचईपी (150 मेगावाट) से विद्युत की निकासी के लिए पारेषण प्रणाली

कार्य-क्षेत्र
<table>
<tr><th>क्रम सं.</th><th>पारेषण स्कीम का कार्य-क्षेत्र</th><th>क्षमता/कि.मी.</th></tr>
<tr><td colspan="3">क. टीडोंग एचईपी के साथ चरण-I [समय :सीमा-दिनांक 01 जुलाई, 2026]</td></tr>
<tr><td>1</td><td>झांगी में 2x315 एमवीए (एक अतिरिक्त यूनिट सहित 7x105 एमवीए 1-फेज यूनिट) 400/220 केवी जीआईएस पूलिंग स्टेशन की स्थापना
भावी प्रावधान (निम्नलिखित के लिए जगह):
• 5400 केवी लाइन बे
• भावी परियोजनाओं के लिए 6 220 केवी लाइन बे (टिडोंग उत्पादन से कनेक्टिविटी हेतु 2 बे के लिए जगह का उपयोग किया जाएगा)
• 2400/220 केवी ट्रांसफार्मर
• बे सहित 1 420 केवी बस रिएक्टर
• 220 केवी सेक्शनलाइज़ेशन बे: 1 सेट
• बस कपलर: 1</td><td>• 400/220 केवी आईसीटी-2x315 एमवीए (7x105 एमवीए 1-फेज यूनिट जिसमें एक अतिरिक्त यूनिट शामिल है)
• 400 केवी आईसीटी बे-2
• 220 केवी आईसीटी बे2
• 400 केवी लाइन बे (जीआईएस) -2 (झांगी पीएस - वांगटू डी/सी लाइन के लिए)
• 420 केवी बस रिएक्टर-1 (4x 41.66 एमवीए 1-फेज यूनिट जिसमें एक अतिरिक्त यूनिट शामिल है)
• 420 केवी रिएक्टर बे-1</td></tr>
<tr><td>2</td><td>400 केवी झांगी पीएस - वांगटू (क्वाड) डी/सी लाइन (लाइन क्षमता नाममात्र वोल्टेज पर प्रति सर्किट 2500 एमवीए होगी)</td><td>रूट की लंबाई -54 कि.मी.</td></tr>
<tr><td>3</td><td>400 केवी झांगी पीएस-वांगटू डी/सी लाइन की समाप्ति के लिए वांगटू में 400 केवी बे</td><td>400 केवी बे – 2 (जीआईएस)</td></tr>
<tr><td colspan="3"></td></tr>
</table>
</td>
<td>आरईसी पावर डेवलपमेंट एंड कंसल्टेंसी लिमिटेड</td>
</tr>
</table>

ख. शोंगटोंग एचईपी के साथ चरण-II [समय-सीमा: दिनांक 31 जुलाई, 2026]

1	शोंगटोंग एचईपी के जेनरेशन स्विचयार्ड में झांगी पीएस-वांगटू (एचपीपीटीसीएल) 400 केवी डी/सी (क्वाड) लाइन$ के एक सर्किट का एलआईएलओ	एलआईएलओ रूट की लंबाई - 1 कि.मी. (2 सीकेएम)
2	वांगटू (एचपीपीटीसीएल) - पंचकुला (पीजी) 400 केवी डी/सी (ट्विन एचटीएलएस*) लाइन के साथ-साथ प्रत्येक सर्किट के पंचकुला सिरे पर 80 एमवीएआर स्विचेबल लाइन रिएक्टर	रूट की लंबाई - 210 कि.मी.
3	400 केवी वांगटू (एचपीपीटीसीएल) - पंचकुला (पीजी) डी/सी लाइन की समाप्ति के लिए 400 केवी बेवांगटू सब-स्टेशन (2)और पंचकुला सब-स्टेशन (2)	400 केवी लाइन बे- 4 (वांगटू में 2 जीआईएस बे और पंचकुला में 2 एआईएस बे)

$नाममात्र वोल्टेज पर लाइन क्षमता 2500 एमवीए प्रति सर्किट होगी।

* नाममात्र वोल्टेज पर प्रत्येक सर्किट पर 2100 एमवीए की न्यूनतम क्षमता के साथ

टिप्पणी:

i. आवेदक/उत्पादन विकासकर्ता के कार्यक्षेत्र के अधीन-टिडोंग एचईपी-झांगी पीएस 220 केवी डी/सीलाइन (दोनों सिरों पर संबद्ध बे के साथ)।

ii. शोंगटोंग एचईपी के विकासकर्ता शोंगटोंग एचईपी के उत्पादन स्विचयार्ड में झांगी पीएस- वांगटू (एचपीपीटीसीएल) 400 केवी डी/सी (क्वाड) लाइन के एक सर्किट के एलआईएलओ के लिए शोंगटोंग स्विचयार्ड में 2 400 केवी बे की व्यवस्था करेंगे।

iii. एचपीपीटीसीएल 400 केवी झांगी पीएस-वांगटू डी/सी लाइन और वांगटू (एचपीपीटीसीएल)-पंचकुला (पीजी) डी/सी लाइन की समाप्ति के लिए वांगटू सबस्टेशन पर चार 400 केवी लाइन बे (जीआईएस) के लिए स्थान प्रदान करेगा।

iv. पावरग्रिड वांगटू (एचपीपीटीसीएल) - पंचकुला (पीजी) डी/सी लाइन की समाप्ति के लिए पंचकुला सब-स्टेशन में 2 400 केवी बे के लिए जगह प्रदान करेगा।

v. ऊपर बताई गई लाइनों की लंबाई अनुमानित है क्योंकि वास्तविक लाइन की लंबाई विस्तृत सर्वेक्षण के बाद प्राप्त की जाएगी।

vi. **कार्यान्वयन समय-सीमा**: दिनांक 1 जुलाई, 2026 से उत्तरोत्तर

2. बोली-प्रक्रिया समन्वयक की नियुक्ति इस संबंध में विद्युत मंत्रालय द्वारा जारी, समय-समय पर संशोधित, दिशा-निर्देशों मेंनिर्धारित शर्तों के अधीन है।

[फा. सं. 15/3/2018-ट्रांस-भाग(1)]

मोहम्मद अफजल, संयुक्त सचिव (ट्रांस)

MINISTRY OF POWER

NOTIFICATION

New Delhi, the 13th April, 2023

S.O. 1723(E).—In exercise of the powers conferred by sub- para 3.2 of Para 3 of the Guidelines circulated under Section 63 of the Electricity Act, 2003 (no. 36 of 2003), the Central Government, on recommendations of 11th meeting of National Committee on Transmission, hereby appoints the following Bid-Process Coordinators (BPCs) for the Transmission Schemes, as shown against the name of the Transmission Schemes: -

<table>
<tr><th>Sl. No.</th><th>Name & Scope of the Transmission Scheme</th><th>Bid Process Coordinator</th></tr>
<tr><td>1</td><td>Transmission system for evacuation of additional 7 GW RE power from Khavda RE park under Phase-III Part A
Scope:
<table>
<tr><th>Sl. No.</th><th>Scope of the Transmission Scheme</th><th>Capacity /km</th></tr>
<tr><td>1</td><td>Establishment of 765 kV Halvad switching station with 765 kV, 2x330 MVAr bus reactors
Future Scope:
Space for
• 765/400 kV ICT along with bays- 6 Nos.
• 765 kV line bays along with switchable line reactors – 6 Nos.
• 765 kV Bus Reactor along with bay: 2 Nos.
• 765 kV Sectionaliser bay: 1 set
• 400 kV line bays along with switchable line reactor – 12 Nos.
• 400/220 kV ICT along with bays – 8 Nos.
• 400 kV Bus Reactor along with bays: 2 Nos.
• 400 kV Sectionaliser bay: 1 set
• 220 kV line bays: 16 Nos.
• 220 kV Sectionaliser bay: 2 sets
• 220 kV BC and TBC: 3 Nos.
• STATCOM (±300 MVAr) along with MSC (2x125 MVAr) & MSR (1x125 MVAr) alongwith associated bays: 1 No.</td><td>• 330 MVAR, 765 kV bus reactors - 2 (7x110 MVAr single phase reactor units including 1 spare unit)
• 765 kV bus reactor bays- 2
• 765 kV line bays- 6 (for lines at Sl. 2 & 5)</td></tr>
<tr><td>2</td><td>KPS2 (GIS) - Halvad 765 kV D/c line</td><td>Route length: 220 km</td></tr>
<tr><td>3</td><td>240 MVAr switchable line reactor on each ckt at both ends of KPS2- Halvad 765 kV D/c line</td><td>• 240 MVAr, 765 kV switchable line reactors- 4 [2 at KPS2(GIS) & 2 at Halvad]
• Switching equipment for 765 kV line reactors- 4 [2 at KPS2 (GIS) & 2 at Halvad]
• 80 MVAr, 765 kV, single phase spare reactor unit at KPS2 (GIS)
• 80 MVAR, 765 kV, single phase spare reactor unit at Halvad S/s</td></tr>
</table></td><td>PFC Consulting Ltd.</td></tr>
</table>

	4	2 Nos. of 765 kV GIS line bays at KPS2 for termination of KPS2 - Halvad 765 kV D/c line	• 765 kV line bays (GIS) – 2 Nos. [for KPS2(GIS) end]	
	5	LILO of Lakadia – Ahmedabad 765 kV D/c line at Halvad	LILO route length: 30 km (120 ckm)	
	Note: i. Developer of KPS2 to provide space for implementation of 2 Nos. of 765 kV line bays alongwith switchable line reactors for termination of KPS2(GIS) - Halvad 765 kV D/c line ii. **Implementation timeframe**: 24 months from SPV transfer			
2.	Transmission system for evacuation of additional 7 GW RE power from Khavda RE park under Phase-III Part B **Scope:**			PFC Consulting Ltd.
	Sl. No.	***Scope of the Transmission Scheme***	***Capacity /km***	
	1	Establishment of 765 kV switching station near Vataman with 2x330 MVAr, 765 kV bus reactors **Future Scope:** Space for • 765/400kV ICT along with bays- 6 Nos. • 765 kV line bays along with switchable Line reactors – 6 Nos. • 765kV Bus Reactor along with bay: 2 Nos. • 765kV Sectionaliser bay: 1 -set • 400 kV line bays along with switchable line reactor – 12 Nos. • 400/220kV ICT along with bays -8 Nos. • 400 kV Bus Reactor along with bay: 2 Nos. • 400 kV Sectionalization bay: 1- set • 220 kV line bays: 16 Nos. • 220 kV Sectionalization bay: 2 sets • 220 kV BC and TBC: 3 Nos. • STATCOM (±300 MVAr) along with MSC (2x125 MVAr) & MSR (1x125MVAr) alongwith associated bays: 1 No.	• 330 MVAR 765 kV bus reactors-2 (7x110 MVAr single phase reactor units including 1 spare unit for line/bus reactor) • 765 kV bus reactor bays-2 • 765 kV line bays- 8 (for lines at Sl. 2, 5 & 7)	
	2	Halvad – Vataman 765 kV D/c line	Route length: 170 km	
	3	1x330 MVAr switchable line reactor on each ckt at Vataman end of Halvad – Vataman 765 kV D/c line	• 330 MVAr, 765 kV switchable line reactor-2 Nos. (6 x 110 MVAr single phase reactor unit) [110 MVAr single phase	

		spare bus reactor unit to be used as spare for line reactor] • Switching equipment for 765 kV line reactor- 2
4	2 Nos. of 765 kV line bays at Halvad end for termination of Halvad – Vataman 765 kV D/c line	• 765 kV line bays– 2 Nos. (for Halvad end)
5	LILO of Lakadia – Vadodara 765 kV D/c line at Vataman 765 kV switching station	LILO route length: 10 km (40 ckm)
6	240 MVAr 765 kV switchable line reactor on each ckt at Vataman end of Lakadia – Vataman 765 kV D/c line with NGR bypassing arrangement	• 240 MVAr, 765 kV switchable line reactor- 2 (7x 80 MVAr single phase reactor units including 1 spare unit) • Switching equipment for 765 kV line reactors- 2
7	Vataman switching station – Navsari (New) (GIS) 765 kV D/c line	Route length: 200 km
8	330 MVAr switchable line reactors on each ckt at Navsari (New) (GIS) end of Vataman switching station – Navsari (New) (GIS) 765 kV D/c line	• 330 MVAr, 765 kV switchable line reactor- 2 Nos. (6 x 110 MVAr single phase reactor unit) [110 MVAr spare reactor unit at Navsari being implemented by PGCIL, would be used as spare] • Switching equipment for 765 kV line reactors - 2
9	2 Nos. of 765 kV GIS line bays at Navsari (New) for termination of Vataman switching station – Navsari (New) (GIS) 765 kV D/c line	• 765 kV line bays (GIS) – 2 Nos. (2 Nos. for Navsari (New) end)

Note:

i. Developer of Halvad S/s to provide space for implementation of 2 Nos. of 765 kV linebays for termination of Halvad – Vataman 765 kV D/c line.

ii. Developer of Navsari (New)(GIS) S/s to provide space for implementation of 2 Nos. of 765 kV line bays alongwith switchable line reactors for termination of Vataman switching station – Navsari (New)(GIS) 765 kV D/c line. Also, developer of Navsari (New)(GIS) S/s to allow the use of 110 MVAr single phase spare reactor unit for 330 MVAr SLR on each ckt at Navsari (New) (GIS) end of Vataman switching station –Navsari (New) (GIS) 765 kV D/c line.

iii. Bay(s) as may be required for completion of diameter (GIS) in one-and-half breaker scheme shall also be executed by the TSP.

iv. Logic for Inter-tripping scheme for tripping of the switchable line reactor alongwith main line breaker at Lakadia and Vadodara end after LILO of Lakadia – Vadodara 765 kV D/c line at Vataman 765 kV switching station

<table>
<tr><td></td><td>shall be enabled by the existing owner of the line (i.e. M/s LVTPL) after LILO of Lakadia – Vadodara 765 kV D/c line at Vataman 765 kV switching station.

v. Implementation timeframe: 24 months from SPV transfer.</td><td></td></tr>
<tr><td>3</td><td>Transmission scheme for evacuation of power from Dhule 2 GW REZ

Scope:
<table>
<tr><th>Sl. No.</th><th>Scope of the Transmission Scheme</th><th>Capacity /km</th></tr>
<tr><td>1.</td><td>Establishment of 4x500 MVA, 400/220 kV Pooling Station near Dhule along with 2x125 MVAr (420 kV) Bus Reactors.

Future provision

Space for

• 400 kV line bays along with switchable line reactor – 8 Nos.
• 400/220 kV ICT along with bays -6 Nos.
• 400 kV Bus Reactor along with bays: 2 Nos.
• 400 kV Bus Sectionalization bay: 1- set
• 220 kV line bays: 9 Nos.
• 220 kV Sectionalization bay: 1 set
• 220 kV BC and TBC: 1 No.</td><td>• 400/220 kV, 500 MVA ICT – 4 Nos.
• 400 kV ICT bays – 4 Nos.
• 220 kV ICT bays – 4 Nos. (2 Nos. on 220 kV bus section 1 and 2 Nos. on 220 kV bus section 2)
• 400 kV line bays – 2 Nos.
• 125 MVAr, 420 kV Bus reactor – 2 Nos.
• Bus reactor bay: 2 Nos.
• 220 kV Bus coupler bay- 2 Nos.
• 220 kV Transfer Bus Coupler (TBC) bay – 2 Nos.
• 220 kV line bays – 7 Nos. (for RE interconnection out of which 4 Nos. would be on 220 kV bus section 1 and 3 Nos. on 220 kV bus section 2)
• 220 kV Bus Sectionalizer – 1 set</td></tr>
<tr><td>2.</td><td>Dhule PS – Dhule (BDTCL) 400 kV D/c line (Quad ACSR/AAAC/AL59 Moose equivalent)</td><td>Route length: 60 km</td></tr>
<tr><td>3.</td><td>2 Nos. 400 kV line bays at Dhule (BDTCL) for Dhule PS – Dhule (BDTCL) 400 kV D/c Line</td><td>400 kV Line bays – 2 Nos</td></tr>
</table>
Note:

i. BDTCL to provide space for 2 Nos. of 400 kV line bays for termination of Dhule PS –Dhule (BDTCL) 400 kV D/c Line

ii. Implementation timeframe: 24 months from SPV transfer</td><td>REC Power Development and Consultancy Limited</td></tr>
<tr><td>4.</td><td>Western Region Expansion Scheme XXXIII (WRES-XXXIII): Part B

Scope:
<table>
<tr><th>Sl. No.</th><th>Scope of the Transmission Scheme</th><th>Capacity /km</th></tr>
<tr><td>1</td><td>Establishment of 2x1500 MVA, 765/400 kV and 2x500 MVA, 400/220 kV S/s at Karera (near Datiya) along with</td><td>• 765/400 kV, 1500 MVA ICT – 2 Nos. (7x500</td></tr>
</table></td><td>REC Power Development and Consultancy Limited</td></tr>
</table>

			1x330MVAr 765 kV bus reactor & 1x125MVAr, 420 kV bus reactor **Future provisions:** Space for • 765/400 kV ICT along with bays- 4 Nos. • 765 kV line bays along with switchable line reactors – 8 Nos. • 765 kV Bus Reactor along with bay: 3 Nos. • 765 kV Sectionaliser: 1 set • 400 kV line bays along with switchable line reactor – 10 Nos. • 400/220 kV ICT along with bays -6 Nos. • 400 kV Bus Reactor along with bays- 3Nos. • 400 kV Sectionalisation bay: 1 set • 220 kV line bays: 10 Nos. • 220 kV Sectionalisation bay: 1 set • 220 kV BC and TBC: 1 No.	MVA single phase units including one spare ICT unit) • 400/220 kV, 500 MVA ICT – 2 Nos. • 765 kV ICT bays – 2 Nos. • 400 kV ICT bays – 4 Nos. • 220 kV ICT bays – 2 Nos. • 765 kV Line bays – 2 Nos. • 330 MVAr, 765 kV Bus Reactor – 1No. (4x110 MVAR single phase units including one spare unit) • 125 MVAr, 420 kV Bus reactor – 1 No. • 765 kV Bus reactor bay: 1 No. • 400 kV Bus reactor bay: 1 No. • 220 kV Bus coupler bay- 2 Nos. • 220 kV Transfer Bus Coupler (TBC) bay - 2 Nos. • 220 kV line bays – 8 Nos. (for 220 kV lines to be implemented by MPPTCL#) • 220 kV Bus sectionaliser– 1 set	
		2	LILO of Satna-Gwalior 765 kV S/c line at Karera	LILO route length: 70 km (140 ckm)	
		3	Installation of 1x330 MVAr, switchable line reactor at Karera end of Karera – Satna 765 kV line	765 kV, 330 MVAr SLR along with Switching equipment – 1 No. (3x110 MVAr) [110 MVAr single phase reactor unit for bus reactor to be used as spare for line reactor too]	
	# LILO of both circuits of Bina - Datiya 220 kV D/c line at Karera, Extention of LILO portion of 220 kV Datiya - Bina line for Pichhore 220 kV upto Karera & Karera - Seondha 220 kV D/c line **Note:** **Implementation timeframe**: 24 months from SPV transfer				

5. Western Region Expansion Scheme XXXIII (WRES-XXXIII): Part C

REC Power Development and Consultancy Limited

Scope:

Sl. No.	***Scope of the Transmission Scheme***	***Capacity /km***
1	Establishment of 2x1500 MVA, 765/400 kV and 2x500 MVA, 400/220 kV S/s at Ishanagar (New) along with 1x330 MVAr, 765 kV & 1x125 MVAr, 420 kV bus reactor **Future provisions:** **Space for** • 765/400 kV ICT along with bays- 4 Nos. • 765 kV line bays along with switchable line reactors – 8 Nos. • 765 kV Bus Reactor along with bay: 3 Nos. • 765 kV Sectionaliser: 1 set • 400 kV line bays along with switchable line reactor – 10 Nos. • 400/220 kV ICT along with bays -7 Nos. • 400 kV Bus Reactor along with bay: 3Nos. • 400 kV Sectionalisation bay: 1- set • 220 kV line bays: 12 Nos. • 220 kV Sectionalisation bay: 2 sets • 220 kV BC and TBC: 3 Nos.	• 765/400 kV, 1500 MVA ICT – 2 Nos. (7x500 MVA 1-phase units including one spare ICT unit) • 400/220 kV, 500 MVA ICT – 2 Nos. • 765 kV ICT bays – 2 Nos. • 400 kV ICT bays – 4 Nos. • 220 kV ICT bays – 2 Nos. • 765 kV Line bays – 2 Nos. • 330 MVAr, 765 kV Bus Reactor – 1 No. (4x 110 MVAr including one spare unit) • 125 MVAr, 420 kV Bus reactor – 1No. • 765 kV Bus reactor bay: 1 No. • 400 kV Bus reactor bay: 1 No. • 220 kV Bus coupler bay- 1 No. • 220 kV Transfer Bus Coupler (TBC) bay - 1 No. • 220 kV line bays – 6 Nos. (for 220 kV lines to be implemented by MPPTCL#)
2	LILO of one circuit of Jabalpur - Orai 765 kV D/c line at Ishanagar 765 kV S/s (New)	LILO route length – 5 km (10 ckm)

Note:

#220 kV Ishanagar 765/400/220 kV - Jatara 220 kV D/C line and LILO of Chhatarpur – Tikamgarh 220 kV 2xS/c line at 765/400/220 kV Ishanagar (Chhatarpur – Tikamgarh 220 kV 2nd ckt is currently under implementation)

Under Intra-State (by MPPTCL):

- *Establishment of 220/132 kV, 2x200 MVA ICT & 132/33 kV 2x50 MVA ICT at Jatara 220 kV S/s*
- *220 kV Ishanagar 765/400/220 kV - Jatara 220 kV D/C line*

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2nd circuit stringing of Chhatarpur – Tikamgarh 220 kV DCSS line
LILO of both circuit of Chhatarpur – Tikamgarh 220 kV DCDS line at 765/400/220 kV Ishanagar
132 kV Jatara 220 kV - Jatara 132 kV D/C line (With High Capacity Conductor)
132 kV Jatara 220 kV - Nowgaon 132 kV D/C line
2nd circuit stringing of Jatara 132 kV - Prithvipur DCSS line
2nd circuit stringing of Jatara 132 kV - Tikamgarh DCSS line

MPPTCL shall execute above works in matching time-frame of the ISTS system.

Implementation timeframe: 24 months from SPV transfer
</td>
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<tr>
<td>6.</td>
<td>
Transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) and Tidong HEP (150 MW)

Scope:
<table>
<tr><th>Sl. No.</th><th>Scope of the Transmission Scheme</th><th>Capacity /km</th></tr>
<tr><td colspan="3">A. Phase-I with Tidong HEP [Schedule: 01st July 2026]</td></tr>
<tr><td>1</td><td>Establishment of 2x315 MVA (7x105 MVA 1-ph units including a spare unit) 400/220 kV GIS Pooling Station at Jhangi

Future provisions (Space for):
• 5 Nos. of 400 kV line bays
• 6 Nos. of 220 kV line bays for future projects (space for 2 bays to be utilized for connectivity to Tidong generation)
• 2 Nos. of 400/220 kV Transformer
• 1 No. 420 kV Bus Reactor along with bay
• 220 kV Sectionalisation bay: 1 set
• Bus Coupler: 1 No.</td><td>• 400/220 kV ICTs- 2x315 MVA (7x105 MVA 1-ph units
including a spare unit)
• 400 kV ICT bays- 2 Nos.
• 220 kV ICT bays- 2 Nos.
• 400kV line bays (GIS) -2 Nos.
(for Jhangi PS – Wangtoo D/c line)
• 420 kV Bus reactor -1 No. (4x 41.66 MVA 1-ph units including one spare unit)
• 420 kV Reactor bay-1 No.</td></tr>
<tr><td>2</td><td>400 kV Jhangi PS – Wangtoo (Quad) D/c line (Line capacity shall be 2500 MVA per circuit at Nominal voltage)</td><td>Route length- 54 km</td></tr>
<tr><td>3</td><td>400 kV bays at Wangtoo for termination of 400kV Jhangi PS – Wangtoo D/c line</td><td>400 kV bays – 2 Nos.(GIS)</td></tr>
<tr><td colspan="3">B. Phase-II with Shongtong HEP [Schedule : 31st July, 2026]</td></tr>
<tr><td>1</td><td>LILO of one circuit of Jhangi PS – Wangtoo (HPPTCL) 400 kV D/c (Quad) line$ at generation switchyard of Shongtong HEP</td><td>LILO route length- 1 km (2 ckm)</td></tr>
<tr><td>2</td><td>Wangtoo (HPPTCL) - Panchkula (PG) 400 kV
D/c (Twin HTLS*) line along with 80 MVAr switchable line reactor at Panchkula end on each circuit</td><td>Route length- 210 km</td></tr>
</table>
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<td>REC Power Development and Consultancy Limited</td>
</tr>
</table>

	3	400 kV bays at Wangtoo S/s (2 Nos.) and Panchkula S/s (2 Nos.) for termination of 400kV Wangtoo (HPPTCL) - Panchkula (PG) D/c line	400 kV Line bays- 4 Nos. (2 Nos.GIS bays at Wangtoo and 2 Nos.AIS bays at Panchkula)

$ Line capacity shall be 2500 MVA per circuit at Nominal voltage

* with minimum capacity of 2100 MVA on each circuit at Nominal voltage

***Note* :**

i. Tidong HEP- Jhangi PS 220 kV D/C line (along with associated bays at both ends) - under the scope of applicant/generation developer.

ii. Developer of Shongtong HEP to provide 2 Nos. of 400 kV bays at Shongtong switchyard for LILO of one circuit of Jhangi PS - Wangtoo (HPPTCL) 400 kV D/c (Quad) line at generation switchyard of Shongtong HEP

iii. HPPTCL to provide space for four number of 400 kV line bays (GIS) at Wangtoo substation for termination of 400 kV Jhangi PS – Wangtoo D/c line and Wangtoo (HPPTCL) - Panchkula (PG) D/c line

iv. Powergrid to provide space for 2 Nos. of 400 kV bays at Panchkula S/s for termination of Wangtoo (HPPTCL) - Panchkula (PG) D/c line

v. The line lengths indicated above are approximate as the actual line length would be obtained after detailed survey

vi. **Implementation timeframe**: Progressively from 1st July, 2026

2. The appointment of the Bid-Process Coordinator is subject to the conditions laid down in the Guidelines issued by Ministry of Power in this regard, as amended from time to time.

[F, No. 15/3/2018-Trans-Part(1)]

MOHAMMAD AFZAL, Jt. Secy. (Trans)

अधिसूचना

नई दिल्ली, 13 अप्रैल, 2023

का.आ. 1724(अ).—विद्युत अधिनियम, 2003 (2003 की सं. 36) की धारा 63 के अंतर्गत परिचालित दिशा-निर्देशों के पैरा 3 के उप-पैरा 3.2 द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, केंद्र सरकार ने नीचे दी गई तालिका में उल्लिखित राजपत्र अधिसूचना द्वारा टैरिफ आधारित प्रतिस्पर्धात्मक बोली के अंतर्गत कार्यान्वयन हेतु (टीबीसीबी) निम्नलिखित पारेषण स्कीमें अधिसूचित की थीं/ इनका कार्य क्षेत्र संशोधित किया था:

क्रम सं.	स्कीम का नाम	राजपत्र अधिसूचना जिसके द्वारा स्कीम अधिसूचित की गई थी
1	खावड़ा आरई पार्क में खावड़ा पूलिंग स्टेशन-2 (केपीएस2) की स्थापना	सां.आ. 5032(अ) दिनांक 06.12.2021 [फा. सं. 15/3/2018-ट्रांस-पार्ट (1)] तथा सां.आ. 8506(अ) दिनांक 23.02.2023 [फा. सं. 15/3/2018-ट्रांस-पार्ट (2)]
2	खावड़ा पीएस1 (केपीएस1) में 3 गीगावाट आरई विद्युत से अधिक इंजेक्शन के लिए पारेषण स्कीम	सां.आ. 5032(अ) दिनांक 06.12.2021 [फा. सं. 15/3/2018-ट्रांस-पार्ट (1)] तथा

		सां.आ. 8506(अ) दिनांक 23.02.2023 [फा. सं. 15/3/2018-ट्रांस-पार्ट (2)]
3	खावड़ा आरई पार्क में खावड़ा पूलिंग स्टेशन-3 (केपीएस3) की स्थापना	सां.आ. 5032(अ) दिनांक 06.12.2021 [फा. सं. 15/3/2018-ट्रांस-पार्ट (1)] तथा सां.आ. 8506(अ) दिनांक 23.02.2023 [फा. सं. 15/3/2018-ट्रांस-पार्ट (2)]
4	खावड़ा पीएस में चरण-II- भाग-ख के अंतर्गत 4.5 जीडब्ल्यू आरई इंजेक्शन की निकासी के लिए पारेषण स्कीम	सां.आ. 3313(अ) दिनांक 25.09.2020 [फा. सं. 15/3/2018-ट्रांस-पार्ट (2)]
5	चरण-III भाग ग1 के अंतर्गत राजस्थान में आरईजेड से विद्युत की निकासी (20 गीगावाट) के लिए पारेषण प्रणाली	सां.आ. 5032(अ) दिनांक 06.12.2021 [फा. सं. 15/3/2018-ट्रांस-पार्ट (1)]
6	चरण-III भाग च के अंतर्गत राजस्थान में आरईजेड से विद्युत की निकासी (20 गीगावाट) के लिए पारेषण प्रणाली	सां.आ. 5032(अ) दिनांक 06.12.2021 [फा. सं. 15/3/2018-ट्रांस-पार्ट (1)]

2. अब, केंद्र सरकार ने पारेषण संबंधी राष्ट्रीय समिति (एनसीटी) की 11वीं बैठक की सिफारिशों की जांच के पश्चात, उपर्युक्त छह स्कीमों के कार्य-क्षेत्र को संशोधित करने का निर्णय लिया है। अतः, एतद्वारा उपर्युक्त स्कीमों के कार्य-क्षेत्र को निम्नानुसार संशोधित किया जाता हैः

<table>
<tr><th>क्रम सं.</th><th>स्कीम का नाम</th><th>स्कीम का संशोधित कार्य-क्षेत्र</th></tr>
<tr><td>1.</td><td>खावड़ा आरई पार्क में खावड़ा पूलिंग स्टेशन-2 (केपीएस2) की स्थापना</td><td>स्कीम के कार्यान्वयन की समय-सीमा को एसपीवी अधिग्रहण की तारीख से 24 महीने से घटाकर 21 महीने कर दिया गया है।
स्कीम के मूल कार्य क्षेत्र की अन्य सामग्री अपरिवर्तित रहेगी, जैसा कि पूर्व मे अधिसूचित किया गया है ।</td></tr>
<tr><td>2.</td><td>खावड़ा पीएस1 (केपीएस1) में 3 गीगावाट आरई विद्युत से अधिक इंजेक्शन के लिए पारेषण स्कीम</td><td>स्कीम के कार्यान्वयन की समय-सीमा को एसपीवी अधिग्रहण की तारीख से 24 महीने से घटाकर 21 महीने कर दिया गया है।
स्कीम के मूल कार्य क्षेत्र की अन्य सामग्री अपरिवर्तित रहेगी, जैसा कि पूर्व मे अधिसूचित किया गया है ।</td></tr>
<tr><td>3.</td><td>खावड़ा आरई पार्क में खावड़ा पूलिंग स्टेशन-3 (केपीएस3) की स्थापना</td><td>स्कीम के कार्यान्वयन की समय-सीमा को एसपीवी अधिग्रहण की तारीख से 24 महीने से घटाकर 21 महीने कर दिया गया है।
स्कीम के मूल कार्य क्षेत्र की अन्य सामग्री अपरिवर्तित रहेगी, जैसा कि पूर्व मे अधिसूचित किया गया है ।</td></tr>
<tr><td>4.</td><td>खावड़ा पीएस में चरण-II- भाग-ख के अंतर्गत 4.5 जीडब्ल्यू आरई इंजेक्शन की निकासी के लिए पारेषण स्कीम</td><td>कार्य-क्षेत्र
<table>
<tr><th>क्रम सं.</th><th>पारेषण स्कीम का कार्य-क्षेत्र</th><th>क्षमता/लाइन की लंबाई किमी</th></tr>
<tr><td>1.</td><td>लकाड़िया पीएस-अहमदाबाद 765 केवी डी/सी लाइन</td><td>200 किमी</td></tr>
<tr><td>2.</td><td>लकाड़िया पीएस-अहमदाबाद 765 केवी डी/सी लाइन के लिए लकडिया पीएस में 2 765 केवी लाइन बे</td><td>765 केवी लाइन बे – 2</td></tr>
</table></td></tr>
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		3.	लकाड़िया पीएस-अहमदाबाद 765 केवी डी/सी लाइन के अहमदाबाद सिरे पर प्रत्येक सर्किट के लिए 240 एमवीएआर, 765 केवी स्विचेबल लाइन रिएक्टर	• 1x240 एमवीएआर, 765 केवी स्विचेबल लाइन रिएक्टर - 2 (लकाड़िया पीएस - अहमदाबाद 765 केवी डी/सी लाइन के अहमदाबाद सिरे पर प्रत्येक सर्किट के लिए) • 765 केवी लाइन रिएक्टर के लिए स्विचिंग उपकरण – 2 • 1x80 एमवीएआर स्पेयर रिएक्टर - 1 (अहमदाबाद सिरे के लिए)
		कार्यान्वयन समय-सीमा:: आरई परियोजनाओं की मैचिंग समय-सीमा या 24 महीने, जो भी बाद में हो। ***टिप्पणी:*** *खावड़ा पीएस में चरण-II (भाग क से भाग ङ) के अंतर्गत 4.5 जीडब्ल्यू आरई इंजेक्शन की निकासी के लिए प्रस्तावित सभी पारेषण पैकेजों का कार्यान्वयन समान समय-सीमा में किया जाना आवश्यक है।*			
5.	चरण-III भाग ग1 के अंतर्गत राजस्थान में आरईजेड से विद्युत की निकासी (20 गीगावाट) के लिए पारेषण प्रणाली	**कार्य-क्षेत्र:**		
		क्रम सं.	**पारेषण स्कीम का कार्य-क्षेत्र**	**क्षमता/लाइन की लंबाई किमी**
		1	रामगढ़ में 2x240 एमवीएआर (765केवी) बस रिएक्टर एवं 2x125 एमवीएआर (420केवी) बस रिएक्टर सहित 2x1500 एमवीए, 765/400 केवी और 2x500 एमवीए, 400/220 केवी पूलिंग स्टेशन की स्थापना, एमएससी+एमएसआर सहित ±2x300 एमवीएआर स्टेटकॉम **<u>भावी प्रावधान</u>: निम्नलिखित के लिए स्थान** • बे सहित 765/400 केवी आईसीटी: 5 • स्विचेबल लाइन रिएक्टर सहित 765केवी लाइन बे: 2 • बे सहित 765केवी बस रिएक्टर: 2 • बे सहित 400/220 केवी आईसीटी: 8 • स्विचेबल लाइन रिएक्टर सहित 400 केवी लाइन बे: 4 • 400 केवी लाइन बे: 2 • बे सहित 400केवी बस रिएक्टर: 2 • 400 केवी सेक्शनाइजेशन बे: 2 सेट्स**	• 765/400केवी1500 एमवीए आईसीटी: 2 (एक अतिरिक्त यूनिट सहित 7x500 एमवीए) • 765 केवी आईसीटी बे – 2 • 400/220 केवी, 500 एमवीए आईसीटी – 2 • 400 केवी आईसीटी बे – 4 • 220 केवी आईसीटी बे – 2 • 400 केवी लाइन बे –2 • 220 केवी लाइन बे – 4 • 765 केवी लाइन बे – 2. • 240 एमवीएआर बस रिएक्टर-2 (7x80 एमवीएआर- एक अतिरिक्त इकाई पर विचार करते हुए) • 765 केवी रिएक्टर बे- 2 • 125 एमवीएआर, 420 केवी बस रिएक्टर - 2 • 420 केवी रिएक्टर बे – 2 • 400 केवी सेक्शनाइजेशन बे: 1 सेट** • 2 400 केवी बे सहित ± 2x300 एमवीएआर स्टेटकॉम, 4x125 एमवीएआर एमएससी, 2x125 एमवीएआर एमएसआर

			• 220 केवी लाइन बे: 11 • 220 केवी सेक्शनाइजेशन बे: 2**	
		2	रामगढ़ - भादला-3, 765 केवी डी/सी लाइन (180 किमी) के साथ के रामगढ़ छोर पर प्रत्येक सर्किट पर 240 एमवीएएआर स्विचेबल लाइन रिएक्टर सहित रामगढ़ - भादला-3 765 केवी डी/सी लाइन	• लंबाई – 180 कि.मी. • 765 केवी, 240 एमवीएआर स्विचेबल लाइन रिएक्टर - 2 • 765 केवी 240 एमवीएआर स्विचेबल लाइन रिएक्टर के लिए स्विचिंग उपकरण–2
		3	भादला-3 में 2, 765केवी लाइन बे	765 केवी लाइन बे - 2

टिप्पणी:

i. चरण III-भाग ग1 पैकेज के कार्यान्वयन कार्यक्रम को पैकेज चरण III-भाग ख1 के साथ मैच करना है (भादला-3 पीएस, 765केवी भादला-3 पीएस-सीकर-2 डी/सी लाइन, 400केवी भादला-3 पीएस-फतेहगढ़-2 डी/सी लाइन की स्थापना)।

ii. रामगढ़-भादला-3 765 केवी डी/सी लाइन को समाप्त करने के लिए भादला-3 एस/एस में 2, 765 केवी लाइन वे के लिए स्थान प्रदान करने हेतु भादला-3 एस/एस के विकासकर्ता।

iii. ऊपर उल्लिखित लाइन की लंबाई अनुमानित है क्योंकि विस्तृत सर्वेक्षण के बाद सटीक लंबाई प्राप्त की जाएगी।

iv. शॉर्ट सर्किट स्तर को सीमित करने के लिए रामगढ़ में 400 केवी और 220 केवी स्तर पर उपयुक्त सेक्शनलाइजेशन का प्रावधान रखा जाएगा।

v. ±रामगढ़ पीएस के प्रत्येक 400 केवी बस सेक्शन में 300 एमवीएआर स्टेटकॉम लगाए जाने चाहिए

vi. रामगढ़ पीएस/भादला-3 पीएस में आरई उत्पादन विकासकर्ताओं से एलटीए प्राप्त होने पर स्कीम का कार्यान्वयन शुरू किया जाएगा

**बस सेक्शनलाइजेशन बे में मेन बस-I और मेन बस-II दोनों का बस सेक्शनलाइजेशन शामिल होगा।

कार्यान्वयन समय-सीमा: एसपीवी अधिग्रहण की तिथि से 18 माह।

6.	चरण-III भाग च के अंतर्गत राजस्थान में आरईजेड से विद्युत की निकासी (20 जीडब्ल्यू) के लिए पारेषण प्रणाली	**कार्य-क्षेत्र:**		
		1.	ब्यावर के पास उपयुक्त स्थान पर 2x330 एमवीएएआर 765केवी बस रिएक्टर और 2x125 एमवीएएआर 420केवी बस रिएक्टर सहित 2x1500 एमवीए 765/400केवी सबस्टेशन की स्थापना **<u>भावी प्रावधान</u>: निम्नलिखित के लिए स्थान** • बे सहित 765/400केवी आईसीटी: 2 • स्विचेबल लाइन रिएक्टर सहित 765केवी लाइन बे: 8 • बे सहित 765केवी बस	• 765/400केवी 1500 एमवीए आईसीटी: 2 (एक अतिरिक्त यूनिट सहित, 7x500 एमवीए,) • 330 एमवीएएआर, 765 केवी बस रिएक्टर- 2 (एक अतिरिक्त यूनिट सहित 7x110 एमवीएएआर) • 765 केवी आईसीटी बे – 2 • 400 केवी आईसीटी बे – 2 • 765 केवी लाइन बे – 6 • 400 केवी लाइन बे- 2 • 765 केवी रिएक्टर बे- 2 • 125 एमवीएएआर, 420 केवी बस

			रिएक्टर: 2 • बे सहित 400/220 केवी आईसीटी:2 • स्विचेबल लाइन रिएक्टर सहित 400 केवी लाइन बे: 4 • बे सहित 400केवी बस रिएक्टर: 1 • 220 केवी लाइन बे: 4	रिएक्टर – 2 • 420 केवी रिएक्टर बे – 2
		2.	ब्यावर में अजमेर-चित्तौड़गढ़ 765 केवी डी/सी के दोनों सर्किटों का एलआईएलओ	लंबाई – 45 किमी
		3.	ब्यावर में 400 केवी कोटा-मेड़ता लाइन का एलआईएलओ	लंबाई – 20 किमी
		4.	फतेहगढ़-3-ब्यावर 765 केवी डी/सी लाइन के प्रत्येक छोर पर प्रत्येक सर्किट के लिए 330 एमवीएएआर स्विचेबल लाइन रिएक्टर सहित फतेहगढ़-3-ब्यावर 765 केवी डी/सी	• लंबाई – 30 किमी • 765 केवी 330 एमवीएआर स्विचेबल लाइन रिएक्टर के लिए स्विचिंग उपकरण –4 • 765 केवी, 330 एमवीएएआर स्विचेबल लाइन रिएक्टर - 4
		5.	फतेहगढ़ -3 पीएस में स्टेटकॉम	फतेहगढ़-3 पीएस में 2 400 केवी बे सहित 4x125 एमवीएआर एमएससी, 2x125 एमवीएआर एमएसआर सहित ±2x300 एमवीएआर स्टेटकॉम

टिप्पणी:

i. पावरग्रिड, फतेहगढ़-3 एस/एस में फतेहगढ़-3-ब्यावर 765 केवी डी/सी लाइन के लिए 765 केवी स्विचेबल लाइन रिएक्टरों के साथ 2 765 केवी लाइन बे के लिए जगह प्रदान करेगा।

ii. ऊपर उल्लिखित लाइन की लंबाई अनुमानित है क्योंकि विस्तृत सर्वेक्षण के बाद सटीक लंबाई प्राप्त की जाएगी।

iii. स्कीम फतेहगढ़-3 (नया खंड और/या फतेहगढ़-4) में एसईसीआई/आरईआईए द्वारा आरई परियोजना की पहली बोली अवार्ड किए जाने के बाद, अवार्ड की जाएगी।

iv. फतेहगढ़-3 पीएस (फेज-III पार्ट ङ1) के प्रत्येक 400 केवी सेक्शन में+300 एमवीएआर स्टेटकॉम रखा जाएगा।

v. पावरग्रिड फतेहगढ़ -3 पीएस में एमएससी और एमएसआर तथा संबंधित 400 केवी बे के साथ स्टेटकॉम के लिए जगह प्रदान करेगा।

vi. **कार्यान्वयन समय-सीमा:** एसपीवी अधिग्रहण की तिथि से 18 माह।

3. मूल अधिसूचना के अनुसार इन स्कीमों के लिए बोली प्रक्रिया समन्वयक अपरिवर्तित रहेंगे।

[फा. सं. 15/3/2018-ट्रांस-पार्ट(1)]

मोहम्मद अफजल, संयुक्त सचिव (ट्रांस)

NOTIFICATION

New Delhi, the 13th April, 2023

S.O. 1724(E).— In exercise of the powers conferred by sub- para 3.2 of Para 3 of the Guidelines circulated under Section 63 of the Electricity Act, 2003 (no. 36 of 2003), the Central Government had notified/ modified scope of following transmission schemes for implementation under Tariff Based Competitive Bidding (TBCB) vide Gazette Notification mentioned in below table:

Sl. No.	Name of the Scheme	Gazette Notification by which Scheme was notified
1	Establishment of Khavda Pooling Station-2 (KPS2) in Khavda RE Park	S.O. 5032(E) dated 6.12.2021 [F. No. 15/3/2018-Trans-Pt(1)] and S.O. 856(E) dated 23.02.2023 [F. No. 15/3/2018-Trans-Pt(2)]
2	Transmission scheme for injection beyond 3 GW RE power at Khavda PS1 (KPS1)	S.O. 5032(E) dated 6.12.2021 [F. No. 15/3/2018-Trans-Pt(1)] and S.O. 856(E) dated 23.02.2023 [F. No. 15/3/2018-Trans-Pt(2)]
3	Establishment of Khavda Pooling Station-3 (KPS3) in Khavda RE Park	S.O. 5032(E) dated 6.12.2021 [F. No. 15/3/2018-Trans-Pt(1)] and S.O. 856(E) dated 23.02.2023 [F. No. 15/3/2018-Trans-Pt(2)]
4	Transmission scheme for evacuation of 4.5 GW RE Injection at Khavda PS under Phase-II- Part B	S.O. 3313(E) dated 25.09.2020 [F. No. 15/3/2018-Trans-Pt(2)]
5	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase-III Part C1	S.O. 5032(E) dated 06.12.2021 [F. No. 15/3/2018-Trans-Pt(1)]
6	Transmission system for evacuation of power from REZ in Rajasthan (20 GW) under Phase-III Part F	S.O. 5032(E) dated 6.12.2021 [F. No. 15/3/2018-Trans-Pt(1)]

2. Now, the Central Government has decided to modify the scope of above mentioned six schemes after examining the recommendations of the 11th meeting of National Committee on Transmission (NCT). As such, the scopes of above schemes are hereby modified as mentioned below:

Sl. No.	Name of the Scheme	Modified Scope of the scheme
1.	Establishment of Khavda Pooling Station-2 (KPS2) in Khavda RE Park	Implementation Time-frame for the scheme has been reduced from 24 months to 21 months from date of SPV acquisition. Other contents of the original scope of the Scheme shall remain unchanged i.e. as notified earlier.
2.	Transmission scheme for injection beyond 3 GW RE power at Khavda PS1 (KPS1)	Implementation Time-frame for the scheme has been reduced from 24 months to 21 months from date of SPV acquisition. Other contents of the original scope of the Scheme shall remain unchanged i.e. as notified earlier

<table>
<tr><td>3.</td><td>Establishment of Khavda Pooling Station-3 (KPS3) in Khavda RE Park</td><td>Implementation Time-frame for the scheme has been reduced from 24 months to 21 months from date of SPV acquisition.

Other contents of the original scope of the Scheme shall remain unchanged i.e. as notified earlier.</td></tr>
<tr><td>4.</td><td>Transmission scheme for evacuation of 4.5 GW RE Injection at Khavda PS under Phase-II- Part B</td><td>Scope
<table><tr><th>Sl. No.</th><th>Scope of the Transmission Scheme</th><th>Capacity / line length km</th></tr><tr><td>1.</td><td>Lakadia PS – Ahmedabad 765kV D/c line</td><td>200 km</td></tr><tr><td>2.</td><td>2 nos. of 765 kV line bays at Lakadia PS for Lakadia PS – Ahmedabad 765kV D/c line</td><td>765 kV line bays – 2</td></tr><tr><td>3.</td><td>240 MVAr, 765 kV switchable line reactor for each circuit at Ahmedabad end of Lakadia PS-Ahmedabad 765 kV D/c line</td><td>• 1x240 MVAr, 765 kV switchable line reactor – 2 (for each circuit at Ahmedabad end of Lakadia PS – Ahmedabad 765 kV D/c line)
• Switching equipments for 765 kV line reactor – 2
• 1x80 MVAr spare reactor – 1(for Ahmedabad end)</td></tr></table>
Implementation Timeframe: Matching timeframe of RE projects or 24 months whichever is later.

Note: Implementation of all the transmission packages proposed for evacuation of 4.5 GW RE injection at Khavda P.S. under Phase-II (Part A to Part E) needs to be taken up in similar timeframe.</td></tr>
<tr><td>5.</td><td>Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase-III Part C1</td><td>Scope
<table><tr><th>Sl. No</th><th>Scope of the Transmission Scheme</th><th>Capacity / line length km</th></tr><tr><td>1</td><td>Establishment of 2x1500 MVA, 765/400kV & 2x500 MVA, 400/220 kV pooling station at Ramgarh alongwith 2x240 MVAr (765kV) Bus Reactor & 2x125 MVAr (420kV) Bus reactor, ± 2x300MVAr STATCOM along with MSC+MSR
<u>Future provisions</u>: <u>Space for</u>
• 765/400kV ICTs along with bays: 5 nos.
• 765kV line bay along with switchable line reactor: 2nos.
• 765kV Bus Reactor along with bays: 2 nos.
• 400/220 kV ICTs along</td><td>• 765/400 kV 1500 MVA ICTs- 2 Nos. (7x500 MVA including one spare unit)
• 765kV ICT bays –2 nos.
• 400/220 kV, 500 MVA ICT – 2 nos.
• 400 kV ICT bays – 4 nos.
• 220 kV ICT bays – 2 nos.
• 400 kV line bays –2 Nos.
• 220 kV line bays – 4 Nos.
• 765 kV line bays – 2 Nos.
• 240 MVAr Bus Reactor-2 Nos. (7x80 MVAr considering one spare unit)
• 240 MVAr Bus Reactor-2 nos. (7x80 MVAr,</td></tr></table></td></tr>
</table>

			with bays: 8 nos. • 400 kV line bays along with switchable line reactor: 4 nos. • 400 kV line bays: 2 Nos. • 400kV Bus Reactor along with bays: 2 nos. • 400kV Sectionalization bay: 2 sets ** • 220 kV line bays: 11 nos. • 220kV Sectionalization bay: 2 nos.**	including one spare unit) • 765kV reactor bay- 2 nos. • 125 MVAr, 420kV bus reactor - 2 nos. • 420 kV reactor bay – 2 nos. • 400kV Sectionalization bay: 1 set. ** • ± 2x300 MVAr STATCOM, 4x125 MVAr MSC, 2x125 MVAr MSR along with 2Nos. of 400 kV bays
		2	Ramgarh – Bhadla-3, 765 kV D/c line (180 km) alongwith 240 MVAr switchable line reactor at each circuit at Ramgarh end of Ramgarh – Bhadla-3, 765kV D/c line	• Length – 180km • 765 kV, 240 MVAr switchable line reactor- 2 nos. • Switching equipment for 765 kV 240 MVAR switchable line reactor –2 nos.
		3	2 nos. of 765kV line bays at Bhadla-3	765 kV line bays - 2nos.
		Note: i. Implementation schedule of Phase III –Part C1 package is to match with package Phase III –Part B1 (establishment of Bhadla-3 PS, 765kV Bhadla-3 PS-Sikar-2 D/c line, 400kV Bhadla-3 PS-Fatehgarh-2 D/c line). ii. Developer of Bhadla-3 S/s to provide space for 2 Nos. of 765 kV line bays at Bhadla-3 S/s for termination of Ramgarh – Bhadla-3 765kV D/c line iii. The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey iv. Provision of suitable sectionalization shall be kept at Ramgarh at 400kV & 220kV levels to limit short circuit level v. ±300 MVAr STATCOM should be placed in each 400 kV bus section of Ramgarh PS vi. Implementation of the scheme to be taken up upon receipt of LTA from RE generation developers at Ramgarh PS/Bhadla-3 PS ** Bus Sectionalization bay shall comprise of bus sectionalization of both Main Bus-I & Main Bus-II. **Implementation Timeframe**: 18 months from date of SPV acquisition.		
6.	Transmission system for evacuation of power from REZ in Rajasthan (20 GW) under Phase-III Part F	**Scope:**		
		Sl. No.	**Scope of the Transmission Scheme**	**Capacity /km**
		1.	Establishment of 2x1500	• 765/400kV 1500 MVA

			MVA, 765/400 kV Substation at suitable location near Beawar along with 2x330 MVAr 765 kV Bus Reactor & 2x125 MVAr 420 kV Bus Reactor **Future provisions: Space for** • 765/400kV ICTs along with bays: 2 nos. • 765kV line bay along with switchable line reactor: 8 nos. • 765kV Bus Reactor alongwith bays: 2nos. • 400/220 kV ICTs along with bays: 2nos. • 400 kV line bays along with switchable line reactor: 4 nos. • 400kV Bus Reactor alongwith bays: 1no. • 220 kV line bays: 4nos.	ICTs: 2 nos. (7x500 MVA, including one spare unit) • 330 MVAr, 765 kV bus reactor- 2 (7x110 MVAr, including one spare unit) • 765kV ICT bays – 2 nos. • 400 kV ICT bays – 2 nos. • 765 kV line bays – 6 Nos. • 400kV line bay- 2 nos. • 765kV reactor bay- 2 nos. • 125 MVAr, 420kV bus reactor – 2 nos. • 420 kV reactor bay – 2nos.
		2.	LILO of both circuit of Ajmer-Chittorgarh 765 kV D/c at Beawar	Length – 45km
		3.	LILO of 400kV Kota-Merta line at Beawar	Length – 20km
		4.	Fatehgarh-3 - Beawar 765 kV D/c alongwith 330 MVAr Switchable line reactor for each circuit at each end of Fatehgarh-3 - Beawar 765 kV D/c line	• Length – 350km • Switching equipment for 765 kV 330 MVAR switchable line reactor- 4nos. • 765 kV, 330 MVAr switchable line reactor- 4nos.
		5.	STATCOM at Fatehgarh-3 PS	± 2x300 MVAr STATCOM along with 4x125 MVAr MSC, 2x125 MVAr MSR alongwith 2 Nos. of 400 kV bays at Fatehgarh-3 PS
		Note: i. POWERGRID shall provide space for 2 Nos. of 765 kV line bays at Fatehgarh-3 S/s for Fatehgarh-3 - Beawar 765 kV D/c line alongwith 765 kV switchable line reactors ii. The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey		

		iii. Scheme to be awarded after SECI/REIA awards first bid of RE project at Fatehgarh-3 (new section and/or Fatehgarh-4). iv. ±300 MVAr STACOM should be placed in each 400 kV section of Fatehgarh-3 PS (Phase-III Part E1) v. POWERGRID shall provide space at Fatehgarh-3 PS for STATCOM alongwith MSC & MSR and associated 400 kV bays. vi. **Implementation Timeframe**: 18 months from date of SPV acquisition

3. Bid Process Co-ordinators for these schemes will remain unchanged as per original notification.

[F. No. 15/3/2018-Trans-Part(1)]

MOHAMMAD AFZAL, Jt. Secy. (Trans)

Uploaded by Dte. of Printing at Government of India Press, Ring Road, Mayapuri, New Delhi-110064
and Published by the Controller of Publications, Delhi-110054.

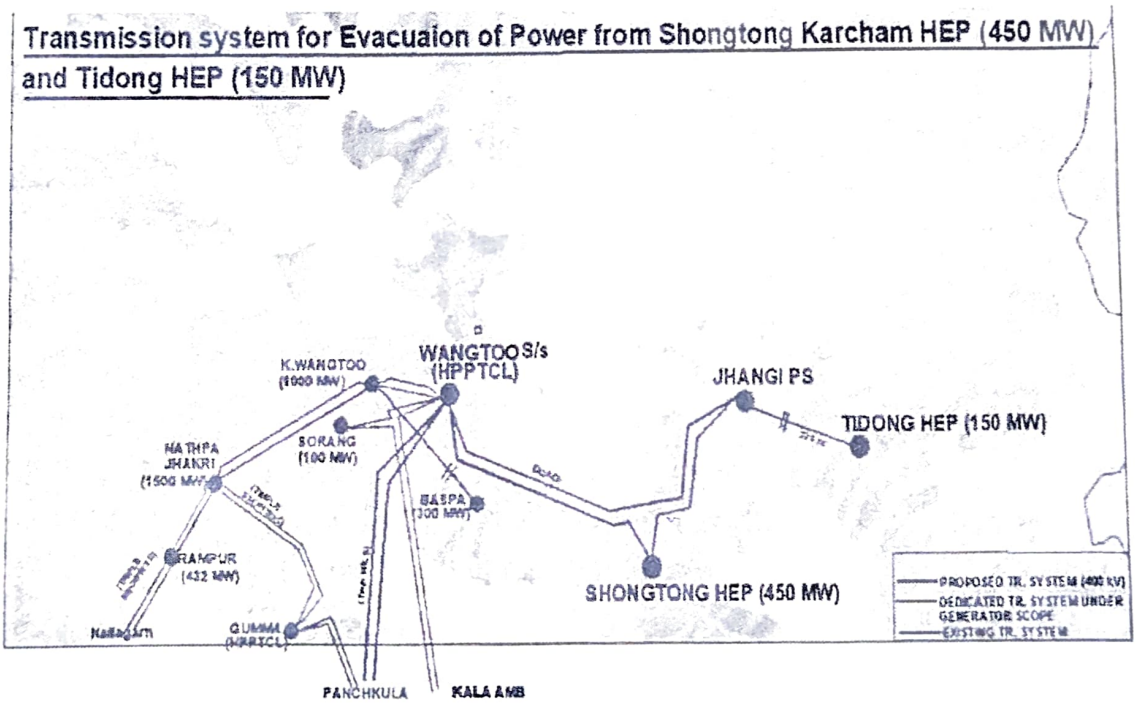
Annex-(ii) attached .STU/Discom may look and plan the Intrastate Network System in H.P in view of proposal solar power project by HPPCL.

The above point may be deliberated in the 52nd STU coordination meeting so that STU may plan to strengthen Intrastate Network System for evacuation of Power.

Agenda no:-5 **Planning and execution of evacuation of Power from Shongtong-Karchham HEP (450MW)-Alternative Arrangement.**

Current Power Evacuation Scheme of STKHEP with CTUIL

- A comprehensive transmission scheme for evacuation of power from Shongtong Karcham HEP (450 MW) was approved by MoP based on the recommendation by 11th NCT **(Annex I)** for implementation through Tariff Based Competitive Bidding (TBCB) route. Scheme has been notified on dated 22.05.2023 **(Annex-II)** with REC Power Development and Consultancy Limited (RECPDCL) as the Bid Process Coordinator (BPC).
- Subsequently, RECPDCL opened the technical bid on 13th September 2024 and the financial bid on 24th September 2024.
- Currently, the tender process remains under evaluation by the Bid Evaluation Committee of the Central Electricity Authority (CEA).



Issues with Current Scheme

i. As on date there is no time frame in which tender is finalised and awarded to L-1bidder as yet.

ii. If the time considered upto commissioning date of STKHEP i.e. November 2026 then there is less than 2 years have been left for completion of transmission line works; in that case evacuation of power from Shongtong HEP seems not possible.

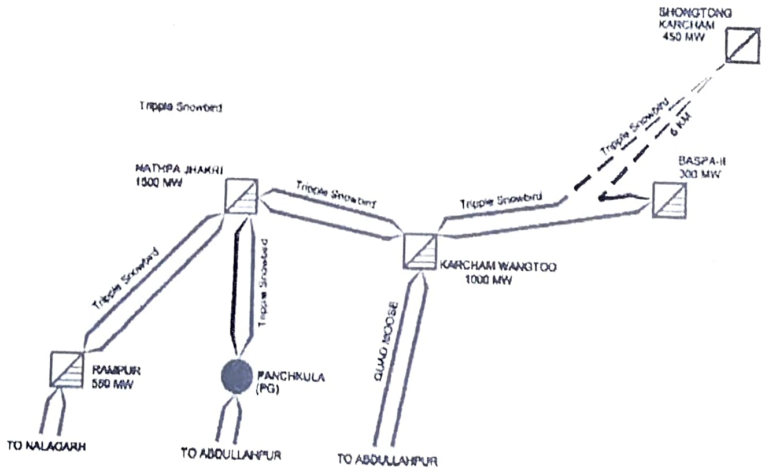
In view of above an alternate proposal may be deliberated to avoid any loss of power due to non-completion of above transmission scheme.

Proposal of Interim Arrangement of Power Evacuation of STKHEP

i. LILO **of 400 kV Baspa II -Karcham-Wangtoo D/C line of M/s JSW at Shongtong Karcham HEP (about 6 km)** which is an interim arrangement as shown in block diagram.

ii. Provision of SPS at Shongtong generation switchyard to take care for n-1 condition.

iii. The line from the LILO would be extended to Wangtoo substation, with 2 no. of bays at Wangtoo Switchyard for evacuation of power with the upstream projects in that area. In case there is an outage/ overloading observed at Baspa-II-karcham Wangtoo line, then one unit of Shongtong Karcham HEP will be backed down.



Interim Arrangement

The above point may be deliberated in the 52nd STU coordination meeting so that STU may plan for evacuation of Power.

H. P. POWER TRANSMISSION CORPORATION LTD.

(A State Govt. Undertaking)

Regd. Office: HimfedBhawan, New ISBT Road, Panjari, Shimla-171005
Ph.: 0177-2831283, 2831284 FAX 0177-2831284
(CIN): U40101HP2008SGC030950

HPPTCL/PLG/OOS(1)/2024/Pg/HPPTCL-1/550788/2025

Dated: - 16-01-2024

To

The Chairperson,
Central Electricity Authority (CEA),
Sewa Bhawan, R.K. Puram
New Delhi, PIN-110066.

Subject: Implementation of Transmission System for Shongtong HEP (450 MW) Matching with Generation Schedule.

Sir,

This is to bring in your kind notice an urgent issue pertaining to the implementation of the transmission system for evacuation of Shongtong Hydro Electric Project (450MW) in Himachal Pradesh.

It is submitted that Himachal Pradesh Power Corporation Limited (HPPCL) is executing 3x150 MW Shongtong-Karcham HEP (STKHEP) in Satluj Basin in Kinnaur District of Himachal Pradesh. The Transmission system for evacuation of Power from Shongtong-Karcham HEP (450MW) was discussed and approved in the 11th meeting of National Committee on Transmission (NCT) held on 17.01.2023. The scheme was notified on 22.05.2023 with REC Power Development and Consultancy limited (RECPDCL) as the bid process co-ordinator (BPC). RECPDCL opened the technical bids on 13.09.2024, the financial bids on 24.09.2024. Despite repeated meetings by BPC, the work has still not been awarded for execution.

It is necessary to mention here that HPPCL has intimated the scheduled commissioning of Shongtong HEP in November 2026. The LTA and connectivity agreement has been signed for 31st July, 2026. In view of the delay in award of works under TBCB, HPPCL has approached HPPTCL i.e. STU regarding likely mismatch in the Generation schedule of Shongtong HEP and commissioning of Transmission system under ISTS.

It is submitted that we are already in the month of January, 2025 and there is only a left-out period of 22 months for intimated commissioning of Shongtong HEP i.e. in November, 2026. Accordingly, HPPTCL proposes the following interim arrangement for evacuation of power from Shongtong Karcham HEP to match the intimated commissioning schedule of November, 2026:

Priority construction of the 400 kV D/C (QUAD) configuration Shongtong to LILO point of the Baspa-II – Karcham-Wangtoo line to avoid any generation loss on Regulated Tariff Mechanism (RTM) basis.

The Single Line Diagram of final arrangement and interim arrangement is attached as **Annexure-I.** HPPTCL is ready to execute this portion under RTM mode if the element is approved as deemed ISTS. Otherwise interim arrangement can be got executed from PGCIL on RTM basis as they have done a lot of ground work while preparing their bid under TBCB mode. It is necessary to mention that due to limited corridor constraints in the narrow valley, it is only possible to construct the above interim component which ultimately shall become part of Final Transmission Plan.

In addition, the requirement of 400 kV D/C Twin HTLS corridor from Wangtoo Substation to Panchkula may be reassessed in view of available capacity in existing 400 kV Corridors by upgrading terminal 400 kV line equipment as required at Jhakhri, Nalagarh, Panchkula and Rampur HEP.

It is requested that the proposed Interim Arrangement may kindly be got evaluated on priority and decision to construct the interim arrangement be taken at the earliest to avoid any generation loss.

Yours sincerely,

DA: Single Line Diagram of Interim Arrangement.

16/1/2025

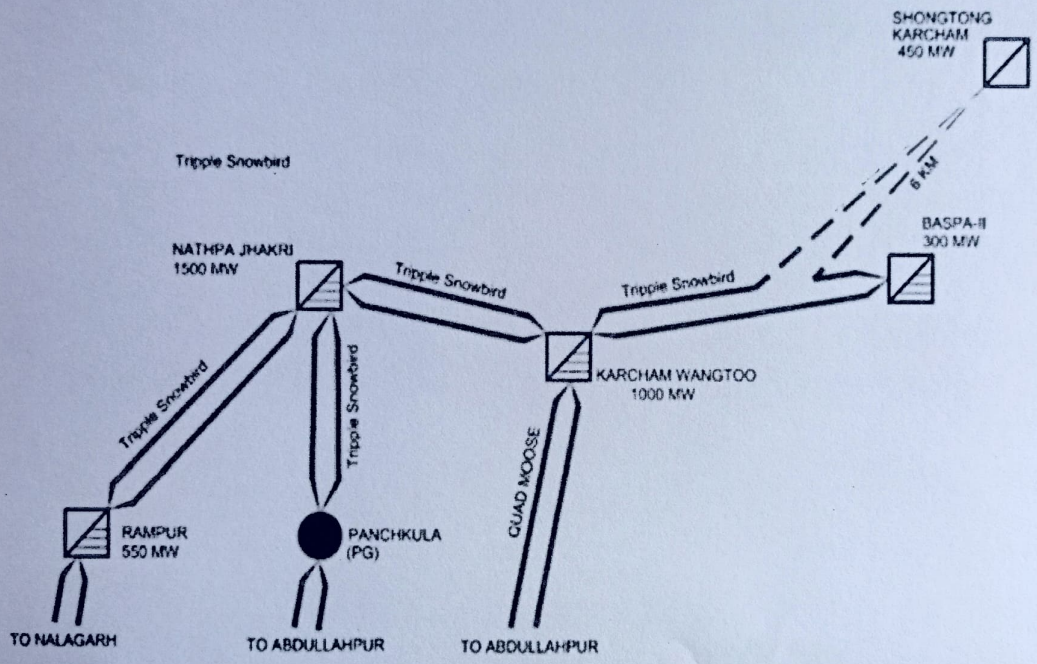
Er. Rajiv Sood,
Managing Director,
HPPTCL, Shimla-05.

Copy to the following for information please-

1. Secretary (MPP & Power) to the Government of H.P. for information please.
2. Managing Director HPPCL for information please w.r.t. HPPCL letter dated-07.01.2025 on the subject cited issue.

-Sd-

Er. Rajiv Sood,
Managing Director,
HPPTCL, Shimla-05.



Interim Arrangement

सत्यमेव जयते

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

विषय: Minutes of the meeting held on 02.09.2024 to Review of SPS scheme no. SPS/NR/GEN/01 SPS for reliable evacuation of power from NJPS, Rampur, Swara Kuddu, Baspa Sorang and Karcham Wangtoo HEP-reg.

महोदय,

Please find attached minutes of the meeting held on to 02.09.2024 to Review of SPS scheme no. SPS/NR/GEN/01 SPS for reliable evacuation of power from NJPS, Rampur, Swara Kuddu, Baspa Sorang and Karcham Wangtoo HEP.

This issues with approval of MS, NRPC.

संलग्नक: यथोपरि

भवदीय,
Signed by Anzum Parwej
Date: 22-10-2024 17:40:41

(अंजुम परवेज)
अधीक्षण अभियंता (प्रणाली अध्ययन)

प्रति:

1. Chief Engineer (PSPA-1), Central Electricity Authority
2. Concerned officer from CTU, PGCIL, NRLDC, HPPTCL, HPSLDC, HPPCL, HPSEB, other private generators, and other upcoming generators.

Minutes of Meeting held through VC mode on 02.09.2024 to Review of SPS scheme no. SPS/NR/GEN/01 SPS for reliable evacuation of power from NJPS, Rampur, Swara Kuddu, Baspa Sorang and Karcham Wangtoo HEP

Member Secretary, NRPC welcomed participants from CEA (PSPA-I), NRPC Secretariat, CTU, PGCIL, NRLDC, HPPTCL, HPSLDC, HPPCL, HPSEBL and other private generators. MS NRPC asked EE NRPC to present the agenda of meeting.

1. EE NRPC said that the agenda of the meeting i.e. "*Review of SPS scheme no. SPS/NR/GEN/01 SPS for reliable evacuation of power from NJPS, Rampur, Swara Kuddu, Baspa Sorang and Karcham Wangtoo HEP*" was submitted by HPPTCL vide their letter dated 27.03.2024. The Agenda was brought in 51st Protection Sub-Committee meeting where-in it was decided by the forum to discuss the issue in separate meeting among CEA (PSPA-I), NRPC Secretariat, CTU, PGCIL, NRLDC, HPPTCL, HPSLDC, HPPCL, HPSEBL and other private generators, other upcoming generators.

2. EE NRPC informed that HPPTCL had submitted that SPS (SPS/NR/GEN/01) which is currently in operation for reliable evacuation of power from NJPS, Rampur, Swara Kuddu, Baspa Sorang and Karcham Wangtoo HEP in state may be reviewed. HPPTCL representative mentioned that the 850MW load on any of the 400kV triple snowbird line from Jhakri, Gumma and Rampur towards Nalagarh and Panchkula seems to be highly conservative. HPPTCL representative also mentioned that the triple snowbird lines under N-1 contingency shall be sufficient to carry around 1500 to 1600MVA power at 45^0 C ambient temperature and 85^0 C conductor temperature. The 400kV quad moose has capacity to transfer from 2100 to 2200MVA at 45^0 C ambient temperature and 85^0 C conductor temperature. By removal/revision of SPS, it will enhance the overall capacity to the grid and backing down of the hydro generators may be avoided.

3. EE NRPC mentioned that NRLDC representative had conveyed that the confirmation had been sought from POWERGRID side regarding conductor capacity with respect to temperature. POWERGRID also highlighted that the CT, CB rating are of 2kA at Nalagarh, Panchkula and Abdullapur which limits the line loading to 1385MVA. Therefore, lines can't be loaded more than ~1385 MVA due to limitation of switchgear equipment's (CT, CB & isolators) rating. Hence, SPS is required. Therefore, NRLDC did not give consent to remove backing down of generation. HPPTCL representative was of view that switchgear uprating will help not only in this scenario but in future also. Therefore, the same may be explored.

The total injection of power in this complex and Corridors for evacuation as provided by HPPTCL is attached as **Annexure A**. NRLDC has also carried out the study and the same is attached as **Annexure B**. Further, NRLDC representative mentioned that POWERGRID has denied for the power flow of 2200MVA on 400kV quad moose. Due to operational constraints, the loading may go up to 1704MVA. POWERGRID was asked to submit the reason for not allowing the 2200MVA on 400kV quad moose and restricting to 1704MVA only.

4. MS NRPC said that in the last meeting held on 29.08.2024, NRLDC observation was that based on present condition without changing terminal equipment only 50 MW should be enhanced. He asked CTU representative for their views regarding the maximum enhancement possible. CTU representative said that they have gone through the studies done by NRLDC, however they have 2-3 observations. Due to some assumptions taken in study, enhancement proposed by NRLDC is on the conservative side. There are two assumptions which if reviews, capacity enhancement can be increased more. First assumption is power factor taken as 0.95. It is understood that 0.95 power factor in transmission side is to be taken if it is observed in real time because 0.95 power factor is identified in technical standards for Distribution boards and bulk consumers. Quoting from Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 “The distribution licensees shall provide adequate reactive compensation to compensate the inductive reactive power requirement in their system so that they do not depend upon the grid for reactive power support. The power factor of the distribution system and bulk consumer shall not be less than 0.95.” The power factor 0.95 is a boundary or terminal condition and in worst case. Power factor for transmission line in real time should be taken either 0.97 or 0.98, that would provide some relief.

5. CTU representative further mentioned that second observation is that sensitivity limit taken as 41%. In the assumption, Gumma-Panchkula line taken as additional contingency which classified as n-1-1 and it is therefore sensitivity increases to 45%. It should be kept at 41% and SPS should be designed in such a way that if line is out only then we should go for second grade SPS. That would also provide some relief for enhancement. If we review both the assumption as discussed, then 850MW load on transmission line can be enhanced to at least 933MW and 950MW is also doable.

6. MS NRPC said that above SPS was designed many years ago, it needs to be reviewed considering latest scenario and backing down of hydro generations if any, must be avoided/minimized. He also asked the views of NRLDC.

7. NRLDC representative said that this deliberation happened in 26th NRPC meeting nearly 10 years ago. MS NRPC said that situation has changed from last 10 years, many new elements have been added, Generation is also increased, new line have come and there is need to review. NRLDC representative briefed the deliberation held in 26th NRPC meeting and said that as per thermal limits, line could handle n-1 contingency but simulation was not converging under n-2 contingency and voltage dip at 400kV Patiala was indicated. As such, load shedding in Nalagarh and Patiala area through SPS besides reduction in generation in Karcham Wangto, Nathpa Jhakri, and Baspa complex was necessary to avoid overloading of lines under any contingency. Basically, voltage dips at Patiala and Nalagarh is more during high hydro season and also during paddy season in Punjab. Demand in Paddy season is highly inductive load due to induction motors load for agricultural use. Ideally, state shouldn't draw reactive power. However, some reactive power is drawn by states from ISTS and they pay charges for the same. 0.95 PF is a safe margin. SPS is generally operational in n-2 contingency. In n-2 contingency, we need to devise SPS such as to protect large generation complexes. If due to any contingency, generation like 4000MW in this complex is lost that would be huge problem for grid. It is therefore 0.95 PF has been taken in NRLDC studies and again the induction load coincides with high hydro season (June to September). If we decide to increase PF, that would be risky assuming SPS is operational generally in n-2, that is also a rare contingency.

8. DGM NRLDC said that we should also hear the views of Generators.

a. JSW representative (Karcham Wangto) said that they have no objection in increasing the loading but they have limiting factor that they have bus at 2250MVA but the cable for Karcham Wanto to Jhakri and Karcham Wangto to Wangto substation has 1800MVA capacity. MS NRPC asked if the capacity is enhanced by 100MW instead of 50MW, will it be a problem. JSW representative said that it would not be a problem.
b. Nathpa Jhakri representative said for enhancement of 50MW, they have no objection however for 100MW, there could be issue of under voltage and reactive power.
c. Rampur HEP representative said they have no issue in enhancement of either 50MW or 100MW.

9. DGM NRLDC said that 50MW enhancement can be done easily however we should be careful for 100MW enhancement; voltage dips cannot be ignored. CTU representative said that they have reservation in enhancement of 50MW as it is based on two conservative grounds i.e., one is 0.95 PF and other is n-1-1 contingency. However, if only out of two assumptions, only one remains conservative, the capacity can be enhanced to 933 MW. NRLDC

representative said that in High Hydro season, if PowerGrid or any other utility takes shutdown of one line, then we would not like that hydro generation should be backed down. But if another line trips, that would be n-1-1 contingency, even then system should be secured. This is the idea that in high hydro season, one emergency shutdown can also be facilitated in real time and one contingency could also be handled. Sensitivity comes at 45% if shutdown of one line is taken.

10. HPPTCL representative said that they agree with CTU that designing on the basis of n-1-1 contingency would be conservative. NRLDC representative said that regarding generation backing, in the last high hydro season, line loading did not even touch to 850MW, and even if it is increased to 900MW that would also not reach real-time. MS NRPC agreed with the proposal that line loading in SPS may be increased to 900MW and may be observed for next 1 year and may be reviewed later again.

11. NRLDC representative said that in the SPS at Karcham Wangto, low voltage logic is set at 395kV, that could be set a 380kV. Karcham Wangto representative said that they have no problem.

12. MS NRPC asked PowerGrid to brief the issue of terminal equipment. PowerGrid representative said that Rampur, Nalagarh, Patiala, Kaithal & Hisar and IndiGrid's Patran Substation and in second line Panchkula, Abdullapur & Bawana have 2kA CT, Breaker & Isolators are installed. NRLDC representative said that enhancement of terminal equipment is needed at Nalagarh and Panchkula and substations in generation complex. MS NRPC said that first terminal equipment should be changed as per the requirement to remove the immediate constraints and after further increase in loading, terminal equipment of other substation can also be changed. PowerGrid representative informed that terminal equipment shall be enhanced to 3000A ratings. CTU representative asked rating of Rampur HPS. Representative of Rampur HPS said that they have also 2kA ratings of terminal equipment. Jhakri also has 2kA ratings terminal equipment. CTU representative asked for Gumma -Panchkula ratings. HPPTCL representative said that Gumma- Panchkula is designed for 4kA. MS NRPC asked about the terminal ratings/constraints for Karcham Wangto. JSW representative said that for higher ratings cable have to be changed and during termination, planned shutdown has to be taken. CTU representative said that we should also see at generators end for upgradation. Upgradation of terminal equipment should be done in phase-wise manner. DGM NRLDC said that PowerGrid and Generators shall send the constraints and requirement of upgradation of terminal equipment at their substations. NRLDC shall study in consultation with CTU for the upgradation of terminal

equipment to remove the constraints.

13. MS NRPC asked representative of CEA for his views on this matter. CEA representative said that they agree that the line loading in SPS should be increased to 900MW. HPPTCL should also coordinate with CTU, if any injection of power is affecting ISTS so that proper planning can be done.

14. MS NRPC asked PowerGrid to study the comprehensive requirement for upgradation of terminal equipment at different substations for safe evacuation of hydro power from Himachal Pradesh and send a proposal to NRPC & NRLDC. NRLDC to examine this proposal and the same would be discussed further in OCC meetings.

15. After detailed deliberations as above, following was decided in the meeting:

a) Line loading in existing SPS may be increased to 900MW from 850MW and may be observed for next 1 year. Thereafter, it may be reviewed again for further enhancement as CTU & HPPTCL were of view that the increase in line loading in SPS to 900 MW is on the conservative side.

b) In the SPS at Karcham Wangto low voltage logic shall be set to 380kV instead of 395kV.

c) PowerGrid and the Generators in this complex shall provide their study/ inputs for upgradation of terminal equipment at various substations to remove constraints for evacuation of power from Himachal Pradesh. NRLDC shall study the inputs in consultation with CTU and matter for upgradation of terminal equipment shall be discussed further in OCC meetings.

Meeting ended with thanks to the chair.

****

Annexure A

Hydro Generation

The total injection of complex is as follows (As provided by HPPTCL):

S.no.	Name of Project	Capacity including 10% O/L
1	Baspa	330
2	Karcham Wangtoo	1200
3	Sorang	110
4	Nathpa Jhakri	1650
5	Rampur	453
6	Swara Kuddu	122
7	Natwar Mori	66
8	Small IPPs replacing Gumma	55
9	Max injection Wangtoo	150
10	Total	4136

Corridors for Evacuation

- The corridor for power evacuation are as follows: -

1. 400kV D/C Jhakhri -Gumma – Panchkula – Abdullapur (Triple Snowbird)
2. 400 kV D/C Jhakri – Rampur – Nalagarh (Triple Snowbird)
3. 400 kV Karcham Wangtoo – Wangtoo – Kala Amb – Abdullapur (Quad Moose)
4. 400 kV interconnecting line between Nathpa Jhakhri and Karcham Wngtoo (Triple Snowbird)

Annexure B

NRLDC Study

Line	Sensitivity on parallel ckt	n-1 loading limit for 1270 MVA line rating	n-1 loading limit of 1600 MVA line rating	~ Max Loading of line recorded during 2023 -24
400kV Rampur - Nallagarh D/C	41%	850 MW	1078 MW	786 per ckt
400kV NJPC - Rampur D/C	87%	645 MW	812 MW	560 per ckt
400kV NJPC - Gumma D/C	68%	718 MW	904 MW	606 per ckt
400kV Gumma - Panchkula D/C	44%	837 MW	1055 MW	675 per ckt
400kV KWHEP - NJPC D/C	79%	674 MW	850 MW	

Line	Sensitivity on parallel ckt	n-1 loading limit for 1704 MVA line rating	n-1 loading limit of 2200 MVA line rating	~ Max Loading of line recorded during 2023 -24
400kV KWHEP-Wangtoo D/C	99%	813 MW	1050 MW	660 per ckt
400kV KalaAmb-Abdullapur D/C	79%	904MW	1168MW	700 per ckt

NRLDC Study

Two Line Trip	Generation backing required with 1270 MVA and 1704 MVA limits (existing)	Generation backing required with 1600 MVA and 2200 MVA limits
400kV Rampur - Nallagarh D/C	2 units each of Jhakri, Rampur, KWHEP and Swara Kuddu	No backing required
400kV NJPC - Rampur-1 and NJPC - Gumma -1	2 units each of Jhakri, Rampur, KWHEP and Swara Kuddu	No backing required
400kV Gumma- Panchkula D/C	2 units each of Jhakri, Rampur, KWHEP and Swara Kuddu	1 unit each of Jhakri, Rampur, KWHEP and Swara Kuddu
400kV NJPC - Gumma D/C	2 units each of Jhakri, Rampur, KWHEP and Swara Kuddu	1 unit each of Jhakri, Rampur, KWHEP and Swara Kuddu

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
विद्युत प्रणाली योजना एवं मूल्यांकन-I प्रभाग
Power System Planning & Appraisal-I Division

सेवा में / To,

1. COO, CTUIL, Floors No. 5-10, Tower 1, Plot No. 16, IRCON International Tower, Institutional Area, Sector 32, Gurugram (Haryana)-122001
2. Managing Director, HPPTCL, Himfed Bhawan, Panjari, Shimla (HP)-171005
3. General Manager (Electrical), HPPCL, Himfed Bhawan, Panjari, Shimla(HP)-171005
4. Addl. CEO, RECPDCL, D Block, Plot No. 1-4, Sector-29, Gurugram-122 001
5. VP (Head of Plant KW & Baspa), JSW Hydro Energy Limited, Sholtu Colony, Kinnaur (HP)-172104

विषय/Subject: Minutes of the meeting for deliberation on transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) in Himachal Pradesh

Sir/Madam,

Please find enclosed the Minutes of Meeting held on 30.01.2025, for deliberation on the transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) in Himachal Pradesh.

भवदीय / Yours faithfully

Signed by Nitin Deswal
Date: 07-02-2025 23:18:57

(नितिन देसवाल /Nitin Deswal)
उप निदेशक / Deputy Director

Copy to:

1. SA to Member (Power Systems), CEA
2. Member Secretary (NRPC)

Minutes of Meeting held on 30.01.2025, for deliberation on the transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) in Himachal Pradesh

List of participants is enclosed as **Annexure-I.**

Background:

The transmission scheme "Transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) and Tidong HEP (150 MW)" is currently under bidding. The broad scope of the transmission scheme is given below:

- Establishment of 2x315 MVA 400/220 kV GIS Pooling Station at Jhangi
- 400 kV Jhangi PS – Wangtoo (Quad) D/c line
- LILO of one circuit of Jhangi PS – Wangtoo (HPPTCL) 400 kV D/c (Quad) line at generation switchyard of Shongtong HEP
- Wangtoo (HPPTCL) – Panchkula (PG) 400 kV D/c line

The above transmission scheme in under bidding with implementation timeframe of 30 months.

HPPTCL vide letter dated 16.01.2024 informed that HPPCL has intimated scheduled commissioning of Shongtong HEP in November 2026 and transmission scheme (under TBCB) for evacuation of power from Shongtong HEP has not yet been awarded for execution. As only 22 months are left for the proposed commissioning of Shongtong HEP, HPPTCL had proposed following interim arrangement for evacuation of power from Shongtong HEP:

- LILO of one circuit of Baspa-II – Karcham Wangtoo 400 kV line (Triple snowbird) at Shongtong HEP

Further, HPPTCL mentioned that as there is limited corridor in the narrow valley, the LILO portion may be constructed on Quad configuration under ISTS and the same would become part of the final transmission scheme.

Deliberations held in the meeting:

1. Chief Engineer, CEA stated that the similar interim arrangement was earlier agreed in a meeting held on 03.01.2020. He opined that modalities and requirement of proposed interim arrangement could be ascertained after getting the firm commission timeframe of the Shongtong HEP and timeframe of transmission scheme that is under bidding.

2. BPC (RECPDCL) informed that the Bid Evacuation Committee (BEC) had decided to go for re-bidding of the transmission scheme "Transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) and Tidong HEP (150 MW)". However, final view on the same is yet to be taken.

3. Regarding the commissioning timeframe of the Shongtong HEP, HPPCL informed that the works are under full swing and they are trying best to achieve the commissioning of hydro project by November, 2026.

4. JSW raised the issue of under rated XLPE cable (630 sqmm) at Karcham Wangtoo end of Baspa-II – Kancham Wangtoo 400 kV D/c line which limits the capacity of this Triple snowbird line. Upon query regarding the change of under rated cable, JSW stated that the cable delivery would take at least couple of years and long shutdown would also be required for the same. Further, JSW expressed concerns about congestion in the existing corridor due to the interim arrangement and opined for realignment of SPS setting in the complex.

5. HPPTCL stated that the interim arrangement has been proposed as HPPCL is consistently perusing for the timeframe of commissioning of Shongtong HEP by November 2026. HPPTCL added that due to delay in associated transmission scheme, power from Tidong HEP could be evacuated through the intra-state network; however, same would not be possible for Shongtong HEP. The interim arrangement could be established under ISTS and Shongtong HEP would shutdown one unit in case of outage in one ckt of Baspa-II – Karcham Wangtoo 400 kV D/c line. Further, the SPS scheme for the entire complex should be revised considering Shongtong HEP. HPPTCL highlighted the issue of bottlenecks in the existing system such as under rated cable, under rated bay equipments etc. that limits the capacity of the corridor and suggested for measures for removal of those bottlenecks.

6. CTUIL submitted the following observations on proposal:
   - From the load flow studies, it is envisaged that considering Shongtong generation with interim arrangement (LILO of one ckt of Baspa-II – Karcham Wangtoo at Shongtong HEP), loadings are in order; however, loading of 400 kV Nathpa Jhakri – Gumma – Panchkula D/c line (Triple snowbird) under N-1 contingency is about 950 MW.
   - Considering huge quantum of hydro generation in above complex after additional generation of Shongtong HEP (450 MW) and Tidong HEP (150 MW), it may be prudent to plan additional corridor beyond Wangtoo (Wangtoo - Panchukula) to maintain system reliability & security. Also, SPS requirement and setting in above complex with proposed interim arrangement may be reviewed.
   - From the studies considering the interim arrangement, in the contingency of 400 kV Baspa - Shongtong circuit, loading on 400 kV Baspa – Karcham Wangtoo circuit would be about 825 MW (considering 10% overloading in peak hydro season). Therefore, due to the under rated cable (~700 MW capacity) in existing 400 kV Baspa - K Wangtoo D/c line section, SPS arrangement on Baspa-Shongtong generation complex would also be required with above interim arrangement at the event of contingency. Also, JPTL may assess the possibility to upgrade the power rating of above cables.

