सत्यमेव जयते

भारत सरकार

Government of India

विद्युत मंत्रालय

Ministry of Power

उत्तर क्षेत्रीय विद्युत समिति

Northern Regional Power Committee

सं.: उक्षेविस/ प्रचालन/108/04/2023/5303 - 5337 दिनांक:18.05.2023

No. NRPC/OPR/108/04/2023/ Date:18.05.2023

सेवा में/ To,

Members of TeST Sub-Committee of NRPC

विषय: दूरसंचार, स्काडा और टेलीमेटरी उप समिति की 22वीं बैठक की कार्यसूची ।

Subject: Agenda for 22nd meeting of Telecommunication, SCADA & Telemetry Sub Committee-reg.

महोदय/ Sir,

इस कार्यालय के पत्र दिनांक 28.04.2023 के क्रम करते हुए यह सूचित किया जाता है कि उत्तर क्षेत्रीय विद्युत समिति की दूरसंचार,स्काडा और टेलीमेटरी (टेस्ट) उप-समिति की 22 वीं बैठक दिनांक **24.05.2023** को **11:00** बजे से **वेब-एक्स विडियो कॉन्फ्रेंसिंग** के माध्यम से आयोजित की जाएगी । बैठक में सम्मिलित होने के लिए लिंक व आवश्यक जानकारी सदस्यों को ई-मेल द्वारा प्रदान करा दी जाएगी । बैठक की कार्यसूची आपकी सूचना एवं आवश्यक कार्यवाही हेतु संलग्न है ।

कृपया बैठक में भाग लेने की कृपा करें ।

In continuation to NRPC letter dated 28.04.2023, it is to be intimated that the 22nd meeting of Telecommunication, SCADA & Telemetry (TeST) Sub-committee of NRPC will be **held on 24.05.2023 at 11:00 AM via WebEx video conferencing**. The link and necessary information to attend the meeting would be provided to the members via e-mail. The agenda for the meeting is enclosed herewith for your information and necessary action.

Kindly make it convenient to attend the meeting.

Encl.: As above.

भवदीय

Yours faithfully,

18.5.23

(संतोष कुमार)

(Santosh Kumar)

अधीक्षण अभियंता

Superintending Engineer

Special Invitee: M/s. Siemens.

Contents

1. Confirmation of Minutes

1.1. The minutes of 21st meeting of TeST sub-committee held on 13.12.2022 were issued on 17.02.2023. Minutes are available at NRPC website (http://164.100.60.165). No comments have been received till date.

Members may kindly confirm the minutes.

2. Introduction of MPLS Technology in ISTS Communication (Agenda by CTU)

2.1. Presently most of the ISTS networks are based on SDH technology with suitable redundancy. From the recent market trends, it is evident that Telecom Service Providers have started using MPLS based networks because of its embedded benefits like high Band Width efficiency, availability of various Quality of Service (QoS) for different applications. This has led to reduction in the chip production of SDH equipment and SDH equipment are thus getting obsolete for future projects and also for maintenance of the existing SDH system.

2.2. In order to evaluate latest market trends and views of various stakeholders, CTU has organized a Seminar on MPLS Technology in Jan'23. The Seminar was attended by participants from CEA, RPCs, CERC, Grid-India, STUs, Transmission Licensees, POWERGRID, MPLS Service providers both in person and online.

2.3. During the seminar the MPLS service providers viz, NOKIA, HITACHI, SIEMENS, CISCO, GE & Tejas made elaborate presentations followed with a interactive Q&A session. It emerged out that introduction of MPLS technology in Power Sector has become essential and cannot be carried out with the current SDH technology for more time. However, many challenges are involved in Power Sector for monitoring and operation of Grid using applications such as SCADA, PMU, VoIP, Protection, AGC, Tele-Protection etc. Power System applications for Grid Operation compared to Telecom and Internet services are more critical as these applications require real time monitoring, low latency, redundancy and high reliability. Considering the same, the MPLS technology needs to be explored suitably for Power Sector communication requirements for new projects.

2.4. Another major challenge would be dovetailing of the legacy ISTS SDH communication networks constituting of approximately 70000 kms of OPGW. The existing SDH system shall be rolled out in a phased manner as it lives its life.

2.5. The above-mentioned aspects were detailed by the MPLS service providers and both options of MPLS i.e. TP & IP were advised.

2.6. It is also learnt that some STUs are using MPLS networks for their Intra-State communication and they may share the detailed usage of the same.

2.7. It is proposed that the matter may be deliberated in depth with the various stakeholders to introduce the appropriate technology of MPLS for the new ISTS communication system elements and integration of the same with the existing SDH network. It is also proposed that a Pilot Project may be carried out to examine the various power system applications (SCADA, PMU, VoIP, Protection, AGC, Tele-Protection etc.) on MPLS network and bridging with existing SDH network.

2.8. Separate special RPC meeting can also be called to deliberate the matter in depth.

Members may kindly deliberate

3. Providing redundant communication to 400kV Manesar Substation (Agenda by CTU)

3.1. Presently 400kV Manesar sub-station is connected through ISTS communication network via following two (02) transmission lines:

(i) 400kV D/C Manesar-Neemrana.
(ii) 400kV D/C Manesar- Gurgaon.

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).

3.2. Manesar-Neemrana link & Manesar-Sohna/ Gurgaon link is regularly being disrupted due to diversion works associated with highways being in close proximity.

3.3. Manesar S/s is an important wideband node of Northern Region in view of WAMS PDC backup housed at Manesar.

3.4. It is proposed one more backup communication path may be planned to Manesar. Additional link may be created by laying OPGW from the crossing point of Neemrana – Manesar (2nd E/W peak of the line) & Agra-Jhatikara line upto Jhatikara & Manesar, which will be around 35 kms. This agenda was also discussed in the 3rd Meeting of CTUIL for Planning of Communication System for Inter-State Transmission system (ISTS) in Northern Region held on 17.02.2023 & in 64th NRPC where Forum requested that agenda first needs to be deliberated in TeST meeting.