7. NRLDC stated the following:
   - In case Shongtong and Tidong generation is to be evacuated before commissioning of 400kV Wangtoo – Panchkula D/c line, switchgear replacement for Jhakri – Panchkula section and Rampur – Nallagarh section may be carried out as it may lead to SPS requirement under N-1 contingency.
   - Modification of SPS under different contingencies needs to be discussed with all stakeholders at OCC/NRPC level after revised simulation studies and also depending on switchgear upgradation work at POWERGRID/Hydro stations.
   - Shongtong HEP should confirm whether they will be able to receive SPS signal from Nathpa Jhakri/Rampur/Gumma and trip their units in case of N-1-1 contingency of lines,

as the comprehensive SPS logic of the whole complex would require tripping of Shongtong generation.

- For replacement of terminal equipment, prolonged shutdown may be required. Shutdown requirement for terminal equipment replacement also to be discussed beforehand to take judicious call as most substations in the complex are GIS substations.

8. After further deliberations, following was agreed:
   (i) HPPTCL is requested to take the matter in the coming meeting of NRPC for consultation with all the stakeholders.
   (ii) Decision on the interim arrangement would be taken based on the timeline of commissioning of the planned transmission scheme and the timeline of commissioning of Shongtong Karcham HEP.

* * *

Annexure

List of Participants

- **CEA**
    1. Shri Ishan Sharan - Chief Engineer
    2. Smt. Kavita Jha - Director
    3. Shri Nitin Deswal - Deputy Director
    4. Ms. Komal Dupare - Deputy Director

- **CTUIL**
    1. Shri Sandeep Kumawat – DGM

- **Grid India / NRLDC**
    1. Shri Gaurav Malviye - Manager

- **RECPDCL**
    1. Shri Saroj Kumar - General Manager
    2. Shri Anil Kumar Perala - Chief Manager (Tech.)
    3. Shri Ritam Biswas - Asst.Manager (Engg)

- **HPPTCL**
    1. Shri Rajiv Sood - MD
    2. Shri Manoj Kumar - GM (C&D)
    3. Shri Harmanjeet Singh - AE (Planning)

- **HPPCL**
    1. Shri Vimal Negi - GM (Electrical)
    2. Shri Aditya Thakur - Sr. Manager

- **M/s JSW**
    1. Shri Kaushik Maulik - VP (Head of Plant KW & Baspa)
    2. Shri P K Jha - GM (Electrical & Transmission)
    3. Shri Vikas Gupta - GM (Head Operation Baspa)

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

Date 19.02.2025

सेवा मे:
Chairperson,
Central Electricity Authority,
Sewa Bhawan, R. K. Puram,
Delhi-110066

विषय: Transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) in Himachal Pradesh- reg.

Recently, a meeting was held in CEA on 30.01.2025 (copy of MoM attached as **Annexure-I**) for deliberation on the transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) in Himachal Pradesh. Following was agreed in the said meeting:

a. HPPTCL was requested to take the matter in the coming meeting of NRPC for consultation with all the stakeholders.

b. Decision on the interim arrangement would be taken based on the timeline of commissioning of the planned transmission scheme and the timeline of commissioning of Shongtong Karcham HEP.

Background:

The transmission scheme "Transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) and Tidong HEP (150 MW)" is **currently under bidding process** and **implementation timeframe of 30 months**. The broad scope of the transmission scheme is given below:

- Establishment of 2x315 MVA 400/220 kV GIS Pooling Station at Jhangi
- 400 kV Jhangi PS – Wangtoo (Quad) D/c line
- LILO of one circuit of Jhangi PS – Wangtoo (HPPTCL) 400 kV D/c (Quad) line at generation switchyard of Shongtong HEP
- Wangtoo (HPPTCL) – Panchkula (PG) 400 kV D/c line

This matter was brought by HP & discussed in the 228th OCC meeting of NRPC held on 14.02.2025, wherein HPPCL informed that the proposed scheme was approved by the Ministry of Power (MoP) in April 2023. According to the scheme, construction activities for the Tidong Hydroelectric Project (HEP) were scheduled for completion in the first phase by July 1, 2026, while construction activities for the Shongtong HEP were to be completed in the second phase by July 31, 2026. However, the bidding process has taken over one and a half years and is yet to be completed.

Additionally, HPPCL anticipates that water availability is expected by November 2026, with their machines would be ready to generate power by December 1, 2026. With only 21 months remaining until the planned commissioning of the Shongtong HEP, hence, approval is being requested by HPPCL for the interim arrangement of Loop-In Loop-Out (LILO) of one circuit from the Baspa-II to Karcham Wangtoo 400 kV line (Triple Snowbird) at the Shongtong HEP.

Major viewpoints emerged in the 228th OCC meeting of NRPC is given as under;

NRLDC Views:

i. In case Shongtong and Tidong generation is to be evacuated before commissioning of 400kV Wangtoo – Panchkula D/c line, switchgear replacement for Jhakri – Panchkula section and Rampur – Nallagarh section may be carried out as it may lead to SPS requirement under N-1 contingency.

ii. Modification of SPS under different contingencies needs to be discussed with all stakeholders at OCC/NRPC level after revised simulation studies and also depending on switchgear upgradation work at POWERGRID/Hydro stations.

iii. Shongtong HEP should confirm whether they will be able to receive SPS signal from Nathpa Jhakri/Rampur/Gumma and trip their units in case of N-1-1 contingency of lines, as the comprehensive SPS logic of the whole complex would require tripping of Shongtong generation.

iv. ***For replacement of terminal equipment, prolonged shutdown may be required. Shutdown requirement for terminal equipment replacement also to be discussed beforehand to take judicious call as most substations in the complex are GIS substations.***

CTU Views:

i. From the load flow studies, it is envisaged that considering Shongtong generation with interim arrangement (LILO of one ckt of Baspa-II – Karcham Wangtoo at Shongtong HEP), loadings are in order; however, loading of 400 kV Nathpa Jhakri – Gumma – Panchkula D/c line (Triple snowbird) under N-1 contingency is about 950 MW.

ii. Considering huge quantum of hydro generation in above complex after additional generation of Shongtong HEP (450 MW) and Tidong HEP (150 MW), it may be prudent to plan additional corridor beyond Wangtoo (Wangtoo - Panchukula) to maintain system reliability & security. Also, SPS requirement and setting in above complex with proposed interim arrangement may be reviewed.

iii. From the studies considering the interim arrangement, in the contingency of 400 kV Baspa - Shongtong circuit, loading on 400 kV Baspa – Karcham Wangtoo circuit would be about 825 MW (considering 10% overloading in peak hydro season). Therefore, due to the under rated cable (~700 MW capacity) in existing 400 kV Baspa - K Wangtoo D/c line section, SPS arrangement on Baspa-Shongtong generation complex would also be required with the proposed interim arrangement at the event of contingency. Also, JPTL may assess the possibility to upgrade the power rating of above cables.

Views of NRPC Secretariate in 228th OCC Meeting:

- In case of delays in likely commissioning of Shongtong (450MW) HEP beyond December,26 the evacuation system may be constructed as per originally planned scheme of 400kV D/C (Quad HLTS) line upto Wangtoo SS (about 18 km length). In case Shongtong HEP is in advance stage and could be

commissioned by November/December 2026, then interim LILO arrangement (about 6 km length) as proposed by HPPTCL may be considered subject to other requirements (SPS etc).

- With the proposed LILO arrangement of HPPTCL, power of Shontong HEP(450MW) would be evacuated through 400KV Karcham-Wangtoo-KalaAmb-Abdullapur section which has been implemented under ISTS. As it would increase power flow on the ISTS network, so the proposed interim arrangement must first be discussed in the CMETS meeting before being presented to the NRPC forum.
- Additionally, a team of hydro experts from CEA may visit the site to assess the progress of the ongoing work and likely commissioning of the Shontong HEP (450MW) project. Based on their assessment, a decision could be made on whether to proceed with the proposed interim arrangement or as per originally planned evacuation system.

In view of above, it is requested that a team of hydro experts from CEA may please be deputed for site visit to assess the progress of ongoing Hydro Projects (Shongtong Karcham HEP (450 MW) and Tidong HEP (150 MW)") and their likely commissioning vis-à-vis HPPCL anticipation of commissioning in Nov/Dec,2026.

Based on CEA assessment, a decision could be taken on whether to proceed with the proposed interim arrangement or go ahead as per earlier planned evacuation system for 450 MW Shongtong HEP in Himanchal Pradesh. Since next meeting of TCC/NRPC is scheduled on 16th/17th March,2025 and this issue shall also be discussed as Agenda item, the site visit and assessment report of CEA may kindly be arranged at the earliest (preferably before 7th March,2025).

Signed by Vijay Kumar Singh
Date: 19-02-2025 15:38:34

(वी. के. सिंह)
सदस्य सचिव

Copy to: Chairperson, NRPC & MD HPPTCL.

Annexure-I

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
विद्युत प्रणाली योजना एवं मूल्यांकन-I प्रभाग
Power System Planning & Appraisal-I Division

सेवा में / To,

1. COO, CTUIL, Floors No. 5-10, Tower 1, Plot No. 16, IRCON International Tower, Institutional Area, Sector 32, Gurugram (Haryana)-122001
2. Managing Director, HPPTCL, Himfed Bhawan, Panjari, Shimla (HP)-171005
3. General Manager (Electrical), HPPCL, Himfed Bhawan, Panjari, Shimla(HP)-171005
4. Addl. CEO, RECPDCL, D Block, Plot No. 1-4, Sector-29, Gurugram-122 001
5. VP (Head of Plant KW & Baspa), JSW Hydro Energy Limited, Sholtu Colony, Kinnaur (HP)-172104

विषय/Subject: Minutes of the meeting for deliberation on transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) in Himachal Pradesh

Sir/Madam,

Please find enclosed the Minutes of Meeting held on 30.01.2025, for deliberation on the transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) in Himachal Pradesh.

भवदीय / Yours faithfully

Signed by Nitin Deswal
Date: 07-02-2025 23:18:57

(नितिन देसवाल /Nitin Deswal)
उप निदेशक / Deputy Director

Copy to:

1. SA to Member (Power Systems), CEA
2. Member Secretary (NRPC)

Minutes of Meeting held on 30.01.2025, for deliberation on the transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) in Himachal Pradesh

List of participants is enclosed as **Annexure-I.**

Background:

The transmission scheme "Transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) and Tidong HEP (150 MW)" is currently under bidding. The broad scope of the transmission scheme is given below:

- Establishment of 2x315 MVA 400/220 kV GIS Pooling Station at Jhangi
- 400 kV Jhangi PS – Wangtoo (Quad) D/c line
- LILO of one circuit of Jhangi PS – Wangtoo (HPPTCL) 400 kV D/c (Quad) line at generation switchyard of Shongtong HEP
- Wangtoo (HPPTCL) – Panchkula (PG) 400 kV D/c line

The above transmission scheme in under bidding with implementation timeframe of 30 months.

HPPTCL vide letter dated 16.01.2024 informed that HPPCL has intimated scheduled commissioning of Shongtong HEP in November 2026 and transmission scheme (under TBCB) for evacuation of power from Shongtong HEP has not yet been awarded for execution. As only 22 months are left for the proposed commissioning of Shongtong HEP, HPPTCL had proposed following interim arrangement for evacuation of power from Shongtong HEP:

- LILO of one circuit of Baspa-II – Karcham Wangtoo 400 kV line (Triple snowbird) at Shongtong HEP

Further, HPPTCL mentioned that as there is limited corridor in the narrow valley, the LILO portion may be constructed on Quad configuration under ISTS and the same would become part of the final transmission scheme.

Deliberations held in the meeting:

1. Chief Engineer, CEA stated that the similar interim arrangement was earlier agreed in a meeting held on 03.01.2020. He opined that modalities and requirement of proposed interim arrangement could be ascertained after getting the firm commission timeframe of the Shongtong HEP and timeframe of transmission scheme that is under bidding.

2. BPC (RECPDCL) informed that the Bid Evacuation Committee (BEC) had decided to go for re-bidding of the transmission scheme "Transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) and Tidong HEP (150 MW)". However, final view on the same is yet to be taken.

3. Regarding the commissioning timeframe of the Shongtong HEP, HPPCL informed that the works are under full swing and they are trying best to achieve the commissioning of hydro project by November, 2026.

4. JSW raised the issue of under rated XLPE cable (630 sqmm) at Karcham Wangtoo end of Baspa-II – Kancham Wangtoo 400 kV D/c line which limits the capacity of this Triple snowbird line. Upon query regarding the change of under rated cable, JSW stated that the cable delivery would take at least couple of years and long shutdown would also be required for the same. Further, JSW expressed concerns about congestion in the existing corridor due to the interim arrangement and opined for realignment of SPS setting in the complex.

5. HPPTCL stated that the interim arrangement has been proposed as HPPCL is consistently perusing for the timeframe of commissioning of Shongtong HEP by November 2026. HPPTCL added that due to delay in associated transmission scheme, power from Tidong HEP could be evacuated through the intra-state network; however, same would not be possible for Shongtong HEP. The interim arrangement could be established under ISTS and Shongtong HEP would shutdown one unit in case of outage in one ckt of Baspa-II – Karcham Wangtoo 400 kV D/c line. Further, the SPS scheme for the entire complex should be revised considering Shongtong HEP. HPPTCL highlighted the issue of bottlenecks in the existing system such as under rated cable, under rated bay equipments etc. that limits the capacity of the corridor and suggested for measures for removal of those bottlenecks.

6. CTUIL submitted the following observations on proposal:
   - From the load flow studies, it is envisaged that considering Shongtong generation with interim arrangement (LILO of one ckt of Baspa-II – Karcham Wangtoo at Shongtong HEP), loadings are in order; however, loading of 400 kV Nathpa Jhakri – Gumma – Panchkula D/c line (Triple snowbird) under N-1 contingency is about 950 MW.
   - Considering huge quantum of hydro generation in above complex after additional generation of Shongtong HEP (450 MW) and Tidong HEP (150 MW), it may be prudent to plan additional corridor beyond Wangtoo (Wangtoo - Panchukula) to maintain system reliability & security. Also, SPS requirement and setting in above complex with proposed interim arrangement may be reviewed.
   - From the studies considering the interim arrangement, in the contingency of 400 kV Baspa - Shongtong circuit, loading on 400 kV Baspa – Karcham Wangtoo circuit would be about 825 MW (considering 10% overloading in peak hydro season). Therefore, due to the under rated cable (~700 MW capacity) in existing 400 kV Baspa - K Wangtoo D/c line section, SPS arrangement on Baspa-Shongtong generation complex would also be required with above interim arrangement at the event of contingency. Also, JPTL may assess the possibility to upgrade the power rating of above cables.

7. NRLDC stated the following:
   - In case Shongtong and Tidong generation is to be evacuated before commissioning of 400kV Wangtoo – Panchkula D/c line, switchgear replacement for Jhakri – Panchkula section and Rampur – Nallagarh section may be carried out as it may lead to SPS requirement under N-1 contingency.
   - Modification of SPS under different contingencies needs to be discussed with all stakeholders at OCC/NRPC level after revised simulation studies and also depending on switchgear upgradation work at POWERGRID/Hydro stations.
   - Shongtong HEP should confirm whether they will be able to receive SPS signal from Nathpa Jhakri/Rampur/Gumma and trip their units in case of N-1-1 contingency of lines,

as the comprehensive SPS logic of the whole complex would require tripping of Shongtong generation.

- For replacement of terminal equipment, prolonged shutdown may be required. Shutdown requirement for terminal equipment replacement also to be discussed beforehand to take judicious call as most substations in the complex are GIS substations.

8. After further deliberations, following was agreed:
   (i) HPPTCL is requested to take the matter in the coming meeting of NRPC for consultation with all the stakeholders.
   (ii) Decision on the interim arrangement would be taken based on the timeline of commissioning of the planned transmission scheme and the timeline of commissioning of Shongtong Karcham HEP.

* * *

Annexure

List of Participants

- **CEA**
    1. Shri Ishan Sharan - Chief Engineer
    2. Smt. Kavita Jha - Director
    3. Shri Nitin Deswal - Deputy Director
    4. Ms. Komal Dupare - Deputy Director

- **CTUIL**
    1. Shri Sandeep Kumawat – DGM

- **Grid India / NRLDC**
    1. Shri Gaurav Malviye - Manager

- **RECPDCL**
    1. Shri Saroj Kumar - General Manager
    2. Shri Anil Kumar Perala - Chief Manager (Tech.)
    3. Shri Ritam Biswas - Asst.Manager (Engg)

- **HPPTCL**
    1. Shri Rajiv Sood - MD
    2. Shri Manoj Kumar - GM (C&D)
    3. Shri Harmanjeet Singh - AE (Planning)

- **HPPCL**
    1. Shri Vimal Negi - GM (Electrical)
    2. Shri Aditya Thakur - Sr. Manager

- **M/s JSW**
    1. Shri Kaushik Maulik - VP (Head of Plant KW & Baspa)
    2. Shri P K Jha - GM (Electrical & Transmission)
    3. Shri Vikas Gupta - GM (Head Operation Baspa)

Clause No.	Responsible Entity	Compliance Assignment
5.2(i)	Each distribution licensee within a State	Estimate the demand in its control area including the demand of open access consumers and factoring in captive generating plants, energy efficiency measures, distributed generation, demand response, in different time horizons, namely long-term, medium term and short-term.
5.2(ii)	STU (on behanlf of distribution licensee)/other designated agency	Estimate the demand for the entire State duly considering the diversity in different time horizons, namely long-term, medium term and short-term.
5.3(a)	Each distribution licensee	(i) assess the existing generation resources and identify the additional generation resource requirement to meet the estimated demand in different time horizons, (ii) prepare generation resource procurement plan.
5.3(c)	Each distribution licensee	Generation resource procurement planning (specifying procurement from resources under State control area and regional control area) shall be undertaken in different time horizons, namely long-term, medium term and short-term to ensure (i) adequacy of generation resources and (ii) planning reserve margin (PRM) taking into account loss of load probability and energy not served as specified by CEA.
5.3(d)	STU (on behalf of distribution licensee)/other designated agency	STU or other designated agency by state comission shall provide to NLDC, •the details regarding demand forecasting, •assessment of existing generation resources •such other details as may be required for carrying out a national level simulation for generation resource adequacy for States.
5.3(e)	NLDC	Based on the information received, NLDC shall carry out a simulation to assist the States in drawing their optimal generation resource adequacy plan.
5.3(f)	Each distribution licensee	Each distribution licensee shall ensure demonstrable generation resource adequacy for such period as specified by the respective SERC
31.1(a)	NLDC/RLDC/SLDC	Operational planning in advance by NLDC, RLDCs and SLDCs within their respective control areas: Monthly and Yearly time horizons in co-ordination with CTU, RPCs or STUs, as applicable.
31.1(b)	NLDC/RLDC/SLDC	Operational planning shall be carried out in advance by NLDC, RLDCs and SLDCs within their respective control areas on Intra-day, Day Ahead, Weekly time horizons.

31.1(c)	NLDC/RLDC	Procedure and data format by NLDC/RLDC for following activity •Operational planning analysis •Real-time monitoring, •Real-time assessments. Format is available at *https://posoco.in/wp-content/uploads/2024/03/Final-NLDC-Operating-Procedure_as-submitted-to-CERC-dated-290923.pdf*
31.1(d)	SLDC	SLDC may also issue procedures and formats for data collection for the above purposes.
31.2(a)	SLDC	Each SLDC shall carry out demand estimation (active & reactive) as part of operational planning after duly factoring in the demand estimation done by STU as part of resource adequacy planning referred to in Chapter 2 of these regulations.
31.2(b)	SLDC	Each SLDC shall develop methodology for daily, weekly, monthly, yearly demand estimation in MW and MWh for operational analysis as well as resource adequacy purposes
31.2(c)	SLDC	The demand estimation by each SLDC shall be done on day ahead basis with time block wise granularity for the daily operation and scheduling . Revision in real-time demand estimate by SLDC if major change is observed and sharing with RLDC
31.2(d)	SLDC	Each SLDC shall submit node-wise morning peak, evening peak, day shoulder and night off-peak estimated demand in MW and MVA on a monthly and quarterly basis for the nodes 110 kV and above
31.2(e)	SLDC	SLDC shall also estimate peak and off-peak demand (active as well as reactive power) on a weekly and monthly basis for load -generation balance planning as well as for operational planning analysis
31.2(f)	ISTS connected bulk consumers or distribution licensees	The entities such as bulk consumers or distribution licensees that are directly connected to ISTS shall estimate and furnish such a demand estimate to the concerned RLDC
31.2(g)	RLDC/NLDC	Based on the demand estimate furnished by the SLDCs and other entities directly connected to ISTS, each RLDC shall prepare the regional demand estimate and submit it to the NLDC. NLDC, based on regional demand estimates furnished by RLDCs, shall prepare national demand estimate
31.2(h)	SLDC	Submission of demand estimate data by SLDCs or other entities directly connected to ISTS, as applicable, to the respective RLDC and RPC as per below timeline : - Daily: 10:00 hrs of previous day - Weekly: First workinh day of previus week - Monhtly: Fifth day of previous month - Yearly: 30th September of the previous year

31.2(i)	SLDC/RLDC/NLDC	Compute forecasting error for intra-day, dayahead, weekly, monthly and yearly forecasts and analyse the same in order to reduce forecasting error in the future. The computed forecasting errors shall be made available by SLDCs, RLDCs and NLDC on their respective websites.
31.3(a)	SLDC	The generation estimation by each SLDC shall be done on day ahead basis with time block wise granularity for the daily operation and scheduling . Revision in real-time generation estimate by SLDC if major change is observed and sharing with RLDC
31.3(b)	RLDC	RLDC shall forecast generation from wind, solar, ESS and Renewable Energy hybrid generating stations that are regional entities and SLDC shall forecast generation from such sources that are intra-state entities, for different time horizons as referred to in clause (1) of Regulation 31 of these regulations for the purpose of operational planning
31.4(a)	SLDC	SLDCs estimate and ensure the adequacy of resources, identify generation reserves, demand response capacity and generation flexibility requirements with due regard to the resource adequacy framework as specified under Chapter 2 of these regulations
31.4(b)	SLDC	Furnishing time block-wise information for the following day in SLDC respect of all intra-state entities to the concerned RLDC who shall validate the adequacy of resources with due regard to the following: (i) Demand forecast aggregated for the control area; (ii) Renewable energy generation forecast for the control area; (iii) Injection schedule for intra-State entity generating station; (iv) Requisition from regional entity generating stations (v) Secondary and planned procurement through Tertiary reserve requirement; (vi) Planned procurement of power through other bilateral or collective transactions, if any.
33.1	NLDC, RLDC, SLDC & (RPC: Monthly & Yearly)	Based on the operational planning analysis data, operational planning study shall be carried out by various agencies for time horizons such as Real time, Intra Day , Weekly , Monthly & Yearly
33.2	SLDC, RLDCs and NLDC	SLDCs, RLDCs and NLDC shall utilize network estimation tool integrated in their EMS and SCADA systems for the real time operational planning study.

33.3	SLDC	SLDCs shall perform day-ahead, weekly, monthly and yearly operational studies for the concerned State for: (a) assessment and declaration of total transfer capability (TTC) and available transfer capability (ATC) for the import or export of electricity by the State. TTC and ATC shall be revised from time to time based on the commissioning of new elements and other grid conditions and shall be published on SLDC website with all the assumptions and limiting constraints; (b) planned outage assessment; (c) special scenario assessment; (d) system protection scheme assessment; (e) natural disaster assessment; and (f) any other study relevant in operational scenario.
33.4	RLDCs and NLDC	RLDCs and NLDC shall perform day-ahead, weekly, monthly and yearly operational studies for: (a) assessment of TTC and ATC at inter-regional, intra-regional, and inter-state levels; (b) planned outage assessment; (c) special scenario assessment; (d) system protection scheme assessment; (e) natural disaster assessment; and (f) any other study relevant to operational scenarios
33.5	RLDCs	RLDC shall assess intra-regional and inter-state level TTC and ATC and submit them to NLDC. NLDC shall declare TTC and ATC for import or export of electricity between regions including simultaneous import or export capability for a region, and crossborder interconnections 11 (Eleven) months in advance for each month on a rolling basis.
33.6	RLDCs	Operational planning study shall be done to assess whether the planned operations shall result in deviations from any of the system operational limits defined under these regulations and applicable CEA Standards. The deviations, if any, shall be reviewed in the monthly operational meeting of RPC and significant deviations shall be monitored by RPC for early resolution.
33.7	NLDC, RLDCs, RPCs and SLDCs	NLDC, RLDCs, RPCs and SLDCs shall maintain records of the completed operational planning study, including date specific power flow study results, the operational plan and minutes of meetings on operational study.
33.8	NLDC, RLDCs, RPCs and SLDCs	NLDC, RLDCs, RPCs and SLDCs shall have operating plans to address potential deviations from system operational limit identified as a result of the operational planning study.
33.9	SLDCs	Each SLDC shall undertake a study on the impact of new elements to be commissioned in the intra-state system in the next six (6) months on the TTC and ATC for the State and share the results of the studies with RLDC

33.10	RLDCs	Each RLDC shall undertake a study on the impact of new elements to be commissioned in the next six (6) months in (a) the ISTS of the region and (b) the intrastate system on the inter-state system and share the results of the studies with NLDC
33.11	NLDC	NLDC shall undertake study on the impact of new elements to be commissioned in the next six (6) months in (a) inter-regional system, (b) cross-border link and (c) intraregional system on the inter-regional system.
33.12	NLDC, RLDCs and SLDCs	NLDC, RLDCs and SLDCs shall compare the results of the studies of the impact of new elements on the system and transfer capability addition with those of the interconnection and planning studies by CTU and STUs
33.13	concerned user or SLDC or RLDC or NLDC	Defense mechanisms like system protection scheme, load-rejection scheme, generation run-back, islanding scheme or any other scheme for system security shall be proposed by the concerned user or SLDC or RLDC or NLDC and shall be deployed as finalized by the respective RPC

RA data submission by SLDCs (Feb 2025)

State/Entity	Day Ahead (2025-26)	Week Ahead	Month Ahead (Mar 2025)	Year-Ahead
Punjab	As per Format	As per Format	Not received	Not received
Haryana	Demand and Resource not as per format	Not received	Not received	Not received
Delhi	As per Format	As per Format	As per Format	Only Demand
Rajasthan	As per Format	Not received	Not received	Not received
Uttar Pradesh	As per Format	Only Demand	Only Demand	Only Demand
Uttarakhand	Demand and Resource not as per format	Only Demand	Not received	Not received
Himachal Pradesh	As per Format	As per Format	As per Format	As per Format
J&K and Ladakh (UT)	As per Format	Not received	As per Format	Not received
Chandigarh (UT)	As per Format	As per Format	Not received	Not received

Annexure-XIX

सत्यमेव जयते

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

विषय: Minutes of the meeting to discuss opening of 400kV Singrauli-Anpara line as per decision of NRPCTP and shifting of Rihand-III to NR for enhancement of WR-NR transfer capability reg.

Kindly find attached minutes of the meeting held on **09.07.2024 (03:00 PM)** to discuss opening of 400kV Singrauli-Anpara line as per decision of NRPCTP and shifting of Rihand-III to NR for enhancement of WR-NR transfer capability.

Encl: As above

Signed by Dharmendra Kumar Meena
Date: 24-07-2024 13:22:02

(डी. के. मीना)
अधीक्षण अभियंता (प्रचालन)

सेवा में,

As per list of participants attached

Minutes of the meeting held on 09.07.2024 (15:00 HRS) to discuss opening of 400kV Singrauli-Anpara line as per decision of NRPCTP and shifting of Rihand-III to NR for enhancement of WR-NR transfer capability

MS NRPC welcomed all the participants and stated that the issue was discussed in 50th TCC & 74th NRPC meetings recently held in Raipur. In the meeting, UP SLDC and UPRVUN expressed concern regarding possibility of major grid event in case of multiple element outage (N-2/N-3) in UP Control area. Further, NTPC expressed concern on healthiness of bus coupler at Rihand and also stated it would increase stress on Stage-1 & 2 switchyard equipments. Accordingly, forum decided that joint meeting would be convened with participants from NRPC, WRPC, CEA-PSPA I, CTUIL, NRLDC, WRLDC, NLDC, NTPC, POWERGRID, UP SLDC, UPPTCL, UPRVUN and Lanco Anpara. List of participants is attached as Annexure-A.

1. MS NRPC asked NRLDC representative to present the proposal from Grid-India (NRLDC) side.

2. NRLDC representative stated that as per the recommendations of the 1st Meeting of Northern Regional Power Committee (Transmission Planning) (NRPCTP) held on 24.01.2020, 400 kV Singrauli – Anpara has to be opened to control the high fault levels in Anpara – Singrauli – Rihand complex.

3. Extract from the MoM were presented in the meeting.

6.13. After deliberations, following was agreed:

(i) The transmission system for evacuation of power from Singrauli III:

I. LILO of both circuits of Tie line (Vindhyachal Stage-IV to Vindhyachal Stage-V 400kV D/C Twin Moose line) at Singrauli Stage-III- under the scope of NTPC.

II. Reconductoring of Singrauli Stage-III - Vindhyachal stage-IV 400 kV D/C TM line (formed after above proposed LILO) with HTLS conductor - under the scope of NTPC

III. Singrauli-III–Rihand-III 400kV D/c line- under ISTS scope

IV. 2x125 MVAR Bus Reactor at Singrauli-III generation switchyard- under scope of NTPC

(ii) Singrauli- Anpara 400 kV line will be kept normally open (can be closed in emergency conditions) after commissioning of Anpara D –Unnao 765kV line to restrict high short circuit level in Singrauli-Anpara complex.

(iii) The short circuit level in Singrauli will again be studied by CEA and CTU and accordingly, would be discussed in the next NRPCTP meeting.

The above scheme may also be rectified in next NRPCTP meeting.

- It was mentioned that 765kV Anpara D- Unnao line was charged after LILO at Obra C on 19.04.2023.

Subsequently, a meeting was convened on 10.07.2023 between NLDC, NRLDC and UP SLDC for discussion on opening of 400kV Singrauli-Anpara and other measures for controlling loading of 765kv Vindhyachal-Varanasi D/C. In the meeting, it was discussed that NRLDC & SLDC - UP to conduct a study to observe the impact of opening 400 kV Singrauli – Anpara and SOP to be prepared for opening of the line as well as for scenarios in which line is to be closed in real

time. Further, the matter shall be discussed in OCC meeting for consultation with all stakeholders. The agenda was then discussed in 210, 211 & 212 NR-OCC meetings.

- After discussions in 210, 211 and 212 OCC meetings; in 212 OCC meeting, it was agreed that as requested by UP, 400 kV Anpara-Singrauli line should remain in service till commissioning of 2X1000 MVA ICTs at Obra C and revised SPS for Anpara Complex is commissioned. Thereafter, the line may be opened after discussion at OCC level.
- During the same meeting, interim SPS for Anpara complex was approved by OCC forum. In the meeting, it was also informed that interim SPS logic was approved considering that logic approved in 209 OCC would take 6-8 months for implementation. It was informed from UP side that no time is required for interim SPS implementation.
- At the time of discussion in 212th OCC meeting held in October 2023, NR import had reduced considerably and it was informed that 2X1000 MVA ICTs at Obra C would also be commissioned shortly. Therefore, opening of 400kV Anpara-Singrauli was linked with commissioning of 2X1000 MVA ICTs at Obra C as winter was approaching and fog related tripping were also suspected.
- Subsequently, the matter was also discussed in first meeting of Standing Committee on Short Term & Perspective Power System Planning- Northern Region (SCSTPPSP-NR) held on 14.03.2024 at NRPC, New Delhi. In the meeting, it was recorded that

  "*During the meeting, UPPTCL representative informed that the 765/400 kV ICTs at Obra C are expected to be charged this summer (one in April and another in June) along with associated 400 kV lines from Obra C. This is expected to provide relief in the complex*"
- However, due to delay in commissioning of 765/400kV ICTs at Obra C and high loadings of 765 kV Vindhyachal-Varanasi-D/c during high NR import, the agenda for opening of 400 kV Anpara-Singrauli line needs to be deliberated again.

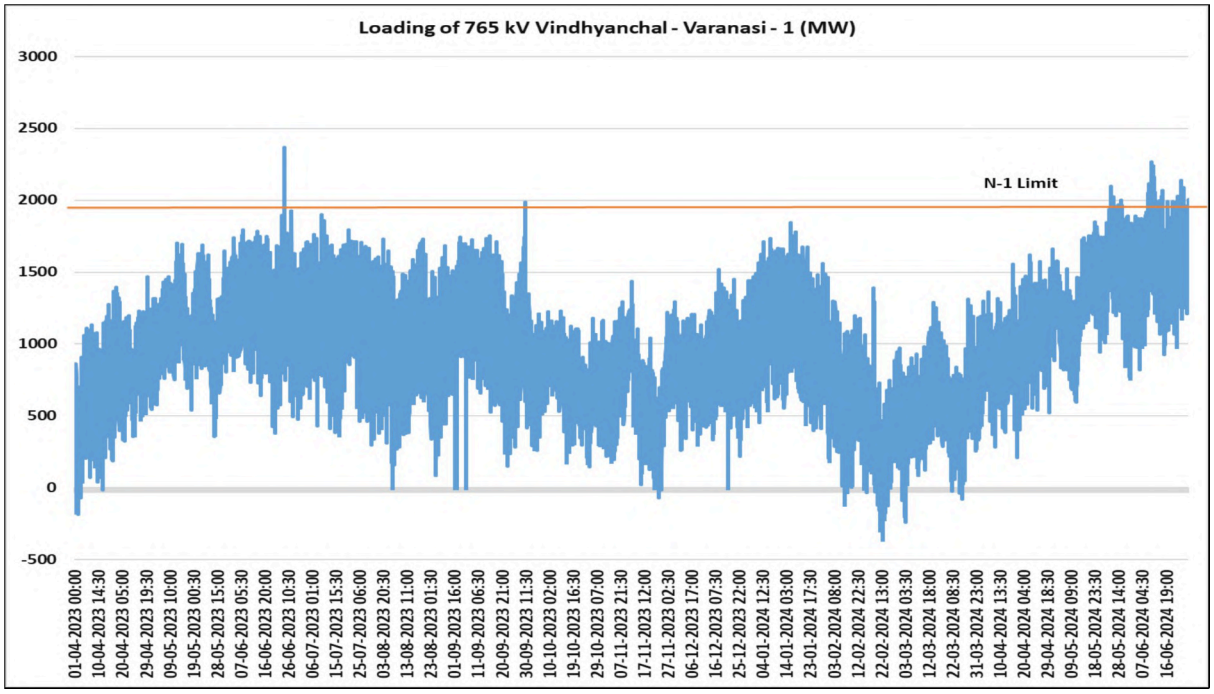
  With opening of 400kV Singrauli-Anpara line, following relief in 3-ph fault levels would be achieved:

  - 400kV Singrauli by 16kA (below 40kA)
  - 400kV Anpara by 14kA (below 40kA)
  - 400kV Anpara C by 13kA (below 40kA)
  - 400kV Anpara D by 11kA (below 40kA)
  - 400kV Rihand by 5kA (below 40kA)

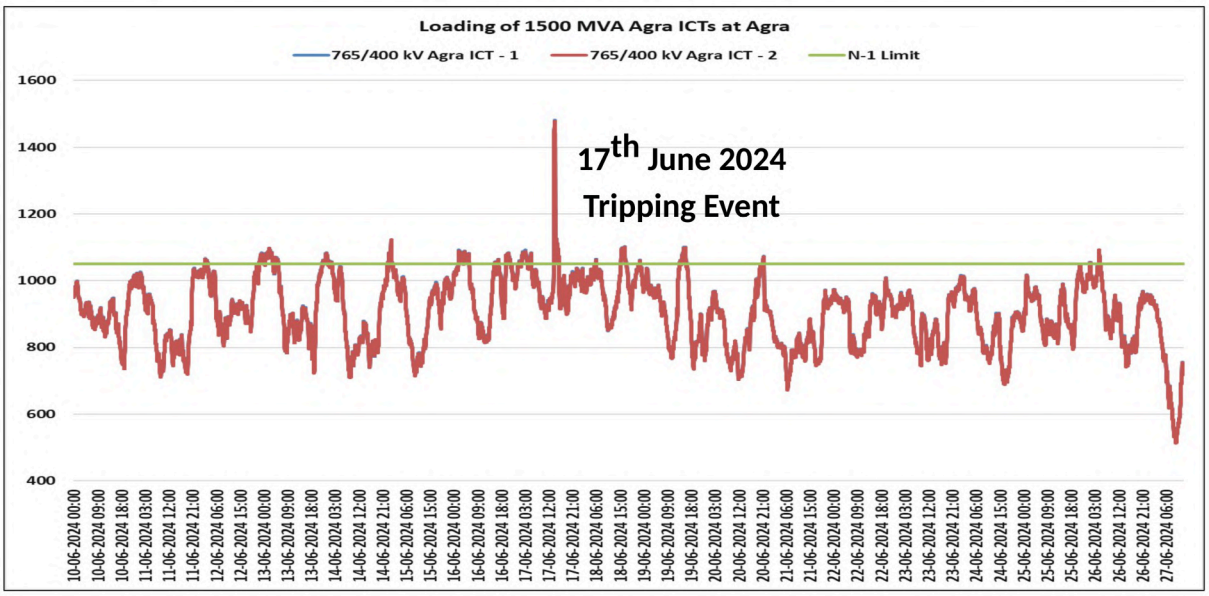
  This was the reason line is to be opened as discussed in 1 NRPCTP meeting. Opening of 400kV Anpara-Singrauli would also facilitate shifting of Rihand-III generation to NR and removing direct connection from Vindhyachal Pool in WR.
- It was informed from NRLDC side that since last year, Northern Region (NR) is experiencing a significant increase in power demand, particularly during non-solar hours in summer months. The Northern Regional import from neighboring regions (WR and ER) has also increased and the transfer capability limit (TTC/ATC) between the Western Region (WR) and Northern Region (NR) is getting breached on regular basis.

- The loading on the 765 kV Vindhyachal-Varanasi D/C remains on the higher side (N-1 non-compliance also observed on few occasions) for significant period of the time.

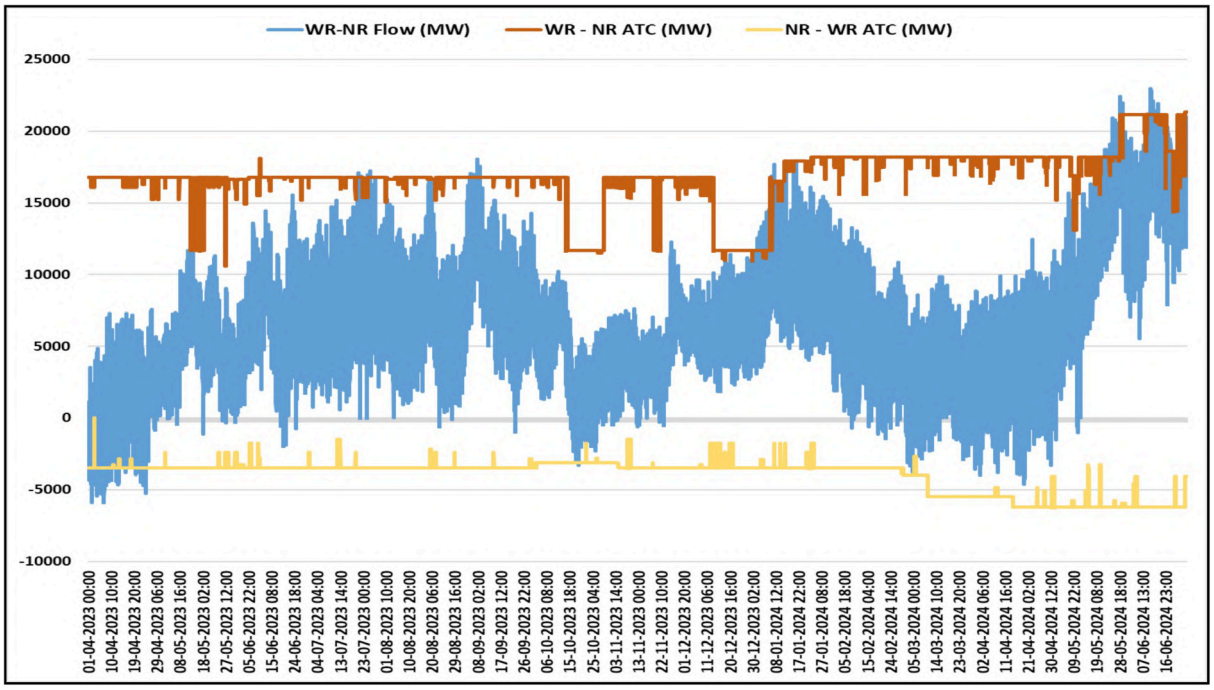
- Violation of WR-NR ATC and request to remain within schedule has also been communicated from NRLDC side to NR states in real-time through mail as well as through written communication. Violations of import transfer capability limits are also being highlighted by NLDC in real-time and congestion warning messages are also being issued in real-time.



High loading, beyond N-1 limits of 765kV Vindhyachal-Varanasi D/C lines



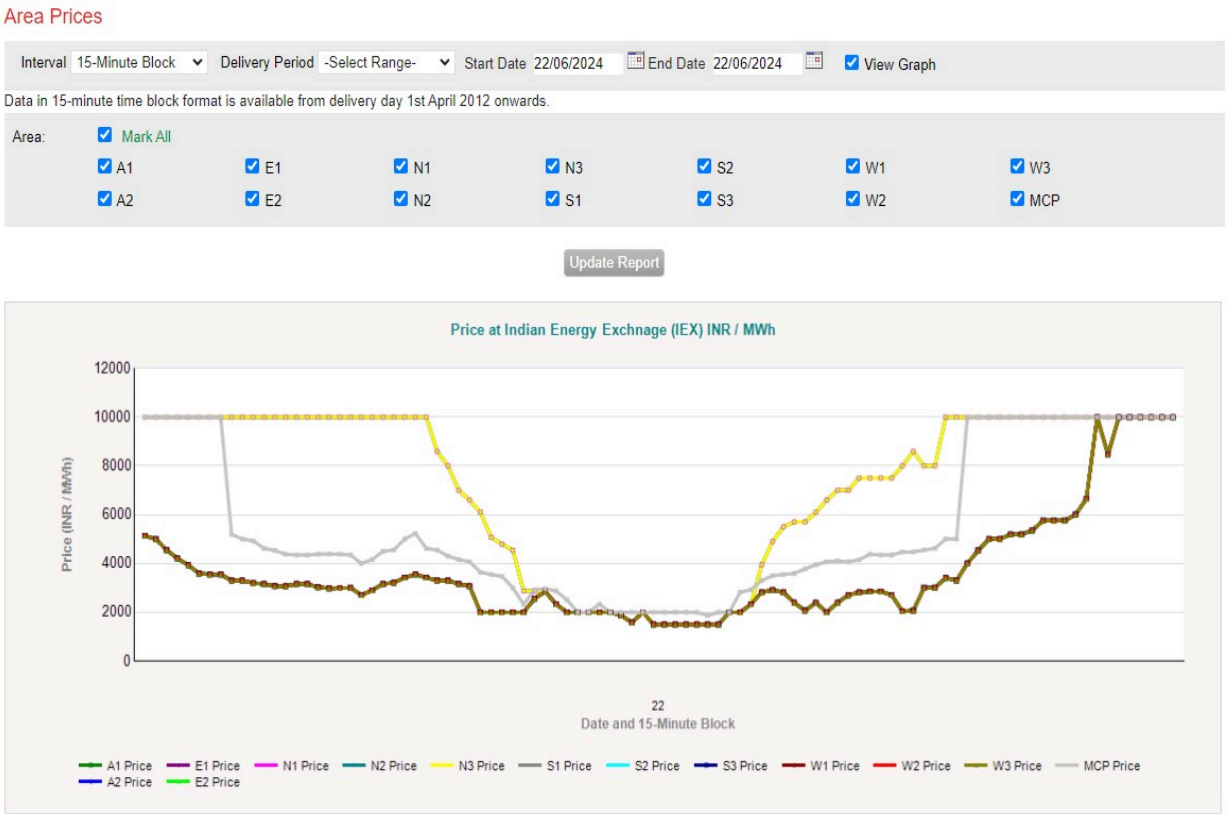
High loading, beyond N-1 limits of 765/400kV 2*1500MVA Agra(PG) ICTs for 09-27 June 2024



Violations of WR-NR ATC/TTC for 09-24 June 2024

WR-NR ATC violations in real-time may endanger the reliability of NR grid as a whole.

Due to the limit of power transfer from WR to NR, market splitting is being observed in real-time i.e. market prices in NR is higher than rest of the country due to congestion. Market area prices for two sample days i.e. 22Jun and 23Jun 2024 were presented in the meeting. Sample plot for 22Jun 2024 is shown below:

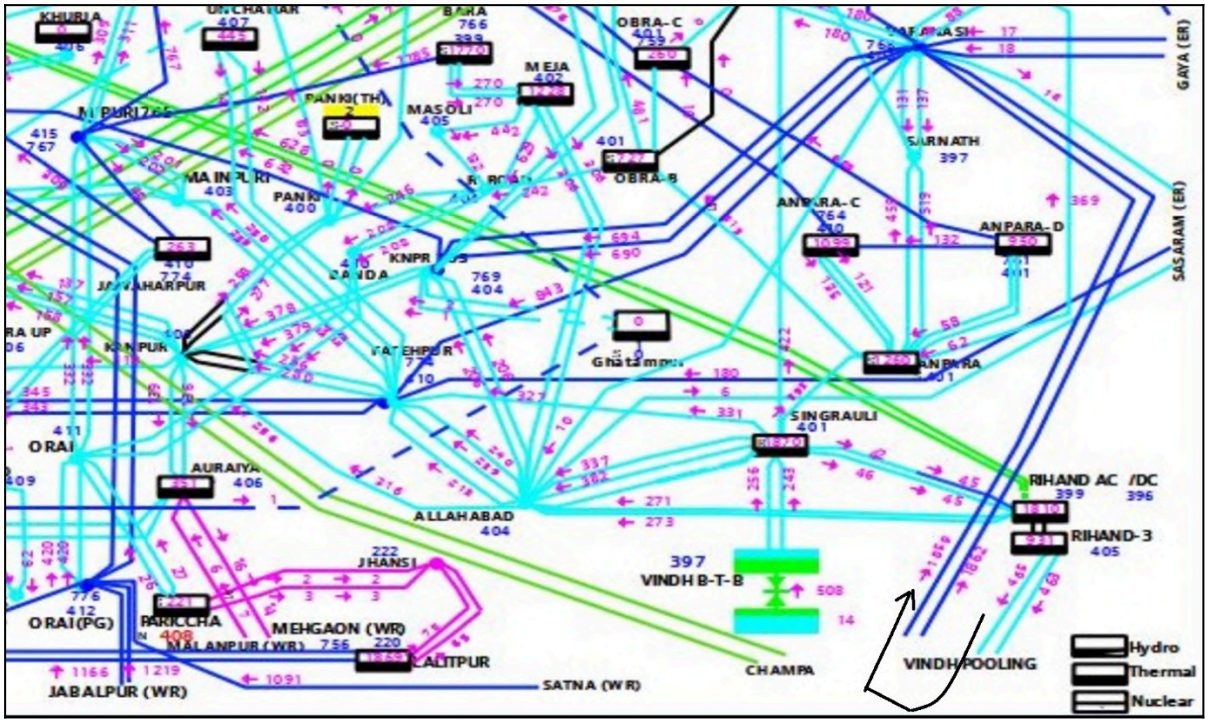


- In order to address the critical loading of 765 kV Vindhyachal – Varanasi D/C during high NR Import, power order of inter-regional and intra-regional HVDC links are being controlled from NLDC side. Following actions are being taken in real-time

  - HVDC Agra-BNC (towards BNC) is operated at higher power order. However, the same leads to high loading in intra-regional lines in ER
  - Operation HVDC Vindhyachal in WR – NR direction. The same leads to high loading of 400 kV Anpara – Obra S/C
  - Operation of HVDC Balia – Bhiwadi is done from Bhiwadi to Balia. The same leads to high loading of 400 kV Balia – Mau S/c
  - Reduction in the power order of HVDC Rihand is explored. This leads to due to high loading of 400 KV Singrauli-Anpara & 400 KV Anpara-Obra-S/C and is against the power flow pattern.
  - HVDC Champa – Kurukshetra is operated at Maximum order towards NR. Reliability Issues were observed with the operation of HVDC Champa – Kurukshetra Bipole (more than 30 tripping incidents of since Jan 2024).
  - On 17th Jun 2024 at 1353 hrs, all four poles of HVDC Champa-Kurukshetra tripped while carrying total power flow of 4500 MW. The simultaneous outage of all four poles of HVDC resulted in voltage dip in all 3-phases of AC system across all stations of northern region (400 kV Kurukshetra station phase to ground AC voltage reduced to 178 kV in all 3-phases as per PMU) which resulted in sharp reduction of around 16,500 MW in Northern Region demand.
  - Congestion management through AGC/TRAS is also being explored by rescheduling of generation in other regions.

Only after exploring all other options, this proposal for interim shifting of Rihand-III to NR has been studied and brought out for discussion.

- It was deliberated that in case of shifting of Rihand-III generation to NR and disconnection from Vindhyachal Pool in WR, power of Rihand-III generators which is getting evacuated through Vindhyachal and again being pooled to NR through 765kV Vindhyachal-Varanasi D/C line would directly be evacuated to NR from Rihand. This may help NR to import more power from WR-NR path and violations of WR-NR ATC and NR simultaneous import ATC could be minimised.



Network diagram showing power of Rihand-III evacuated to Vindhyachal Pool and again flowing to NR through 765kV Vindhyachal-Varanasi D/C lines

- Transmission System associated with Rihand-III (1000MW) generation projects of NTPC were approved in 29th WR-SCM on 10.09.2009. Approved transmission system of Rihand-III was planned towards WR side by 400kV Rihand-III – Vindhyachal D/C lines. However, as the line commissioning was delayed and HVDC Champa-Kurukshetra bipole was not commissioned, for the benefit of NR states it was agreed that Rihand-III may be evacuated directly through NR Grid till commissioning of HVDC Champa-Kurukshetra bipole. Same was also discussed in 31st TCC & 35th NRPC Meetings held on 8th and 9th July, 2015.
- After operation of HVDC Champa-Kurukshetra bipole since Sep 2017, Rihand-III was shifted to its original planned transmission system in November 2017 and its generation is getting evacuated through WR since then.

  No major issues were observed in NR import till previous year as HVDC Champa-Kurukhsetra bipoles were commissioned, subsequently, 765kV Vindhyachal-Varanasi D/C lines were also commissioned to increase transfer capability limits from WR to NR.
- At present, Rihand stage-III generating station (2x500 MW) is evacuated through Western Region via 400 KV Rihand stage-III- Vindhyachal PS D/C. Further, the station is disconnected from NR by keeping the bus coupler between Rihand-III and Rihand-I&II open. Shifting of Rihand stage-III generating station (2x500 MW) to NR by closing the bus coupler between Rihand-III and Rihand-I & II and disconnecting Rihand-III from WR by opening 400 kV Rihand stage-III - Vindhyachal PS D/C as an interim measure is proposed.

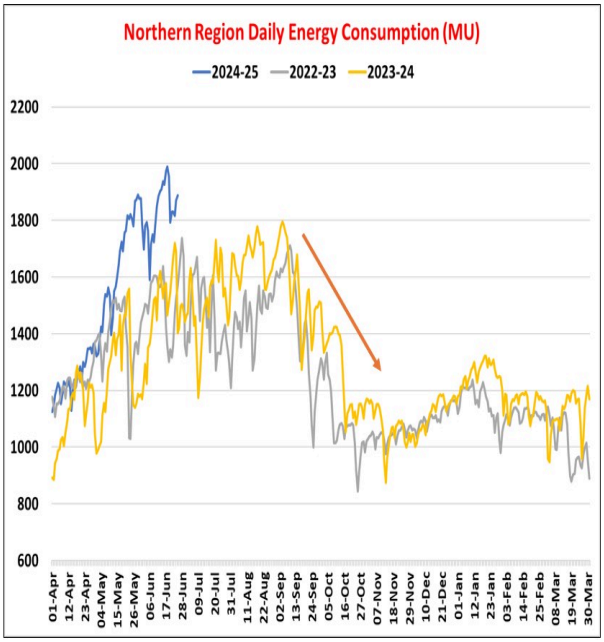
- As per the system studies carried out by NRLDC and NLDC, the system is n-1 secure with the above reconfiguration. The fault levels of stations in the generation complex

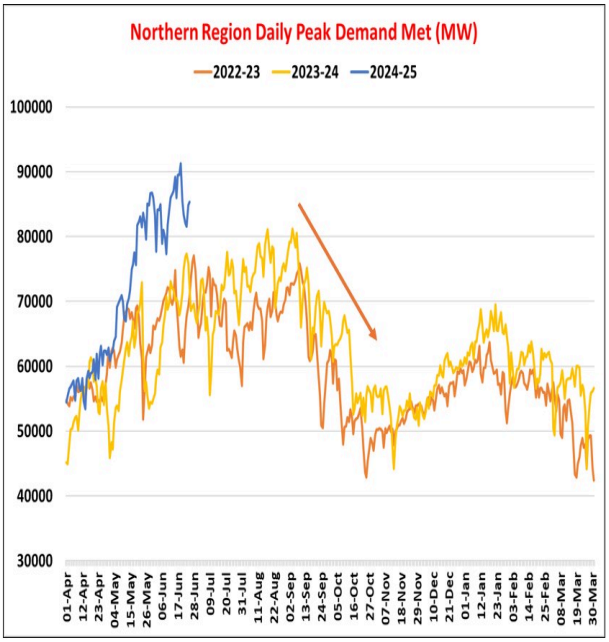
are also getting reduced to values within CEA Regulations, with the proposed arrangement. There would be a relief of ~250 MW in loading of each circuit of 765 kV Vindhyachal - Varanasi D/C and the increment in WR-NR TTC/ATC after the implementation of proposed rearrangement is expected to be of the order of ~1300 MW.

- NRLDC representative mentioned that Rihand-III was evacuated through NR from 2013-14 to Nov 2017 till commissioning of Champa-Kurukshetra HVDC. Moreover, one 400kV line i.e. 400kV Singrauli-Allahabad ckt3 has also been commissioned thereafter without any increase in generation capacity.
- It was also mentioned that NR demand is continuously on the higher side. CEA LGBR for 2024-25 mentions that demand in Jun-Jul is likely to be in range of 86GW whereas for Aug-Sep it may cross 90GW. However, NR demand had already crossed 91.2GW in Jun'2024 and may again be more than 90GW for the next 2-3 months. Extract from CEA's LGBR report is shown below:

Region/ State/ UTs	Peak Dema					
	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24
Chandigarh	288	361	428	391	457	444
Delhi	6,324	7,344	8,109	8,160	7,475	7,423
Haryana	10,598	11,388	14,573	14,547	14,066	14,164
Himachal Pradesh	1,900	1,788	1,842	1,865	1,879	1,918
Jammu & Kashmir	3,169	3,069	3,121	3,115	3,269	3,485
Punjab	8,935	12,557	16,378	16,265	16,686	16,357
Rajasthan	14,994	17,952	17,238	15,504	19,342	17,878
Uttar Pradesh	25,379	28,291	29,853	30,581	31,585	31,917
Uttarakhand	2,470	2,497	2,752	2,493	2,544	2,515
Northern Region	**67,648**	**77,992**	**86,623**	**86,392**	**90,612**	**89,659**

- NR energy consumption and demand pattern were also presented in the meeting. It was mentioned that NR demand remains on the higher side for Jun-Sep months and is on relatively lower side for rest of the year. Accordingly, high drawl from WR to NR is only for period of Jun-Sep. Rihand-III rearrangement is temporary arrangement and may be reversed in the month of Oct'2024.





4. **MS NRPC** summarized the advantages of the proposal discussed:

a. Approx. 250 MW loading relief in each circuit of 765 kV Vindhyachal - Varanasi D/C.

b. Increment in WR-NR TTC/ATC figure by around 1300 MW

c. Reduction in the fault level of 400 kV Rihand, Singrauli, Anpara and nearby substations.

d. Relief in loading on the 400 kV Anpara-Obra line allowing flexible operation of the HVDC B2B Vindhyachal.

However, some concerns were received from UP SLDC, UPRVUN and NTPC. He asked all other participants to provide comments from their side.

5. Detailed comments received from **UP SLDC** are attached as **Annexure-I**. During the meeting, UP SLDC representative stated that proposal seems to be in order in general, however following are few comments:

- N-1 non-compliance of 400/220kV Allahabad(PG) ICTs
- Event of 05.09.2023 was described. Detailed comments in Annexure-I.
- Incase of low generation at Obra B, 400kV Anpara-Obra may be overloaded even incase of N-1 contingency
- Incase of requirement of closing of 400kV Singrauli-Anpara line, generation in both generation complex needs to be monitored before closing the line, as with connection of Rihand-III to NR, even after outage of 765kV line from AnparaC/AnparaD, flow may be from Singrauli to Anpara, after the line is closed.
- Revised SPS for Anpara complex which was in principle approved in 50 TCC 74 NRPC meeting is likely to be implemented by 31st July 2024.
- Protection related issues have been observed in substations in the complex such as 400kV Anpara, 400kV Obra, 400kV Mau, 400kV Sarnath etc. Self-audit may be carried out by UPPTCL and UPRVUNL at these substations in the complex at the earliest.

6. Detailed comments received from **NTPC** are attached as **Annexure-II**. During the meeting, NTPC representative stated that:

- No issue in normal conditions when all elements in service
- In case of tripping of HVDC pole, line loading is higher than Surge Impedance loading
- SPS is implemented for Rihand-Dadri HVDC, which may have to be reviewed incase of proposed rearrangement
- Availing shutdowns with such arrangement would become difficult as with present arrangement itself shutdowns are denied on number of occasions
- Frequent hotspots have been observed in past in Stage-I equipments, which may further aggravate.
- Bus coupler which is proposed to be charged for connecting Rihand-III to Rihand-I/Rihand-II has not been in service since last six years. Testing would need to be carried out before operation of bus coupler.
- Rihand Stage-1 repair & maintenance works are in progress. There would be difficulty in getting shutdown from NRLDC/NRPC with proposed rearrangement.

7. **Obra-C** representative stated that 765/400kV ICT-1 at Obra is expected to be charged by 31st July and ICT-2 is expected to be charged by December 2024.

8. Detailed comments received from **CTUIL** are attached as **Annexure-III**. During the meeting, CTUIL representative stated that:

   - Proposal seems to be ok in general as it is a temporary proposal
   - Issues related to high loading of transmission line in N-1 case will not be significant as safe rating for lines is being considered as thermal limit
   - N-1 non-compliance of Allahabad(PG) ICTs need to be attended
   - Scheme for 765kV Prayagraj and 765kV Robertsganj is also under planning at CTUIL level for enhancing WR-NR ATC/TTC limits

   CTUIL representative further enquired, what limit is being considered for 765kV Vindhyachal-Varanasi D/C by Grid-India for determining ATC/TTC limit.

9. **NLDC** representative stated that limit of 3000MW for each ckt of 765kV Vindhyachal-Varanasi D/C has been considered as per written submission by POWERGRID. Since these are inter-regional lines which are heavily loaded during high NR import, it is important that all precautions are taken to ensure the reliable operation of these lines. Further, under N-1-1 contingency in these lines during high NR import, angular difference is crossing 35 degrees as per simulation based studies and in such case it may not be possible to charge the line given high standing phase angle. Further, the terminating stations of these lines are near large generation complexes where any transient stability issue may aggravate the contingency.

10. **WRPC and WRLDC** representatives stated that network constraints are not envisaged, and loading on the 765 kV Vindhyachal(PS)-Varanasi-D/c is reduced with the proposed interim arrangement.

    Protection relay settings at Vindhyachal (PS) and adjacent stations are to be reviewed with the proposed arrangement. This will be coordinated with all utilities after information about Rihand-III shifting is received from NRLDC on a D-2 basis.

11. **CEA-PSPA I** representative stated that the proposal seems to be ok in general as it is temporary proposal.

12. **Anpara Thermal** representative stated that under N-1-1/N-2 contingency, loading of 400kV Anpara-Obra line would be very high and the line is very old. Accordingly, revised SPS logic of Anpara complex may be implemented before the proposed rearrangement.

13. **POWERGRID** representative stated that new 400/220kV 500MVA ICT at Allahabad(PG) is expected by Feb'2025. SPS approved in 220 OCC meeting is likely to be implemented by 25th July 2024 at Allahabad(PG). It was also mentioned that loading beyond N-1 limit is also observed at other substations such as Mainpuri(PG), Gorakhpur(PG), Agra(PG) and Lucknow(PG). POWERGRID representative requested for deemed availability of 400kV Singrauli-Anpara line incase same is kept out for controlling the fault level.

14. NRLDC representative provided following comments on various inputs received:

- Rihand-III generation was evacuated through NR till Nov'2017. Additional line i.e. 400kV Singrauli-Allahabad ckt3 has been commissioned in the complex after Nov'2017 without any generation capacity addition.
- SOP/ Ready reckoner would be prepared for closing of 400kV Singrauli-Anpara line and will be discussed with all stakeholders which shall be used in real-time by all control rooms.
- System is being planned for N-1 contingency and all members mentioned that system would be N-1 compliant except 400/220kV Allahabad(PG) ICTs. For taking care of N-2 contingency, SPS needs to be implemented by UPPTCL at the earliest for Anpara complex.
- Deemed availability of 400kV Singrauli-Anpara shall be provided as the line would be kept charged from one end.
- Loading of 400/220kV ICTs is beyond N-1 limits at number of substations in UP state including Allahabad(PG), such as Lucknow(PG), Agra(PG), Obra etc.
- It was suggested to manage loading of 400/220kV Allahabad(PG) by shifting some load to 400kV RewaRoad(UP) and also to 400/220kV Obra(UP). SPS is already in service at 400/220kV Obra. 220kV Allahabad(PG)-RewaRoad D/C may be opened in case of requirement, as same is already proposed to be wired in SPS logic of 400/220kV Allahabad(PG) ICTs. Same may be implemented after studies by UP SLDC.
- Vindhyachal Btb towards NR may not be required if Rihand-III is shifted towards NR as loadings in WR side would reduce. Flow on Btb shall be decided as per real-time conditions
- NRLDC would provide shutdowns as per the prevailing grid conditions. Due to high generation in complex, it is recommended that shutdown activities are planned during lean season (except for emergency shutdowns)
- Time and required shutdowns shall be provided for testing of bus coupler bay equipments connecting Rihand-II and Rihand-III before rearrangement
- SPS for Rihand-Dadri implemented takes care of severe contingency. Further, incase after SPS operation, margin is available in transmission system, SPS may be disabled and generation may be ramped back to higher level after consultation with NRLDC.
- Meters are available in Rihand-III bus coupler bay as per NRLDC records. NTPC Rihand may separately communicate to NRLDC in case of any issues in energy meters in bus coupler bay
- D/C line outage to Allahabad is very rare contingency (in which limitation of 2kA may arise). Further, in case of planned/emergency shutdown of double ckt lines generation would also be backed down.
- Further as discussed in 50th TCC and 74th NRPC meeting, if required Rihand-III can be shifted back to WR on seasonal basis i.e.
    - Rihand-III connected to NR: May-Sep
    - Rihand-III connected to WR: Rest of the months

15. ***After detailed deliberations, all members agreed that:***

a) ***Following works are in pipeline which are expected to be completed by 31st July 2024 and would facilitate opening of 400kV Singrauli-Anpara line as per decision of 1 NRPCTP and shifting of Rihand-III to NR for enhancement of WR-NR transfer capability :***

- ***Testing of equipments of bus coupler bay connecting Rihand-II and Rihand-III by NTPC***
- ***SPS implementation at 400/220kV Allahabad(PG) by POWERGRID***
- ***SPS implementation in Anpara complex by UPPTCL***
- ***Commissioning of one 765/400kV ICT at Obra C***

b) ***As it has been observed that there has been significant delay w.r.t commitments made for some of the works at s.no.1, opening of 400kV Singrauli-Anpara line to control fault levels and shifting of Rihand-III to NR for enhancement of WR-NR transfer capability would be implemented as temporary measure in first week of August without further deliberations.***

c) ***Above rearrangement of Rihand-III would be reversed to original configuration (Rihand-III back to WR) in October 2024. 400kV Singrauli-Anpara would continue to be kept opened as it is being opened to control fault levels in the complex.***

d) ***Protection settings/CEA safety clearances to be coordinated before first time charging of the proposed rearrangement.***

e) ***Weekly report to be submitted by UPPTCL/POWERGRID/NTPC/ObraC for points listed in S.no.1***

f) ***SOP to be prepared by NRLDC/NLDC for shifting of Rihand-III generation to NR***

g) ***SOP/ready reckoner to be prepared by NRLDC and UP SLDC for switching operation of 400kV Singrauli-Anpara as per requirement.***

Meeting ended with vote of thanks to the Chair.

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Annexure-A

List of participants of the meeting held on 09.07.2024 (15:00 HRS) to discuss opening of 400kV Singrauli-Anpara line as per decision of 1 NRPCTP and shifting of Rihand-III to NR for enhancement of WR-NR transfer capability:

S. No.	Name	Organisation
1	V. K. Singh	NRPC
2	Dharmendra Meena	NRPC
3	Omkishore	NRPC
4	P.D. Lone	WRPC
5	Nitin Deswal	CEA, PSPA-I
6	Kashish Bhambhani	CTUIL
7	Pratyush	CTUIL
8	Sandeep Kumawat	CTUIL
9	Venky Minnakuri	WRLDC
10	Somara Lakra	NRLDC
11	Mahavir Prasad Singh	NRLDC
12	BR Meena	NRLDC
13	Kamaldeep	NRLDC
14	Gaurav Singh	NRLDC
15	Gaurav Malviya	NRLDC
16	Rahul Shukla	NLDC
17	Priyam Jain	NLDC
18	Raj Kishan	NLDC
19	Gaurab Dash	NLDC
20	Parimal Piyush	NTPC
21	Hitesh Rastogi	NTPC
22	Subodh Kumar Sudhakar	NTPC
23	Abhishek Khanna	NTPC
24	BS Jena	NTPC
25	Ashish Kumar Singh	POWERGRID
26	A J Siddique	UP SLDC
27	Ram Sharan Singh	UP SLDC
28	Mohsin Khan	UP SLDC
29	Sunil Kumar	Obra
30	Manoj Prasad	Anpara TPS
31	Sujeet Singh	Anpara C
32	ETD-III, Varanasi	UPPTCL
33	EE, TNC, Azamgarh	UPPTCL
34	EET& CD-1, Varanasi	UPPTCL
35	EE TNC-2, Varanasi	UPPTCL
36	SE, T&C Gorakhpur	UPPTCL
37	SE, ETC, Mirzapur	UPPTCL

Comments received from Anpara D

Regarding issues arrived in case of permanent opening of 400kV Anpara- Singrauli transmission line.

ee emcd_7.dtps.anpara <ee.emcd_7.dtps.anpara@uprvunl.org>

Reply all

Sat 06-07-2024 16:44

To: seo-nrpc@nic.in

Cc: omkishor.sahu@gov.in; Gaurav Malviya (गौरव मालवीय); cgm anpara <cgm.anpara@uprvunl.org>; gm dtps.anpara <gm.dtps.anpara@uprvunl.org>; se ecc.dtps.anpara <se.ecc.dtps.anpara@uprvunl.org>; cgm.to@uprvunp.org

R/Sir,

Issues arrived in case of permanent opening of 400kV Anpara- Singrauli transmission line.

1. At present, during tripping of 765kV Anpara-Obra C line, 765kV Anpara-Unnao line and other 400kV lines emanating from A/BTPS, Power evacuation takes place through other lines along with 400kV Anpara- Singrauli line. In case of permanent opening of this line, it will lead to overloading of 400kV Anpara-Obra B line, which further causes the tripping of this line due to overload breakdown and may result to the permanent blackout of Anpara generation complex.
2. Till charging of ICTs at Obra CTPS (1 no will commissioned in July-24 and other in Dec-24), it is proposed that 400kV Anpara-Singrauli line may kept in service for the Grid stability and healthiness of Anpara generation complex.

In case it becomes mandatory to open the 400kV Anpara B-Singrauli line, then kindly consider the following for the safest evacuation of power from Anpara complex stability of Grid.

1. Implementation of opening of 400kV Anpara B- Singrauli line may be done after commissioning of both ICT at Obra C (1st in July 24 and 2nd in Dec-24).
2. Theft charging of 400kV Anpara B- Singrauli line may be done from Singrauli side, and it kept ready for synchronization from Anpara B end and synchronization may be done from Anpara B end after intimating to Singrauli through telephone or mail during multiple contingencies at Anpara/Obra region WITHOUT TAKING THE CODE FROM SLDC/NRLDC for Grid stability and safe power evacuation.
3. In case CODE is mandatory the it should be provided from SLDC/NRLDC within 5 minutes after intimation through telephone or mail.

Regards,

Manoj Kumar

Executive Engineer

Electrical Maintenance Division-III,
2X500MW,
'D' Thermal Power Station,
U.P. Rajya Vidyut Utpadan Nigam Ltd.
(A Government of U.P. Undertaking.)
Anpara, Sonebhadra-231225.

Mob: **9161028061, 9415903061,**
Web: **https//uprvunl.org.**
e-mail: ee.emcd_7.dtps.anpara@uprvunl.org

Comments received from Anpara

From: sera@upsldc.org
To: "Santosh Kumar" <seo-nrpc@nic.in>, "Omkishor" <omkishor.sahu@gov.in>
Sent: Saturday, July 6, 2024 4:45:11 PM
Subject: Fwd: comment on ANPARA-Singrauli line opening.

---------- Forwarded message ---------
From: **ee esmd.btps.anpara** <ee.esmd.btps.anpara@uprvunl.org>
Date: Sat, Jul 6, 2024 at 1:10 PM
Subject: comment on ANPARA-Singrauli line opening.
To: <sera@upsldc.org>
Cc: gm btps.anpara <gm.btps.anpara@uprvunl.org>, se omc_5.btps.anpara <se.omc_5.btps.anpara@uprvunl.org>

Dear sir,

As per study report on opening of 400 KV Singrauli (NT)-Anpara (UP) (PG)

1. Fault level of Anpara reduces from 54.7059 KA to 40.5746 KA
2.Also the opening of 400 KV SINGRAULI-ANPARA WILL RELIEVE THE LOADING OF 400 KV ANPARA-OBRA LINE.

But in case of tripping of 765 KV AnparaC-Unnao line and 765 KV Anpara D-Obra C line, loading on 400 KV Anpara-Obra line is more than 1250 MW with no ICT at Obra C TPS and In case of tripping of 765 KV AnparaC-Unnao line, load on Anpara- obra line will increase more than 900 MW.

Hence in view of above It is requested that
1. Anpara-obra line may be kept in open condition after commissioning of ICTs at OBRA C.
2.The line should be in charged condition from Singrauli end and OPEN FROM Anpara END and there should be provision/standing Instruction to charge the line with permission of SLDC in case of tripping of 765 KV lines.

With Regards:
MANOJ PRASAD

EE, EMD-III, BTPS
Anpara, Sonebhadra (U.P.)
Mob. No. 9415900610

Comments received from UP SLDC

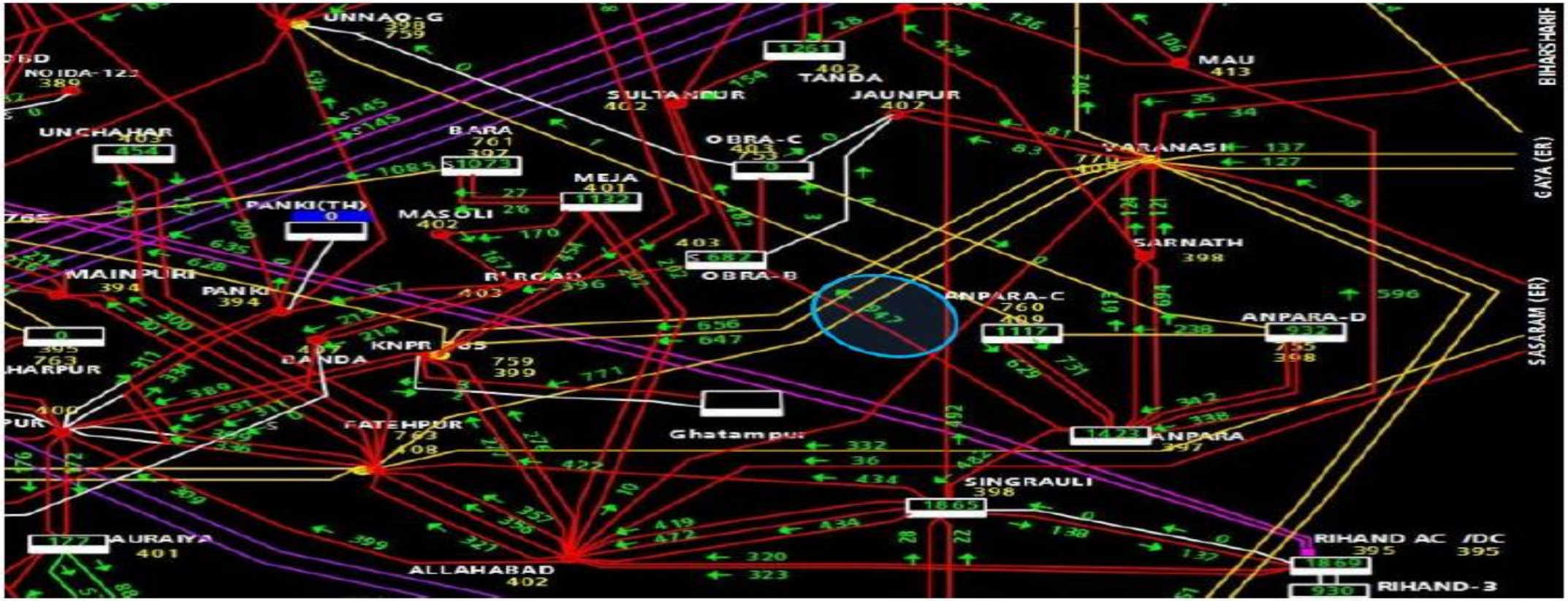
Comments from UPSLDC regarding opening of 400kV Anpara-Singrauli line

1) With the transfer of Rihand Stage-3 to NR and opening of 400kV Anpara-Singruali line, ICTs at 400kV Allahabad PG becomes N-1 non-Compliant. Also, flow on 400kV lines carrying power from Singrauli is more than 600MW.
2) Also Shifting of Rihand Stage-3 results into high loading of 400kV Anpara-Obra B line. Although opening of 400kV Anpara-Singruali provides relief on 400kV Anpara-Obra line but it compromises the reliability of Anpara Complex in the event of any contingency. Therefore, revised SPS should be implemented before shifting of Rihand Stage-3 from WR to NR.
3) Shifting of Rihand Stage-III form WR to NR may be done only after the commissioning of revised system protection scheme at Anpara Complex and SPS at 400kV Allahabad PG
4) As per Regulation 15(1) of IEGC, 2023 internal audit may be conducted at Anpara A, B, C, D, Obra B, Obra C, 765kV Unnao,400kV Sarnath and Mau.
5) In the event of single contingency of 765kV line in Anpara Complex, vinchayachal B-B flow should be from NR-WR (500MW) and 1000MW back down should be done in Rihand-Singruali complex. After ensuring such generation scenario 400kV Anpara-Singruali may be closed.

Cont. (Comments received from UP SLDC)

Event on 5 Sept, 2023

6) Due to the tripping of 765kV Anpara C-Unnao line and Obra C –Unnao line, loading on 400kV Anpara –Obra B line was 950MW. At that time there was no generation at Obra C TPS and flow on 400kV Anpara-Singruali was 450MW from Anpara –Singruali. In the absence of 400kV Anpara-Singruali line and full generation at Obra C TPS, the line loading on 400kV Anpara –Obra B might have crossed 1200MW. Under such condition probability of blackout incident at Anpara Complex is very high.



Comments received from NTPC

Rihand-III connected to NR. NTPC observations to the same are indicated below:

i) In the base case, Rihand-Dadri HVDC has been set to 1500MW and Singrauli-Vindhachal HVDC has been blocked. Under this situation evacuation from Rihand III + Rihand I/II + SingraulilI/II is N-1 compliant.

ii) However, in case of One pole outage of Rihand-Dadri HVDC, the loading to lines from Rihand and Singrauli exceeds SIL ratings.

iii) The HVDC also operates at reduced load of 300MW in ground return mode. This will further aggravate the load flow situation.

iv) It has been informed by WRLDC during connectivity discussions of singrauli-III that singrauli-Vindhyachal Back to Back is also used to import power to NR which will require additional evacuation upto 500MW.

v) Due to the problems associated with reliable transmission in AC system, SPS is implemented at Rihand end for DC load throw off >750 MW causes load reduction in stage-1 by 50 MW in each unit and Stage-2 by 100 MW in each unit. [total 300MW]

Such combined operation of stage-III with NR was being done earlier and Station Blackout happened on 18.05.2017 when HVDC was running at 750MW only.

Comments received from NTPC

Considering above NRLDC may please clarify on actual load flow situation after connection of Rihand-III to NR. It is further requested to consider HVDC pole outage and HVDC total outage as credible contingency during load flow study.

Further, NRLDC is also requested to confirm that NTPC shall be allowed shutdown for planned/scheduled maintenance under normal operating conditions. It is felt that Availing shutdown of lines and BUS for annual OH purpose will be very difficult under the proposed operation regimen.

- ***Recent case 1**: OH of 400 KV bus-3 shutdown planned on 7.6.2024 for bus side isolators Annual OH (OCC_219 against RQ no 177915) and same was denied on 06.06.2024 due as singrauli line-2 outage was on the same date.*
- ***Recent case 2:** request given for bus-3 shut down 08.06.2024, same got rejected again 07.06.2024 stating reason as "**in view of high All India demand (crunch period) as in case of N-1 of Bus 4, unit 3 & 4 will trip**"*

Comments received from NTPC

4) As per Rihand switchyard layout, Singrauli line-I/II and HVDC feeders are with stage-I 400kV bus. Allahabad line-I/II are on stage-II 400kV bus. Stage-I and II buses are coupled through bus section bays with equipment rating of 2000Amps which is under normally closed condition. Considering outage of Rihand-II to Allahabad lines, the total power flow from Stage-II bus to stage-I bus can exceed the 2000Amp equipment rating.
Stge-1 Switchyard Equipments such as Isolators and terminal connectors have completed almost 35 + years of life. NTPC has earlier faced frequent hot spot problems in system while stage III units generation was being evacuated to NR through Stage-2 & 3 Bus coupler.

5) Presently Interface meters are not available at stage-III bus section breaker. New interface meters and change in metering methodology required for new operation regime.

6) Stage- 2 & 3 bus coupler breakers along with Stage -2 side isolators are in open condition from past 6 year approximately, so Stage 2 & 3 Bus coupler isolators, breakers, Stage-3 Bus CTs and CVTs PM and testing to be carried out before shifting.

7) Various R&M works for implementing Kiosk based control and protection system, replacement of isolators, R&M of breakers is under progress at Rihand stage-I/II [system is approx. 40-year-old]. The completion of above works will require frequent Bay and Bus shutdown and getting required shutdown will become difficult. Clubbing of BUS, Lines, Unit OHs together is also not possible in many cases due to staggered O/H schedule, different scope of works related with Each OH activity and OH duration.

Annexure-III

Sandeep Kumawat {संदीप कुमावत} <sandeepk@powergrid.in>

Tue 09-07-2024 12:20

To:Gaurav Malviya (गौरव मालवीय) <gauravmalviya@grid-india.in>; Priyam Jain (प्रियम जैन) <priyam.jain@grid-india.in>; Gaurab Dash <gaurabdash@grid-india.in>;

Cc:Kashish Bhambhani {कशिश भम्भानी} <kashish@powergrid.in>; Rahul Shukla (राहुल शुक्ला) <rahulshukla@grid-india.in>; ms-nrpc@nic.in <ms-nrpc@nic.in>; Somara Lakra (सोमारा लाकरा) <somara.lakra@grid-india.in>; Narendra Sathvik Ranganath . {नरेंद्र सात्विक आर} <rnsathvik@powergrid.in>; Santosh Kumar <seo-nrpc@nic.in>;

Dear Sir

CTU observations on opening of 400 kV Singrauli-Anpara line and Shifting of NTPC Rihand stage-III generating station to NR is as under :

1) In base case (with Singrauli-Anpara line open and Rihand-III shifting in NR), loadings are generally in order except Allahabad ICT loading (348MW in N-1 contingency). 400/220kV ICT augmentation an (4^{th}) at Allahabad S/s is under implementation (Sch. Feb'25). POWERGRID may confirm
   In view of that, SPS to be implemented at Allahabad S/s with above shifting arrangement till 4^{th} ICT commissions
2) In base case, with outage of Rihand-Dadri one pole (750MW), Loading of Rihand-Singrauli is on higher side (923MW in N-1 contingency). The loading will further increases with vindhychal (back to back) blocking (1025MW in N-1 contingency). Considering that suitable SPS to be implemented/modified in Rihand/Singrauli complex
3) UPPTCL may inform the status of 765/400KV ICTs at Obra C. Therefore requirement of ICT implementation is critical for opening of 400 kV Singrauli-Anpara line and Shifting of NTPC Rihand stage-III generating station to NR to improve reliability of Anpara/Obra complex.
4) To relive the loading of 765kV Vindhyachal-varanasi D/c line, WR-NR Interregional strengthening scheme (765kV Prayagraj-Sasan) is planned and under approval in NR and WR (discussed in WR joint study meeting) (Tentative Schedule- Jun'27). In view of that above arrangement may be reviewed after implementation of proposed WR-NR strengthening scheme.

Regards
Sandeep Kumawat
DGM (CTUIL)
Power Grid Corporation of India Limited

~~Annexure I~~

Sr. No.	Meter No.	Feeder Name	Discrepancies	Entities
1	NP-1711-A	ICT-3 (220 kV) at Moga-PG	ABRUPT READING	POWERGRID
2	NP-6857-A	400 kV Koldam -2 at Ludhiana -PG	ABRUPT READING	POWERGRID
3	NP-1569-A	ICT-2 (400 kV) at Malerkotla-PG	ABRUPT READING	POWERGRID
4	NS-1924-A	220kV Mohali-2 at Nalagarh-PG	ABRUPT READING	POWERGRID
5	NS-1058-A	220 KV ICT-1 at Jind(PG)	LESS READING	POWERGRID
6	NR-3274-A	ICT-1 (400 kV) at Kaithal-PG	LESS READING	POWERGRID
7	WR-2007-A	400/220 kV ICT-1(220 kV) at Fatehpur-PG	NO DATA RECEIVED	POWERGRID
8	NR-3748-A	ICT-2 (220 kV) at Mainpuri-PG	NO DATA RECEIVED	POWERGRID
9	NP-6656-A	400kV Kashipur(UPCL)-2 at 765/400kV PG New Bareily	NO DATA RECEIVED	POWERGRID
10	NR-4534-A	400kV Chittorgarh-RVPNL-2 at Chittorgarh-PG	NO DATA RECEIVED	POWERGRID
11	NR-4471-A	400 kV Ajmer(Raj)-I at Ajmer-PG	NO DATA RECEIVED	POWERGRID
12	NR-3814-A	ICT-2 (220 kV) at Sikar-PG	NO DATA RECEIVED	POWERGRID
13	NP-5042-A	400 kV Bawana PPCL-III at Bahadurgarh-PG	NO DATA RECEIVED	POWERGRID
14	NP-3005-A	ICT-3 (400 kV) at Meerut-PG	NO DATA RECEIVED	POWERGRID
15	NP-6652-A	ICT-2(400 kV)500MVA at Lucknow-PG	NO DATA RECEIVED	POWERGRID
16	NR-3846-A	ICT-2 (400 kV)500MVA at Bahadurgarh-PG	NO DATA RECEIVED	POWERGRID
17	NR-4519-A	ICT-2 (400 kV) at Dehradun-PG	NO DATA RECEIVED	POWERGRID
18	NS-1533-A	220/66 kV ICT 2(66 kV) at Chandigarh(PG)	OPPOSITE POLARITY	POWERGRID
19	NS-1961-A	ICT-II (400 kV) at Tughlakabad-GIS-PG	OPPOSITE POLARITY	POWERGRID
20	NS-1960-A	ICT-III (400 kV) at Tughlakabad-GIS-PG	OPPOSITE POLARITY	POWERGRID
21	NS-1983-A	ICT-IV (400 kV) at Tughlakabad-GIS-PG	OPPOSITE POLARITY	POWERGRID
22	NS-1951-A	ICT-I (400 kV) at Tughlakabad-GIS-PG	OPPOSITE POLARITY	POWERGRID
23	NS-1957-A	ICT-III (220 kV) at Tughlakabad-GIS-PG	OPPOSITE POLARITY	POWERGRID
24	NS-1950-A	ICT-IV (220 kV) at Tughlakabad-GIS-PG	OPPOSITE POLARITY	POWERGRID
25	NS-1966-A	ICT-II (220 kV) at Tughlakabad-GIS-PG	OPPOSITE POLARITY	POWERGRID
26	NS-1972-A	ICT-I (220 kV) at Tughlakabad-GIS-PG	OPPOSITE POLARITY	POWERGRID
27	NR-4399-A	400KV Panki(UP)-I at Fatehpur-PG	TIME DRIFT	POWERGRID
28	NR-4337-A	400 kV Sarnath(UP)-II at Varanasi PG	TIME DRIFT	POWERGRID
29	WR-2004-A	400 kV Sahupuri(UP)-I at Varanasi PG	TIME DRIFT	POWERGRID
30	NP-9885-A	400 KV Jaunpur-2 at Varanasi PG	TIME DRIFT	POWERGRID
31	NP-8034-A	400 KV Rosa(UP)-2 at Shahjahanpur PG	TIME DRIFT	POWERGRID
32	NP-8250-A	400 KV Rosa(UP)-1 at Shahjahanpur PG	TIME DRIFT	POWERGRID
33	NP-8117-A	400 kV Agra UP (UPPCL) at Agra-PG	TIME DRIFT	POWERGRID
34	NP-5173-A	400kV JEHTA-2 at Lucknow-PG	TIME DRIFT	POWERGRID
35	NR-4488-A	ICT-2 (400 kV) at Mainpuri-PG	TIME DRIFT	POWERGRID
36	NR-4468-A	400 kV Mainpuri(UP)-I at Mainpuri-PG	TIME DRIFT	POWERGRID
37	NR-4463-A	400 kV mainpuri(UP)-II at Mainpuri-PG	TIME DRIFT	POWERGRID
38	NP-6591-A	400kV Basti-2 at Lucknow-PG	TIME DRIFT	POWERGRID
39	NP-6697-A	400 kV Basti at Gorakhpur-PG	TIME DRIFT	POWERGRID
40	NR-3984-A	400 kV Kabulpur(HVPN) at Bahadurgarh-PG	TIME DRIFT	POWERGRID
41	NP-6677-A	400 kV Daultabad (HVPNL)-I at Gurgaon-PG	TIME DRIFT	POWERGRID

42	NP-5475-A	ICT-1 (220 kV) at Malerkotla-PG	TIME DRIFT	POWERGRID
43	NP-1707-A	ICT-2 (220 kV) at Moga-PG	TIME DRIFT	POWERGRID
44	NR-3423-A	220kV HPSEB NANGAL-1 at Nalagarh-PG	TIME DRIFT	POWERGRID
45	NR-3490-A	ICT-3 (400 kV) at Samba-PG	TIME DRIFT	POWERGRID
46	NP-7758-A	400kV Kashipur-II Roorkee-PG	TIME DRIFT	POWERGRID
1	NP-8056-A	220kV NAPS at Simbhauli-UPPCL	LESS READING	UTTAR PRADESH
2	NS-1541-A	220kV Roorkee at Muzaffarnagar-UPPCL	NO DATA RECEIVED	UTTAR PRADESH
3	NP-1797-A	132kV Kalagarh at Sherkot-UPPCL	NO DATA RECEIVED	UTTAR PRADESH
4	NP-5187-A	220kV BTPS (DTL) at Sec-38 Noida-UPPCL	NO DATA RECEIVED	UTTAR PRADESH
5	NP-7717-A	220kV Auraiya at 220kV Sikandara-UPPCL	NO DATA RECEIVED	UTTAR PRADESH
6	NP-1216-A	220kV NAPS-2 at Khurja-UPPCL	NO DATA RECEIVED	UTTAR PRADESH
7	NR-3983-A	220kV Kanpur(PG) at Naubastha-UPPCL	NO DATA RECEIVED	UTTAR PRADESH
8	NP-7997-A	400kV PG Bareilly at Moradabad-UPPCL	NO DATA RECEIVED	UTTAR PRADESH
9	NP-7696-A	220kV Unchahar-2 at Fatehpur-UPPCL	NO DATA RECEIVED	UTTAR PRADESH
10	NR-4467-A	400kV Shahjahanpur(PG)-2 at ROSA TPS-UPPCL	NO DATA RECEIVED	UTTAR PRADESH
11	NR-3790-A	400kV Shahjahanpur(PG)-1 at ROSA TPS-UPPCL	NO DATA RECEIVED	UTTAR PRADESH
12	NP-1895-A	220kV Khodri-2 at Saharanpur-UPPCL	NO DATA RECEIVED	UTTAR PRADESH
13	NP-8053-A	220kV Khodri-1 at Sarsawa-UPPCL	NO DATA RECEIVED	UTTAR PRADESH
14	NP-5197-A	132kV Sitarganj at Pilibhit-UPPCL	NO DATA RECEIVED	UTTAR PRADESH
15	NP-8123-A	400kV Lucknow(PG) at 400kV Lucknow-UPPCL	NO DATA RECEIVED	UTTAR PRADESH
16	NP-1159-A	220kV Kanpur(PG) at Mainpuri-UPPCL	NO DATA RECEIVED	UTTAR PRADESH
17	NP-7142-A	220kV Raebarely at CG City-UPPCL	NO DATA RECEIVED	UTTAR PRADESH
18	NP-5028-A	400kV BALIA-2 at RASRA	NO DATA RECEIVED	UTTAR PRADESH
19	NP-3039-A	400 kV Agra-PG-1 at Fatehabad-UPPCL	NO DATA RECEIVED	UTTAR PRADESH
20	NR-4548-A	400 kV Orai(PG)-2 at Orai-UPPCL	NO DATA RECEIVED	UTTAR PRADESH
21	NR-4545-A	132kV Khatima at Pilibhit-UPPCL	NO DATA RECEIVED	UTTAR PRADESH
22	NS-1581-A	220kV Kanpur-2(PG) at 220kV Kidwai Nagar-UPPCL	OPPOSITE POLARITY	UTTAR PRADESH
23	NP-6808-A	400kV Roorkee(PG) at Muzaffarnagar-UPPCL	TIME DRIFT	UTTAR PRADESH
24	NP-6809-A	400kV Meerut at Muzaffarnagar-UPPCL	TIME DRIFT	UTTAR PRADESH

25	NP-1891-A	220 kV Muzaffarnagar at Roorkee-UPCL	TIME DRIFT	UTTAR PRADESH
26	NP-1823-A	220kV Saharanpur at Khodri HPS-UPCL	TIME DRIFT	UTTAR PRADESH
27	NR-4389-A	400 kV Kashipur(UK) at Nehtaur-UPPCL	TIME DRIFT	UTTAR PRADESH
28	NP-6586-A	400kV Kashipur at Moradabad-UPPCL	TIME DRIFT	UTTAR PRADESH
29	NP-8166-A	220kV NAPS-1 at Dibai-UPPCL	TIME DRIFT	UTTAR PRADESH
30	NP-8260-A	400 kV Allahabad(PG)-I at Meja-UPPCL	TIME DRIFT	UTTAR PRADESH
31	NP-8261-A	400 kV Allahabad(PG)-II at Meja-UPPCL	TIME DRIFT	UTTAR PRADESH
32	NR-3902-A	220kV Kanpur at 220kV Raniya-UPPCL	TIME DRIFT	UTTAR PRADESH
33	WR-2002-A	220kV Raebarely at 220kV Bachhrawan -UPPCL	TIME DRIFT	UTTAR PRADESH
34	NP-1779-A	400 kV Varanasi-II at Sarnath-UPPCL	TIME DRIFT	UTTAR PRADESH
35	NP-8200-A	400kV Dadri at Greater Noida-UPPCL	TIME DRIFT	UTTAR PRADESH
36	NP-8010-A	765kV Aligarh-PG at Greater Noida-WUPPTCL	TIME DRIFT	UTTAR PRADESH
37	NP-8011-A	765kV Meerut at Greater Noida-WUPPTCL	TIME DRIFT	UTTAR PRADESH
38	NP-8270-A	400kV Mainpuri(PG)-1 at Mainpuri-UPPCL	TIME DRIFT	UTTAR PRADESH
39	NP-8272-A	400kV Mainpuri(PG)-2 at Mainpuri-UPPCL	TIME DRIFT	UTTAR PRADESH
40	NR-3995-A	400 kV Gorakhpur 1 at Basti-UPPCL	TIME DRIFT	UTTAR PRADESH
1	NP-1651-A	220/132kV ICT-1 (220kV) at Jalandhar-BBMB	ABRUPT READING	BBMB
2	NS-1869-A	220/66kV ICT-1(66kV) at Jamalpur-BBMB	LESS READING	BBMB
3	NS-1868-A	220/66kV ICT-2(66kV) at Jamalpur-BBMB	LESS READING	BBMB
4	NP-8829-A	220/66kV ICT-2(66kV) at Jagadhari-BBMB	NO DATA RECEIVED	BBMB
5	NP-1635-A	220/66kV ICT-1(66kV) at Sangrur-BBMB	NO DATA RECEIVED	BBMB
6	NR-3458-A	220kV Narela-2 at Panipat-BBMB	NO DATA RECEIVED	BBMB
7	NS-1914-A	220kV Hissar (IA)-1 at Hissar-BBMB	NO DATA RECEIVED	BBMB
8	NP-3024-A	ICT-2(220kV) at Narela-BBMB	NO DATA RECEIVED	BBMB
9	NS-2408-A	66 kV NFF-1 at Bhakra Left Bank	NO DATA RECEIVED	BBMB
10	NR-3294-A	220/132kV T/F-1(220 kV) at Panipat-BBMB	NO DATA RECEIVED	BBMB
11	NR-3230-A	400/220kV ICT-1(400 kV) at Panipat-BBMB	NO DATA RECEIVED	BBMB
12	NR-3854-A	220kV Bhiwani(HVPN)-1 at Bhiwani-BBMB	NO DATA RECEIVED	BBMB
13	NR-3582-A	220kV Bhiwani(HVPN)-2 at Bhiwani-BBMB	NO DATA RECEIVED	BBMB
14	NR-3226-A	220kV Panipat(T)-3 at Panipat-BBMB	NO DATA RECEIVED	BBMB
15	NS-1936-A	220kV Faridabad GPS-1 at Samaypur-BBMB	OPPOSITE POLARITY	BBMB
16	NS-1920-A	220kV Faridabad GPS-2 at Samaypur-BBMB	OPPOSITE POLARITY	BBMB
17	NS-1862-A	220/66kV ICT-2 (66kV) at Jalandhar-BBMB	OPPOSITE POLARITY	BBMB
18	NS-1864-A	220/66kV ICT-3(66kV) at Jamalpur-BBMB	OPPOSITE POLARITY	BBMB

19	NP-5462-A	220/132kV ICT-4 (220kV) at Jalandhar-BBMB	OPPOSITE POLARITY	BBMB
20	NS-1870-A	220/66kV ICT-1 (66kV) at Jalandhar-BBMB	OPPOSITE POLARITY	BBMB
21	NS-1883-A	220/66kV ICT-2(220kV) at Jamalpur-BBMB	OPPOSITE POLARITY	BBMB
22	NS-2421-A	220kV Dhandari-1 at Jamalpur-BBMB	OPPOSITE POLARITY	BBMB
23	NP-8153-A	220kV Badshapur-1 at Samaypur-BBMB	TIME DRIFT	BBMB
24	NP-6683-A	220kV Badshapur-2 at Samaypur-BBMB	TIME DRIFT	BBMB
25	NP-6695-A	220kV Palla-1 at Samaypur-BBMB	TIME DRIFT	BBMB
26	NP-6824-A	220kV Palla-2 at Samaypur-BBMB	TIME DRIFT	BBMB
27	NP-8071-A	ICT-1(132kV) at Narela-BBMB	TIME DRIFT	BBMB
1	NP-8544-A	220kV Panipat(BBMB)-II at Chajpur-HVPN	NO DATA RECEIVED	HARYANA
2	NP-5459-A	400kV Fatehabad-2 at Nuhiwali(LILO Khedar) - HVPNL	NO DATA RECEIVED	HARYANA
3	NP-1406-A	220 kV Baddi ckt 1 at Pinjore-HVPN	NO DATA RECEIVED	HARYANA
4	NP-3087-A	132 kV Ropar-2 at Pinjore-HVPN	NO DATA RECEIVED	HARYANA
5	NR-3766-A	400 KV Jind(PG)-2 at Kirori(HVPNL)	NO DATA RECEIVED	HARYANA
6	NP-1339-A	220 kV Bhiwani -2 at Bhiwani-HVPN	NO DATA RECEIVED	HARYANA
7	NP-8306-A	220 kV Bhiwani -1 at Bhiwani-HVPN	NO DATA RECEIVED	HARYANA
8	NP-7048-A	220kV Panipat(BBMB)-I at Chajpur-HVPN	TIME DRIFT	HARYANA
9	NP-1156-A	220/132kV ICT-1(220kV) at Charkhi Dadri	TIME DRIFT	HARYANA
10	NP-8560-A	400kV Fatehabad-1 at Khedar - HVPNL	TIME DRIFT	HARYANA
11	NR-3931-A	400 kV Neemrana(PG)-1 at Dhanonda(HVPN)	TIME DRIFT	HARYANA
12	NR-3826-A	400 kV Neemrana(PG)-2 at Dhanonda(HVPN)	TIME DRIFT	HARYANA
13	NR-3771-A	400 KV Jind(PG)-1 at Kirori(HVPNL)	TIME DRIFT	HARYANA
1	NP-1820-A	220 kV Sarna-2 at Dasuya-PSEB	ABRUPT READING	PUNJAB
2	NS-2458-A	220 kV ICT-III(500MVA) at Patran-PTCL	ABRUPT READING	PUNJAB
3	NS-2437-A	220 kV Jallandhar(PG)-2 at Kartarpur-PSEB	LESS READING	PUNJAB
4	NP-8823-A	400kV Moga at Behman Jassa Singh	NO DATA RECEIVED	PUNJAB
5	NR-3469-A	400 kV Moga(PG) at Nakodar-PSEB	NO DATA RECEIVED	PUNJAB
6	NS-1532-A	220 kV Ganguwal-1 at Bhari- PSEB	NO DATA RECEIVED	PUNJAB
7	NS-1912-A	220kV Jalandhar-BBMB at Butari(PJ)	NO DATA RECEIVED	PUNJAB
8	NP-1838-A	220 kV Barnala (BBMB) at Lehra Mohabbat-PSEB	NO DATA RECEIVED	PUNJAB
9	NP-1810-A	66 kV Kathua at Pathankote-PSEB	NO DATA RECEIVED	PUNJAB
10	NP-1871-A	132 kV Hamirpur at Chohal-PSEB	NO DATA RECEIVED	PUNJAB
11	NS-2029-A	132 kV Kotla-2 at Ropar-PSEB	OPPOSITE POLARITY	PUNJAB
12	NP-1879-A	66 kV Kathua at 132kV Sarna-PSEB	OPPOSITE POLARITY	PUNJAB
13	NP-8822-A	66 kV Sec 56 Chd-1 at Mohali-PSEB	TIME DRIFT	PUNJAB
1	NS-1193-A	220kV RAPSB at Kota-RVPNL	LESS READING	RAJASTHAN
2	NR-3697-A	400 kV Bhinmal-1 at Barmer-RRVPNL	NO DATA RECEIVED	RAJASTHAN
3	NP-1033-B	220kV Dadri-2 at Khetri-RVPNL	NO DATA RECEIVED	RAJASTHAN
4	NP-1301-A	220kV Badod at Morak-RVPNL	NO DATA RECEIVED	RAJASTHAN
5	NP-1317-A	220kV RAPSB-2 at Chittorgarh-RVPNL	NO DATA RECEIVED	RAJASTHAN
6	NP-6693-A	400 kV Kankroli-PG at Jodhpur-RVPNL	NO DATA RECEIVED	RAJASTHAN
7	NS-1404-A	400kV Fathegarh 3(PG) ckt 1 at Jaisalmer(RS)	NO DATA RECEIVED	RAJASTHAN

8	NS-1322-A	400kV Fathegarh 3(PG) ckt 2 at Jaisalmer(RS)	NO DATA RECEIVED	RAJASTHAN
9	NP-5410-A	220/132kV ICT-2(220kV)-100MVA,CGL at S'madhopr-RVPNL	NO DATA RECEIVED	RAJASTHAN
10	NR-3752-A	400 kV Bhadla-II at Bhadla-RRVPNL	TIME DRIFT	RAJASTHAN
11	NP-5025-A	400kV Chittorgarh PG-2 at Chittorgarh-RVPNL	TIME DRIFT	RAJASTHAN
12	NR-3592-A	400 kV Bhinmal-2 at Barmer-RRVPNL	TIME DRIFT	RAJASTHAN
1	NP-7506-A	132 kV Kangra(PSEB) at Kangra-HPSEB	NO DATA RECEIVED	HIMACHAL PRADESH
2	NS-2440-A	400 kV Rajpura-PSPCL at Dehar HPS	NO DATA RECEIVED	HIMACHAL PRADESH
3	NP-6197-A	220 kV Nalagarh PG-1 at HPSEB Nangal	NO DATA RECEIVED	HIMACHAL PRADESH
4	NP-7094-A	220 kV Nalagarh PG-2 at HPSEB Nangal	NO DATA RECEIVED	HIMACHAL PRADESH
5	NP-3137-A	132 kV Chohal at 132kV Hamirpur-HPSEB	NO DATA RECEIVED	HIMACHAL PRADESH
6	NP-1868-A	220kV Khodri-1 at Majhri-HPSEB	NO DATA RECEIVED	HIMACHAL PRADESH
7	NS-1503-A	220kV Khodri-2 at Majhri-HPSEB	NO DATA RECEIVED	HIMACHAL PRADESH
8	NP-1867-A	220 kV Pinjore-HVPN ckt 2 at Baddi(HP)	NO DATA RECEIVED	HIMACHAL PRADESH
9	NR-3268-A	400 kV Jhakri-II at Gumma-HPPTCL	NO DATA RECEIVED	HIMACHAL PRADESH
10	NP-1845-A	220kV Hamirpur(PG)-1 at 220kV Hamirpur-HPSEB	NO DATA RECEIVED	HIMACHAL PRADESH
11	NP-1825-A	220 kV Ranjit Sagar Dam at Jessore-HPSEB	TIME DRIFT	HIMACHAL PRADESH
1	NP-5481-A	220 kV Kishenpur-PG-1 at Barn-PDD	NO DATA RECEIVED	JAMMU & KASHMIR
2	NP-5482-A	220 kV Kishenpur-PG-2 at Barn-PDD	NO DATA RECEIVED	JAMMU & KASHMIR
3	NR-3326-A	400 kV New Wanpoh at Baglihar	NO DATA RECEIVED	JAMMU & KASHMIR
4	NR-3320-A	400 kV Kishenpur-PG-3 at Baglihar	NO DATA RECEIVED	JAMMU & KASHMIR
5	NP-8534-A	220 kV Sarna at Udhampur-PDD	NO DATA RECEIVED	JAMMU & KASHMIR
6	NP-1883-A	220 kV Sarna at Hiranagar-PDD	NO DATA RECEIVED	JAMMU & KASHMIR
7	NP-6194-A	132 kV SEWA II CIRCUIT-1 at Hiranagar-PDD	NO DATA RECEIVED	JAMMU & KASHMIR
8	NP-6193-A	132 kV SEWA II CIRCUIT-2 at Hiranagar-PDD	NO DATA RECEIVED	JAMMU & KASHMIR
9	NP-5467-A	132 kV SEWA II CIRCUIT-1 at Mahanpur-PDD	TIME DRIFT	JAMMU & KASHMIR
10	NP-6195-A	132 kV SEWA II at Kathua-PDD	TIME DRIFT	JAMMU & KASHMIR
1	NP-8025-A	ICT-4 (220 kV) at Bamnauli-DTL	ABRUPT READING	DELHI
2	NP-5180-A	ICT-2 (400 kV) at Mundka-DTL	NO DATA RECEIVED	DELHI

3	NP-3051-A	220kV Ballabgarh-1 at BTPS	OPPOSITE POLARITY	DELHI
4	NP-8197-A	ICT-2 (400 kV) at Bawana-DTL	TIME DRIFT	DELHI
5	NP-5182-A	400kV Dadri-1 at Harsh Vihar(Loni)-DTL	TIME DRIFT	DELHI
6	NP-1158-A	400kV Dadri-2 at Harsh Vihar(Loni)-DTL	TIME DRIFT	DELHI
7	NR-4340-A	220kV Ballabgarh-2 at BTPS	TIME DRIFT	DELHI
1	NP-8227-A	GT-6-Stage-2 (400kV) at Dadri-NTPC	NO DATA RECEIVED	NTPC
2	NP-8837-A	400 kV Banala at Koldam HPP	NO DATA RECEIVED	NTPC
3	NR-3794-A	400 kV Sultanpur at Tanda Stage-2	NO DATA RECEIVED	NTPC
4	NR-4372-A	400 kV Basti-2 at Tanda Stage-2	NO DATA RECEIVED	NTPC
5	NP-1255-A	220kV Kanpur-1 at Unchahar TPS	NO DATA RECEIVED	NTPC
1	WR-2006-A	132kV Pilibhit at Khatima-UPCL	NO DATA RECEIVED	UTTARAKHAND
2	NP-8296-A	400kV Nehtaur-UP at Rishikesh-PTCUL	NO DATA RECEIVED	UTTARAKHAND
3	NP-1890-A	400kV Moradabad at Kashipur-UPCL	NO DATA RECEIVED	UTTARAKHAND
1	NP-1356-A	66 kV Mohali-1 at Chandigarh UT-Sec.39	NO DATA RECEIVED	CHANDIGARH
2	NP-6573-A	66 kV Mohali-2 at Chandigarh UT-Sec.39	NO DATA RECEIVED	CHANDIGARH
1	NR-3212-A	400 kV ICT-1 at Amargarh-Sterlite	TIME DRIFT	INDIGRID
2	NR-3220-A	220 kV ICT-1 at Amargarh-Sterlite	TIME DRIFT	INDIGRID
1	NP-8576-A	400kV Banala-I(PG) at Parabati-III HPS	TIME DRIFT	NHPC
2	NP-1202-A	220kV CBGunj-1 at Tanakpur HPS	NO DATA RECEIVED	NHPC
1	NS-1871-A	220 kV Abdullapur-PG -1 at JAGADHARI(Railway)	NO DATA RECEIVED	RAILWAYS
2	NS-1878-A	220 kV Abdullapur-PG -2 at JAGADHARI(Railway)	NO DATA RECEIVED	RAILWAYS
1	RE-0236-A	400 kV TR-1 at Avaada Sustainable Project Pvt Ltd	NO DATA RECEIVED	AVAADA

ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
भारत सरकार का उद्यम
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर क्षेत्रीय भार प्रेषण केन्द्र / Northern Regional Load Despatch Centre
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
Office : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN : U40105DL2009GOI188682, Website : www.nrldc.in, E-mail : nrldc@grid-india.in, Tel: 011 26519406, 26523869, Fax: 011 26852747

Ref. No. NRLDC/ MO/Legacy dues/641 Date :14th February 2025

To
The Director,
UP SLDC Ltd,
UP SLDC Complex, Vibhuti Khand,
Gomti Nagar, Lucknow- 226010

Sub: Payment of deviation and ancillary services pool account deficit recovery (Legacy dues) - Reg.

Ref: 1) Our letter NRLDC/MO/DSM/-2024/538 dated 11/11/2024
2) Your letter 4103/CE(CS)/DSM dated 21/11/2024
3) Our Letter NRLDC/MO/Legacy dues dated 04/12/2024
4) Your letter 4309/CE(CS)/DSM(Settlement for Legacy Dues) dated 06/12/2024
5) Our Letter NRLDC/MO/Legacy dues /577 dated 19/12/2024
6) Our Letter NRLDC/MO/Legacy dues/579 dated 20/12/2024
7) Your letter 17 DIR(SLDC)/CE(CS)/SE/(EA)/EE(DSM) dated 02/01/2025
8) Our Letter NRLDC/MO/Legacy dues /598 dated 14/01/2025
9) Our Letter NRLDC/MO/Legacy dues /606 dated 22/01/2025

Sir,

This has reference to our letter dated 11/11/2024 & 13/01/2025 regarding payment of deviation and ancillary services pool account deficit recovery for the period prior to 16/09/2024 (Statement of legacy dues) and for period 16.09.2024 to 22.12.2024. It is to state that the deficit payment statement "***Net Deviation & Ancillary Services Pool Account Deficit Recovery Statements***" were issued in line with the Deviation Settlement Mechanism Regulations, 2024, ***CERC approved procedure vide order No. L-1/260/2021/CERC dated 15th October 2024*** and CERC **Suo-Moto order no. 01/SM/2025 dated 08/01/2024**..

In this context it is noted that payment for the last thirteen (13) instalments (instalment no 1 to 13) and payment of pool deficit recovery as per NLDC statement dated 13/01/2025 are yet to be received from UP state.
Total outstanding payment of pool deficit recovery dues given as below:

Sl. No.	Description	Principal (in ₹)	Remarks
1	Pool Deficit Recovery Charges (Legacy Dues) (13th instalment is due as on date.	174,54,88,823	13 nos Instalment (1th to 13th) of ₹ 13,42,68,371each are pending out of total 20 instalment
2	Pool Deficit Recovery Charges (As per NLDC statement dated 13/01/2025)	17,83,89,832	
	Total Outstanding	**192,38,78,655**	

UP SLDC, being the member of regional pool account is the "Nodal Entity" for all payments related to deviation charges, reactive charges and congestion charges of State of Uttar Pradesh, it is therefore request your kind office to look into the matter and facilitate the settlement of the outstanding dues of ₹ **192,38,78,655/- (Rupees One Hundred Ninety Two Crore Thirty Eight Lakhs Seventy Eight Thousand Six Hundred and Fifty Five only)** against the pool deficit recovery charges at the earliest.

Further, it is also requested that timely payment for forthcoming instalments may be ensured to avoid any further interest liability on delayed payments.

धन्यवाद,

आपका आभारी,

शेख शदरुद्दीन
मुख्य महाप्रबंधक (मा. ओ.), उ.क्षे.भा.प्रे.के.

Copy for kind information:

1. Secretary, CERC, New Delhi
2. Chairman and Managing Director, Grid-India
3. Director (Market Operation), Grid-India
4. Member Secretary, NRPC,
5. Executive Director, NRLDC
6. Executive Director, NLDC

ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
भारत सरकार का उद्यम
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उत्तर क्षेत्रीय भार प्रेषण केन्द्र / Northern Regional Load Despatch Centre
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
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CIN : U40105DL2009GOI188682, Website : www.nrldc.in, E-mail : nrldc@grid-india.in, Tel.: 011 26519406, 26523869, Fax: 011 26852747

Ref. No. NRLDC/ MO/Legacy dues/606 Date :21st January 2025
22

To
The Director,
UP SLDC Ltd,
UP SLDC Complex, Vibhuti Khand,
Gomti Nagar, Lucknow- 226010

Sub: Payment of deviation and ancillary services pool account deficit recovery (Legacy dues) - Reg.

Ref: 1) Our letter NRLDC/MO/DSM/-2024/538 dated 11/11/2024
2) Your letter 4103/CE(CS)/DSM dated 21/11/2024
3) Our Letter NRLDC/MO/Legacy dues dated 04/12/2024
4) Your letter 4309/CE(CS)/DSM(Settlement for Legacy Dues) dated 06/12/2024
5) Our Letter NRLDC/MO/Legacy dues /577 dated 19/12/2024
6) Our Letter NRLDC/MO/Legacy dues/579 dated 20/12/2024
7) Your letter 17 DIR(SLDC)/CE(CS)/SE/(EA)/EE(DSM) dated 02/01/2025
8) Our Letter NRLDC/MO/Legacy dues /598 dated 14/01/2025

Sir,

This has reference to our letter dated 11/11/2024 regarding payment of deviation and ancillary services pool account deficit recovery for the period prior to 16/09/2024 (Statement of legacy dues). It is to state that the deficit payment statement "***Net Deviation & Ancillary Services Pool Account Deficit Recovery Statement for period prior 16.09.2024***" was issued in line with the Deviation Settlement Mechanism Regulations, 2024 and ***CERC approved procedure vide order No. L-1/260/2021/CERC dated 15th October 2024***.

CERC **Suo-Moto order no. 01/SM/2025 dated 08/01/2024** regarding recovery of legacy dues in the Deviation Settlement Mechanism (DSM) Pool Account states that the methodology approved in the detailed procedure vide the Order dated 15.10.2024 is applicable for recovery of charges in case of the deficits in the DSM Pool Account "as on and from 16th September 2024.

In this context it is noted that payment for the last nine (9) instalments (instalment no 1 to 9) are yet to be received from UP state. As you are aware that this payment quantum of each state/drawee DICs towards net Deviation and Ancillary Services is to be settled through 20 equal weekly instalments, of which first 9 instalments have been under collection at respective RLDC.

Cont…

Total outstanding payment of legacy dues given as below:

Sr. No	Per Instalment Amount (in ₹)	Total Instalment Due as on date (in Nos.)	Total Outstanding Legacy dues (in ₹)
1	13,42,68,371	9	120,84,15,339/-

UP SLDC, being the member of regional pool account is the "Nodal Entity" for all payments related to deviation charges, reactive charges and congestion charges of State of Uttar Pradesh Therefore, you are once again requested to clear all the payment of pending instalments mentioned in the legacy dues statement for UP state at the earliest.

Further, it is also requested that timely payment for forthcoming instalments may be ensured to avoid any further interest liability on delayed payments.

धन्यवाद,

आपका आभारी,

22/1/2025

(एन. रॉय)
कार्यपालक निदेशक- उ॰क्षे॰भा॰प्रे॰के॰

Copy for kind information:

1. Secretary, CERC, New Delhi
2. Chairman and Managing Director, Grid-India
3. Director (Market Operation), Grid-India
4. Member Secretary, NRPC,
5. Executive Director, NLDC

ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
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Ref. No. NRLDC/ MO/DSM Payment/ 607 Date:22nd January 2025

To
The Executive Engineer (DSM Pool A/c)
UP SLDC Ltd,
UP SLDC Complex, Vibhuti Khand,
Gomti Nagar, Lucknow- 226010

Sub: Balance payment of DSM charges of UP SLDC from NR Pool DSM Pool Account - Reg.

Ref: 1) Your letter 4636/EE DSM Pool/NRPC dated 30/12/2024

Sir,

This is in reference to your letter dated 30/12/2024 regarding payment of deviation charges for week-13 (24/06/2024 – 30/06/2024) along with the late payment surcharge.

As communicated vide mail dated 24/07/2024, 29/08/2024 and 10/12/2024, due to shortage of funds in NR pool accounts, the disbursement to the receivable entities of the Pool is being made on pro-rata basis, depending upon the availability of funds. These deviation charges are prior to 16/09/2024 (DSM Regulation 2022) and payment to receivable entries are being made on pro-rata basis from the fund received towards recovery of pool deficit charges (legacy dues) from drawee DIC /State. Therefore, remaining payment receivable by UP shall be disbursed as and when the funds are available in the DAS Pool Account.

Further, there are no provisions for late payment surcharges in the DSM Regulations 2022 for delays in payment from the DSM pool account.

धन्यवाद,

आपका आभारी,

(शेख शदरुद्दीन)
मुख्य महाप्रबंधक (मा. ओ.), उ.क्षे.भा.प्रे.के.

Copy for kind information:

1. Director, UP SLDC, UP SLDC Complex, Vibhuti Khand, Gomti Nagar, Lucknow- 226010
2. Executive Director, NRLDC, New Delhi

ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
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Ref. No. NRLDC/ MO/Legacy dues/ 598 Date:14th January 2025

To
The Chief Engineer (C&S)
UP SLDC Ltd,
UP SLDC Complex, Vibhuti Khand,
Gomti Nagar, Lucknow- 226010

Sub: Payment of deviation and ancillary services pool account deficit recovery (Legacy dues) - Reg.

Ref: 1) Your letter 4103/CE(CS)/DSM dated 21/11/2024
2) Our Letter NRLDC/MO/Legacy dues dated 04/12/2024
3) Your letter 4309/CE(CS)/DSM(Settlement for Legacy Dues) dated 06/12/2024
4) Our Letter NRLDC/MO/Legacy/577 dues/19/12/2024
5) Our Letter NRLDC/MO/Legacy/579 dues/20/12/2024
6) Your letter 17 DIR(SLDC)/CE(CS)/SE/(EA)/EE(DSM) dated 02/01/2025

Sir,

This has reference to our letter dated 11/11/2024 regarding payment of deviation and ancillary services pool account deficit recovery for the period prior to 16/09/2024 (Statement of legacy dues). It is to state that the deficit payment statement "Net Deviation & Ancillary Services Pool Account Deficit Recovery Statement for period prior 16.09.2024" was issued in line with the Deviation Settlement Mechanism Regulations, 2024 and CERC approved procedure vide order No. L-1/260/2021/CERC dated 15th October 2024.

Further CERC Sou-moto order no. 01/SM/2025 dated 08/01/2024 regarding recovery of legacy dues in the Deviation Settlement Mechanism (DSM) Pool Account states that the methodology approved in the detailed procedure vide the Order dated 15.10.2024 is applicable for recovery of charges in case of the deficits in the DSM Pool Account "as on and from 16th September 2024.

In this context it is noted that payment for the last Eight (8) instalments (instalment no 1 to 8) are yet to be received from UP state. As you are aware that this payment quantum of each state/drawee DICs towards net Deviation and Ancillary Services is to be settled through 20 equal weekly instalments, of which first 8 instalments have been under collection at respective RLDC. You are therefore once again requested to clear all the payment of pending instalments mentioned in the legacy dues statement for UP state at the earliest.

Cont...

Total outstanding payment of legacy dues given as below:

Sr. No	Per Instalment Amount (in ₹)	Total Instalment Due as on date (in Nos.)	Total Outstanding Legacy dues (in ₹)
1	13,42,68,371	8	107,41,46,968

Further, it is also requested that timely payment for forthcoming instalments may be ensured to avoid any further interest liability on delayed payments.

In view of above, you are once again requested to clear all the payment of pending instalments (instalment no 1 to 8) mentioned in the legacy dues statement for Uttar Pradesh state at the earliest.

धन्यवाद,

आपका आभारी,

(शेख शदरुद्दीन)
मु. महाप्रबंधक (मा. ओ.), उ.क्षे.भा.प्रे.के.

Copy for kind information:

1. Secretary, CERC, New Delhi
2. Member Secretary, NRPC
3. Director (Market Operation), Grid-India
4. Executive Director, NLDC
5. Director, UP SLDC, UP SLDC Complex, Vibhuti Khand, Gomti Nagar, Lucknow- 226010

ग्रिड-इंडिया
GRID-INDIA

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[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर क्षेत्रीय भार प्रेषण केन्द्र / Northern Regional Load Despatch Centre
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
Office : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN : U40105DL2009GOI188682, Website : www.nrldc.in, E-mail : nrldc@grid-india.in, Tel: 011 26519406, 26523869, Fax: 011 26852747

Ref. No. NRLDC/ MO/Legacy dues/ 579 Date:20th December 2024

To
The Director,
UP SLDC Ltd,
UP SLDC Complex, Vibhuti Khand,
Gomti Nagar, Lucknow- 226010

Sub: Payment of deviation and ancillary services pool account deficit recovery (Legacy dues) - Reg.

Ref: 1) Our letter NRLDC/MO/DSM/-2024/538 dated 11/11/2024
2) NRLDC/MO/Legacy dues dated 04/12/2024

Sir,

This has reference to our letter dated 11/11/2024 regarding payment of deviation and ancillary services pool account deficit recovery for the period prior to 16/09/2024 (Statement of legacy dues). It is to state that the deficit payment statement "Net Deviation & Ancillary Services Pool Account Deficit Recovery Statement for period prior 16.09.2024" was issued in line with the Deviation Settlement Mechanism Regulations, 2024 and CERC approved procedure vide order No. L-1/260/2021/CERC dated 15th October 2024.

In this context it is noted that payment for the last five (5) instalments (instalment no 1 to 5) are yet to be received from UP state. As you are aware that this payment quantum of each state/drawee DICs towards net Deviation and Ancillary Services is to be settled through 20 equal weekly instalments, of which first 5 instalments have been under collection at respective RLDC. You are therefore once again requested to clear all the payment of pending instalments mentioned in the legacy dues statement for UP state at the earliest.

Further, it is also requested that timely payment for forthcoming instalments may be ensured to avoid any further interest liability on delayed payments.

धन्यवाद,

आपका आभारी,

(एन. रॉय) 20/12/2024
कार्यपालक निदेशक- उ॰क्षे॰भा॰प्रे॰के॰

Copy for kind information:

1. Secretary, CERC, New Delhi
2. Chairman and Managing Director, Grid-India
3. Director (Market Operation), Grid-India
4. Member Secretary, NRPC,
5. Executive Director, NLDC
6. Chief Engineer (C&S), UP SLDC

ग्रिड-इंडिया
GRID-INDIA

ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
भारत सरकार का उद्यम
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर क्षेत्रीय भार प्रेषण केन्द्र / Northern Regional Load Despatch Centre
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
Office : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN : U40105DL2009GOI188682, Website : www.nrldc.in, E-mail : nrldc@grid-india.in, Tel: 011 26519406, 26523869, Fax 011 26852747

Ref. No. NRLDC/ MO/Legacy dues/ 577

Date: 19th December 2024

To
The Chief Engineer (C&S)
UP SLDC Ltd,
UP SLDC Complex, Vibhuti Khand,
Gomti Nagar, Lucknow- 226010

Sub: Payment of deviation and ancillary services pool account deficit recovery (Legacy dues) - Reg.

Ref: 1) Your letter 4103/CE(CS)/DSM dated 21/11/2024
2) Our Letter NRLDC/MO/Legacy dues dated 04/12/2024
3) Your letter 4309/CE(CS)/DSM(Settlement for Legacy Dues) dated 06/12/2024

Sir,

This has reference to your letter dated 06/12/2024 regarding payment of deviation and ancillary services pool account deficit recovery for the period prior to 16/09/2024 (Statement of legacy dues). It is to state that the deficit payment statement "Net Deviation & Ancillary Services Pool Account Deficit Recovery Statement for period prior 16.09.2024" was issued in line with the Deviation Settlement Mechanism Regulations, 2024 and CERC approved procedure vide order No. L-1/260/2021/CERC dated 15th October 2024.

As per the Electricity Act 2003, UP SLDC is responsible for scheduling & despatch of electricity, Energy Accounting and DSM settlement etc in control area of Uttar Pradesh state. SLDC being the Apex body of the state is responsible for the payments/dues related to DSM/Ancillary/Reactive charges as per the principal regulations. The responsibility of payments of legacy dues which also pertain to the dues related to DSM/Reactive/Ancillary charges is that of statutory body of the state in line with the principal regulations.

All the payments related to deviation charges, reactive charges and congestion charges of Uttar Pradesh state is being paid/received by UP SLDC as UP SLDC is the member of regional deviation and ancillary services pool account. The Legacy dues also pertain to the dues related to Deviation, Reactive and Ancillary charges. Therefore, the responsibility of payment of these dues is that of the members of the DAS pool Account.

In view of above, you are once again requested to clear all the payment of pending instalments (instalment no 1 to 5) mentioned in the legacy dues statement for Uttar Pradesh state at the earliest.

Cont…

Further, it is also requested that timely payment for forthcoming instalments may be ensured to avoid any further interest liability on delayed payments.

धन्यवाद,

आपका आभारी,

(शेख शदरुद्दीन)
वरि. महाप्रबंधक (मा. ओ.), उ.क्षे.भा.प्रे.के.

Copy for kind information:

1. Director (Market Operation), Grid-India
2. Executive Director, NLDC
3. Director, UP SLDC, UP SLDC Complex, Vibhuti Khand, Gomti Nagar, Lucknow- 226010

ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
भारत सरकार का उद्यम
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
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उत्तर क्षेत्रीय भार प्रेषण केन्द्र / Northern Regional Load Despatch Centre
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
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Ref. No. NRLDC/ MO/Outstanding/640 Date:14th February 2025

To
The Chief Engineer
JKPCL, SLDC Building,
Ist Floor Gladni Grid Station,
Nanval Bala, Jammu-180 004

Sub: Release of outstanding payment against NR Statutory Pool Accounts - Reg.

Ref: 1) NRLDC Letter Ref No. 1) NRLDC/ MO/Pool/03-10 Dt: 02/01/2024, to CE (SLDC), JKPCL
2) NRLDC/ MO/Pool/56-63 Dt: 24/01/2024, to CE (SLDC), JKPCL
3) NRLDC/ MO/Outstanding /89-96 Dt: 13/02/2024, to CE (SLDC), JKPCL
4) NRLDC/ MO/Outstanding /31-139 Dt: 02/04/2024, to CE (SLDC), JKPCL
5)NRLDC/ MO/Outstanding /183-191 Dt: 03/05/2024, to CE (SLDC), JKPCL
6) NRLDC/ MO/Outstanding /210-216 Dt: 20/05/2024, to MD, JKPCL
7) NRLDC/ MO/Outstanding /394-401 Dt: 01/07/2024, to CE (SLDC), JKPCL
8)) NRLDC/ MO/Outstanding /430-438 Dt: 05/08/2024, to CE (SLDC), JKPCL
9) NRLDC/ MO/Outstanding / Dt: 10/10/2024, to CE (SLDC), JKPCL
10) NRLDC/ MO/Outstanding /523-531 Dt: 30/10/2024, to CE (SLDC), JKPCL
11) NRLDC/ MO/Outstanding /564-573 Dt: 12/12/2024, to CE (SLDC), JKPCL
12) NRLDC/ MO/Outstanding /578 Dt: 20/12/2024, to MD, JKPCL
13) NRLDC/ MO/Outstanding /597 Dt: 14/01/2024, to CE (SLDC), JKPCL

Sir,

As you are aware, NRLDC is operating and maintaining the "Northern Regional Pool Account" for Deviation charges, Reactive Energy Charges and Congestion Charges in accordance with provisions under various CERC Regulations. As per Regulations the payment to the statutory pool account have **high priority** and the concerned utilities are required to pay the indicated amounts within ten days of issue of the weekly energy account by NRPC Secretariat.

Further, kindly refer to the NRLDC letter dated 11/11/2024 & 13/01/2025 regarding payment of Net Deviation & Ancillary Services Pool Account Deficit Recovery for period prior 16.09.2024 (Statement of legacy dues) and for period 16.09.2024 to 22.12.2024. It is to state that the deficit payment statement "Net Deviation & Ancillary Services Pool Account Deficit Recovery Statements" were issued in line with the Deviation Settlement Mechanism Regulations, 2024, CERC approved procedure vide order No. L-1/260/2021/CERC dated 15th October 2024 and CERC **Suo-Moto order no. 01/SM/2025 dated 08/01/2024**.

In this context it is noted that payment for the last thirteen (13) instalments (instalment no 1 to 13) are yet to be received from Jammu and Kashmir.

Cont…

The last payment received in pool accounts from JKPCL was on 09/02/2024. Now, the outstanding against statuary pool accounts payments as on date (Considering Week 42 of FY 2024-25) by JKPCL is as briefed here under.

All figures in Rs.

Sl. No.	Description	Principal (in ₹)	Remarks
1	Deviation Charges	122,92,48,381	Up to week 42 (13-01-2025/19-01-2025)
2	Pool Deficit Recovery Charges (Legacy Dues) (13th instalment is due as on date.	35,74,87,078	13 nos Instalment (1th to 13th) of ₹ 2,74,99,006 each are pending out of total 20 instalment
3	Pool Deficit Recovery Charges (As per NLDC statement dated 13/01/2025)	2,92,27,885	
	Total Outstanding	**1,61,59,63,344**	Detailed reconciliation statement is attached at Annex-I

It is therefore request your kind office to look into the matter and facilitate the settlement of the outstanding dues of ₹ **1,61,59,63,344/- (Rupees One Hundred Sixty One Crore Fifty Nine Lakhs Sixty Three Thousand Three Hundred and Forty Four only**) against the deviation charges and pool deficit recovery charges at the earliest.

Further, it is also requested that timely payment of deviation charges and forthcoming instalments of pool deficit recovery may kindly be ensured to avoid any further interest liability on delayed payments.

धन्यवाद,

आपका आभारी,

शेख शदरुद्दीन
मुख्य महाप्रबंधक (मा. ओ.), उ.क्षे.भा.प्रे.के.

Copy for kind information:

1. Secretary (Power), Ministry of Power, New Delhi
2. Secretary, CERC, 3rd & 4th Floor, Chanderlok Building, 36, Janpath, New Delhi- 110001
3. Principal Secretary, Power Development Department J&K, Lotary building Behind Civil Secretariat, Srinagar, Jammu and Kashmir
4. MD, JKPCL, SLDC Building, Ist Floor, Gladani Grid Station, Narval Bala, Jammu
5. Member Secretary, NRPC, Katwaria Sarai, New Delhi
6. CMD, GRID-INDIA, CC, 8th/9th floor, IFCI Tower, 61, Nehru Place, New Delhi
7. Director (Market Operation), 8th/9th floor, IFCI Tower, 61, Nehru Place, New Delhi
8. Executive Director, NRLDC, Katwaria Sarai, New Delhi
9. Executive Director, NLDC, Katwaria Sarai, New Delhi

ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
भारत सरकार का उद्यम
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Ref. No. NRLDC/ MO/Outstanding/ 597 Date:14th January 2025

To
The Chief Engineer
JKPCL, SLDC Building,
Ist Floor Gladni Grid Station,
Nanval Bala, Jammu-180 004

Sub: Release of outstanding payment against NR Statutory Pool Accounts - Reg.

Ref: 1) NRLDC Letter Ref No. 1) NRLDC/ MO/Pool/03-10 Dt: 02/01/2024, to CE (SLDC), JKPCL
2) NRLDC/ MO/Pool/56-63 Dt: 24/01/2024, to CE (SLDC), JKPCL
3) NRLDC/ MO/Outstanding /89-96 Dt: 13/02/2024, to CE (SLDC), JKPCL
4) NRLDC/ MO/Outstanding /31-139 Dt: 02/04/2024, to CE (SLDC), JKPCL
5)NRLDC/ MO/Outstanding /183-191 Dt: 03/05/2024, to CE (SLDC), JKPCL
6) NRLDC/ MO/Outstanding /210-216 Dt: 20/05/2024, to MD, JKPCL
7) NRLDC/ MO/Outstanding /394-401 Dt: 01/07/2024, to CE (SLDC), JKPCL
8)) NRLDC/ MO/Outstanding /430-438 Dt: 05/08/2024, to CE (SLDC), JKPCL
9) NRLDC/ MO/Outstanding / Dt: 10/10/2024, to CE (SLDC), JKPCL
10) NRLDC/ MO/Outstanding /523-531 Dt: 30/10/2024, to CE (SLDC), JKPCL
11) NRLDC/ MO/Outstanding /564-573 Dt: 12/12/2024, to CE (SLDC), JKPCL
12) NRLDC/ MO/Outstanding /578 Dt: 20/12/2024, to MD, JKPCL

Sir,

As you are aware, NRLDC is operating and maintaining the "Northern Regional Pool Account" for Deviation charges, Reactive Energy Charges and Congestion Charges in accordance with provisions under various CERC Regulations. As per Regulations the payment to the statutory pool account have **high priority** and the concerned utilities are required to pay the indicated amounts within ten days of issue of the weekly energy account by NRPC Secretariat.

Further, kindly refer the NRLDC letter dated 11/11/2024 regarding payment of Net Deviation & Ancillary Services Pool Account Deficit Recovery for period prior 16.09.2024 (Statement of legacy dues). It is to state that the deficit payment statement "Net Deviation & Ancillary Services Pool Account Deficit Recovery Statement for period prior 16.09.2024" was issued in line with the Deviation Settlement Mechanism Regulations, 2024 and CERC approved procedure vide order No. L-1/260/2021/CERC dated 15th October 2024.

CERC **Suo-Moto order no. 01/SM/2025 dated 08/01/2024** regarding recovery of legacy dues in the Deviation Settlement Mechanism (DSM) Pool Account states that the methodology approved in the detailed procedure vide the Order dated 15.10.2024 is applicable for recovery of charges in case of the deficits in the DSM Pool Account "as on and from 16th September 2024.

Contd…

In this context it is noted that payment for the last eight (8) instalments (instalment no 1 to 8) are yet to be received from Jammu and Kashmir.

The last payment received in pool accounts from JKPCL was on 09/02/2024. Now, the outstanding against statuary pool accounts payments as on date (Considering Week 38 of FY 2024-25) by JKPCL is as briefed here under.

All figures in Rs.

Sl. No.	Description	Principal (up to Week 38)	Remarks
1	Deviation Charges	126,46,86,614	Detailed reconciliation statement is attached at Annex-I
2	Pool Deficit Recovery Charges (8th Instalment due as on date)	21,99,92,048	
	Total Outstanding	**1,48,46,78,662**	

It is therefore request your kind office to look into the matter and facilitate the settlement of the outstanding dues of ₹ **1,48,46,78,662/- (Rupees One Hundred Forty Eight Crore Forty Six Lakhs Seventy Eight Thousand Six Hundred and Sixty Two only**) against the deviation charges and pool deficit recovery charges at the earliest.

Further, it is also requested that timely payment of deviation charges and forthcoming instalments of pool deficit recovery may kindly be ensured to avoid any further interest liability on delayed payments.

धन्यवाद,

आपका आभारी,

शेख शदरुद्दीन
मुख्य महाप्रबंधक (मा. ओ.), उ.क्षे.भा.प्रे.के.

Copy for kind information:

1. Secretary (Power), Ministry of Power, New Delhi
2. Secretary, CERC, 3rd & 4th Floor, Chanderlok Building, 36, Janpath, New Delhi- 110001
3. Principal Secretary, Power Development Department J&K, Lotary building Behind Civil Secretariat, Srinagar, Jammu and Kashmir
4. MD, JKPCL, SLDC Building, Ist Floor, Gladani Grid Station, Narval Bala, Jammu
5. Member Secretary, NRPC, Katwaria Sarai, New Delhi
6. CMD, GRID-INDIA, CC, 8th/9th floor, IFCI Tower, 61, Nehru Place, New Delhi
7. Director (Market Operation), 8th/9th floor, IFCI Tower, 61, Nehru Place, New Delhi
8. Executive Director, NRLDC, Katwaria Sarai, New Delhi
9. Executive Director, NLDC, Katwaria Sarai, New Delhi

Statement of Deviation Account of JAMMU AND KASHMIR

From 01-02-2024 To 14-01-2025

Sr. No.	A/C ISSUE/ TRANSACTION	DESCRIPTOR OF TRANSACTION IN DEVIATION POOL ACCOUNT	DUE/ PAYMENT DATE	AMOUNT PAYABLE TO POOL (Rs)(A)	AMOUNT RECEIVABLE FROM POOL (Rs) (B)	AMOUNT PAID TO POOL (Rs)(C)	AMOUNT DISBURSED FROM POOL (Rs)(D)	BALANCE AMOUNT (Rs)
		OPENING BALANCE		49,86,30,632				49,86,30,632
1	02-02-2024	For Week:43(15-01-2024/21-01-2024)	09-02-2024	8,90,28,996				58,76,59,628
2	09-02-2024	PAID	09-02-2024			20,22,44,280		38,54,15,348
3	08-02-2024	For Week:44(22-01-2024/28-01-2024)	15-02-2024	12,08,86,804				50,63,02,152
4	16-02-2024	For Week:45(29-01-2024/04-02-2024)	23-02-2024	3,10,04,355				53,73,06,507
5	23-02-2024	For Week:46(05-02-2024/11-02-2024)	01-03-2024	4,46,31,017				58,19,37,524
6	01-03-2024	For Week:47(12-02-2024/18-02-2024)	08-03-2024	1,19,29,624				59,38,67,148
7	08-03-2024	For Week:48(19-02-2024/25-02-2024)	15-03-2024	3,22,92,553				62,61,59,701
8	15-03-2024	For Week:49(26-02-2024/03-03-2024)	22-03-2024	3,64,45,294				66,26,04,995
9	21-03-2024	For Week:50(04-03-2024/10-03-2024)	28-03-2024	1,10,76,016				67,36,81,011
10	27-03-2024	For Week:51(11-03-2024/17-03-2024)	03-04-2024	2,08,33,623				69,45,14,634
11	03-04-2024	For Week:52(18-03-2024/24-03-2024)	10-04-2024	1,89,69,966				71,34,84,600
12	10-04-2024	For Week :53(25-03-2024/31-03-2024)	17-04-2024		1,50,65,122			69,84,19,478
13	19-04-2024	For Week:1(01-04-2024/07-04-2024)	26-04-2024	8,49,57,549				78,33,77,027
14	26-04-2024	For Week:2(08-04-2024/14-04-2024)	03-05-2024	93,64,256				79,27,41,283
15	03-05-2024	For Week:3(15-04-2024/21-04-2024)	10-05-2024	1,36,52,699				80,63,93,982
16	09-05-2024	For Week:4(22-04-2024/28-04-2024)	16-05-2024	1,50,98,973				82,14,92,955
17	16-05-2024	For Week :5(29-04-2024/05-05-2024)	23-05-2024		1,45,56,512			80,69,36,443
18	22-05-2024	For Week :6(06-05-2024/12-05-2024)	29-05-2024		2,51,19,691			78,18,16,752
19	30-05-2024	For Week :7(13-05-2024/19-05-2024)	06-06-2024		2,51,94,190			75,66,22,562
20	06-06-2024	For Week :8(20-05-2024/26-05-2024)	13-06-2024		4,22,48,745			71,43,73,817
21	14-06-2024	For Week :9(27-05-2024/02-06-2024)	21-06-2024		3,87,54,181			67,56,19,636
22	20-06-2024	For Week :10(03-06-2024/09-06-2024)	27-06-2024		53,62,640			67,02,56,996
23	27-06-2024	For Week:11(10-06-2024/16-06-2024)	04-07-2024	11,52,91,398				78,55,48,394
24	05-07-2024	For Week:12(17-06-2024/23-06-2024)	12-07-2024	25,61,107				78,81,09,501
25	12-07-2024	For Week :13(24-06-2024/30-06-2024)	19-07-2024		7,53,08,295			71,28,01,206
26	19-07-2024	For Week :14(01-07-2024/07-07-2024)	26-07-2024		8,09,70,139			63,18,31,067
27	25-07-2024	For Week :15(08-07-2024/14-07-2024)	01-08-2024		10,41,96,483			52,76,34,584

Sr. No.	A/C ISSUE/ TRANSACTION	DESCRIPTOR OF TRANSACTION IN DEVIATION POOL ACCOUNT	DUE/ PAYMENT DATE	AMOUNT PAYABLE TO POOL (Rs)(A)	AMOUNT RECEIVABLE FROM POOL (Rs) (B)	AMOUNT PAID TO POOL (Rs)(C)	AMOUNT DISBURSED FROM POOL (Rs)(D)	BALANCE AMOUNT (Rs)
28	01-08-2024	For Week :16(15-07-2024/21-07-2024)	08-08-2024		8,11,92,094			44,64,42,490
29	09-08-2024	For Week :17(22-07-2024/28-07-2024)	16-08-2024		1,24,88,253			43,39,54,237
30	16-08-2024	For Week :18(29-07-2024/04-08-2024)	23-08-2024		3,87,97,325			39,51,56,912
31	27-08-2024	For Week :19(05-08-2024/11-08-2024)	03-09-2024		2,04,24,755			37,47,32,157
32	30-08-2024	For Week :20(12-08-2024/18-08-2024)	06-09-2024		2,39,11,048			35,08,21,109
33	06-09-2024	For Week:21(19-08-2024/25-08-2024)	13-09-2024	8,30,39,429				43,38,60,538
34	17-09-2024	For Week :22(26-08-2024/01-09-2024)	24-09-2024		88,21,819			42,50,38,719
35	19-09-2024	For Week:23(02-09-2024/08-09-2024)	26-09-2024	38,72,580				42,89,11,299
36	26-09-2024	For Week:24(09-09-2024/15-09-2024)	03-10-2024	22,26,891				43,11,38,190
37	07-10-2024	For Week:25(16-09-2024/22-09-2024)	17-10-2024	10,06,67,680				53,18,05,870
38	10-10-2024	For Week:26(23-09-2024/29-09-2024)	20-10-2024	30,85,11,126				84,03,16,996
39	17-10-2024	For Week:27(30-09-2024/06-10-2024)	27-10-2024	19,11,45,390				1,03,14,62,386
40	24-10-2024	For Week:28(07-10-2024/13-10-2024)	03-11-2024	9,31,80,369				1,12,46,42,755
41	30-10-2024	For Week:29(14-10-2024/20-10-2024)	09-11-2024	2,65,93,750				1,15,12,36,505
42	07-11-2024	For Week :30(21-10-2024/27-10-2024)	17-11-2024		1,60,79,818			1,13,51,56,687
43	13-11-2024	For Week:31(28-10-2024/03-11-2024)	23-11-2024	2,26,37,138				1,15,77,93,825
44	20-11-2024	For Week :32(04-11-2024/10-11-2024)	30-11-2024		1,30,71,150			1,14,47,22,675
45	28-11-2024	For Week :33(11-11-2024/17-11-2024)	08-12-2024		1,37,48,727			1,13,09,73,948
46	05-12-2024	For Week :34(18-11-2024/24-11-2024)	15-12-2024	1,38,84,577				1,14,48,58,525
47	11-12-2024	For Week :35(25-11-2024/01-12-2024)	21-12-2024	1,67,55,030				1,16,16,13,555
26	20-12-2024	For Week:36(02-12-2024/08-12-2024)	30-12-2024	1,02,29,444				1,17,18,42,999
27	24-12-2024	For Week:37(09-12-2024/15-12-2024)	03-01-2025	3,13,66,479				1,20,32,09,478
28	03-01-2025	For Week:38(16-12-2024/22-12-2024)	13-01-2025	6,14,77,136				1,26,46,86,614
Total				2,12,22,41,881	65,53,10,987	20,22,44,280	-	1,26,46,86,614

Total Outstanding dues against Pool Deficit Recovery 21,99,92,048 8 Nos instalment of ₹ 27499006 each are due as on 14/01/2025

Total Outstanding charges of Deviation Charges: 1,26,46,86,614

Total Outstanding charges of Jammu & Kashmir: 1,48,46,78,662

ग्रिड-इंडिया
GRID-INDIA

ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
भारत सरकार का उद्यम
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर क्षेत्रीय भार प्रेषण केन्द्र / Northern Regional Load Despatch Centre
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
Office : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN : U40105DL2009GOI188682, Website : www.nrldc.in, E-mail : nrldc@grid-india.in, Tel: 011 26519406, 26523869, Fax 011 26852747

Ref. No. NRLDC/ MO/Outstanding/ 578

Date: 20th December 2024

To

The Managing Director
JKPCL,
1st Floor JERC Building,
Ambedkar Road, Panama Chowk
Jammu , J&K -180016

Sub: Outstanding Dues towards the NR Statutory Pool Account (Deviation Charges) - Reg.

Ref: 1) NRLDC Letter Ref No. 1) NRLDC/ MO/Pool/03-10 Dt: 02/01/2024, to CE (SLDC), JKPCL
2) NRLDC/ MO/Pool/56-63 Dt: 24/01/2024, to CE (SLDC), JKPCL
3) NRLDC/ MO/Outstanding /89-96 Dt: 13/02/2024, to CE (SLDC), JKPCL
4) NRLDC/ MO/Outstanding /31-139 Dt: 02/04/2024, to CE (SLDC), JKPCL
5)NRLDC/ MO/Outstanding /183-191 Dt: 03/05/2024, to CE (SLDC), JKPCL
6) NRLDC/ MO/Outstanding /210-216 Dt: 20/05/2024, to MD, JKPCL
7) NRLDC/ MO/Outstanding /394-401 Dt: 01/07/2024, to CE (SLDC), JKPCL
8)) NRLDC/ MO/Outstanding /430-438 Dt: 05/08/2024, to CE (SLDC), JKPCL
9) NRLDC/ MO/Outstanding / Dt: 10/10/2024, to CE (SLDC), JKPCL
10) NRLDC/ MO/Outstanding /523-531 Dt: 30/10/2024, to CE (SLDC), JKPCL
11) NRLDC/ MO/Outstanding /564-573 Dt: 12/12/2024, to CE (SLDC), JKPCL

Sir,

As you are aware, NRLDC is operating and maintaining the "Northern Regional Pool Account" for Deviation charges, Reactive Energy Charges and Congestion Charges in accordance with provisions under various CERC Regulations. As per Regulations the payment to the statutory pool account have **high priority** and the concerned utilities are required to pay the indicated amounts within seven days of issue of the weekly energy account by NRPC Secretariat.

The Deviation charges payable by JKPCL to the "Northern Regional Pool Account" have been piling up since last 10 months and now stands at around ₹116.16 crores as on 20/12/2024 (principal amount). Week wise outstanding details attached at Annexure-I, which shows that no payment has been made since beginning of 2024. Despite multiple communications in this regard from our side, JKPCL has not cleared the outstanding payable amount. Due to non-receipt of payment from JKPCL, the payable amount to the receivable entities from the Pool are also held up due to non-availability of funds in the account.

Further kindly refer the NRLDC letter dated 11/11/2024 regarding payment of Net Deviation & Ancillary Services Pool Account Deficit Recovery for period prior 16.09.2024 (Statement of legacy dues). In this context it is noted that payment for the last five (5) instalments (instalment no 1 to 5) are yet to be received from Jammu and Kashmir.

Cont….

Summary of outstanding payments of JKPCL is given below:

All figures in Rs. Lakhs

Sl. No.	Description	Principal (up to Week 35)	Remarks
1	Deviation Charges	11616.14	Detailed reconciliation statement is attached at Annex-I
2	Pool Deficit Recovery Charges (5th Instalment due as on date)	1374.95	
	Total Outstanding	**12991.08**	

It is worth mention here that due to non-receipt of the aforesaid payments within the schedule timelines as stipulated in the regulation, the delay payment interest liabilities on the outstanding principle amount is also piling up, which has accumulated to a substantial amount, which can be quantified only after settlement of the principle amount.

We therefore request your kind office to look into the matter and arrange for the settlement of the outstanding dues of ₹ 129,91,08,585 /- (Rupees One Hundred Twenty Nine Crore Ninety one Lakhs Eight Thousand Five Hundred and Eighty Five only) against the deviation charges and pool deficit recovery charges at the earliest.

Further, it is also requested that timely payment of deviation charges and forthcoming instalments of pool deficit recovery may kindly be ensured to avoid any further interest liability on delayed payments.

धन्यवाद,

आपका आभारी,

20/12/2024

(एन. रॉय)

कार्यपालक निदेशक- उ॰क्षे॰भा॰प्रे॰के॰

Encl.: As stated above.

Copy for kind information:

1. Secretary (Power), Ministry of Power, New Delhi
2. Secretary, CERC, 3rd & 4th Floor, Chanderlok Building, 36, Janpath, New Delhi- 110001
3. Principal Secretary, Power Development Department J&K, Lotary building Behind Civil Secretariat, Srinagar, Jammu and Kashmir
4. Member Secretary, NRPC, Katwaria Sarai, New Delhi
5. CMD, GRID-INDIA, CC, 8th/9th floor, IFCI Tower, 61, Nehru Place, New Delhi
6. Director (Market Operation), 8th/9th floor, IFCI Tower, 61, Nehru Place, New Delhi
7. Executive Director, NLDC, Katwaria Sarai, New Delhi

Statement of Deviation Account of JAMMU AND KASHMIR

From 01-02-2024 To 20-12-2024

Sr. No.	A/C ISSUE/ TRANSACTION	DESCRIPTOR OF TRANSACTION IN DEVIATION POOL ACCOUNT	DUE/ PAYMENT DATE	AMOUNT PAYABLE TO POOL (Rs)(A)	AMOUNT RECEIVABLE FROM POOL (Rs) (B)	AMOUNT PAID TO POOL (Rs)(C)	AMOUNT DISBURSED FROM POOL (Rs)(D)	BALANCE AMOUNT (Rs)
		OPENING BALANCE		49,86,30,632				49,86,30,632
1	02-02-2024	For Week:43(15-01-2024/21-01-2024)	09-02-2024	8,90,28,996				58,76,59,628
2	09-02-2024	PAID	09-02-2024			20,22,44,280		38,54,15,348
3	08-02-2024	For Week:44(22-01-2024/28-01-2024)	15-02-2024	12,08,86,804				50,63,02,152
4	16-02-2024	For Week:45(29-01-2024/04-02-2024)	23-02-2024	3,10,04,355				53,73,06,507
5	23-02-2024	For Week:46(05-02-2024/11-02-2024)	01-03-2024	4,46,31,017				58,19,37,524
6	01-03-2024	For Week:47(12-02-2024/18-02-2024)	08-03-2024	1,19,29,624				59,38,67,148
7	08-03-2024	For Week:48(19-02-2024/25-02-2024)	15-03-2024	3,22,92,553				62,61,59,701
8	15-03-2024	For Week:49(26-02-2024/03-03-2024)	22-03-2024	3,64,45,294				66,26,04,995
9	21-03-2024	For Week:50(04-03-2024/10-03-2024)	28-03-2024	1,10,76,016				67,36,81,011
10	27-03-2024	For Week:51(11-03-2024/17-03-2024)	03-04-2024	2,08,33,623				69,45,14,634
11	03-04-2024	For Week:52(18-03-2024/24-03-2024)	10-04-2024	1,89,69,966				71,34,84,600
12	10-04-2024	For Week :53(25-03-2024/31-03-2024)	17-04-2024		1,50,65,122			69,84,19,478
13	19-04-2024	For Week:1(01-04-2024/07-04-2024)	26-04-2024	8,49,57,549				78,33,77,027
14	26-04-2024	For Week:2(08-04-2024/14-04-2024)	03-05-2024	93,64,256				79,27,41,283
15	03-05-2024	For Week:3(15-04-2024/21-04-2024)	10-05-2024	1,36,52,699				80,63,93,982
16	09-05-2024	For Week:4(22-04-2024/28-04-2024)	16-05-2024	1,50,98,973				82,14,92,955
17	16-05-2024	For Week :5(29-04-2024/05-05-2024)	23-05-2024		1,45,56,512			80,69,36,443
18	22-05-2024	For Week :6(06-05-2024/12-05-2024)	29-05-2024		2,51,19,691			78,18,16,752
19	30-05-2024	For Week :7(13-05-2024/19-05-2024)	06-06-2024		2,51,94,190			75,66,22,562
20	06-06-2024	For Week :8(20-05-2024/26-05-2024)	13-06-2024		4,22,48,745			71,43,73,817
21	14-06-2024	For Week :9(27-05-2024/02-06-2024)	21-06-2024		3,87,54,181			67,56,19,636
22	20-06-2024	For Week :10(03-06-2024/09-06-2024)	27-06-2024		53,62,640			67,02,56,996
23	27-06-2024	For Week:11(10-06-2024/16-06-2024)	04-07-2024	11,52,91,398				78,55,48,394
24	05-07-2024	For Week:12(17-06-2024/23-06-2024)	12-07-2024	25,61,107				78,81,09,501
25	12-07-2024	For Week :13(24-06-2024/30-06-2024)	19-07-2024		7,53,08,295			71,28,01,206
26	19-07-2024	For Week :14(01-07-2024/07-07-2024)	26-07-2024		8,09,70,139			63,18,31,067
27	25-07-2024	For Week :15(08-07-2024/14-07-2024)	01-08-2024		10,41,96,483			52,76,34,584
28	01-08-2024	For Week :16(15-07-2024/21-07-2024)	08-08-2024		8,11,92,094			44,64,42,490

Sr. No.	A/C ISSUE/ TRANSACTION	DESCRIPTOR OF TRANSACTION IN DEVIATION POOL ACCOUNT	DUE/ PAYMENT DATE	AMOUNT PAYABLE TO POOL (Rs)(A)	AMOUNT RECEIVABLE FROM POOL (Rs) (B)	AMOUNT PAID TO POOL (Rs)(C)	AMOUNT DISBURSED FROM POOL (Rs)(D)	BALANCE AMOUNT (Rs)
29	09-08-2024	For Week :17(22-07-2024/28-07-2024)	16-08-2024		1,24,88,253			43,39,54,237
30	16-08-2024	For Week :18(29-07-2024/04-08-2024)	23-08-2024		3,87,97,325			39,51,56,912
31	27-08-2024	For Week :19(05-08-2024/11-08-2024)	03-09-2024		2,04,24,755			37,47,32,157
32	30-08-2024	For Week :20(12-08-2024/18-08-2024)	06-09-2024		2,39,11,048			35,08,21,109
33	06-09-2024	For Week:21(19-08-2024/25-08-2024)	13-09-2024	8,30,39,429				43,38,60,538
34	17-09-2024	For Week :22(26-08-2024/01-09-2024)	24-09-2024		88,21,819			42,50,38,719
35	19-09-2024	For Week:23(02-09-2024/08-09-2024)	26-09-2024	38,72,580				42,89,11,299
36	26-09-2024	For Week:24(09-09-2024/15-09-2024)	03-10-2024	22,26,891				43,11,38,190
37	07-10-2024	For Week:25(16-09-2024/22-09-2024)	17-10-2024	10,06,67,680				53,18,05,870
38	10-10-2024	For Week:26(23-09-2024/29-09-2024)	20-10-2024	30,85,11,126				84,03,16,996
39	17-10-2024	For Week:27(30-09-2024/06-10-2024)	27-10-2024	19,11,45,390				1,03,14,62,386
40	24-10-2024	For Week:28(07-10-2024/13-10-2024)	03-11-2024	9,31,80,369				1,12,46,42,755
41	30-10-2024	For Week:29(14-10-2024/20-10-2024)	09-11-2024	2,65,93,750				1,15,12,36,505
42	07-11-2024	For Week :30(21-10-2024/27-10-2024)	17-11-2024		1,60,79,818			1,13,51,56,687
43	13-11-2024	For Week:31(28-10-2024/03-11-2024)	23-11-2024	2,26,37,138				1,15,77,93,825
44	20-11-2024	For Week :32(04-11-2024/10-11-2024)	30-11-2024		1,30,71,150			1,14,47,22,675
45	28-11-2024	For Week :33(11-11-2024/17-11-2024)	08-12-2024		1,37,48,727			1,13,09,73,948
46	05-12-2024	For Week :34(18-11-2024/24-11-2024)	15-12-2024	1,38,84,577				1,14,48,58,525
47	11-12-2024	For Week :35(25-11-2024/01-12-2024)	21-12-2024	1,67,55,030				1,16,16,13,555
Total				**2,01,91,68,822**	**65,53,10,987**	**20,22,44,280**	**-**	**1,16,16,13,555**

Total Outstanding dues against Pool Deficit Recovery **13,74,95,030** 5 Nos instalment of ₹ 27499006 each are due as on 20/12/2024

Total Outstanding charges of Deviation Charges: **1,16,16,13,555**

Total Outstanding charges of Jammu & Kashmir: **1,29,91,08,585**

ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
भारत सरकार का उद्यम
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर क्षेत्रीय भार प्रेषण केंद्र / Northern Regional Load Despatch Centre
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
Office : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN : U40105DL2009GOI188682, Website : www.nrldc.in, E-mail : nrldc@grid-india.in, Tel: 011 26519406, 26523869, Fax: 011 26852747

Ref. No. NRLDC/ MO/Outstanding/564-573 Date:12th December 2024

To
The Chief Engineer
JKPCL, SLDC Building,
Ist Floor Gladni Grid Station,
Nanval Bala, Jammu-180 004

Sub: Release of outstanding payment against NR Statutory Pool Accounts - Reg.

Ref: 1) NRLDC Letter Ref No. 1) NRLDC/ MO/Pool/03-10 Dt: 02/01/2024, to CE (SLDC), JKPCL
2) NRLDC/ MO/Pool/56-63 Dt: 24/01/2024, to CE (SLDC), JKPCL
3) NRLDC/ MO/Outstanding /89-96 Dt: 13/02/2024, to CE (SLDC), JKPCL
4) NRLDC/ MO/Outstanding /31-139 Dt: 02/04/2024, to CE (SLDC), JKPCL
5)NRLDC/ MO/Outstanding /183-191 Dt: 03/05/2024, to CE (SLDC), JKPCL
6) NRLDC/ MO/Outstanding /210-216 Dt: 20/05/2024, to MD, JKPCL
7) NRLDC/ MO/Outstanding /394-401 Dt: 01/07/2024, to CE (SLDC), JKPCL
8)) NRLDC/ MO/Outstanding /430-438 Dt: 05/08/2024, to CE (SLDC), JKPCL
9) NRLDC/ MO/Outstanding / Dt: 10/10/2024, to CE (SLDC), JKPCL
10)NRLDC/ MO/Outstanding /523-531 Dt: 30/10/2024, to CE (SLDC), JKPCL

Sir,

As you are aware, NRLDC is operating and maintaining the "Northern Regional Pool Account" for Deviation charges, Reactive Energy Charges and Congestion Charges in accordance with provisions under various CERC Regulations. As per Regulations the payment to the statutory pool account have **high priority** and the concerned utilities are required to pay the indicated amounts within ten days of issue of the weekly energy account by NRPC Secretariat.

In this regard, last payment received in pool accounts from JKPCL was on 09/02/2024. Now, the outstanding against statuary pool accounts payments as on date (Considering Week 35 of FY 2024-25) by JKPCL is as briefed here under.

All figures in Rs. Lakhs

Sl. No.	Description	Principal (up to Week 24)	Delay Payment Interest	Total Amount
1	Deviation Charges	11616.14	0.00	11616.14
2	Pool Deficit Recovery Charges (4th Instalment due as on date)	1099.96	0.00	1099.96
	Total Outstanding	**12,716.10**	**0.00**	**12,716.10**

Detailed reconciliation statement is attached at Annex-I.

Contd…

Due to non-receipt of the payment from JKPCL, the payments to the receivable entities from the pool are also getting delayed. Despite multiple communications in this regard from our side, JKPCL has not cleared the outstanding payable amount.

We therefore request your kind office to look into the matter and facilitate the settlement of the outstanding dues of ₹ **127,16,09,579 /- (Rupees One Hundred Twenty Seven Crore Sixteen Lakhs Nine Thousand Five Hundred and Seventy Nine only**) against the deviation charges and pool deficit recovery charges at the earliest to avoid further accumulation of payable principal amount of deviation charges and the interest on delayed deviation account payments.

It is also requested to regularly make payments to Statutory Pool Accounts as per the Regulations to avoid any further interest liability on delayed payments.

धन्यवाद,

आपका आभारी,

(शेख शदरुद्दीन)

वरि. महाप्रबंधक (मा. ओ.), उ.क्षे.भा.प्रे.के.

Copy for kind information:

1. Secretary (Power), Ministry of Power, New Delhi
2. Secretary, CERC, 3rd & 4th Floor, Chanderlok Building, 36, Janpath, New Delhi- 110001
3. Principal Secretary, Power Development Department J&K, Lotary building Behind Civil Secretariat, Srinagar, Jammu and Kashmir
4. MD, JKPCL, SLDC Building, Ist Floor, Gladani Grid Station, Narval Bala, Jammu
5. Member Secretary, NRPC, Katwaria Sarai, New Delhi
6. CMD, GRID-INDIA, CC, 8th/9th floor, IFCI Tower, 61, Nehru Place, New Delhi
7. Director (Market Operation), 8th/9th floor, IFCI Tower, 61, Nehru Place, New Delhi
8. Executive Director, NRLDC, Katwaria Sarai, New Delhi
9. Executive Director, NLDC, Katwaria Sarai, New Delhi

Statement of Deviation Account of JAMMU AND KASHMIR

From 01-02-2024 To 12-12-2024

Sr. No.	A/C ISSUE/ TRANSACTION	DESCRIPTOR OF TRANSACTION IN DEVIATION POOL ACCOUNT	DUE/ PAYMENT DATE	AMOUNT PAYABLE TO POOL (Rs)(A)	AMOUNT RECEIVABLE FROM POOL (Rs) (B)	AMOUNT PAID TO POOL (Rs)(C)	AMOUNT DISBURSED FROM POOL (Rs)(D)	BALANCE AMOUNT (Rs)
		OPENING BALANCE		49,86,30,632				49,86,30,632
1	02-02-2024	For Week:43(15-01-2024/21-01-2024)	09-02-2024	8,90,28,996				58,76,59,628
2	09-02-2024	PAID	09-02-2024			20,22,44,280		38,54,15,348
3	08-02-2024	For Week:44(22-01-2024/28-01-2024)	15-02-2024	12,08,86,804				50,63,02,152
4	16-02-2024	For Week:45(29-01-2024/04-02-2024)	23-02-2024	3,10,04,355				53,73,06,507
5	23-02-2024	For Week:46(05-02-2024/11-02-2024)	01-03-2024	4,46,31,017				58,19,37,524
6	01-03-2024	For Week:47(12-02-2024/18-02-2024)	08-03-2024	1,19,29,624				59,38,67,148
7	08-03-2024	For Week:48(19-02-2024/25-02-2024)	15-03-2024	3,22,92,553				62,61,59,701
8	15-03-2024	For Week:49(26-02-2024/03-03-2024)	22-03-2024	3,64,45,294				66,26,04,995
9	21-03-2024	For Week:50(04-03-2024/10-03-2024)	28-03-2024	1,10,76,016				67,36,81,011
10	27-03-2024	For Week:51(11-03-2024/17-03-2024)	03-04-2024	2,08,33,623				69,45,14,634
11	03-04-2024	For Week:52(18-03-2024/24-03-2024)	10-04-2024	1,89,69,966				71,34,84,600
12	10-04-2024	For Week :53(25-03-2024/31-03-2024)	17-04-2024		1,50,65,122			69,84,19,478
13	19-04-2024	For Week:1(01-04-2024/07-04-2024)	26-04-2024	8,49,57,549				78,33,77,027
14	26-04-2024	For Week:2(08-04-2024/14-04-2024)	03-05-2024	93,64,256				79,27,41,283
15	03-05-2024	For Week:3(15-04-2024/21-04-2024)	10-05-2024	1,36,52,699				80,63,93,982
16	09-05-2024	For Week:4(22-04-2024/28-04-2024)	16-05-2024	1,50,98,973				82,14,92,955
17	16-05-2024	For Week :5(29-04-2024/05-05-2024)	23-05-2024		1,45,56,512			80,69,36,443
18	22-05-2024	For Week :6(06-05-2024/12-05-2024)	29-05-2024		2,51,19,691			78,18,16,752
19	30-05-2024	For Week :7(13-05-2024/19-05-2024)	06-06-2024		2,51,94,190			75,66,22,562
20	06-06-2024	For Week :8(20-05-2024/26-05-2024)	13-06-2024		4,22,48,745			71,43,73,817
21	14-06-2024	For Week :9(27-05-2024/02-06-2024)	21-06-2024		3,87,54,181			67,56,19,636
22	20-06-2024	For Week :10(03-06-2024/09-06-2024)	27-06-2024		53,62,640			67,02,56,996
23	27-06-2024	For Week:11(10-06-2024/16-06-2024)	04-07-2024	11,52,91,398				78,55,48,394
24	05-07-2024	For Week:12(17-06-2024/23-06-2024)	12-07-2024	25,61,107				78,81,09,501
25	12-07-2024	For Week :13(24-06-2024/30-06-2024)	19-07-2024		7,53,08,295			71,28,01,206
26	19-07-2024	For Week :14(01-07-2024/07-07-2024)	26-07-2024		8,09,70,139			63,18,31,067
27	25-07-2024	For Week :15(08-07-2024/14-07-2024)	01-08-2024		10,41,96,483			52,76,34,584
28	01-08-2024	For Week :16(15-07-2024/21-07-2024)	08-08-2024		8,11,92,094			44,64,42,490
29	09-08-2024	For Week :17(22-07-2024/28-07-2024)	16-08-2024		1,24,88,253			43,39,54,237
30	16-08-2024	For Week :18(29-07-2024/04-08-2024)	23-08-2024		3,87,97,325			39,51,56,912
31	27-08-2024	For Week :19(05-08-2024/11-08-2024)	03-09-2024		2,04,24,755			37,47,32,157
32	30-08-2024	For Week :20(12-08-2024/18-08-2024)	06-09-2024		2,39,11,048			35,08,21,109
33	06-09-2024	For Week:21(19-08-2024/25-08-2024)	13-09-2024	8,30,39,429				43,38,60,538
34	17-09-2024	For Week :22(26-08-2024/01-09-2024)	24-09-2024		88,21,819			42,50,38,719
35	19-09-2024	For Week:23(02-09-2024/08-09-2024)	26-09-2024	38,72,580				42,89,11,299
36	26-09-2024	For Week:24(09-09-2024/15-09-2024)	03-10-2024	22,26,891				43,11,38,190

Sr. No.	A/C ISSUE/ TRANSACTION	DESCRIPTOR OF TRANSACTION IN DEVIATION POOL ACCOUNT	DUE/ PAYMENT DATE	AMOUNT PAYABLE TO POOL (Rs)(A)	AMOUNT RECEIVABLE FROM POOL (Rs) (B)	AMOUNT PAID TO POOL (Rs)(C)	AMOUNT DISBURSED FROM POOL (Rs)(D)	BALANCE AMOUNT (Rs)
37	07-10-2024	For Week:25(16-09-2024/22-09-2024)	17-10-2024	10,06,67,680				53,18,05,870
38	10-10-2024	For Week:26(23-09-2024/29-09-2024)	20-10-2024	30,85,11,126				84,03,16,996
39	17-10-2024	For Week:27(30-09-2024/06-10-2024)	27-10-2024	19,11,45,390				1,03,14,62,386
40	24-10-2024	For Week:28(07-10-2024/13-10-2024)	03-11-2024	9,31,80,369				1,12,46,42,755
41	30-10-2024	For Week:29(14-10-2024/20-10-2024)	09-11-2024	2,65,93,750				1,15,12,36,505
42	07-11-2024	For Week :30(21-10-2024/27-10-2024)	17-11-2024		1,60,79,818			1,13,51,56,687
43	13-11-2024	For Week:31(28-10-2024/03-11-2024)	23-11-2024	2,26,37,138				1,15,77,93,825
44	20-11-2024	For Week :32(04-11-2024/10-11-2024)	30-11-2024		1,30,71,150			1,14,47,22,675
45	28-11-2024	For Week :33(11-11-2024/17-11-2024)	08-12-2024		1,37,48,727			1,13,09,73,948
46	05-12-2024	For Week :34(18-11-2024/24-11-2024)	15-12-2024	1,38,84,577				1,14,48,58,525
47	11-12-2024	For Week :35(25-11-2024/01-12-2024)	21-12-2024	1,67,55,030				1,16,16,13,555
Total				**2,01,91,68,822**	**65,53,10,987**	**20,22,44,280**	-	**1,16,16,13,555**

Total Outstanding dues against Pool Deficit Recovery 10,99,96,024 4 Nos instalment of ₹ 27499006 each are due as on 12/12/2024

Total Outstanding charges of Deviation Charges: 1,16,16,13,555

Total Outstanding charges of Jammu & Kashmir: 1,27,16,09,579

ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
भारत सरकार का उद्यम
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर क्षेत्रीय भार प्रेषण केंद्र / Northern Regional Load Despatch Centre
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
Office : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN : U40105DL2009GOI188682, Website : www.nrldc.in, E-mail : nrldc@grid-india.in, Tel.: 011 26519406, 26523869, Fax: 011 26852747

Ref. No. NRLDC/ MO/Outstanding/523-531

Date:30th October 2024

To
The Chief Engineer
JKPCL, SLDC Building,
Ist Floor Gladni Grid Station,
Nanval Bala, Jammu-180 004

Sub: Release of outstanding payment against NR Statutory Pool Accounts - Reg.

Ref: 1) NRLDC Letter Ref No. 1) NRLDC/ MO/Pool/03-10 Dt: 02/01/2024, to CE (SLDC), JKPCL
2) NRLDC/ MO/Pool/56-63 Dt: 24/01/2024, to CE (SLDC), JKPCL
3) NRLDC/ MO/Outstanding /89-96 Dt: 13/02/2024, to CE (SLDC), JKPCL
4) NRLDC/ MO/Outstanding /31-139 Dt: 02/04/2024, to CE (SLDC), JKPCL
5)NRLDC/ MO/Outstanding /183-191 Dt: 03/05/2024, to CE (SLDC), JKPCL
6) NRLDC/ MO/Outstanding /210-216 Dt: 20/05/2024, to MD, JKPCL
7) NRLDC/ MO/Outstanding /394-401 Dt: 01/07/2024, to CE (SLDC), JKPCL
8)) NRLDC/ MO/Outstanding /430-438 Dt: 05/08/2024, to CE (SLDC), JKPCL
9) NRLDC/ MO/Outstanding /Dt: 10/10/2024, to CE (SLDC), JKPCL

Sir,

As you are aware, NRLDC is operating and maintaining the "Northern Regional Pool Account" for Deviation charges, Reactive Energy Charges and Congestion Charges in accordance with provisions under various CERC Regulations. As per Regulations the payment to the statutory pool account have **high priority** and the concerned utilities are required to pay the indicated amounts within ten days of issue of the weekly energy account by NRPC Secretariat.

In this regard, last payment received in pool accounts from JKPCL was on 09/02/2024. Now, the outstanding against statuary pool accounts payments as on date (Considering Week 28 of FY 2024-25) by JKPCL is as briefed here under.

All figures in Rs. Lakhs

Sl. No.	Description	Principal (up to Week 24)	Delay Payment Interest	Total Amount
1	Deviation Charges	11246.43	0.00	11246.43
	Total Outstanding	**11246.43**	**0.00**	**11246.43**

Detailed reconciliation statement is attached at Annex-I.

Due to non-receipt of the payment from JKPCL, the payments to the receivable entities from the pool are also getting delayed. Despite multiple communications in this regard from our side, JKPCL has not cleared the outstanding payable amount.

Contd...

We therefore request your kind office to look into the matter and facilitate the settlement of the outstanding dues of ₹ **112,46,42,755/- (Rupees One Hundred Twelve Crore Forty Six Lakhs Forty Two Thousand Seven Hundred and Fifty Five only)** against the deviation charges at the earliest to avoid further accumulation of payable principal amount of deviation charges and the interest on delayed deviation account payments.

It is also requested to regularly make payments to Statutory Pool Accounts as per the Regulations to avoid any further interest liability on delayed payments.

धन्यवाद,

आपका आभारी,

(शेख शदरुद्दीन)

वरि. महाप्रबंधक (मा. ओ.), उ.क्षे.भा.प्रे.के.