3.5. Details of proposed link is given below in the figure:

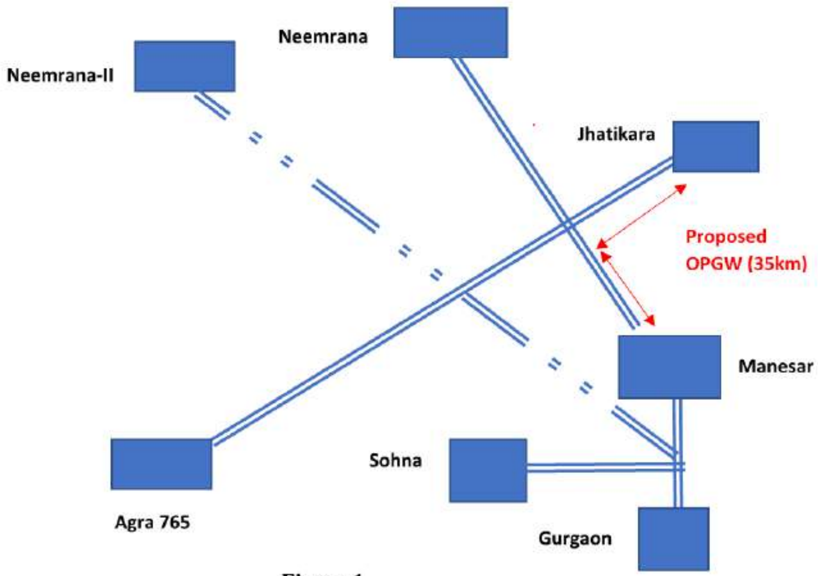

Figure-1

3.6. Line length of proposed OPGW installation is 35 kms. After TeST meeting this agenda shall be put up in NRPC meeting.

Members may kindly deliberate

4. Redundant communication for Fatehgarh PS (Adani), Mohindergarh (Adani) & Mundra (Adani) stations (Agenda by CTU)

4.1. Redundant communication for Fatehgarh PS (Adani), Mohindergarh (Adani) & Mundra (Adani) stations was discussed in the 2nd ISTS planning meeting of NR, 20th TesT meeting and in 3rd ISTS planning meeting of NR.

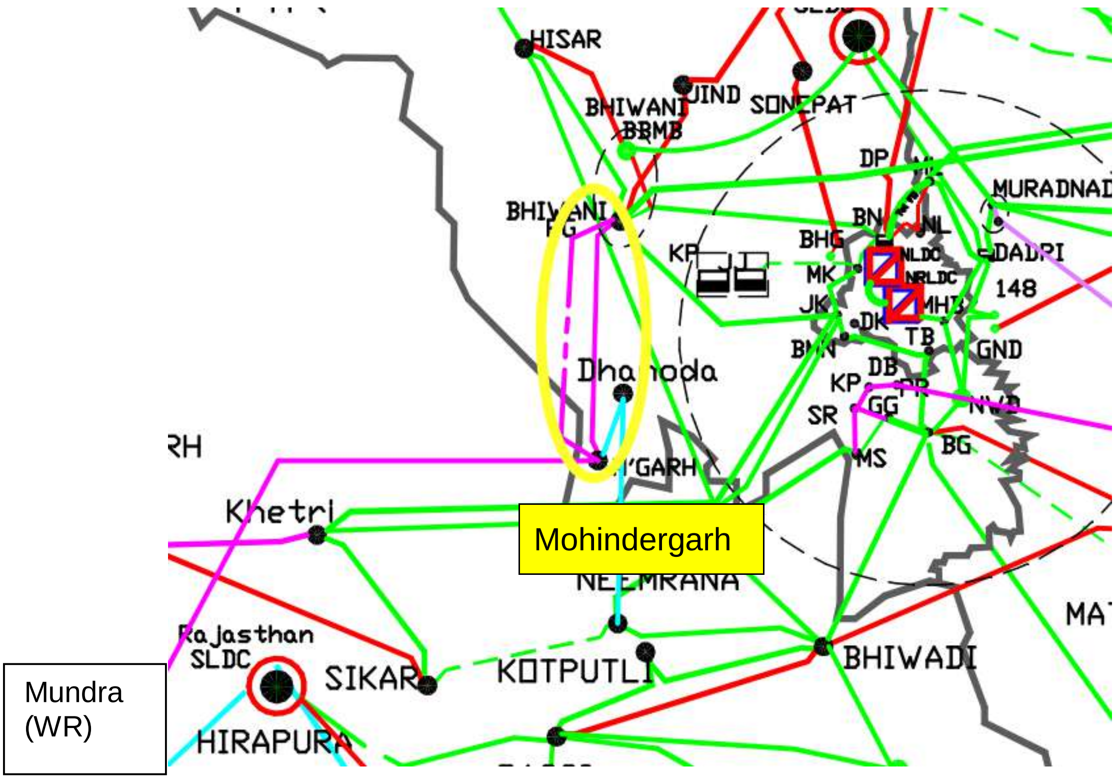

Fig-3

4.2. In the 3rd ISTS planning meeting it was deliberated that to provide redundant communication for Mohindergarh, OPGW on Mohindergarh– Bhiwani (PG) Ckt-1&2 links of Adani needs to be optically patch with Bhiwani PG FOTE from Adani Bay Kiosk FOTE. Further POWERGRID informed that Ckt-3 & 4 of Mohindergarh– Bhiwani (PG) line is under construction and likely to be commissioned shortly, thereafter there will be one additional redundancy shall be made.

4.3. Adani representative informed in 3rd ISTS planning meeting of NR that they will revert back with their internal team for the local patching of Bhiwani equipment of POWERGRID through ckt-1&2 OPGW link. Further they confirmed that they shall revert back details before next TeST meeting**.**

4.4. For Mundra – Mohindergarh line, Adani has stated that OPGW was not in the original scope of the transmission line for ULDC purpose. They have installed OPGW for HVDC operation only. CTU stated that however OPGW was not envisaged originally in the TSA but installed OPGW can be utilised for ISTS communication purposes.

4.5. For Fatehgarh PS station Adani to provide the details for redundant communication.

Members may kindly deliberate.

5. Redundant communication for Samba (PG) (Agenda by CTU)

5.1. Redundant communication for Samba (PG) was deliberated in the 2nd ISTS planning meeting of NR, 20th TeST meeting of NRPC and also in 3rd ISTS planning meeting of NR.

5.2. Samba (PG) is connected on single route i.e. Sambha- Kishenpur path, second path can be created by following lines where OPGW is already available:

(i) Amargarh – Samba (Indigrid line)

(ii) Samba – Jallandhar (Indigrid line)

However, these OPGW are not utilized for ULDC. For the redundancy of Samba (PG), Amargarh (Indigrid), Uri-1 & Wagoora these links can be used by optically patching of FOTE at these locations.