Copy for kind information:

1. Secretary, CERC, 3rd & 4th Floor, Chanderlok Building, 36, Janpath, New Delhi- 110001
2. Principal Secretary, Power Development Department J&K, Lotary bulding Behind Civil Secretariat, Srinagar, Jammu and Kashmir
3. MD, JKPCL, SLDC Building, Ist Floor, Gladani Grid Station, Narval Bala, Jammu
4. Member Secretary, NRPC, Katwaria Sarai, New Delhi
5. CMD, GRID-INDIA, CC, 8th/9th floor, IFCI Tower, 61, Nehru Place, New Delhi
6. Director (Market Operation), 8th/9th floor, IFCI Tower, 61, Nehru Place, New Delhi
7. Executive Director, NRLDC, Katwaria Sarai, New Delhi
8. Executive Director, NLDC, Katwaria Sarai, New Delhi

NR Pool Account - Reconciliation Statement of Deviation Account

JAMMU AND KASHMIR

From 01-02-2024 To 07-11-2024

Sr. No.	A/C ISSUE/ TRANSACTION	DESCRIPTOR OF TRANSACTION IN DEVIATION POOL ACCOUNT	DUE/ PAYMENT DATE	AMOUNT PAYABLE TO POOL (Rs)(A)	AMOUNT RECEIVABLE FROM POOL (Rs) (B)	AMOUNT PAID TO POOL (Rs)(C)	AMOUNT DISBURSED FROM POOL (Rs)(D)	BALANCE AMOUNT (Rs)
		OPENING BALANCE		**49,86,30,632**				**49,86,30,632**
1	02-02-2024	For Week:43(15-01-2024/21-01-2024)	09-02-2024	8,90,28,996				58,76,59,628
2	09-02-2024	PAID	09-02-2024			20,22,44,280		38,54,15,348
3	08-02-2024	For Week:44(22-01-2024/28-01-2024)	15-02-2024	12,08,86,804				50,63,02,152
4	16-02-2024	For Week:45(29-01-2024/04-02-2024)	23-02-2024	3,10,04,355				53,73,06,507
5	23-02-2024	For Week:46(05-02-2024/11-02-2024)	01-03-2024	4,46,31,017				58,19,37,524
6	01-03-2024	For Week:47(12-02-2024/18-02-2024)	08-03-2024	1,19,29,624				59,38,67,148
7	08-03-2024	For Week:48(19-02-2024/25-02-2024)	15-03-2024	3,22,92,553				62,61,59,701
8	15-03-2024	For Week:49(26-02-2024/03-03-2024)	22-03-2024	3,64,45,294				66,26,04,995
9	21-03-2024	For Week:50(04-03-2024/10-03-2024)	28-03-2024	1,10,76,016				67,36,81,011
10	27-03-2024	For Week:51(11-03-2024/17-03-2024)	03-04-2024	2,08,33,623				69,45,14,634
11	03-04-2024	For Week:52(18-03-2024/24-03-2024)	10-04-2024	1,89,69,966				71,34,84,600
12	10-04-2024	For Week :53(25-03-2024/31-03-2024)	17-04-2024		1,50,65,122			69,84,19,478
13	19-04-2024	For Week:1(01-04-2024/07-04-2024)	26-04-2024	8,49,57,549				78,33,77,027
14	26-04-2024	For Week:2(08-04-2024/14-04-2024)	03-05-2024	93,64,256				79,27,41,283
15	03-05-2024	For Week:3(15-04-2024/21-04-2024)	10-05-2024	1,36,52,699				80,63,93,982
16	09-05-2024	For Week:4(22-04-2024/28-04-2024)	16-05-2024	1,50,98,973				82,14,92,955
17	16-05-2024	For Week :5(29-04-2024/05-05-2024)	23-05-2024		1,45,56,512			80,69,36,443
18	22-05-2024	For Week :6(06-05-2024/12-05-2024)	29-05-2024		2,51,19,691			78,18,16,752
19	30-05-2024	For Week :7(13-05-2024/19-05-2024)	06-06-2024		2,51,94,190			75,66,22,562
20	06-06-2024	For Week :8(20-05-2024/26-05-2024)	13-06-2024		4,22,48,745			71,43,73,817
21	14-06-2024	For Week :9(27-05-2024/02-06-2024)	21-06-2024		3,87,54,181			67,56,19,636
22	20-06-2024	For Week :10(03-06-2024/09-06-2024)	27-06-2024		53,62,640			67,02,56,996
23	27-06-2024	For Week:11(10-06-2024/16-06-2024)	04-07-2024	11,52,91,398				78,55,48,394
24	05-07-2024	For Week:12(17-06-2024/23-06-2024)	12-07-2024	25,61,107				78,81,09,501

Sr. No.	A/C ISSUE/ TRANSACTION	DESCRIPTOR OF TRANSACTION IN DEVIATION POOL ACCOUNT	DUE/ PAYMENT DATE	AMOUNT PAYABLE TO POOL (Rs)(A)	AMOUNT RECEIVABLE FROM POOL (Rs) (B)	AMOUNT PAID TO POOL (Rs)(C)	AMOUNT DISBURSED FROM POOL (Rs)(D)	BALANCE AMOUNT (Rs)
25	12-07-2024	For Week :13(24-06-2024/30-06-2024)	19-07-2024		7,53,08,295			71,28,01,206
26	19-07-2024	For Week :14(01-07-2024/07-07-2024)	26-07-2024		8,09,70,139			63,18,31,067
27	25-07-2024	For Week :15(08-07-2024/14-07-2024)	01-08-2024		10,41,96,483			52,76,34,584
28	01-08-2024	For Week :16(15-07-2024/21-07-2024)	08-08-2024		8,11,92,094			44,64,42,490
29	09-08-2024	For Week :17(22-07-2024/28-07-2024)	16-08-2024		1,24,88,253			43,39,54,237
30	16-08-2024	For Week :18(29-07-2024/04-08-2024)	23-08-2024		3,87,97,325			39,51,56,912
31	27-08-2024	For Week :19(05-08-2024/11-08-2024)	03-09-2024		2,04,24,755			37,47,32,157
32	30-08-2024	For Week :20(12-08-2024/18-08-2024)	06-09-2024		2,39,11,048			35,08,21,109
33	06-09-2024	For Week:21(19-08-2024/25-08-2024)	13-09-2024	8,30,39,429				43,38,60,538
34	17-09-2024	For Week :22(26-08-2024/01-09-2024)	24-09-2024		88,21,819			42,50,38,719
35	19-09-2024	For Week:23(02-09-2024/08-09-2024)	26-09-2024	38,72,580				42,89,11,299
36	26-09-2024	For Week:24(09-09-2024/15-09-2024)	03-10-2024	22,26,891				43,11,38,190
37	07-10-2024	For Week:25(16-09-2024/22-09-2024)	17-10-2024	10,06,67,680				53,18,05,870
38	10-10-2024	For Week:26(23-09-2024/29-09-2024)	20-10-2024	30,85,11,126				84,03,16,996
39	17-10-2024	For Week:27(30-09-2024/06-10-2024)	27-10-2024	19,11,45,390				1,03,14,62,386
40	24-10-2024	For Week:28(07-10-2024/13-10-2024)	03-11-2024	9,31,80,369				**1,12,46,42,755**
TOTAL				**1,44,06,67,695**	**61,24,11,292**	**20,22,44,280**	-	

Total Deviation Account Charges Balance as on date Rs. : 112,46,42,755/-

ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
भारत सरकार का उद्यम
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर क्षेत्रीय भार प्रेषण केन्द्र / Northern Regional Load Despatch Centre
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
Office : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN : U40105DL2009GOI188682, Website : www.nrldc.in, E-mail : nrldc@grid-india.in, Tel: 011 26519406, 26523869, Fax: 011 26852747

Ref. No. NRLDC/ MO/Outstanding/ Date:10th October 2024

To
The Chief Engineer
JKPCL, SLDC Building,
Ist Floor Gladni Grid Station,
Nanval Bala, Jammu-180 004

Sub: Release of outstanding payment against NR Statutory Pool Accounts - Reg.

Ref: 1) NRLDC Letter Ref No. 1) NRLDC/ MO/Pool/03-10 Dt: 02/01/2024, to CE (SLDC), JKPCL
2) NRLDC/ MO/Pool/56-63 Dt: 24/01/2024, to CE (SLDC), JKPCL
3) NRLDC/ MO/Outstanding /89-96 Dt: 13/02/2024, to CE (SLDC), JKPCL
4) NRLDC/ MO/Outstanding /31-139 Dt: 02/04/2024, to CE (SLDC), JKPCL
5)NRLDC/ MO/Outstanding /183-191 Dt: 03/05/2024, to CE (SLDC), JKPCL
6) NRLDC/ MO/Outstanding /210-216 Dt: 20/05/2024, to MD, JKPCL
7) NRLDC/ MO/Outstanding /394-401 Dt: 01/07/2024, to CE (SLDC), JKPCL
8)) NRLDC/ MO/Outstanding /430-438 Dt: 05/08/2024, to CE (SLDC), JKPCL

Sir,

As you are aware, NRLDC is operating and maintaining the "Northern Regional Pool Account" for Deviation charges, Reactive Energy Charges and Congestion Charges in accordance with provisions under various CERC Regulations. As per Regulations the payment to the statutory pool account have **high priority** and the concerned utilities are required to pay the indicated amounts within seven days of issue of the weekly energy account by NRPC Secretariat.

In this regard, last payment received in pool accounts from JKPCL was on 09/02/2024. Now, the outstanding against statuary pool accounts payments as on date (Considering Week 24 of FY 2024-25) by JKPCL is as briefed here under.

All figures in Rs. Lakhs

Sl. No.	Description	Principal (up to Week 24)	Delay Payment Interest	Total Amount
1	Deviation Charges	4311.38	0.00	4311.38
	Total Outstanding	**4311.38**	**0.00**	**4311.38**

Due to non-receipt of the payment from JKPCL, the payments to the receivable entities from the pool are also getting delayed. Despite multiple communications in this regard from our side, JKPCL has not cleared the outstanding payable amount.

Contd…

We therefore request your kind office to look into the matter and facilitate the settlement of the outstanding dues of ₹ 43,11,38,190/- (Rupees Forty Three Crore Eleven Lakhs Thirty Eight Thousand One Hundred and Ninety only) against the deviation charges at the earliest to avoid further accumulation of payable principal amount of deviation charges and the interest on delayed deviation account payments.

It is also requested to regularly make payments to Statutory Pool Accounts as per the Regulations to avoid any further interest liability on delayed payments.

धन्यवाद,

आपका आभारी,

(शेख शदरुद्दीन)

वरि. महाप्रबंधक (मा. ओ.), उ.क्षे.भा.प्रे.के.

Copy for kind information:

1. Secretary, CERC, 3rd & 4th Floor, Chanderlok Building, 36, Janpath, New Delhi- 110001
2. Principal Secretary, Power Development Department J&K, Lotary bulding Behind Civil Secretariat, Srinagar, Jammu and Kashmir
3. MD, JKPCL, SLDC Building, Ist Floor, Gladani Grid Station, Narval Bala, Jammu
4. Member Secretary, NRPC, Katwaria Sarai, New Delhi
5. CMD, GRID-INDIA, CC, 8th/9th floor, IFCI Tower, 61, Nehru Place, New Delhi
6. Director (Market Operation), 8th/9th floor, IFCI Tower, 61, Nehru Place, New Delhi
7. Executive Director, NRLDC, Katwaria Sarai, New Delhi
8. Executive Director, NLDC, Katwaria Sarai, New Delhi

ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
भारत सरकार का उद्यम
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर क्षेत्रीय भार प्रेषण केन्द्र / Northern Regional Load Despatch Centre
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
Office : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN : U40105DL2009GOI188682, Website : www.nrldc.in, E-mail : nrldc@grid-india.in, Tel.: 011 26519406, 26523869, Fax: 011 26852747

Ref. No. NRLDC/ MO/Outstanding/ 629 **Date: 10th February 2025**

To
The Executive Engineer,
UT Chandigarh,
Electricity 'OP' Division No. 2,
New Power House, Industrial Area Phase-I,
Chandigarh,

Sub: Payment of outstanding dues against Deviation Charges & Pool deficit recovery

Ref.: *NRLDC/MO/2024-25/ dated 01/08/2024*
NRLDC/MO/DSM-2024/538 dated 11/11/2024
NLDC/DSM/Deficit Recovery/2025/ dated 13/01/2025
NRLDC/MO/2024-25/ dated 14/01/2025

Sir,

As you are aware, NRLDC is operating and maintaining the "Northern Regional Pool Account" for Deviation charges, Reactive Energy Charges and Congestion Charges in accordance with provisions under various CERC Regulations. As per Regulations the payment to the statutory pool account have **high priority** and the concerned utilities are required to pay the indicated amounts within ten days of issue of the weekly energy account by NRPC Secretariat.

Further, kindly refer to the NRLDC letter dated 11/11/2024 & 13/01/2025 regarding payment of Net Deviation & Ancillary Services Pool Account Deficit Recovery for period prior 16.09.2024 (Statement of legacy dues) and for period 16.09.2024 to 22.12.2024. It is to state that the deficit payment statement "Net Deviation & Ancillary Services Pool Account Deficit Recovery Statements" were issued in line with the Deviation Settlement Mechanism Regulations, 2024 and CERC approved procedure vide order No. L-1/260/2021/CERC dated 15th October 2024.

CERC **Suo-Moto order no. 01/SM/2025 dated 08/01/2024** regarding recovery of legacy dues in the Deviation Settlement Mechanism (DSM) Pool Account states that the methodology approved in the detailed procedure vide the Order dated 15.10.2024 is applicable for recovery of charges in case of the deficits in the DSM Pool Account "as on and from 16th September 2024.

In this context it is noted that payment for the last seven (7) instalments (instalment no 6 to 12 are yet to be received from Chandigarh.

The outstanding against statuary pool accounts payments as on date (Considering Week 42 of FY 2024-25) by Chandigarh is as briefed here under.

Cont…

Sl. No.	Description	Principal (in ₹)	Remarks
1	Deviation Charges	9,56,53,988	Up to week 42(13-01-2025/19-01-2025)
2	Pool Deficit Recovery Charges (Legacy Dues) (12th instalment is due as on date.	2,98,18,411	7 nos Instalment (6th to 12th) of ₹ 42,59,773 each are pending out of total 20 instalment
3	Pool Deficit Recovery Charges (As per NLDC statement dated 13/01/2025)	53,59,428	
	Total Outstanding	**13,08,31,827**	

It is therefore request your kind office to look into the matter and facilitate the settlement of the outstanding dues of ₹ **13,08,31,827/- (Rupees Thirteen Crore Eight Lakhs Thiry one Thousand Eight Hundred and Twenty Seven only)** against the deviation charges and pool deficit recovery charges at the earliest.

It is also requested that timely payment of deviation charges and forthcoming instalments of pool deficit recovery may kindly be ensured to avoid any further interest liability on delayed payments.

Further, kindly refer our letters, vide it was requested to submit bank accounts details of Chandigarh UT enabling us to set up electronic payments. The banks account details of Chandigarh of Chandigarh UT is yet to be received. ***The NRLDC could not release a payment of ₹ 1.89 crore towards deviation charges/reactive energy charges to Chandigarh due to the lack of required bank account information.***

It is once again requested that the bank account details of Chandigarh be provided as soon as possible, enabling us to set up electronic payments and facilitate timely disbursements from the pool accounts.

Thanking you,

Yours faithfully,

(Sheikh Shadruddin)
Chief GM (MO), NRLDC

Copy for kind information:

1. Secretary, CERC, 3rd & 4th Floor, Chanderlok Building, 36, Janpath, New Delhi- 110001
2. CMD, GRID-INDIA, New Delhi
3. Director (MO), GRID-INDIA, New Delhi
4. Member Secretary, NRPC, New Delhi
5. Executive Director, NRLDC, New Delhi
6. Executive Director, NLDC, New Delhi
7. Head, (PMG), Chandigarh Power Distribution Ltd (CPDL), 4th Floor, SCO, 33 to 35, Sector 34A, Chandigarh -160022

ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
भारत सरकार का उद्यम
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर क्षेत्रीय भार प्रेषण केन्द्र / Northern Regional Load Despatch Centre
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
Office : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN : U40105DL2009GOI188682, Website : www.nrldc.in, E-mail : nrldc@grid-india.in, Tel.: 011 26519406, 26523869, Fax: 011 26852747

Ref. No. NRLDC/ MO/Outstanding/596 **Date: 14th January 2025**

To
The Executive Engineer,
UT Chandigarh,
Electricity 'OP' Division No. 2,
New Power House, Industrial Area Phase-I,
Chandigarh,

Sub: Payment of outstanding payment against Deviation Charges.

Ref.: NRLDC/MO/2024-25/ dated 01/08/2024

Sir,

NRLDC is operating and maintaining the "Northern Regional Pool Accounts" for Deviation Charges, Reactive Energy Charges & Congestion Charges in accordance with provisions under various provisions of CERC Regulations. As per CERC Regulations, the payment to pool accounts shall have **high priority** and the concerned constituents are required to pay the indicated amounts within 10 (Ten) days of issue of the weekly energy account by NRPC Secretariat.

The outstanding of Chandigarh UT against Deviation Charges Pool account as on date is as briefed here under.

Sl No.	Account Description	Due Date	Outstanding amount (₹)
1	For Week:32(04-11-2024/10-11-2024)	30-11-2024	10,59,425
2	For Week:33(11-11-2024/17-11-2024)	08-12-2024	92,33,316
3	For Week:34(18-11-2024/24-11-2024)	15-12-2024	1,02,09,836
4	For Week:35(25-11-2024/01-12-2024)	21-12-2024	1,09,89,879
5	For Week:36(02-12-2024/08-12-2024)	30-12-2024	1,07,51,170
6	For Week:37(09-12-2024/15-12-2024)	03-01-2025	1,34,07,618
7	For Week:38(16-12-2024/22-12-2024)	13-01-2025	1,26,60,213
	TOTAL		**6,83,11,457/-**

Cont...

Due to non-receipt of the payment from Chandigarh UT, the payments to the receivable entities from the pool are also getting delayed. It is therefore, requested to settle the pending outstanding of **₹ 6,83,11,457/-** against statutory pool accounts.

It is also requested to make payments regularly to Statutory Pool Accounts as per the Regulations in order to avoid any further interest liability on delayed payments.

Further, kindly refer our letter dated 01/08/2024, vide it was requested to submit bank accounts details of Chandigarh UT enabling us to set up electronic payments. The banks account details of Chandigarh of Chandigarh UT is yet to be received.

The NRLDC could not release a payment of ₹ 1.82 crore towards deviation charges/reactive energy charges to Chandigarh due to the lack of required bank account information.

It is once again requested that the bank account details of Chandigarh be provided as soon as possible, enabling us to set up electronic payments and facilitate timely disbursements from the pool accounts.

Thanking you,

Yours faithfully,

(Sheikh Shadruddin)
Chief GM (MO), NRLDC

Copy for kind information:

1. Secretary, CERC, 3rd & 4th Floor, Chanderlok Building, 36, Janpath, New Delhi-110001
2. CMD, GRID-INDIA, CC, 8th/9th floor, IFCI Tower, 61, Nehru Place, New Delhi
3. Director (MO), POSOCO, CC, 8th/9th floor, IFCI Tower, 61, Nehru Place, New Delhi
4. Member Secretary, NRPC, New Delhi
5. Executive Director, NRLDC, New Delhi

Annrxure-XXII Annexure-I

सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड
(पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड के स्वामित्व में)
(भारत सरकार का उद्यम)
CENTRAL TRANSMISSION UTILITY OF INDIA LTD.
(A wholly owned subsidiary of Power Grid Corporation of India Limited)
(A Government of India Enterprise)

Ref: CTU/N/00/CMETS_NR/34 **Date:** 08-10-2024

As per distribution list

Subject: 34th Consultation Meeting for Evolving Transmission Schemes in Northern Region-Minutes of Meeting

Dear Sir/Ma'am,

Please find enclosed the minutes of the 34th Consultation Meeting for Evolving Transmission Schemes in Northern Region held on 20th September 2024 (Friday) through virtual mode.

The minutes are also available at CTU website (www.ctuil.in)

Thanking you,

Yours faithfully,

08/10/24

(Kashish Bhambhani)
General Manager (CTU)

UPPTCL reiterated the requirement of Augmentation of 400/220 kV ,1x500 MVA (3rd) ICT at Lucknow (PG) S/s as load of Lucknow ICT will not be shared by other 400kV substations nearby. In the meeting, UPPTCL also stated that 2 nos. of 220kV line bays (future space) at Lucknow (PG) S/s are sufficient to meet their future drawl requirement from above S/s as they are already planning for new 400kV S/s at Barapanki and Sitapur in near vicinity to serve the future demand requirement. CEA & NRLDC agreed on the proposal.

In view of above, following ICT augmentation scheme was agreed in ISTS:

- Augmentation of 400/220 kV ,1x500 MVA (3rd) ICT at 400/220kV Lucknow (PG) S/s along with associated transformer bays (1 no. additional 400kV line bay is also being implemented for GIS diameter completion)
- 400kV ICT bay shall be Outdoor GIS type & 220kV ICT bay shall be AIS type
- Connectivity for 400kV Bus Extension to GIS Bays is to be achieved through GIB Duct having multiple road crossings in duct route from 400kV Bus to GIS bay

B.8 PSTCL proposal for LILO of both ckts of 220 kV Jalandhar(BBMB)- Jamalpur (BBMB) D/c line (owned by BBMB) at 220 kV Goraya S/s (PSTCL) Substation

It was stated that PSTCL vide mail & letter dated 14.08.24 to CTUIL sent their agenda for approval of LILO of both ckts of 220 kV Jalandhar (BBMB)- Jamalpur (BBMB) D/c line (line owned by BBMB) at 220 kV Goraya S/s for taking up in upcoming CMETS-NR meeting.

In the letter, it was stated that 220 kV Goraya S/s is currently connected to 220kV Jamsher (PSTCL) and 220 kV Jadala by LILO of GGSSTP Ropar- Jamsher line. Further, 220 kV Jamalpur is a very critical substation as it feeds the power supply to Ludhiana industry area. The Jamalpur S/s draws power mainly from Bhakhra and Ganguwal and supplies power to Dhandari Kalan-I and Dhandari Kalan-2. These two stations (Dhandari Kalan-I and Dhandari Kalan-2) take power from 400kV Ludhiana (PG) also. This power drawl becomes even more prominent during non-paddy scenario since the load in Ludhiana area (being industrial load) invariably remains the same but the hydel generation availability in Punjab is reduced.

Further, 220 kV substation Nurmehal is connected to 400 kV Nakodar S/s in radial mode and there is an urgent need to connect 220kV substation Nurmehal to another source to enhance reliability of the system for which new 220kV link between Nurmehal and Goraya has already been planned in the current MYT 2023-26. So, with the 220kV connectivity of Goraya with Nurmehal through D/c and LILO of Jalandhar-Jamalpur line at Goraya S/s, Jamalpur S/s will gain an additional source of power from 400kV Nakodar S/s via Nakodar – Nurmehal-Goraya route, thus enhancing the reliability of power supply.

PSTCL mentioned that to cater the ever-growing demand of the industry, LILO of one circuit of Dhandari Kalan I-Jamalpur at Sherpur (2x160MVA) is under progress and the work is likely to be completed by Oct'24. Apart from this a new 220kV station with a capacity of 2x160MVA at Giaspura is also planned with LILO of 220kV Ludhiana(PG) -Dhandari Kalan circuit. So, there is urgent need to cater the ever-growing upcoming load within the sources available with PSTCL as there are serious issues of ROW in Ludhiana city area. PSTCL intends to use capacity available at 400 KV Nakodar through BBMB Jamalpur during the period of low Hydel Generation of BBMB, which becomes all the more necessary as Himachal Pradesh shall be using some power at Tahliwal from the line connecting Jamalpur-Bhakra.

The proposed LILO of 220 kV Jalandhar—Jamalpur line at 220 kV Goraya S/s (which is presently bisecting the yard area of 220 kV Goraya) and erection of D/c line from 220 kV Nurmehal to 220 kV Goraya will resolve the above-mentioned issues as 220 kV Jamalpur will then draw substantial amount of power from 400 kV Nakodar via Nakodar—Nurmehal—Goraya route as well, thus giving relief to ICTs at 400 kV Ludhiana (in low hydro scenario) as well as increasing the reliability of the transmission system with now an additional source feeding Jamalpur.

PSTCL also stated that, a committee comprising of officers of PSTCL was also constituted to deliberate on the matter and visited 220kV Goraya S/s and following was emerged after discussion

- 220 kV BBMB Jalandhar—Jamalpur D/c line passing through the yard may be LILOed (both circuits) at 220 kV substation Goraya.
- substation Goraya may be connected with 220 kV substation Nurmehal with 220 kV D/c line.
- No additional 100 MVA, 220/66 kV transformer needs to be installed at 220 kV substation Goraya for N-1 contingency.
- Suitable space is to be provided between the existing 100 MVA 220/132 kV and 100 MVA 220/66 kV transformers at 220 kV substation Goraya by shifting the existing 100 MVA 220/132 kV for constructing firewall between them.
- SHB shall be required to extend suitably.

Further, if the LILO of 220 kV Jalandhar—Jamalpur D/c line at 220 kV Goraya is approved, the 4 Nos. 220 kV bays required at 220 kV substation Goraya for carrying out the above mentioned LILO shall be constructed by PSTCL and shall be the asset of PSTCL.

PSTCL in the letter stated that an agenda on the subject matter was put up initially in the 145th Power Sub Committee meeting dated 12.07.2022. However, after various deliberations in the meeting, BBMB opined that power flow wise there seems no requirement of LILO at Goraya Substation. In response, PSTCL provided its comments vide memo no. 586 dated 07.09.2022, asserting that with the LILO of 220kV Jalandhar-Jamalpur line D/c at Goraya and D/C line from 220kV Nurmehal to Goraya, Jamalpur will draw power from 400kV Nakodar via Nakodar—Nurmehal— Goraya corridor.

CTU vide mail 18.01.23 to stakeholders (CEA, NRLDC & BBMB) requested to provide observation on PSTCL proposal at the earliest. In reply, BBMB vide mail 08.02.23 intimated that Load Flow Sheets enclosed along with the subject cited proposal are not showing

overall scenario of Jamalpur station regarding drawl of power after its interconnections with 400kV Nakodar via Nakodar-Nurmehal-Goraya route as well as power drawn by 220kV Goraya station after LILO of 220kV Jalandhar-Jamalpur D/c Line is not forthcoming on record. BBMB requested that comprehensive Load Flow Study with n-1 contingency along with Load Flow Study report from NRLDC is required to be taken up for further necessary action in the matter . As far as strengthening of 220kV Sub-station, Goraya is concerned there is no hindrance from 220kV Jalandhar-Jamalpur D/c Line which is passing through the 220kV Goraya Sub-station as ample space is available at 220kV Goraya Sub-station to run through 220kV Jalandhar-Jamalpur D/C Line on the Gantries without LILO of the said line.

Further CTU in its mail 03.05.24 to BBMB informed that PSTCL vide letter 04.09.23 requested to take-up the agenda for LILO of both ckts of 220kV Jalandhar – Jamalpur line D/c line (Owned by BBMB) at 220kV Goraya (PSTCL) S/s in CMETS-NR meeting, however as per the PSTCL letter BBMB opined that there is no urgent need of proposed LILO of both ckts of 220kV Jalandhar – Jamalpur line D/c line at Goraya Sub-Station. As per the letter, BBMB also declared that there will not be any significant advantage to Punjab on account of power flows with LILO of 220kV Jalandhar-Jamalpur line (D/C) at 220kV S/S Goraya. PSTCL also informed that revised studies were also discussed with BBMB in Sep/Oct'23 and Jan'24

In this regard, CTU requested BBMB to provide comments on PSTCL revised studies and their observations on proposed LILO so that proposal can be deliberated in CMETS-NR meeting followed by SCSTPPSP-NR meeting for stakeholder consultation. BBMB vide letter dated 09.05.24 intimated that .sld and .sav cases provided by PSTCL cannot be accessed by BBMB and it may be sent in pdf format, however with the available N-1 condition, load flow studies received following feeders are found to be overloaded i.e. Jamalpur-Dhandari Kalan-1, Dhandari Kalan-1-Ludhiana, Ganguwal- Jamalpur D/c etc. To discuss upon BBMB observations, PSTCL vide mail 12.07.24 requested to convene a meeting among CTU, CEA, BBMB, and PSTCL to deliberate on the subject matter and address pertinent issues.

PSTCL also stated in letter (14.08.24) that recently, the matter was also discussed in a meeting held on 02.08.2024 with BBMB which was chaired by Member (Power), BBMB and where Engineer-in-Chief/TS, PSTCL and Chief Engineer/TS, BBMB were also present. BBMB agreed in-principle to the proposal in the meeting and recommended that the agenda may be taken up in the upcoming CMETS and NRPC meetings. NRPC vide mail 16.08.24 to CTUIL also forwarded the PSTCL proposal for discussion.

From loading pattern of 220 kV Jalandhar—Jamalpur D/c line, it emerged that loading on above line is 50-100MW/ckt in summer season (Apr-Jul) and below 50MW rest of the year. Loading pattern of 220 kV Jalandhar(BBMB)—Jamalpur(BBMB) D/c line is as under :

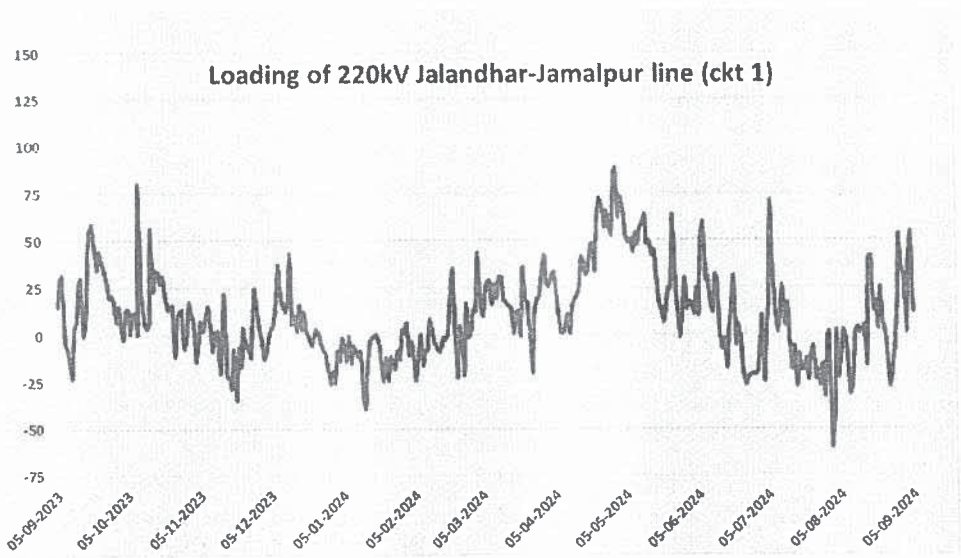


Fig : Loading of 220kV Jalandhar-Jamalpur D/c line (ckt1) (Source: Grid-India)

CTUIL also carried out studies on above proposal. As per the CTUIL studies, with proposed scheme i.e. LILO of 220 kV Jalandhar—Jamalpur D/c line at Goraya S/s (PSTCL), loadings are in order, whereas Ludhiana ICT (3x500+1x315MVA) loading is marginally increased (15-20MW/ICT).

BBMB stated that they already agreed in-principally on the proposal and from load flow studies there is not much loading increase on 220 kV Jalandhar (BBMB)- Jamalpur (BBMB) D/c line. PSTCL stated that LILO along with 4 nos. of 220kV line bays shall be implemented by PSTCL along with necessary communication requirement.

NRLDC stated that Jalandhar/Jamalpur area is mainly fed from 400kV Ludhiana, Ropar as well as Nakodar S/s. NRLDC requested PSTCL to update on 400/220kV Nakodar ICT augmentation. PSTCL stated that 400/220kV, 1x500MVA Nakodar ICT will be commissioned by 30.09.24 and total transformation capacity would be 1130MVA (2x315+1x500) by Dec'24. NRLDC stated that loading of 400/220kV Ludhiana ICT is also on higher side. PSTCL stated that with commissioning of 400/220kV, 1x500MVA ICT (2nd) at Dhanansu S/s which is expected in Dec'24, 400/220kV Ludhiana ICT may get relieved. NRLDC agreed for the above PSTCL proposal on LILO of both ckts of 220 kV Jalandhar (BBMB)- Jamalpur (BBMB) line D/c at 220 kV Goraya S/s (PSTCL) S/s.

PSTCL stated that they have sent another agenda on 20.09.24 (today) for replacement of 2 nos. 220/66kV, 100MVA ICTs with 160MVA at 220kV Jalandhar (BBMB) S/s for which BBMB also given in principal approval in Joint meeting with BBMB & PSTCL. PSTCL stated the 220/66kV ICTs at Jalandhar (BBMB) S/s are critically loaded and N-1 non-compliant in peak load scenario. PSTCL requested to take up the agenda in present CMETS-NR meeting for approval.

On the CTU enquiry about ownership of 220/66kV ICTs at Jalandhar (BBMB) S/s, PSTCL stated that ICTs are owned by BBMB, however 160MVA ICT will be implemented by PSTCL as part of intra state scheme. CTU stated that the ownership of ICTs will change from interstate (BBMB) to Intra state (PSTCL), therefore BBMB and PSTCL may mutually discuss on utilization of 100MVA ICT or Dismantle/Decapitalization of 100MVA ICT based on its useful life. PSTCL stated that modalities for Dismantle/Decapitalization of 100MVA ICTs will be discussed with BBMB in their next power sub-committee meeting

CTU stated that BBMB confirmation for replacement of 2 nos. 220/66kV, 100MVA ICTs with 160MVA ICTs at 220kV Jalandhar (BBMB) S/s along with treatment of existing 100MVA ICTs after replacement with 160MVA ICTs is required.

CTU stated that as agenda is received today only, they will seek comments from stakeholders through mail and based on their observations and subcommittee decision on existing 100MVA ICT treatment, agenda will be taken up in next CMETS-NR meeting.

Based on above deliberations, following intra state scheme was agreed to be implemented by PSTCL along with necessary communication infrastructure.

- LILO of both ckts of 220 kV Jalandhar (BBMB)- Jamalpur (BBMB) D/c line at 220 kV Goraya S/s (PSTCL)

----------X----------

Annexure-XXIII Annexure-II

Outlook

Regarding Agenda Item:- Augmentation of 2 No. 100MVA, 220/66kV transformers at 220kV Sub-Station (BBMB) Jalandhar to 160MVA.

From Sandeep Kumawat {संदीप कुमावत} <sandeepk@powergrid.in>
Date Wed 20-Nov-24 10:14 AM
To srxen-plann1@pstcl.org <srxen-plann1@pstcl.org>; ce-tl@pstcl.org <ce-tl@pstcl.org>; se-planning@pstcl.org <se-planning@pstcl.org>
Cc Madhusudan Meena {मधुसूदन मीना} <madhusudanmeena@powergrid.in>; Kashish Bhambhani {कशिश भम्भानी} <kashish@powergrid.in>; Ashok Pal {अशोक पाल} <ashok@powergrid.in>; Yatin Sharma {यतिन शर्मा} <yatinsharma@powergrid.in>; V Thiagarajan {वी. त्यागराजन} <vthiagarajan@powergrid.in>

Dear Sir

As per our understanding from PSTCL letter dated 14.11.24 , 2x100 MVA 220/66kV transformers at 220kV BBMB Jalandhar S/s is owned and operated by PSTCL as part of intra state scheme.

Considering nature of scheme as intra state, it is requested to take up the matter with CEA for approval of Augmentation of 2 No. 100MVA, 220/66kV transformers at 220kV Sub-Station (BBMB) Jalandhar to 160MVA".

Regards
Sandeep Kumawat
DGM (CTUIL)
Power Grid Corporation of India Limited

From: Senior Executive Engineer, Planning, Cell-1 <>
Sent: 14 November 2024 12:29
To: P C Garg {पी.सी. गर्ग} <pcgarg@powergrid.in>; Ashok Pal {अशोक पाल} <ashok@powergrid.in>
Cc: Ajay Kumar Sharma <spsecy@bbmb.nic.in>; se-tech-distribution@pspcl.in <se-tech-distribution@pspcl.in>; Sandeep Kumawat {संदीप कुमावत} <sandeepk@powergrid.in>; CE TL <ce-tl@pstcl.org>; SE Planning <se-planning@pstcl.org>; Sr.XEN Dir.Tech. <srxen-dir-tech@pstcl.org>; Vipin Gupta <cets@bbmb.nic.in>; Vinod Kumar Mahajan <power@bbmb.nic.in>
Subject: Regarding Agenda Item:- Augmentation of 2 No. 100MVA, 220/66kV transformers at 220kV Sub-Station (BBMB) Jalandhar to 160MVA.

With DA

Regards,

Sr. XEN/Planning-1,
PSTCL, Patiala.

Annexure-XXIV Annexure – III

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
विद्युत प्रणाली योजना एवं मूल्यांकन-I प्रभाग
Power System Planning & Appraisal-I Division

सेवा में / To,

Chief Engineer / TS
Punjab State Transmission Corporation Limited (PSTCL)
PSEB Head Office, The Mall, Patiala (Punjab) - 147001

विषय/Subject : Augmentation of 2x100 MVA, 220/66 kV ICTs at 220 kV Jalandhar (BBMB) sub-station-regd.

महोदय / Sir,

This has reference to PSTCL letter No. 665 dated 21.11.2024 regarding the augmentation of 2 Nos. of 100 MVA, 220/66 kV transformers with 2 Nos. of 160 MVA, 200/66 kV transformers at 220 kV Jalandhar sub-station of BBMB. The issue was also deliberated in the 34th meeting of CMETS-NR held on 20.09.2024 wherein PSTCL had submitted that the existing 220/66 kV ICTs at Jalandhar (BBMB) sub-station are critically loaded and N-1 non-compliant in peak load scenario; therefore, replacement of 2x100 MVA, 220/66 kV ICTs with 2x160 MVA, 220/66 kV ICTs has been proposed.

The proposal of PSTCL for augmentation of 2 Nos. of 100 MVA, 220/66 kV transformers with 2 Nos. of 160 MVA, 200/66 kV transformers at 220 kV Jalandhar sub-station of BBMB is generally in order. Further, the modalities for Dismantle/Decapitalization of the existing 2 Nos. of 100 MVA, 220/66 kV ICTs of BBMB should be mutually discussed between PSTCL and BBMB.

भवदीय / Yours faithfully,

Signed by Nitin Deswal
Date: 28-01-2025 10:24:09

(नितिन देसवाल / Nitin Deswal)
उप निदेशक / Deputy Director

Copy to:

1. The Special Secretary, BBMB, Sector-19 B, Madhya Marg, Chandigarh-160019
2. COO (CTUIL), Floors No. 5-10, Tower 1, Plot No. 16, IRCON International Tower, Institutional Area, Sector 32, Gurugram, Haryana-122001

Annexure-XXV

Annexure-IV

भाखड़ा ब्यास प्रबन्ध बोर्ड
मध्य मार्ग, सैक्टर 19-बी, चंडीगढ़-160019
दूरभाष: 0172-5011761
E-Mail: spsecy@bbmb.nic.in

प्रेषक

विशेष सचिव

सेवा में,

1. निदेशक/उत्पादन,
पंजाब स्टेट पावर कारपोरेशन लिमिटेड,
पटियाला - 147001

2. निदेशक /तकनीकी,
पंजाब स्टेट ट्रांसमिशन कारपोरेशन लिमिटेड,
द मॉल, पटियाला - 147001

3. निदेशक/तकनीकी,
हिमाचल प्रदेश राज्य विद्युत बोर्ड, विद्युत भवन,
शिमला-171004

4. निदेशक/तकनीकी,
हरियाणा विद्युत प्रसारण निगम लिमिटेड,
शक्ति भवन, सैक्टर-6, पंचकुला - 134109

5. निदेशक/तकनीकी,
राजस्थान राज्य विद्युत प्रसारण निगम लिमिटेड,
विद्युत भवन, ज्योति नगर, जनपथ, जयपुर - 302005

क्रमांक: 4093-4102 /बी-1684/पावर सब कमेटी/4पी/152वीं दिनांक: 25-02-2025

विषय: भाखड़ा ब्यास प्रबन्ध बोर्ड (विद्युत खण्ड) की विद्युत उप समिति (पावर सब कमेटी) की 152वीं बैठक के कार्यवृत ।

उपर्युक्त विषय पर, दिनांक 07.02.2025 को हुई पावर सब कमेटी की 152वीं बैठक के कार्यवृत की प्रति सूचना एवं आवश्यक कार्रवाई हेतु प्रेषित की जाती है जी।

25/2/25

उप सचिव/विद्युत एवं सामान्य

संलग्न/कार्यवृत

प्रतिलिपि:

1. मुख्य अभियन्ता/उत्पादन, भा.ब्या.प्र.बोर्ड, नंगल ।
2. मुख्य अभियन्ता/प्रणाली परिचालन, भा.ब्या.प्र.बोर्ड, चण्डीगढ़ ।
3. मुख्य अभियन्ता/पारेषण प्रणाली, भा.ब्या.प्र.बोर्ड, चण्डीगढ़ ।
4. अध्यक्ष महोदय के निजी सचिव, भा.ब्या.प्र.बोर्ड, चंण्डीगढ।
5. सदस्य/विद्युत के निजी सचिव, भा.ब्या.प्र.बोर्ड, चण्डीगढ़।

PSC Meeting No. III/2024-25

भाखड़ा ब्यास प्रबन्ध बोर्ड (विद्युत खण्ड) की दिनांक **07.02.2025** को चंडीगढ़ में हुई 152वीं विद्युत उप-समिति (पावर सब कमेटी) की बैठक के कार्यवृत।

समिति के सदस्य जिन्होंने बैठक में भाग लिया:-

1. ई. जगजीत सिंह,सदस्य/विद्युत, बीबीएमबी।(Chairman of Committee)
2. श्री राकेश प्रजापती (आईएइस), Director/DoE,हिमाचल प्रदेश, सरकार।
3. श्री अरिंदम चौधरी (आईएइस),विशेष सचिव (विद्युत),एमपीपी, हिमाचल प्रदेश, सरकार।
4. ई. एम जी शर्मा, निदेशक(टी), एचपीएसईबीएल।
5. ई. मंदीप सिंह, मुख्य अभियंता, प्रणाली प्रचालन, एचपीएसईबीएल।
6. ई. कुलदीप कुमार, वरिष्ठ कार्यकारी अभियंता/DoE, एचपीएसईबीएल।
7. ई. संजीव सूद, ईआईसी/पारेषण प्रणाली, पीएसटीसीएल।
8. ई. नितिन कुमार, वरिष्ठ कार्यकारी अभियंता/योजना, पीएसटीसीएल।
9. ई. अरनदीप सिंह, मुख्य अभियंता/ह्राईडल, पीएसपीसीएल।
10. ई. ए के शर्मा, मुख्य अभियंता/(एनपीपीएंडआरए), आरआरवीपीएनएल।
11. ई. राजीव जैन,अधीक्षण अभियंता/आईएसपी, आरआरवीपीएनएल।
12. ई. राजीव कुमार तयाल, मुख्य अभियंता/कमर्शियल, एचवीपीएनएल।
13. ई. गुलशन टुटेजा, मुख्य अभियंता/पीडी&सी, एचवीपीएनएल।
14. ई. रोहतास, अधीक्षण अभियंता/एसटीयू, एचवीपीएनएल।
15. ई. विकास मलिक, कार्यकारी अभियंता, आईएसएमसी, एचवीपीएनएल।
16. ई. सुभाष धीमान, कार्यकारी अभियंता/क्षेत्र योजना-II, एचवीपीएनएल।
17. ई. अंकुश गर्ग, सह्रायकनिदेशक,आईएसएमसी, एचवीपीएनएल।
18. ई. पिंकल गोस्सेन, सह्रायकनिदेशक/क्षेत्र योजना-I, एचवीपीएनएल।
19. ई. विशाल शर्मा, कार्यकारी अभियंता, एचवीपीएनएल।

अन्यबोर्डकार्यालयकेअधिकारीजिन्होंनेबैठकमेंभागलिया:-

1. ई. एच एस मनोचा, मुख्य अभियंता/प्रणाली परिचालन, बीबीएमबी, चंडीगढ़।
2. ई. रवि शेर सिंह, मुख्य अभियंता/पारेषण प्रणाली, बीबीएमबी, चंडीगढ़।
3. ई. अजय कुमार शर्मा, विशेषसचिव, बीबीएमबी, चंडीगढ़।
4. ई.रुचि शर्मा,निदेशक/विद्युत विनियम, बीबीएमबी, चंडीगढ़।
5. ई. तजिंदर कौर, उप मुख्य अभियंता, मुख्यालय/पारेषण प्रणाली,बीबीएमबी, चंडीगढ़, अतिरिक्त कार्यभार अधीक्षण अभियंता/पानीपत, बीबीएमबी।
6. ई. आर के गोयल, उप मुख्य अभियंता, बीबीएमबी, जमालपुर ।
7. ई. सतवंत कौर काहलों, निदेशक, पी&डी (टीएस),बीबीएमबी, चंडीगढ़।
8. ई. तिलक राज ढींगरा, उपसचिव/विद्युत एवं साभान्य, बीबीएमबी, चंडीगढ़।
9. ई. राजेश कुमार थमन,संयुक्त सचिव/सदस्य विद्युत, बीबीएमबी, चंडीगढ़।
10. ई. संजय सिडाना, उप निदेशक,कमर्शियल, बीबीएमबी, चंडीगढ़।
11. ई. एस के गोयल,वरिष्ठ कार्यकारी अभियंता, ओ&एम मण्डल, बीबीएमबी, पानीपत।
12. ई.स्वाति शर्मा, सह्रायकनिदेशक/विद्युत, बीबीएमबी, चंडीगढ़।

Member (Power) welcomed all the members and participants of the meeting.

Item No. I

Memorandum regarding alternate connectivity for 132kV substation Polysteel Hisar by construction of 132kV S/C line from 220kV substation BBMB, Hisar to 132kV substation Polysteel Hisar through underground power cable.

HVPNL explained the memorandum in detail. It was apprised that HVPNL's 132kV Polysteel Sub-Station at Hisar is currently being fed through 132kV S/C BBMB-Ding (Sirsa) line through solid T-off arrangement having 0.2 sq" ACSR conductor (0.28 km). It is having single feeding source i.e. solid T-Off of 220KV BBMB Hisar Sub-station - Polysteel-IA Hisar-Ding (Sisra) line which causes interruption of supply during failure/ breakdown of 132kV S/C BBMB-Ding (Sirsa) line. Alternate connectivity is required for reliable flow of energy. It was deliberated that since, BBMB system at 220/132 kV Hisar sub-station is Inter-State Transmission system, therefore, any addition/ alteration to the ISTS system (incident on it) will require approval of the Northern Regional Power Committee/ CMETS.

After detailed deliberation, Power Sub-Committee approved the proposal of HVPNL for "*Alternate connectivity for 132kV substation Polysteel Hisar by construction of 132kV S/C line from 220kV substation BBMB, Hisar to 132kV substation Polysteel Hisar through underground power cable*", subject to the fulfilment of requisite regulatory requirements.

Item No. II

Augmentation of 2 No. 100MVA, 220/66kV transformers at 220kV Substation, BBMB, Jalandhar to 160 MVA.

EIC/PSTCL, explained the memorandum in detail. It was apprised that loading on 2X100 MVA, 200/66kV, transformers at BBMB Jalandhar Sub-station is anticipated to reach 98.17% of their total capacity and highlighted the need for augmentation of the 2 No. 80/100MVA, 220/66kV transformer at 220kV Substation, BBMB, Jalandhar to 160/200 MVA each before start of summer season.

Further, it was apprised that the proposal stand deliberated as the table agenda in the 34th CMETS meeting held on 20.09.2024 and sought clarification regarding who will be responsible for bearing the cost of this augmentation work and who will own the 100 MVA transformers spared after augmentation. PSTCL on 14.11.2024 has

conveyed to CTU that PSTCL will provide 2 no. 160 MVA, 220/66 kV transformers for 220 kV BBMB Jalandhar sub-station and will retain the dismantled 2 no. 100 MVA Transformers, as it is PSEB asset. Additionally, PSTCL will provide the allied equipment and augmentation in the system for executing the proposal in the 220/66kV Jalandhar BBMB Substation as deposit work. Subsequently, CTU requested PSTCL to take up the matter with CEA for approval stating that the nature of work is Intra State. CEA vide letter dated has intimated that the proposal of PSTCL has been found generally in order.

HVPNL stated that they need the load flow study data for deciding the matter. In response, PSTCL stated that the proposal has already been technically approved by the CEA. However, on the request of HVPNL, PSTCL agreed to share the files with HVPNL and HVPNL assured to furnish its comments within 1 week. Further, RRVPNL raised the issue regarding the ownership of the assets after augmentation vis-a-vis commercial/financial obligations thereof by the beneficiary. BBMB also raised the issue for the concurrence by CEA as InSTS, whereas BBMB transmission system has been categorized as deemed ISTS System. RRVPNL requested to form the committee for the finalization of the modalities & commercial obligations of the beneficiary.

After detailed deliberations, Power Sub-Committee decided as under:-

1. Separate committee be constituted to the issue regarding the ownership of the assets after augmentation vis-a-vis commercial obligations thereof by the beneficiary and modalities finalized will be applicable to all the proposals including already approved in the Power Sub Committee.
2. The agenda was in-principle approved subject to adverse comments from HVPNL on the transmission system studies within one week.

Item No. III

LILO of 220kV Jalandhar-Jamalpur line (D/C) at 220kV Goraya:-

EIC/PSTCL explained the memorandum in detail. It was apprised

that the proposal was included by the CTU in 34th CMETS meeting held on 20.09.2024, wherein the intra-state scheme of LILO of both circuit of 220 kV Jalandhar (BBMB)- Jamalpur (BBMB) D/C line at Goraya was approved and agreed to be implemented by PSTCL.

HVPNL and RRVPNL enquired about the commercial terms and conditions/ modalities for the instant proposal. Further, HVPNL also requested PSTCL to provide the Load flow study data/ files for further decision in the matter.

In response, PSTCL stated that as the instant proposal has already been approved in CMETS meeting the same may be approved by the Partner States, as CMETS is the highest authority for the planning of ISTS system and all NR States including Partner State Utilities are stakeholders. However, on the request of HVPNL, PSTCL agreed to share the load flow study data and HVPNL assured to provide its comments within one week.

After detailed deliberations, Power Sub-Committee decided as under:-

1. Separate committee be constituted to the issue regarding the ownership of the assets and other operational modalities after LILOing of the circuits vis-a-vis commercial obligations thereof of the beneficiary and it will be applicable to all the proposals (including already approved).
2. The agenda was approved subject to adverse comments from HVPNL on the transmission system studies within one week.

Item No. IV

Discontinuation of energy given to Himachal Pradesh from BBMB Bhakra-Nangal Project @10MW at 50% Load Factor (1.2LUs per day) as common pool consumer.

CE/PSPCL explained the memorandum and stated that since, State of H.P. has been given partner State status after the judgement of Hon'ble Supreme Court in 2011 and is accordingly, being given the share of 7.19%, as such, H.P. can not be treated as common pool consumer.

In response, Director (T), HPSEBL explained that the old H.P. was

not the part of erstwhile Punjab and is being given 10MW at 50% Load factor (1.2 LU/day) in line with relevant provisions thereof in Bhakra Nangal agreement, 1959 and letter dated 25/27 July, 1961 of Planning Commission, GoI, regarding allotment of Bhakra Power House. Further, it was apprised that since the 7.19% power share given to H.P. in the judgement made by Hon'ble Supreme court in 2011 is related to the transferred territory of erstwhile Punjab not related to Old HP and also, explicitly mention to exclude the common pool consumer power share for the calculation of aforesaid 7.19% share of H.P., as such, contention of the Punjab to co-relate the Hon'ble Supreme court judgment as Himachal Pradesh granted partner state status and getting @7.19% right thereof, is contentious statement since State of the Himachal Pradesh was granted status as partner/Successor State by the PRA 1966. The Hon'ble Supreme court judgment has only provided the legal rights as per Statute under PRA 1966 .

Further, the Director, DoE, GoHP and Special Secretary (Power) to the GoHP stated that Himachal Pradesh got the 1.2 LU/ day common pool supply entitlement in accordance with the agreements between the then governments of Punjab and Rajasthan prior to the Punjab Reorganization Act (PRA), 1966, and moreover it was the pre-requisite condition for allotment of Bhakhra Power House as mentioned in the Planning Commission, GoI, letter dated 25/27th July, 1961, as such, as per section 79(3) (b) (iii) of PRA, 1966, power generation through the Bhakra Projects have to be regulated by giving due cognizance of the agreement made by the existing State of Punjab/PSEB/Rajasthan/RSEB with any other Electricity Board or authority in charge of distribution of power before the appointed date i.e. 01.11.1966. So, in view of above it is beyond the purview of Punjab or BBMB to withdraw the common pool supply given to Old Himachal Pradesh without mutual agreement, as it being statutory provision under the PRA 1966. Accordingly, representative from State of H.P. demanded to withdraw or drop the instant agenda item from the Power Sub-Committee Meeting.

RVPNL also supported the above stand of H.P. State and demanded

to drop or withdraw agenda item.

HVPNL stated that the concept of common pool consumers as a whole needs to be reviewed and withdrawn keeping in view the present scenario.

On the remarks of H.P. state regarding applicability of PRA in the instant matter, PSPCL and HVPNL stated that before arriving at any decision, BBMB may take legal opinion on 'Whether PRA, 1966 limits/ restricts the power of BBMB board to unilaterally withdraw the common pool supply of 1.2 LUs/Day to State of H.P. or not'

After detailed deliberation,in view of divergent opinion Member/Power, Chairman of the Power Sub-committee decided as under:-

1. In view of submission made by Himachal pradesh, BBMB to take legal opinion on 'Whether PRA, 1966 limits/ restricts the power of BBMB board to unilaterally withdraw the common pool supply of 1.2 LUs/Day to State of H.P.'
2. The agenda item will be dropped or deferred in accordance with the legal opinion to be taken as per Sr. No. 1.

Item No. V

Augmentation of 400KV sub-station BBMB, Siwah (Panipat) from (1x450 +1x500)MVA, 400/220KV + 2x100MVA, 220/132KV +1x60MVA, 220/33kV transformers to 3x500MVA, 400/220KV + 2x160MVA 220/132KV +1x60MVA, 220/33kV transformers along with augmentation of 220KV Sewah (Panipat BBMB) – ChhajpurD/C line from 0.4 sq inch ACSR conductor to 0.4 sq inch HTLS conductor having ampacity of 1200Amp to meet N-1 contingency.

HVPNL explained the memorandum in detail. It was deliberated that since, the BBMB system at 400 kV Panipat sub-station is Inter-State Transmission system, therefore, any addition/ alteration to the ISTS system will require approval of the Northern Regional Power Committee/ CMETS.

After detailed deliberations, Power Sub-Committee decided as

under:-

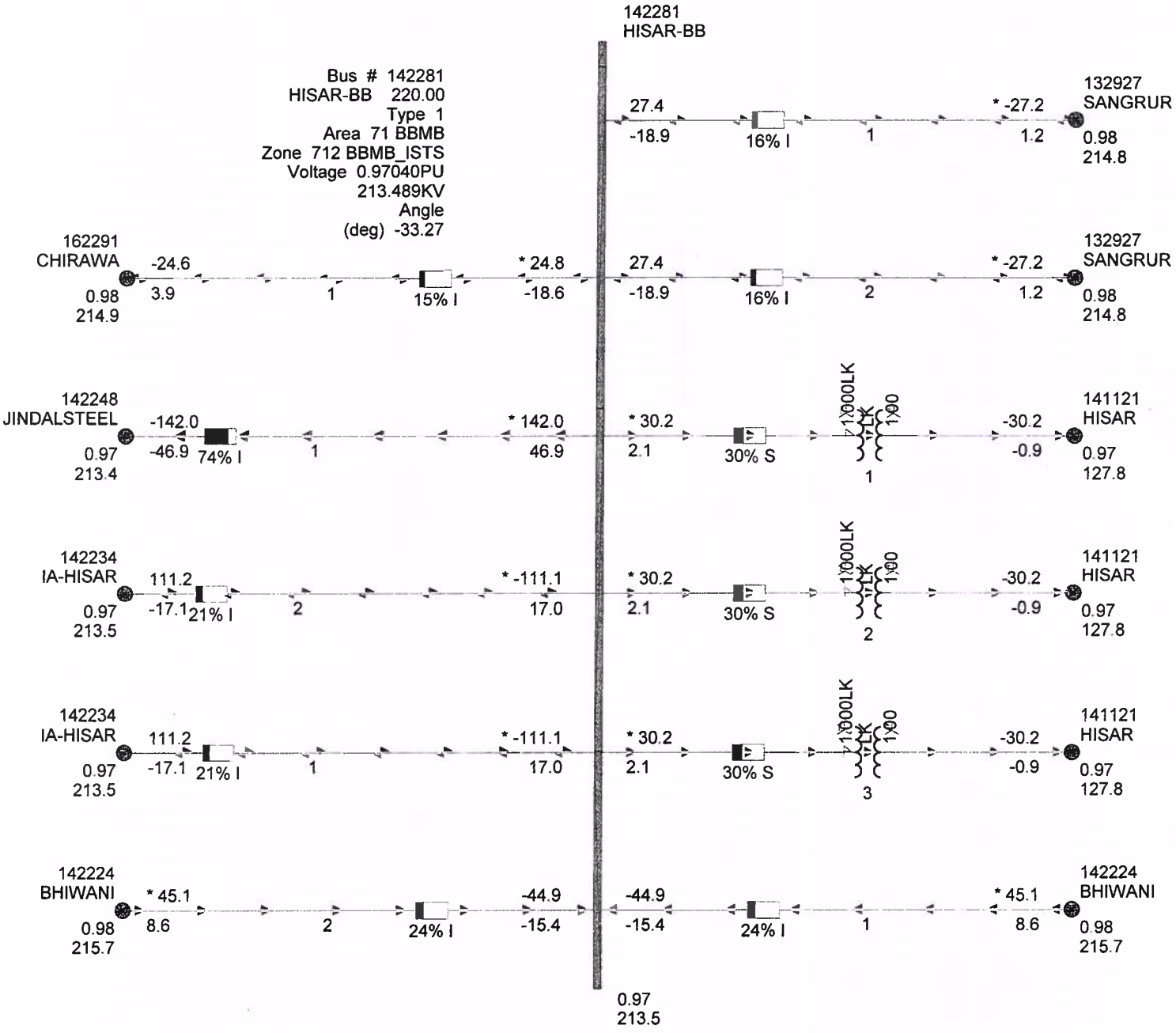
1. To place separate agenda regarding replacement of 3x150 MVA, 400/220 kV transformers with 1x500 MVA transformer at BBMB Panipat sub-station in the next power sub-committee meeting.
2. Further, instant proposal regarding augmentation of different transformers at BBMB Panipat Sub-station and 220KV Sewah (Panipat BBMB) – Chhajpur D/C line be first taken up with NRPC/CMETS, CTU as the BBMB system is an ISTS system.

Member (Power), BBMB advised all the members of PSC to be come prepared with relevant studies/facts before actually discussing the agendas in the PSC Meeting.

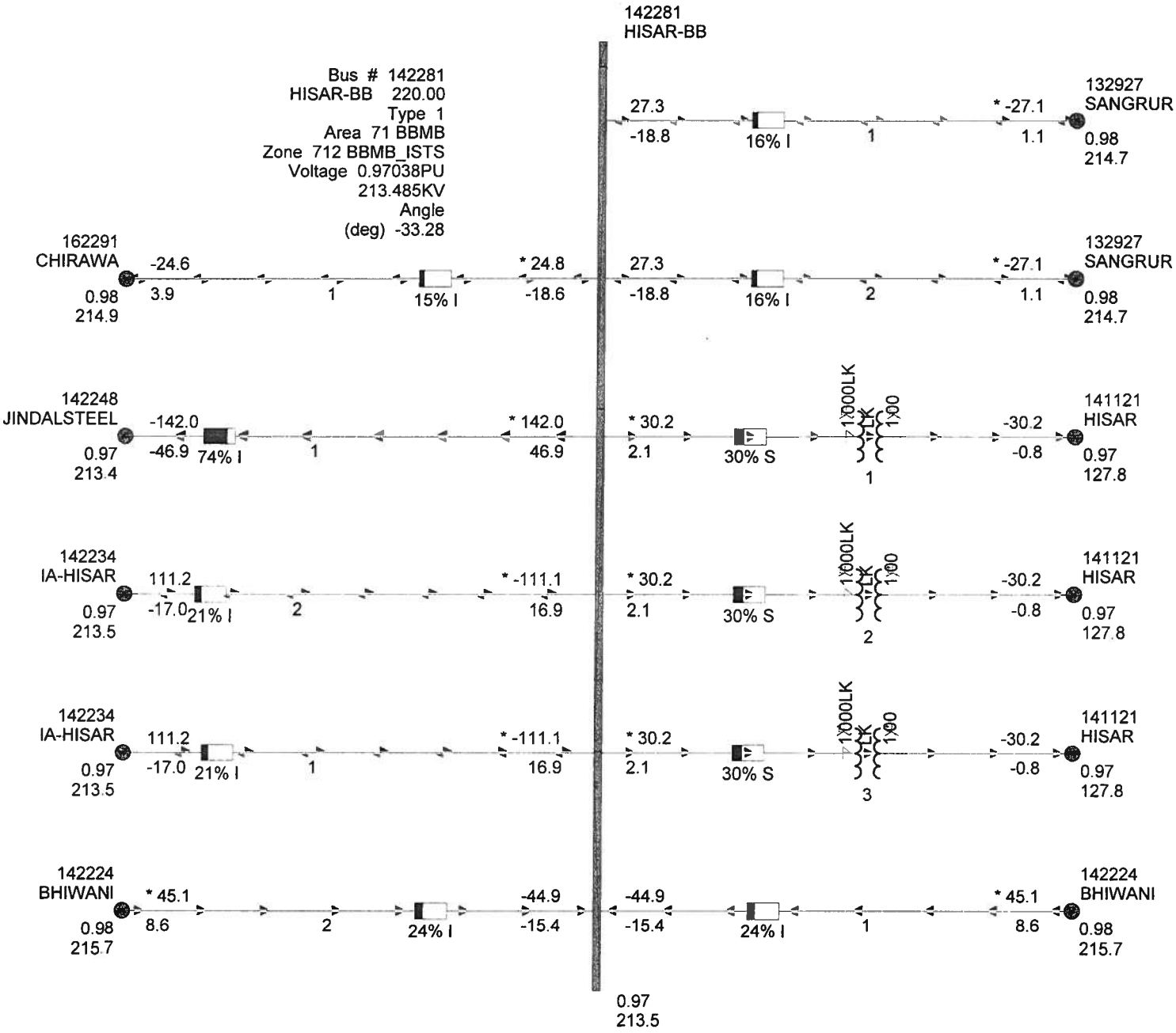
Meeting ended with the note of thanks to Chair.

Signed by Ajay Kumar Sharma
Date: 25-02-2025 15:51:37
SPECIAL SECRETARY

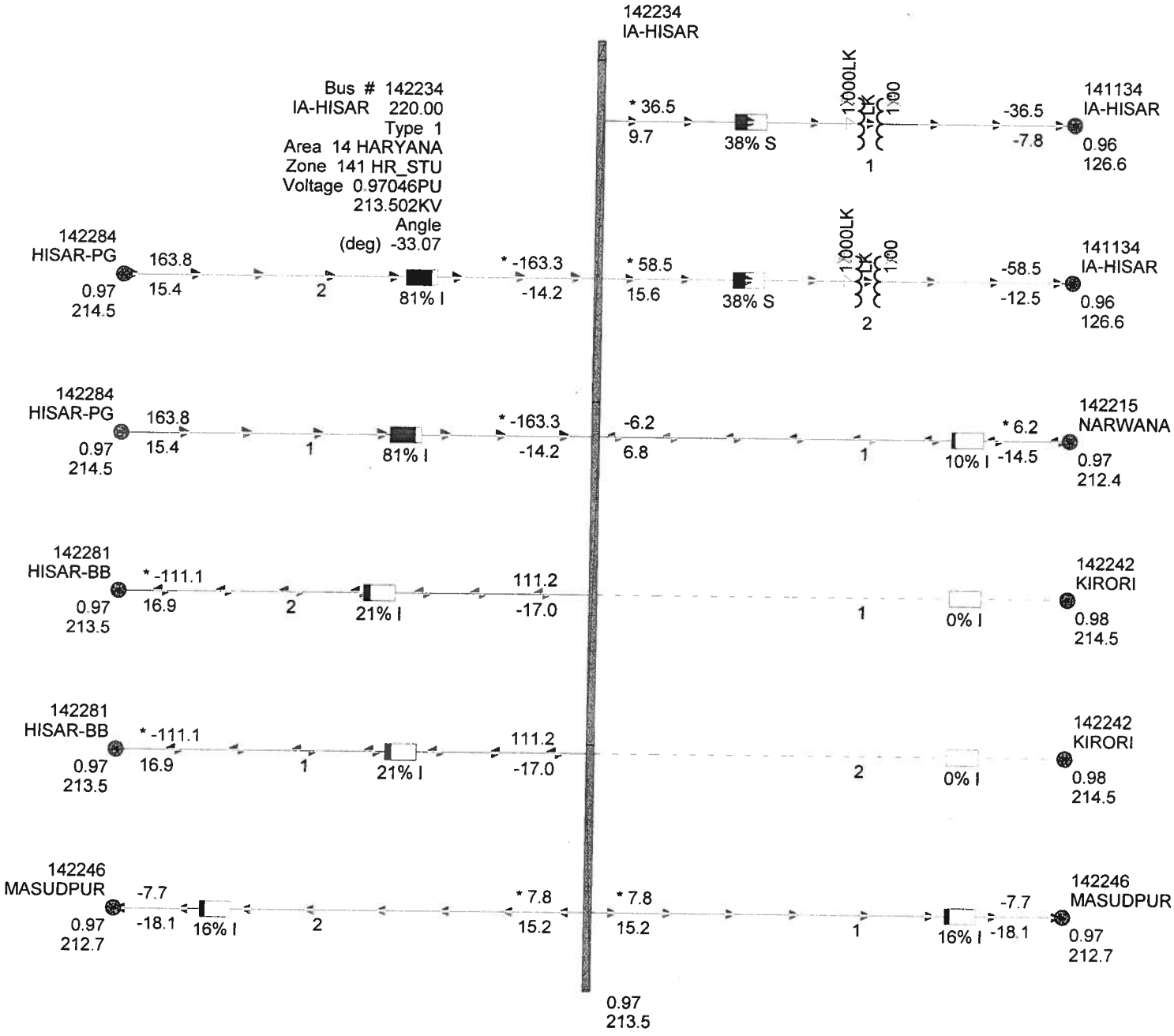
Annexure-IV



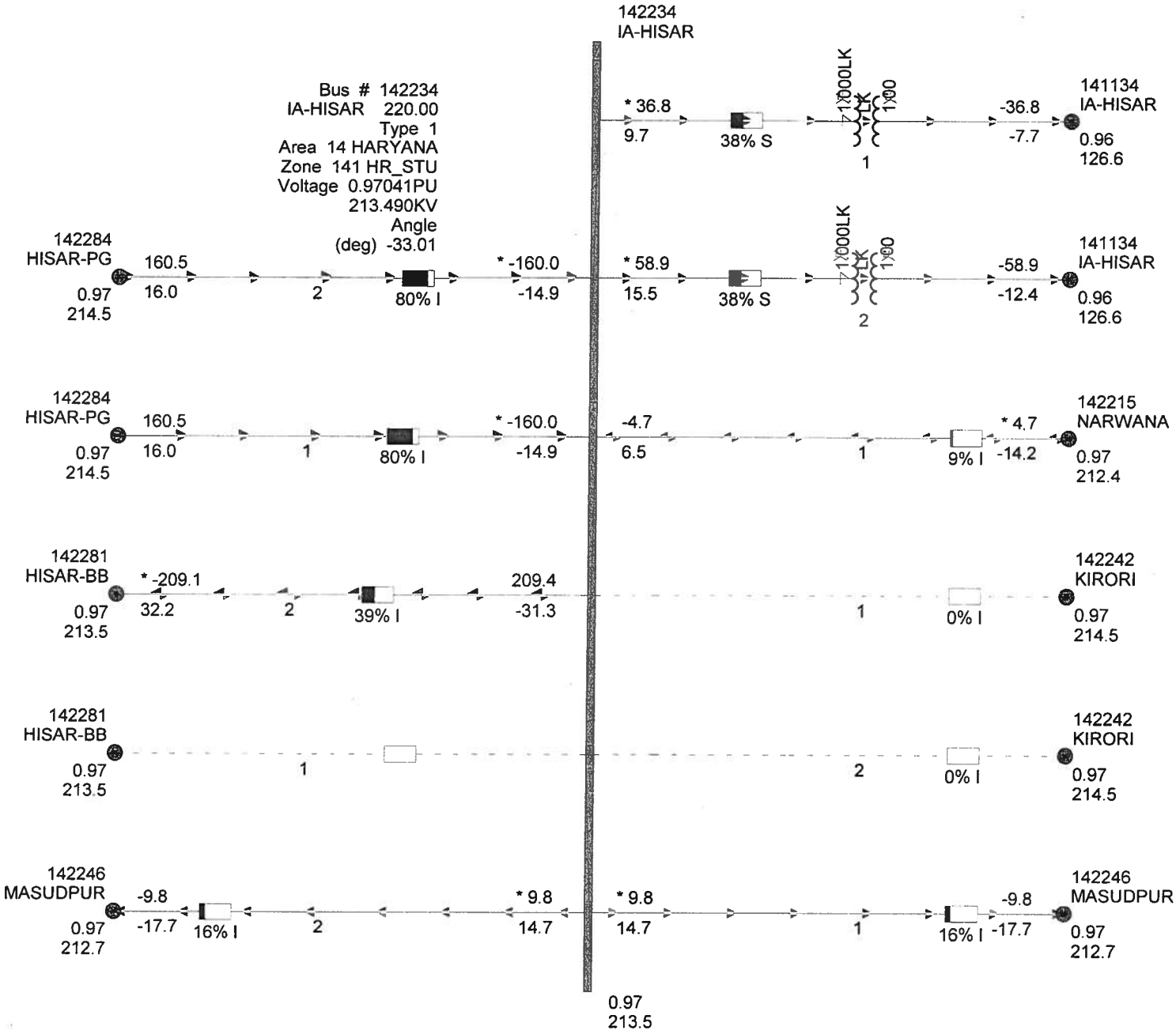
PEAK SEASON SCENARIO
Power flow direction (220 kV Sangrur - Hisar BB line)
With LILO of 220 kV Jalandhar - Jamalpur line at 220 kV Goraya
With D/C line from 220 kV Nurmehel to 220 kV Goraya



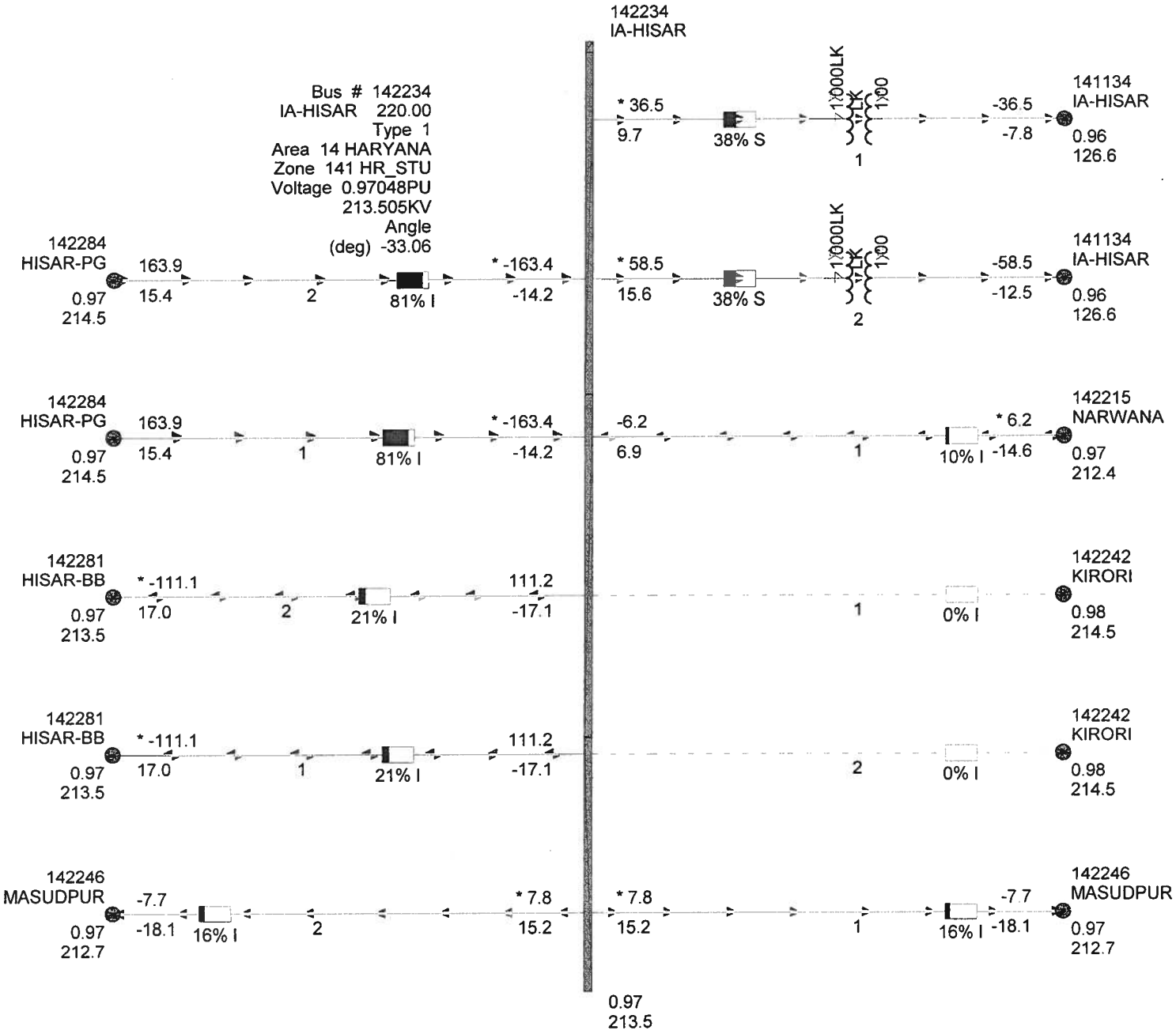
PEAK SEASON SCENARIO
Power flow direction (220 kV Sangrur - Hisar BB line)
Without LILO of 220 kV Jalandhar - Jamalpur line at 220 kV Goraya
Without D/C line from 220 kV Nurmehel to 220 kV Goraya



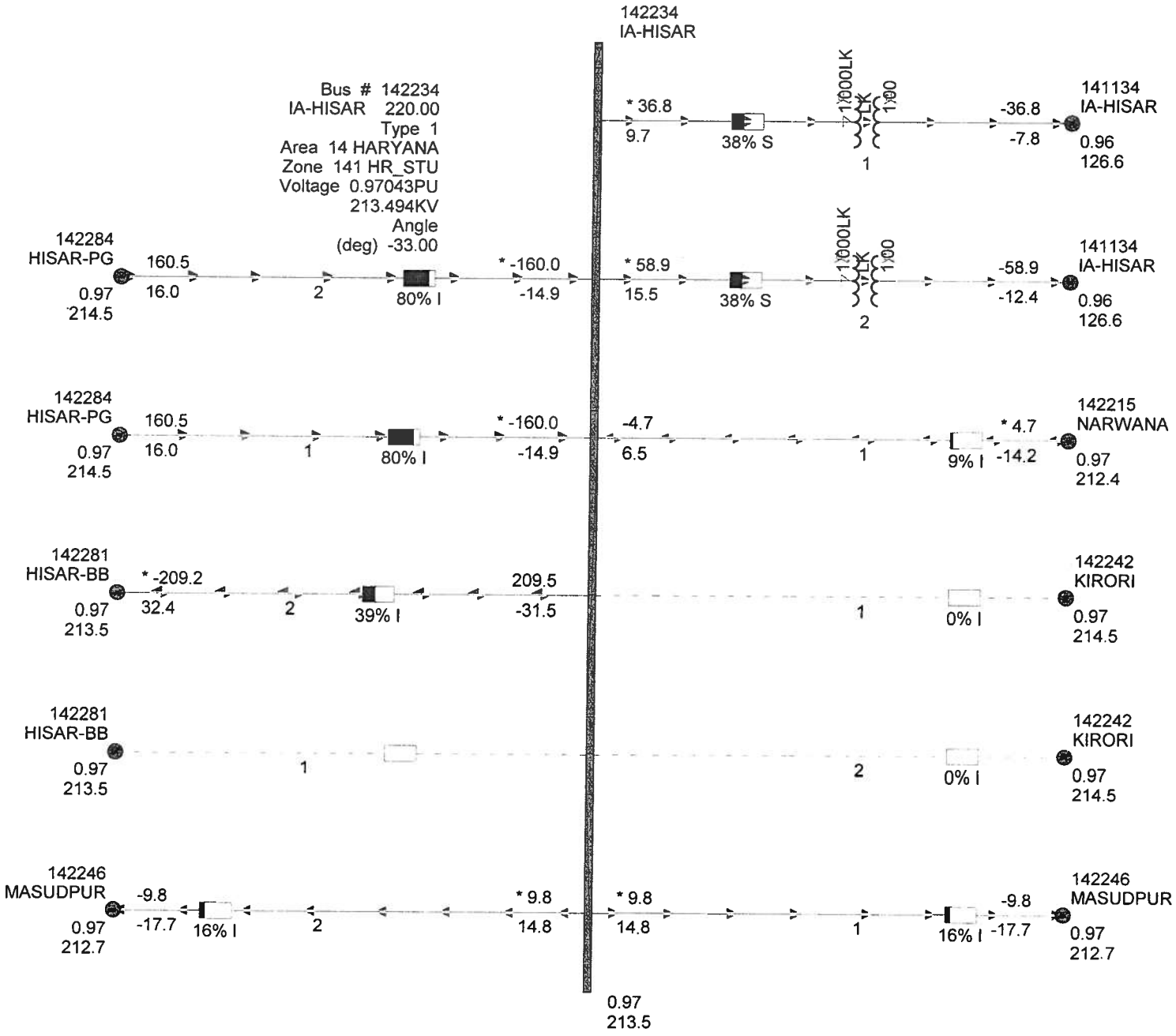
PEAK SEASON SCENARIO
Without LILO of 220 kV Jalandhar - Jamalpur line at 220 kV Goraya
Without D/C line from 220 kV Nurmehel to 220 kV Goraya



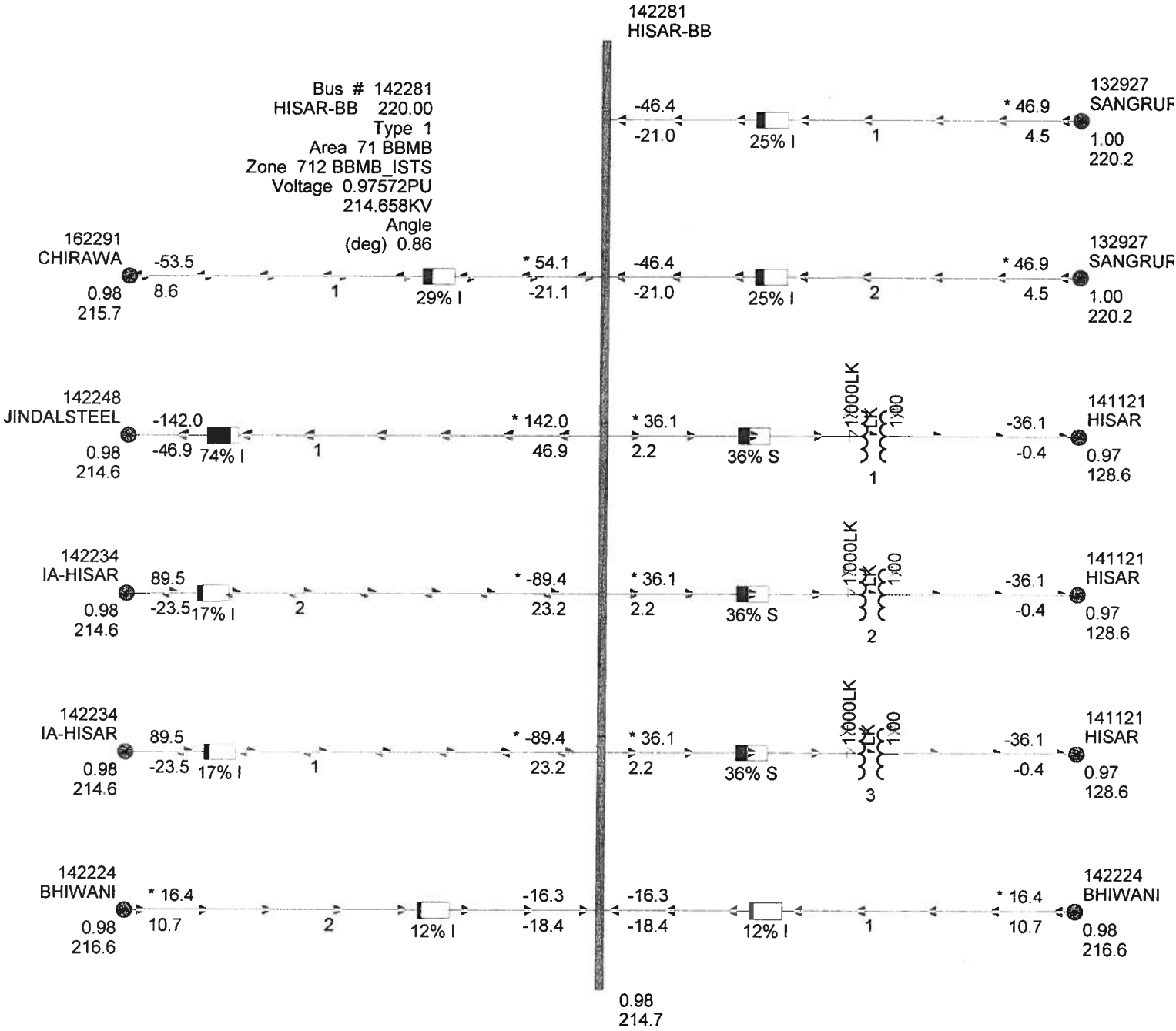
PEAK SEASON SCENARIO
Without LILO of 220 kV Jalandhar - Jamalpur line at 220 kV Goraya
Without D/C line from 220 kV Nurmehel to 220 kV Goraya
With outage of one ckt. of 220 kV IA Hisar - Hisar BBMB D/C line



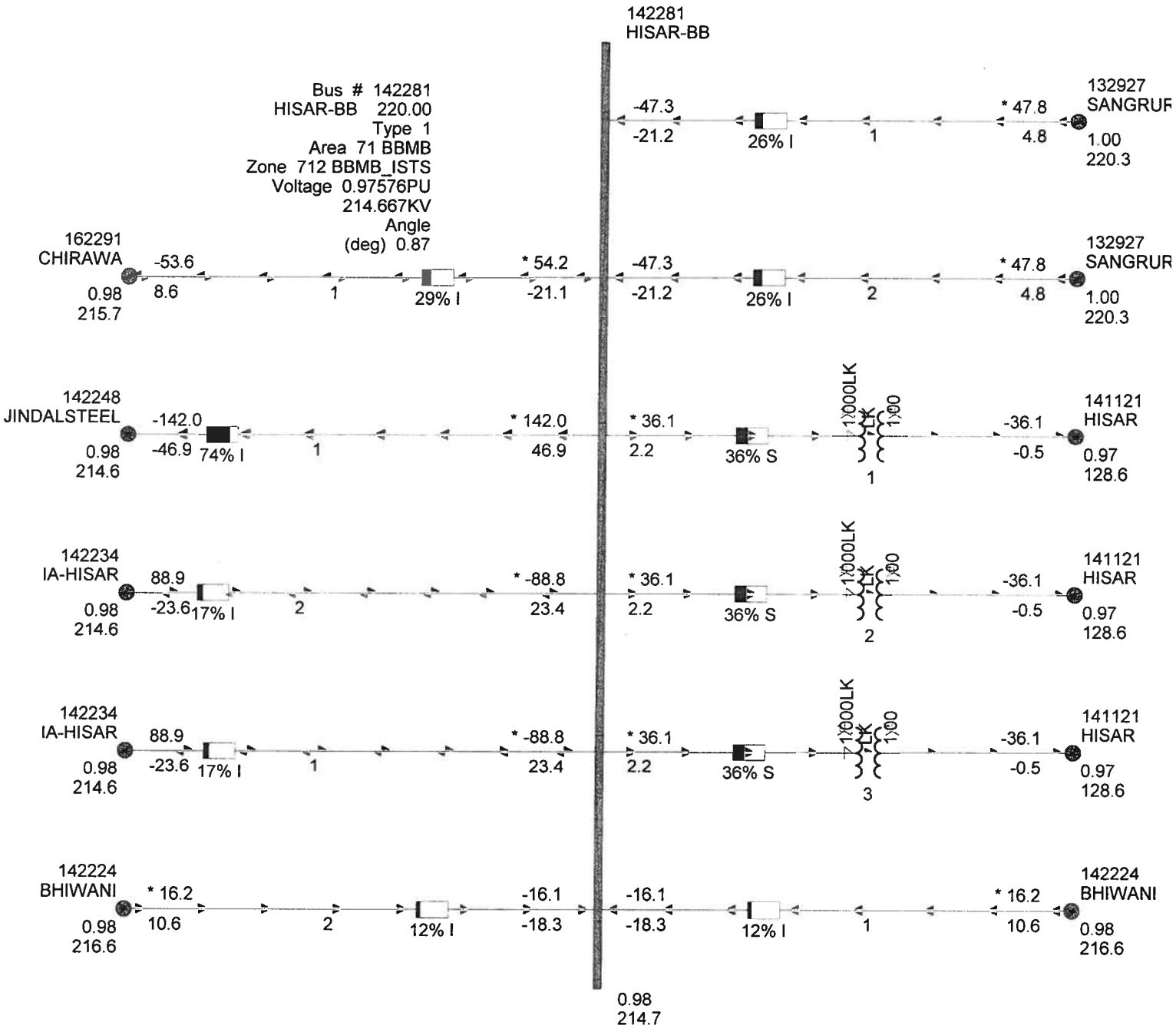
PEAK SEASON SCENARIO
With LILO of 220 kV Jalandhar - Jamalpur line at 220 kV Goraya
With D/C line from 220 kV Nurmehel to 220 kV Goraya