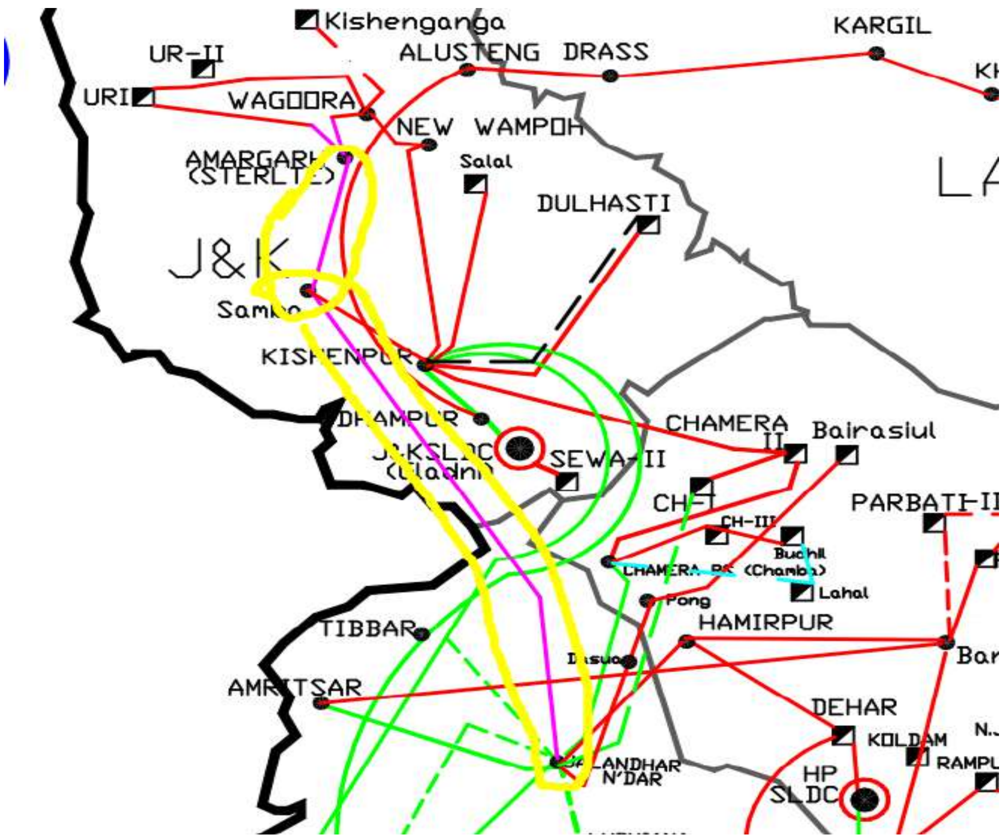

Fig-4

5.3. The matter was deliberated in the 3rd ISTS planning meeting where POWERGRID informed that local patching with Indigrid equipment with ULDC equipment has been done at Amargarh, however KLM bypass to be done by Indigrid at GE equipment.

5.4. Indigrid confirmed that local patching issue at Amargarh and bypassing of KLM they will resolve in next one month. Indigrid to provide details of the same.

J&K PDD also informed that their line Janikote – Delina will be LILOed at Amargarh in future, this may also be planned to create redundant path to J&K network.

5.5. For the Samba- Jallandhar link Indigrid informed that OPGW was not originally in their scope of line. CTU stated that for Power System / ULDC requirement they should provide support as these OPGW are now part of transmission line. Indigrid to provide the update on the same.

Members may kindly deliberate.

6. Redundant communication for Dulhasti (NHPC) (Agenda by CTU)

6.1. As Dulhasti station is important at the point of AGC, between Kishenpur – Dulhasti OPGW can be installed on second circuit (another 400kV S/c line). The agenda was discussed in the 2nd & 3rd ISTS planning meeting of NR and also in 57th NRPC wherein POWERGRID was requested to submit additional cost details (in view of tower strengthening if required), survey report and all relevant details to CTU to put up proposal in upcoming NRPC meetings.

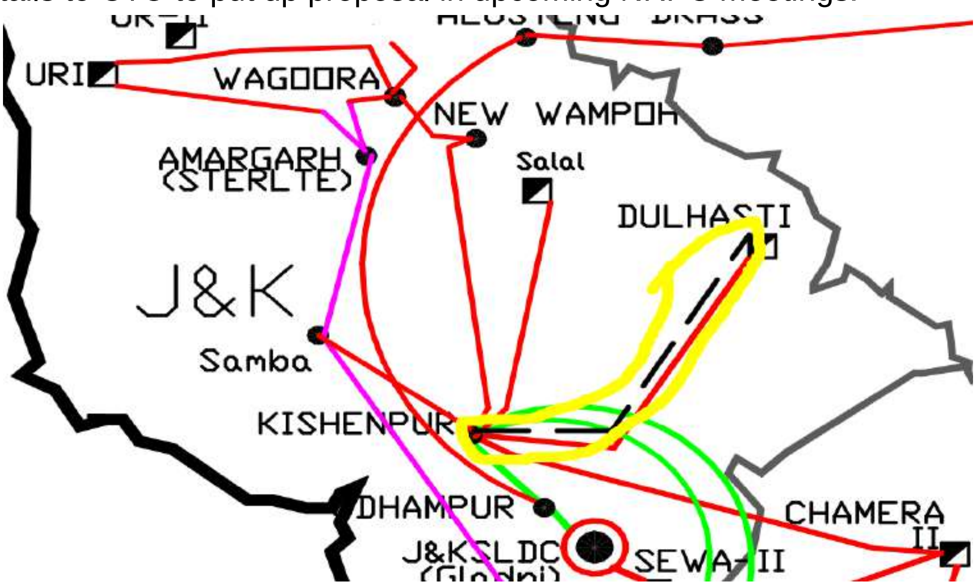

Fig-2

POWERGRID is requested to provide update on the same.

Members may kindly deliberate

7. Redundant communication for Alusteng, Drass, Kargil, Khalasti, Leh (Agenda by CTU)

7.1. Requirement of redundant communication for Alusteng, Drass, Kargil, Khalasti, Leh was deliberated in the 2nd & 3rd ISTS planning meeting of NR.

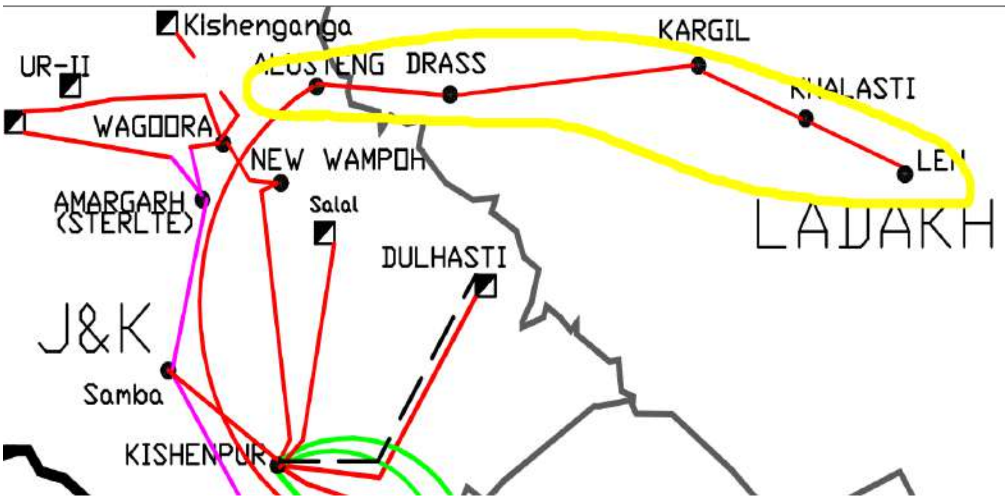

Fig-1

7.2. During 3rd ISTS Communication planning meeting of NR, J&K PDD informed that there are no transmission lines available at their STU network to provide redundant communication for these stations viz. Alusteng, Drass, Kargil, Khalasti & Leh.

7.3. NRLDC also informed in the meeting that data of these stations is routed through PowerTel equipment and not from equipment in S/s packages. POWERGRID informed that equipment is commissioned, however data is routed from PowerTel equipment due to maintenance issues.

7.4. CTU stated in view of resource disjoint equipment under S/s packages to be integrated parallel with PowerTel equipment.

7.5. POWERGRID informed that between Drass – Alusteng J&K PDD fibre are used and shared by Powertel through J&K PDD network upto Udhampur. CTU stated that spare fiber may be used to create redundant link from Drass to Udhampur for ULDC purpose also. POWERGRID will revert back after exploring the same.

POWERGRID is requested to provide the update.

8. Redundant communication for Narora (NAPP) (NPCIL) (Agenda by CTU)

8.1. Redundant communication for Narora (NAPP) (NPCIL) was deliberated in the 2nd & 3rd ISTS planning meeting of NR, in 20th TesT meeting of NRPC & 64th NRPC meeting.

8.2. In the 3rd ISTS planning meeting of NR UPPTCL has confirmed that they have included NAPP – Atrauli link (38 kms.) in their proposed OPGW package awarded to TCIL. Using NAPP – Atrauli link data of NAPP may be routed through following links upto ISTS node:

8.3. Narrora (NAPP) – Atrauli – Aligarh (400) – Sikandara Rao – Kasganj- Etah – Mainpuri (UP) – Mainpuri (PG) -> NRLDC

8.4. CTU suggested that alternate path may be explored with lesser hops e.g. OPGW on Narrora – Sibhawali UPPTCL line can also be planned. Line length of Narrora – Sibhawali is around 88 kms.

UPPTCL to provide the update on the same.

9. Redundant communication for Sewa-II (Agenda by CTU)

9.1. Redundant communication for Sewa-II was deliberated in the 2nd & 3rd ISTS planning meeting. Presently Sewa-II is connected with Sewa-II – Hiranagar link. Where 2nd path not available due to unavailability of ISTS line.

9.2. In the 3rd ISTS planning meeting POWERGRID suggested that Sewa-II & Chamera-I are very close and fiber (UGFO/ADSS) can be installed between these stations to create redundant communication path through underground route/river crossing route.

9.3. CTU requested POWERGRID to provide the details for UGFO/ADSS cable installation between these stations.

POWERGRID is requested to provide the details and update.

10. Connectivity of STU node on fibre in view of AMR. (Agenda by CTU)

10.1. The meter readings from several locations (mostly STU nodes) (list of location shall be provided by NRLDC) are intermittent and having communication issues as the meters at the state nodes are not having secure & reliable communication links and are operational on public domain communication links like GPRS.

10.2. CTU requested NRLDC to furnish the list of such identified nodes so as to propose the connectivity of such nodes on captive OPGW network for receiving the data successfully.

10.3. NLDC has submitted list of such nodes of Northern Region to CTU earlier is attached as **Annexure-1.**

10.4. This agenda was also deliberated in the 3rd ISTS planning meeting of NR where it was deliberated that respective state/utility may check the Fibre connectivity and apprise the details. If fibre connectivity is required for such stations in view of AMR, CTU shall make a scheme and take approval.

10.5. STUs to provide the details to CTU for examination and preparation of scheme.

Members may kindly deliberate

11. Congestion in ISTS communication network (Agenda by CTU)

11.1. The communication networks have STM-16 link capacity at most of the places, however few links having STM-4 or lesser capacity. There may be few links /nodes the capacity of whom may have been utilized more than 75 percent. The detail of such nodes/links may be intimated by POWERGRID/Grid-India which are having congestion in terms of traffic/bandwidth so that planning for capacity enhancement of the node/link may be done.

11.2. This agenda was also deliberated in the 3rd ISTS planning meeting of NR where POWERGRID informed that after reviewing the network they will provide the status for the links where bandwidth is utilized more than 75%.

Members may kindly deliberate

12. Redundancy philosophy in case of availability of only one transmission line from ISTS/ISGS station: (Agenda by CTU)

12.1. Many ISTS/Generating stations are connected with single fibre path due to non-availability of alternate transmission lines, especially in the case of terminal nodes/Hydro stations/RE Generators. In this scenario, for providing protection path following options may be explored:

a) OPGW on same transmission line on second peak.

b) VSAT

c) Lease line

12.2. This agenda was also deliberated in the meeting of common points with RLDCs & POWERGRID held on 05.04.2023. Where POWERGRID expressed concerns on “Communication Availability” in view of OPGW on same tower on second peak, VSAT & leased line.

12.3. Further, Grid-India (ERLDC) suggested that VSAT or leased line both being third party networks are not recommended due to the following considerations:
1. Cyber security issue.
2. Monitoring of VSAT link at the service provider’s hub only.
3. Latency issues.

However, CEA opined that the redundant path should be on diverse media.

Members may kindly deliberate

13. Redundant communication for Faridabad (NTPC) & Jhajhar (NTPC) (Agenda by CTU)

13.1. Redundant communication for Faridabad (NTPC) & Jhajhar (NTPC) was deliberated in the 2nd & 3rd \ ISTS planning meeting of NR, in 20th TesT meeting of NRPC.

13.2. Where HVPNL & POWERGRID informed that LILO of Faridabad – Palla at Sector-78, Faridabad and other interconnecting links of HVPNL are under implementation. After commission redundant path for Faridabad (NTPC) shall be created. Further redundant communication for Jhajhar can be created using Jhajhar – Daultabad – Sec-72, Gurgaon (HVPNL)- Gurgaon (PG) links.

Status of same may be provided by HVPNL & POWERGRID.

14. Redundant Communication for Chamera-III (NHPC) & Budhil (GreenCo) (Agenda by CTU)

14.1. Redundant communication for Chamera-III (NHPC) & Budhil (GreenCo) was deliberated in the 2nd & 3rd ISTS planning meeting of NR, in 20th TesT meeting of NRPC.

14.2. In the 3rd ISTS planning meeting of NR it was deliberated that to provide redundancy for Chamera-III (NHPC) and Budhil (GeenCo), 2 nos. of additional STM-16 equipment are required at Lahal & Budhil. Further, HPPTCL to provide 3 pair of optical fibres for above redundancy on following lines:

(1) 220kV Lahal – Budhil (GreenCo)
(2) 400kV Chamera Pooling(PGCIL)- Lahal(HPPTCL)

14.3. Requirement of 2 nos. FOTE shall be put up in next RPC meeting after TeST meeting deliberations.

Members may kindly deliberate.