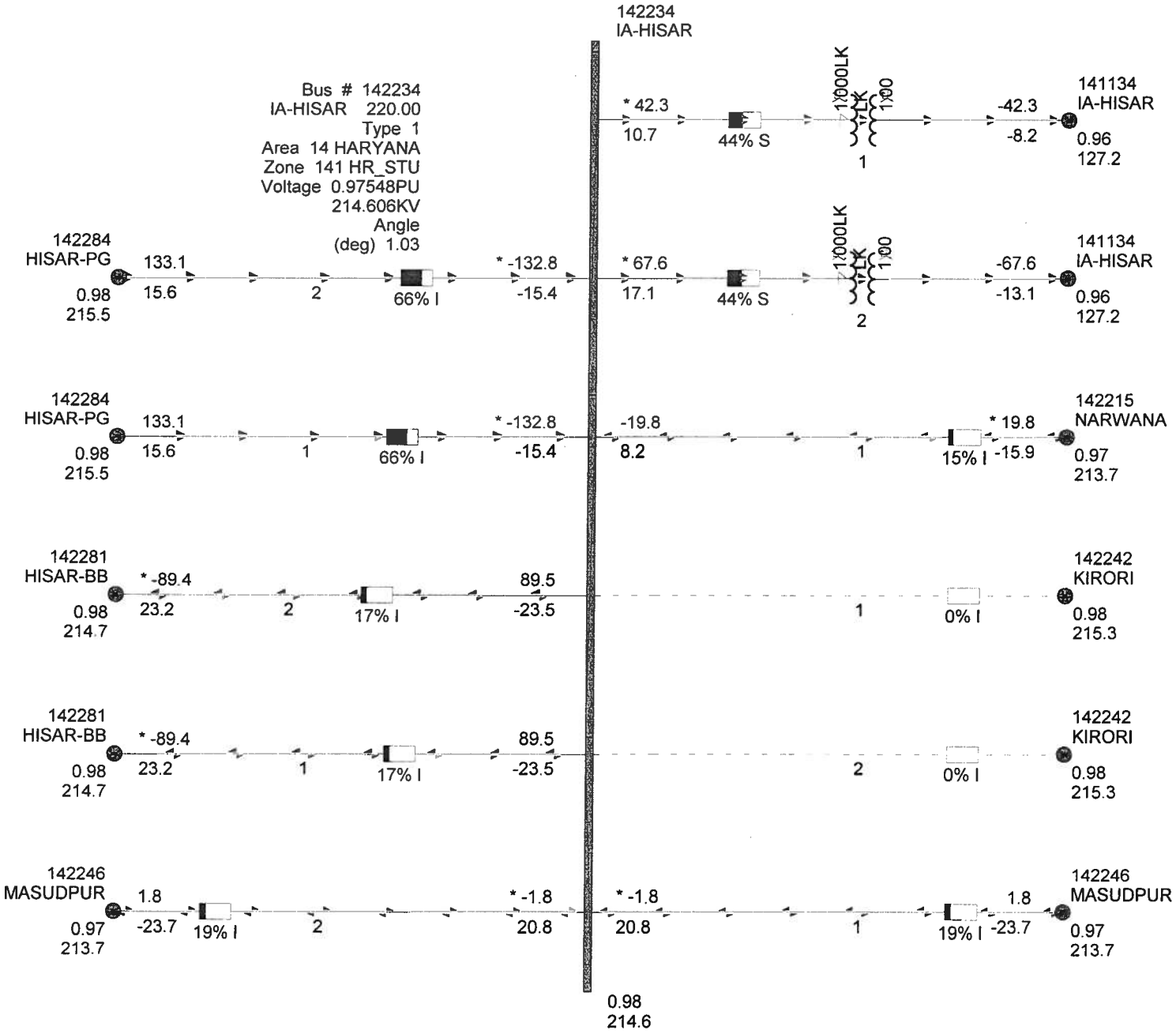
PEAK SEASON SCENARIO
With LILO of 220 kV Jalandhar - Jamalpur line at 220 kV Goraya
With D/C line from 220 kV Nurmehel to 220 kV Goraya
With outage of one ckt. of 220 kV IA Hisar - Hisar BBMB D/C line



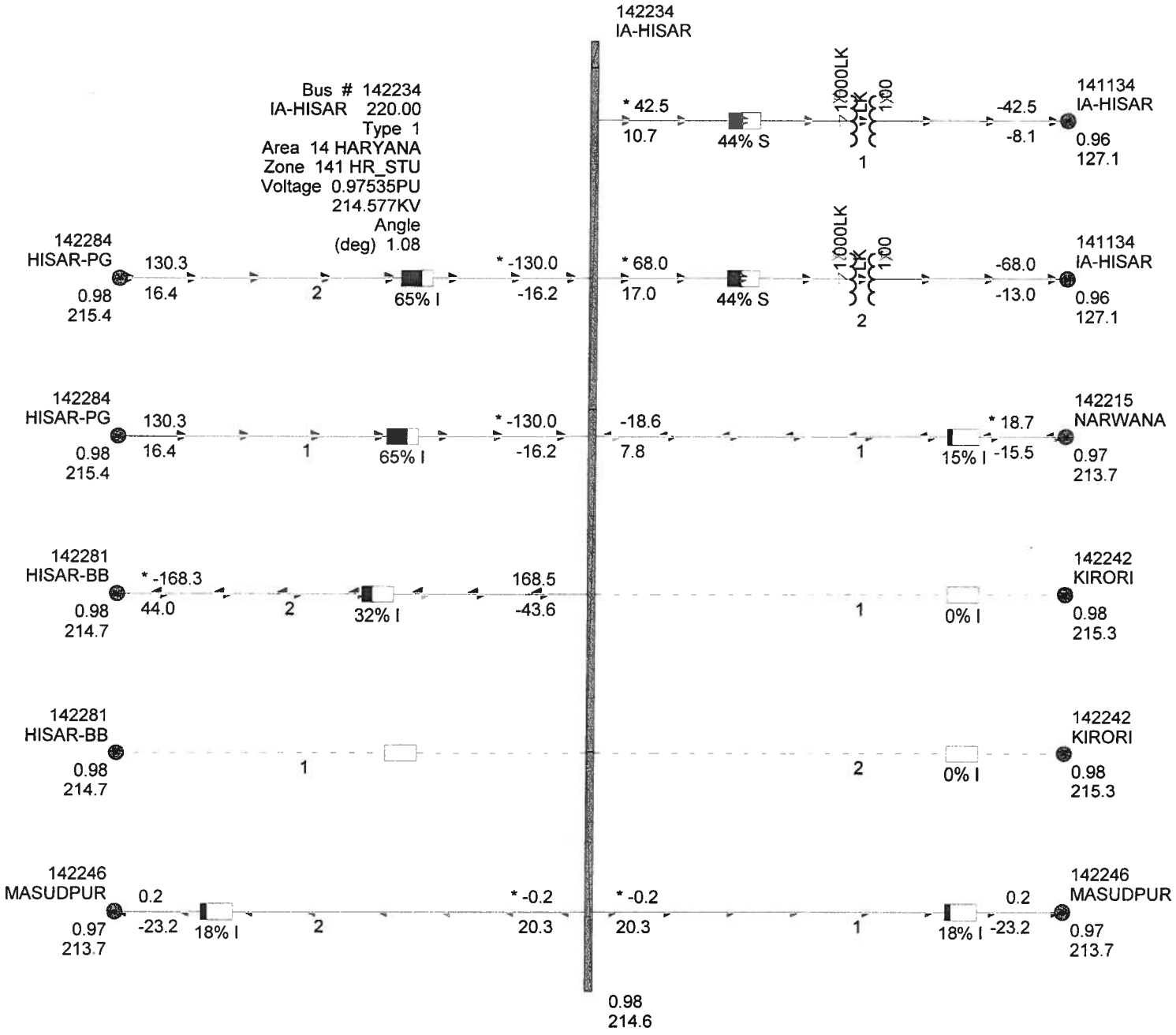
LEAN SEASON SCENARIO
Power flow direction (220 kV Sangrur - Hisar BB line)
Without LILO of 220 kV Jalandhar - Jamalpur line at 220 kV Goraya
Without D/C line from 220 kV Nurmehel to 220 kV Goraya



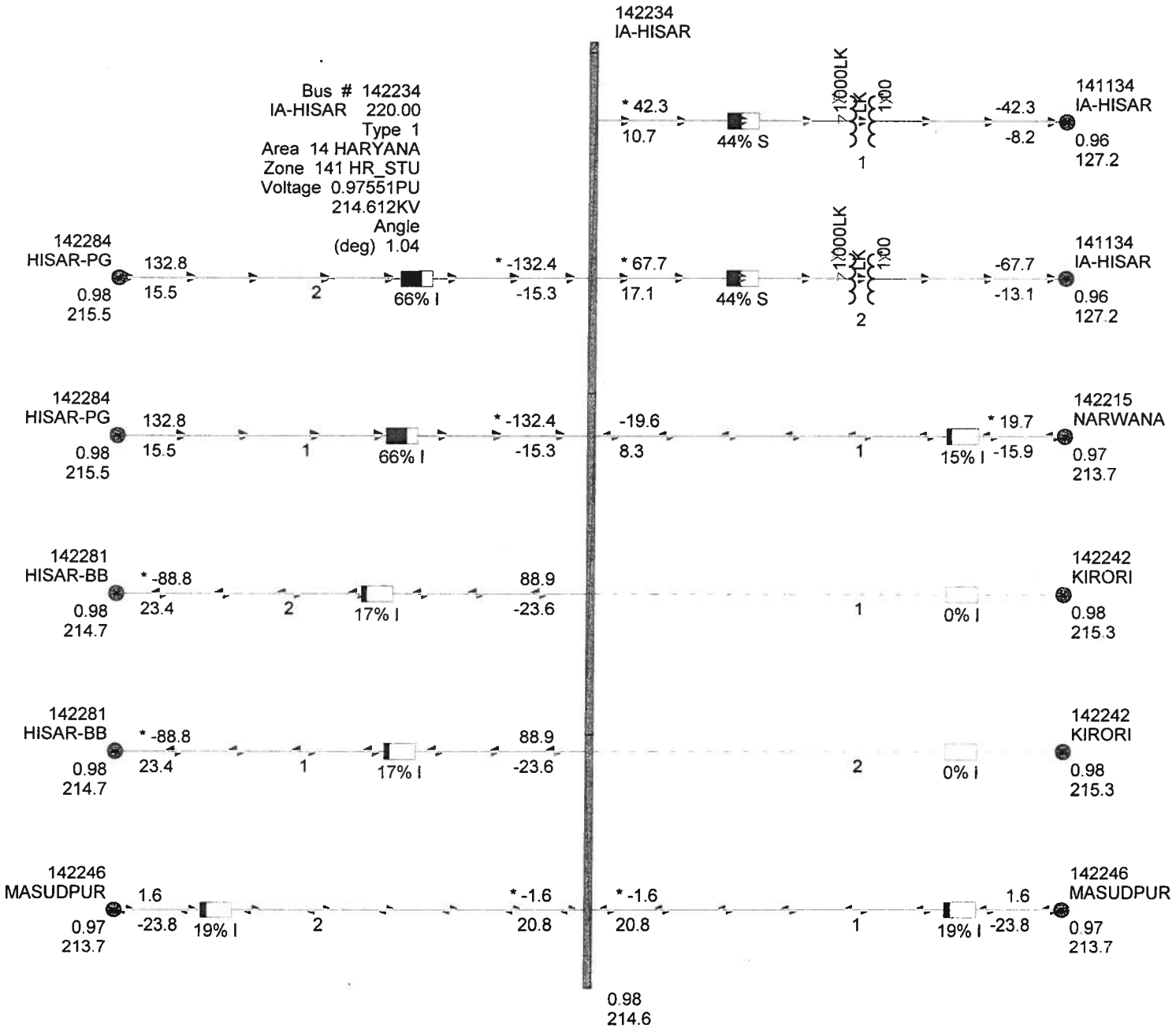
LEAN SEASON SCENARIO
Power flow direction (220 kV Sangrur - Hisar BB line)
With LILO of 220 kV Jalandhar - Jamalpur line at 220 kV Goraya
With D/C line from 220 kV Nurmehel to 220 kV Goraya



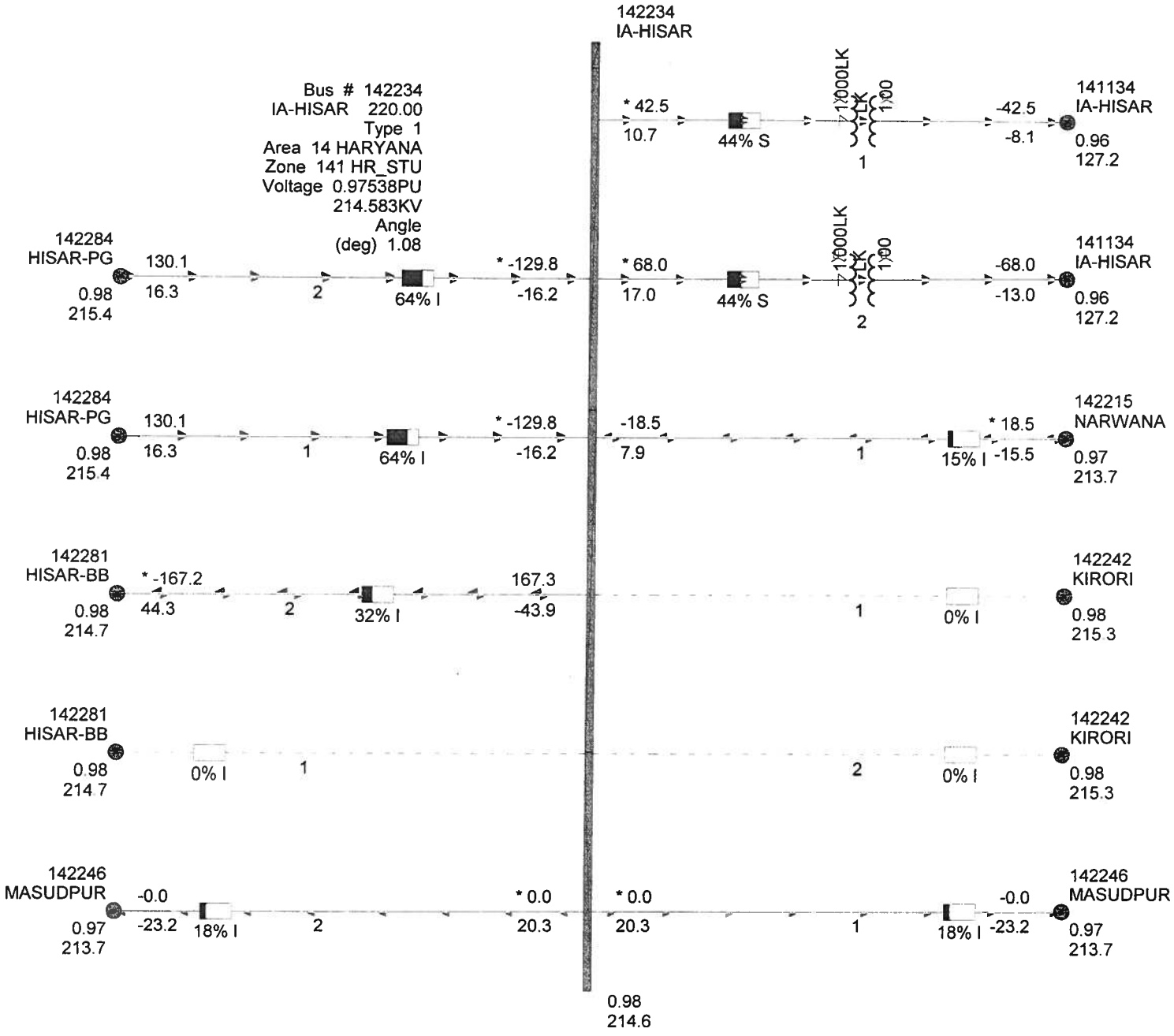
LEAN SEASON SCENARIO
Without LILO of 220 kV Jalandhar - Jamalpur line at 220 kV Goraya
Without D/C line from 220 kV Nurmehel to 220 kV Goraya



LEAN SEASON SCENARIO
Without LILO of 220 kV Jalandhar - Jamalpur line at 220 kV Goraya
Without D/C line from 220 kV Nurmehel to 220 kV Goraya
With outage of one ckt. of 220 kV IA Hisar - Hisar BBMB D/C line



LEAN SEASON SCENARIO
With LILO of 220 kV Jalandhar - Jamalpur line at 220 kV Goraya
With D/C line from 220 kV Nurmehel to 220 kV Goraya



LEAN SEASON SCENARIO
With LILO of 220 kV Jalandhar - Jamalpur line at 220 kV Goraya
With D/C line from 220 kV Nurmehel to 220 kV Goraya
With outage of one ckt. of 220 kV IA Hisar - Hisar BBMB D/C line

Annexure-A.XXVII

सत्यमेव जयते

DIRECTOR GENERAL OF AUDIT
(ENERGY), NEW DELHI
5th,6th, 7th & 10th Floor Annexe Building,
10-Bahadur Shah Zafar Marg, NEW DELHI
- 110002

Local Audit Party : Compliance Audit of NR-I Region of PGCIL for the period 2022-23 to 2023-24
Auditee Unit Name : PGCIL NR-I, Faridabad
Dated : 04-Feb-25

Audit observation reference : #12 (OBS-1828864)

Subject: Compliance Audit of PGCIL NR1 region from the period 2022-24

Non recovery of rent from DTL in respect of diversion of ICT transformer

Delhi Transco Limited (DTL) vide letter dated 01.11.2019 requested PGCIL for lending of 2 Nos. 315 MVA transformers at their book value which was available as regional spares at Powergrid Mandola Substation. However, PGCIL refused its request to transfer the above transformer on book value. Subsequently DTL again requested PGCIL to hand over transformer on loan basis to maintain the uninterrupted power supply in Delhi. DTL assured to return both 315 MVA transformers after procurement and commissioning of new transformer at 400 kV substation Tikri Kalan. Finally, PGCIL accepted the request and hand over the two 315 MVA transformers to DTL in December 2019.

During audit it was noticed that NR1 Region temporarily diverted transformers without establishing a monthly rental agreement. As a result, management has failed to retrieve its spare transformers from DTL even after more than five years and transformers are still lying with DTL. The prolonged absence of these assets has resulted in a loss of potential revenue for PGCIL.

The inaction from management regarding the retrieval of its assets has not only led to significant financial losses for the NR1Region but has also hindered Region's ability to utilize its inventory from other regions during emergencies.

Thus, it is imperative for management to take immediate corrective actions to recover the spares and establish clear agreements moving forward to prevent similar occurrences in the future.

Facts and figures contained in the HM may be verified and comments of the management may be offered to audit.

Sandeep Kumar

Sr. Audit Officer

To,
PGCIL NR-I, Faridabad

Annexure-A.XXVIII ~~Annexure-I~~

सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड
(पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड के स्वामित्व में)
(भारत सरकार का उद्यम)
CENTRAL TRANSMISSION UTILITY OF INDIA LTD.
(A wholly owned subsidiary of Power Grid Corporation of India Limited)
(A Government of India Enterprise)

Ref: CTU/N/00/CMETS_NR/36 **Date:** 24-02-2025

As per distribution list

Subject: 36th Consultation Meeting for Evolving Transmission Schemes in Northern Region-Minutes of Meeting

Dear Sir/Ma'am,

Please find enclosed the minutes of the 36th Consultation Meeting for Evolving Transmission Schemes in Northern Region held on 15th January 2025 (Wednesday) through virtual mode.

The minutes are also available at CTU website (www.ctuil.in)

Thanking you,

Yours faithfully,

(Partha Sarathi Das)
Sr. General Manager (CTU)

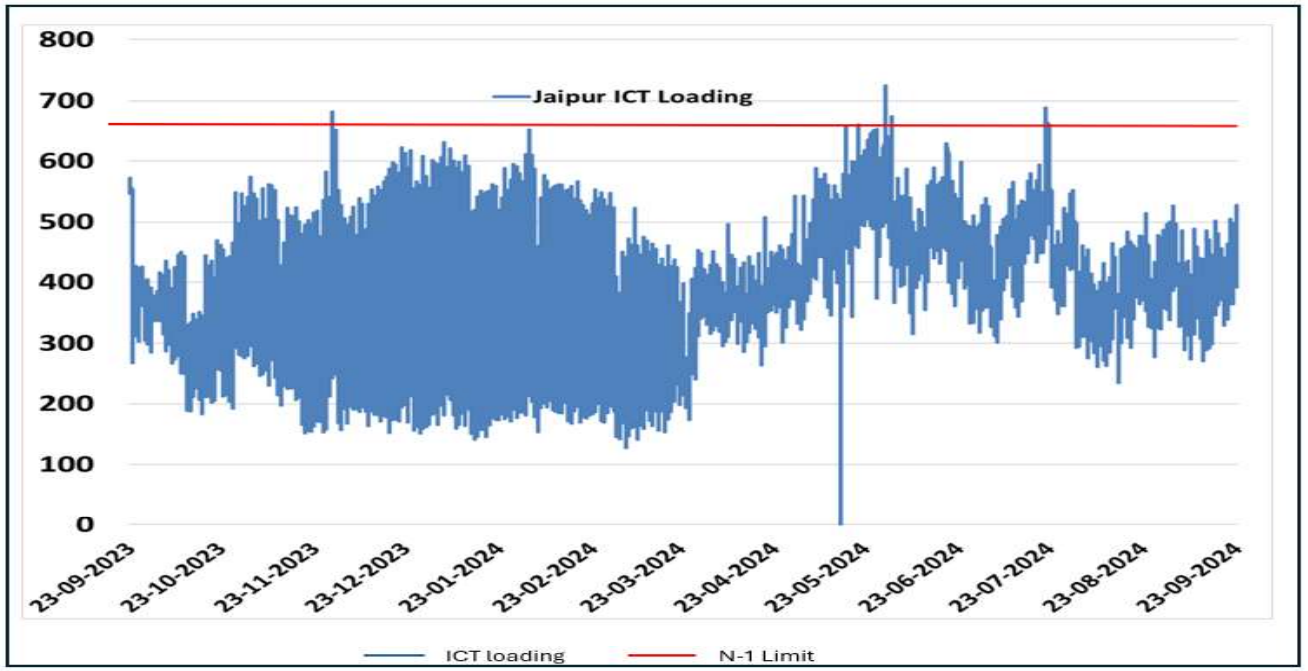


Fig : Loading of Jaipur South ICTs of Past one year (Source: Grid-India)

RVPN stated that LILO of one ckt of 220kV Dausa- Sawai Madhopur at Jaipur (South) is under implementation which may further increase the loading of Jaipur (South) ICTs. Considering above there is urgent requirement of ICT augmentation at 400/220kV Jaipur South (PG) S/s. CEA and NRLDC agreed on proposal. No other comments were received.

POWERGRID vide mail dated 30.09.2024 confirmed space availability for Augmentation of 400/220 kV transformer (3rd, 500MVA) along with transformer bays at 400/220kV Jaipur South (PG) S/s.

In view of above, following ICT augmentation scheme was agreed in ISTS :

- Augmentation of 400/220 kV ,1x500 MVA (3rd) ICT at 400/220kV Jaipur South (PG) S/s along with associated transformer bays

G4. LILO of 220 kV Chittorgarh-RAPP B D/c Lines at RVPNs proposed 220 kV GSS Begun(Chittorgarh)

It was stated that RVPN vide letter dated 04.09.2024 to CTU requested for in principle approval for making LILO of 220kV Chittorgarh-RAPP-B D/c lines at RVPN's proposed 220 kV Begun (Chittorgarh) S/s. In the letter, RVPN mentioned that total length of 220 kV D/c RAPP-B- Chittorgarh line is 130kM (approx.) and LILO length would be about 5 kms. Further RVPN mentioned that 220kV D/c RAPP-B-Chittorgarh line is passing near to the proposed site of 220kV GSS Begun and after making LILO of this line at proposed 220 kV GSS Begun, length of 220kV D/c line between Begun-RAPP-B will be approximately 70kM. This will help to minimize the tripping on the line and will ensure availability of grid to units of RAPP-B.

CTUIL vide mail dated 19.09.24 to CEA, Grid-India & RVPN requested to provide comments/observations on RVPN's proposal (05km LILO of 220 kV D/C Chittorgarh-RAPP B Lines at RVPNs proposed 220 kV GSS Begun (Chittorgarh)) at the earliest for taking up in ensuing CMETS-NR meeting. CEA vide mail dated 10.10.2024 intimated following observations:

(i) It may be clarified whether LILO of both circuits or only one circuit of Chittorgarh-RAPP B 220 kV D/c line has been proposed at Begun (Chittorgarh).
(ii) Following details may be furnished:
- Timeline of the Begun substation as well as details of anticipated load.
- Details of additional connectivity of Begun substation at 220 kV level, if any.
- Peak loading experienced till date on 220 kV D/C Chittorgarh-RAPP B lines.
- Load flow studies for the above proposal.

Subsequently, RVPN vide letter dated 21.10.2024, submitted following clarification on the observations intimated by CEA

(i) LILO of both circuits of 220 kV D/C Chittorgarh-RAPP-B lines has been proposed for creation of 220 kV GSS Begun (Chittorgarh).
(ii) Following details are furnished as following

(a) Tentative timeline of the proposed 220 kV GSS Begun (Chittorgarh) will be 02 years from the date of approval of RERC. RERC approval will be received in 6 months.
(b) Additional connectivity at proposed 220 kV GSS Begun at 220 kV level is NIL
(c) Peak loading experienced till date on both 220 kV D/c Chittorgarh-RAPP-B line-I and II circuits are 150 MW and 150 MW respectively.
(d) A detailed justification note for creation of proposed 220 kV GSS Begun is attached. Load flow studies for above proposal are attached at Exhibit-1, Exhibit2, Exhibit-3 and Exhibit-4

Further Grid-India vide mail dated 22.10.2024 also intimated following comments /observations-:

- 220kV RAPPB-Chittorgarh line is also part of RAPS islanding scheme, therefore, islanding scheme would have to be modified after commissioning of 220kV Begun.
- Chittorgarh(220kV) substation is also fed from 400/220kV Chittorgarh substation of RVPN. To control loading of 400/220kV Chittorgarh ICTs, 220kV Chittorgarh-Chittorgarh line is often kept open by Rajasthan SLDC. Accordingly, it is suggested that ICT capacity augmentation at 400/220kV ICTs at Chittorgarh is also done timely so that opening of 220kV Chittorgarh-Chittorgarh line to control loading of 400/220kV ICTs is avoided.
- Further, as nuclear stations are generally not providing significant reactive power support in real-time, reactive power requirement at 220kV Begun may be met locally to avoid low voltage issues. Voltage profile of 400/220kV Chittorgarh (220kV bus) and 220kV RAPP B during winter 2023-24 is shown below:

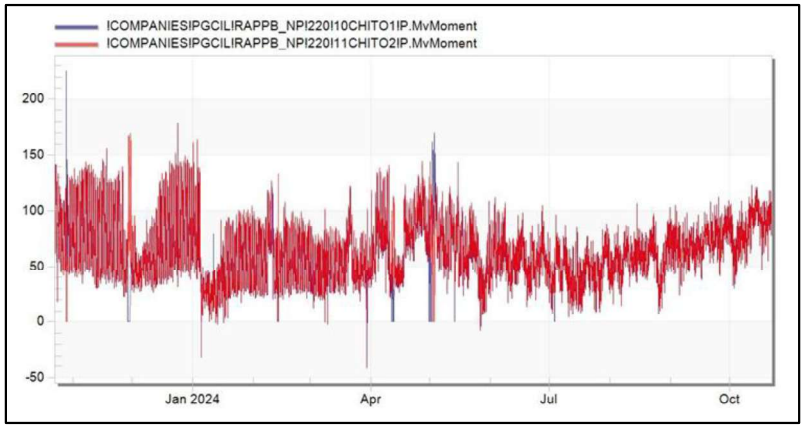
Further RVPN vide letter dated 04.11.2024, submitted following clarification on the comments /observations intimated by Grid-India:-

(i) It may be noted that 220kV RAPPB-Chittorgarh line is also part of RAPS islanding scheme and LILO has been proposed of both circuits of 220kV RAPPB-Chittorgarh line at RVPN's proposed 220 kV GSS Begun (Chittorgarh). Therefore, islanding scheme will be modified accordingly after commissioning of proposed 220kV Begun.

(ii) 220 kV GSS Chittorgarh (RVPN) is fed from 400 kV GSS Chittorgarh (RVPN). To control loading of 400/220kV Chittorgarh ICTs, 220kV Chittorgarh-Chittorgarh line is often kept open by Rajasthan SLDC. In this regards it is submitted that augmentation of additional 500 MVA, 400/220 kV ICT at 400 kV GSS Chittorgarh is under feasibility examination.

(iii) Nuclear stations are generally not providing significant reactive power support in real time. Therefore, to avoid low voltages issues, reactive power support at 220kV Begun has been taken as 5.43 MVAR shunt capacitor bank at 33 kV voltage level. Further, additional shunt capacitor bank will be installed by RVPN, if required.

Line loading pattern of 220kV RAPPB-Chittorgarh D/C lines and voltages of RAPPB and Chittorgarh buses for last one year was also provide by Grid-India which is shown below:



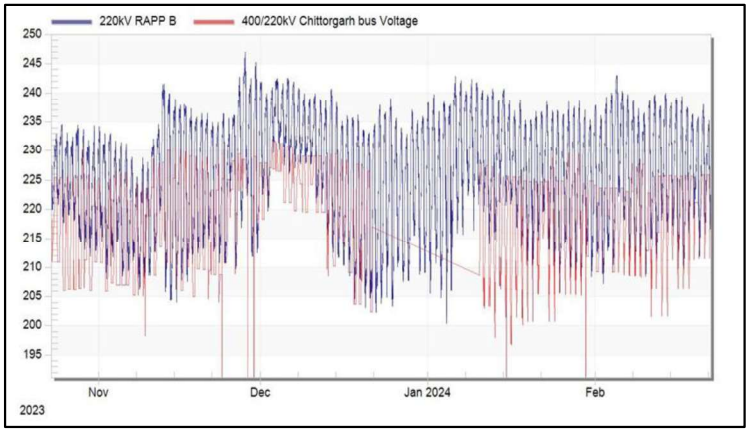


FIg : Line loading pattern and voltages of 220kV RAPP-B-Chittorgarh D/C lines (Source-Grid-india)

CTUIL also carried out studies on above proposal in planning file. In CTU planning files it emerged that loadings on 400/220kV ICTs (3x 315 MVA) of Chittorgarh (RVPN) S/s already higher (~295MW/ICT & ~342MW/ICT in 2027 & 2030 timeframe respectively) and these ICTs are already N-1 non-compliant in Planning study files. Further with proposed transmission scheme (5km LILO of 220 kV D/c Chittorgarh-RAPP B Lines at RVPN's proposed 220 kV GSS Begun S/s (considering 50MW load at Begun S/s) , loadings on 400/220 kV ICTs of Chittorgarh (RVPN) S/s further increases by 13-15 MW/ICT.

Therefore, in future ICT augmentation (4th ICT) may be required at 400/220 Chittorgarh (RVPN) S/s. it is recommended that RVPN may take up the augmentation of 400/220kV ICT (4th) at Chittorgarh (RVPN) S/s or replace 400/220kV, 3x315MVA ICTs with 3x500MVA ICTs (at least 2 nos. ICTs) in case of space constraint at Chittorgarh (RVPN) S/s on urgent basis to meet the drawl requirement from Chittorgarh (RVPN) S/s .

RVPN stated that replacement of 400/220kV, 1 no. 315MVA ICT with 500MVA ICT at Chittorgarh (RVPN) S/s is already approved with 18 months time schedule and based on future drawl requirement, replacement of other 315MVA ICTs with 500MVA ICT at Chittorgarh (RVPN) S/s may be taken up.

NRLDC also highlighted the N-1 non compliance issue of 400/220kV ICTs (3x315MVA) at Chittorgarh S/s and ICT loading will be reviewed and will be highlighted as part operational feedback report. NRLDC enquired about schedule of replacement of 1 no. 315MVA ICT with 500MVA ICT at Chittorgarh (RVPN) S/s. RVPN stated that implementation schedule for above replacement of 400/220kV ICT at Chittorgarh PG) is 18 months from award, however the ICT is not yet taken up for award due to approval at later stage. It was concluded that based on loading pattern and Grid-India operational feedback, RVPN may take up advance actions for replacement of other 2 nos. of 315MVA ICTs with 500MVA ICT at Chittorgarh (RVPN) S/s.

The comprehensive scheme proposal is intra state in nature, however the proposal involves LILO of ISTS line i.e. LILO of 220 kV D/C Chittorgarh-RAPP B Line at RVPNs proposed 220 kV GSS Begun (Chittorgarh)-. In view of above, the proposal is being discussed in present CMETS-NR meeting. NPCIL vide mail 28.01.25 informed their consent to consider the LILO of both the 220kV Chittorgarh- RAPP B D/C lines at Begun GSS.

During the meeting, RVPNL asked that whether they need to install OPGW on the LILO portion of 220kV Chittorgarh-RAPP B D/c line, they also asked who shall install OPGW on POWERGRID line if OPGW is not available. CTUIL stated that as per CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022, "The primary path for tele-protection shall be on point-to-point Optical Ground Wire", further as per CEA letter dtd. 22.05.24 all the Central and State utilities to ensure the OPGW on their transmission network (attached at **Annexure-IA**). Therefore RVPNL needs to install OPGW on their LILO portion, for the main line i.e. 220kV Chittorgarh-RAPP B D/c if OPGW is not available POWERGRID shall needs to install the same. CTUIL asked availability of OPGW from POWERGRID, as Concerned representative from POWERGRID was not present in the meeting, later on vide email dtd. 24.01.25 POWERGRID informed that OPGW is not available on this line. CTUIL stated that as OPGW not available on 220kV Chittorgarh-RAPP B D/c line, a separate scheme shall be formed by CTU for review in the upcoming NRPC, forum agreed for the same

Considering above following scheme proposed to be implemented by RVPN under Intra state was agreed :

- LILO of 220 kV D/C Chittorgarh-RAPP B Lines at RVPNs proposed 220 kV GSS Begun (Chittorgarh)-5kms

G5. Deletion of Augmentation of 1x500 MVA, 400/220 kV ICT at Fatehgarh-III PS (6th ICT in Section-2)

It was stated that in 34th Consultation Meeting for Evolving Transmission Schemes in Northern Region held on 20.09.2024, it was stated that considering the connectivity quantum of 2120 MW at 220 kV level (Connectivity granted: 2070MW, connectivity margin:50MW) at Fatehgarh-III PS(Sec-II), augmentation of 1x500 MVA, 400/220 kV ICT at Fatehgarh-III PS (6th ICT in Section-2) is required to meet N-1 compliance. Accordingly, above ICT augmentation was agreed in the above meeting.

Earlier, POWERGRID vide mail 23.05.23 informed that space is available for 2 nos. ICTs (One ICT is 220kV Section-1 (ICT-5) and remining One ICT in 220kV Section-4 (ICT-11) at Fatehgarh-III PS. The above space requirement was communicated by POWERGRID to CTUIL after considering 2 nos. 400kV line Bays utilized for Barmer-I PS interconnection as part of Transmission System for Rajasthan Ph-IV scheme(Jaisalmer/Barmer) scheme. Based on above space confirmation, proposal for augmentation of 1x500 MVA, 400/220 kV ICT at Fatehgarh-III PS (6th ICT in Section-2) was put up in 34th CMETS-NR meeting.

Further during costing for ICT augmentation (6th ICT in Section-2) at Fatehgarh-III PS, POWERGRID vide mail 30.10.24 informed that space for additional 400/220KV ICT is not available at Fatehgarh-III S/s (Sec-2). POWERGRID vide mail dated 18.11.2024 to CTUIL informed that earlier earmarked bays (Main Bays -446, 449), for ICTs (ICT11 &12), have been utilized for termination of transmission line for RE Developers (Spring & Azure) and hence no additional ICT bay is available at 765/400/220kV Fatehgarh-III S/s.

- LILO of one ckt of 400kV Mandola – Dadri D/c line(Quad Bersimis) at Harsh Vihar S/s (DTL) (Incl. 400kV cable portion) (LILO length-12km incl. 0.7km cable)

G7. LILO of one circuit of 400kV Sikar – Agra D/c (Quad Moose) line at 400 kV GSS Kumher (6.5 ckm) along with 80 MVAR, 420 kV switchable line reactor at Kumher end of Sikar – Kumher 400 kV section

It was stated that a meeting was held among CEA, Grid-India, CTUIL & RVPN on 25.10.2024 through VC to discuss the Intra-State Transmission Schemes proposed by RVPNL. In the meeting Proposal for Establishment of 400/220 kV, 2x500 MVA GSS and associated transmission system at Kumher, Bharatpur district, Rajasthan was deliberated. In the meeting, RVPN stated that presently, load of Bharatpur area is being fed mainly from Dholpur GTPS and Agra through 220 kV lines. However, generation at Dholpur GTPS is not being scheduled due to comparatively costly power due to prevailing high gas price. Hence, there is high power flow is from Chhabra TPS to 400 kV GSS Hindaun to Dholpur GTPS which in turn is connected to Bharatpur (load centre).

Further, 400 kV GSS Alwar is also fed radially from 400 kV GSS Hindaun. Due to radial nature of 400 kV network at 400 kV GSS Hindaun and 400 kV GSS Alwar, there is large voltage variations in the region especially during high agriculture load conditions. Condition further worsens with opening of Bharatpur – Agra 220 kV S/c line due to operational and maintenance activities. In order to address the above issues and to ensure reliable power supply in Bharatpur area, RVPN has proposed following intra state transmission scheme:

- New substation at Kumher with 2×500 MVA, 400/220 kV ICTs and 125 MVAR, 420 kV Switchable Bus Reactor
- LILO of one circuit of Sikar – Agra 400 kV D/c (Twin Moose) line at 400 kV GSS Kumher (6.5 ckm) along with 50 MVAR, 420 kV switchable line reactor at Kumher end of Sikar – Kumher 400 kV Section (km)
- LILO of Hindaun – Alwar (Twin Moose) 400 kV S/c line at 400 kV GSS Kumher (45 ckm)
- LILO of Nadbai – Bharatpur 220 kV S/c line at 400 kV GSS Kumher (5 ckm)
- LILO of Sikri – Bharatpur 220 kV S/c line at 400 kV GSS Kumher (10 ckm)
- Future Elements at Kumher GSS:
  - Space for 4 Nos. 220 kV line bays
  - Space for 1×500 MVA (3rd), 400/220 kV ICT along with bays

In the same meeting CTUIL stated that this proposal seems to be in order & would enhance the stability of the system through LILO of 400kV Sikar- Agra line (386km) at Kumher GSS. Further it is suggested that instead of 50 MVAr line reactor, 80 MVAr line reactor may be considered at Kumher end of Sikar – Kumher 400 kV line section (formed after LILO) as considerable voltage rise is being observed for which 50 MVAr line reactor may not be adequate.

After the deliberations, the transmission scheme proposed by RVPN for establishment of a new 400 kV Kumher substation in Bharatpur district, Rajasthan was agreed in that meeting with following scope of work:

- New substation at Kumher with 2×500 MVA, 400/220 kV ICTs and 125 MVAR, 420 kV Switchable Bus Reactor. Future provisions:
  (i) Space for 4 Nos. 220 kV line bays
  (ii) Space for 1×500 MVA (3rd), 400/220 kV ICT along with bays

- LILO of one circuit of Sikar – Agra 400 kV D/c (Twin Moose) line at 400 kV GSS Kumher (6.5 ckm) along with 50 MVAR, 420 kV switchable line reactor at Kumher end of Sikar – Kumher 400 kV section
- LILO of Hindaun – Alwar (Twin Moose) 400 kV S/c line at 400 kV GSS Kumher (45 ckm)
- LILO of Nadbai – Bharatpur 220 kV S/c line at 400 kV GSS Kumher (5 ckm)
- LILO of Sikri – Bharatpur 220 kV S/c line at 400 kV GSS Kumher (10 ckm)

Subsequently, Grid-India vide email dated 27.12.2024 has clarified that the Sikar – Agra 400 kV D/c line has been implemented with Quad Moose conductor. POWERGRID has confirmed that conductor type of Sikar – Agra 400 kV D/c line is Quad Moose.

CTUIL also carried out studies on above proposal. In CTU planning files it emerged that loadings are in order. Further with the proposed 50 MVAr, 420 kV switchable line reactor at Kumher end of Sikar – Kumher 400 kV line section (316 km), reactive compensation is on lower side (~40%) with Ferranti rise of about 17kV. Considering above, 80 MVAr, 420 kV switchable line reactor at Kumher end of Sikar – Kumher 400 kV line section may be suggested in place of 50 MVAr, 420 kV switchable line reactor.

Subsequently, the minutes of the meeting circulated vide CEA letter dated 04.12.2025 were modified (vide CEA letter dated 03.01.25) with proposed Transmission scheme as below

- New substation at Kumher with 2×500 MVA, 400/220 kV ICTs and 125 MVAR, 420 kV Switchable Bus Reactor.
  Future provisions:
  (i) Space for 4 Nos. 220 kV line bays
  (ii) Space for 1×500 MVA (3rd), 400/220 kV ICT along with bays

- LILO of one circuit of Sikar – Agra 400 kV D/c (Quad Moose) line at 400 kV GSS Kumher (6.5 ckm) along with 80 MVAR, 420 kV switchable line reactor at Kumher end of Sikar – Kumher 400 kV section
- LILO of Hindaun – Alwar (Twin Moose) 400 kV S/c line at 400 kV GSS Kumher (45 ckm)
- LILO of Nadbai – Bharatpur 220 kV S/c line at 400 kV GSS Kumher (5 ckm)
- LILO of Sikri – Bharatpur 220 kV S/c line at 400 kV GSS Kumher (10 ckm)

The comprehensive scheme proposal is intra state in nature, however the proposal involves LILO of ISTS line i.e. LILO of one circuit of Sikar – Agra 400 kV D/c (Quad) line at 400 kV GSS Kumher. In view of above, the proposal is being discussed in present CMETS-NR meeting.

During the meeting, RVPNL asked that whether they need to install OPGW on the LILO portion of Sikar – Agra 400 kV D/c line at Kumher, they also asked who shall install OPGW on POWERGRID line if OPGW is not available. CTUIL stated that as per CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022, "The primary path for tele-protection shall be on point-to-point Optical Ground Wire", further as per CEA letter dtd. 22.05.24 all the Central and State utilities to ensure the OPGW on their transmission network (attached at **Annexure-IA**). Therefore, RVPNL needs to install OPGW on their LILO portion of Kumher S/s, for the main line i.e. Sikar – Agra 400 kV D/c if OPGW is not available POWERGRID shall needs to install the same. CTUIL asked availability of OPGW from POWERGRID, as Concerned representative from POWERGRID was not present in the meeting, later on vide email dtd. 24.01.25 POWERGRID informed that OPGW is not available on this line. CTUIL stated that as OPGW not available on Sikar – Agra 400 kV D/c line, a separate scheme shall be formed by CTU for review in the upcoming NRPC. Same was agreed in the meeting**.**

Considering above following scheme is agreed to be implemented by RVPN as part of comprehensive scheme discussed above under Intra state along with necessary communication infrastructure:

- LILO of one circuit of Sikar – Agra 400 kV D/c (Quad) line at 400 kV GSS Kumher (6.5 ckm) along with 80 MVAr, 420 kV switchable line reactor at Kumher end of Sikar – Kumher 400 kV section

G8. Augmentation of 400/220 kV, 1x315 MVA (3rd) ICT at 400/220kV New Wanpoh substation

It was stated that in 21st CMETS-NR meeting, based on the request of JKPTCL to meet the growing demand of power in J&K, as well as to fulfill the N-1 criteria of ICTs in future, proposal to implement one no. of 400/220kV, 315 MVA ICT (3rd) at New Wanpoh (PG) S/s under ISTS was agreed.

Further, JKPTCL vide letter dated 07.10.23 informed that as per the present trend of power demand and the upcoming downstream projects, it is imperative that 400/220kV New Wanpoh substation is augmented by the end of 2025. In reply to CTU mail to provide firm schedule to implement 315 MVA ICT (3rd) at New Wanpoh (PG) S/s, JKPTCL vide mail dated 01.02.24 mentioned the firm schedule to be considered as 31.12.25 for above ICT augmentation.

Subsequently, as per CTU OM 22.03.24, CTU approved the implementation of the transmission scheme "Augmentation of Transmission Capacity at 400/220kV New Wanpoh (PG) S/s in Jammu and Kashmir by 400/220kV, 1x315 MVA ICT(3rd)" by the implementing agency "Power Grid Corporation of India Ltd." with timeline of 31.12.25

Recently, in the POWERGRID vide letter dated 24.12.24 informed about several challenges are being faced in awarding the contract execution of substation extension work at New-Wanpoh Substation with a completion schedule of 21 months i.e., Dec'25 based on CTUIL OM dated 22.03.24. POWERGRID also mentioned that the NIT had been issued in July'24 for the subjected work with a completion schedule up to Dec'25 and already 17 extensions have been given to bidders for submission of bids but not even a single

Annexure-A.XXIX

सत्यमेव जयते

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
विद्युत संचार विकास प्रभाग
Power Communication Development Division
****

CEA-PS-17-24/1/2024-PCD Division/ **Date: 22-11-2024**

To,

(As per the attached list)

Subject: Facilitating Broadband expansion by allowing leasing of fiber on OPGW - regd.

This has reference to the DO letter dated 11th November 2024(No. 5-5/NBM-2024/PGCIL-OPGW) addressed to Secretary (MoP) from Department of Telecommunications, Ministry of Communications. Wherein MoP has been requested to consider laying at least 48F (48 Fibres) OPGW (Optical Ground Wire) in future transmission projects making provision for leasing of additional fibers for the use of telecom licensees i.e TSP (Telecom Service Provider)/ ISP (Internet Service Provider)/ IP (Internet Protocol)-1 etc.

During a review meeting of NER (North Eastern Region) Telecom projects, Hon'ble Minister for Communication had directed to facilitate broadband expansion by allowing leasing of fibers on OPGW of POWERGRID in place of leasing of bandwidth, so that rural areas and hinterlands can get good and reliable telecom connectivity.

In view of this, CTU (Central Transmission Utility), POWERGRID, STUs (State Transmission Utilities) and all the TSPs (Transmission Service Providers) are requested to incorporate the necessary provisions in the technical specifications of their future transmission schemes supporting the laying of at least 48F OPGW instead of 24F OPGW for the upcoming TBCB (Tariff based Competitive Bidding)/RTM (Regulated Tariff Mechanism) schemes. It is further advised that the schemes which are presently in bidding stage may also be modified accordingly by the BPCs (Bid Process Coordinators) wherever applicable.

This issues with the approval of Chairperson, CEA.

22/11/24

Chief Engineer (PCD)

(Addressed to the list below :)

S.No.	Designation	Address	E-mail
1.	COO, CTUIL	Plot No. 2, Sector – 29 Near IFFCO chowk Metro station, Gurugram – 122001	df@powergrid.in, do@powergrid.in, pcgarg@powergrid.in
2.	CMD, PGCIL	Powergrid, Saudamini, Plot No – 02, Sector – 29, Gurugram, Haryana 122001	cmd@powergridindia.com
3.	Chairman & Managing Director, PGCIL	Saudamini, Plot No. 2, Sector-29 Gurgaon-122001 (Haryana)	cmd@powergrid.in
4.	Chairman & Managing Director, APTRANSCO	Gunadala, Eluru Rd, Vijayawada, Andhra Pradesh 520004	cmd@aptransco.gov.in
5.	Chairman, APPGCL, Andhra Pradesh	Vidyut Soudha, Gunadala Eluru Road, Vijaywada Andhra Pradesh – 520 004	chairman@apgenco.gov.in
6.	Chairman & Managing Director, TCTL	Vidyut Soudha, Khairatabad, Hyderabad – 500082	cmd@tgtransco.com
7.	Chairman & Managing Director, TSPGCL	Vidyut Soudha, 'A' Block, Khairatabad, Hyderabad – 500 082 (Telangana)	cmd@tsgenco.co.in cmdtransco@telangana.gov.in
8.	Managing Director, TANTRANSCO	10th Floor/NPKRR Malikai, No. 144 Anna Salai, Chennai-600002	mdtantransco@tnebnet.org
9.	Chairman & Managing Director, KSEBL Kerala	Board Secretariat, Vidyuthi Bhavanam Pattom, Thiruvananthapuram – 695004	cmdkseb@kseb.in
10.	Managing Director, KPTCL	1st floor, Kaveri Bhawan, K. G. Road, Bangalore-560009	md@kpclgmail.com

11.	Director (Operations), MSETCL	C-19, E-Block Prakashganga, Bandra-Kurla Complex Bandra(E), Mumbai 400 051.	dirop@mahatransco.in, sealdc8100@mahatransco.in
12.	Managing Director, MSPGCL Maharashtra	Prakashgad, Plot No. G-9, 4th Floor Bandra (E), Mumbai-400051	md@mahagenco.in
13.	Chief Engineer (Elect.), Goa Electricity	Department Vidyut Bhawan, Panji, Goa - 403001	cee-elec.goa@nic.in, elec.goa@nic.in
14.	Chairman, GUVNL Gujarat	Sardar Patel Vidyut Bhawan, Race Course, Vadodara- 390 007	md.guvnl@gebmail.com
15.	Chairman, Gujarat Urja Vikas Nigam Ltd.	Sardar Patel Vidyut Bhawan, Race Course, Vadodara- 390007	md.guvnl@gebmail.com
16.	Managing Director, GETCO	Sardar Patel Vidyut Bhawan, Race Course, Vadodara- 390 007	md.getco@gebmail.com
17.	Secretary, Dadra & Nagar Haveli Electricity Department	Dadar Nagar Secretariat, Silvassa- 396230	tapasyaraghav@gmail.com
18.	Director (Operations) , RRVPNL	Vidyut Bhawan, Jyoti Nagar Jaipur, Rajasthan	dir.oper@rvpn.co.in cmd.rvpn@gmail.com
19.	Chairman, HVPNL	Shakti Bhawan, C4, Sector No. 6 Panchkula – 134109, Haryana	chairmanpu@gmail.com
20.	Managing Director, J&KPTCL	JKPTCK ,Power complex , bemina Srinagar (J&K) janipur jammu	mdjkptcl1@gmail.com
21.	Managing Director, HPPTCL	Himfed Building, BCS, New Shimla - 171009 (H.P.)	md@hppcl@gmail.com
22.	Managing Director, HPGCL Haryana	Room No.411,3rd Floor, Urja Bhawan,C-7, Sector-6, HPGCL Panchkula	md@hpgcl.org.in

23.	Managing Director, PTCL of Uttarakhand	Vidyut Bhawan, Saharnpur Road, Near I.S.B.T. Crossing, Dehradun,Uttarakhand – 248002	md.ptcul@rediffmail.com
24.	Managing Director, UJVNL (Uttarakhand)	Maharani Bagh, G M S Road, Dehradun	mdujvnl@ujvnl.com, md@ujvnl.com
25.	Chairman& Managing Director, BSPTCL	Vidyut Bhawan, Bailey Road Patna – 800021	mdcellbsptcl@gmail.com, cmd.bsphcl@gmail.com
26.	Managing Director, BSPGCL Bihar	5th Floor, Vidyut Bhawan, Bailey Road, Patna	md.bspgcl@gmail.com
27.	Chairman & Managing Director, PSTCL Punjab	The Mall, Mall Road, Patiala – 147001	cmd@pstcl.org
28.	Chairman & Managing Director, UPPTCL	7th Floor Shakti Bhawan, 14-Ashok Marg Lucknow Lucknow- 226001	cmd@upptcl.org, chairman@upptcl.org
29.	CMD, UPRVUNL	Shakti Bhawan,14- Ashok Marg, Lucknow226001	chairmanuppcl@gmail.co m md@uprvunl.org
30.	Managing Director, MPPTCL	Shakti Bhawan, Rampur, Jabalpur(MP) - 482 008	md@mptransco.nic.in, ce.pnd@mptransco.nic.in
31.	Managing Director, MPPGCL	Shakti Bhawan, Vidyutnagar, P.O. Jabalpur- 482 008	mppgcl@mp.nic.in
32.	Chairman, Jharkhand Urja Utpadan Nigam Ltd.	Engineering Building, HEC Dhurwa, Ranchi- 834004	mdjuunl2018@gmail.com
33.	Managing Director, JUSNL Jharkhand	Engineering Buliding, HEC, Dhurwa, Ranchi – 834004	mdjusnl@gmail.com, md@jusnl.in
34.	Chairman & Managing Director, CSPHCL, Chhattisagarh	Vidyut Seva Bhawan,P.O. Sunder Nagar, Danganiya,	mdtransco@cspc.co.in, chairman@cspc.co.in

		Raipur- 492 013	
35.	Chairman & Managing Director, WBSETCL	Bidhan Nagar, Kolkata-700 091.	md@wbsetcl.in
36.	Chairman & Managing Director, WBPDCL	Bidyut Unnayan Bhaban, plot 3/C, LABlock, Sector-III Salt Lake City, Kolkata - 700	wbpdcl@wbpdcl.co.in
37.	Chairman & Managing Director, OPTCL	Janpath, Bhubaneswar-751022.	ele.bpmohapatra@optcl.co.in, ele.ssahu@optcl.co.in, dir.operation@optcl.co.in, cmd@optcl.co.in
38.	Chairman, OPGCL Odisha	Zone-A,7th Floor, Fortune Towers, Chandrasekharpur, Bhubaneswar - 751023 Odisha	energy@nic.in
39.	Managing Director, CSPGCL	Vidyut Seva Bhawan P.O. Sunder Nagar, Danganiya, Raipur- 492 013 Chhattisgarh	mdgenco@cspc.co.in
40.	Chairman, Jharkhand Urja Utpadan Nigam Ltd.	Engineering Building, HEC Dhurwa, Ranchi-834004	mdjuunl2018@gmail.com
41.	Managing Director, SPDCL Sikkim	NH– 10, Near UD&HD Dept. Gangtok East Sikkim 737101	spdcskm@gmail.com
42.	Chairman, APGCL, Assam	Bijulee Bhawan, Paltan Bazar, Guwahati,Assam.	cgm.ppd@aegcl.co.in, anjanjc.aegcl@gmail.com, gm.mpr@aegcl.co.in, rakesh.kumar@apgcl.org
43.	Managing Director, AEGCL (Assam)	Bijulee Bhawan, Paltan Bazar, Guwahati- 781 001	managing.director@aegcl.co.in, md_aegcl@yahoo.co.in

44.	The Engineer-in-Chief, Power and Electricity Dept, Govt of Mizoram	Kawlphetha Building New Secretariat Complex, Khatla, Aizawl Mizoram 796001	eincpower@gmail.com
45.	Chief Engineer (P), Manipur Electricity Dept.	South Block, Imphal, Manipur- 795 001.	md.mspcl@gmail.com, snandei@gmail.com, ed.tech.mspcl@gmail.com , ce-power@man.nic.in
46.	Chief Engineer, Nagaland Dept. of Power	Chief Engineer (D&R) Electricity House. A.G. Colony, Kohima – 797001	miaziekho77kehie@gmail .com
47.	Chairman & Managing Director, Meghalaya	Lumjingshai Short Round Road Shillong- 793001	ewnong@yahoo.com, directormeptcl@gmail.co m, cetranzemeptcl@gmail.co m
48.	Chairman, TSECL Tripura	Bidyut Bhaban, Banamalipur, Agartala, Tripura - 799001	managing.director@tsecl.i n
49.	Chief Engineer (P) Dept. of Power , Govt of Arunachal Pradesh	Itanagar, Arunachal Pradesh – 791 111	setrans26@gmail.com, tktara@hotmail.com, vidyutarunachal@rediffm ail.com, vidyutarunachal@gmail.c om, setrans26@gmail.com, tktara@hotmail.com, ee.ced@hotmail.com
50.	Commissioner-cum-Secretary(P), ANED (Andaman)	Secretariat , Andaman and Nicobar Islands, Port Blair- 744101	secyit.and@nic.in
51.	Secretary, Lakshadweep Electricity Dept.	Lakshadweep Electricity Dept. Kavaratti - 682555	lk-ktelect@nic.in
52.	Secretary, Puducherry Electricity	Department Secretariat, Puducherry- 605001	secycs.pon@nic.in, secytran@py.gov.in
53.	Chairman & Managing Director, DTL Delhi	Shakti Sadan, Kotla Marg, New Delhi – 110002	gmom1.dtl@gmail.com, dgmtoperation1.dtl@gmai l.com, md@dtl.gov.in

54.	Chairman & Managing Director, NTPC Ltd	NTPC Bhawan, Core 7, Scope Complex 7, Institutional Area Lodhi Road, New Delhi-110003	cmd@ntpc.co.in, amanna@ntpc.co.in, kamalverma@ntpc.co.in shipratyagi@ntpc.co.in
55.	Chairman & Managing Director, NHPC Ltd	Corporate Office, NHPC Office Complex, Sector 33 Faridabad- 121003, Haryana	cmd@nhpc.nic.in
56.	Chairman & Managing Director, NLC Ltd	Cuddalore District Block - 1, Neyveli Tamilnadu- 607 801	cmd@nlcindia.in
57.	Chairman & Managing Director, THDC Ltd	Pragatipuram, By Pass Road, Rishikesh 249 201	cmd@thdc.co.in
58.	Chairman & Managing Director, NPCIL	Nabhikiya Urja Bhavan, Anushaktinagar, Mumbai-400094	npciltecrectt@npcil.co.in, cmdsecretariat@npcil.co.in
59.	Chairman & Managing Director, NEEPCO Ltd.	NEEPCO Ltd., Lower New Colony, Shillong-793003	cmdneepco@neepco.co.in
60.	Chairman, BBMB (Bhakhra)	Sector -19B, Madhya Marg, Chandigarh – 160019	cman@bbmb.nic.in
61.	Chairman & Managing Director, Damodar Valley Corp.	Head Quarter DVC Towers, VIP Road Kolkata-700054	chairman@dvc.gov.in
62.	Director General, EPTA	First Floor, 6 Basant Lok, Vasant Vihar, New Delhi - 110070	Dg.epta@epta.in, epta.dg@gmail.com
63.	Chairman & Managing Director, TATA Power	NDPL House, Hudson Lines, Kingsway Camp Delhi-110 009	vrshrikhande@tatapower.com, BD@tatapower.com, nitin.kumar@tatapower.com, neeraj.srivastava@tatapower.com, piyushkumar@tatapower.com

64.	MD & CEO, Adani Transmission Ltd	3rd Floor, South Wing, Adani Corporate House, Shantigram, S. G. Highway, Ahmedabad - 382421	sameer.ganju@adani.com, Narendran.Ojha@adani.com, atlbd@adani.com, ishwar.dubey@adani.com, sunnykumar.singh@adani.com, sanjay.johari@adani.com
65.	Managing Director, Adani Power Limited	Shantigram, Near Vaishnodevi Circle, S.G. Highway, Ahmedabad-382421 Gujarat	manish.karna@adani.com
66.	Manager, AESL	Adani Power Limited, 7th Floor, Sambhav Building, Judges Bunglow Road, Bodakdev, Ahmedabad, Gujarat-380015	Praveen.tamak@adani.com
67.	Managing Director, L&T IDPL	L&T Campus, TCTC Building, First Floor, Mount Poonamallee Road, Manapakkam, Chennai – 600089.	csr@lntecc.com
68.	Chairman & Managing Director, Reliance Power	Reliance Centre, Ground Floor 19, Walchand Hirachand Marg, Ballard Estate, Mumbai 400 001	
69.	Director, Darbhanga – Motihari Transmission Co. Ltd.	6th Floor, Plot No. 19 & 20, Film City, Sector 16 –A, Noida, Uttar Pradesh – 201301	Nimish.Sheth@SEKURA.IN, Neeraj.Verma@SEKURA.IN, Vijayanand.Semletty@Sekura.in
70.	Chairman & Managing Director, SJVN Ltd	SJVN Corporate Head Quarters, Shanan Shimla-06. SHIMLA – 171006 HP	sectt.cmd@sjvn.nic.in, nandlal.sharma@sjvn.nic.in
71.	Director, G R Infra Project Ltd	2nd Floor, Novus Tower, Plot No. 18, Sector 18, Gurugram, Haryana - 122015,	modassar.a@grinfra.com, ashwin@grinfra.com, transmission@grinfra.com, akul.s@grinfra.com

72.	Dy GM, G R Infra Project Ltd	Rajgarh Transmission Limited, C/O: G R INFRAPROJECTS LIMITED, 2nd Floor, Novus Tower, Plot No. 18, Sector 18, Gurugram State - Haryana Pin Code – 122015	rajgarhtransmission@grinfra.com
73.	CMD, Megha Engineering & Infrastructures Ltd	S-2 Technocrat Industrial Estate Balanagar Hyderabad - 500 037	jsrinivaskumar@meilgroup.in
74.	Chairman & Managing Director, PPCL	Himadri, Rajghat Power House Complex, New Delhi – 110002	md.ipgpp@nic.in
75.	Director & CEO, Indian Transmission Business Sterlite Power Transmission Ltd	DLF Cyber Park, Tower B, 9th Floor, Udyog Vihar Phase -III, Sector-20 Gurugram- 122008 Ph – 0124-4562000	balaji.sivan@sterlite.com, fahim.alam@sterlitepower.in, Sterlite.bd@sterlitepower.com, chandan.dutt@sterlite.com
76.	Dy. President Kalpataru Power Transmission Ltd	101, Kalpataru Synergy, Opp. Grand Hyatt, Vakola , Santacruz (E), Mumbai 400055. India.	milind.nene@kalptarupower.com, kaushal.thakkar@kalpatarupower.com, thakkarkaushal86@yahoo.com, ajay.tripathi@kalpatarupower.com
77.	Director, Torrent Power Ltd	Electricity House, Lal Darwaja, Ahmedabad – 380001	NAMANSHAH@torrentpower.com, kaushal.thakkar@kalpatarupower.com, kashyapdesai@torrentpower.com, MAYANKGUPTA@torrentpower.com, VATSALPATEL@torrentpower.com
78.	Associate Director, Commercial & Regulatory, Sekura	503A, Windsor, Off CST Road, Kalina Mumbai-400098	Vijayanand.Semletty@Sekura.in

79.	CMD, KEC International Limited	RPG House, 463, Dr. Annie Besant Road,Worli, Mumbai – 400030	kecindia@kecrpg.com
80.	CMD, Juniper Green Transmission Private Limited	F-9 First Floor, Manish Plaza-1, Plot No. 7, MLU, Sector 10, Dwarka South West Delhi 110075	rohit.gera@junipergreenenergy.com, rohit.gera91@gmail.com
81.	CMD, ReNew Transmission Ventures Private Limited	ReNew , Commercial Block-1, Zone 6, Golf Course Road DLF City Phase-V, Gurugram-122009	mohit.jain@renewpower.in, anuj.jain@renewpower.in, amit.kumar1@renewpower.in
82.	CMD, Apraava Energy Private Limited	7th Floor, FULCRUM, Sahar Road, Andheri (East) Mumbai 400 099	sumit.sinha@apraava.com, naveen.munjal@apraava.com, roshni.shah@apraava.com
83.	Head & VP, Regulatory & Contracts	Unit No. 101, First Floor, Windsor, Village KoleKalyan, off CST Road, Vidyanagari Marg, Kalina, Santacruz (East), Mumbai – 400 098	venkatraman.inumula@indigrid.com
84.	Senior Manager (Bidding & Business Development), IndiGrid Ltd	Unit No. 101, First Floor, Windsor, Village KoleKalyan, off CST Road, Vidyanagari Marg, Kalina, Santacruz (East), Mumbai – 400 098 Maharashtra	wasim.alam1@indigrid.com
85.	Managing Director, L&T IDPL	L&T campus TCTC building , First Floor, Mount Poonamalle Road, Manapakkam, Chennai-600089, Tamil Nadu	contactus@lntidpl.com csr@lntecc.com
86.	Chief Engineer, Electric M &RE Division	Electric M &RE Division, Choglamsar, Leh-Ladakh-194101	cepladakh@gmail.com

87.	Director (BD & Commercial), Apraava Energy	Apraava Energy Private Limited (FULCRUM 7th Floor, Next to Hyatt Regency, Sahar Road, Andheri (East), Mumbai – 400 099. India.	sumit.sinha@apraava.com
88.	Manager, Megha Engineering & Infrastructures Ltd	-	**shivaprasad@meilgroup.com**
89.	Manager ReNew Transmission Ventures Pvt Ltd	Renew.Hub, Commercial Block-1, Zone-6, Golf Course Road, DLF City Phase V, Gurugram, Haryana – 122009	mohit.jain@renew.com
90.	Asst. Vice President, Sterlite Power	DLF Cyber Park, 9th Floor, B Block, Udyog Vihar Phase III, Sector 20, Gurugram – 122008, Haryana, India	yash.tandon@sterlite.com
91.	Head Environment & Corporate Affairs, Resergent Power (TATA)	NRSS - XXXVI,Tata Power B-12 & 13 Shatabdi Bhawan, Sector-4, Noida State - Uttar Pradesh - 201301	rajnishmehrotra@tatapower.com

Appendix-I

S. No.	Items	Details
1.	Name of Scheme	OPGW installation on existing 400 kV Sikar (PG) – Agra (PG) D/c line (owned by PG) which is proposed to be LILOed at 400 kV GSS Kumher (RVPN)
2.	Scope of the scheme	Supply and Installation of 48 Fiber OPGW on existing 400 kV Sikar (PG) – Agra (PG) D/c line (owned by PG) **(386 Km)** including Repeater which is proposed to be LILOed at 400 kV GSS Kumher (RVPN) including FOTE at Sikar S/s (PG) & Agra S/s (PG). **Total OPGW - 386 kms.** **Total FOTE – 2 Nos.** **Repeater- 1 No.**
3.	Objective / Justification	In the 36th Consultation Meeting for Evolving Transmission Schemes in Northern Region held on 15.01.2025 (MoM attached at **Annexure-I**) transmission scheme "*LILO of one circuit of 400kV Sikar – Agra D/c (Quad Moose) line at 400 kV GSS Kumher (6.5 ckm) along with 80 MVAR, 420 kV switchable line reactor at Kumher end of Sikar – Kumher 400 kV section*" was deliberated. In the scheme LILO of existing 400 kV Sikar-Agra D/c line is proposed at 400 kV GSS Kumher (RVPN). As per the inputs received from POWERGRID, OPGW is not available on 400 kV Sikar-Agra D/c line. To meet data, voice & protection requirements between Agra, Sikar & Kumher Substations, OPGW needs to be installed over the 400 kV Sikar-Agra D/c line **(386 Km)** which is proposed to be LILOed at 400 kV GSS Kumher (RVPN). Further as per CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022, "The primary path for tele-protection shall be on point-to-point Optical Ground Wire". Subsequently CEA PCD division vide letter Ref. CEA-PS-17-24/1/2024-PCD Division dtd. 22.11.2024 informed that in line with letter addressed to MoP from DoT, Ministry of Communication CTU, POWERGRID, STUs and all TSPs are requested to incorporate at least 48 Fiber OPGW in place of 24 Fiber in all upcoming schemes for utilization of additional fibers for Telecom licensees on

		leasing basis. (Letter attached at ***Annexure-II)*** based on this 48 Fiber OPGW has been proposed for this scheme. This scheme shall be taken up in NRPC Meeting alongwith transmission scheme "*LILO of one circuit of 400kV Sikar – Agra D/c (Quad Moose) line at 400 kV GSS Kumher (6.5 ckm) along with 80 MVAR, 420 kV switchable line reactor at Kumher end of Sikar – Kumher 400 kV section*".
4.	Estimated Cost	**Rs. 26.49 crore (approx.)**
5.	Implementation timeframe	30 months from date of allocation with best effort to match time frame with transmission scheme of "*LILO of one circuit of 400kV Sikar – Agra D/c (Quad Moose) line at 400 kV GSS Kumher (6.5 ckm) along with 80 MVAR, 420 kV switchable line reactor at Kumher end of Sikar – Kumher 400 kV section*"
6.	Implementation Agency	**POWERGRID**
7.	Implementation mode	**RTM mode**
8.	Deliberations in different meetings	36th Consultation Meeting for Evolving Transmission Schemes in Northern Region held on 15.01.2025

Appendix-II

S. No.	Items	Details
1.	Name of Scheme	OPGW installation on existing 220 kV Chittorgarh (RVPN)-RAPP B (NPCIL) D/c Line (owned by PG) which is proposed to be LILOed at RVPNs 220 kV GSS Begun (Chittorgarh)
2.	Scope of the scheme	Supply and Installation of 48 Fiber OPGW on existing 220 kV Chittorgarh (RVPN)-RAPP B (NPCIL) D/c Line (owned by PG) (**130 Km**) which is proposed to be LILOed at RVPNs 220 kV GSS Begun (Chittorgarh) including FOTE at Chittorgarh S/s (RVPN) & RAPP B station (NPCIL). **Total OPGW - 130 kms.** **Total FOTE – 2 Nos.**
3.	Objective / Justification	In the 36th Consultation Meeting for Evolving Transmission Schemes in Northern Region held on 15.01.2025 (MoM attached at **Annexure-I**) transmission scheme "*LILO of 220 kV Chittorgarh-RAPP B D/c Lines at RVPNs proposed 220 kV GSS Begun(Chittorgarh)*" was deliberated. In the scheme LILO of both circuits of 220 kV D/c Chittorgarh-RAPP-B lines has been proposed for creation of 220 kV GSS Begun (Chittorgarh). As per the inputs received from POWERGRID, OPGW is not available on 220 kV Chittorgarh-RAPP B D/c Line. To meet data, voice & protection requirements between Chittorgarh, RAPP-B & Begun Substations, OPGW needs to be installed over the 220 kV Chittorgarh-RAPP B D/c Line **(130 Km)** which is proposed to be LILOed at 220 kV GSS Begun (Chittorgarh). Further as per CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022, "The primary path for tele-protection shall be on point-to-point Optical Ground Wire". Subsequently CEA PCD division vide letter Ref. CEA-PS-17-24/1/2024-PCD Division dtd. 22.11.2024 informed that in line with letter addressed to MoP from DoT, Ministry of Communication CTU, POWERGRID, STUs and all TSPs are requested to incorporate at least 48 Fiber OPGW in place of 24 Fiber in all upcoming schemes for utilization of additional fibers for Telecom

		licensees on leasing basis. (Letter attached at ***Annexure-II***) based on this 48 Fiber OPGW has been proposed for this scheme. This scheme shall be taken up in NRPC Meeting alongwith transmission scheme "*LILO of 220 kV Chittorgarh-RAPP B D/c Lines at RVPNs proposed 220 kV GSS Begun (Chittorgarh)".*
4.	Estimated Cost	**Rs. 8.55 crore (approx.)**
5.	Implementation timeframe	24 months from date of allocation with best effort to match time frame with transmission scheme of "*LILO of 220 kV Chittorgarh-RAPP B D/c Lines at RVPNs proposed 220 kV GSS Begun (Chittorgarh)*"
6.	Implementation Agency	**POWERGRID**
7.	Implementation mode	**RTM mode**
8.	Deliberations in different meetings	36th Consultation Meeting for Evolving Transmission Schemes in Northern Region held on 15.01.2025

सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड
(पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड के स्वामित्व में)
(भारत सरकार का उद्यम)
CENTRAL TRANSMISSION UTILITY OF INDIA LTD.
(A wholly owned subsidiary of Power Grid Corporation of India Limited)
(A Government of India Enterprise)

Ref: C/CTU/Comm/UPPTCL/01 02.11.2023

Managing Director,
Uttar Pradesh Power Transmission Corporation Ltd,
7th Floor Shakti Bhawan,
14-Ashok Marg, Lucknow- 226001
Uttar Pradesh

Sub: Regarding Fibre Sharing on UPPTCL lines for ULDC purpose for redundant communication of Narora (NAPP) (NPCIL) and Saharanpur (PG) ISTS nodes

Sir,

This is in with reference to 23rd meeting of Telecommunication, SCADA & Telemetry Sub Committee (TeST) of NRPC held on 21.09.23 through video conference. The Minutes of Meetings (MoM) were issued on 23.10.2023 and are attached with this letter. In the meeting redundant communication of Narora, NPCIL (NAPP) & Saharanpur (PG) was deliberated which is minuted at para 6 & 14 of MoM.

Further, with reference to MoM clause 6.4 & 14.3, MS, NRPC requested CTUIL to write a letter to UPPTCL for fibre sharing on their OPGW links to provide redundant communication with the following details:

A. Fibre Sharing requirement for NAPP (NPCIL)

NAPP is presently connected via path NAPP (ISGS) -Khurja (UP)-Sikandarabad(UP)- Dadri (UP)– Muradnagar 400(UP) -Dadri (PG). To provide redundant communication for NAPP, laying of approx. 88 Km of OPGW from Narora (ISGS) to Simbhavali (UP) shall be installed under ISTS project and atleast 6 nos. of fibre sharing is required on the following links of UPPTCL:

1. Simbhavali (UP) - Shatabdi Nagar (UP)
2. Shatabdi Nagar (UP) - Modipuram (ULDC node under ISTS)

2 nos. of STM-16 FOTE are proposed under ISTS one each at Simbhavali (UP) and Shatabdi Nagar (UP).
This arrangement will also strengthen the redundancy of Modipuram which is backup SLDC of UPPTCL .

B. Fibre Sharing requirement for Saharanpur (PG)

Saharanpur (PG) is presently connected with Roorkee (PG), to provide redundant communication to Saharanpur (PG) atleast 6 nos. of fibre sharing is required on the following links of UPPTCL:

1. Sahararnpur (PG)- Deoband (UP)
2. Deoband (UP)- Sahararnpur (UP)
3. Sahararnpur (UP) -Nanauta (UP)
4. Nanauta (UP)-Shamli (UP)
5. Shamli (UP) -Muradnagar (ULDC node under ISTS)

5 Nos of STM-16 equipment at Sahararnpur (PG), Deoband (UP), Sahararnpur (UP), Nanauta (UP) and Shamli (UP) are proposed under ISTS.

It is to be mentioned that fibre required on UPPTCL links shall be solely used for ULDC & Grid Management purposes.

After receiving the confirmation of fibre sharing from UPPTCL, scheme shall be prepared by CTUIL and put up for approval in NCT after getting views of NRPC.

It is requested that UPPTCL may provide their consent for above mentioned sharing of fibers to CTUIL so that scheme shall be finalised at the earliest.

Thanking you,

Yours faithfully,

(H S Kaushal)
Sr. GM (CTUIL)

Appendix-III

S. No.	Items	Details
1.	Name of Scheme	Redundant communication for Saharanpur (PG) S/s
2.	Scope of the scheme	Supply & Installation of 48F OPGW (**15.8 Km**) from Saharanpur Gantry to LILO point (Tower no. 59) of 400kV Roorkee/Baghpat line along with one (01) STM16 communication equipment at Saharanpur S/s
3.	Objective / Justification	Presently Saharanpur S/s (PG) is connected with ISTS network on radial and no redundant path is available. Redundant communication for Saharanpur S/s was deliberated in 2nd, 3rd & 4th CPM held on dtd 25.07.2022, 17.02.2023 & 25.07.2023 respectively. Later, this agenda was discussed in 23rd TeST Meeting, where it was decided that redundant communication for SaharanpurS/s can be provided by sharing 3 pairs of fiber on the following UPPTCL links: 1. Sahararnpur (PG)- Deoband (UP) 2. Deoband (UP)- Saharanpur (UP) 3. Saharanpur (UP) -Nanauta (UP) 4. Nanauta (UP)-Shamli (UP) 5. Shamli (UP) -Muradnagar (UP) In the 23rd TeST meeting, NRPC suggested CTU to write a letter to UPPTCL for consent on fiber sharing on the above links, thereafter CTU has written a letter dtd 02.11.2023 to UPPTCL. (Letter attached as ***Annexure- IIA***) In the 24th TeST meeting held on 09.02.2024 this matter was again deliberated, and it was decided that two nos. of FOTE shall be required at Shamli and Muradnagar alongwith Fiber sharing on UPPTCL links. This agenda was also deliberated in the 72nd NRPC held on 29-30 March'24 where forum suggested that matter may be brough after formulation of fiber sharing policy by CEA for which a committee is formed. In the 26th TeST Meeting of NRPC held on 19.11.2024 NRLDC put up this agenda again for deliberation. POWERGRID informed that redundant communication of Saharanpur S/s can be made by installing OPGW on the

		second peak of 400kV Saharanpur- Roorkee/Baghpat line. i.e., OPGW shall be laid from Saharanpur Gantry to LILO point (Tower no. 59) of 400kV Roorkee/Baghpat line. Total 15.8 Kms of OPGW shall be laid along with one (01) STM16 communication equipment at Saharanpur S/S, Forum agreed for the same. For the formation of final scheme, CTU requested POWERGRID to provide complete connectivity details with schematic diagram so that scheme can be put up in the upcoming NRPC meeting for review. POWERGRID vide mail dtd. 28.02.2025 has provided their input regarding redundant connectivity of Saharanpur S/s (PG). Based on the input received and deliberations of the 26th TeST Meeting**.** Further it is to mention that "**Comprehensive Guidelines for the Usage and Sharing of Fiber Cores of Optical Ground Wire (OPGW) and Underground Fiber Optic (UGFO) Cables for Power System Applications" are published by CEA vide letter dtd. 03.03.2025 (Attached as Annexure-IV).** UPPTCL may now share the fiber infrastructure which shall obviate the said scheme.
4.	Estimated Cost	**Rs. 1.33 crore (approx.)**
5.	Implementation timeframe	**24 months from date of allocation**
6.	Implementation Agency	**POWERGRID**
7.	Implementation mode	**RTM mode**
8.	Deliberations in different meetings	**a.** 8th NR CPM held on 03.02.2025 b. 26th NRPC TeST Meeting held on 19.11.2024 c. 72nd NRPC held on 29-30 March'24

Annexure-A.XXXI

सत्यमेव जयते

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
विद्युत संचार विकास प्रभाग
Power System Communication Development Division
****

Subject: Comprehensive guidelines for the usage and sharing of optical fibers of OPGW/UGFO cables for power system applications - reg

महोदय / Sir,

The rapid expansion and modernization of the power sector necessitate a robust, secure and efficient communication infrastructure. Optical Ground Wire (OPGW)/Underground Fiber Optic Cable (UGFO) plays a crucial role in ensuring seamless data exchange, real-time monitoring, and reliable operation of power systems. However, with increasing demands and multiple stakeholders involved in fiber usage, it became essential to establish a structured framework governing the sharing and utilization of fiber cores of OPGW/UGFO cable.

A Committee was constituted under the chairmanship of Member (Power System), CEA tasked with formulating comprehensive guidelines for the usage and sharing of fiber cores of Optical Ground Wire (OPGW)/ Under Ground Fiber Optic (UGFO) Cable for power system applications.

With the collective efforts of the Committee, CEA has formulated Comprehensive guidelines for the usage and sharing of fiber cores of Optical Ground Wire (OPGW)/ Under Ground Fiber Optic (UGFO) Cable for power system applications. The list of nominated members and the Terms of Reference of the Committee are attached as Annexure to the guidelines.

It is requested that all utilities/TSPs, power system stakeholders, and users to adopt and adhere to these guidelines.

भवदीय,
Signed by Suman Kumar Maharana
Date: 03-03-2025 13:13:55
(S K Maharana)
Chief Engineer,
Power System Communication Development Division,
Central Electricity Authority

Comprehensive guidelines for the usage and sharing of fiber cores of Optical Ground Wire (OPGW)/ Under Ground Fiber Optic (UGFO) Cable for power system applications

भारत सरकार
Government of India

केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority

विद्युत मंत्रालय
Ministry of Power

February 2025

Acknowledgement

The rapid expansion and modernization of the power sector necessitate a robust, secure and efficient communication infrastructure. Optical Ground Wire (OPGW)/Underground Fiber Optic Cable (UGFO) plays a crucial role in ensuring seamless data exchange, real-time monitoring, and reliable operation of power systems. However, with increasing demands and multiple stakeholders involved in fiber usage, it became essential to establish a structured framework governing the sharing and utilization of OPGW fibers.

The formulated guidelines establish a structured approach to fiber allocation, safeguarding power system communication needs and mitigating future conflicts. These guidelines also ensure that commercial leasing of fiber cores is managed in a way that does not hinder the grid's operational efficiency and reliability.

A committee was constituted with the approval of the Chairperson, CEA, to formulate comprehensive guidelines for the usage and sharing of fiber cores of OPGW/UGFO cable for power system applications. The complete list of the nominated members of the Committee as well as Terms of Reference of the Committee has been annexed with the guidelines.

As the Convenor of the Committee, I express my deepest gratitude to all committee members for their invaluable contributions in shaping these guidelines. Their collective efforts have resulted in a standardized framework that will ensure transparency and efficiency in the usage and sharing of OPGW fiber infrastructure. The technical insights and dedication of all Committee members have played a crucial role in developing these comprehensive guidelines, which will significantly mitigate conflicts and enhance the reliability of grid communications.

I extend special thanks to Shri Ghanshyam Prasad, Chairperson, CEA, for his vision and leadership in constituting this Committee. I am also grateful to Shri A K Rajput, Member (Power Systems), CEA, for chairing the Committee and steering discussions towards a balanced and effective outcome.

Furthermore, I would like to acknowledge the specific contribution made by the officers of Power System Communication Development Division, CEA namely Ms. Priyam Srivastava, Deputy Director; Shri Akshay Dubey, Deputy Director and Shri Arjun Agarwal, Assistant Director. The guidelines have been brought out by the dedicated and sincere efforts of these officers.

Shri S K Maharana,
Chief Engineer, PSCD Division & Convenor of the Committee

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Abbreviations:

1.	AGC - Automatic Generation Control
2.	CERC - Central Electricity Regulatory Commission
3.	CTU - Central Transmission Utility
4.	FOTE - Fiber Optic Terminal Equipment
5.	GSS - Grid Substation
6.	IEEE - Institute of Electrical and Electronics Engineers
7.	IEC - International Electrotechnical Commission
8.	InSTS - Intra-State Transmission System
9.	IPPs - Independent Power Producers
10.	ISGS - Inter-State Generating Station
11.	ISTS - Inter-State Transmission System
12.	LILO - Loop-in-Loop-Out
13.	NLDC - National Load Dispatch Center
14.	NoC - No Objection Certificate
15.	OPGW - Optical Ground Wire
16.	PMU - Phasor Measurement Unit
17.	PSCD - Power System Communication and Development
18.	RLDC - Regional Load Dispatch Center
19.	RoW - Right of Way
20.	SCADA - Supervisory Control and Data Acquisition
21.	SERC - State Electricity Regulatory Commission
22.	SLDC - State Load Dispatch Center
23.	STU - State Transmission Utility
24.	TSP - Transmission Service Provider
25.	UGFO – Under Ground Fiber Optic Cable
26.	VoIP - Voice over Internet Protocol

Comprehensive guidelines for the usage and sharing of fiber cores of Optical Ground Wire (OPGW)/ Under Ground Fiber Optic (UGFO) Cable for power system applications

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1. Introduction

1.1. These guidelines have been formulated to establish a uniform procedure for the sharing of fiber cores of Optical Ground Wire (OPGW)/ Under Ground Fiber Optic (UGFO) Cable deployed across the power transmission network, ensuring reliable, secure, and continuous monitoring and operation of the grid. They provide a comprehensive framework for fiber allocation, addressing the diverse needs of grid operations, system protection, as well as authorized commercial use. It establishes principles for effective resource allocation, maintaining sufficient redundancy to support future requirements, such as Loop-in-Loop-Out (LILO) expansions, network reconfiguration and scalability to accommodate evolving operational demands.

1.2. In alignment with the *Central Electricity Authority (Technical Standards for Communication System in Power System Operations) Regulations, 2020*, and the *Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022*, these guidelines have been formulated to support seamless communication needs for power system at national level, regional level, inter-state and intra-state level. By fostering a consistent approach to fiber sharing and allocation, these guidelines intends to promote interoperability and efficiency across multiple entities and users within the power system, ensuring reliable and uninterrupted communication system, which is critical for grid stability and operations.

2. Allocation Requirements

2.1. On any transmission line, minimum of 6 fibers are always in use for critical grid communication, supporting Supervisory Control and Data Acquisition (SCADA), Phasor Measurement Unit (PMU), Voice over Internet Protocol (VoIP), Automatic Generation Control (AGC), and other real-time operations (2 Main, 2 Hot Standby, 2 Spares).

Additionally, for transmission lines requiring line differential protection:

- **4 fibers** are used for reliable differential protection of single feeder (S/c line).
- **8 fibers** are used for reliable differential protection of a double circuit (D/c) line.

2.2. Over and above these fibers which are already in use, the fibers that shall be spared for future grid communication requirements, based on need, is tabulated below:

Type of Future Grid Communication Requirements	**Fiber Allocation**	**Remarks**
Alternate Communication Path/Future expansion/Reconfiguration/LILO requirement/Inter-Utility Communication etc.	Upto 6 Fibers	Shall be spared as and when required for future grid communication requirements of ISTS/In-STS/ISGS/Radial feeders etc.

Type of Future Grid Communication Requirements	Fiber Allocation	Remarks
Line Differential Protection with future reconfiguration, if applicable.	Upto 4 Fibers per circuit	Shall be spared in case new differential protection schemes are required due to system expansion, reconfiguration or LILO additions.
Technology Migration/Centralised Asset Management & Control.	Upto 4 Fibers	Shall be spared for simultaneous transition to next-generation communication networks (e.g., packet-based systems).

Additional Considerations:

1. The actual number of healthy fiber cores to be spared free of cost for future grid telemetry requirements, within the limits stipulated in table above, shall be decided as and when the need arises.
2. **Commercial Utilisation of Fiber cores** –

   - While leasing excess fibers for **non-grid applications**, utilities/Transmission Service Providers (TSPs) must **reserve the right to intervene, seek withdrawal, or cease utilization of leased fibers** to address any emerging grid requirements. The contract to include flexibility for renewal or termination based on evolving needs.

   - The **number of fiber cores to be leased** and the **duration of leasing** must be planned in a rational way, such that, whenever the need arises to spare fibers for grid applications, their availability cannot be denied on the premise that the spare fibers are already leased out for commercial purpose. Additionally, under no circumstances should the routing of grid application data to the SLDC/RLDC (State/Regional Load Dispatch Centers) be adversely affected.

3. Commercial Utilization of OPGW Fibers for other purposes

3.1. While Optical Ground Wire (OPGW) is primarily implemented on transmission assets for telemetering power system parameters and ensuring reliable grid communication, spare fiber cores may be commercially utilized under the following conditions:

3.1.1. **Grid Applications Take Priority** – Spare fibers can be leased for commercial purposes, provided that whenever the need arises for grid applications, the number of cores within the limits stipulated in the Allocation Requirements, is made available without exception.

3.1.2. **Assessment of Future Grid Communication Needs –** Before leasing fiber cores, STUs/TSPs must conduct an assessment of impending grid communication requirements for atleast next five years. This assessment shall be holistic considering state/regional/national level requirements for routing of the data to SLDCs/RLDCs. STUs/TSPs intending to lease fiber cores to collaborate with CTU to discuss:

- Upcoming **grid expansion plans** and their communication requirements.
- Possible dependencies where **ISTS/STU networks need mutual data routing support**.
- The spare fiber capacity that should be **retained for future grid needs** before considering commercial leasing.

Based on this assessment, entities must determine **how many cores can be leased** and the **duration of leasing**, without affecting the availability for future grid applications.

3.1.3. **Termination Clause in Leasing Contracts** – All leasing contracts must include a termination clause, mandating at max 18 month notice period for making the fiber cores available for grid applications whenever required. This ensures that grid operator can reclaim the necessary fibers for critical grid operations with adequate notice. However, it is always advisable to retain some spare fibers for emergency or future grid communication needs in advance, rather than having to invoke the termination clause of the contract when the need arises.

3.1.4. **Regulatory Compliance** – Any commercial utilization of spare fibers must adhere to applicable CERC/SERC regulations pertaining to the 'Sharing of Revenue Derived from Utilization of Transmission Assets for Other Business.'