15. **Redundant Communication for Pithoragarh (PG) Sitarganj (PG) stations (Agenda by CTU)**

15.1. Redundant communication for Chamera-III (NHPC) & Budhil (GreenCo) was deliberated in the 2nd & 3rd ISTS planning meeting of NR, in 20th TesT meeting of NRPC.

15.2. Where it was deliberated that to provide redundant communication for Pithoragarh (PG) OPGW can be installed on Pithoragarh- Almora line (around 50 kms.). After this redundant path can be created using existing OPGW on Almora-Haldwani-Kashipur- Roorkee (PG) links. PTCUL stated that OPGW on Pithoragarh- Almora line is under panning of PTCUL network.

15.3. Further to provide redundant communication to Sitarganj (PG), Alternate path can be created through Sitarganj (PTCUL) – Kiccha – Rudrapur-Pantnagar-Kashipur STU links. Equipment at Sitarganj (PG) to be integrated PTCUL network.

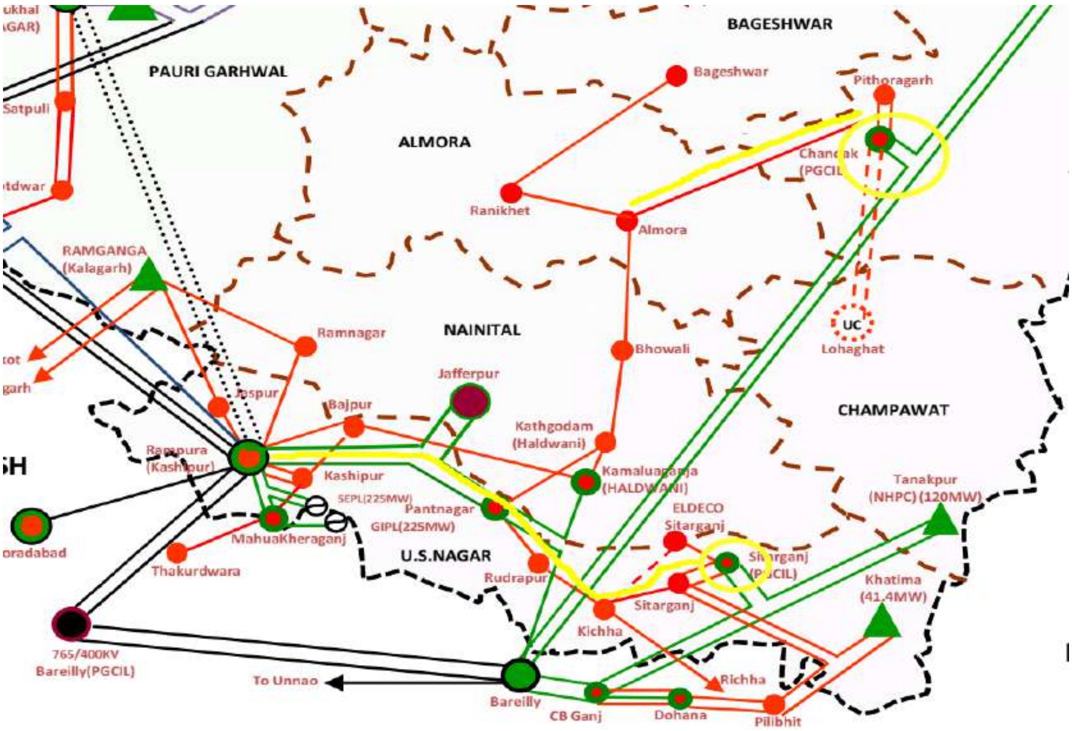

Fig-4

PTCUL to provide status of their existing network and sharing with ISTS network.

16. **Additional FOTE at AGC locations (Agenda by CTU)**

16.1. Additional FOTE at all AGC operated generating stations in Northern Region are proposed in view of resource disjoint and criticality of AGC operation for grid operation purpose as failure of single equipment may lead to disruption in AGC operation. This agenda was also deliberated in the 2nd & 3rd ISTS planning meeting of NR.

AGC Locations are listed as below:

Sr. No.	Generator on AGC in NR
1	Koteshwar
2	Nathpa Jhakri
3	Chamera-3
4	Dulhasti
5	Tehri
6	Rihand-1
7	Riahnd-2
8	Rihand-3
9	Anta
10	Chamera-2
11	Chamera-1
12	Dhauliganga
13	Unchahar-3
14	Unchahar-4
15	Auraiya
16	Bairasiul
17	Tanda-2
18	Unchahar-2
19	Singrauli
20	IGSTPS - Jhajhar
21	Dadri Gas
22	Dadri-2

16.2. It is requested that POWERGRID shall provide details of existing FOTE and requirement of additional ports/cards/FOTE at AGC locations so that planning of additional FOTE can be carried out.

16.3. Updated list of AGC stations shall be provided by NRLDC to the forum from NLDC.

Members may kindly deliberate.

17. Redundant communication for Saharanpur (PG) S/s (Agenda by CTU)

17.1. Saharanpur (PG) is presently connected with Roorkee that is on single fibre path. During 3rd ISTS planning meeting of NR, POWERGRID informed that Alternate path can be created using UPPTCL network or using Sahararnpur-Bhagpat PG line (121 kms.).

17.2. This agenda shall be put up in next RPC meeting after TeST meeting deliberations.

Members may kindly deliberate

18. VOIP connection for Indigrid Control Centre at NOIDA (Agenda by CTU)

18.1. At present Indigrid doing Real time operation for their ISTS elements located in different regions e.g. WR, SR, NR, NER from their control centre (CC) located at BDTCL-Bhopal S/s. Indigrid CC is connected with WRLDC through VOIP connection via PowerTel leased line.

18.2. Indigrid is now setting up new CC at NOIDA by shifting their existing CC located at BDTCL-Bhopal S/s. Indigrid has requested CTUIL for providing VOIP connection to their NOIDA control centre through NRLDC.

18.3. Further they stated that if VOIP through connection via NRLDC is not feasible they can extend the existing VOIP link at their Prithla ISTS station to their new Control Centre at Noida.

18.4. For this purpose, they have requested an additional separate VOIP channel or a new VOIP number in their existing channel from NRLDC to Prithla S/s.

18.5. All the expenses towards lease line from their control centre to Prithla S/s shall be borne by them. Further they shall provide all necessary cyber security provisions as per CEA cyber security guidelines, 2021. Letter of Indigrid submitted to CTUIL is attached herewith.

Members may kindly deliberate.

19. Extension of AMC and Upgradation of Hot Line Speech Communication System (M/s ORANGE) (Agenda by POWERGRID)

19.1. As all are aware that for Hot Line Speech Communication System was implemented by POWERGRID for PAN India basis wherein NLDC, RLDCs and all SLDCs are inter connected through Alcatel Lucent make EPABX system, VOIP/Analog phones are also installed at power plants/sub-station/IPPs, etc over dedicated OPGW network of ULDC. This scheme was executed by M/s ORANGE and 7 years of AMC was also part of the original contract and this AMC going is to expire in coming July' 2023. There is no extension clause in the contract, therefore extension modalities may be discussed in details, being an electronic item, old model, spare unavailability, etc, Replacement/upgradation of EPABX system may also be discussed among all stake holders.

19.2. Based on the discussions held in previous TeST meeting, offer was requested from M/s Alcatel Lucent (OEM), however they mentioned that PABX system which was installed in 2016-17 under mentioned project has older version i.e. 11.0. At present 100.1 version is available and all new hardware which is available, will be supportable to new version only. Therefore, to continue with Comprehensive AMC, we need to first upgrade/migrate the system with the latest software version then Alcatel through their authorized channel partners, can further support for minimum 5 years of AMC.

19.3. Further the issue was deliberated in 3rd meeting of CTU-ISTS communication system planning for Northern Region held on 17.02.2023, then the issue was again discussed in CTU communication planning meeting for Pan India held on 05.04.2023. As per discussion held in CTU-ISTS meeting, a separate meeting was also convened with Alcatel Lucent on 27.04.2023 wherein CTU and Grid-India was also present. During the meeting, POWERGRID requested to extend AMC support for at least 2 years, so that we can get upgradation/replacement time, however M/s Alcatel lucent reiterated their stand and inform that without upgradation of software version and CPU card in EPABX system, continuous support for AMC is not possible as new card will not support on older version of software and once any card got faulty in exchange, new card will not support and services got hampered for longer period. They confirmed to share the quotation for upgradation and subsequent AMC for next 7 years (offer still not received).

19.4. During the above mentioned meetings, it was common that continuous support for AMC is required for next few years i.e. till upgradation/replacement of Hot Line Speech Communication System in Pan India. Grid -India insisted that since Hot line /VOIP phone are very useful for grid operation, and requested to POWERGRID/CTU to extend AMC on priority till upgradation of the EPABX system takes place. After several discussions and rigorous persuasion, M/s ORANGE has agreed to support for AMC for next 2 years on best effort basis only. They also mentioned that "any equipment becomes faulty during the AMC then, they shall render the services on best effort basis and SLA / Penalties shall not be applicable. They also confirmed that they will, at all times, faithfully and in a professional manner perform all of the services that may be reasonably required of, and from ORANGE pursuant to the terms of this Agreement". Prices offered for this AMC is almost 5 to 6 times higher in comparison with present AMC charges.

19.5. POWERGRID is proposing that additional financial implication on account of AMC extension through M/s ORANGE (Presently engaged in AMC) for next two years shall be booked in ULDC O&M charges and additional cost implication shall be recovered in tariff charges under CERC O&M cost. Further, CTU to take suitable and prompt action for upgradation / replacement of existing Hot Line/VOIP communication system across India by taking up the issue in respective RPCs or call a common meeting among all RPCs for approval and subsequently put up implementation.

Members may kindly deliberate.

20. Frequent outage of OPGW link for NARORA, NPCIL Power Plant (Agenda by POWERGRID)

20.1. OPGW connectivity for NARORA Power Plant is presently connected through Narora-Khurja-Muradnagar 220- Muradnagar 400 (central sector node). OPGW project for NAPP- Khurja line was booked in central sector, whereas Khurja - Muradnagar 220 - Muradnagar 400 has been booked under UPPTCL head, six

(06) fibres was used for ULDC purpose for NARORA telemetry and voice data connectivity with NRLDC. Data of NARORA plant is impacting drawl calculation (OD/UD) of UPPTCL, however OPGW link was frequently disturbed by UPPTCL (specially under Khurja section) for facilitating their fibre lease out customers which is a business for UPPTCL at the risk of running ULDC system.

20.2. The issue was raised several times and informed to UPPTCL officials as well, however frequent data outage is happening quite some time, at 2-3 instances, data was out for 2-3 days. NRLDC can update the data outage report.

20.3. It is requested to issue instructions to UPPTCL to not disturb running OPGW links specially used for Grid Operations. Further, NRPC and CTU is requested to formulate some guidelines / instructions which categorically mentioned the priority of OPGW links for ULDC/Grid Operation and leasing out / monetization of OPGW Assets.

20.4. CTU is also requested to plan OPGW redundancy for NARORA, NPCIL Power Plant.

Members may kindly deliberate.

21. Signing of AMC contract for Synergy make RTUs (replaced by POWERGRID) (Agenda by POWERGRID)

21.1. In line with MOU signed by Northern Region Constituents (BBMB, DTL, PSTCL, NHPC, NTPC, NPCIL, SJVNL, THDC and IPGCL) with POWERGRID for replacement of Areva make S900 RTUs (63 Nos. in total). As per MOU, supply and services works was to be executed by POWERGRID and AMC contract shall be signed by respective constituents with successful bidder and maintenance payment shall be made directly by respective owner on quarterly basis.

21.2. Now defect liability period for these 63 nos. of RTU has been completed. POWERGRID has issued AMC contract for next 6 years effective from 01.12.2022 to 30.11.2028, M/s Synergy has repeatedly pursuing with constituents to Sign the AMC contract for smooth operations, however BBMB, DTL, SJVNL and NPCIL are still not signing contract agreement or issuance of separate work order for release of payments. It is may be noted here that almost 6 months has been lapsed after issuance of AMC work order. AMC and Preventive Maintenances are being carried out by M/s Synergy without any payment but higher management of Synergy are frequently raising the issue for not singing of agreement and release of payments for already carried out works.

21.3. It is again requested kindly to expedite the signing of Contract Agreement, so that maintenance activity may have carried out by vendor in smooth manner and RTU data availability can be ensured.

Members may kindly deliberate.

22. AMC of VSAT for URI-I (Agenda by POWERGRID)

22.1. POWERGRID has installed VSAT at URI-I for reporting of telemetry data of URI-I, NHPC power plant. Three (03) years of AMC of the VSAT was considered in original scope and POWERGRID is regularly maintained the system as of now, however during implementation of VSAT, it was recorded that after 3 years of AMC, system shall be handed over to NHPC to maintain the VSAT and their AMC shall be taken care of by NHPC at their own.

22.2. NHPC may take suitable action for extension of AMC for VSAT system installed at Uri-I.

NHPC may kindly update.