3.1.5. **Intimation to RPCs for ISTS Fiber Leasing** –

Any ISTS licensee/TSPs proposing to lease fiber cores on a commercial basis must provide prior intimation to the concerned Regional Power Committees (RPCs) regarding:

i. The number of fiber cores proposed for commercial utilization.
ii. The duration of the lease.
iii. The mechanism incorporated in the contract to ensure fiber availability in case of future grid requirements.

3.2. It must be emphasized that the primary purpose of fibers in OPGW/UGFO implemented as part of a transmission scheme is reliable telemetering of power system parameters. Commercial utilization of these transmission assets can only be done after a prudent evaluation of future grid communication needs, ensuring that grid operations are never compromised.

3.3. Proper planning and foresight are necessary to ensure that the commercial use of spare fibers does not jeopardize the security, reliability, and expansion needs of the power system communication network.

4. Sharing Scenarios

The table below outlines fiber-sharing arrangements across different transmission line ownership scenarios, ensuring that:

- Fibers essential for grid operations are spared free of cost, irrespective of whether they are required for Intra-State (InSTS) or Inter-State (ISTS) communication needs.
- Entities to spare healthy fibers, within the limits stipulated in the Allocation Requirements, whenever grid needs arise.

Scenario	**Entity to manage the allocation for grid operation purposes.**	**Fiber Sharing**
i) OPGW Laid Under ULDC Scheme on ISTS Lines	Owned and maintained by POWERGRID. Allocation to be managed by CTU.	Fibers to be **spared free of cost** as per Allocation Requirements outlined in Clause 2, whenever required by **STUs, ISTS Licensees/TSPs** for any type of future grid communication requirements.
ii) OPGW Laid Under ULDC Scheme on Intra-State Lines (InSTS)	Owned and maintained by POWERGRID. Allocation to be managed by STU with CTU coordination.	Fibers to be **spared free of cost** as per Allocation Requirements outlined in Clause 2, whenever required by **STUs, ISTS Licensees/TSPs** for any type of future grid communication requirements.
iii) OPGW Laid by STUs on Intra-State Lines	Owned and maintained by STU. Allocation to be managed by STU.	Fibers to be **spared free of cost** as per Allocation Requirements outlined in Clause 2, whenever required by **STUs, ISTS Licensees/TSPs** for any future grid communication requirements.
iv) OPGW Laid by CTU/POWERGRID on Intra-State Lines	Owned and maintained by POWERGRID. Allocation to be managed by CTU with STU coordination.	50% fibers allocated for **ISTS operations**, 50% for **Intra-State operations**. If more than 50% is required by either, fibers to be **spared free of cost**, for any type of future grid communication requirements.
v) OPGW Laid by TSPs on ISTS Lines under TBCB/RTM Projects	Owned and maintained by TSP. Allocation to be managed by CTU	Fibers to be **spared free of cost** as per Allocation Requirements outlined in Clause 2, whenever required by **STUs, ISTS Licensees/TSPs** for any type of

Scenario	Entity to manage the allocation for grid operation purposes.	Fiber Sharing
		future grid communication requirements.
vi) OPGW Laid by TSPs on Intra-State Lines through TBCB	Owned and maintained by TSP. Allocation to be managed by STU	Fibers to be **spared free of cost** as per Allocation Requirements outlined in Clause 2, whenever required by **STUs, ISTS Licensees/TSPs** for any type of future grid communication requirements.
vi) OPGW Laid by POWERGRID/STU's on Deemed ISTS Lines	Owned and maintained by POWERGRID/STU. Allocation to be managed by CTU with STU coordination.	50% fibers allocated for **ISTS operations**, 50% for **Intra-State operations**. If more than 50% is required by either, fibers to be **spared free of cost** for any type of future grid communication requirements.
vi) OPGW Laid by TSPs at their own cost, utilizing the ISTS asset/RoW, with necessary approvals from CERC.	Owned and maintained by TSP. Allocation to be managed by CTU, as the OPGW now, is forming integral part of backbone ISTS Communication network. It is assumed that: • No OPGW was included in the originally approved scheme for the transmission line. • The TSP obtained necessary approvals from the competent authority prior to laying the OPGW.	Fibers to be **spared free of cost** as per Allocation Requirements outlined in Clause 2, whenever required by **STUs, ISTS Licensees/TSPs** for any type of future grid communication requirements.

5. Integration of FOTE for Differential Protection

5.1. Differential teleprotection is a vital component of power system protection, ensuring rapid and selective fault clearance. The choice of communication medium, whether IEEE C37.94 (herein after referred as C37.94) protocol over a shared fiber or separate optical fibers, significantly impacts the reliability and performance of this protection scheme.

5.2. The choice between C37.94 compliant FOTE and separate fiber cores for differential teleprotection depends on a variety of factors, including line length, voltage level, criticality, and network conditions. While C37.94 can be a cost-effective solution for certain applications, separate fibers offer superior reliability and faster fault clearance, making them the preferred choice for critical transmission lines, especially at higher voltage levels.

5.3. The Regional Power Committees (RPCs) generally prioritize a **reliable and dedicated communication link for line differential protection** to ensure the integrity and security of protection signals, especially given the criticality of fast and accurate fault detection for power system stability.

5.4. While specific practices may vary depending on the line's voltage level, length, and criticality, however, in order to guarantee reliable communication for line differential protection systems, the Committee recommends the following provisions:

Condition	**Recommendation**	**Reason**
High-Criticality and High-Voltage Lines (220 kV and above) requiring line differential protection	Preference to dedicated or separate fiber cores for line differential protection rather than shared fibers.	As per IEC 60834, which governs teleprotection equipment, the RPCs lean towards using communication setups that meet high reliability and availability standards, favoring separate fibers to reduce signal attenuation and improve reliability for critical protection.
Lower-Criticality or lines with Voltage below 220 kV requiring line differential protection	Line differential protection may be allowed on shared fibers via Fiber Optic Terminal Equipment (FOTE) using the C37.94 protocol	Multiplexing protection signals over a shared fiber can be a cost-effective solution, particularly when the risk of latency and interference is lower due to shorter transmission distances and moderate fault current levels.
High-Criticality and High-Voltage Lines (220 kV and Above) requiring line differential protection. However, having constraint in availability of dedicated Optical fibers.	Line differential Protection using C37.94-compliant FOTE over shared fiber may be allowed with the following condition: • The setup must meet the provisions of IEC 60834 regarding speed, security, and dependability standards under real-time conditions.	By ensuring reliable and timely communication, C37.94-compliant FOTEs can contribute to meeting the requirements of IEC 60834.

6. Routing of OPGW Fibers during LILO

6.1. In case of Loop-In-Loop-Out (LILO) of transmission lines, routing OPGW fibers must be done in a way that preserves the operational integrity of the grid's communication infrastructure. Key recommendations are elucidated in table below:

Main Line and LILO Configuration	**LILO Tower Type**	**OPGW Installation Requirement**	**Fiber Routing/Splicing in New Substation**	**Configuration Adjustments in Existing Substations**
Main Line: D/c, 24-Fiber OPGW; S/c LILO	M/c Or D/c Tower (Single Tower for Loop In and Out) with two Earth wire peaks	Install 24 F OPGW on both earthwire peaks i.e same Nos. of OPGW as that of main line on both earth wire peaks.	Route required no. of fibers only through the new substation. Splice the required number of fibers for the LILO section at the appropriate point.	Configure protection schemes and data transfer systems to accommodate the new line and substation Ensure fiber continuity for main line traffic.
Main Line: D/c, 24-Fiber OPGW; D/c LILO	Two Separate D/c Towers (Separate Loop In and Out)	Install 24F OPGW i.e same Nos. of fiber cores as that of main line on one earthwire peak per tower.	Route all fibers of OPGW from the main line through the new substation. Splice the required number of fibers for the LILO line at the new substation, if the new S/stn is of different entity.	Configure protection schemes and data transfer systems to accommodate the new line and substation Ensure fiber continuity for main line's traffic through the new S/stn
Main Line: D/C, 24-Fiber OPGW; D/c LILO	Multi-Circuit Tower	Install 24 F OPGW on both earthwire peaks i.e same Nos. of OPGW as that of main line on both earth wire peaks.	Route all fibers of OPGW from the main line through the new substation. Splice the required number of fibers for the LILO line at the new substation, if the new S/stn is of different entity.	Configure protection schemes and data transfer systems to accommodate the new line and substation Ensure fiber continuity for main line's traffic through the new S/stn

Main Line and LILO Configuration	LILO Tower Type	OPGW Installation Requirement	Fiber Routing/Splicing in New Substation	Configuration Adjustments in Existing Substations
Main Line: D/c (220 kV/132 kV), 24-Fiber OPGW; S/c LILO	Tower with Singe Earth wire peak	Install 48F OPGW i.e., double the number of fiber cores as that of main line on single peak available in LILO portion	Route half number of fibers (12F) of OPGW from the main line through the new substation Splice the required number of fibers for the LILO section at the appropriate point.	Configure protection schemes and data transfer systems to accommodate the new line and substation. Ensure fiber continuity for main line traffic.
Main Line: S/C (220kV/132 kV), 24-Fiber OPGW; S/c LILO	Tower with Singe Earth wire peak	Install 48F OPGW i.e., double the number of fiber cores as that of main line on single peak available in LILO portion	Route all fibers (24F) of main line OPGW through the new substation to maintain continuity between the existing stations. Splicing of all the fibers at the new S/stn to be done to integrate LILO traffic.	Configure protection schemes and data transfer systems to accommodate the new line and substation. Ensure fiber continuity for main line's traffic through the new S/stn.

6.2. Whenever a Transmission Licensee implements a Loop-In-Loop-Out (LILO) arrangement on an existing transmission line, adjustments must be made in the **existing Substations**, including **Fiber Optic Terminal Equipment (FOTE)**, **relays**, and **other protection equipment** to ensure seamless integration and reliable protection.

Table summarizing LILO adjustments in existing Substations

Equipment	Adjustments Required	Details
Fiber Optic Terminal Equipment (FOTE)	Signal reconfiguration, routing modifications, capacity upgrades, synchronization, integration with new FOTE, supply of necessary optical	Ensure compatibility with new LILO traffic, enhance capacity if required, and synchronization with relays.

Equipment	Adjustments Required	Details
	interfaces to meet link budget requirement.	
Relays	Reconfiguration of protection schemes, distance zone adjustments, differential protection tuning.	Modify relay settings for fault detection across LILO, adjust impedance settings, and back-up coordination.
SCADA and Telemetry	Data routing, alarm configuration, SCADA system updates.	Integrate new LILO substation data into SCADA, configure additional alarms for LILO events.
Amplifiers/Signal Boosters	Installation if required, signal quality testing.	Ensure strong signal levels across LILO paths, perform attenuation checks.
Protection Redundancy	Ensure redundancy, perform testing and commissioning.	Verify that no single point of failure exists, conduct fault simulations, and document updated settings.

6.3. The entity undertaking the LILO installation and commissioning of the new substation shall ensure that all necessary adjustments, interfaces, and configuration support are implemented to maintain seamless data communication and reliable operation of protection schemes without signal degradation or loss. It is incumbent upon this entity to provide comprehensive support to the owner of the existing substation, facilitating integration and ensuring that all configuration and interoperability requirements are met to uphold continuous, high-integrity signal transmission and effective protection functionality across the network.

6.4. When the LILO is performed at the substation, the leased fiber cores, if any, by the main line owner must be routed continuously through the LILO section. Entity undertaking LILO cannot commercialize fibers routed for main line owner's use to prevent potential disputes.

7. Maintenance of Database:

7.1. CTU for ISTS/ STUs for InSTS shall be responsible for monitoring the utilization of OPGW fibers and ensuring compliance with the established conditions. The CTU/STU shall maintain a comprehensive database that clearly segregates:

1. **Total number of OPGW fiber cores:** The total number of fiber cores available on the OPGW of the transmission lines.
2. **Number of cores utilized for grid applications:** The number of fiber cores currently being used for essential grid operations
3. **Spare cores reserved for grid applications:** The number of fiber cores specifically retained for future grid applications.

4. **Number of fiber cores already being shared for grid applications:** The number of fiber cores shared with other grid entities (e.g., other TSPs, STUs, DISCOMs) for grid-related purposes. This should include details of the entities involved in each sharing arrangement.
5. **Number of cores leased on a commercial basis:** The number of fiber cores leased to entities for non-grid applications (e.g., telecom providers, internet service providers). This should include details of the lease agreements, including the lessee, lease period, and terms of termination.

7.2. CTU/STU shall prepare a standardized format/procedure for the TSPs/Licensees to furnish the above data pertaining to OPGW fibers. CTU/STU shall display the data on its website.

8. OPGW Implementation in New Transmission Projects and Upgradation Schemes

8.1. In all the new transmission projects and upgradation schemes, the Planning agency should ensure that any decision regarding deployment of fiber cores considers both present needs and future expansions, balancing the infrastructure's capability with associated costs.

8.2. Planning of OPGW with a minimum of 48 fiber cores to be done, as per feasibility and requirement. For installations within city limits, OPGW may be equipped with 96 fiber cores to also facilitate usage by DISCOMs, SLDCs, RLDCs, and NLDC for last-mile connectivity, contingent upon the load-bearing capacity of the line. This approach will accommodate any additional future requirements, including Loop-In-Loop-Out (LILO) configurations or increased capacity utilizing the same Right of Way (ROW).

8.3. Additionally, since OPGW fibers can also support long-distance telecommunications network across India, the planning exercise should also take into account the dynamics of the telecom industry while determining the number of fibers to be deployed.

8.4. This strategy will facilitate the establishment of a robust, scalable communication network while maintaining efficiency and responsiveness to evolving operational needs across all areas.

9. Implementation Strategy for Existing ISTS/ InSTS Lines

9.1. Any ISTS TSP/In-STS utility/entity planning to lease out spare fiber cores of its OPGW on existing lines on commercial basis shall adhere to all the provisions and framework for fiber sharing and usage, as outlined in these guidelines.

9.2. For TSPs/utilities that have already leased out fiber cores before the issuance of these guidelines, it is expected that, as and when the need arises to spare fibers for grid applications, they will explore all possible means to make available the minimum no. spare fibers that can serve the purpose, free of cost. In cases where conflicts or stalemate arises regarding the availability of requisite number of fibers, a resolution committee shall be formed. This committee will include representatives from the RPCs, PSCD Division of CEA, CTU, concerned STUs /TSPs , with the goal of resolving the issue in a fair and balanced manner.

10. Conclusion

10.1. These guidelines aim to establish a standardized approach to the allocation and sharing of Optical Ground Wire (OPGW) fibers across power sector, ensuring secure, reliable, and scalable communication infrastructure that meets both present and future grid requirements. By implementing uniform principles for fiber allocation and usage, entities across the power sector—including CTU, STU, TSPs, DISCOMs, SLDCs, RLDCs, and NLDCs—can achieve consistent and efficient communication system for grid operations, protection, and commercial applications. These guidelines provide a clear and standardized framework for the allocation and sharing of Optical Ground Wire (OPGW) fibers, balancing the commercial prospects of fiber usage with the imperative of maintaining secure, reliable, and scalable grid operations.

11. Brief of Recommendations for Adoption

11.1. Uniform Fiber Allocation

Entities should adhere to this fiber allocation guidelines/framework for grid operations, ensuring designated fibers for essential communication and protection. Excess fibers may be designated for commercial use, subject to periodic review and regulatory oversight, thereby maximizing resource utilization without compromising the grid stability.

11.2. Compliance with CEA Regulations

All implementations should align with the CEA (Technical Standards for Communication System in Power System Operations) Regulations, 2020 , CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022, CERC Interface Requirements and CEA Cyber Security Guidelines, to promote standardized, high-quality communication infrastructures across the power transmission networks.

11.3. Scalability for Future Needs

In areas with high potential for future growth or within city limits, entities are encouraged to install OPGW with 48/96 fiber cores to provide sufficient capacity for last-mile connectivity, future expansions, and LILO requirements, leveraging the Right of Way (ROW) effectively.

11.4. Commercial Usage Protocol

Any commercial usage should adhere to the applicable CERC/SERC Regulations. All leasing contracts must include a termination clause, mandating at max of 18-month notice period for making the fiber cores available for grid applications whenever required. This ensures that grid operator can reclaim the necessary fibers for critical grid operations with adequate notice. However, it is always advisable to retain spare fibers for emergency or future grid communication needs in advance, rather than having to invoke the termination clause of the contract when the need arises.

11.5. **Coordination and Monitoring**

For LILO implementations and OPGW installations in new and upgraded transmission schemes, the entity responsible for installation of the same must provide continuous support to existing substations, facilitating configuration adjustments and ensuring reliable data transfer. Continuous monitoring by CTU is recommended to assess the impact of commercial use and maintain high standards of operational reliability.

These recommendations will ensure that all stakeholders in power system communication can operate within a unified framework, promoting efficiency, compliance, and grid security.

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Composition of the Committee constituted under the chairmanship of Member (Power System), CEA tasked with formulating comprehensive guidelines for the usage and sharing of optical fibers (OPGW) for power system applications:

S.no	Members	Organisation/Association
1.	Member (Power System) (Chair)	CEA
2.	Chief Engineer, PCD	CEA
3.	Chief Engineer, NPC	CEA
4.	Chief Engineer, ET & I	CEA
5.	Member Secretary, RPCs	RPCs
6.	Executive Director, CTU	CTU
7.	Executive Director, Grid India	GridIndia
8.	Executive Director, Powergrid	Powergrid
9.	Representative of Electric Power Transmission Association – 2 TSPs	EPTA
10.	Representative from STUs (at the level of Chief Engineer or equivalent)	• Northern Region: UPPCL, RRVPNL • Western Region: GETCO, MPPTCL •Southern Region: KSEBL,TANTRANSCO • Eastern Region: WBSETCL, OPTCL • North Eastern Region: AEGC

The Terms of Reference (ToR) of the Committee is as follows:

1) **Scope and Purpose:** Define the need to develop guidelines that address the unique requirements and challenges associated with the sharing of OPGW fibers among CTU, STUs, and Private Transmission Licensees.

2) **Allocation Requirements:** Define/determine the number of fibers required for catering to varied applications/services for grid management such as data, speech, protection etc., including minimum spare fibres to be earmarked for grid applications/requirements.

3) **Sharing Scenarios**: Analyse the scenarios wherein the spare fibers in the OPGW laid by an entity is to be shared amongst several entities (CTU, STU, TSPs) to facilitate real time grid monitoring. Formulating the uniform mechanism governing the access, usage, or other aspects of the shared fibers in following scenarios:

(i) Sharing of OPGW laid under ULDC scheme on the ISTS lines.
(ii) Sharing of OPGW laid under ULDC scheme on the Intra-State lines.
(iii) Sharing of OPGW laid by STUs on the Intra State lines.
(iv) Sharing of OPGW laid by CTU/Powergrid on the Intra State lines.
(v) Sharing of OPGW on the ISTS lines laid by TSPs under TBCB and RTM projects.

Identify and define the role and responsibilities of Centre, State, and Private Transmission Licensees in the sharing of OPGW fibers.

4) Investigate the integration of Fiber Optic Terminal Equipment (FOTE) for differential protection in accordance with the C37.94 protocol and bring out recommendations.

5) Define the uniform mechanism of routing of OPGW fibers in case of LILO taken up on any transmission line.

6) Recommend the scenarios/limit of OPGW fibers beyond which it can be utilized for other commercial purposes.

7) Formulate recommendations for seamless adoption of these guidelines.

Nominated Members of the Committee

S. No.	Nominated Member's Name	Designation	Division & Organisation
1.	Shri A K Rajput	Member (Power Systems)	Central Electricity Authority
2.	Shri V K Singh	Member Secretary	NRPC, CEA
3.	Shri Asit Singh	Member Secretary	SRPC, CEA
4.	Shri N S Mondal	Member Secretary	ERPC, CEA
5.	Shri Deepak Kumar	Member Secretary	WRPC, CEA
6.	Shri K B Jagtap	Member Secretary	NERPC, CEA
7.	Smt Rishika Sharan	Chief Engineer	NPC, CEA
8.	Shri Surata Ram	Chief Engineer	ET&I, CEA
9.	Shri S K Maharana	Chief Engineer	PSCD, CEA
10.	Shri J B Len	SE	SRPC, CEA
11.	Shri Shiv K Gupta	Sr. DGM	Comm, CTUIL
12.	Shri Ankur Gulati	DGM	GRID-INDIA
13.	Shri. Doman Yadav	Executive Director	Grid Automation & Communication (GA&C), Powergrid
14.	Smt S.Kannika Parameswari	Chief Engineer	P&C, TANTRANSCO
15.	Shri. Viju Rajan John	Chief Engineer	Transmission System Operation, KSEBL
16.	Shri Binaya Ku Mallick	DGM(Telecom)	E & Q, OPTCL,HQRS
17.	Shri N. K Patel	SE (Telecom)	TR Department, Corporate Office, GETCO, Vadodara
18.	Shri R. B Kathiria	EE (Telecom),	Telecom Unit, 220kV S/s, GETCO, Gondal
19.	Shri Jayesh A Mehta	DE (Telecom)	Telecom Unit, 220kV S/s, GETCO, Ranasan
20.	Shri Arup Sarmah	AGM	LA Communication Division, Kahilipara, AEGCL
21.	Smt. Punam Biswakarma	AGM	CA Communication Division, Samaguri, AEGCL
22.	Shri Ashutosh Bhattacharjee	GM	(T&C and Comm.)
23.	Shri Rajesh Gupta	SE (SLDC)	MPPTCL
24.	Shri Sudhir Nema	SE (Planning)	MPPTCL

S. No.	Nominated Member's Name	Designation	Division & Organisation
25.	Smt. Kshama Shukla	EE (P&D)	MPPTCL
26.	Shri Debasis Sarkar	Chief Engineer	Communication Department, WBSETCL
27.	Shri Vivek Dixit	Chief Engineer	Sanchar and Niyantran, UPPTCL
28.	Shri Sanjay Johari	VP	Business Development & Adani Energy Solutions Ltd.
29.	Shri Tarun Tayal	Head- Govt. Alliances and Partnerships	Sterlite Power

Special Invitee - Power System Technology Development Division, CEA

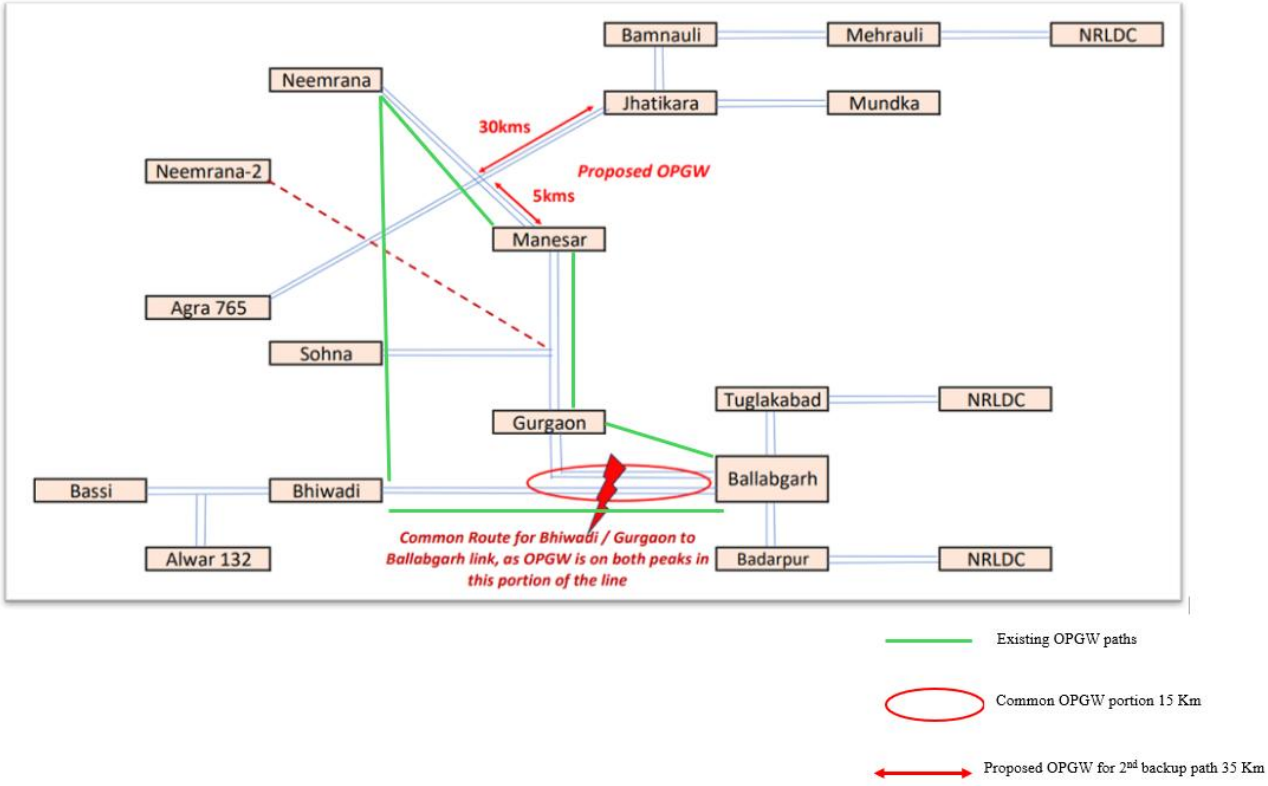
Appendix-IV

S. No.	Items	Details
1.	Name of Scheme	Redundant communication for Manesar (PG) S/s
2.	Scope of the scheme	Supply and Installation of OPGW 48F (35 Km) including SFPs from a. 400kV Neemrana – Manesar line (on 2nd E/W peak) (from the crossing point of Neemrana – Manesar & Agra- Jhatikara line up to Manesar S/s (**5 kms**.) b. 765kV Agra-Jhatikara line (from the crossing point of Neemrana – Manesar & Agra-Jhatikara line up to Jhatikara S/s (**30 kms**).
3.	Objective / Justification	This agenda was deliberated in 67th NRPC held on 30.06.2023 and later on sent for deliberation in 15th NCT Meeting by CTU but due to some observations of CEA PCD, agenda could not be deliberated in the NCT Meeting. In the 8th NR CPM held on 03.02.2025, POWERGRID asked CTU regarding the agenda for redundant communication of Manesar (PG) S/s. CTU asked POWERGRID to provide the revised agenda so that it can be reviewed in upcoming NRPC. CTUIL also stated that this agenda needs to put in NRPC along with the recommendation of CEA-PCD first. *POWERGRID informed CTU that Issue of Manesar redundancy has been briefed to PCD and NRPC by POWERGRID, and consent will be shared before NRPC meeting as per agenda of CTU/POWERGRID.* POWERGRID vide mail dtd 28.02.2025 has provided their input regarding redundant connectivity of Manesar S/s (PG) which are mentioned below: Existing fiber connectivity for Manesar s/s: a. Manesar – Sohna – *Gurgaon – Ballabhgarh* - - - up to NRLDC b. Manesar – Neemrana – *Bhiwadi – Ballabhgarh* - - - up to NRLDC 400kV D/c Manesar- Gurgaon line is LILOed at Sohna Sub-station and further proposed to be

		LILOed at Neemrana-II S/s under Rajasthan REZ Ph-IV (Part-B), which would be in opposite direction and would increase nos of intermediate nodes on redundant path. Gurgaon S/s is established with LILO of 400kV S/C Ballabhgarh – Bhiwadi line, therefore OPGW of Ballabhgarh-Gurgaon & Ballabhgarh - Bhiwadi link are running on common towers on route of approximately 12kms of from Ballabhgarh gantry to Tower No-30. Recently in a tower sabotage case on 400kV S/C Ballabhgarh – Gurgaon line, OPGW of Ballabhgarh to Bhiwadi as well as that of Ballabgarh to Gurgaon link got damaged simultaneously because of common tower / route, which led to disruption of connectivity to Manesar and at the same time in-bound data from Rajasthan including the Solar pocket also got affected. It is also pertinent to mention that all the PMUs of POWERGRID are reporting at NTAMC Manesar and NTAMC WAMS system is connected with main NLDC as well as back-up NLDC, in case any of the RLDCs' WAMS system get down then NTAMC system would work as a back-up control centre for NLDC. In view of the above, redundant communication path for Manesar is very much required. Accordingly, an additional link may be created by laying OPGW on the following two nos. of POWERGRID lines to reach up to NRLDC/NLDC from Manesar. a. 400kV Neemrana – Manesar line (on 2nd E/W peak) (from the crossing point of Neemrana – Manesar & Agra- Jhatikara line up to Manesar S/s (5 kms.) b. 765kV Agra-Jhatikara line (from the crossing point of Neemrana – Manesar & Agra-Jhatikara line up to Jhatikara S/s (30 kms).
4.	Depiction in Figure	Figure attached as ***Appendix-V***
5.	Estimated Cost	**Rs. 2.30 crore (approx.)**

6.	Implementation timeframe	**24 months from date of allocation**
7.	Implementation Agency	**POWERGRID**
8.	Implementation mode	**RTM mode**
9.	Deliberations in different meetings	a. 8th NR CPM held on 03.02.2025 b. 67th NRPC held on 30.06.2023

Appendix-V



Annexure-AA.XXXII

पावरग्रिड

पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड

(भारत सरकार का उपक्रम)

POWER GRID CORPORATION OF INDIA LTD

(A Government of India Enterprise)

OB-26, "GRID BHAWAN" (Near Bahu Plaza), Rail Head Complex, NR-II, Jammu-180012.
TEL.: 0191- 2475639 .FAX : 0191-2477395,Grams:'NATGRID'
CIN: L40101DL1989GOI038121

संधर्भ स.: **N2JM/PESM/LTS/2019** **दिनांक:** 28.01.2019

To

The Development Commissioner(Power)
Power Development Department, Govt of J&K,
Grid Substation Complex, Janipur,
Jammu (J&K)

SUB.: **Construction of 220KV Srinagar to Leh Transmission system- Regarding deployment of Manpower and taking over by JKPDD.**

Sir,

With great pleasure, it is being informed that complete 220kV Srinagar(Alusteng)-Leh Transmission System has been successfully test charged on 11.01.2019 with support of PDD & Govt. of J&K and this system is going to be dedicated to the Nation by Hon' able Prime Minister of India on 3rd Feb'19. After the dedication the system has to be put under 24x7 operation and cannot be de-energized.

Please refer to our letter Ref No. N2JM/JKPROJ/2019/SLTS/529 dtd 21.01.2019 wherein you have already been requested to take over the system as per MOU. So far PDD has not deputed their manpower to take over the system for its smooth O&M. However, as a special case considering harsh weather, POWERGRID is making arrangement for smooth and uninterrupted operation of SLTS for 3 months i.e upto 30th of April'19. The expenditure in this regard shall be booked **in the project cost**. Meanwhile, it is requested to depute PDD staff, so that they can be made aware/familiarize with the operation and the system can be taken over by PDD smoothly before 30th April'19.

Thanking You

Yours Faithfully

28.01.2019

(Amar Jit)
Chief General Manager
(Commercial & Consultancy), Jammu

CC : Commissioner Secretary,(POWER), Govt. of J&K, Civil Secretariat ,Jammu.

Annexure-AA.XXXIII

No. 3/18/2011-Trans Vol (2)
भारत सरकार / Government of India
विद्युत मंत्रालय / Ministry of Power
(पारेषण प्रभाग / Transmission Division)
*****

श्रम शक्ति भवन, रफी मार्ग, नई दिल्ली- 110001
Shram Shakti Bhawan, Rafi Marg, New Delhi-110001

दिनांक: 23rd March, 2021

To,

The CMD,
Power Grid Corporation of India Ltd (POWERGRID)
Gurugram, Harayana

Sub:- Maintenance of 220 kV Srinagar-Leh S/c Transmission System -regarding

Sir,

I am directed to say that the 220 kV Srinagar-Leh Transmission System (SLTS) was constructed by POWERGRID with 95% funding from Central Govt and 5% funding from State Government, and commissioned in 2019. As per agreement between POWERGRID and erstwhile Jammu and Kashmir Power Development Department (JKPDD), the said Srinagar Leh Transmission System (SLTS) was to be taken over by JKPDD after commissioning. However, JKPDD is yet to take over the system. Considering the importance of the System, POWERGRID is still maintaining the System, but it is not getting any maintenance charges.

2. The Technical Committee headed by CEA in the meeting held on 28.12.2020 (MoM at **Annex I**) inter-alia recommended that UT of J&K and UT Ladakh to communicate their consent regarding handing over the System as ISTS. UT of J&K and UT of Ladakh vide their letters 3.2.2021 (**Annex II**) and dated 7.1.2021 (**Annex III**) respectively have mentioned that they have no objection regarding declaration of 220 kV Srinagar – Leh Transmission System as Inter State Transmission System (ISTS).

3. In this regard, it may be noted that as per Section 2(36) of the Electricity Act 2003, definition of inter-state transmission system includes "any system for the conveyance of electricity by means of main transmission line from the territory of one State to another State" and accordingly, 220 kV Srinagar- Leh Transmission System has automatically become an inter-state System, after bifurcation of erstwhile State of Jammu and Kashmir into UT of J&K and UT of Ladakh.

23/3/2021.

4. Keeping in view the importance of the Srinagar-Leh Transmission System and recommendation received from Technical Committee headed by CEA, and also the fact that both these UTs have given their consents for declaring the System as ISTS, it is decided to transfer the 220kV Sringar-Leh Transmission System to POWERGRID as ISTS. The O&M charges prior to date of transfer would be shared between two UTs in proportion of respective line length in the UTs. POWERGRID is advised to approach CERC for determination of tariff, so that CERC can decide tariff and other terms and conditions for the Srinagar-Leh Transmission System from the date of transfer, after hearing all the related parties including UT of J&K and UT of Ladakh, after considering POWERGRID's operation and maintenance charges, as well as UT of J&K and UT of Ladakh's contribution in the construction of the line. Date of formation of the two UTs of J&K and Ladakh i.e. 31st October,2019 will be construed as date of transfer of above asset as ISTS to POWERGRID.

5. This issues with the approval of Hon'ble Minister of State (Independent Charge) for Power and NRE and Minister of State for Skill Development and Entrepreneurship.

Encl: As above.

Yours faithfully,

23/3/2021.

(Bihari Lal)
Under Secretary to the Govt. of India
E-mail: transdesk-mop@nic.in
Tele-fax: 23325242

To

1. Chairperson (CEA), R K Puram, New Delhi.
2. Secretary (CERC), New Delhi
3. Commissioner/ Secretary Power Dev. Department, UT of J&K.
4. Commissioner/ Secretary (Power, New & Renewable Energy) to Government of UT of Ladakh.

Appendix-VI

<table>
<tr><th>S. No.</th><th>Items</th><th>Details</th></tr>
<tr><td>1.</td><td>Name of Scheme</td><td>Replacement of Coriant make FOTE at Alstung, Drass, Kargil, Khalsti, Leh S/s</td></tr>
<tr><td>2.</td><td>Scope of the scheme</td><td>Supply and installation of STM-16 FOTE (5 No.) One no. each at the following location:

<table>
<tr><th>S. No.</th><th>Station</th><th>Date of Commissioning</th><th>No. of FOTE</th></tr>
<tr><td>1</td><td>Alstung S/s</td><td>Jan 2019</td><td>1</td></tr>
<tr><td>2</td><td>Drass S/s</td><td>Jan 2019</td><td>1</td></tr>
<tr><td>3</td><td>Kargil S/s</td><td>Jan 2019</td><td>1</td></tr>
<tr><td>4</td><td>Khalasti S/s</td><td>Jan 2019</td><td>1</td></tr>
<tr><td>5</td><td>Leh S/s</td><td>Jan 2019</td><td>1</td></tr>
<tr><td colspan="3">Total FOTE Required</td><td>5</td></tr>
</table>
</td></tr>
<tr><td>3.</td><td>Objective / Justification</td><td>In the 26th TeST Meeting of NRPC, POWERGRID informed that six nos. of Coriant make FOTE installed at Alstung, Drass, Kargil, Khalsti, Leh & Kala-amb sub-stations. These sub-stations were originally under the ownership of J&K, later handed over to POWERGRID by the Ministry of Power (MoP). The cost recovery for these sub-stations is being handled under the RTM mode.

POWERGRID informed that the useful life of the FOTE equipment has nearly been completed, as per CERC's new tariff regulations (2024–29), which specify a lifespan of 7 years for these assets.

Due to difficulties in obtaining AMC services and spares for these aging equipment, replacement of these FOTE has become essential.

Following was concluded in the 26th TeST Meeting:
a. POWERGRID will provide CTUIL with detailed information on the RTM declaration, commissioning dates, and cost estimates for replacing the FOTE equipment.
b. POWERGRID was advised to file a petition with CERC to seek approval for a revised tariff for the sub-stations under RTM mode, considering the completion of the FOTE's useful life.
c. Replacement of FOTE at Kala-Amb sub-station cannot be included under the useful life clause, as the sub-station falls under the TBCB mode.</td></tr>
</table>

		This agenda was further discussed in the 8th NR CPM held on 03.02.2025 where POWERGRID stated the equipment commissioning date is March 2019 and the commissioning date for S/s is 31.01.2019. POWERGRID also shared their concerns about difficulties in obtaining AMC services and spares for Coriant make FOTE equipment. CTU requested POWERGRID to provide the details as deliberated in 26th TeST Meeting so that scheme can be prepared for the replacement of these Coriant make equipment. POWERGRID vide mail dtd. 04.03.2025 provided following inputs: a. Date of Commissioning: 11th Jan 2019 (Letter attached as ***Annexure-IV***) b. RTM Declaration of the Asset: 31st Oct 2019 (Letter attached as ***Annexure-V***) c. Cost for supply and installation of STM-16 FOTE (5 No.): Rs 1.5 Crore
4.	Estimated Cost	**Rs. 1.5 Crs (approx.)**
5.	Implementation timeframe	**12 months from date of allocation**
6.	Implementation Agency	**POWERGRID**
7.	Implementation mode	**RTM mode**
8.	Deliberations in different meetings	**a.** 8th NR CPM held on 03.02.2025 b. 26th NRPC TeST Meeting held on 19.11.2024

सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड
(पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड के स्वामित्व में)
(भारत सरकार का उद्यम)
CENTRAL TRANSMISSION UTILITY OF INDIA LTD.
(A wholly owned subsidiary of Power Grid Corporation of India Limited)
(A Government of India Enterprise)

Ref: C/CTU/Comm/HPPTCL/01 08.11.2023

DGM (Protection & Communication),
Himachal Pradesh Power Transmission Corporation Ltd,
V.P.O. Chowki Jamwalan,
Hamirpur- 177020
Himachal Pradesh

Sub: Regarding Fibre Sharing on HPPTCL lines for ULDC purpose for Redundant Communication for Chamera-III (NHPC) & Budhil (GreenCo)

Sir,

This is with reference to 23rd meeting of Telecommunication, SCADA & Telemetry Sub Committee (TeST) of NRPC held on 21.09.23 in virtual mode. The Minutes of Meetings (MoM) were issued on 23.10.2023 and are attached with this letter. In the meeting Redundant Communication for Chamera-III (NHPC) & Budhil (GreenCo) was deliberated at para 8 of MoM.

Further with reference to MoM clause 8.2 of minutes MS, NRPC requested CTUIL to write a letter to HPPTCL for fibre sharing on their OPGW links to provide redundant communication links as under

Fibre Sharing requirement for Chamera-III (NHPC) & Budhil (GreenCo)
Budhil is presently connected via POWERGRID fibre network through Budhil – Chamera III-Chamera PS (ISTS node). To provide redundant communication to Budhil and Chamera III, HPPTCL to share atleast 6 nos. of fibers for ULDC purpose on the following links:

1. Budhil(GreenCo) - Lahal(HP)
2. Lahal (HP) – Chamera PS (ISTS node)

It was deliberated during the meeting that one no. of STM-16 FOTE shall also be planned at Lahal (HPPTCL) in ISTS project alongwith the sharing of fibers mentioned above.

It is to be mentioned that fibres required on HPPTCL links are solely used for ULDC & Grid Management purpose.

After receiving the confirmation of fibre sharing from HPPTCL, scheme shall be prepared by CTUIL and put up for approval in NCT after getting views of NRPC.

It is requested that HPPTCL may provide their consent to CTUIL with copy to NRPC so that scheme shall be finalised at earliest.

Thanking you,

Yours faithfully,

(H S Kaushal)
Sr. GM (CTUIL)

CC:

1. Member Secretary Northern Regional Power Committee 18A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi – 110 016	**2.GM Projects,** Himachal Pradesh Power Transmission Corporation Ltd, New ISBT Road, Panjari (Below Old MLA Quarters), Shimla- 171005, Himachal Pradesh

सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड
(पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड के स्वामित्व में)
(भारत सरकार का उद्यम)
CENTRAL TRANSMISSION UTILITY OF INDIA LTD.
(A wholly owned subsidiary of Power Grid Corporation of India Limited)
(A Government of India Enterprise)

Ref: C/CTU/Comm/J&K/01 08.11.2023

To,
Managing Director,
J&K Power Transmission Corporation Limited,
Janipur, Jammu- 180001

Sub: Regarding Fibre Sharing on JKPTCL links for ULDC purpose for redundant communication of Alusteng, Drass, Kargil, Khalasti, Leh ISTS Nodes

Sir,

This is with reference to 23rd meeting of Telecommunication, SCADA & Telemetry Sub Committee (TeST) of NRPC held on 21.09.23 in virtual mode. The Minutes of Meetings (MoM) were issued on 23.10.2023 and are attached with this letter. In the meeting redundant communication of Alusteng, Drass, Kargil, Khalasti, Leh was deliberated which was deliberated at para 5 of MoM.

Further, with reference to MoM clause 5.2, MS, NRPC requested CTUIL to write a letter to JKPTCL for fibre sharing on their OPGW links to provide redundant communication links as under:

Fibre Sharing requirement for Alusteng, Drass, Kargil, Khalasti, Leh.

Alusteng, Drass, Kargil, Khalasti, Leh are presently connected with RLDC using PowerTel and J&K links upto Wagoora(ISTS node). To provide redundant path to these stations other pairs of fibre of existing OPGW shall be used with existing ISTS FOTE established under substation packages. JKPTCL to share atleast 6 nos. of fibers for ULDC purpose on the following links:

1. Alusteng - Zainakote
2. Zainakote - Wagoora

It was deliberated during the meeting that two nos. of STM-16 FOTE shall be planned one each at Zainakote and Wagoora in ISTS project alongwith the sharing of fibers mentioned above.

It is to be mentioned that fibres required on JKPTCL links are solely used for ULDC & Grid Management purpose.

After receiving the confirmation of fibre sharing from JKPTCL, scheme shall be prepared by CTUIL and put up for approval in NCT after getting views of NRPC.

It is requested that JKPTCL may provide their consent to CTUIL with copy to NRPC so that scheme shall be finalised at earliest.

Thanking you,

Yours faithfully,

(H S Kaushal)
Sr. GM (CTUIL)

CC:

1. Member Secretary Northern Regional Power Committee 18A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi – 110 016	**2.Chief Engineer,** Transmission – Kashmir, J&K Power Transmission Corporation Limited, Bemina, Srinagar, J&K

सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड
(पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड के स्वामित्व में)
(भारत सरकार का उद्यम)
CENTRAL TRANSMISSION UTILITY OF INDIA LTD.
(A wholly owned subsidiary of Power Grid Corporation of India Limited)
(A Government of India Enterprise)

Ref: C/CTU/Comm/PTCUL/01 08.11.2023

Er. Anupam Singh,
Chief Engineer (SCADA & SLDC)
Power Transmission Corporation of Uttarakhand Ltd.
Dehradun-24800,
Uttarakhand

Sub: Regarding Fibre Sharing on PTCUL lines for ULDC purpose for redundant communication of Pithoragarh (PG) and Sitarganj (PG) stations

Sir,

This is with reference to 23rd meeting of Telecommunication, SCADA & Telemetry Sub Committee (TeST) of NRPC held on 21.09.23 in virtual mode. The Minutes of Meetings (MoM) were issued on 23.10.2023 and are attached with this letter. In the meeting redundant communication of Pithoragarh(PG) and Sitarganj(PG) was deliberated at para 22.1(Sr. No. 8) of MoM.

Further, in the meeting it was deliberated that CTUIL shall write a letter to PTCUL for fibre sharing on their OPGW links to provide redundant communication links as under:

A. Fibre Sharing requirement for Pithoragarh (PG)

Pithoragarh (PG) is presently connected to RLDC with radial path via Jauljivi(ISTS), redundant path of Pithoragarh(PG) can be created via PTCUL OPGW network, PTCUL to share atleast 6 nos. of fibers for ULDC purpose on the following links:

1. Pithoragarh (PG) – Pithoragarh (PTCUL)
2. Pithoragarh (PTCUL) – Almora
3. Almora -bhawoli
4. bhawoli -Haldwani
5. Haldwani -220kv Kamalwaganj
6. 220kv Kamalwaganj - pantnagar
7. Pantnagar - 400kv Kashipur (PTCUL)

At Kashipur (PTCUL), ISTS FOTE is available which is further connected with Bareiley(PG) through ISTS link.

It is understood that links mentioned at 1 & 2 above are in the process of implementation, same may be expedited at your end in order to establish the said redundant path at the earliest.

B. Fibre Sharing requirement for Sitarganj(PG)

Sitarganj (PG) is presently connected to RLDC with radial path via CB Ganj (UP Network), redundant path of Sitarganj (PG) can be created via PTCUL OPGW network, PTCUL to share atleast 6 nos. of fibers for ULDC purpose on the following links:

1. Sitarganj(PG) - Sitarganj(PTCUL)
2. Sitarganj(PTCUL) - Kiccha
3. Kiccha - Rudrapur
4. Rudrapur - Pantnagar
5. Pantnagar – Kashipur (PTCUL)

At Kashipur (PTCUL), ISTS FOTE is available which is further connected with Bareiley(PG) through ISTS link.

It is to be mentioned that fibre required on PTCUL links shall be solely used for ULDC & Grid Management purpose.

After receiving the confirmation of fibre sharing from PTCUL, scheme shall be prepared by CTUIL and put up for approval in NCT after getting views of NRPC.

It is requested that PTCUL may provide their consent to CTUIL with copy to NRPC so that scheme shall be finalised at earliest.

Thanking you,

Yours faithfully,

(H S Kaushal)
Sr. GM (CTUIL)

CC:

1. Member Secretary Northern Regional Power Committee 18A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi – 110 016	**2. Er. D.P. Singh,** Superintendent Engineer (SCADA), Power Transmission Corporation of Uttarakhand Ltd. Haldwani-263139, Uttarakhand

सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड
(पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड के स्वामित्व में)
(भारत सरकार का उद्यम)
CENTRAL TRANSMISSION UTILITY OF INDIA LTD.
(A wholly owned subsidiary of Power Grid Corporation of India Limited)
(A Government of India Enterprise)

Ref: C/CTU/Comm/UPPTCL/01 02.11.2023

Managing Director,
Uttar Pradesh Power Transmission Corporation Ltd,
7th Floor Shakti Bhawan,
14-Ashok Marg, Lucknow- 226001
Uttar Pradesh

Sub: Regarding Fibre Sharing on UPPTCL lines for ULDC purpose for redundant communication of Narora (NAPP) (NPCIL) and Saharanpur (PG) ISTS nodes

Sir,

This is in with reference to 23rd meeting of Telecommunication, SCADA & Telemetry Sub Committee (TeST) of NRPC held on 21.09.23 through video conference. The Minutes of Meetings (MoM) were issued on 23.10.2023 and are attached with this letter. In the meeting redundant communication of Narora, NPCIL (NAPP) & Saharanpur (PG) was deliberated which is minuted at para 6 & 14 of MoM.

Further, with reference to MoM clause 6.4 & 14.3, MS, NRPC requested CTUIL to write a letter to UPPTCL for fibre sharing on their OPGW links to provide redundant communication with the following details:

A. Fibre Sharing requirement for NAPP (NPCIL)

NAPP is presently connected via path NAPP (ISGS) -Khurja (UP)-Sikandarabad(UP)- Dadri (UP)– Muradnagar 400(UP) -Dadri (PG). To provide redundant communication for NAPP, laying of approx. 88 Km of OPGW from Narora (ISGS) to Simbhavali (UP) shall be installed under ISTS project and atleast 6 nos. of fibre sharing is required on the following links of UPPTCL:

1. Simbhavali (UP) - Shatabdi Nagar (UP)
2. Shatabdi Nagar (UP) - Modipuram (ULDC node under ISTS)

2 nos. of STM-16 FOTE are proposed under ISTS one each at Simbhavali (UP) and Shatabdi Nagar (UP).
This arrangement will also strengthen the redundancy of Modipuram which is backup SLDC of UPPTCL .

B. Fibre Sharing requirement for Saharanpur (PG)

Saharanpur (PG) is presently connected with Roorkee (PG), to provide redundant communication to Saharanpur (PG) atleast 6 nos. of fibre sharing is required on the following links of UPPTCL:

1. Sahararnpur (PG)- Deoband (UP)
2. Deoband (UP)- Sahararnpur (UP)
3. Sahararnpur (UP) -Nanauta (UP)
4. Nanauta (UP)-Shamli (UP)
5. Shamli (UP) -Muradnagar (ULDC node under ISTS)

5 Nos of STM-16 equipment at Sahararnpur (PG), Deoband (UP), Sahararnpur (UP), Nanauta (UP) and Shamli (UP) are proposed under ISTS.

It is to be mentioned that fibre required on UPPTCL links shall be solely used for ULDC & Grid Management purposes.

After receiving the confirmation of fibre sharing from UPPTCL, scheme shall be prepared by CTUIL and put up for approval in NCT after getting views of NRPC.

It is requested that UPPTCL may provide their consent for above mentioned sharing of fibers to CTUIL so that scheme shall be finalised at the earliest.

Thanking you,

Yours faithfully,

(H S Kaushal)
Sr. GM (CTUIL)

Annexure-XXXV

RAJASTHAN RAJYA VIDYUT PRASARAN NIGAM LIMITED

[Corporate Identity Number (CIN): U40109RJ2000SGC016485]
Regd. Office: Vidyut Bhawan, Janpath, Jyoti Nagar, Jaipur-302005

OFFICE OF THE CHIEF ENGINEER (LD)

New Prasaran Bhawan, TCC Building, Heerapura, Jaipur Tel. No. 0141-2948293
E-mail: ce.ld@rvpn.co.in website: www.http://energy.rajasthan.gov.in/rvpnl

RVPN
An ISO 9001:2015 Certified Company

No. RVPN/CE (LD)/ F. /D. 325 Dated:- 11/02/2025

The Member Secretary,
NRPC, New Delhi

Sub: Agenda note for reduction in the prices quoted by M/s Siemens for AMC of SCADA/ EMS system w.e.f. 01.04.2025 to 31.03.2026 to be placed in next NRPC meeting.

On the subject cited above, kindly find enclosed herewith the Agenda note for Reduction in the prices quoted by M/s Siemens for AMC of SCADA/ EMS system w.e.f. 01.04.2025 to 31.03.2026 for inclusion in the next NRPC meeting.

Encl: As above

(Sudhir Jain)
Chief Engineer (LD)

Copy submitted/ forwarded to the following for kind information:
1. The Director (Operation), RVPN, Jaipur.
2. TA to MD, RVPN, Jaipur.

Chief Engineer (LD)

Document certified by SUDHIR JAIN <jain.sudhir@rvpn.co.in>.
Digitally Signed by SUDHIR JAIN
Designation: Chief Engineer
Date :11-02-2025 05:34:06

RajKaj Ref No.: 13527995

Agenda Note for arranging reduction in the prices quoted by M/s Siemens for AMC of SCADA/EMS system from w.e.f. 01.04.2025 to 31.03.2026

The AMC of SCADA/EMS system installed by M/s Siemens under ULDC-II was carried out w.e.f. 01.04.2016 at a total cost of Rs. 78,45,221 /- for 7 years including 1-year warranty period i.e. Rs. 11,07,556.5/-per annum. This AMC expired on 31.03.2023. However due to delay in implementation of ULDC-III, the AMC of existing system of Siemens was further extended for two more years from 01.04.2023 to 31.03.2025 at a total cost of Rs.22,15,113/-i.e. Rs. 11,07,556.5/- per annum.

Meanwhile the Notice of Award for NR ULDC-III SCADA/EMS Project has been placed on M/s GE T&D India Ltd on 12.07.2024 by PGCIL, New Delhi and implementation work of this Project is to be completed within 18 months i.e by Feb 2026. As the AMC of SCADA/EMS system installed under ULDC-II is going to expire on 31.03.2025, further extension of AMC is required for at least 1 year.

Accordingly AMC proposal was sought from M/s Siemens and the same was submitted by M/s Siemens for extension of AMC for further 1 year, at a cost of Rs.3,26,62,321/-(enclosed at **Annexure-1**). As the rates offered was very high i.e. approximately 30 times higher than the existing AMC rates therefore an on line meeting was held on 17.01.2025 for negotiation on the high prices between NR State Constituents, NRLDC POWERGRID and M/s Siemens.

During the meeting, M/s Siemens was asked to provide justification of the rates and to reduce the rates. It was suggested by RVPNL that the AMC proposal be split into two parts one for manpower cost and in the second part rates of the equipment/items likely to be replaced may be quoted. In case of replacement of the faulty equipment, the cost can be charged at the rates quoted by M/s Siemens. UPSLDC and HPSLDC also shared the same opinion. Further, HPSLDC requested M/s Siemens to submit items wise prices instead of lot. RVPN submitted its suggestion vide letter dated 09.01.2025 (**Annexure-2**).

On this Siemens vide its email dated 19.01.2025 (Copy enclosed at **Annexure-3**) replied that the IT hardware has already reached its End of Service Life, Spares are not available with OEM. Third parties may still support for hardware maintenance. Third party will need a commitment of definite numbers of hardware and duration. They will source it from international market as well.

Now M/s Siemens has revised its proposal vide email dated 08.01.2025 (**Annexure-4**) for extension of AMC for further 1 year and the revised rates for AMC of SCADA/EMS system is Rs.3,00,49,408/-i.e. approximately 8% less as compared to its earlier proposal but approximately 30 times higher than the existing AMC rates.

Since the rates offered by M/s Siemens are extraordinarily high and it would be very difficult to arrange approval from our management. Therefore, matter may be put up before the NRPC so that matter be discussed at the highest forum and M/s Siemens for reduction in the AMC rates to a reasonable level.

ANNEXURE-1

SIEMENS

Non-binding Budgetary Offer for one year Annual Maintenance Contract for constituents of NRLDC

Sr. No.	Item Description	Unit	Quantity	Total Ex-works (Kalwa) Price in INR	Total Price in INR including GST
1	Annual Maintenance Contract for one year for constituents of Northern Region	Lot	1		
A	HPSLDC, Shimla (1-Jan-2025 to 31-Dec-2025)	No.	1	28,630,838	33,784,389
B	Haryana SLDC, Panipat (1-Apr-2025 to 31-Mar-2026)	No.	1	31,272,862	36,901,977
C	UPSLDC, Lucknow & Modipuram (1-Apr-2025 to 31-Mar-2026)	No.	1	52,509,464	61,961,168
D	Punjab SLDC, Patiala (1-Apr-2025 to 31-Mar-2026)	No.	1	29,411,927	34,706,074
E	RRVPN SLDC, Jaipur (1-Apr-2025 to 31-Mar-2026)	No.	1	27,679,933	32,662,321
F	BBMB LDC, Chandigarh	No.	1	27,737,475	32,730,221
G	DTL SLDC, New Delhi (1-Apr-2025 to 31-Mar-2026)	No.	1	28,105,100	33,164,018
H	JKPTCL Jammu SLDC & Srinagar B-SLDC (1-Apr-2025 to 31-Mar-2026)	No.	1	44,083,117	52,018,078
			Total	**269,430,716**	**317,928,245**

	Basis of offer
1	"THIS IS A BUDGETARY PRICE QUOTE BASED ON PRELIMINARY INFORMATION, THUS IS PURELY INDICATIVE AND DOES NOT CONSTITUTE AN OFFER OR COMMITMENT NOR DOES IT CONTAIN ANY REPRESENTATION OR WARRANTY ON SIEMEN'S PART. SHOULD THERE BE A REQUIREMENT TO PROGRESS THIS TRANSACTION PLEASE REVERT BACK WITH DETAILS AND SPECIFICATIONS AND WE SHALL ADDRESS THE REQUEST APPROPRIATELY AT THAT TIME AND SUBJECT TO ALL INTERNAL APPROVALS AS MAYBE REQUIRED BY US."
2	Our Commercial Terms & Conditions will be submitted in the event of Firm offer.
3	Though Contituent wise break-up is provided, our offer is valid only if all NR constituents place the order.
4	Price basis is Ex-works Siemens India. Taxes and duties will be charged extra as applicable. Currently we have considered GST @ 18% on Ex-Works Price.
5	Our budgetary price is based on the scope document submitted along with our offer. Any change in scope and/or quantity will have a commercial implication to the above non binding budgetary price
6	Above non-binding budgetary price is with a considernation that Power Grid will place an order for minimum One year AMC on Siemens Limited. In case this AMC is to be extended further, then such extension will be required in minimum of multiples of One quarter.
7	Offer Validity: 31st December 2024

ANNEXURE-2

RAJASTHAN RAJYA VIDYUT PRASARAN NIGAM LIMITED

(An ISO 9001-2015 Certified Company)
(CIN: U40109RJ2000SGC016485)
(GSTIN: 08AABCR8312A1ZT)

OFFICE OF THE SUPERINTENDING ENGINEER (SSDA-SLDC)
State Load Despatch Centre, Ajmer Road, Heerapura, Jaipur -302 021, Tele Fax:(141)2251278
E-mail address : se.ssda@rvon.co.in

NO. RVPN/SE (SSDA-SLDC)/XEN-2(SSDA-SLDC) /D. Dated:

Sh. Kuleshwar Sahu, CGM (AM & ULDC),
NR-1,PGCIL,
B-9, Qutub Instutional Area,
Katwaria Sarai,
New Delhi-110016

Sub: Extension of AMC of SCADA/EMS System installed under ULDC-Phase-II at SLDC, Heerapura for one more year i.e. till 31.03.2026.

On the subject cited above, it is to intimate that AMC for SCADA/EMS System installed at SLDC, Heerapura, Jaipur is going to expire on 31st March' 2025. In this context, please refer to Budgetary Offer of M/s Siemens vide which they have offered to provide comprehemnsive AMC for one more year. An online meeting took place on 18.12.2024 wherein the high cost quoted by M/s Siemens was discussed in detail. During the meeting it was also suggested that M/s Siemens may be asked to submit proposal in two parts one for providing man power and in the second part M/s Siemnes may quote the prices of the items which might be required to replace so in case of replacemnt of any part/item payment can be made on the basis of the cost quoted by M/s Siemens.

It is brought to your notice that present AMC shall expire on 31.03.2025 therefore it is requested to expedite the process to award AMC of SCADA/EMS system and if required online/offline meeting of all constitutents M/s Siemens may be convened at the earliest.

(Manish Athaiya)
Superintending Engineer (SSDA-SLDC)
RVPN, Jaipur

Copy to the following for kind information needful.

1. Director (Operation), RVPN, Jaipur
2. Chief Engineer (LD), RVPN, Jaipur.

Superintending Engineer (SSDA-SLDC)
RVPN, Jaipur

Signature valid
Digitally signed by Manish Athaiya
Designation : Superintending Engineer
Date: 2025.01.09 10:38:47 IST
Reason: Approved

ANNEXURE-3

RE: SCADA/EMS - AMC Extension (M/s Siemens)

Bhatnagar, Sumit <sumit.bhatnagar@siemens.com>

Sun 19-01-2025 14:20

To:Narendra Kumar Meena {नरेंद्र कुमार मीणा} <nkmeena@powergrid.in>;

Cc:Ghanshyam Meena {घनश्याम मीना} <ghanshyam.meena@powergrid.in>; Vinay Kumar Jaiswal <vinay.jaiswal@dtl.gov.in>; dirpr <dirpr@bbmb.nic.in>; ddld1 <ddld1@bbmb.nic.in>; SrXEN SCADA <srxen-sldc2@pstcl.org>; sescadait <sescadait@gmail.com>; xen1.ssda@rvpn.co.in <xen1.ssda@RVPN.CO.IN>; HPSLDC XEN SCADA <sldc.scadaxen@gmail.com>; Executive Engineer SCADA EMS <xenscada@hvpn.org.in>; Superintending Engineer (SCADA & IT) <sescadait@upsldc.org>; JK SLDC <jksldc3@gmail.com>; CE JKPTCL J <sojpdd@gmail.com>; chowhan.pdd <chowhan.pdd@gmail.com>; Kumar, Namit <namit.kumar@siemens.com>; Das, Jayeeta <jayeeta.das@siemens.com>; ddld2 <ddld2@bbmb.nic.in>; vinayjaiswaldtl <vinayjaiswaldtl@gmail.com>; Chief Engineer(LD) <ce.ld@RVPN.CO.IN>; ATHAIYA.MANISH@RVPN.CO.IN <athaiya.manish@RVPN.CO.IN>; se.ssda@rvpn.co.in <se.ssda@RVPN.CO.IN>; cehpsldc <cehpsldc@gmail.com>; Arun Kumar Singh {ए.के. सिंह} <singh_ak@powergrid.in>; Mohan Kishor Nemmaluri {मोहन किशोर नेम्मलूरि} <mohan.kishor@powergrid.in>; M M Hassan (एम एम हसन) <mm.hassan@grid-india.in>; Lopez, Beryl <beryl.lopez@siemens.com>; ankurgulati <ankurgulati@grid-india.in>; Kuleshwar Sahu {कुलेश्वर साहू} <kuleshwar@powergrid.in>; kamlesh@dtl.gov.in <kamlesh@dtl.gov.in>; Murada, Rahul <rahul.murada@siemens.com>;

1 attachments (47 KB)

Reply of POWERGRID AMC MoM Extn 17-Jan-2025.pdf;

Dear Sir,

Please find our reply attached with this email.

Best Regards,
Sumit Bhatnagar
Lifecycle Manager
SI GSW SOL LM
Siemens Ltd.
+91-9999452888

From: Narendra Kumar Meena {नरेंद्र कुमार मीणा} <nkmeena@powergrid.in>
Sent: Friday, January 17, 2025 8:01 PM
To: Bhatnagar, Sumit (SI GSW IN SOL LM) <sumit.bhatnagar@siemens.com>; Kumar, Namit (SI GSW IN SOL) <namit.kumar@siemens.com>; Das, Jayeeta (SI GSW S IN) <jayeeta.das@siemens.com>
Cc: Ghanshyam Meena {घनश्याम मीना} <ghanshyam.meena@powergrid.in>; Vinay Kumar Jaiswal <vinay.jaiswal@dtl.gov.in>; dirpr <dirpr@bbmb.nic.in>; ddld1 <ddld1@bbmb.nic.in>; SrXEN SCADA <srxen-sldc2@pstcl.org>; sescadait <sescadait@gmail.com>; xen1.ssda <xen1.ssda@rvpn.co.in>; HPSLDC XEN SCADA <sldc.scadaxen@gmail.com>; Executive Engineer SCADA EMS <xenscada@hvpn.org.in>; Superintending Engineer (SCADA & IT) <sescadait@upsldc.org>; JK SLDC <jksldc3@gmail.com>; CE JKPTCL J <sojpdd@gmail.com>; chowhan.pdd <chowhan.pdd@gmail.com>; ddld2 <ddld2@bbmb.nic.in>; vinayjaiswaldtl <vinayjaiswaldtl@gmail.com>; Chief Engineer(LD) <ce.ld@rvpn.co.in>; ATHAIYA.MANISH <athaiya.manish@rvpn.co.in>; se.ssda <se.ssda@rvpn.co.in>; cehpsldc <cehpsldc@gmail.com>; Arun Kumar Singh {ए.के. सिंह} <singh_ak@powergrid.in>; Mohan Kishor Nemmaluri {मोहन किशोर नेम्मलूरि} <mohan.kishor@powergrid.in>; M M Hassan (एम एम हसन) <mm.hassan@grid-india.in>; Lopez, Beryl (SI GSW IN)

ANNEXURE-4

FW: Discussion POWERGRID-SIEMENS for Quotation for AMC proposal NR SCADA EMS system

Narendra Kumar Meena {नरेंद्र कुमार मीणा} <nkmeena@powergrid.in>

Wed 08-01-2025 20:01

To:Vinay Kumar Jaiswal <vinay.jaiswal@dtl.gov.in>; dirpr <dirpr@bbmb.nic.in>; ddld1 <ddld1@bbmb.nic.in>; SrXEN SCADA <srxen-sldc2@pstcl.org>; sescadait <sescadait@gmail.com>; xen1.ssda@rvpn.co.in <xen1.ssda@RVPN.CO.IN>; HPSLDC XEN SCADA <sldc.scadaxen@gmail.com>; Executive Engineer SCADA EMS <xenscada@hvpn.org.in>; Superintending Engineer (SCADA & IT) <sescadait@upsldc.org>; JK SLDC <jksldc3@gmail.com>; CE JKPTCL J <sojpdd@gmail.com>; chowhan.pdd <chowhan.pdd@gmail.com>; ddld2 <ddld2@bbmb.nic.in>; vinayjaiswaldtl <vinayjaiswaldtl@gmail.com>; Chief Engineer(LD) <ce.ld@RVPN.CO.IN>; ATHAIYA.MANISH@RVPN.CO.IN <athaiya.manish@RVPN.CO.IN>; se.ssda@rvpn.co.in <se.ssda@RVPN.CO.IN>; cehpsldc <cehpsldc@gmail.com>;

Cc:Arun Kumar Singh {ए.के. सिंह} <singh_ak@powergrid.in>; Mohan Kishor Nemmaluri {मोहन किशोर नेम्मलूरि} <mohan.kishor@powergrid.in>; M M Hassan (एम एम हसन) <mm.hassan@grid-india.in>; Das, Jayeeta <jayeeta.das@siemens.com>; Kumar, Namit <namit.kumar@siemens.com>; ankurgulati <ankurgulati@grid-india.in>; Lopez, Beryl <beryl.lopez@siemens.com>; Kuleshwar Sahu {कुलेश्वर साहू} <kuleshwar@powergrid.in>; sumit bhatnagar <sumit.bhatnagar@siemens.com>;

Importance: High

2 attachments (1 MB)

Powergrid_AMC_Price-schedule_rev1.0.pdf; ULDC Ph-II AMC Offer Rev 1 NR Constituents .pdf;

Dear Sir/Ma'am,

After several rounds of discussions with M/s Siemens, revised offer for AMC of SCADA/EMS System of SLDCs of Northern Region has been submitted by Siemens.

Please go through the offer submitted by Siemens for further deliberations and necessary action.

Regards,

Narendra Kr Meena
Dy. General Manager (NR-ULDC)
POWERGRID
RHQ, NRTS-I, Faridabad
Ph. +91-9810082410

From: Das, Jayeeta <jayeeta.das@siemens.com>
Sent: Monday, December 30, 2024 2:44 PM
To: Narendra Kumar Meena {नरेंद्र कुमार मीणा} <nkmeena@powergrid.in>
Cc: Kuleshwar Sahu {कुलेश्वर साहू} <kuleshwar@powergrid.in>; Arun Kumar Singh {ए.के. सिंह} <singh_ak@powergrid.in>; Mohan Kishor Nemmaluri {मोहन किशोर नेम्मलूरि} <mohan.kishor@powergrid.in>; sldc.scadaxen@gmail.com; mm.hassan@grid-india.in; ankurgulati@grid-india.in; cehpsldc@gmail.com; Kumar, Namit <namit.kumar@siemens.com>; Bhatnagar, Sumit <sumit.bhatnagar@siemens.com>; Singha Roy, Rajarshi <rajarshi.singharoy@siemens.com>; Kulkarni, Harshad <harshad.kulkarni@siemens.com>; Sail, Dipti <dipti.sail@siemens.com>; Murada, Rahul <rahul.murada@siemens.com>; Khandelwal, Amit <amit.khandelwal@siemens.com>; Lopez, Beryl

ANNEXURE-3

Issues discussed in the meeting held on 17.01.2025 for AMC extension for SCADA/EMS System

(Meeting attended by NR State Constituents, NRLDC POWERGRID and M/s Siemens)

Meeting held on 17.01.2025

Mode: MS Teams, Participant list is attached.

During the meeting, following points were raised by Constituents:

1. RRVPNL has proposed for separation of manpower cost and separate rate contract (item wise) to reduce the cost and justification of offered prices. UPSLDC and HPSLDC have also shared the same opinion. Further, HPSLDC requested M/s Siemens to submit items wise prices instead of lot. They specifically mentioned that at present cost is coming around 22 lacs and under proposed AMC charges are of 3.10 Cr which are of 14-15 times.

Siemens Reply: As the IT hardware has already reached it's End of Service Life, Spares are not available with OEM. Third parties may still support for hardware maintenance. Third party will need a commitment of definite numbers of hardware and duration. They will source it from international market as well. (Siemens request to close the contract by end of February so that these spares could be arranged within March)

2. HPSEBL, BBMB, JKPDD and DTL along with the other constituents requested for price justification, as more than 80% of AMC cost is considered as manpower cost which comes approx. Rs 2.4 to 3.0 cr per control centre, that is very much higher than the original cost plus escalation on account of PV clause. BBMB further opined that annual manpower charges of 2.4 cr for deployment 02 engineers is very high and extremely difficult to get approval from higher management.

Siemens Reply: L1 Man-power is only the Man-power present at the site. In the backend L2 (Senior/Expert resources from India), L3 (R&D/Experts from Germany/US) Man-power provide required support to the L1 Manpower and keep a track of software performance by evaluating the Daily reports. As software version has already reached End of service life, we are requiring more and more support from L3 experts. The support cost considered in original contract wasn't sufficient. Also, the cost as evaluated by constituents is not only for L1 support but includes many other components too.

3. PSTCL have raised regarding the exclusion of certain hardware and software items under the AMC extension, as their BARCO screen is not working properly, which is currently under AMC. Other exclusions are NMS, RTUs and other sites items outside the control center.

Siemens Reply: Understanding provided to Siemens during initial AMC Extension discussions that the VPS will be replaced in the early part of AMC Extension period. If any constituent is looking for VPS maintenance, Siemens can provide support on chargeable basis. (Can be included in scope for that particular constituent). RTU's corrective maintenance (Non-comprehensive) can be catered separately.

4. HVPNL requested to submit criteria of offered prices, costing is too high to justify to the management for approval. Siemens to clarify.

Siemens Reply: Proposed price is based on present cost elements which are revised due to inflation and aging system. Siemens request not to compare the existing prices with the offered prices. As we are covering SCADA critical items for comprehensive support. Such support was not there for last 2 years of extended AMC.

5. BBMB has raised concern for exclusion of maintenance of RTUs under AMC extension. M/s Siemens have mentioned that another department is looking after the RTU maintenance works, however they can extend their support through the engineers. Further. M/s Siemens asked to maintain the spares as no spares are available at site. In view of this, NRLDC have suggested for leasing of spares available at JKPDD (some of the sites are non-operational) to BBMB / PSTCL / HPSEBL on returnable basis. JKPDD representative agreed to consider the request from BBMB / PSTCL, however JKPDD have to take approval from their higher management in this regard. Transportation shall be arranged by the beneficiary itself. J&K PTCL requested to concern state to submit fresh request.

Siemens Reply: RTU's corrective maintenance (Non-comprehensive) can be catered separately. Required spares to be provided by utilities.

ANNEXURE-4

SIEMENS

Offer for One year Annual Maintenance Contract for NR Constituents

Sr. No.	Item Description	Unit	Quantity	Total Ex-works (Kalwa) Price in INR	Total Price in INR including GST
1	Annual Maintenance Contract for One year for BBMB	Lot	1	25,511,600	30,103,688
2	Annual Maintenance Contract for One year for HPSLDC	Lot	1	26,339,600	31,080,728
3	Annual Maintenance Contract for One year for RRVPNL	Lot	1	25,465,600	30,049,408
4	Annual Maintenance Contract for One year for UPSLDC	Lot	1	48,905,000	57,707,900
5	Annual Maintenance Contract for One year for DTL	Lot	1	25,852,000	30,505,360
6	Annual Maintenance Contract for One year for PSTCL	Lot	1	27,048,000	31,916,640
7	Annual Maintenance Contract for One year for HVPNL	Lot	1	28,768,400	33,946,712
8	Annual Maintenance Contract for One year for J&K	Lot	1	40,553,600	47,853,248
			Total	**248,443,800**	**293,163,684**

	Basis of offer
1	Price basis is Ex-works Siemens India. Taxes and duties will be charged extra as applicable. Currently we have considered GST @ 18% on Ex-Works Price.
2	Our Firm price is based on the scope document submitted along with our offer. Any change in scope and/or quantity will have a commercial implication to the above mentioned price
3	Above price is with a consideration that Power Grid / Grid India will place an order for minimum One year of AMC on Siemens Limited. In case this AMC is to be extended further, then such extension will be required in minimum of multiples of One quarter and to the maximum of One additional year.
4	Offer Validity: 90 days from the date of submission of Firm offer.
5	Payment Terms: Quarterly on furnishing GST invoice(s) for the Annual Maintenance Charges by Contractor and on certification by the Employer in line with provisions of Technical Specifications within 30 days.
6	All old dues to be cleared before signing of this contract. Parent company Guarantee will not be provided for this AMC extension.
7	Siemens shall have right to charge interest @ 12% on the amounts that have not been paid by the customer beyond 30 days from the invoice date
8	SLAs : SLA will be as per existing AMC contract however response time, as defined in our technical proposal, will be taken into consideration while calculating penalties. Resolution time will not be taken into consideration while calculating the penalties.
9	Effective date and Project Duration : The effective date will be the date of contract and the AMC duration will be for One (1) year from the date of contract.
10	Termination : Not Applicable. Customer cannot terminate the Order for one year.
11	Force Majeure : Not Applicable. AMC will come under the purview of Essential Services and hence necessary support will be provided during the AMC period to the extent possible.
12	All other terms & conditions will be as per the GCC & SCC of the existing contract for AMC.

Beryl Lopez
Country Head – Grid Software India

AMIT KHANDELWAL

Amit Khandelwal
Finance Head – Grid Software India

Internal Audit was conducted of NRPC Fund for FY 2023-24. The consolidated receipt and payment account for the period from .01.04.2023 to 31.03.2024 is as below:

Payment Received	Amount (In Rs.)	Expenditure	Amount (In Rs.)
Opening Balance	37998713	Expenditure incurred by NRPC	36408413
Contribution for the Year 2023-24	60120000	GST	171572
Interest	1330454	TDS	117408
Grid Controller of India Limited	11836314	Medical Treatment	441310
		Office Expenses (stationery and Others)	1488188
		Utility	15155562
		Upkeep Housekeeping	4044197
		Professional Services	935840
		Fire Fighting	202881
		IT Services	984004
		PAO CEA Licence Fees	169040
		ICT (Information computer, Telecommunication Equipment's)	3246615
		Other Revenue Expenditure	242414
		Domestic Travel Expenses	869827
		Rent Rates & Taxes for Land & Building	416812
		Minor civil and electrical works	15459998
		Digital Equipment	219936
		Leasing of Vehicles	1339999
		Closing Balance	29371465
Total	**111285481**	**Total**	**111285481**

D.K Meena
Superintending Engineer, NRPC

डी. के. मीना / D.K. MEENA
अधीक्षण अभियंता / Superintending Engineer
उत्तरी क्षेत्र विद्युत समिति / NRPC
विद्युत मंत्रालय / Ministry of Power
भारत सरकार / Govt. of India
नई दिल्ली–110016 / New Delhi-110016

Praveen Jangra
Executive Engineer, NRPC

प्रवीण / PRAVEEN
उप निदेशक / Deputy Director
केन्द्रीय विद्युत प्राधिकरण / C.E.A.
विद्युत मंत्रालय / Ministry of Power
भारत सरकार / Govt. of India
नई दिल्ली / New Delhi-66

Lokesh Agrawal
Assistant Executive Engineer, NRPC

लोकेश अग्रवाल / Lokesh Agrawal
सहायक कार्यालय अभियंता / Asstt. Executive Engineer
उ.क्षे.वि.सं. / N.R.P.C.
भारत सरकार / Govt. of India
कटवारिया सराय / Katwaria Sarai
नई दिल्ली / New Delhi-110016

Following are the observations from the internal audit of the NRPC Fund for FY 2023-24:

1. As per OM 3(2) (1)/2016/R&P Rules/Amendment/ 649 Ministry of Finance Department of Expenditure dated 05-12-2016. On Payment to Suppliers etc. by Government Departments through e-Payment wherein reference to O.M. No. 1(1)/2011/TA/366 dated 1st August 2016 regarding payment to Suppliers etc. above Rs. 10,000/- by Government Departments through e-Payment.

   In order to attain the goal of complete digitization of Government payments, the existing limit of Rs. 10,000/- prescribed in paragraph 2 of this office O.M. dated 1st August 2016 has been further reviewed. It has now been decided to lower the threshold limit to Rs. 5,000/-(Rupees five thousand only).

   Instances have been noted where imprest vouchers surpassed the Rs. 5000 threshold. This violates the above rule which needs to be undertaken in practice.

2. As per Rule 322 of GFR Permanent Advances or Imprest, Permanent advance or Imprest for meeting day to day contingent and emergent expenditure may be granted to a government servant by the Head of the Department in consultation with Internal Finance Wing, keeping the amount of advance to the minimum required for smooth functioning.

   Cash Books maintained by the Drawing and Disbursing Officers under Central Government Account (Receipts and Payments) Rules,1983.

   According to the above, a cash book to be maintained. However the same has not been maintained.

3. As per GAR 3, cash book format, Cheque withdrawal date and cash expenditure date to be mentioned which were not recorded in several instances.

D.K Meena
Superintending Engineer, NRPC
NRPC

डी. के. मीना / D.K. MEENA
अधीक्षण अभियंता / Superintending Engineer
उत्तरी क्षेत्र विद्युत समिति / NRPC
विद्युत मंत्रालय / Ministry of Power
भारत सरकार / Govt. of India
नई दिल्ली--110016 / New Delhi-110016

Praveen Rangra
Executive Engineer, NRPC

प्रवीण / PRAVEEN
उप निदेशक / Deputy Director
केन्द्रीय विद्युत प्राधिकरण / C.E.A.
विद्युत मंत्रालय / Ministry of Power
भारत सरकार / Govt. of India
नई दिल्ली / New Delhi-66

Lokesh Agrawal
Assistant Executive Engineer,

लोकेश अग्रवाल / Lokesh Agrawal
सहायक कार्यालय अभियंता / Asstt. Executive Engineer
उ.क्षे.वि.सं. / N.R.P.C.
भारत सरकार / Govt. of India
कटवारिया सराय / Katwaria Sarai
नई दिल्ली / New Delhi-110016

4. Rule 323 (2)The adjustment bill, along with balance if any, shall be submitted by the government servant within fifteen days of the drawal of advance, failing which the advance or balance shall be recovered from his next salary(ies).

   According to above, advance adjustment settlement to be done in 15 days of the drawal of advance. However the balance amount was not submitted to DDO, NRPC. In future, it should be taken care that balance amount must be deposited to DDO, NRPC.

5. Further, the audit team has suggested that there should not be dual utilization of withdrawn cheque amounts. As it has been observed that Funds withdrawn via cheque appear to have been utilized for both imprest and advance purposes.

7/03/2025

07/03/2025

D.K Meena
Superintending Engineer, NRPC

डी. के. मीना / D.K. MEENA
अधीक्षण अभियंता / Superintending Engineer
उत्तरी क्षेत्र विद्युत समिति / NRPC
विद्युत मंत्रालय / Ministry of Power
भारत सरकार / Govt. of India
नई दिल्ली-110016 / New Delhi-110016

Praveen Jangra
Executive Engineer, NRPC

प्रवीण/PRAVEEN
उप निदेशक/Deputy Director
केन्द्रीय विद्युत प्राधिकरण/C.E.A.
विद्युत मंत्रालय/Ministry of Power
भारत सरकार/Govt. of India
नई दिल्ली/New Delhi-66

Lokesh Agrawal
Assistant Executive Engineer, NRPC

लोकेश अग्रवाल / Lokesh Agrawal
सहायक कार्यालय अभियंता / Asstt. Executive Engineer
उ.क्षे.वि.सं. / N.R.P.C.
भारत सरकार / Govt. of India
कटवारिया सराय / Katwaria Sarai
नई दिल्ली / New Delhi-110016

NRPC Members for FY 2025-26			
S. No.	**NRPC Member**	**Category**	**Remarks**
1	Member (GO&D), CEA	Member (Grid Operation & Distribution), Central Electricity Authority (CEA)	-
2	Member (PS), CEA	Nodal Agency appointed by the Government of India for coordinating cross-border power transactions	-
3	CTUIL	Central Transmission Utility	-
4	PGCIL	Central Government owned Transmission Company	-
5	NLDC	National Load Despatch Centre	-
6	NRLDC	Northern Regional Load Despatch Centre	-
7	NTPC	Central Generating Company	-
8	BBMB		-
9	THDC		-
10	SJVN		-
11	NHPC		-
12	NPCIL		-
13	Delhi SLDC	State Load Despatch Centre	-
14	Haryana SLDC		-
15	Rajasthan SLDC		-
16	Uttar Pradesh SLDC		-
17	Uttarakhand SLDC		-
18	Punjab SLDC		-
19	Himachal Pradesh SLDC		-
20	DTL	State Transmission Utility	-
21	HVPNL		-
22	RRVPNL		-
23	UPPTCL		-
24	PTCUL		-
25	PSTCL		-
26	HPPTCL		-
27	IPGCL	State Generating Company	-
28	HPGCL		-
29	RRVUNL		-
30	UPRVUNL		-
31	UJVNL		-
32	HPPCL		-
33	PSPCL	State Generating Company & State owned Distribution Company	-
34	DHBVN	State owned Distribution Company (alphabetical rotaional basis/nominated by state govt.)	There are only 2 STATE DISCOMs DHBVN & UHBVN. UHBVN was member for FY 24-25.
35	Ajmer Vidyut Vitran Nigam Ltd.		There are 3 state DISCOMs Ajmer, Jaipur & Jodhpur. Jodhpur Vidyut Vitran Nigam Ltd. was member for FY 24-25.
36	Purvanchal Vidyut Vitaran Nigam Ltd.		There are 4 state DISCOMs: Dakshinanchal, Madhyanchal, Paschimanchal, Purvanchal. Paschimanchal Vidyut Vitaran Nigam Ltd. was member for FY 24-25.
37	UPCL		UPCL is sole state DISCOM
38	HPSEB		HPSEB is sole state DISCOM
39	Prayagraj Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity	-
40	Aravali Power Company Pvt. Ltd		-
41	Apraava Energy Private Limited		-
42	Talwandi Sabo Power Ltd.		-
43	Nabha Power Limited		-
44	Lanco Anpara Power Ltd		-
45	Rosa Power Supply Company Ltd		-
46	Lalitpur Power Generation Company Ltd		-
47	MEJA Urja Nigam Ltd.		-
48	Adani Power Rajasthan Limited		-
49	JSW Energy Ltd. (KWHEP)		-
50	To be decided.	IPP having less than 1000 MW installed capacity (alphabetical rotaional basis)	TATA POWER RENEWABLE was member in FY24-25.
51	UT of J&K	From each of the Union Territories in the region, a representative nominated by the administration of the Union Territory concerned out of the entities engaged in generation/ transmission/ distribution of electricity in the Union Territory.	JKPCL has been considered.
52	UT of Ladakh		LPPD has been considered.
53	UT of Chandigarh		May be nominated by UT administration. SLDC/STU may be nomiated as there is no TRANSCO and DISCOM has been privatized.
54	To be decided. (for rotation in states or rotation in region)	Private Distribution Company in region (alphabetical rotaional basis)	NPCL was member for FY 24-25. There are 5 private DISCOMs in NR i.e. BRPL, BYPL, TPDDL, NPCL, and Chandigarh Power Distribution Limited (CPDL).
55	Gurgaon Palwal Transmission Limited	Private transmission licensee (nominated by cetral govt.)	As nominated by CEA on alphabatical rotataional basis. Fatehgarh Bhadla Transmission Limited was member in FY 24-25.
56	Nomination awaited from CEA.	Electricity Trader (nominated by central govt.)	As nominated by CEA. NTPC Vidyut Vyapar Nigam Ltd. was member in FY24-25.
57	ReNew Power Private Limited	RE Generating Company having more than 1000 MW installed capacity	
58	NTPC Green Energy Limited		
59	Azure Power India Pvt. Limited		
60	Avaada Energy Private Limited		
61	Adani Green Energy Limited		

NRPC Members for FY 2025-26			
S. No.	**NRPC Member**	**Category**	**Remarks**
1	Member (GO&D), CEA	Member (Grid Operation & Distribution), Central Electricity Authority (CEA)	-
2	NVVN	Nodal Agency appointed by the Government of India for coordinating cross-border power transactions	NVVN and PTC are two nodal agencies in Northern Region. Since PTC is already a member in this year for trader category, it is listed at serial no. 56.
3	CTUIL	Central Transmission Utility	-
4	PGCIL	Central Government owned Transmission Company	-
5	NLDC	National Load Despatch Centre	-
6	NRLDC	Northern Regional Load Despatch Centre	-
7	NTPC	Central Generating Company	-
8	BBMB		-
9	THDC		-
10	SJVN		-
11	NHPC		-
12	NPCIL		-
13	Delhi SLDC	State Load Despatch Centre	-
14	Haryana SLDC		-
15	Rajasthan SLDC		-
16	Uttar Pradesh SLDC		-
17	Uttarakhand SLDC		-
18	Punjab SLDC		-
19	Himachal Pradesh SLDC		-
20	DTL	State Transmission Utility	-
21	HVPNL		-
22	RRVPNL		-
23	UPPTCL		-
24	PTCUL		-
25	PSTCL		-
26	HPPTCL		-
27	IPGCL	State Generating Company	-
28	HPGCL		-
29	RRVUNL		-
30	UPRVUNL		-
31	UJVNL		-
32	HPPCL		-
33	PSPCL	State Generating Company & State owned Distribution Company	-
34	DHBVN	State owned Distribution Company (alphabetical rotaional basis/nominated by state govt.)	There are only 2 STATE DISCOMs DHBVN & UHBVN. UHBVN was member for FY 24-25.
35	Ajmer Vidyut Vitran Nigam Ltd.		There are 3 state DISCOMs Ajmer, Jaipur & Jodhpur. Jodhpur Vidyut Vitran Nigam Ltd. was member for FY 24-25.
36	Purvanchal Vidyut Vitaran Nigam Ltd.		There are 4 state DISCOMs: Dakshinanchal, Madhyanchal, Paschimanchal, Purvanchal. Paschimanchal Vidyut Vitaran Nigam Ltd. was member for FY 24-25.
37	UPCL		UPCL is sole state DISCOM
38	HPSEB		HPSEB is sole state DISCOM
39	Prayagraj Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity	-
40	Aravali Power Company Pvt. Ltd		-
41	Apraava Energy Private Limited		-
42	Talwandi Sabo Power Ltd.		-
43	Nabha Power Limited		-
44	Lanco Anpara Power Ltd		-
45	Rosa Power Supply Company Ltd		-
46	Lalitpur Power Generation Company Ltd		-
47	MEJA Urja Nigam Ltd.		-
48	Adani Power Rajasthan Limited		-
49	JSW Energy Ltd. (KWHEP)		-
50	Transition Cleantech Services Private Limited	IPP having less than 1000 MW installed capacity (alphabetical rotaional basis)	
51	UT of J&K	From each of the Union Territories in the region, a representative nominated by the administration of the Union Territory concerned out of the entities engaged in generation/ transmission/ distribution of electricity in the Union Territory.	JKPCL has been considered.
52	UT of Ladakh		LPPD has been considered.
53	UT of Chandigarh		May be nominated by UT administration. SLDC/STU may be nomiated as there is no TRANSCO and DISCOM has been privatized.
54	TPDDL	Private Distribution Company in region (alphabetical rotaional basis)	NPCL was member for FY 24-25. There are 5 private DISCOMs in NR i.e. BRPL, BYPL, TPDDL, NPCL, and Chandigarh Power Distribution Limited (CPDL).
55	Gurgaon Palwal Transmission Limited	Private transmission licensee (nominated by cetral govt.)	As nominated by CEA on alphabatical rotataional basis. Fatehgarh Bhadla Transmission Limited was member in FY 24-25.
56	PTC	Electricity Trader (nominated by central govt.)	As nominated by CEA. NTPC Vidyut Vyapar Nigam Ltd. was member in FY24-25.
57	ReNew Power Private Limited	RE Generating Company having more than 1000 MW installed capacity	
58	NTPC Green Energy Limited		
59	Azure Power India Pvt. Limited		
60	Avaada Energy Private Limited		
61	Adani Green Energy Limited		

Annexure-B.III

सत्यमेव जयते

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

To,

The Executive Engineer (E)
Delhi Electrical Division-61,
3rd Floor, Pushpa Bhawan,New-Delhi
Email- eeeecd5@gmail.com

विषय: Request for cost estimate for the installation of New fire-fighting system at NRPC Sectt. along with AMC for five years- reg.