23. Permission to work for Installation of DCPS & Battery and Maintenance activity of existing communication equipment at Manimajra UT sub-station under ULDC scheme (Chandigarh -Panchkula link) (Agenda by POWERGRID)

23.1. The matter was raised in 19th, 20th and 21st TeST Committee meeting but agenda point was not deliberated as representative of UT Chandīgarh was not present in the meeting and issue remain undiscussed/unresolved.

23.2. NRPC is requested to intervene for providing entry permission from UT Chandigarh for DCPS, OPGW installation under Reliable communication scheme and for regular/day to day maintenance issues. At present power outage are frequently reported at Manimajra site, resulting outage of complete communication system in the area, restoration of power supply and installation of new DCPS system is immediately required.

23.3. NRPC may call a separate meeting with UT higher officials, if required we can have a separate meeting at Chief Engineer’s office at Chandigarh UT office to resolve the issue.

Members may kindly deliberate.

24. Implementation of U-NMS Project (Database development and input for integration) (Agenda by POWERGRID)

24.1. For commissioning of U-NMS Project, database development is required which requires details of existing NMS of centre sector / state sector/ IPPs / Solar developer/ other transmission licensee and independent nodes which are reporting data for grid operation. Technical details/ information pertain to integration has been obtained for POWERGRID installed NMS system(s) which were part of ULDC schemes, whereas details from state sector/ IPPs / other transmission licensee are still not been available in full shape to UNMS vendor, which may further delay the works for database development and integration.

24.2. POWERGRID along with M/s Sterlite Technology (implementing agency) is regularly pursuing the OEM/state utilities for providing details of NMS system which were implemented by State utilities/other transmission licensees including IPP/ Solar developer. For ex. Sterlite is regularly visiting sites i.e.

Panipat for integration of Keymile make NMS system but input details are neither available with state utilities nor OEMs are supporting during visits.

24.3. HVPNL's case, M/s Velocis (KEYMILE make Equipment) is very reluctant in providing details mentioning non-availability/non-support from OEM as this make/model of equipment/NMS is of absolute technology and Keymile (Now ownership is with Hitachi) is also not having proper support for this NMS. They mentioned that in case any issues observed during integration/ running of third party script in this NMS, M/s Velocis may not be able to restore the system and grid operation data reporting at SLDC Panipat will be affected very seriously. Several correspondences were made; separate meetings have been conducted parallelly. Even after regular persuasion, nobody from HVPNL is responding for meeting and integration, in this case Keymile equipment might not be integrated with UNMS system.

24.4. FAT of the UNMS system has been completed, all equipment has been installed and shortly commissioning activities will be started. All state utilities are requested kindly check their database module in UNMS system and any changes required, may be intimated. Shortly will be start site acceptance test (SAT) and all constituents are requested to join the SAT at New Delhi main control centre of UNMS. Schedule for SAT will be shared subsequently.

24.5. Further, during the last meeting, POWERGRID has commissioned ABB/Hitachi and ECI make NMS for ULDC system at NRLDC where all ABB and ECI make equipment can be integrated for Northern Region, so that this equipment can be integrated with U-NMS scheme easily but support from IPP/Solar park owners may be required (calling of ABB engineer at site for integration). In this regard, instructions are required from NRPC forum/CTUIL / NRLDC, so that they may turned up for integration in centralized communication NMS system.

Members may kindly deliberate.

25. Delay in Payment of consultancy services provided by POWERGRID (Agenda by POWERGRID)

25.1. POWERGRID is providing consultancy services on RTU/APS/Wideband/OPGW maintenance to constituents on overhead charges basis as per MOU signed with respective Constituents. Constituents are paying on quarterly or yearly basis with advance payment. PTCUL, J&K PDD, UPPTCL are not paying the amounts, several reminders were raised with them. In some cases, payment has not been made by constituents since 4-5 years and POWERGRID's management is very serious against these outstanding payments. Auditors has raised serious issues for non-settlement of payment in SAP / POWERGRID books.

25.2. Some states are not serious, neither proving details nor replying mails, specially UPPTCL, PTCUL and J&K PDD. POWERGRID have no other option but to cancellation of the AMC with immediate effects. Separate Mails/letters has been sent to respective utilities for providing details, all constituents are once again requested to deposit balance payment and details may also be provided for payment made. TDS details may also be provided.

25.3. As on date outstanding amount is Rs 2.79 crores.

Sr. No.	Constituent's Name	Amount
1	JKPDD	Rs. 34.48 Lacs
2	PTCUL	Rs 21.49 Lacs
3	UPPTCL	Rs 29.97 Lacs
4	PSTCL	Rs 120.63 Lacs
5	DTL	Rs 11.11 Lacs
6	HPSEBL	Rs 23.14 Lacs
7	HVPNL and BBMB portion	Rs 7.86 Lacs
8	BBMB	2.32 Lacs
9	RRVPNL	28.35 Lacs
Total		Rs 279.35 Lacs

25.4. Approx Rs 1.5 crore is 45 days old, whereas Rs. 1.29 is very old and constituents are even not responding. Please note, if POWERGRID or their vendor is stopping services due to non-payment, responsibility lies with Constituents only for outage of data which effecting services of grid operations.

Members may kindly update.

26. Installation of interface energy meters along with AMR equipment at interstate points of Punjab at PGCIL stations (Agenda by PSTCL)

Minutes of 205th OCC meeting regarding subject cited matter is reproduced as under:

26.1. “Replacement/Installation of Interface Energy Meters at PGCIL Sub-Stations (Agenda by PSTCL).

26.2. NRPC representative apprised forum that PSTCL vide its mail dated 16.03.2023 has mentioned that they had installed EDMI(Wallaby) make meters at PGCIL Sub-Stations while executing boundary metering project in 2012-13. Now, PSTCL is replacing all existing boundary meters with latest interface energy meters and is also installing AMR equipment as a part of SAMAST project. List of existing boundary meters to be replaced/New meters to be installed at PGCIL Sub-Stations is enclosed as Annexure-+A.VII of agenda.

26.3. Powergrid representative intimated forum that installation of new meters is not approved in any standing committee. While with regard to replacement of existing energy meters, Powergrid has no objections.

26.4. SE (Op.), NRPC desired that a separate meeting may be conveyed among the officials of NRPC, NRLDC and PSTCL in next week for further deliberation in this matter.”

26.5. In view of above, a meeting of PSTCL/SLDC, NRPC and PGCIL officers was held on 12.04.23 and it was proposed that being technical matter issue may be discussed in the next TeST meeting. It was also advised to PSTCL to prepare a detailed project report for discussion in TeST meeting.

26.6. In view of urgency, an agenda was also placed in the 65th meeting of NRPC (Agenda point AA-4) held on 21.04.2023 at Timber Trail, Parwanoo (H.P.) where the matter was discussed and it was conveyed that matter will be discussed in Special TeST meeting, which shall be called shortly. As such following agenda is proposed: -

26.7. In view of above, PSTCL Punjab requires PGCIL approval for the following:

1. Approval to install new energy meters at LV side of ICT's at PGCIL sub stations. Details are as per enclosed DPR (**Annexure-2**).
2. Approval to install AMR equipment like DCU, Network Switch, Wall mount enclosure and associated equipment/cabling, etc. at PGCIL sub stations.
3. Approval to access optical network of PGCIL for communication of meter data upto SLDC, Ablowal."