Sir/Madam,

It is to mention that the current Annual Maintenance Contract (AMC) for the fire-fighting system installed at NRPC has expired on 31.08.2023. Concerns have arisen regarding the availability of spare parts for the existing system, which were encountered during the previous AMC. Recognizing the essential role played by this system and the risks associated with outdated or obsolete equipment, the NRPC Sectt. seeks assistance in conducting a thorough assessment and providing an estimated cost for a new fire-fighting system installation along with AMC for five years.

The proposed firefighting system at NRPC Sectt. may include the following work:

1. Fire Alarm System components, including Smoke Detectors, Glass Break Call Points, Fire Alarm Control Panel, Hooters, and Batteries.
2. The Fire Hydrant System, which includes an Electric Pump with Monoblock, Hydrant Valves, Hose Boxes, Hose Reels, Fire Hydrant Nozzles, Fire Hydrant Hose Pipes, and a Fire Hydrant Control Panel.
3. The installation of proper fire exit signage at strategic locations.
4. Marking assembly areas for fire evacuation scenarios within the NRPC office.
5. Provision of essential first-aid equipment.
6. The placement of an adequate number of fire extinguisher cylinders of suitable types at strategic locations within the NRPC office premises.
7. Any other work required to ensure compliance with prevailing fire-related rules and regulations.

It is requested from Central Public Works Department (CPWD) to conduct a comprehensive survey of the NRPC office premises and provide a detailed cost estimate for the fire-fighting system. This estimate should include the installation of a new fire-fighting system at NRPC office along with AMC for five years.

Given that the existing AMC expired on 31.08.2023, it is requested that priority may kindly be accorded for providing the cost estimates for the installation of new fire-fighting system at NRPC office along with AMC for five years.

Signed by Anzum Parwej
Date: 19-10-2023 17:05:37
Reason: Approved
(अंजुम परवेज)
अधीक्षण अभियंता (सेवाएं)

18-ए,शहीदजीतसिंहमार्ग, कटवारियासराय, नईदिल्ली- 110016 फोन:011-26513265 ई-मेल:seo-nrpc@nic.in वेबसाईट: www.nrpc.gov.in
18-A, ShaheedJeet Singh Marg, Katwaria Sarai, New Delhi-110016 Phone: 011-26513265 e- mail: seo-nrpc@nic.in
Website: www.nrpc.gov.in

भारत सरकार
केन्द्रीय लोक निर्माण विभाग
दिल्ली विद्युत मंडल – 61, कमरा नं –333, तृतीय तल,
पुष्पा भवन, नई दिल्ली – 110062
फैक्स–011–29962547, दूरभाष–011–29051185
ई–मेल – deleeeecd5.cpwd@nic.in
eeeecd5@gmail.com

Govt. of India
Central Public Works Department
Delhi Electrical Division – 61,
Room No. – 333, Third Floor,
Pushpa Bhawan, New Delhi-110062.
Fax 011-29962547 Phone 011-29051185
e-mail:- **deleeeecd5.cpwd@nic.in**
Eeeecd5@gmail.com

File No. :23(3)/DB/DED-61/2023-24/ 25

दिनांक : 03/01/24

To,

S.E. (Services)
NRPC,
Katwaria Sarai, New Delhi.

Subject:- Regarding Fire Fighting & Alarm System for NRPC, New Delhi.
Ref. Letter no. File No.CEA-GO-17-12(11)/5/2023-NRPC dated 19.10.2023

After site visit regarding Fire alarm & fire fighting sytem at NRPC, New Delhi as requested vide letter referred above, the observations are as follows:-

1. As per details provided by NRPC officicals & site survey, NRPC building is B+, G+3 with less than 15mtr in height with plot area more then 1000m². As per NBC, Part 4 Fire and life safety, building should be installed with fire extinguishers, Firest Aid Hose Reel, Wet- Riser system, yard hydrants, with underground water storage tank & automatic sprinkler system.
2. It is advised to consult concerned Fire safety Officer regarding the current scenario of Fire Fighting & Fire alarm system of the building and get the required fire fighting & fire alarm system plan approved for NRPC building.

As per direction & approved plant of fire safety officer, according Preliminary Estimate will be shared.

Executive Engineer (E)
DED-61, CPWD
Pushpa Bhawan, New Delhi

Copy:-

1. AE(E)-3, DED-61, CPWD, Old JNU Campus, New Delhi for information.

Executive Engineer (E)

SE(Comm.)
08/01/24

उ.से.वि.रा. आवती
सं./No. 51
दिनांक/Date 8/1/2024

सत्यमेव जयते
भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

To,

Div. Officer (South Division)
Delhi Fire Service
Fire Station Bhikaji Cama Palace
R. K. Puram, New Delhi -110066
Email: dosd.dlfire@nic.in

विषय: Request for site survey of existing Fire Fighting & Fire alarm system to upgrade with New Fire Fighting system at NRPC Bulilding, Katwaria Sarai, New Delhi.

Sir/Madam,

Government of India, under the provision of Section 2, Subsection 55 of the Electricity Act 2003 vide resolution F.No.23/1/2004-R&R dated 25th May, 2005, amendment dated 29.11.2005 and subsequent amendment dated 09.05.2008 published in the Gazette of India has established the Northern Regional Power Committee (NRPC) comprising of the power systems and generating stations of Union Territory of Chandigarh, States of Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Rajasthan, Uttar Pradesh, Uttarakhand and Delhi. NRPC has its office at NRPC building, Katwaria Sarai, New Delhi-110016.

NRPC have sought assistance from Central Public Works Department to conduct a thorough assessment of its existing Fire Fighting & Fire alarm system and to provide estimated cost for a new fire-fighting system installation along with AMC for five years.

CPWD vide their letter no. 23(3)/DB/DED-61/2023-24/25 dated 03.01.2024 (copy attached) have advised to consult concerned Fire Safety Officer regarding the current scenario of Fire Fighting & Fire alarm system of the building and get the required firefighting & fire alarm system plan approved for NRPC building. NRPC building is B+, G+3 with less than 15mtr in height with plot area more than 1000m^2.

I/33731/2024

It is therefore requested to depute concerned officer for site survey of the existing firefighting & fire alarm system and give plan for installation of new Fire Fighting & Fire Alarm system for the NRPC building.

संलग्नक: यथोपरि|

Signed by Anzum Parwej
Date: 12-02-2024 13:52:21
Reason: Approved

(अंजुम परवेज)
अधीक्षण अभियंता (सेवाएं)

आज़ादी का अमृत महोत्सव

GOVERNMENT OF NATIONAL CAPITAL TERRITORY OF DELHI
HEADQUARTERS: DELHI FIRE SERVICE: NEW DELHI–110001

No. F.6/DFS/MS/2024/SZ/424 Dated: 11 / 03 /2024

To

Mr. Anzum Parwej (Executive Engineer)
Ministry of Power, Northern regional Power Committee,
18-A, Shaheedjeet Singh Marg,
Katwaria Sarai, New Delhi 110016

Sub: Regarding issuance of No Objection Certificate in r/o M/s NRPC Building Katwaria Sarai, New Delhi 110016.

Sir,

This has reference with your letter No CEA-GO-17-12(11)/5/2023-NRPC Dated 12/02/2024 on the subject cited above. In this connection, this is to inform you that, the inspection of the above cited premise was conducted by the officers concerned of this department on 21/02/2024 in the presence of Mr. Ravi Kant (Executive Engineer) and observed that the building in question is comprised of Basement, Ground plus three upper floor (Offices only). This being Business occupancy building and having less than of ground and four upper floors including mezzanine floor with height less than 15.00m, does not covered under Rule 27 of Delhi Fire Service Rules- 2010 under Delhi Fire Service Act 2007. Hence, FSC is not required from this department.

Further, Fire safety arrangements such as terrace pump 900 LPM & terrace tank 10,000 ltrs, Underground tank 50,000, one electrical & one Diesel pump capacity 2280 LPM and one electrical pump capacity 180 LPM, internal hydrant, automatic sprinkler system, detectors, hose reels, MOEFA and smoke management systems, as specified and recommended under the provision contained, in the National Building Code of India Part IV /NBC 2005, found installed at the time of inspection.

'A' The management is hereby advised to maintain the installed fire fighting arrangements in the building in a good working condition at all the time as seen during inspection.

Yours faithfully,

(ATUL GARG)
DIRECTOR
DELHI FIRE SERVICE

Action on 'A'

SE (Services)

18/3/24

AEE(S)

19/3/24

उ.क्षे.वि.स. डायरी
सं./No. 333
दिनांक/Date 18/3/2024
NRPC Diary

सत्यमेव जयते

भारत **सरकार**

Government of India

विद्युत मंत्रालय

Ministry of Power

उत्तर क्षेत्रीय विद्युत समिति

Northern Regional Power Committee

To,
The Executive Engineer (E)
Delhi Electrical Division-61,
CPWD, New-Delhi
Email: eeeded61@gmail.com , aee5ed13jnucpwd@gmail.com

विषय: Request for cost estimate for the AMC for five years for the maintenance of existing Fire-Fighting system, Fire-Alarm system for NRPC Office & Fire extinguishers for NRPC office premises and residential quarters.

महोदय,

Reference is invited to NRPC letter I/31090/2023 dated 19.10.2023 (Attached) to CPWD regarding preliminary cost estimate for the installation of new fire-fighting system at NRPC Office along with AMC for five years.

2. In response to this, CPWD vide its letter dated 03.01.2024(Attached) had advised to consult Fire Safety Officer regarding the current scenario of Fire-Fighting & Fire alarm system of the building.

3. NRPC vide its letter I/33731/2024 dated 12.02.2024 (Attached) had requested Div. Officer (South Division), Delhi Fire services for site survey of existing Firefighting system and Fire alarm system to upgrade with new Firefighting system.

4. Officers from Delhi Fire Services inspected the premises on 21.02.2024 and submitted its inspection report vide its letter dated 11.03.2024 (copy Attached). In their inspection report, Delhi Fire Services observed as under;

"Fire safety arrangements such as terrace pumps 900 LPM & terrace tank 10,000 ltrs, Underground Tank 50,000 ltrs, one electrical & one Diesel pump capacity 2280 LPM and one electrical pump capacity 180 LPM, internal hydrant, automatic sprinkler system, detectors, hose reels, MOEFA and smoke management systems, as specified and recommended under the provision contained in the National Building Code of India Part-IV/NBC 2005 found installed at the time of inspection".

Further Delhi Fire Service Deptt. advised NRPC to maintain the above installed firefighting arrangements in the building in good working condition at all the time.

In this regard, it is clarified that the above firefighting system installed in NRPC Building was found in working condition at the time of inspection by Delhi Fire Deptt and presently remains in the same condition. However, to maintain the above system in good working condition at all time, renovation and modernization of existing Fire-Fighting system, Fire-Alarm system for NRPC Office & Fire extinguishers for NRPC office premises and residential quarters may be provisioned based on actual requirements.

It is, therefore, requested from CPWD to provide to this office, a detailed cost estimate for the AMC for 5(Five) years towards maintenance of above firefighting system installed in NRPC Office Building in good working condition. During the AMC period, necessary requirement of manpower/fire operator for day-to-day maintenance shall be in the scope of the CPWD/Contractor.

Further, familiarization/demonstration for operation of firefighting system to NRPC staffs shall also be required twice in a year at the interval of six months during the AMC period.

Signed by Anzum Parwej
Date: 13-11-2024 12:46:19

संलग्नक:यथोपरि

(अंजुम परवेज)
अधीक्षण अभियंता (सेवाएं)

18-ए,शहीदजीतसिंहमार्ग, कटवारियासराय, नईदिल्ली- 110016 ई-मेल:seo-nrpc@nic.in वेबसाईट: www.nrpc.gov.in
18-A, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110016 e- mail: anzum.parwej@nic.in Website: www.nrpc.gov.in

भारत सरकार
केन्द्रीय लोक निर्माण विभाग
दिल्ली विद्युत मंडल – 61, कमरा नं –333, तृतीय तल,
पुष्पा भवन, नई दिल्ली – 110062
फैक्स–011–29962547, दूरभाष–011–29051185
ई–मेल –deleeeecd5.cpwd@nic.in
eeeded61@gmail.com

Govt. of India
Central Public Works Department
Delhi Electrical Division – 61,
Room No. – 333, Third Floor,
Pushpa Bhawan, New Delhi-110062.
Fax 011-29962547 Phone 011-29051185
e-mail:- deleeeecd5.cpwd@nic.in
Eeeded61@gmail.com

पत्र सं0:23(5)/दि0वै0मं0–61/2024–25/ 2486 दिनांक : 28/11/24

सेवा में,

Superintending Engineer (Services)
N.R.P.C., 18A, Shaheed Jeet Singh Marg,
Katwaria Sarai, New Delhi-110016

उ.क्षे.वि.स. जयपुरी
सं./No. 1156
दिनांक/Date 02/12/2024
NRPC Diary

विषयः कार्य का नाम–Replacement of fire alarm system & renovation and upgradation of existing fire fighting system at NRPC, New Delhi.

महोदय,

उपरोक्त कार्य का प्रारम्भिक प्राक्कलन केवल **52,71,420/-** रूपये का बनाकर आपके कार्यालय में प्रशासनिक अनुमोदन एवं व्यय स्वीकृति हेतु भेजा जाता है। कार्य की आवश्यकता प्राक्कलन के इतिहास में दर्शायी गई है।

अतः आपसे अनुरोध है, कि इस अनुमान को प्रशासनिक अनुमोदन एवं व्यय स्वीकृति जल्द से जल्द प्रदान करें ताकि कार्यस्थल पर कार्य समय पर करवाया जा सके।

संलग्नः- प्राक्कलन।

कार्यपालक अभियंता (वै0)
दि0वै0मं0–61, के0लो0नि0वि0,
पुष्पा भवन, नई दिल्ली।

प्रतिलिपिः-

1. सहायक अभियंता (वै0)-III, दि0वि0मं0–61, के0लो0नि0वि0, नई दिल्ली।

कार्यपालक अभियंता (वै0)

Pl discuss
4/12/24
SE (Services)

DelhiElectDivn61/ED-13/507

CENTRALPUBLICWORKSDEPARTMENT

PRELIMINARYESTIMATE

State: New Delhi
Branch: E&M

Division:DED-61
Sub-Division: III

Name of Work:- Replacement of fire alarm system & renovation and upgradation of existing fire fighting system at NRPC, New Delhi.

This Preliminary Estimate has been framed by Er. Narendra Kumar Khoker, EE (E), DED-61, CPWD, New Delhi for Rs 52,71,420/- including contingencies.

REPORT

History:- This Preliminary Estimate amounting to Rs. 52,71,420/- (Rs. Fifty Two Lakh Seventy One Thousand Four Hundred Twenty Only) i/c 5% contingencies has been framed to cover the probable cost for above noted work. The necessity of work has been desired by client vide letter no. CEA-GO-17-12(11)/5/2023-NRPC I/31090/2023 dated19.10.2023 & subsequent letter no. CEA-GO-17-12(11)/5/2023-NRPC I/44391/2024 dated 13.11.2024. Accordingly, the preliminary estimate is prepared for obtaining A/A & E/S from the competent authority of client Department.

Design & Scope:-

1. Provision for replacement of fire alarm system.
2. Provision for PA system.
3. Provision for upgradation of fire fighting system.
4. Provision for Comprehensive maintenance of fire alarm, fire fighting & PA system for 5 years.

Rate:- DSR 2022 & Market rate items

Method:-Through contract by call of tenders.

Cost:- Rs. 52,71,420/- i/c 5% Contingencies.

Time: - 2 Months

Assistant Engineer(E)
Subdivn.-III,DED-61,CPWD
Old JNU Campus, New Delhi

Executive Engineer
DED-61,CPWD
Pushpa Bhawan, New Delhi

Preliminary Estiamte

Name of work: Replacement of fire alarm system & renovation and upgradation of existing fire fighting system at NRPC, New Delhi.

S.No	Item Code/ MR	Description of items	Qty	Unit	Rate	GST @3.466% on DSR Item	Amount
		SH-I: Fire Alarm, Fire Fighting & PA System					
1		Supplying, installation, testing and commissioning of micro processor based intelligent addressable main fire alarm panel, central processing unit with the following loop modules and capable of supporting not less than 240 devices (including detectors) and minimum 120 detectors per loop and loop length up to 2 km, network communication card, minimum 320 character graphics/ LCD display with touch screen or other keypad and minimum 4000 events history log in the non volatile memory (EPROM), power supply unit (230 ± 5% V, 50 hz), 48 hrs back-up with 24 volt sealed maintenance free batteries with automatic charger. The panel shall have facility to connect printer to printout log and facility to have seamless integration with analog/digital voice evacuation system (which is part of the schedule of work under SH: PA System) and shall be complete with all accessories . The panel shall be compatible for IBMS system with open protocol BACnet/ Modbus over IP complete as per specifications.					
1.2	17.2.1.2	Two Loop Panel.	1	Each	239225	247517	247517.00
2	17.2.3	Supplying, installation, testing & commissioning of repeater panel wih 320 character/ Touch screen LCD display with inbuilt reset, acknowledge and silence switches complete as required.	1	Each	108688	112455	112455.00
3	17.2.4	Supplying, installation, testing & commissioning of intelligent analog addressable photothermal detector complete with mounting base complete as required.	250	Each	2858	2957	739250.00
4	17.2.14	Supplying, installation, testing & commissioning of addressable manual call point complete as required.	18	Each	3871	4005	72090.00
5	17.2.15	Supplying, installation, testing & commissioning of addressable horn cum strobe complete as required.	18	Each	3506	3628	65304.00
6	17.3.1	Supplying, installation, testing & commissioning of 6 zone, voice alarm controller with USB, MP3 player (including 6 zone button paging station) with seamless integration facility with main fire alarm panel for voice evacuation complete as required.	1	Each	126411	130792	130792.00
7	17.3.2	Supplying, installation, testing & commissioning of 1.5/3/6W ceiling speaker complete as required.	25	Each	965	998	24950.00
8	17.2.5	Supplying, installation, testing & commissioning of response indicator on surface/recessed MS Box having two LED, metallic cover complete with all connections etc as required.	70	Each	276	286	20020.00
9	17.3.6	Supplying, installation, testing & commissioning of digital audio amplifier 50 Watt, 25V rms operating at 240 volt AC supply complete as required.	1	Each	96779.00	100133	100133.00
10	17.5.2	Supplying & laying of 2x1.5 sqmm fire alarm armoured cable, 600/1000V rated with annealed copper conductor having XLPE insulation, steel wire armouring & FRLS outer sheath complete as required.	2400	Meter	173	179	429600.00
11	17.2.10	Supplying, installation, testing & commissioning of addressable fire control module complete as required.	12	Each	3003	3107	37284.00
12	18.7	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required:	48	Meter	2555	2644	126912.00
12.1	18.7.7	100 mm dia					

S.No	Item Code/ MR	Description of items	Qty	Unit	Rate	GST @3.466% on DSR Item	Amount
13	18.9	Supplying and fixing single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required :					
13.1	18.9.2	Single headed Stainless steel	6	Each	6139	6352	38112.00
14	18.11	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :					
14.1	18.11.5	100 mm dia	3	Each	6667	6898	20694.00
15	18.12	Supplying, fixing, testing & commissioning of double flanged sluice valve of rating PN 1.6 with non rising spindle, bronze/gun metal seat, ISI marked complete with nuts, bolts, washers, gaskets and conforming to IS 780 of following sizes as required:					
15.1	18.12.5	100 mm dia	6	Each	14641	15148	90888.00
16	18.14	Providing, installation, testing and commissioning of non-return valve of following sizes confirming to IS: 5312 complete with rubber gasket, GI bolts, nuts, washers etc.as required:					
16.1	18.14.5	100 mm dia	5	Each	11050	11433	57165.00
17	18.16	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required:					
17.1	18.16.2	Stainless Steel (Grade 304)	14	Each	4448	4602	64428.00
18	18.18	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required:					
18.1	18.18.2	Stainless Steel (Grade 304)	7	Each	1662	1720	12040.00
19	18.19	Supplying and fixing of fire brigade connection of cast iron body with gun metal male instantaneous inlet couplings complete with cap and chain as reqd. for suitable dia MS pipe connection conforming to IS 904 as required:					
19.1	18.19.1	2 way-100 mm dia M.S. Pipe	1	Each	6742	6976	6976.00
20	18.20	Supplying and fixing air vessel made of 250 mm dia, 8 mm thick MS sheet, 1200 mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25 mm dia gun metal wheel valve with required accessories, pressure gauge and painting with synthetic enamel paint of approved shade as required.	1	Each	18244	18876	18876.00
21	16.8	Providing and fixing in position the industrial type pressure gauge complete as required	1	Each	1196	1237	1237.00
22	18.22	Providing & fixing of pressure switch in M.S. pipe line including connection etc. as required.	2	Each	1546	1600	3200.00
23		Providing and fixing glazing in fire hydrant and etc. with EPDM rubber / neoprene gasket etc. complete as per the architectural drawings and the directions of engineer-in-charge .					
23.1	Civil DSR 21.3	With float glass panes of 4.0 mm thickness (weight not less than 10 kg/ sqm)	10	Sqmtr	1176.8	1251.29	12512.90
24	MR	Providing Weather proof Hose box (Double Door) (900mm x 600mm x 500mm) 16 gauge MS Sheet suitable for 2 no. 15mtr. Hose and 1 no short branch pipe and 1 no hydrant. Complete in all respect including necessary locking arrangements and painting in red colour outside and white colour inside.	3	Each	15655.00	-	46965.00

S.No	Item Code/ MR	Description of items	Qty	Unit	Rate	GST @3.466% on DSR Item	Amount
25	18.4	(A) Supplying, installation, testing and commissioning of electric driven terrace pump suitable for automatic operation and consisting of following, complete in all respects, as required: (Terrace Pump) (B) Horizontal type, multistage, centrifugal, split casing pump of cast iron body & bronze impeller with stainless steel shaft, mechanical confirming to IS: 1520 (C) Suitable HP squirell cage induction motor TEFC type suitable for operation on 415 volts, 3 phase, 50 Hz, AC supply with IP55 class of protection for enclosure, horizontal foot mounted type with Class-'F' insulation, conforming to IS-325. (D) M.S. fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required. (E) Suitable cement concrete foundation duly plastered and with anti vibration pads.					
25.1	18.4.2	450 lpm at 35 m Head	2	Each	86203	89190.8	178381.60
26		Providing Services for annual periodical servicing, up keep and routine maintenance & operation of automatic Fire Alarm System, PA system, comprising of main fire alarm panel, power supply, Repeater panels & circuity equipments, electric fire panel, terrace pump, valves, hydrants, RRL hose pipe, Hose Reel i/c other fire fighting accessories etc including repairing, replacement, fault finding and rectifying of faults at NRPC, New Delhi etc. complete as required in accordance with terms and conditon attached. (i) Operator cum technician (E&M) - 1 Nos. (in General shift) all days in a month i/c sunday and holidays	12	Months	39512.00		474144.00
27	13.62	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :					
27.1	Civil DSR 13.62.1	Two or more coats	100	Sqmtr.	226.25	234	23400.00
28	Civil DSR 13.91	Removing dry or oil bound distemper, water proofing cement paint and the like by scrapping, sand papering and preparing the surface smooth including necessary repairs to scratches etc. complete.	100	Sqmtr.	25.15	26	2600.00
29	MR	Supplying and laying and fixing of 4 core X 6 Sqmm. Shielded armoured copper cable on wall surface etc. complete as required.	50	Mtr.	801	-	40050.00
30	MR	Supplying, Installation, testing & Commissioning of CO2 type fire extinguisher ISI marked confirming to IS:15683 Capacity 4.5 Kg complete with delivery hose horn,squeeze grip/wheel type release valve,locking arrangement,pressure gauge,operation manual and bracket ,operating temperature - 30C to 55C with wall mounting bracket on surface/ wall with dash fasteners etc. complete as reqd.	40	Each	11029.00	-	441160.00
31	MR	Supplying, Installation, testing & Commissioning of Powder Fire Extinguisher (Stored Pressure type) Capacity 6 kg duly ISI marked confirming to IS:15683:2006 with IS 14609 ,ISI marked ABC powder complete with squeeze grip release valve ,discharge pipe,locking arrangement, pressure gauge, operation manual and bracket ,operating temperature - 10C to 55C with wall mounting bracket on surface wall with dash fasteners etc. complete as reqd.	40	Each	3962.00	-	158480.00
		Total					**3797616.50**
32		Comprehensive maintenance of fire fighting & fire alarm system complete with all accessories which include routine preventive & break down maintenance i/c repair/replacement of worn out items with minimum down time and warranty & guarantee of repaired/replaced items after completion of one year guarantee period/ defect liability period as below.					
32.1	Defect Liability	Ist year	12	Month	0	Per Month	0.00

S.No	Item Code/ MR	Description of items	Qty	Unit	Rate	GST @3.466% on DSR Item	Amount
32.2	MR	IInd year	12	Month	15823	Per Month	189876.00
32.3	MR	III rd year	12	Month	16614	Per Month	199368.00
32.4	MR	IVth year	12	Month	17445	Per Month	209340.00
32.5	MR	Vth year	12	Month	18317	Per Month	219804.00
		Total of SH-I					**4616004.50**
		SH-II: Water Pump House					
33	MR	Supplying installation, testing and commissioning of 7.5 HP 3000 RPM monoblock pump set give a discharge of 1080 LPM to 825 LPM at a head of 21 Mtr to 27 Mtr with mechanical seal, CI impeller, SS Saft, suction size 80 mm and delivery size 65 mm including DOL Starter Panel, suitable for operation on 3 Phase 415 volts 50 Hz AC supply, on the existing foundation, complete with connecting of existing suction and delivery lines, i/c providing and fixing rubber gaskets, nut bolts, washers i/c Credit Buyback complete etc. as reqd.	2.00	Job	59434.00	-	118868.00
34	18.8	Providing, laying, testing & commissioning of 'B' class medium duty G.I. pipe conforming to IS 1239 including welding, fittings like elbows, tees, flanges, tapers, nuts, bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :					
34.1	18.8.5	65 mm	12	Meter	1159.00	1199	14388.00
34.2	18.8.6	80 mm	6	Meter	1335.00	1381	8286.00
35	18.11	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :					
35.1	18.11.3	65 mm dia	2	No.	4302.00	4451	8902.00
35.2	18.11.4	80 mm dia	1	No.	4982.00	5155	5155.00
36	18.14	Providing, installation, testing and commissioning of non-return valve of following sizes confirming to IS: 5312 complete with rubber gasket, GI bolts, nuts, washers etc.as required:					
36.1	18.14.3	65 mm dia	2	Set	6418.00	6640	13280.00
37		Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed steel conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.					
37.1	1.3.3	Group C	2	Point	1845.00	1909	3818.00
38		Rewiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable and 1.5 sq.mm FRLS PVC insulated copper conductor single core cable as earth wire in existing surface/ recessed steel/PVC conduit including dismantling as required.					
38.1	1.15.3	Group C	5	Point	894.00	925	4625.00
39	MR	Supplying installation, testing, commissioning of 300 mm 900/1400 RPM heavy duty exhaust fan complete with louvers of suitable size suitable for single phase 230 V 50 Hz supply i/c making the hole to suit the size of the fan, making good the damage, connection, etc. as reqd.	1	No.	4477	-	4477.00

S.No	Item Code/ MR	Description of items	Qty	Unit	Rate	GST @3.466% on DSR Item	Amount
40	19.1	Supply, Installation, Testing and Commissioning of 1200 mm sweep, BEE 5 star rated, ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, Power Factor not less than 0.9, Service Value (CMM/W) minimum 6.85, Air delivery minimum 215 CMM, 350 RPM (tolerance as per IS: 374-2019), THD less than 10%, remote or electronic regulator unit for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise-75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Supply, earthing etc. complete as required.	1	No.	2730.00	2825	2825.00
41	MR	Supplying, installation, testing & Commissioning of surface mounted 4 feet long LED batten, IP20 fitting, having CCT range 5700K-6500K with Extruded aluminium housing having system efficacy> 110 lm/W (not LED Chip efficacy), CRI≥80, Mimimum System Ouput ≥ 2200 Lumens, useful life of 50,000 hrs at L70 (L70B50 not acceptable) & driver having PF ≥ 0.9 & THD<10% and Surge Protection of 2 KV including connections with 3X1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and earthing on existing wall/ceiling etc complete as reqd. The LED fitting must have the embossed/engraved logo the approved make (fittings with stickers shall not be approved). BIS Certificate issued to the approved make along with LM79 report from NABL lab must be shared at the time of supply.	4	No.	1074.00	-	4296.00
42	MR	Buyback of the following dismantled material (As is where is basis) & clearing the site etc as required. Detectors-200 Nos. (as assorted) MCP/Hooter- 8Nos.(approx.) Sluice/NRV/4Ways- 10 Nos. (approx.) Wire/Cables (Al/Copper) - 20Kg (Approx.)	1	Lot	-10000	-	-10000.00
		Total of SH-II					178920.00
		Total of SH (I+II)					4794924.50
		ESI/EPF @ 3.9375 % =					188800.15
		Add Contingencies @ 5% =					239746.23
		Add Labour cess @ 1% =					47949.25
		G. Total					**5271420.12**
		Say Rs.					**5271420.00**

JE (E)

Assistant Engineer (E)
SD-3/DED-61, CPWD
Old JNU Campus, New Delhi

AE (E) P

Executive Engineer (E)
DED-61, CPWD
Pushpa Bhawan, New Delhi

अनुबंध|Contract

अनुबंध क्रमांक|Contract No: GEMC-511687770071538
अनुबंध तिथि|Contract Generated Date : 11-Mar-2024
बोली/आरए/पीबीपी संख्या|Bid/RA/PBP No.: GEM/2024/B/4558947

संगठन विवरण|Organisation Details

प्ररूप|Type :	Central Government
मंत्रालय|Ministry :	Ministry of Power
विभाग|Department :	NA
संगठन का नाम|Organisation Name :	Northern Regional Power Committee Ministry of Power
कार्यालय क्षेत्र|Office Zone:	North

खरीदार विवरण|Buyer Details

पद|Designation :	JSA
संपर्क नंबर|Contact No. :	011-26868681-213
ईमेल आईडी|Email ID :	sunny.mann@nic.in
जीएसटीआईएन|GSTIN :	N
पता|Address :	18-A, Shaheed Jeet Singh Marg, P O Hauz Khas, Opp Katwaria Sarai, New Delhi, SOUTH DELHI, DELHI-110016, India

वित्तीय स्वीकृति विवरण|Financial Approval Detail

आईएफडी सहमति|IFD Concurrence :	Yes
प्रशासनिक अनुमोदन का पदनाम| Designation of Administrative Approval:	Member Secretary
वित्तीय अनुमोदन का पदनाम| Designation of Financial Approval :	Member Secretary

भुगतान प्राधिकरण विवरण|Paying Authority Details

Role:	BUYER
भुगतान का तरीका| Payment Mode:	Offline
पद|Designation :	JSA
ईमेल आईडी|Email ID :	sunny.mann@nic.in
जीएसटीआईएन|GSTIN :	N
पता|Address:	18-A, Shaheed Jeet Singh Marg, P O Hauz Khas, Opp Katwaria Sarai, New Delhi, SOUTH WEST DELHI, DELHI-110016, India

परेषिती विवरण|Consignee Details

क्र.सं.|S.No	परेषिती नाम & पता|Consignee Name & Address	सेवा विवरण|Service Description
1	संपर्क|Contact : 011-26868681-108 ईमेल आईडी|Email ID : narender.rathee95@gov.in जीएसटीआईएन|GSTIN : - पता|Address : 18-A, Shaheed Jeet Singh Marg, P O Hauz Khas, Opp Katwaria Sarai, New Delhi, SOUTH DELHI, DELHI-110016, India	Manpower Outsourcing Services - Fixed Remuneration - Finance/Accounts; Accounting Operator or Accounts Assistants or Accounts Executive; Graduate
		Manpower Outsourcing Services - Fixed Remuneration - Admin; Personnel Assistant; Graduate

सेवा प्रदाता विवरण|Service Provider Details

जेम विक्रेता आईडी|GeM Seller ID :	2B0F200001505778
कंपनी का नाम|Company Name :	SPACEX MANPOWER SERVICES PRIVATE LIMITED
संपर्क नंबर|Contact No. :	09643710741
ईमेल आईडी|Email ID :	spacexmanpower@gmail.com
पता| Address :	PLOT NO-A-41,F/F,,PHASE-3, SECTOR-3,J J COLONY,DWARKA, South West delhi, DELHI-110078, -
एमएसएमई सत्यापित|MSME verified :	Yes
एमएसएमई पंजीकरण संख्या|MSME Registration number :	UDYAM-DL-10-0002510
एमएसई सामाजिक श्रेणी|MSE Social Category :	General
एमएसई लिंग श्रेणी|MSE Gender :	Male
जीएसटीआईएन|GSTIN:	07ABECS3805M1Z4

*जिसके नाम के पक्ष में GST/TAX इनवॉइस पेश किया जाएगा|GST / Tax invoice to be raised in the name of - Consignee

सेवा विवरण|Service Details

सेवा प्रारंभ दिनांक (नवीनतम) |Service Start Date (latest by): 14-Mar-2024 **सेवा समाप्ति तिथि|Service End Date :** 13-Mar-2025

श्रेणी नाम|Category Name : Manpower Outsourcing Services - Fixed Remuneration

बिलिंग चक्र|Billing Cycle: monthly

विवरण|Description		Number of Resources to be hired	Percentage of Service charge
Type of Function	Finance/Accounts		
List of Profiles	Accounting Operator or Accounts Assistants or Accounts Executive		
Educational Qualification	Graduate		
Specialization	Commerce, Economics, Arts, Science, Law		
Post Graduation	Not Required, Required, Optional		
Specialization for PG	Not Applicable		
Experience	3 to 7 Years		
District	NA		
Zipcode	NA		

Basic monthly pay (INR) exclusive of GST	42486		
Bonus (INR Monthly)	0	1	3.85
EDLI (INR Monthly)	0		
EPF Admin Charges (INR Monthly)	0		
Estimated Number of Overtime Hours per Resource per Month	0		
Remuneration per resource per hour for Overtime Hours (Including all applicable allowance etc & excluding GST)	0		
Optional Allowances 1 (INR Monthly)	0		
Optional Allowances 2 (INR Monthly)	0		
Optional Allowances 3 (INR Monthly)	0		
Provident Fund (INR Monthly)	0		
ESI (INR Monthly)	0		
Tenure/ Duration of Employment (In Months)	12		

कुल राशि (सूत्र) |Total Amount (Formula) :

(((Basic monthly pay (INR) exclusive of GST+ESI (INR Monthly)+Provident Fund (INR Monthly)+EDLI (INR Monthly)+Bonus (INR Monthly)+EPF Admin Charges (INR Monthly) +Optional Allowances 1 (INR Monthly)+Optional Allowances 2 (INR Monthly)+Optiona l Allowances 3 (INR Monthly)+Estimated Number of Overtime Hours per Resource per Month*Remuneration per resource per hour for Overtime Hours (Including all applicable allowance etc & excluding GST))*(1.18+Percentage of Service charge/100))*Tenure/ Duration of Employment (In Months)*Number of Resources to be hired)

ऐडऑन के बिना कुल मूल्य |Total Value without Addons(INR)	621230.29
कुल एडऑन मूल्य |Total Addon Value(INR)	0
ऐडऑन सहित कुल मूल्य |Total Value Including Addons(INR)	621230.29

अतिरिक्त जानकारिया|Additional Details

- Title for Optional Allowance 1 : 0
- Title for Optional Allowance 2 : 0
- Title for Optional Allowance 3 : 0
- Designation : Jr. Administrator (Accounts)

श्रेणी नाम|Category Name : Manpower Outsourcing Services - Fixed Remuneration

बिलिंग चक्र|Billing Cycle: monthly

विवरण|Description		**Number of Resources to be hired**	**Percentage of Service charge**
Type of Function	Admin		
List of Profiles	Personnel Assistant		
Educational Qualification	Graduate		
Specialization	Commerce, Economics, Arts, Science, Law		
Post Graduation	Not Required		
Specialization for PG	Not Applicable		
Experience	3 to 7 Years		
District	NA		
Zipcode	NA		
Basic monthly pay (INR) exclusive of GST	35000		
Bonus (INR Monthly)	0	1	3.85
EDLI (INR Monthly)	0		
EPF Admin Charges (INR Monthly)	0		
Estimated Number of Overtime Hours per Resource per Month	0		
Remuneration per resource per hour for Overtime Hours (Including all applicable allowance etc & excluding GST)	0		
Optional Allowances 1 (INR Monthly)	0		
Optional Allowances 2 (INR Monthly)	0		
Optional Allowances 3 (INR Monthly)	0		
Provident Fund (INR Monthly)	0		
ESI (INR Monthly)	0		
Tenure/ Duration of Employment (In Months)	12		

कुल राशि (सूत्र) |Total Amount (Formula) :

(((Basic monthly pay (INR) exclusive of GST+ESI (INR Monthly)+Provident Fund (INR Monthly)+EDLI (INR Monthly)+Bonus (INR Monthly)+EPF Admin Charges (INR Monthly) +Optional Allowances 1 (INR Monthly)+Optional Allowances 2 (INR Monthly)+Optiona l Allowances 3 (INR Monthly)+Estimated Number of Overtime Hours per Resource per Month*Remuneration per resource per hour for Overtime Hours (Including all applicable allowance etc & excluding GST))*(1.18+Percentage of Service charge/100))*Tenure/ Duration of Employment (In Months)*Number of Resources to be hired)

ऐडऑन के बिना कुल मूल्य |Total Value without Addons(INR)	511770
कुल एडऑन मूल्य |Total Addon Value(INR)	0

ऐडऑन सहित कुल मूल्य |Total Value Including Addons(INR)	511770

अतिरिक्त जानकारियां|Additional Details

- Title for Optional Allowance 1 : 0
- Title for Optional Allowance 2 : 0
- Title for Optional Allowance 3 : 0
- Designation : Jr. Administrator (Private Secretary)

अनुबंध की राशि|Amount of Contract

सभी शुल्क और करों सहित कुल अनुबंध मूल्य|Total Contract Value Including All Duties and Taxes(INR)	1133000.29

मूल्य विभाजन की पेशकश की|Price Break up offered : प्राइज़ ब्रेक अप ऑफ़र किए गए दस्तावेज़ लिंक|Price Break up offered Document link

एसएलए विवरण|SLA Details

Service Level Agreement

Manpower Outsourcing Services – Fixed Remuneration Based

1 Agreement Overview

This is a Service Level Agreement ("SLA" or "Agreement") between the Buyer and Manpower HiringAgency/Service Provider. The purpose of this Agreement is to facilitate implementation of Manpower Hiring Service at the Buyer's premises, or any other premises approved by the Buyer. This Agreement outlines the scope of work, Buyer's obligations, special terms and conditions related to service delivery and payment of services. The Agreement remains valid till completion of scope of services or end of contractual duration (whichever is earlier) unless mutually extended by both the parties.

The Services contracts placed through GeM shall be governed by following set of Terms and Conditions:

I. General terms and conditions for Services;("GTC")
II. Service Specific Standard Terms and Conditions ("STC") of the Services contracts shall include the service level agreement (SLA) for the service.
III. BID/ Reverse Auction specific Additional Terms & Conditions (ATC) as specified by the buyer.

The above terms and conditions are in reverse order of precedence i.e. ATC shall supersede Service specific STC which shall supersede GTC, whenever there are any conflicting provisions. The above set of terms and conditions along with the scope of work and SLA as enumerated in this document shall be construed to be part of the Contract/Agreement between the Buyer and Service Provider.

2 Objectives and Goals

The objective of this Agreement is to ensure that all the commitments and obligations are in place to ensure consistent delivery of services to Buyer by Service Provider. The goals of this agreement are to:
I. Provide clear reference to service ownership, accountability, roles and responsibilities of both parties
II. Present a clear, concise, and measurable description of services offered to the Buyer
III. Establish terms and conditions for all the involved stakeholders, it also includes the actions to be taken in case of failure to comply with conditions specified
IV. To ensure that both the parties understand the consequences in case of termination of services due to any of the stated reasons
ThisAgreement will act as a reference document that both the parties have understood the above-mentioned terms and conditions and have agreed to comply by the same.

3 Parties to the Agreement

The main stakeholders associated with this agreement are below-

1. **Buyer**: Buyer is responsible to provide clear instructions, approvals and timely payments for the services availed
2. **ServiceProvider**: Service provider is responsible to provide all the required services in timely manner. Service provider may also include seller, any authorized agents, permitted assignees, successors and nominees as described in the agreement
   The responsibilities and obligations of the stakeholders have been outlined in this document. The document also encompasses service level/ deductions in case of non-adherence to the defined terms and conditions.

4 Terms & Conditions

4.1 Buyer's Obligations:

i. The Buyer shall provide workspace (seating area, work desk, furniture etc.) for the manpower hired through Service Provider, the Buyer shall also arrange necessary gate/ entry pass to Buyer's premise/ designated premise for the manpower.
ii. Working shifts (includes day and night shift) if any, and daily working hours shall be mutually agreed upon between Buyer and Service Provider and should follow all the labor laws.
iii. The Buyer shall directly or in consultation with the Service Provider provide the necessary training to the manpower for Buyer specific tools, applications, and machinery etc., if required.'
iv. The Buyer shall provide, free of charge unimpeded access to all the infrastructure which is required to perform the Services. It may include use of stationery, printer, electricity, internet, Buyer specific servers, data drives, tools, and software etc. However, use of such infrastructure shall be limited for official purpose only.
v. The Buyer shall make necessary arrangements for use of basic facilities like water pots/ machines, cafeteria, washrooms etc. for manpower working at Buyer's premise/ designated premise.
vi. TA/ DA shall be payable directly by the Buyer, in case of travel included in the scope of work, on production of travel documents in original and approval of appropriate authority of the Buyer for undertaking such travel for the project/assignment.
vii. In case of services hired on annual basis and 5 working days, the manpower will be entitled to 08 days of casual leaves per year on pro-rata basis and in case of 6 working days, the manpower will be entitled to 15 days casual leave per year on pro-rata basis. Beyond specified leaves as applicable, leave will be treated as leave without pay (LWP) for which necessary deduction will be made by the Buyer in the amount billed by the Service Provider, if no replacement of manpower is provided.
viii. The Buyer shall have the right, within reason, to have any personnel removed who is undesirable with proper reasoning& justification.
ix. The Buyer will have option to replace the proposed manpower in case of non-performance, non-delivery or in any other exceptional case, however replacement of the manpower will be in same category with same degree of skills, educational qualification, and number of years of experience, also prior approval for the same to be provided by the Buyer.
x. In case if the Buyer has selected the option in the bid for retention of existing resource/resources of previous service provider, then service provider shall retain those resources. In such cases, the Buyer shall be responsible for ensuring the qualification eligibility of those resources as per the contract requirement. Any extra costs

incurred by Service provider for onboarding those resources on their payroll shall be borne by Service Provider. Service Provider shall include any such costs in the service charges quoted by them during the bid participation.

4.2 Service Provider's Obligations:

i. The service provider/contractor shall be responsible for paying wages to contract labour at rates not less than the minimum wages as notified by the Appropriate Government.
ii. The Service Provider would be required to provide sufficient and qualified manpower, capable of supporting the functioning of the project/department in a manner desired by the Buyer. Any mismatch in demand and supply of the manpower such as number of employees, educational qualification, sectoral/ desired work experience etc. may lead to deductions and/or replacement of the resource with the matching skillset based on the approval from buyer.
iii. The service provider/contractor shall be responsible for paying bonus to contract labour in the manner prescribed by the Payment of Bonus Act, 1965 & shall get reimbursed from the buyer.
iv. The service provider/contractor shall be responsible for paying proportionate gratuity to contract labour who have rendered continuous service as per the provisions of the Payment of Gratuity Act, 1972
v. Service Provider shall adhere to the timeline given by Buyer for providing the required manpower on Buyer's premise/ designated premise.
vi. The Service Provider shall not assign its rights or obligations under this Contract, in whole or in part, nor enter any subcontract to perform any portion of this Contract, without the written consent of the Buyer. The Service Provider shall be responsible and liable to deliver the services as per the contract.
vii. The Service Provider shall be required to keep the Buyer updated about the change of address, change of the Management etc. from time to time.
viii. The Service Provider shall provide the documentary proof for the qualifications and experience of the manpower deployed by them. The biodata/ resume, qualification and experience of the said manpower should be verified/certified by the Service Provider. In case any of such document is found to be false at any stage, it would be deemed to be a breach of terms of contract making the Service Provider liable for legal action.
ix. The Service Provider shall be responsible for police verification, character, and antecedents' verification of the manpower. The same may be verified by the Buyer at the time of joining of the manpower, if he/she so desires.
x. The manpower provided by the Service Provider shall not be deemed employees of the Buyer department hence the compliance of the applicable acts/ laws will be the sole responsibility of the Service Provider.
xi. The Service Provider shall furnish the following documents in respect of the manpower deployed by them to Buyer's premise/ designated premise in the given time limit:
    i. List of persons deployed (monthly)
    ii. Biodata/ resume with antecedents' details (at the time of deployment)
    iii. Copy of Aadhaar Card of the candidates (at the time of deployment)
    iv. Identity Cards issued by Service Provider bearing photograph (within 8 days of joining)
    v. Identity proof and residential proof (at the time of deployment)
    vi. Copy of police verification certificate (at the time of deployment)
    vii. Copy of birth certificate, if required (at the time of deployment - for domicile purpose)
    viii. Details of PF Account Number of resources
xii. The Service Provider shall nominate a coordinator/ Single Point of Contact (SPOC) who shall be responsible for regular interaction with the Buyer Department so that optimal services of the persons deployed could be availed without any disruption.
xiii. The attendance of the manpower shall be entered in the register provided by the Service Provider and/or in the Aadhaar based Biometric attendance system at the Buyer's premises.
xiv. All selected manpower shall wear Identity Card provided by the Service Provider every day during working hours.
xv. The Service Provider shall issue the letter of deployment to every deployed manpower and a copy of same shall be submitted to Buyer.
xvi. In an event of deployed manpower availing leave, and if required by Buyer, suitable substitute(s) shall be provided by Service Provider as per mutual understanding with Buyer. Service Provider shall communicate the same to buyer in advance.
xvii. In case of any resource permanently leaving the organization or taking leave for a longer duration, service provider shall communicate the same to buyer at least 1 month prior to the last working day of a resources. Suitable substitute(s) shall be provided by Service Provider as per mutual understanding with buyer.
xviii. The Service Provider shall be responsible for any act of indiscipline on the part of the persons deployed.
xix. The Service Provider shall ensure that all the relevant licenses/ registrations/ permissions which may be required for providing the services under this Agreement are valid during the entire period of the Agreement; failing which the Buyer can take appropriate action including imposition of deductions and termination of contract. The documents relevant in this regard shall be provided by the Service Provider to the Buyer on demand.
xx. In case of continuous work (24 hours or more than 26 days in a month), Service Provider shall be responsible to change the shifts and manpower in compliance with the labor laws.
xxi. The persons deployed by the Service Provider shall not claim nor shall be entitled to pay, perks and other facilities admissible to regular/ confirmed employees during the currency or after expiry of the Agreement.
xxii. No medical facilities or reimbursement or any sort of medical claims thereof in respect of employees provided by the Service Provider will be entertained by the Buyer.
xxiii. The persons deployed shall treat as confidential all data and information received from the Buyer and obtained in the execution of its responsibilities under this Contract/ Agreement, in strict confidence and will not reveal such information to any other party including the Service Provider without the prior written approval of the Buyer. In view of this, the persons deployed shall be required to sign a non-disclosure agreement and breach of the same shall make the Service Provider as well as the person deployed liable for penal action under the applicable laws besides, action for breach of contract and termination of contract.
xxiv. For all intents and purposes, the Service Provider shall be the "Employer" within the meaning of different Rules & Acts in respect of manpower so deployed. The persons deployed by the Service Provider shall not have any claim whatsoever like employer and employee relationship against the Buyer.
xxv. No deployed manpower shall be allowed to stay in the Buyer's premise/ designated premise unnecessarily after working hours without Buyer's permission.
xxvi. Any damages/ losses caused by deployed manpower shall be borne by the Service Provider. The Buyer Department shall not be responsible for any financial loss or any injury to any person deployed by the Service Provider during their performing the functions/duties, or for payment towards any compensation.
xxvii. The Service Provider shall be solely responsible for the redressal of grievances/ resolution of disputes relating to persons deployed. The Buyer shall, in no way be responsible for settlement of such issues whatsoever.
xxviii. The Service Provider shall be responsible for timely payment of take-home remuneration to the manpower and deposit of EPF and ESI (both employee and employer share), failing which deductions shall be made by buyer.
xxix. The Service Provider shall maintain all statutory registers under the Law and shall produce the same, on demand, to the Buyer Department or any other authority under Law.
xxx. The Service Provider shall ensure regular payment to the deployed manpower to their entitlements like monthly salaries/ wages etc. and submit the documentary proof of the salary paid as per the terms and conditions of the contract. Bill for the subsequent month will be paid only after submission of certificate of disbursement of wages of previous month.
xxxi. The wages of every person deployedupon or in any establishment upon or in which less than one thousand persons are employed, shall be paid before expiry of the seventh day after the last day wage-period in respect of which the wages are payable. In any other establishment, wages of every person employed shall be paid before expiry of tenth day after last day wage-period. Payment of salary/ wages to the employees shall be made in their bank accounts only, no cash or kind payment shall be made.
xxxii. The Service Provider shall furnish statement of amount paid for the month to the manpower deployed along with Transaction Details and Bank account from which the payment has been made. Service Provider shall furnish copy of bank statement in support of amount paid as and when required by Buyer.
xxxiii. The Service Provider shall also deposit EPF and ESI of both employer and employee share within 15th day of the month of payment of wages.
xxxiv. The Service Provider shall submit before the Buyer Department, one copy of the return within 7 days from the date of filing of monthly/ quarterly/ half yearly/ annual return if any before the EPF and ESI authorities.
xxxv. All applicable taxes and duties other than mentioned in the contract document, shall be payable by the Service Provider and the Buyer shall not entertain any claims whatsoever with respect to the same.

xxxvi. The Service Provider, at all times,will ensure that the services being provided under this Contract/Agreement are performed strictly in accordance with all applicable laws, order, byelaws, regulations, notifications, guidelines, rules, standards, recommended practices etc. and no liability in this regard will be attached to the Buyer.

4.3 Special Terms & Conditions:

i. As per the Contract Labour Regulation and Abolition Act, 1970, the service provider/contractor shall be responsible for ensuring that wages are paid to the contract labour on time. The principal employer/buyer shall ensure that the wages are paid on time to the contract labour by the service provider/contractor. In case the service provider/contractor fails to pay the wages on time or makes short-payment, the principal employer/buyer shall be liable to pay the wages to the contract labour directly and recover the amount from the service provider/contractor.
ii. The Buyer will in no way be responsible for the violation of any rules and/or infringement of any other laws from the time being in force, either by the manpower or by the Service Provider. The manpower as well as the Service Provider shall comply with the relevant rules and regulations applicable at present and as may be enforced from time to time, for which the Buyer will not be liable or responsible in any manner. The onus of compliance to all the applicable laws/acts/rules etc. shall only rest with the Service Provider. An indicative list of central labor laws is provided under Annexure 1.
iii. The cost of services quoted by the Service Provider shall cover all aspects of service delivery and include all the components of salary/ wages (minimum wage, insurance, PF, ESI etc.) and taxes, as applicable.
iv. As per DoE OM No.F.6/1/2023-PPD dated 6th January 2023, the minimum service charges for Manpower Outsourcing Services has been fixed as 3.85%. The contracts concluded through this service shall be in compliance with the above mentioned OM.
v. No advance payment shall be made to the Service Provider.
vi. Payment shall be made once the services are delivered, and the Service Provider submits the invoice for the same.
vii. The Buyer shall make the payment within prescribed timelines as per the payment process flow upon submission of invoice, logbook, and service feedback.
viii. Payment shall be made only after submission of invoices, attendance sheet, logbook, service feedback, documentary proofs for PF/ESI/EDLI etc. payments. Non-submission of the same may lead to delay/ deduction in payment.
ix. All the deductions (if applicable) shall be settled before making the payments. Service Provider shall not have any objection on the same.
x. Payment to the manpower resources by the service provider shall be made through bank transfer only, in no circumstance cash payment shall be made.
xi. In case of any changes in the minimum wages or any statutory wage component as per the Applicable Laws during the Contract period, the Buyer shall pay the Service Provider the differential amount in wage.It is clarified that such increase in the wages will not have any impact on the service charges. The total value of the service charge to be paid by the buyer to service provider shall remain same as per the original contract value.
xii. Service provider will submit the invoice & upload the supporting documents such as attendance sheet, logbook etc. on GeM portal
xiii. Buyer will review the documents provided by service provider & may either accept or reject based on actual performance. If required, buyer may impose any non-delivery deductions, SLA deductions, over & above the invoice submitted by service provider.

5 Deductions

Deductions can be imposed by the Buyer for the following:

S. No.	Description	Deductions		
		1st Instance	2nd Instance	3rd Instance
1	Non-deployment of total manpower mentioned in the contract as per the date of joining	Up to 15 Days, 1 day wages of the resources which are not deployed, per day. Beyond 15 days cancellation of the contract with cancellation charges @ 10% of the order value.		
2	If employee is found disclosing any confidential information/ document to the Service Provider/ any third parties	Cancellation of the contract with cancellation charges @ 10% of the order value along with recovery of losses caused (if any) and legal action against the Service Provider depending on the gravity of the act	-	-
3	If the employee is found responsible for any theft, loss of material/ articles and damages	Payment in actuals, equivalent to the value of the article theft/ lost/ damaged within the period prescribed by the Buyer. Replacement of employee within 2 days.	Payment in actuals, equivalent to the value of the article theft/ lost/ damaged within the period prescribed by the buyer. Replacement of employee within 2 days/ cancellation of contract as decided by the buyer depending on the gravity of the act.	Cancellation of the contract with cancellation charges @ 10% of the order value

S. No.	Description	Deductions		
		1st Instance	2nd Instance	3rd Instance
4	If the employee is found responsible for disobedience/ misconduct	Warning/ counselling of employee as decided by the Buyer depending on the gravity of the act	Warning/ counselling/ Immediate replacement of employee within 2 days as decided by the Buyer and Warning to Service Provider depending on the gravity of the act	Cancellation of the contract with cancellation charges @ 10% of the order value
5	If the employee is absent or takes leave for more than 2 days without informing buyer or taking prior approval without substitute being provided by the service provider.	Substitute within 2 days of intimation from buyer failing which, up to 15 days, 1day wages of absent resource/s per day. Beyond 15 days, cancellation of the contract with cancellation charges @ 10% of the order value	Substitute within 2 days of intimation from buyer failing which, up to 15 days, 2 day wages of absent resource/s per day. Beyond 15 days, cancellation of the contract with cancellation charges @ 10% of the order value	Cancellation of the contract with cancellation charges @ 10% of the order value
6	If the employee is found responsible for adopting illegal and foul methods or exercising any corrupt practice in collusion with any third party or officials at the workplace	Immediate replacement within 2 days/ cancellation of the contract with cancellation charges @ 10%, as decided by the buyer depending on the gravity of the act.	Cancellation of the contract with cancellation charges @ 10% of the order value	-
7	Delay in payments of take-home remuneration by the Service Provider and deposit of EPF and ESI (both employee and employer share)	Rs. 100 per day per resource, warning to Service Provider to deposit the said amount within 7 working days	Rs. 200 per day per resource, hold on all type of payments to Service Provider till the said amount is deposited to respective stakeholders and proof of same is submitted to Buyer	Cancellation of the contract with cancellation charges @ 10% of the order value

6 Payment Terms

i. The Payment procedure as specified in the General Terms and Conditions (GTC) of GeM will be applicable.
ii. Payment schedule to be as per payment terms specified in bid document/ATC by the buyer.

7 Undertaking

The service provider/contractor shall not make any unauthorized deductions from the wages of the contract labour and provide below undertaking:

"The Service Provider hereby undertakes not to charge any money/fees/ deductions in whatever manner, name or form, or take any monetary/non-monetary considerations, or make any unlawful deductions from the compensation/salary of the manpower/employees/resources engaged by it and, to be deployed at the Buyer's site. The Service Provider further agrees that it will not indulge in any unethical practices and acknowledges that any non-compliance of the aforesaid undertaking will be treated as a material breach of the Contract, in which case the Buyer and GeM shall have the right to take appropriate independent actions including termination of the Contract and actions as per GeM Incident Management Policy."

8 Formula Used

8.1 Cumulative Cost (Monthly): -

"m" = "bp" + "esi" + "pf" + "edli" + "bonus" + "admin" + "nm1" + "nm2" + "nm3" + "oth" * "otr"
Where,

“bp” = Basic monthly pay (INR) exclusive of GST
“pf” = Provident Fund (INR Monthly)
“edli” = EDLI (INR Monthly)
“esi” = ESI (INR Monthly)
“bonus” = Bonus (INR Monthly)
“admin” = EPF Admin Charge (INR Monthly)
“nm1” = Optional Allowance 1 (INR Monthly)
“nm2” = Optional Allowance 2 (INR Monthly)
“nm3” = Optional Allowance 3 (INR Monthly)
“m” = Cumulative Cost (INR Monthly)

"oth" = Estimated Number of Overtime Hours per Resource per Month

"otr" = Remuneration per resource per hour for Overtime Hours (Incl. all applicable allowance etc. & excluding GST)

8.2 Total: -

“tcv” = (m * 1.18 + m * sc / 100) * t * q
Where
“tcv” = Total Contract Value
“m” = Cumulative Cost (Monthly) as calculated in 10.1 above
“sc” = Service Charge in %age, as quoted by service provider
“t” = Tenure for which service is required (In no. of months)
“q” = Quantity (No. of resources required by buyer)

Annexure - 1

1. The Minimum Wages Act, 1948
2. The Payment of Wages Act, 1936
3. The Payment of Bonus Act, 1965
4. The Equal Remuneration Act, 1976
5. The Trade Unions Act, 1926
6. The Industrial Employment (Standing Orders) Act, 1946.
7. The Industrial Disputes Act, 1947
8. The Weekly Holidays Act, 1942
9. The Factories Act, 1948
10. The Plantation Labour Act, 1951
11. The Mines Act, 1952
12. The Building and Other Constructions Workers’ (Regulation of Employment and Conditions of Service) Act, 1996
13. The Motor Transport Workers Act, 1961
14. The Beedi and Cigar Workers (Conditions of Employment) Act, 1966
15. The Contract Labour (Regulation and Abolition) Act, 1970.
16. The Bonded Labour System (Abolition) Act, 1976
17. The Sales Promotion Employees (Conditions of Service) Act, 1976
18. The Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979
19. The Cine Workers and Cinema Theatre Workers (Regulation of Employment) Act, 1981
20. The Dock Workers (Safety, Health and Welfare) Act, 1986
21. The Child Labour (Prohibition and Regulation) Act, 1986
22. The Working Journalists and Other Newspapers Employees (Conditions of Service) and Miscellaneous Provisions Act, 1955
23. The Working Journalists (Fixation of rates of Wages) Act, 1958
24. The Employees’ Compensation Act, 1923
25. The Employees’ Provident Funds and Miscellaneous Provisions Act, 1952
26. The Employees’ State Insurance Act, 1948
27. The Maternity Benefit Act, 1961
28. The Payment of Gratuity Act, 1972
29. The Unorganized Workers’ Social Security Act, 2008
30. The Building and Other Construction Workers Cess Act, 1996
31. The Mica Mines Labour Welfare Fund Act, 1946
32. The Cine Workers Welfare (Cess) Act, 1981
33. The Cine Workers Welfare Fund Act, 1981
34. The Limestone and Dolomite Mines Labour Welfare Fund Act, 1972
35. The Iron Ore Mines, Manganese Ore Mines and Chrome Ore Mines Labour Welfare (Cess) Act, 1976
36. The Iron Ore Mines, Manganese Ore Mines and Chrome Ore Mines Labour Welfare Fund Act, 1976
37. The Beedi Workers Welfare Cess Act, 1976
38. The Beedi Workers Welfare Fund Act, 1976
39. The Labour Laws (Exemption from Furnishing Returns and Maintaining Registers by Certain Establishments) Act, 1988
40. The Employment Exchange (Compulsory Notification of Vacancies) Act, 1959

अतिरिक्त डेटा/दस्तावेज़ : विक्रेता|Additional Data/Document(s) : Seller

1. **Statutory Auditor Certificate : click here**
2. **Certificate (Requested in ATC) : click here**
3. **Registration Certificate For Presence In Geographical Location : click here**
4. **Epf Challans, Esi Challans Or Bank Statements Indicating The Credited Epf Or Service Provider Had Esi/epf Or Wages : click here**
5. **Copy Of Certificate For Incorporation/registration Of Bidding Entity Under Appropriate Act/authority In India :click here**

ईपीबीजी विवरण | ePBG Detail

सलाहकार बैंक | Advisory Bank :	State Bank of India
ईपीबीजी प्रतिशत (%) | ePBG Percentage(%):	2.00

बोली लगाने वाले को बोली के नियमों और शर्तों के अनुसार लागू ईपीबीजी प्रस्तुत करना होगा |The bidder shall furnish ePBG as applicable as per bid's terms and conditions

नियम और शर्तें|Terms and Conditions

1. General Terms and Conditions-

1.1 This contract is governed by the General Terms and Conditions, conditions stipulated to this Product/Service as provided in the Marketplace.

1.2 This Contract between the Seller and the Buyer, is for the supply of the Goods and/ or Services, detailed in the schedule above, in accordance with the General Terms and Conditions (GTC) unless otherwise superseded by Goods / Services specific Special Terms and Conditions (STC) and/ or BID/Reverse Auction Additional Terms and Conditions (ATC), as applicable

2. Buyer Added Bid Specific Terms and Conditions-

2.1 *Generic*
OPTION CLAUSE: The buyer can increase or decrease the contract quantity or contract duration up to 25 percent at the time of issue of the contract. However, once the contract is issued, contract quantity or contract duration can only be increased up to 25 percent. Bidders are bound to accept the revised quantity or duration

2.2 *Buyer Added Bid Specific ATC*:
Buyer Added text based ATC clauses

All Terms and Conditions shall be as per GeM SLA.

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अनुबंध|Contract

अनुबंध क्रमांक|Contract No: GEMC-511687746337586
अनुबंध तिथि|Contract Generated Date : 19-Jul-2024
बोली/आरए/पीबीपी संख्या|Bid/RA/PBP No.: GEM/2024/B/5042340

संगठन विवरण|Organisation Details

प्ररूप|Type :	Central Government
मंत्रालय|Ministry :	Ministry of Power
विभाग|Department :	NA
संगठन का नाम|Organisation Name :	Northern Regional Power Committee Ministry of Power
कार्यालय क्षेत्र|Office Zone:	North

खरीदार विवरण|Buyer Details

पद|Designation :	JSA
संपर्क नंबर|Contact No. :	011-26868681-213
ईमेल आईडी|Email ID :	sunny.mann@nic.in
जीएसटीआईएन|GSTIN :	N
पता|Address :	18-A, Shaheed Jeet Singh Marg, P O Hauz Khas, Opp Katwaria Sarai, New Delhi, SOUTH DELHI, DELHI-110016, India

वित्तीय स्वीकृति विवरण|Financial Approval Detail

आईएफडी सहमति|IFD Concurrence :	No
प्रशासनिक अनुमोदन का पदनाम| Designation of Administrative Approval:	Member Secretary
वित्तीय अनुमोदन का पदनाम| Designation of Financial Approval :	Member Secretary

भुगतान प्राधिकरण विवरण|Paying Authority Details

Role:	BUYER
भुगतान का तरीका| Payment Mode:	Offline
पद|Designation :	JSA
ईमेल आईडी|Email ID :	sunny.mann@nic.in
जीएसटीआईएन|GSTIN :	N
पता|Address:	18-A, Shaheed Jeet Singh Marg, P O Hauz Khas, Opp Katwaria Sarai, New Delhi, SOUTH WEST DELHI, DELHI-110016, India

परेषिती विवरण|Consignee Details

क्र.सं.|S.No	परेषिती नाम & पता|Consignee Name & Address	सेवा विवरण|Service Description
1	संपर्क|Contact : - ईमेल आईडी|Email ID : anishkhatri.1590@gov.in जीएसटीआईएन|GSTIN : - पता|Address : 18-A, Shaheed Jeet Singh Marg, P O Hauz Khas, Opp Katwaria Sarai, New Delhi, SOUTH DELHI, DELHI-110016, India	Manpower Outsourcing Services - Fixed Remuneration - Admin; Administrative Operator or Office Assistant or Executive Assistant; Graduate

सेवा प्रदाता विवरण|Service Provider Details

जेम विक्रेता आईडी|GeM Seller ID :	1CA6180000574651
कंपनी का नाम|Company Name :	FOCUS EXECUTIVE SEARCH
संपर्क नंबर|Contact No. :	09810337883
ईमेल आईडी|Email ID :	PAWAN@FOCUSEXECUTIVE.COM
पता| Address :	216,SUNEJA TOWER 1,DISTRICT CENTRE,JANAK PURI, West Delhi, DELHI-110058, -
एमएसएमई सत्यापित|MSME verified :	Yes
एमएसएमई पंजीकरण संख्या|MSME Registration number :	UDYAM-DL-01-0000566
एमएसई सामाजिक श्रेणी|MSE Social Category :	General
एमएसई लिंग श्रेणी|MSE Gender :	Male
जीएसटीआईएन|GSTIN:	07ACVPV9052E1ZX (R)

*जिसके नाम के पक्ष में GST/TAX इनवॉइस पेश किया जाएगा|GST / Tax invoice to be raised in the name of - Consignee

सेवा विवरण|Service Details

सेवा प्रारंभ दिनांक (नवीनतम) |Service Start Date (latest by): 01-Aug-2024 **सेवा समाप्ति तिथि|Service End Date :** 31-Jul-2025

श्रेणी नाम|Category Name : Manpower Outsourcing Services - Fixed Remuneration

बिलिंग चक्र|Billing Cycle: monthly

विवरण|Description		Number of Resources to be hired	Percentage of Service charge
Type of Function	Admin		
List of Profiles	Administrative Operator or Office Assistant or Executive Assistant		
Educational Qualification	Graduate		
Specialization	Arts, Commerce, Economics, Social, Law, Management(Marketing/Ope rtions/Finance/ General		
Post Graduation	Not Required		
Specialization for PG	Not Applicable		
Experience	0 to 3 Years		

District	NA	2	3.85
Zipcode	NA		
Basic monthly pay (INR) exclusive of GST	30000		
Bonus (INR Monthly)	0		
EDLI (INR Monthly)	0		
EPF Admin Charges (INR Monthly)	0		
Estimated Number of Overtime Hours per Resource per Month	0		
Remuneration per resource per hour for Overtime Hours (Including all applicable allowance etc & excluding GST)	0		
Optional Allowances 1 (INR Monthly)	0		
Optional Allowances 2 (INR Monthly)	0		
Optional Allowances 3 (INR Monthly)	0		
Provident Fund (INR Monthly)	0		
ESI (INR Monthly)	0		
Tenure/ Duration of Employment (In Months)	12		

कुल राशि (सूत्र) |Total Amount (Formula) :

(((Basic monthly pay (INR) exclusive of GST+ESI (INR Monthly)+Provident Fund (INR Monthly)+EDLI (INR Monthly)+Bonus (INR Monthly)+EPF Admin Charges (INR Monthly) +Optional Allowances 1 (INR Monthly)+Optional Allowances 2 (INR Monthly)+Optiona l Allowances 3 (INR Monthly)+Estimated Number of Overtime Hours per Resource per Month*Remuneration per resource per hour for Overtime Hours (Including all applicable allowance etc & excluding GST))*(1.18+Percentage of Service charge/100))*Tenure/ Duration of Employment (In Months)*Number of Resources to be hired)

ऐडऑन के बिना कुल मूल्य |Total Value without Addons(INR)	877320
कुल एडऑन मूल्य |Total Addon Value(INR)	0
ऐडऑन सहित कुल मूल्य |Total Value Including Addons(INR)	877320

अतिरिक्त जानकारिया|Additional Details

- Title for Optional Allowance 1 : 0
- Title for Optional Allowance 2 : 0
- Title for Optional Allowance 3 : 0
- Designation : Office Assistant

अनुबंध की राशि|Amount of Contract

सभी शुल्क और करों सहित कुल अनुबंध मूल्य|Total Contract Value Including All Duties and Taxes(INR)	**877320**

एसएलए विवरण|SLA Details

Service Level Agreement

Manpower Outsourcing Services – Fixed Remuneration Based

1 Agreement Overview

This is a Service Level Agreement ("SLA" or "Agreement") between the Buyer and Manpower HiringAgency/Service Provider. The purpose of this Agreement is to facilitate implementation of Manpower Hiring Service at the Buyer's premises, or any other premises approved by the Buyer. This Agreement outlines the scope of work, Buyer's obligations, special terms and conditions related to service delivery and payment of services. The Agreement remains valid till completion of scope of services or end of contractual duration (whichever is earlier) unless mutually extended by both the parties.

The Services contracts placed through GeM shall be governed by following set of Terms and Conditions:

I. General terms and conditions for Services;("GTC")
II. Service Specific Standard Terms and Conditions ("STC") of the Services contracts shall include the service level agreement (SLA) for the service.
III. BID/ Reverse Auction specific Additional Terms & Conditions (ATC) as specified by the buyer.

The above terms and conditions are in reverse order of precedence i.e. ATC shall supersede Service specific STC which shall supersede GTC, whenever there are any conflicting provisions. The above set of terms and conditions along with the scope of work and SLA as enumerated in this document shall be construed to be part of the Contract/Agreement between the Buyer and Service Provider.

2 Objectives and Goals

The objective of this Agreement is to ensure that all the commitments and obligations are in place to ensure consistent delivery of services to Buyer by Service Provider. The goals of this agreement are to:
I. Provide clear reference to service ownership, accountability, roles and responsibilities of both parties
II. Present a clear, concise, and measurable description of services offered to the Buyer
III. Establish terms and conditions for all the involved stakeholders, it also includes the actions to be taken in case of failure to comply with conditions specified
IV. To ensure that both the parties understand the consequences in case of termination of services due to any of the stated reasons
ThisAgreement will act as a reference document that both the parties have understood the above-mentioned terms and conditions and have agreed to comply by the same.

3 Parties to the Agreement

The main stakeholders associated with this agreement are below-

1. **Buyer**: Buyer is responsible to provide clear instructions, approvals and timely payments for the services availed
2. **ServiceProvider**: Service provider is responsible to provide all the required services in timely manner. Service provider may also include seller, any authorized agents, permitted assignees, successors and nominees as described in the agreement

The responsibilities and obligations of the stakeholders have been outlined in this document. The document also encompasses service level/ deductions in case of non-

adherence to the defined terms and conditions.

4 Terms & Conditions

4.1 Buyer's Obligations:

i. The Buyer shall provide workspace (seating area, work desk, furniture etc.) for the manpower hired through Service Provider, the Buyer shall also arrange necessary gate/ entry pass to Buyer's premise/ designated premise for the manpower.
ii. Working shifts (includes day and night shift) if any, and daily working hours shall be mutually agreed upon between Buyer and Service Provider and should follow all the labor laws.
iii. The Buyer shall directly or in consultation with the Service Provider provide the necessary training to the manpower for Buyer specific tools, applications, and machinery etc., if required.'
iv. The Buyer shall provide, free of charge unimpeded access to all the infrastructure which is required to perform the Services. It may include use of stationery, printer, electricity, internet, Buyer specific servers, data drives, tools, and software etc. However, use of such infrastructure shall be limited for official purpose only.
v. The Buyer shall make necessary arrangements for use of basic facilities like water pots/ machines, cafeteria, washrooms etc. for manpower working at Buyer's premise/ designated premise.
vi. TA/ DA shall be payable directly by the Buyer, in case of travel included in the scope of work, on production of travel documents in original and approval of appropriate authority of the Buyer for undertaking such travel for the project/assignment.
vii. In case of services hired on annual basis and 5 working days, the manpower will be entitled to 08 days of casual leaves per year on pro-rata basis and in case of 6 working days, the manpower will be entitled to 15 days casual leave per year on pro-rata basis. Beyond specified leaves as applicable, leave will be treated as leave without pay (LWP) for which necessary deduction will be made by the Buyer in the amount billed by the Service Provider, if no replacement of manpower is provided.
viii. The Buyer shall have the right, within reason, to have any personnel removed who is undesirable with proper reasoning& justification.
ix. The Buyer will have option to replace the proposed manpower in case of non-performance, non-delivery or in any other exceptional case, however replacement of the manpower will be in same category with same degree of skills, educational qualification, and number of years of experience, also prior approval for the same to be provided by the Buyer.
x. In case, if the buyer has selected the option in the bid for retention of existing resources of the previous/existing service provider, then the new service provider is required to retain those resources as mentioned in the bid document. In such case, the Buyer shall be responsible for ensuring compliance with eligibility requirements of those resources as per the contract. Further, it is the buyer's responsibility to provide requisite documentation & other details pertaining to EPF, ESIC, etc. required for onboarding of such resources with the new service provider. Police verification of such retained resources, if required, will be the responsibility of buyer. The new service provider will not charge anything from the retained resources for onboarding on their payroll.

4.2 Service Provider's Obligations:

i. The service provider/contractor shall be responsible for paying wages to contract labour at rates not less than the minimum wages as notified by the Appropriate Government.
ii. The Service Provider would be required to provide sufficient and qualified manpower, capable of supporting the functioning of the project/department in a manner desired by the Buyer. Any mismatch in demand and supply of the manpower such as number of employees, educational qualification, sectoral/ desired work experience etc. may lead to deductions and/or replacement of the resource with the matching skillset based on the approval from buyer.
iii. The service provider/contractor shall be responsible for paying bonus to contract labour in the manner prescribed by the Payment of Bonus Act, 1965 & shall get reimbursed from the buyer.
iv. The service provider/contractor shall be responsible for paying proportionate gratuity to contract labour who have rendered continuous service as per the provisions of the Payment of Gratuity Act, 1972
v. Service Provider shall adhere to the timeline given by Buyer for providing the required manpower on Buyer's premise/ designated premise.
vi. The Service Provider shall not assign its rights or obligations under this Contract, in whole or in part, nor enter any subcontract to perform any portion of this Contract, without the written consent of the Buyer. The Service Provider shall be responsible and liable to deliver the services as per the contract.
vii. The Service Provider shall be required to keep the Buyer updated about the change of address, change of the Management etc. from time to time.
viii. The Service Provider shall provide the documentary proof for the qualifications and experience of the manpower deployed by them. The biodata/ resume, qualification and experience of the said manpower should be verified/certified by the Service Provider. In case any of such document is found to be false at any stage, it would be deemed to be a breach of terms of contract making the Service Provider liable for legal action.
ix. The Service Provider shall be responsible for police verification, character, and antecedents' verification of the manpower. The same may be verified by the Buyer at the time of joining of the manpower, if he/she so desires.
x. The manpower provided by the Service Provider shall not be deemed employees of the Buyer department hence the compliance of the applicable acts/ laws will be the sole responsibility of the Service Provider.
xi. The Service Provider shall furnish the following documents in respect of the manpower deployed by them to Buyer's premise/ designated premise in the given time limit:
    i. List of persons deployed (monthly)
    ii. Biodata/ resume with antecedents' details (at the time of deployment)
    iii. Copy of Aadhaar Card of the candidates (at the time of deployment)
    iv. Identity Cards issued by Service Provider bearing photograph (within 8 days of joining)
    v. Identity proof and residential proof (at the time of deployment)
    vi. Copy of police verification certificate (at the time of deployment)
    vii. Copy of birth certificate, if required (at the time of deployment - for domicile purpose)
    viii. Details of PF Account Number of resources
xii. The Service Provider shall nominate a coordinator/ Single Point of Contact (SPOC) who shall be responsible for regular interaction with the Buyer Department so that optimal services of the persons deployed could be availed without any disruption.
xiii. The attendance of the manpower shall be entered in the register provided by the Service Provider and/or in the Aadhaar based Biometric attendance system at the Buyer's premises.
xiv. All selected manpower shall wear Identity Card provided by the Service Provider every day during working hours.
xv. The Service Provider shall issue the letter of deployment to every deployed manpower and a copy of same shall be submitted to Buyer.
xvi. In an event of deployed manpower availing leave, and if required by Buyer, suitable substitute(s) shall be provided by Service Provider as per mutual understanding with Buyer. Service Provider shall communicate the same to buyer in advance.
xvii. In case of any resource permanently leaving the organization or taking leave for a longer duration, service provider shall communicate the same to buyer at least 1 month prior to the last working day of a resources. Suitable substitute(s) shall be provided by Service Provider as per mutual understanding with buyer.
xviii. The Service Provider shall be responsible for any act of indiscipline on the part of the persons deployed.
xix. The Service Provider shall ensure that all the relevant licenses/ registrations/ permissions which may be required for providing the services under this Agreement are valid during the entire period of the Agreement; failing which the Buyer can take appropriate action including imposition of deductions and termination of contract. The documents relevant in this regard shall be provided by the Service Provider to the Buyer on demand.
xx. In case of continuous work (24 hours or more than 26 days in a month), Service Provider shall be responsible to change the shifts and manpower in compliance with the labor laws.
xxi. The persons deployed by the Service Provider shall not claim nor shall be entitled to pay, perks and other facilities admissible to regular/ confirmed employees during the currency or after expiry of the Agreement.
xxii. No medical facilities or reimbursement or any sort of medical claims thereof in respect of employees provided by the Service Provider will be entertained by the Buyer.
xxiii. The persons deployed shall treat as confidential all data and information received from the Buyer and obtained in the execution of its responsibilities under this Contract/ Agreement, in strict confidence and will not reveal such information to any other party including the Service Provider without the prior written approval of the Buyer. In

view of this, the persons deployed shall be required to sign a non-disclosure agreement and breach of the same shall make the Service Provider as well as the person deployed liable for penal action under the applicable laws besides, action for breach of contract and termination of contract.

xxiv. For all intents and purposes, the Service Provider shall be the "Employer" within the meaning of different Rules & Acts in respect of manpower so deployed. The persons deployed by the Service Provider shall not have any claim whatsoever like employer and employee relationship against the Buyer.

xxv. No deployed manpower shall be allowed to stay in the Buyer's premise/ designated premise unnecessarily after working hours without Buyer's permission.

xxvi. Any damages/ losses caused by deployed manpower shall be borne by the Service Provider. The Buyer Department shall not be responsible for any financial loss or any injury to any person deployed by the Service Provider during their performing the functions/duties, or for payment towards any compensation.

xxvii. The Service Provider shall be solely responsible for the redressal of grievances/ resolution of disputes relating to persons deployed. The Buyer shall, in no way be responsible for settlement of such issues whatsoever.

xxviii. The Service Provider shall be responsible for timely payment of take-home remuneration to the manpower and deposit of EPF and ESI (both employee and employer share), failing which deductions shall be made by buyer.

xxix. The Service Provider shall maintain all statutory registers under the Law and shall produce the same, on demand, to the Buyer Department or any other authority under Law.

xxx. The Service Provider shall ensure regular payment to the deployed manpower to their entitlements like monthly salaries/ wages etc. and submit the documentary proof of the salary paid as per the terms and conditions of the contract. Bill for the subsequent month will be paid only after submission of certificate of disbursement of wages of previous month.

xxxi. The wages of every person deployedupon or in any establishment upon or in which less than one thousand persons are employed, shall be paid before expiry of the seventh day after the last day wage-period in respect of which the wages are payable. In any other establishment, wages of every person employed shall be paid before expiry of tenth day after last day wage-period. Payment of salary/ wages to the employees shall be made in their bank accounts only, no cash or kind payment shall be made.

xxxii. The Service Provider shall furnish statement of amount paid for the month to the manpower deployed along with Transaction Details and Bank account from which the payment has been made. Service Provider shall furnish copy of bank statement in support of amount paid as and when required by Buyer.

xxxiii. The Service Provider shall also deposit EPF and ESI of both employer and employee share within 15th day of the month of payment of wages.

xxxiv. The Service Provider shall submit before the Buyer Department, one copy of the return within 7 days from the date of filing of monthly/ quarterly/ half yearly/ annual return if any before the EPF and ESI authorities.

xxxv. All applicable taxes and duties other than mentioned in the contract document, shall be payable by the Service Provider and the Buyer shall not entertain any claims whatsoever with respect to the same.

xxxvi. The Service Provider, at all times,will ensure that the services being provided under this Contract/Agreement are performed strictly in accordance with all applicable laws, order, byelaws, regulations, notifications, guidelines, rules, standards, recommended practices etc. and no liability in this regard will be attached to the Buyer.

4.3 Special Terms & Conditions:

i. As per the Contract Labour Regulation and Abolition Act, 1970, the service provider/contractor shall be responsible for ensuring that wages are paid to the contract labour on time. The principal employer/buyer shall ensure that the wages are paid on time to the contract labour by the service provider/contractor. In case the service provider/contractor fails to pay the wages on time or makes short-payment, the principal employer/buyer shall be liable to pay the wages to the contract labour directly and recover the amount from the service provider/contractor.

ii. The Buyer will in no way be responsible for the violation of any rules and/or infringement of any other laws from the time being in force, either by the manpower or by the Service Provider. The manpower as well as the Service Provider shall comply with the relevant rules and regulations applicable at present and as may be enforced from time to time, for which the Buyer will not be liable or responsible in any manner. The onus of compliance to all the applicable laws/acts/rules etc. shall only rest with the Service Provider. An indicative list of central labor laws is provided under Annexure 1.

iii. The cost of services quoted by the Service Provider shall cover all aspects of service delivery and include all the components of salary/ wages (minimum wage, insurance, PF, ESI etc.) and taxes, as applicable.

iv. As per DoE OM No.F.6/1/2023-PPD dated 6th January 2023, the minimum service charges for Manpower Outsourcing Services has been fixed as 3.85%. The contracts concluded through this service shall be in compliance with the above mentioned OM.

v. No advance payment shall be made to the Service Provider.

vi. Payment shall be made once the services are delivered, and the Service Provider submits the invoice for the same.

vii. The Buyer shall make the payment within prescribed timelines as per the payment process flow upon submission of invoice, logbook, and service feedback.

viii. Payment shall be made only after submission of invoices, attendance sheet, logbook, service feedback, documentary proofs for PF/ESI/EDLI etc. payments. Non-submission of the same may lead to delay/ deduction in payment.

ix. All the deductions (if applicable) shall be settled before making the payments. Service Provider shall not have any objection on the same.

x. Payment to the manpower resources by the service provider shall be made through bank transfer only, in no circumstance cash payment shall be made.

xi. In case of any changes in the minimum wages or any statutory wage component as per the Applicable Laws during the Contract period, the Buyer shall pay the Service Provider the differential amount in wage.It is clarified that such increase in the wages will not have any impact on the service charges. The total value of the service charge to be paid by the buyer to service provider shall remain same as per the original contract value.

xii. Service provider will submit the invoice & upload the supporting documents such as attendance sheet, logbook etc. on GeM portal

xiii. Buyer will review the documents provided by service provider & may either accept or reject based on actual performance. If required, buyer may impose any non-delivery deductions, SLA deductions, over & above the invoice submitted by service provider.

5 Deductions

Deductions can be imposed by the Buyer for the following:

S. No.	Description	Deductions		
		1st Instance	2nd Instance	3rd Instance
1	Non-deployment of total manpower mentioned in the contract as per the date of joining	Up to 15 Days, 1 day wages of the resources which are not deployed, per day. Beyond 15 days cancellation of the contract with cancellation charges @ 10% of the order value.		

S. No.	Description	Deductions		
		1st Instance	2nd Instance	3rd Instance
2	If employee is found disclosing any confidential information/ document to the Service Provider/ any third parties	Cancellation of the contract with cancellation charges @ 10% of the order value along with recovery of losses caused (if any) and legal action against the Service Provider depending on the gravity of the act	-	-
3	If the employee is found responsible for any theft, loss of material/ articles and damages	Payment in actuals, equivalent to the value of the article theft/ lost/ damaged within the period prescribed by the Buyer. Replacement of employee within 2 days.	Payment in actuals, equivalent to the value of the article theft/ lost/ damaged within the period prescribed by the buyer. Replacement of employee within 2 days/ cancellation of contract as decided by the buyer depending on the gravity of the act.	Cancellation of the contract with cancellation charges @ 10% of the order value
4	If the employee is found responsible for disobedience/ misconduct	Warning/ counselling of employee as decided by the Buyer depending on the gravity of the act	Warning/ counselling/ Immediate replacement of employee within 2 days as decided by the Buyer and Warning to Service Provider depending on the gravity of the act	Cancellation of the contract with cancellation charges @ 10% of the order value
5	If the employee is absent or takes leave for more than 2 days without informing buyer or taking prior approval without substitute being provided by the service provider.	Substitute within 2 days of intimation from buyer failing which, up to 15 days, 1day wages of absent resource/s per day. Beyond 15 days, cancellation of the contract with cancellation charges @ 10% of the order value	Substitute within 2 days of intimation from buyer failing which, up to 15 days, 2 day wages of absent resource/s per day. Beyond 15 days, cancellation of the contract with cancellation charges @ 10% of the order value	Cancellation of the contract with cancellation charges @ 10% of the order value
6	If the employee is found responsible for adopting illegal and foul methods or exercising any corrupt practice in collusion with any third party or officials at the workplace	Immediate replacement within 2 days/ cancellation of the contract with cancellation charges @ 10%, as decided by the buyer depending on the gravity of the act.	Cancellation of the contract with cancellation charges @ 10% of the order value	-
7	Delay in payments of take-home remuneration by the Service Provider	Rs. 100 per day per resource, warning to Service Provider to deposit the said amount	Rs. 200 per day per resource, hold on all type of payments to Service Provider till the said amount is deposited to respective	Cancellation of the contract with cancellation charges @ 10% of the order

	and deposit of EPF and ESI (both employee and employer share)	within 7 working days Deductions	stakeholders and proof of same is submitted to Buyer	value
S. No.	Description			
		1st Instance	2nd Instance	3rd Instance

6 Payment Terms

i. The Payment procedure as specified in the General Terms and Conditions (GTC) of GeM will be applicable.
ii. Payment schedule to be as per payment terms specified in bid document/ATC by the buyer.

7 Undertaking

The service provider/contractor shall not make any unauthorized deductions from the wages of the contract labour and provide below undertaking:

"The Service Provider hereby undertakes not to charge any money/fees/ deductions in whatever manner, name or form, or take any monetary/non-monetary considerations, or make any unlawful deductions from the compensation/salary of the manpower/employees/resources engaged by it and, to be deployed at the Buyer's site. The Service Provider further agrees that it will not indulge in any unethical practices and acknowledges that any non-compliance of the aforesaid undertaking will be treated as a material breach of the Contract, in which case the Buyer and GeM shall have the right to take appropriate independent actions including termination of the Contract and actions as per GeM Incident Management Policy."

8 Formula Used

8.1 Cumulative Cost (Monthly): -

"m" = "bp" + "esi" + "pf" + "edli" + "bonus" + "admin" + "nm1" + "nm2" + "nm3" + "oth" * "otr"
Where,
"bp" = Basic monthly pay (INR) exclusive of GST
"pf" = Provident Fund (INR Monthly)
"edli" = EDLI (INR Monthly)
"esi" = ESI (INR Monthly)
"bonus" = Bonus (INR Monthly)
"admin" = EPF Admin Charge (INR Monthly)
"nm1" = Optional Allowance 1 (INR Monthly)
"nm2" = Optional Allowance 2 (INR Monthly)
"nm3" = Optional Allowance 3 (INR Monthly)
"m" = Cumulative Cost (INR Monthly)

"oth" = Estimated Number of Overtime Hours per Resource per Month

"otr" = Remuneration per resource per hour for Overtime Hours (Incl. all applicable allowance etc. & excluding GST)

8.2 Total: -

"tcv" = (m * 1.18 + m * sc / 100) * t * q
Where
"tcv" = Total Contract Value
"m" = Cumulative Cost (Monthly) as calculated in 10.1 above
"sc" = Service Charge in %age, as quoted by service provider
"t" = Tenure for which service is required (In no. of months)
"q" = Quantity (No. of resources required by buyer)

Annexure - 1

1. The Minimum Wages Act, 1948
2. The Payment of Wages Act, 1936
3. The Payment of Bonus Act, 1965
4. The Equal Remuneration Act, 1976
5. The Trade Unions Act, 1926
6. The Industrial Employment (Standing Orders) Act, 1946.
7. The Industrial Disputes Act, 1947
8. The Weekly Holidays Act, 1942
9. The Factories Act, 1948
10. The Plantation Labour Act, 1951
11. The Mines Act, 1952
12. The Building and Other Constructions Workers' (Regulation of Employment and Conditions of Service) Act, 1996
13. The Motor Transport Workers Act, 1961
14. The Beedi and Cigar Workers (Conditions of Employment) Act, 1966
15. The Contract Labour (Regulation and Abolition) Act, 1970.
16. The Bonded Labour System (Abolition) Act, 1976
17. The Sales Promotion Employees (Conditions of Service) Act, 1976
18. The Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979
19. The Cine Workers and Cinema Theatre Workers (Regulation of Employment) Act, 1981
20. The Dock Workers (Safety, Health and Welfare) Act, 1986
21. The Child Labour (Prohibition and Regulation) Act, 1986
22. The Working Journalists and Other Newspapers Employees (Conditions of Service) and Miscellaneous Provisions Act, 1955
23. The Working Journalists (Fixation of rates of Wages) Act, 1958
24. The Employees' Compensation Act, 1923
25. The Employees' Provident Funds and Miscellaneous Provisions Act, 1952
26. The Employees' State Insurance Act, 1948
27. The Maternity Benefit Act, 1961
28. The Payment of Gratuity Act, 1972
29. The Unorganized Workers' Social Security Act, 2008
30. The Building and Other Construction Workers Cess Act, 1996

31. The Mica Mines Labour Welfare Fund Act, 1946
32. The Cine Workers Welfare (Cess) Act, 1981
33. The Cine Workers Welfare Fund Act, 1981
34. The Limestone and Dolomite Mines Labour Welfare Fund Act, 1972
35. The Iron Ore Mines, Manganese Ore Mines and Chrome Ore Mines Labour Welfare (Cess) Act, 1976
36. The Iron Ore Mines, Manganese Ore Mines and Chrome Ore Mines Labour Welfare Fund Act, 1976
37. The Beedi Workers Welfare Cess Act, 1976
38. The Beedi Workers Welfare Fund Act, 1976
39. The Labour Laws (Exemption from Furnishing Returns and Maintaining Registers by Certain Establishments) Act, 1988
40. The Employment Exchange (Compulsory Notification of Vacancies) Act, 1959

अतिरिक्त आवश्यक डेटा/दस्तावेज़: खरीदार|Additional Required Data/Document(s) : Buyer

1. **Geographic Presence: Office registration certificate :** DELHI NCR
2. **Scope of work & Job Description :** click here

अतिरिक्त डेटा/दस्तावेज़ : विक्रेता|Additional Data/Document(s) : Seller

1. **Statutory Auditor Certificate :** click here
2. **Auditor Certificate For Profit Making Entity In Last 3 Yrs :** click here
3. **Copy Of Certificate For Incorporation/registration Of Bidding Entity Under Appropriate Act/authority In India :** click here
4. **Registration Certificate For Presence In Geographical Location :** click here
5. **Epf Challans, Esi Challans Or Bank Statements Indicating The Credited Epf Or Service Provider Had Esi/epf Or Wages :** click here
6. **Project Experience And Certificates With Respect To Eligibility Criteria :** click here
7. **Certificate (Requested in ATC) :** click here

ईपीबीजी विवरण | ePBG Detail

सलाहकार बैंक | Advisory Bank :	PUNJAB NATIONAL BANK
ईपीबीजी प्रतिशत (%) | ePBG Percentage(%):	3.00

बोली लगाने वाले को बोली के नियमों और शर्तों के अनुसार लागू ईपीबीजी प्रस्तुत करना होगा |The bidder shall furnish ePBG as applicable as per bid's terms and conditions

नियम और शर्तें|Terms and Conditions

1. General Terms and Conditions-

1.1 This contract is governed by the General Terms and Conditions, conditions stipulated to this Product/Service as provided in the Marketplace.

1.2 This Contract between the Seller and the Buyer, is for the supply of the Goods and/ or Services, detailed in the schedule above, in accordance with the General Terms and Conditions (GTC) unless otherwise superseded by Goods / Services specific Special Terms and Conditions (STC) and/ or BID/Reverse Auction Additional Terms and Conditions (ATC), as applicable

2. Buyer Added Bid Specific Terms and Conditions-

2.1 *Generic*
OPTION CLAUSE: The buyer can increase or decrease the contract quantity or contract duration up to 25 percent at the time of issue of the contract. However, once the contract is issued, contract quantity or contract duration can only be increased up to 25 percent. Bidders are bound to accept the revised quantity or duration

2.2 *Past Project Experience*:
Proof for Past Experience and Project Experience clause: For fulfilling the experience criteria any one of the following documents may be considered as valid proof for meeting the experience criteria:a. Contract copy along with Invoice(s) with self-certification by the bidder that service/supplies against the invoices have been executed.b. Execution certificate by client with contract value.c. Any other document in support of contract execution like Third Party Inspection release note, etc.Proof for Past Experience and Project Experience clause: For fulfilling the experience criteria any one of the following documents may be considered as valid proof for meeting the experience criteria:a. Contract copy along with Invoice(s) with self-certification by the bidder that service/supplies against the invoices have been executed.b. Execution certificate by client with contract value.c. Any other document in support of contract execution like Third Party Inspection release note, etc.

2.3 *Generic*
Bidder financial standing: The bidder should not be under liquidation, court receivership or similar proceedings, should not be bankrupt. Bidder to upload undertaking to this effect with bid.

नोट: यह सिस्टम जनरेटेड फाइल है। कोई हस्ताक्षर की आवश्यकता नहीं है।

Note: This is system generated file. No signature is required.

Annexure-B.VI

SPACEX MANPOWER SERVICES PRIVATE LIMITED

(Providing Security Guards, Gunmen, Skilled & Unskilled Labour, Mechanized Housekeeping Sweeping & Cleaning and All Outsourcing Manpower Services)

Ref: SMS/2024-25/90

Date: 27 Jan 2025

To

The Superintending Engineer (Services)
Northern Regional Power Committee
18-A, Shaheed Jeet Singh Marg, P O Hauz Katwaria Sarai
New Delhi-110016

Ref: Gem Contract No:- GEMC-511687770071538 dated 11.03.2024

Subject: Extension of the contract awarded to M/s Spacex manpower Services Private Limited for providing "Manpower Outsource Services-Fixed remuneration" in NRPC Secretariat, New Delhi-reg.

Dear Sir/Ma'am

1. Refer to your letter dated received on 23 Jan 2025, regarding extension of contract.
2. In this regard it hereby informed that we accept your proposal for extension of the contract for further period up to 31 Jul 2025 under the same terms and conditions or till new contract is finalized whichever is earlier.

We assure you the best of the services.

Regards

SPACEX MANPOWER SERVICES PRIVATE LIMITED

Office : Plot A-41,F/F, Phase-3, Sector-3, J.J. Colony, Dwarka, South West Delhi, Delhi, India - 110075
Branch Office : U.P., Haryana
Mobile No. : 7827520431, **Email :** spacexmanpower@gmail.com, **Website :** www.spacexmanpower.com

Annexure-B.VII

ग्रिड-इंडिया GRID-INDIA

ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर क्षेत्रीय भार प्रेषण केन्द्र / Northern Regional Load Despatch Centre

कार्यालय: 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली -110016
Office : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN : U40105DL2009GOI188682, Website : www.nrldc.in, E-mail : nrldc@grid-india.in, Tel.: 011- 26854015, 40224603

Ref. No.: NRLDC/HR/NRPC Civil Works/2024/339

Date: 13/06/2024

उ.क्षे.वि.स. डाकघर
सं./No. 590
दिनांक/Date 14/6/2024
NRPC Diary

To,
Member Secretary,
Northern Regional Power Committee,
New Delhi - 110016

Subject : Reconciliation of the expenditure incurred against various repair and maintenance works carried out by NRPC through CPWD.

Reference : 1. NRPC Letter No. NRPC/SE-S/CPWD/2019/11461 dated 01/10/2019
2. NRLDC letter Ref. No. NRLDC/HR/2019 dated 05/11/2019

Sir

This is in reference to the above referred letter regarding various repair and maintenance works carried out by NRPC through CPWD at NRPC/ NRLDC office complex and NRPC residential colony, and subsequent discussions on the subject.

In line with the agreed methodology for sharing of cost in the ratio of 50:50 between NRPC and NRLDC, advice for release of NRLDC share amounting to ₹38,18,817/- for a cluster of works in office & colony was raised by NRPC vide aforementioned letter in ref. no.1. In compliance of the advice, an advance payment of the said amount was released by NRLDC to CPWD for the works and the cheques in original were deposited with NRPC as per details enclosed in Annexure – I.

As the aforesaid works have since been completed, therefore in order to reconcile the expenditure, and particularly to conclude on utilization of NRLDC advance payment, it is requested that the details of actual expenditure incurred against the above amounts released by NRLDC along with supporting documents may kindly be furnished. The details are required for making necessary adjustments against the advance payment released for the above works in the books of account and for final settlement of accounts.

We look forward to your continued support and cooperation in efficiently maintaining the office and colony premises.

Thanking You,

Pl examine & advise
SE (Services)
14/6/24
14/6/24
AGM (Services)

Yours sincerely,
Philipp
(Ajay Philipp)
CGM (HR) 13/6/24

Enclosures: as above

Copy for kind information:
- **ED, NRLDC**

Annexure – I

Sl. No.	Particulars of the Works undertaken by CPWD	Estimated Amount	Amount released by NRLDC Office (50 % of the estimate)	Cheque No. / Dated
1	AMC of Civil and Electrical Works in NRPC Residential Complex	58,27,100	29,13,550	487055 / dated 04/11/2019
2	Replacement of ceiling fans in NRPC Residential Complex	3,22,134	1,61,067	487052 / dated 04/11/2019
3	Rain Water Harvesting at NRPC Office Complex	14,88,400	7,44,200	487053 / dated 04/11/2019
	Total Amount (In Rs.)	**76,37,634**	**38,18,817**	

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

No. NRPC/SE-S/CPWD/2019/1146

Date: 01.10.2019

The Executive Director
NRLDC, POSOCO,
Katwaria Sarai
New Delhi-110016

Subject: **Release of 50% share**

Sir,

As you are aware that NRPC recently has taken up few works for NRPC complex including residential quarters. All works are to be executed by CPWD.

2. The works pertaining to residential complex are for Annual Maintenance Contract (AMC) of civil and electrical works. The AMC of residential quarters is necessary as these quarters are 30 years old and some maintenance issue keeps on cropping up from time to time. There are frequent complaints about ceiling fans in the residential quarters, as these are old ones and accordingly it has been decided to fix new ceiling fans through CPWD. Rain water harvesting has been made mandatory by the Government and as per Delhi Jal Board's Regulations, its failing invites penalty by enhancing the tariff 1.5 times the normal tariff. Accordingly, it is decided to get the rain water harvesting done for office complex through CPWD. NRPC has recently constituted a Monitoring Committee comprising four members, two from NRLDC and two from NRPC, to oversee the works.

3. Following payments are due from POSOCO:

- Rs 2913550/- for AMC of civil and electrical works in colony
- Rs 161067/- for replacement of ceiling fans in colony
- Rs 744200/- for rain water harvesting in office

4. CEA has transferred the budget of NRPC share to CPWD for AMC and fans, and for rainwater harvesting the same is in process. However, CPWD has shown its inability to place tender due to absence of receipt of full amount. NRPC Service division has been following up with POSOCO since last 3-4 months.

5. It is pertinent to inform that in the absence of proper AMC arrangement, NRPC is getting continuous requests from the occupants for some works requiring urgent attention, one such example is attached letter vide no. NRLDC/HRD/2019/1496 dated

18, शहीद जीत सिंह मार्ग, कटवारिया सराय, नई दिल्ली- 110016 फोन:011-26521046 फेक्स: 011-26865206ई-मेल: sec-nrpc@nic.inवेबसाईट: www.nrpc.gov.in
18, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110016 Phone: 011-26521046 Fax: 011-26865206 e- mail: sec-nrpc@nic.in Website: www.nrpc.gov.in

1/10/19 from POSOCO issued by Sh. Manish Kumar Singh, AM (HRD) in regard to flat no. B-5 NRPC colony (Transit Camp) occupied by Sh. N Nallarasan, Chief General Manager. It has requested:

- White wash in bedroom due to water leakage occurred due to AC
- Drawer from cot (bed) needs to be repaired
- Fan in hall is very old and giving sound and needs to be replaced
- Two more fans (dining hall & second bedroom) to be arranged as new

6. It is therefore requested that release of 50% share to CPWD, as detailed in para-3 above may be expedited.

Encl.: As above.

Naresh 01/10/19

(Naresh Bhandari)
Member Secretary

Jeet Singh Marg, Katwaria Sarai, New Delhi-110016 Phone: 011-26521046 Fax: 011-26865206 e-mail: sec-nrpc@nic.in Website: www.nrpc.gov.in

पॉवर सिस्टम ऑपरेशन कॉर्पोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Govt. of India Enterprise)

उत्तरी क्षेत्रीय भार प्रेषण केन्द्र / NORTHERN REGIONAL LOAD DESPATCH CENTRE
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली- 110016
OFFICE : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi- 110016
CIN : U40105DL2009GOI188682, Website : www.nrldc.org, www.nrldc.in, Tel.: 011- 26519406, 26523869, Fax : 011- 26852747

Ref No. NRLDC/HR/2019/

Date: 05/11/2019

To,
Member Secretary
NRPC,
Katwaria Sarai,
New Delhi-110016

Sir,

This is with reference to letter ref. no. NRPC/SE-S/CPWD/2019/11461 dated 01.10.2019 received from Shri R.P Pradhan, S.E-Services, NRPC as per following details:

Sl. No	Description of Work	Estimated Expenditure (Rs.)	To be borne by NRLDC (50% of the total estimated expenditure) (in Rs.)/Cheque No.	In favour of
1.	AMC of Civil and Electrical Maintenance work in NRPC/ NRLDC Residential Complex	58,27,100/-	29,13,550/487055	Executive Engineer, "V" Division, CPWD, A-106/110, Sarojini Nagar, New Delhi-110023
2.	Replacement of old defective ceiling fans with accessories in NRPC/NRLDC Residential Complex	3,22,134/-	1,61,067/487052	Executive Engineer, (E), Electrical Division-XIII, Pushpa Bhawan, CPWD, New Delhi
3.	Rain water harvesting in office	14,88,400/-	7,44,200/487053	Executive Engineer, "V" Division, CPWD, New Delhi
	Total	**76,37,634/-**	**38,18,817/-**	

As per aforementioned details of cheques is being forwarded to you in original for further necessary action at your end.

Received
5/11/2019

Yours faithfully,

(Manish Kumar Singh)

Annexure-B.VIII

Expenditure Statements of CPWD Works during 2019-20

S. No.	Name of Work	Estimated Cost	Actual Expenditure	NRPC/NRLDC Share	NRLDC Paid	NRPC Paid	Total amount paid to CPWD	Excess payment by NRLDC	Balance payment to CPWD
1	A/R & M/O NRPC Residential qtrs. during 2019-20	58,27,100	4771756	2385878	2913550	1745464	5403214	527672	
2	Construction of Rain Water Harvesting system & artificial well to ground water at NRPC	14,88,400	952005	476003	744200			268198	
3	Replacement of Ceiling fans in NRPC Residential Complex	3,22,134	322134	161067	161067	161067	322134	0	
	Total	**76,37,634**	**6045895**	**3022948**	**38,18,817**	**19,06,531**	**57,25,348**	**7,95,870**	**3,20,547**

4/3/25

अंजुम परवेज
ANZUM PARWEJ
अधीक्षण अभियंता
Superintending Engineer
उ.क्षे.वि.स./N.R.P.C.
भारत सरकार/Govt. of India
कटवारिया सराय/Katwaria Sarai
नई दिल्ली/New Delhi-110016

04/3/25

मनीष कुमार सिंह/Manish Kumar Singh
प्रबन्धक (मा.सं.)/Manager (HR)
उत्तर क्षेत्रीय भार प्रेषण केन्द्र / Northern Regional Load Despatch Centre
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड (ग्रिड-इंडिया)
GRID CONTROLLER OF INDIA LIMITED (GRID-INDIA)
(भारत सरकार का उद्यम)/(A Government of India Enterprise)
formerly Power System Operation Corporation Limited (POSOCO)
18/ए, शहीद जीत सिंह मार्ग, कटवारिया सराय, नई दिल्ली-16
18/A, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-1

Annexure-B.IX

OSCILLOQUARTZ
A division of Adtran

75 YEARS
TIMING EXCELLENCE

"The Clock (bomb) is Ticking”

Strengthening Power Grid Resilience Against GNSS Cyberthreats

Anil K Reddy | A Vice President – APAC Business Development (OSA)

March 2025

Oscilloquartz at a glance

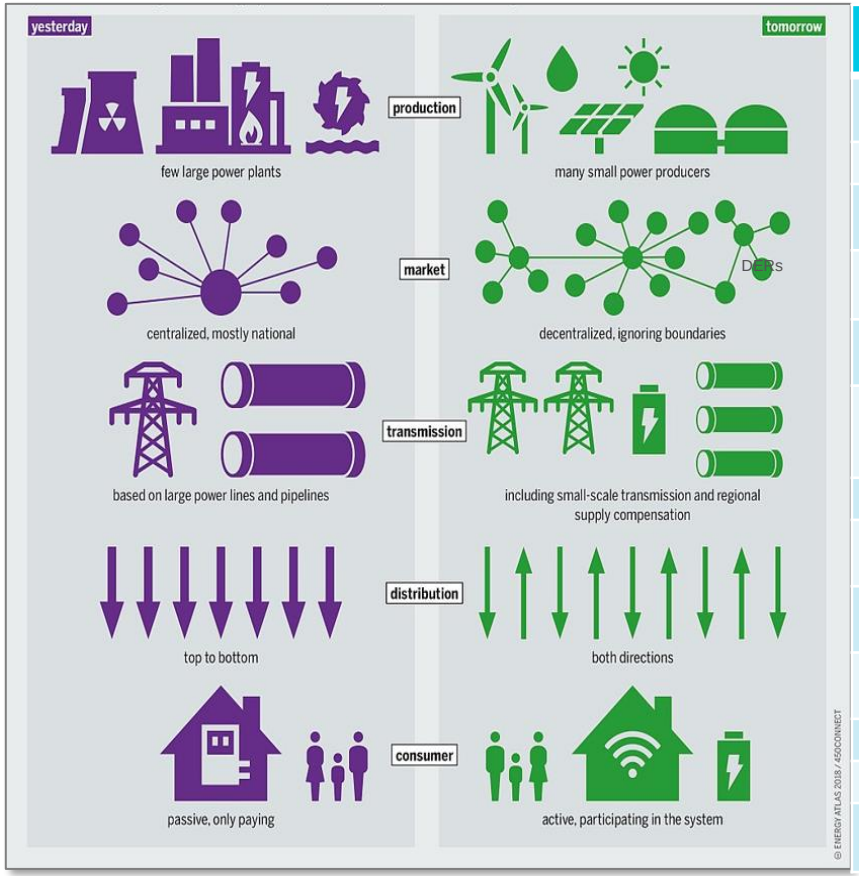
- A division of Adtran Inc (formerly An ADVA company)
- Focused on sync and timing solutions for communications, Critical Infrastructure (Power/Aviation/ Transport), Government, Defense and Enterprise (BFSI & IDC)
- R&D Centers in Switzerland (Neuchâtel), Israel (Tel Aviv) and Finland (Helsinki)
- Longstanding relationships with customers worldwide since founding in 1949, Neuchâtel, Switzerland
  - 200+ sync focused partners in 80+ countries worldwide
  - 1000+ end customers, Customer satisfaction driven
- State-of-the-art time phase and frequency solutions
- Most innovative and scalable end-to-end solutions for all markets
- Excellence in PNT timing delivery and assurance

aPNT+™

Power Customers in India and APAC

Time Sync Requirements in Power Grids

Power Grid time synchronization accuracy requirements



Application	Measurement	Accuracy	Time Interface	Sync Source
TW Fault Locator	**300 m (line span)**	**1 µs**	**PTP, IRIG-B, PPO**	**GPS, 1588 GMC**
Phasor Measurements	**± 0.1 degree**	**1 µs**	**PTP, IRIG-B (1344)**	**GPS, 1588 GMC**
Lightning Strike Correlation	Grid-wide events	1 ms	IRIG-B	GPS
Protection Relaying events	< 1 cycle	1 ms	PTP, IRIG-B IEC 61850	GPS, IRIG-B, 1588 GMC
Event/Disturbance Recorders	< 1 cycle	1 ms	PTP, IRIG-B, PPO	GPS, 1588 GM
Network, Distribution & Substation Control	Grid-wide events	1 ms	PTP, IRIG-B	GPS, Control Centre, 1588 GMC
Quality of Supply Metering	Freq, time error	0.5 sec	PTP, IRIG-B, PPO	GPS, 1588 GMC
Bulk Metering	Energy registers	0.5 sec	Proprietary, PPO	Proprietary
Customer Premises Metering	Energy registers	1 sec	NTP, Proprietary	Proprietary, NTP
SCADA/EMS/PAS	Grid-wide status	1 ms	NTP, ASCII	GPS
Frequency Measurement	Frequency	1 ms	N/A	GPS
Sampled Values	**Volt/Current**	**1 µs**	**PTP**	**1588 GM**
Telecommunication	SDH/PDH	G.812/813	PTP G.8265 2.048 Mbps/MHz	GPS, 1588 GMC

Timing references available for synchronization

Applications uses UTC as a common reference for time that can be derived from multiple sources as below

GNSS

Pros

- Provides accurate UTC ref.
- Easiest way for Time Sync
- Availability - Everywhere
- Less Expensive
- Multiple options - Regional & Global Constellations

Cons

- Vulnerable to external threats
- Highly depend on Environmental conditions
- Not feasible for indoor use cases
- Risks – Geo-political conditions

eLORAN/LEO

Pros

- Provides accurate time sync
- Indoor & Outdoor use cases
- Availability – Satellites added to meet customer needs
- Avoids Geo-political threats

Cons

- Availability - Limited coverage
- Expensive – Subscription Model
- Receivers - Limited

NPL/NIST

Pros

- Maintains UTC using Indigenous Time scales
- Very Accurate
- Availability – Satellites based on customer need
- Avoid risk related to Geo-political conditions

Cons

- Not common at all Locations
- Require expensive transport mechanism like WR or TWSTT

PTP/NTP

Pros

- Easy - Time Sync over network
- PTP - Accurate to sub 1usec @ Client
- Uses traditional Networks like Ethernet/Optical.
- Enables redundancy
- Cost Effective

Cons

- Uses GNSS as reference
- Network must be PTP aware for accurate time delivery

Currently **GNSS is the single time source** for the Power Grid- If it skips, the lights go out!

Potential Impact of GNSS Cyber Threats on the Power Industry

- **Grid Instability Due to GPS Spoofing & Jamming:** GNSS-dependent Phasor Measurement Units (PMUs) provide synchronized voltage and current vectors. Attackers can manipulate or block signals, causing phase angle errors and frequency anomalies leading to power imbalances.
- **Disruptions in Power Management & Distribution:** Substations use Time-Sync equipment for event sequencing and voltage synchronization. Cyberattacks can disrupt synchronization, leading to misaligned grid operations, delayed incident response, prolonged outage durations etc.
- **Risk of Power Outages Due to Time Synchronization Failures:** Power grids require sub-microsecond accuracy; GNSS signal interference can lead to failed synchronization Unsuccessful time synchronization can result in cascading failures across the grid.
- **Economic & Regulatory Implications:** Disruptions due to GNSS threats can lead to financial losses and non-compliance with industry regulations.

Implement secure and multi-source timing architecture to enhance grid resilience.

Can your grid survive the next cyber attack?

GNSS Threat Landscape: Vulnerabilities You Should Know

PNT cyberthreats

External GPS/GNSS level

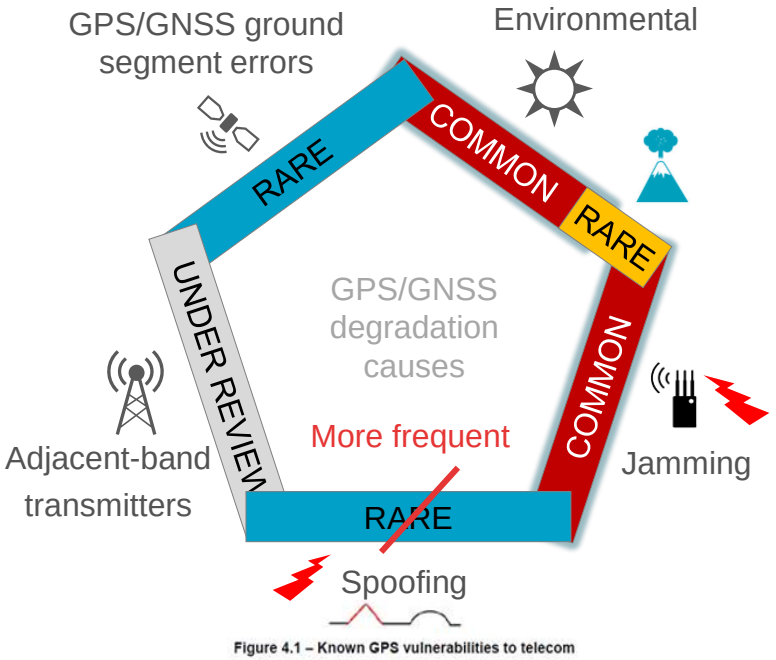
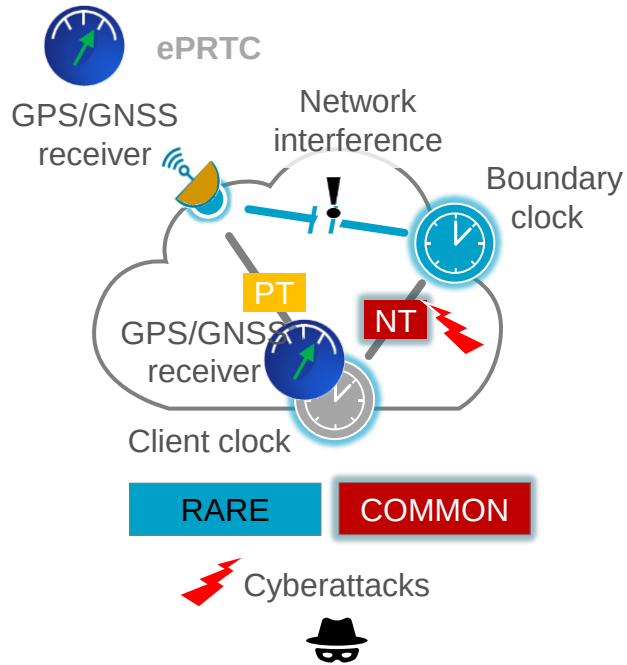


Figure 4.1 – Known GPS vulnerabilities to telecom

Internal network level



GNSS signal travelling 23,000km is very weak at the Earth level (-133 dBm)

Are GPS/PNT threats real?

NEWS UKRAINE WAR

Russia threatens to shoot down Western satellites for helping Ukraine

Oct 27, 2022

ET Satcom.com From ETTelecom

Ukraine war disrupts GPS in Finland, Mediterranean March 19, 2022

Industrial Cyber

April 3, 2023

GhostSec hackers target satellite receivers, as threats toward satellite communication networks gradually rise

What would happen to America if GPS was attacked? Feb 1, 2017

GPS WORLD GNSS POSITIONING NAVIGATION TIMING

Disruption *"lasted for 33.5 hours. Wireline and cellular providers had timing backup systems and were unaffected. A radio system with no backups suffered, as did a simulcast radio system that used rubidium backup clocks"*

What happened to GPS in Denver? Jan 21, 2022

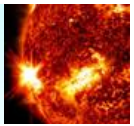
DAILY HONKER

Mysterious GPS Disruptions Spread Across Texas; FAA Issues Warning to Pilots Oct 19, 2022

Newsweek

March 1, 2023

Massive Solar Flare Causes Radio Blackout Over U.S.



Oct 7, 2022

Space Armageddon: Why the Pentagon fears Russia & China's star wars weaponry

OSCILLOQUARTZ
A division of Adtran

Global rise in GNSS threats impacting power grid

GPS Jamming and Ukraine's Electrical Grid – Cisco Talos

by Editor | Apr 21, 2024 | Blog

Project PowerUp – Helping to keep the lights on in Ukraine in the face o electronic warfare

What's New: An interesting blog post about **overcoming the impact of Russia's GPS jamming on Ukraine's electrical grid.**

Why It's Important: GPS underpins all kinds of infrastructure, including electrical grids. If a nation does not have a resilient PNT architecture, a**ttacking GPS signals can have huge impacts for little effort.**

How Israel fooled 99 percent of Iran's 300 missiles and drones

ET Online • Last Updated: Apr 16, 2024, 02:25:00 PM IST

Synopsis

Israel Iran Conflict: Israeli forces successfully disrupted missiles using GPS jamming technology, averting pote Israel's defense capabilities. Despite tensions, including attacks, Israel minimized damage through its Iron Dom vigilant, with officials emphasizing their commitment t

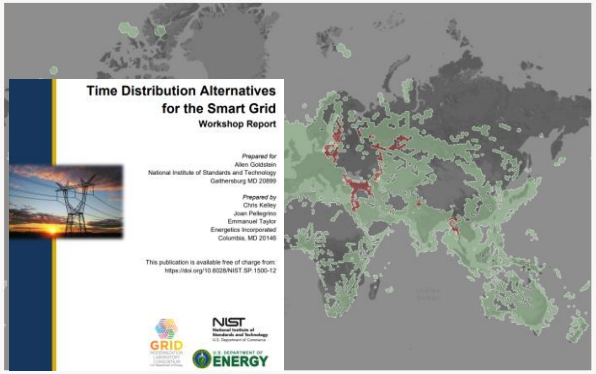
Financial & Power Among Most Likely Spoofing Targets – Fugro

by Editor | Mar 12, 2018 | Blog

Nation-states attacking financial institutions and power grids, and organized criminals stealing high value assets were deemed among the most likely spoofing scenarios in a recent presentation by Fugro.

The urgent need for a national GPS jamming detection system

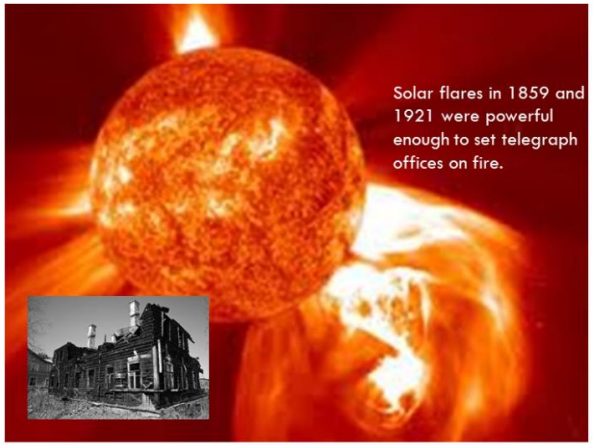
by **Sean Gorman** November 27, 2024



a map of global GNSS interference on Nov. 20, 2024 based on Automatic Dependent Surveillance-Broadcast (ADS-B) data. Credit: Flightradar24

A large solar storm could knock out the power grid and the internet – an electrical engineer explains how – The Conversation

by Editor | Mar 21, 2022 | Blog



Stops Registering GPS Disruptions in Finnmark, Northern Norway

A swarm of drones is controlled from a CV90 tank in Finnmark during the large military exercise Nordic Response in March. Drones can be put out of action by jamming, i.e. sending powerful radio waves towards the drone to block the signals that control it. *(Photo: Ole-Sverre Haugli/the Norwegian Armed Forces)*

Published at: Sep 27 2024 - 14:51 / Updated at: Sep 27 2024 - 14:51

The jamming of GPS signals is now so recurring in Finnmark, Northern Norway, that the national authorities no longer want to be notified. It has

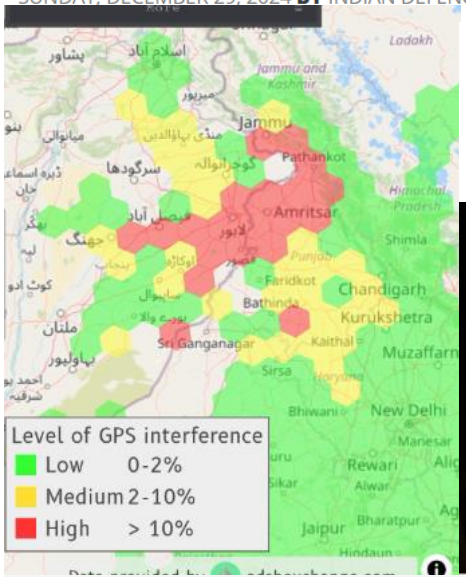
POPULAR LATEST

Greenland Party Wants a National Mining Company

Are GPS/PNT threats real in INDIA?

FREQUENT GPS INTERFERENCE, INCLUDING ‘SPOOFING’, NEAR INDIA'S BORDER WITH PAKISTAN, MYANMAR

SUNDAY, DECEMBER 29, 2024 **BY** INDIAN DEFENCE NEWS



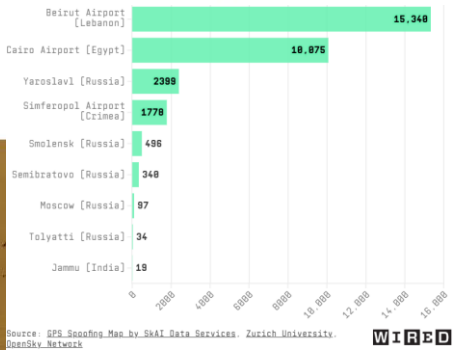
India Intensifies Border Security with GPS Jamming Technology

Published December 22, 2024 | By admin

Suspected Chinese hackers are targeting India’s power grid

It's the continuation of a years-long trend.

BY TONYA RILEY • APRIL 7, 2022



China Appears to Warn India: Push Too Hard and the Lights Could Go Out

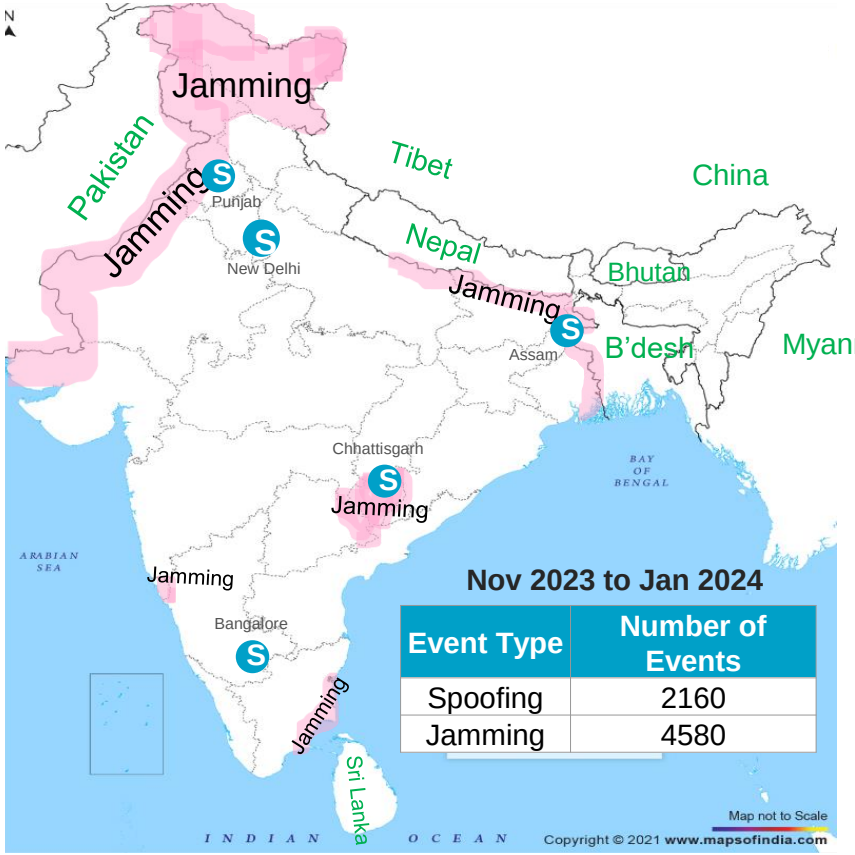
As border skirmishing increased last year, malware began to flow into the Indian electric grid, a new study shows, and a blackout hit Mumbai. It now looks like a warning.

roke out at the Ghazipur landfill darkens the sky on the backdrop of high-tension electricity pylons on the outskirts of New 2. (Photo by MONEY SHARMA/AFP via Getty Images)

Hackers likely affiliated with the Chinese government have been going after North India’s power supply, according to a report by Recorded Future.

GNSS is a free service , but is it really free?

GNSS Audit in India

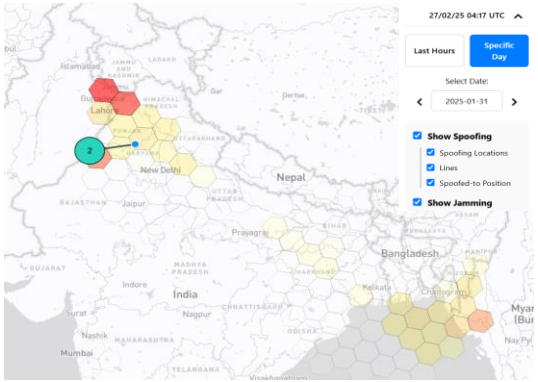


Nov 2023 to Jan 2024

Event Type	Number of Events
Spoofing	2160
Jamming	4580

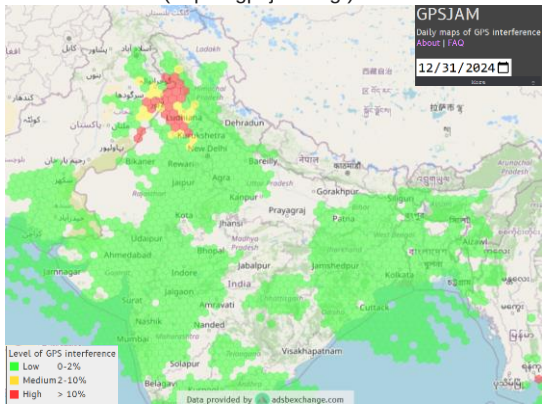
Live GPS Jamming/Spoofing Tracker Map

(https://spoofing.skai-data-services.com/)



GPSJAM GPS/GNSS Interference Map

(https://gpsjam.org/)



GNSS threats observed in India

- GNSS - Single Point of Failure
- Highly susceptible to interferences, attenuation, degradation due to environmental condition
- Intentional threats like Jamming and Spoofing
- Critical application require stringent availability and hence can't rely on single clock source.

Our extensive research on various networks, spanning several years of GNSS alarm analysis, unequivocally underscores the critical necessity of implementing backup systems.

```
info log continues (3/9)
Up Time   Date/Time           Description
--------  ------------------  ------------------------------------------------------
  176165  2023-02-09 03:03:56  OFF: MinSat2 Threshold Crossed
  176143  2023-02-09 03:03:34  OFF:
  175865  2023-02-09 02:58:56  ON:  Clock in Time Holdover
  175865  2023-02-09 02:58:56  ON:  MinSat2 Threshold Crossed
  175864  2023-02-09 02:58:55  ON:  Clock Time Not Traceable
  175864  2023-02-09 02:58:55  ON:  Clock Frequency Not Traceable
  175863  2023-02-09 02:58:55  OFF: Failure Suspended
  175861  2023-02-09 02:58:53  ON:  Failure Suspended
  175859  2023-02-09 02:58:50  ON:  Jamming/Interference detected: critical. : (JamInd=62).
  175849  2023-02-09 02:58:41  OFF: Failure Suspended
  175847  2023-02-09 02:58:39  ON:  Failure Suspended
  155465  2023-02-08 21:18:56  ON:  L1 Signals Available Only
```

Actual GNSS jamming events observed in Tier-1 Telco operators

//Network/OSA5401/UPE/MBJNKYRIPTP002	TRUE	MBJNKYRIPTP002 (10.194.212.210)	Major	2024-02-0	2024-02-0	NSA	PRM	Jamming	1h 23m 2s	GPS-1-1-1-1
//Network/OSA5401/UPE/RATHBHYBPTP001	TRUE	RATHBHYBPTP001 (10.194.208.2)	Major	2024-01-2	2024-01-2	NSA	PRM	Jamming	1h 32m 6s	GPS-1-1-1-1
//Network/OSA5422/Karnataka/BGLRUPKWE18001	TRUE	BGLRUPKWE18001 (10.192.210.98)	Major	2024-01-2	2024-01-2	NSA	PRM	Spoofing	28m 31s	GPS-1-1-1-1
//Network/OSA5401/UPE/RATHBHYBPTP001	TRUE	RATHBHYBPTP001 (10.194.208.2)	Major	2024-01-2	2024-01-2	NSA	PRM	Jamming	1h 24m 34s	GPS-1-1-1-1
//Network/OSA5401/Telangana/TPRNTPRNPTP001	TRUE	TPRNTPRNPTP001 (10.195.240.46)	Major	2024-02-1	2024-02-1	NSA	PRM	Jamming	7h 7m 35s	GPS-1-1-1-1
//	TRUE	TCPPGRWKPTP001 (10.195.84.30)	Major	2024-01-2	2024-01-2	NSA	PRM	Jamming	1w 1h 13m 3s	GPS-1-1-1-1
//	TRUE	TCPPGRWKPTP001 (10.195.84.30)	Major	2024-01-1	2024-01-1	NSA	PRM	Jamming	5h 24m 5s	GPS-1-1-1-1
//Network/OSA5422/Delhi/NOIDNDFDE18001	TRUE	NOIDNDFDE18001 (10.196.33.230)	Major	2024-01-1	2024-01-1	NSA	PRM	Spoofing	14m 7s	GPS-1-1-1-1
//Network/OSA5422/Delhi/DLHIVKDEE18001	TRUE	DLHIVKDEE18001 (10.196.33.226)	Major	2024-01-2	2024-01-2	NSA	PRM	Spoofing	14m 7s	GPS-1-1-1-1
//Network/OSA5401/UPE/RATHBHYBPTP001	TRUE	RATHBHYBPTP001 (10.194.208.2)	Major	2024-01-2	2024-01-2	NSA	PRM	Jamming	1h 24m 34s	GPS-1-1-1-1
//Network/OSA5401/Telangana/TPRNTPRNPTP001	TRUE	TPRNTPRNPTP001 (10.195.240.46)	Major	2024-02-1	2024-02-1	NSA	PRM	Jamming	7h 7m 35s	GPS-1-1-1-1
//Network/OSA5422/Delhi/NOIDNDFDE18001	TRUE	NOIDNDFDE18001 (10.196.33.230)	Major	2023-12-2	2023-12-2	NSA	PRM	Spoofing	17m 21s	GPS-1-1-1-1
//Network/OSA5422/Delhi/NOIDNDFDE18001	TRUE	NOIDNDFDE18001 (10.196.33.230)	Major	2024-01-0	2024-01-0	NSA	PRM	Spoofing	17m 18s	GPS-1-1-1-1
//Network/OSA5401/Rajasthan/SGNRSGNRPTP001	TRUE	SGNRSGNRPTP001 (10.194.72.26)	Major	2024-02-1	2024-02-1	NSA	PRM	Jamming	2h 18m 30s	GPS-1-1-1-1
//Network/OSA5401/Rajasthan/JPURMLVEPTP001	TRUE	JPURMLVEPTP001 (10.194.72.54)	Major	2024-01-1	2024-01-1	NSA	PRM	Jamming	2h 25m 14s	GPS-1-1-1-1
//Network/OSA5401/Rajasthan/JPURMLVEPTP001	TRUE	JPURMLVEPTP001 (10.194.72.54)	Major	2024-01-1	2024-01-1	NSA	PRM	Jamming	2h 26m 45s	GPS-1-1-1-1
//Network/OSA5401/J&K/SGARRGLCPTP001	TRUE	SGARRGLCPTP001 (10.194.164.110)	Major	2024-01-2	2024-01-2	NSA	PRM	Jamming	10h 32m 56s	GPS-1-1-1-1
//Network/OSA5401/J&K/SGARRGLCPTP001	TRUE	SGARRGLCPTP001 (10.194.164.110)	Major	2024-01-1	2024-01-1	NSA	PRM	Jamming	8h 55m 29s	GPS-1-1-1-1
//Network/OSA5422/Delhi/NOIDNDFDE18001	TRUE	NOIDNDFDE18001 (10.196.33.230)	Major	2024-01-1	2024-01-1	NSA	PRM	Spoofing	15m 57s	GPS-1-1-1-1
//Network/OSA5401/Assam/DHEEDHEEPTP001	TRUE	DHEEDHEEPTP001 (10.195.12.42)	Major	2023-12-2	2023-12-2	NSA	PRM	Jamming	5h 6m 58s	GPS-1-1-1-1
//Network/OSA5401/Assam/DHEEDHEEPTP001	TRUE	DHEEDHEEPTP001 (10.195.12.42)	Major	2023-12-3	2023-12-3	NSA	PRM	Jamming	1h 34m 48s	GPS-1-1-1-1
//Network/OSA5422/Assam/GWHTDSPRE18001	TRUE	GWHTDSPRE18001 (10.196.65.38)	Major	2024-01-0	2024-01-0	NSA	PRM	Spoofing	21m 7s	GPS-1-1-1-1
//Network/OSA5422/Delhi/NOIDNDFDE18001	TRUE	NOIDNDFDE18001 (10.196.33.230)	Major	2023-12-0	2023-12-0	NSA	PRM	Spoofing	17m 36s	GPS-1-1-1-1
//	TRUE	SPREUPRSPTP001 (10.194.164.106)	Major	2024-01-1	2024-01-2	NSA	PRM	Jamming	5d 22h 4m 32s	GPS-1-1-1-1
//Network/OSA5401/J&K/SGARRGLCPTP001	TRUE	SGARRGLCPTP001 (10.194.164.110)	Major	2024-01-1	2024-01-1	NSA	PRM	Jamming	6h 43m 55s	GPS-1-1-1-1
//	TRUE	RMPTRMPTPTP001 (10.195.20.154)	Major	2023-12-1	2023-12-1	NSA	PRM	Jamming	5h 48m 26s	GPS-1-1-1-1
//Network/OSA5422/Delhi/NOIDNDFDE18001	TRUE	NOIDNDFDE18001 (10.196.33.230)	Major	2023-11-1	2023-11-1	NSA	PRM	Spoofing	14m 50s	GPS-1-1-1-1
//Network/OSA5422/Delhi/NOIDNDFDE18001	TRUE	NOIDNDFDE18001 (10.196.33.230)	Major	2023-11-2	2023-11-2	NSA	PRM	Spoofing	14m 5s	GPS-1-1-1-1

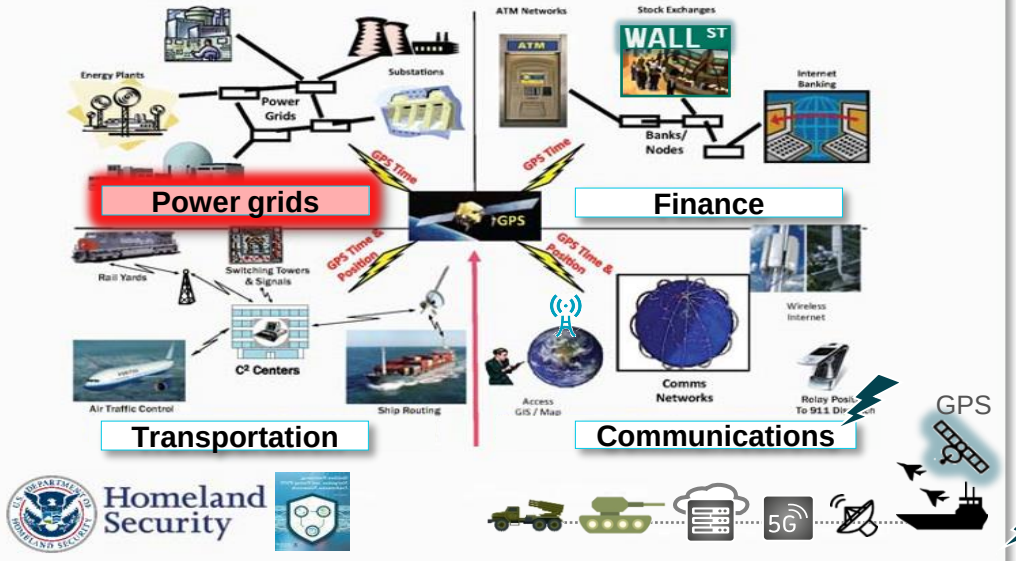
GNSS is most common source used to derive timing synchronization in the network – Single Point of Failure!

Critical infrastructure under homeland security threats

THE BIG PROBLEM IF GPS/GNSS GOES DOWN

PNT cyberthreats

If GNSS is disrupted or compromised



All supported by

Data centers

According to RTI & NIST cost of PNT disruption in US is $1B /Day
A five-day disruption would cost the British economy an estimated £5.2B
Refer: **What would happen to America if GPS was attacked?**

Resilient PNT Conformance – Global Guidelines and Indian Govt. Initiatives

Mitigation of GNSS Cyber threats - Resilient Timing-Backup to GPS

RESILIENT PNT MANDATE AND IEEE PNT STANDARD

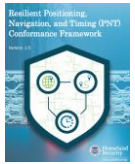
1. **aPNT mandate** - Driven by the **US Federal Executive Order 13905**

- **Protect** critical infrastructure against PNT services disruption from rising GNSS & NTP/PTP threats.
- **Deploy** resilient, multisource and assured PNT systems
- **Target** critical infrastructure sectors under national security threats

GNSS/GPS is a single point of failure risk for PNT services

Power grids | Finance | Transportation | 5G Communications | Defense Communications | Data centers

- Use published resilient PNT guidelines & standard
  - **DHS Resilient PNT Conformance Framework**
  - **NIST Cybersecurity Framework for PNT Profile**
  - **IEEE P1952 Resilient PNT for User Equipment Standard working group**

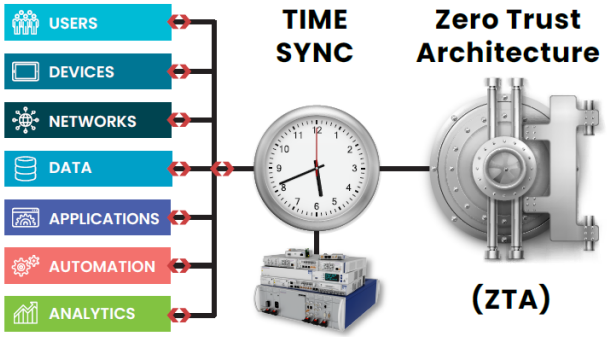


NIST NISTIR 8323

IEEE SA P1952 PNT

2. Implement Zero trust architecture network

- A layered approach with various **redundancy/protection mechanism**
- Flexible to accept **multiple timing input references** and automatic switching between inputs in case of any anomalies.
- Detection & Mitigating against **GNSS Jamming and Spoofing** threats.
- AI/ML based approach to proactively protect against all external Cyber threats.



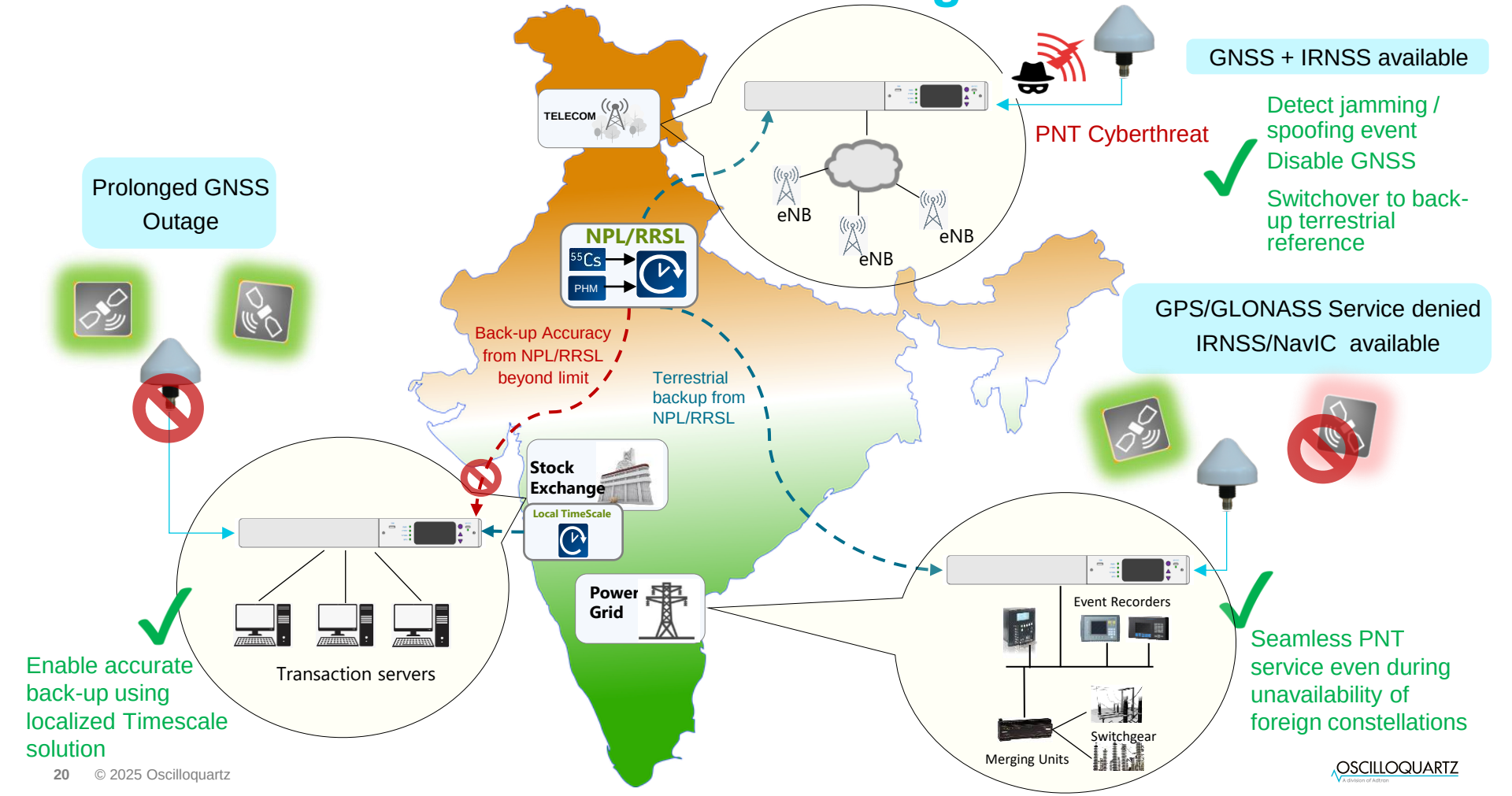
Regulatory Guidelines - Legal Metrology (IST) Rules, 2025

NATIONAL TIME DISSEMINATION POLICY: "ONE NATION, ONE TIME"

- **Mandatory Use of Indian Standard Time (IST):**
  - IST is the official time reference for all legal, administrative, financial, and commercial activities.
  - International time zones may be displayed alongside IST but cannot be used for legal or administrative purposes.
  - Government offices and public institutions must synchronize and display IST using approved sources like NTP, PTP, or other authorized methods.
- **Cybersecurity & Resilience Measures**:
  - Time systems must include **cybersecurity protections against jamming, spoofing, and cyber threats.**
  - **Terrestrial-based time distribution** from RRSLs will complement **NavIC signals** for improved reliability.
- **Monitoring, Compliance and Penalties:**
  - Monitoring solution implementation will ensure Accuracy and Traceability of the client end-systems.
  - Government will issue guidelines for synchronization and conduct regular audits to ensure compliance.
  - Violations may result in fines or penalties as determined by authorities.

Reference : Draft Legal Metrology (Indian Standard Time) Rules, 2025

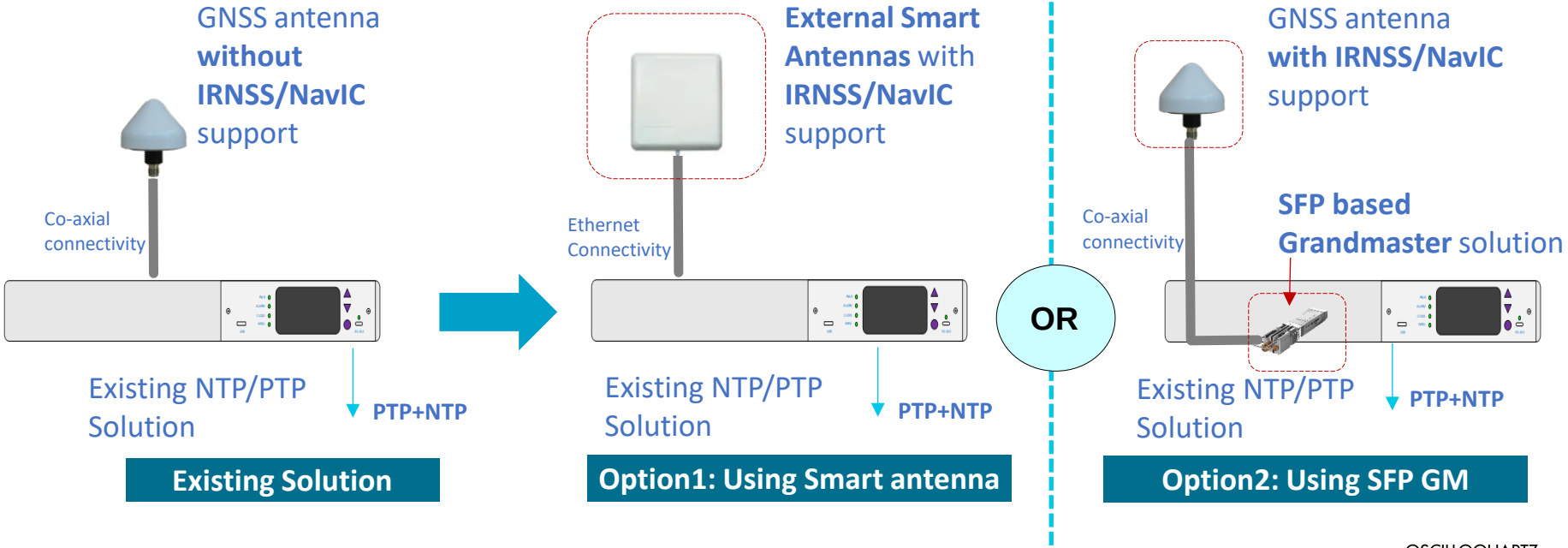
“One Nation One Time” Resilient timing architecture



Towards compliance with “One Nation One Time” Policy

Enable IRNSS/NavIC in all GNSS enabled solutions

- Draft notification to be circulated to all stakeholders, regarding the switchover from GPS/GLONASS etc. systems to **IRNSS/NavIC**.
- OSA Solutions enable seamless migration to **IRNSS/NavIC** compliant infrastructure



IRNSS/NavIC Constellation support

```
INFO:          OSA 5405-MB QUARTZ MB(L1+L5)
 SW version:   12.1.1-036
 HW version:   1.01
 Factory FPGA: 0x536537B1 unknown
 Applic1 FPGA: 0x3FD8690C OSA-5405.12.1.1-036.bin Current image
 Applic2 FPGA: 0xFFFFFFFF erased
 Clock state:  GNSS - Locked
 RTC time:     2023-01-10 02:51:03
 Date and time:2023-01-10 02:50:26 UTC+0
 SFP:          Not Present
 Antenna:      internal
 Board temperature (C):  29.0
 Mac-address 1:84-c8-07-5f-7d-74
 Mac-address 2:84-c8-07-5f-7d-75
 Serial number:FA71223950892
 Mgmt:
  ipv4-dhcp       : disabled
  ipv6-dhcp       : disabled
  ipv6-dhcp-type  : stateful
  ipv4-address    : 192.168.0.2/24
  ipv4-default-gw : 0.0.0.0
  ipv6-address    : ::/64 not defined
  ipv6-default-gw : 0:0:0:0:0:0:0:0
  vlan-id         : 4095
  vlan-pcp        : 7
  ip-priority     : none
```

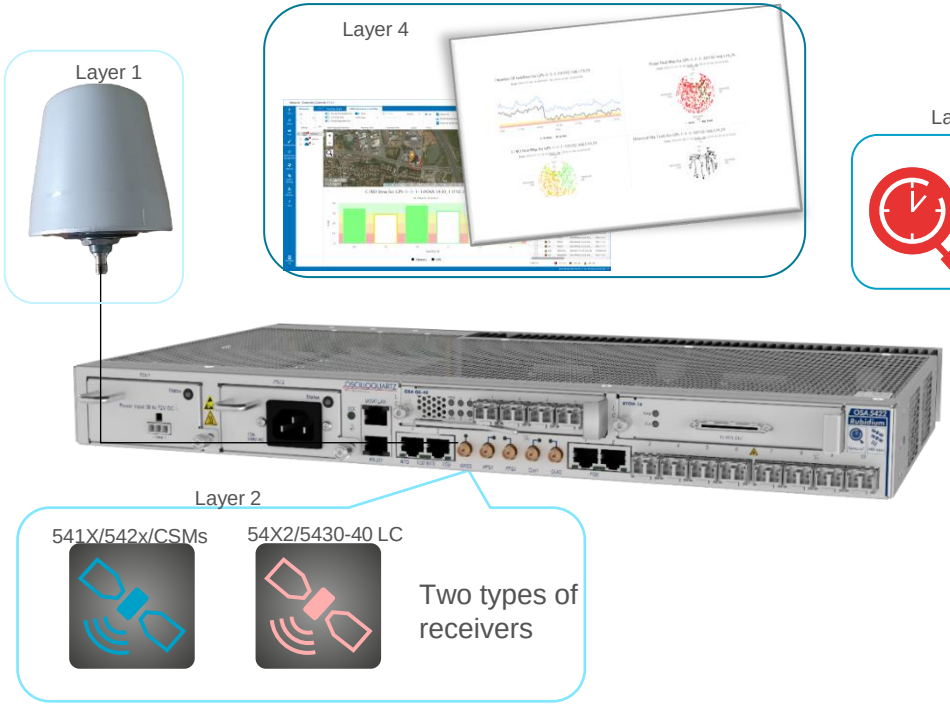
OSA 54xx solution successfully locked on the NavIC constellation.

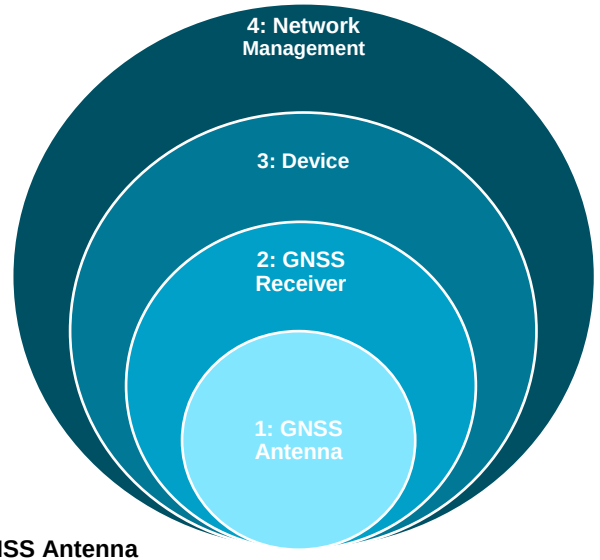
```
ADVA:configure-clock-gnss--> show status
configure clock gnss show status

Administrative Status : Up
Operational Status    : Up
Mode                  : navic,gps-l1ca,gps-l5q
Antenna-delay         : 0

Tracking              : GNSS - Locked

Location Mode         : fixed  ( running-config: survey-in )
Minimum SNR           : 9 dBHz
Minimum Elevation     : 5 deg

Latitude              : N28.4762053
Longitude             : E077.0869292
Altitude              : 192.954 m

Horizontal Accuracy   : 6.317 m
Vertical Accuracy     : 4.467 m
Time DOP              : 0.330
Horizontal DOP        : 0.000
Vertical DOP          : 0.000
```

```
ADVA:configure-clock-gnss-show-status-->
configure clock gnss show status
Satellite Status:
-------------------------------------------
   Num Sig   SNR Hlth Used Azim Elev Corr
-------------------------------------------
 G   1 L1C/A   0    N   N   140    8 None
 G   1 L5Q    20    Y   Y   140    8 None
 G   4 L1C/A  28    Y   Y   160   27 MB
 G   4 L5Q    26    Y   Y   160   27 MB
 G   7 L1C/A  44    Y   Y     6   63 None
 G   7 L5Q     0    N   N     6   63 None
 G   8 L1C/A  40    Y   Y    55   46 MB
 G   8 L5Q    43    Y   Y    55   46 MB
 G   9 L1C/A  41    Y   Y   189   57 MB
 G   9 L5Q    41    Y   Y   189   57 MB
 G  14 L1C/A  43    Y   Y   265   37 MB
 G  14 L5Q    47    Y   Y   265   37 MB
 G  17 L1C/A  23    Y   Y   200   14 None
 G  17 L5Q     0    N   N   200    0 None
 G  20 L1C/A   0    N   N   280    1 None
 G  20 L5Q     0    N   N   280    1 None
 G  21 L1C/A   0    N   N   114   17 None
 Press <enter> to continue

ADVA:configure-clock-gnss-show-status-->
configure clock gnss show status
Satellite Status:
-------------------------------------------
   Num Sig   SNR Hlth Used Azim Elev Corr
-------------------------------------------
 G  21 L5Q     0    N   N   114   17 None
 G  27 L1C/A  41    Y   Y    40   15 MB
 G  27 L5Q    45    Y   Y    40   15 MB
 G  30 L1C/A  47    Y   Y   319   38 MB
 G  30 L5Q    50    Y   Y   319   38 MB
 N 249 L5A    46    Y   Y   249   59 None
 N 250 L5A    41    Y   Y   168   55 None
 N 251 L5A    44    N   Y   160   27 None
 N 253 L5A    45    Y   Y   246   32 None
 N 256 L5A    37    Y   Y   189   57 None
-------------------------------------------
```

OSA54x2+OSA5405 and OSA5430 solutions support IRNSS/NavIC constellations

Multilayer Detection





NR	Jamming Detection	Near	NA	NSA
MJ	Spoofing Detection	Near	NA	NSA
MJ	Advanced Jamming Detection	Near	NA	NSA
MJ	Advanced Spoofing Detection	Near	NA	NSA

Layer 1: GNSS Antenna

- Use anti-jam/spoof antennas, with threat alarms

Layer 2: GNSS Receiver

- Use multi-constellation/-band receivers, with jam/spoof & satellite count monitoring, jam mitigation, spoof detection, etc., and threat alarms
- Use advanced spoofing detection as Layer 2+

Layer 3: Device Level

- SyncJack to mitigate spoofed GNSS vs PTP signals
- Compare two GNSS receivers, in fixed & nav mode, to detect location/phase/time change

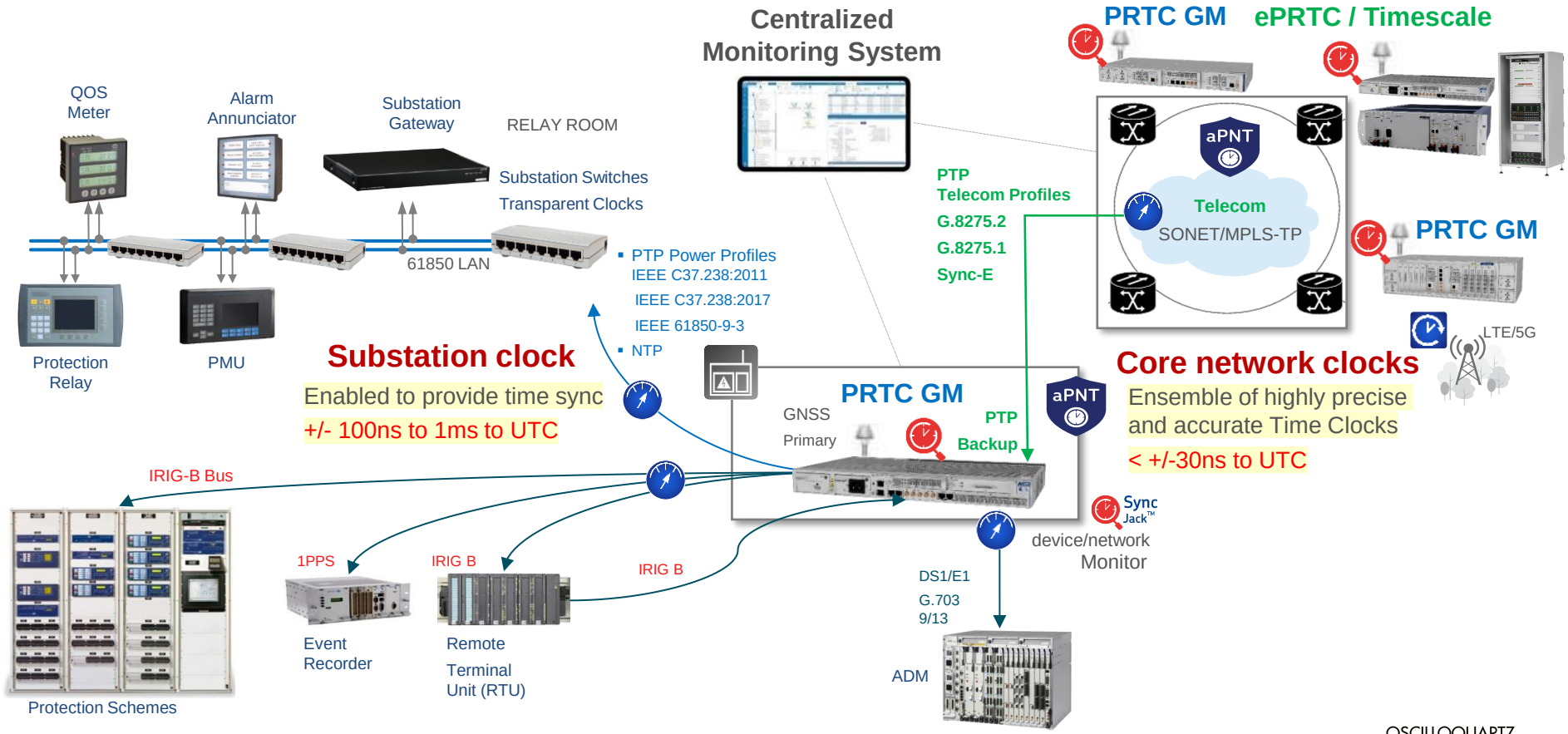
Layer 4: Network Management

- Manage/monitor/compare/verify all network clocks (GNSS/PTP/ etc.) in real-time, with performance threat alarms/analytics

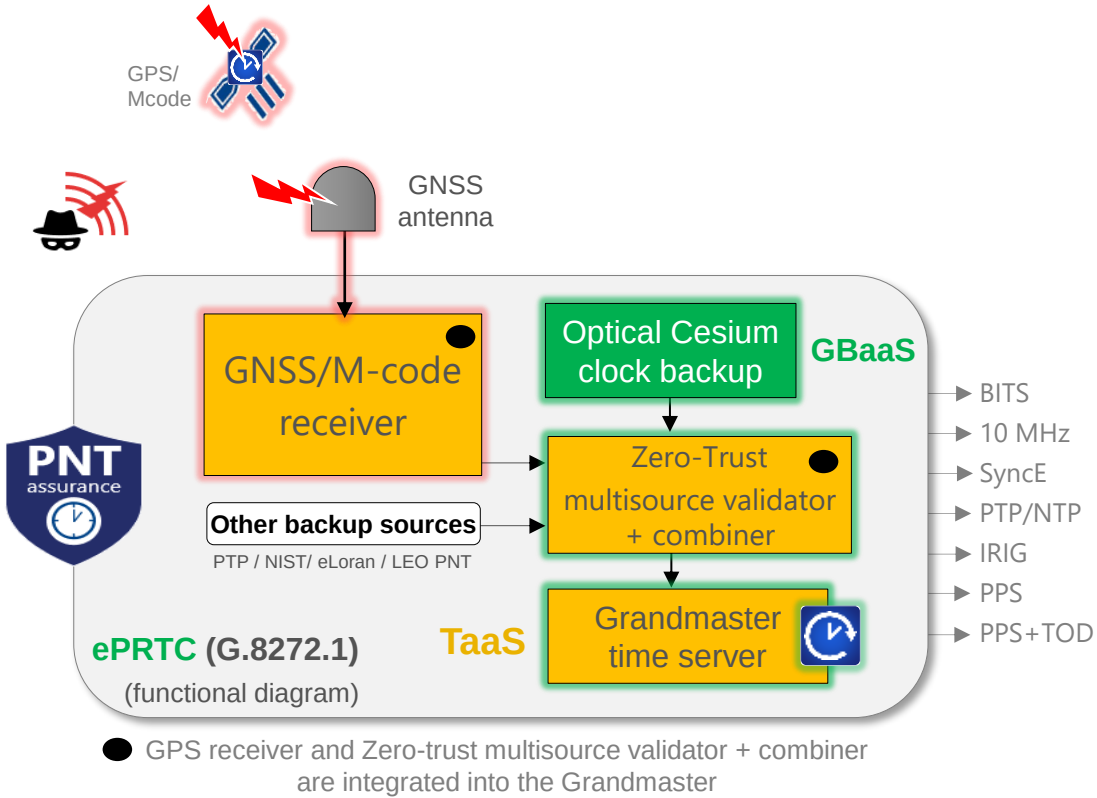
Secure and Resilient Timing Infrastructure for Power Grids

Typical Time sync delivery in Power Grid Network

SECURE & RESILIENT TIME KEEPING/DISTRIBUTION/ASSURANCE

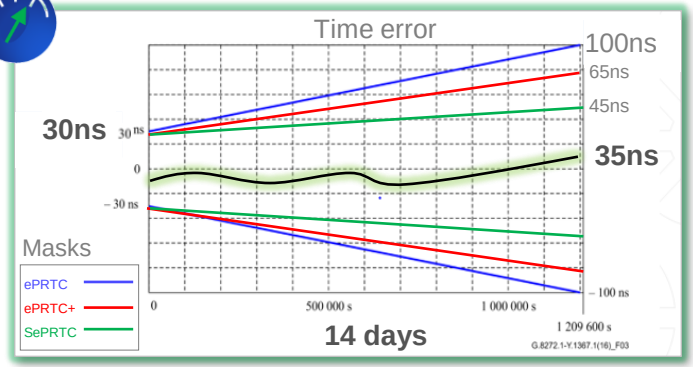


ePRTC solution configuration & performance



GPS receiver and Zero-trust multisource validator + combiner are integrated into the Grandmaster

Short-term GNSS backup holdover performance



Long-term GNSS backup holdover performance

Time/Phase holdover if GPS goes down

SePRTC: 100ns over typ. 55 days
1µs over typ. 4 months
SePRTC+ 100nsec over typ. 100 days (~120 days)

Super ePRTC solution

OSA Timescale System

- Integrated time scale and timekeeping system:
  - Performs UTC realization using multiple frequency sources, including Cesium and high-stability oscillators.
  - Calibrated metrology GNSS receiver ensures accurate post-processing measurements, providing traceability to UTC and enabling precise steering calculations.

- Real-time monitoring and comparison:
  - Continuously measures and compares signals from frequency sources in both phase and frequency using a phase comparator (PCO) and a time interval counter (TIC).
  - Extends real-time monitoring to distributed signals, ensuring that both frequency and phase are consistently accurate.

- Time dissemination:
  - Supports the dissemination of time using protocols such as PTP, NTP and White Rabbit (WR).
  - Supports the generation and submission of required reports like RINEX, CGGTTS and others.
  - Integrates with global timekeeping efforts by providing data to BIPM’s Circular T and Rapid UTC reports.

- Traceability and compliance:
  - The system is traceable to UTC(k) realizations and complies with BIPM reporting standards.

GNSS Assurance - Ensemble Sync Director

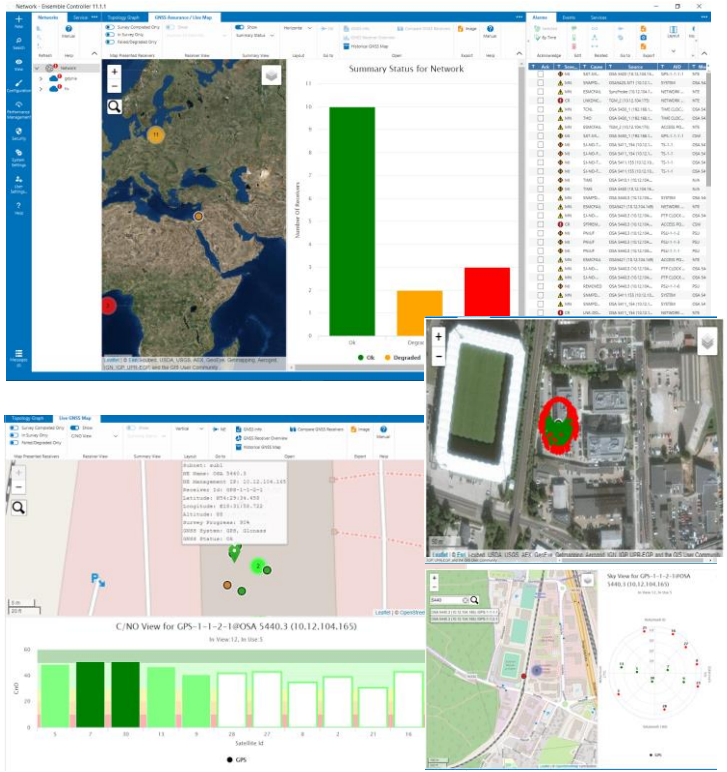
MONITORING AND ANALYSIS OF GNSS (GLOBAL NAVIGATION SATELLITE SYSTEM) STATUS

Product description

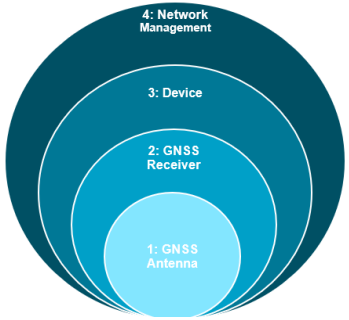
- Real-time and long term GNSS monitoring
- GNSS sites display with “health” indication on geo-map (with Street maps / Satellite view options)
- GNSS Summary Status for network/subnetwork/device
- GNSS data collection and presentation on live and historical views
- “Smart” comparison views between sites and time intervals
- Option to monitor 3rd party GNSS receivers

Key benefits

- GNSS troubleshooting and historical analysis
- Identify GNSS installation/blocking issues, detect blind/poor spots for antenna, jamming/spoofing problems
- Optimize antenna positioning and receiver setting for optimal performance for time synchronization
- Automatic corrective action on detection on Jamming/Spoofing events; eliminating manual operations

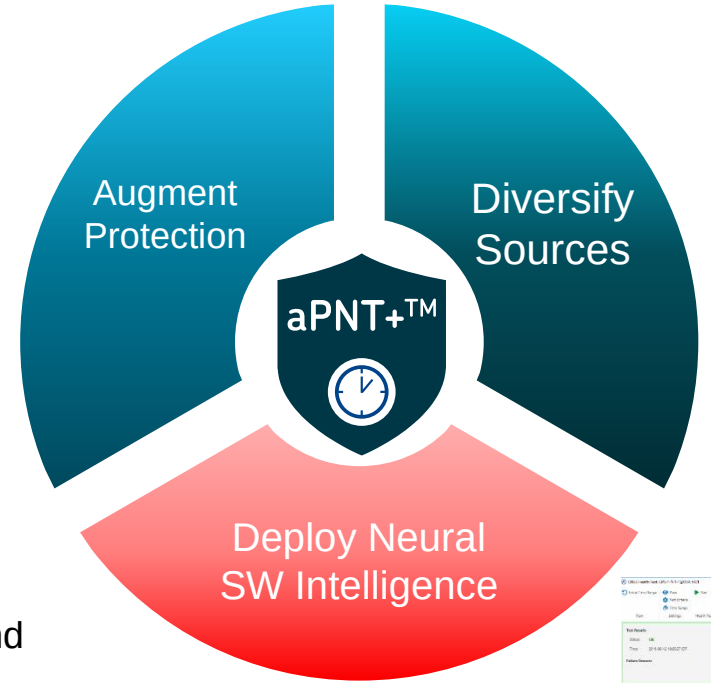


The way forward…

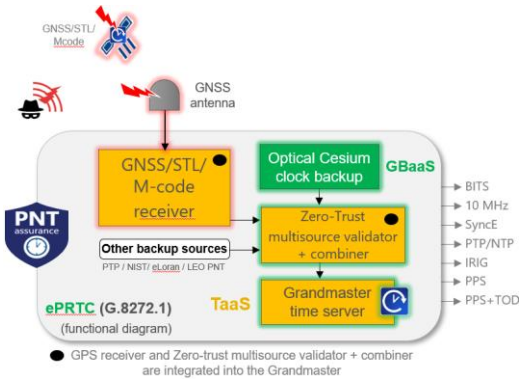


NR	Jamming Detection	Near	NA	NSA
MJ	Spoofing Detection	Near	NA	NSA
MJ	Advanced Jamming Detection	Near	NA	NSA
MJ	Advanced Spoofing Detection	Near	NA	NSA

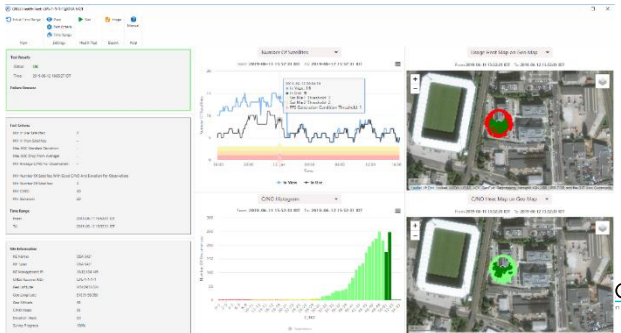
- Enable IRNSS/NavIC
- Jamming/ Spoofing detection and mitigation
- Multi-layer protection
- Future-Proof solutions with authentication protocols and encryption



Network Level Intelligence
- Machine Learning
- Artificial Intelligence



Multiple zero-trust PNT Sources
- Cs backup (100nsec for 120 days)
- PRTC/ePRTC
- PTP/SyncE
- PPS/ToD/BITS



Thank you!

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