Members may kindly deliberate.

27. Regarding AMC Extension of ULDC Ph-II (Agenda by Punjab, HPSLDC, BBMB, UPSLDC, Rajasthan and Delhi)

Punjab

27.1. In this regard, it is informed that PGCIL vide letter no. N1/C&M/22-23/P/9004/AMC Extension/610683 dated 29/03/2023 (**Annexure-3**) has communicated that extension of ULDC Ph-II for 2 years has been approved by PGCIL in line with the provisions of the original contract CA No.: CC-CS/275-NR1/SCADA-1602/3/G5/CA-III/4444 dated 18.10.2012.

27.2. However, M/s Siemens vide letter no. GC LM ULDC-II/PGCIL/15/23 dated 20-APR-23 (**Annexure-4**) has informed that there is a cyber-security risk owing to End of subscription of External firewall and internal firewalls are due for subscription on dated 31st March 2023 and 30th April 2023 respectively. Further M/s Siemens have not given any formal official acceptance in regard to the Extension of SCADA AMC contract issued by PGCIL.

27.3. As per contract agreement CA No.: CC-CS/275-NR1/SCADA-1602/3/G5/CA-III/4444 dated 18.10.2012, M/s Siemens should agree for extension of contract on same terms and conditions of original contract agreement. However, M/s Siemens is not agreeing to the same citing End of Life, design life issues regarding firewalls and other similar issues as discussed in various meetings with Powergrid, Siemens & constituents. The same may be clarified by Powergrid.

HPSLDC

27.4. M/s Siemens has intimated that the OEM has already declared the End of Life (EoL) for Internal Firewall (Fortinet make) of SCADA/ EMS system and its subscription has been expired on 30.04.2023 which this may pose Cyber

Security risk. Further, M/s Siemens has intimated that the Internal Firewalls are required to be replaced at the earliest and the firm shall not be liable for any vulnerabilities arises due to end of life/ subscription. Since, the AMC has been extended for the period of 02 (Two) years in line with the provisions of the AMC Contract on same terms and conditions. Therefore, the said firewall should be in the scope of M/s Siemens in line with the provision of the AMC contract.

27.5. PGCIL may take up the matter with M/s SIEMENS in view of Cyber Security risk and update the status.

27.6. M/s SIEMENS intimated that the subscription of external Firewall was renewed on 31.03.2023 and payment of said subscription has not paid to M/s SIEMENS by the constituents for further payment to vendor. Further, M/s SIEMENS intimated that the subscription will be discontinued by the end of April, 2023, once subscription is ended then latest patches won't be available from OEM and M/s SIEMENS will not be liable for any vulnerability arising once active subscription ended. As the AMC has been extended for the period of 02 Years in line with the provision of AMC contract on same terms & Conditions, the subscription of said Firewall should have to be renewed by M/S SIEMENS.

27.7. PGCIL may take up the matter with M/s SIEMENS in view of Cyber Security risk and update the status.

BBMB

27.8. The current license of Fortigate Make Internal Firewall installed for SCADA system of SLDC BBMB expired on 30.04.2023. The same was also discussed in 21st TeST meeting. BBMB has already requested POWERGRID & POSOCO to ensure that M / s Siemens takes all necessary steps and measures to renew the license of the internal firewall at the earliest so that cyber security posture of the system is maintained.

27.9. The current license of Fortigate Make Internal Firewall installed for SCADA system of SLDC BBMB expired on 30.04.2023. The same was also discussed in 21st TeST meeting. BBMB has already requested POWERGRID & POSOCO to ensure that M / s Siemens takes all necessary steps and measures to renew the license of the internal firewall at the earliest so that cyber security posture of the system is maintained.

UPSLDC

27.10. M/S Siemens has intimated that the existing Internal firewall at SCADA/EMS

27.11. M/S Siemens has also intimated that the Renewal of the subscription of the subscription of the external firewall is to be done. The matter is to be taken up jointly with Siemens.

Rajasthan

27.12. PGCIL vide N1/C&M/22-23/P/9004/AMC Extension/610683 dated 29.03.23 has extended the AMC contract for Expansion and Upgradation of existing

SCADA/EMS system at NRLDC and SLDCs Project of Northern Region for next 2 years upto 31.03.25 on the same terms and condition of previous contract which was expired on 31.03.23 but M/s Siemens intimated that subscription of internal firewall expired on 30.04.23 and firewall is already end of life and needs to replace as soon as possible. Also, the end date of subscription of external firewall is 31.03.23. Due to nonpayment of subscription of firewalls, the subscription can be disconnected by the vendor at any time. This may cause cyber security risk to the SCADA system. PGCIL vide mail dated 02.05.23 has requested to M/s Siemens to extend the firewall subscription by at least one quarter but no reply has been received from M/s Siemens till date.

Delhi

27.13. Though PGCIL has confirmed that 2 years extension for AMC of SCADA/EMS system under ULDC phase-2 has been given to M/s Siemens however, concerned person of M/s Siemens has informed that they have not accepted the extension of said AMC yet. This needs to be clarified by M/s PGCIL.

27.14. Due to above, there are lots of confusion w.r.t. repair & maintenance, up gradation and license renewal of SCADA/EMS equipments installed under ULDC phase-2 and regarding payments against these works.

27.15. Further, as informed by M/s Simens external firewall subscription has been expired and internal firewall has also been end of life which is a serious concern in respect of security of the system but due to non-clarity regarding the extension of AMC as mentioned above, DTL are not able to make any decision about this issue.

27.16. M/s Siemens has denied to comply the findings of Cyber Security Audit of SCADA/EMS system which has been carried out by third party Cert-IN empaneled vendor.

Members may kindly deliberate.

28. Regarding suspected data of Power Grid Intrastate drawal Points (Agenda by Punjab)

28.1. In this regard, it is informed that PGCIL 400 KV ICTs SCADA data remains stuck for some time without showing any suspected sign. Recently on 4th May, 2023 400KV Ludhiana ICT-2 220KV side data was stuck for approx. 6 hrs. Issues like these causes problem for dispatchers in controlling the Grid, which is not desirable & needs to be immediately attended. As such, it is requested to ensure the accuracy of data of all the PGCIL interstate stations of Punjab being the drawl points.

Members may kindly deliberate.

29. Budgetary Cost intimated by M/s PGCIL for upgradation/replacement of SCADA/EMS System to be installed under ULDC Phase-III scheme: (Agenda from HPSLDC)

29.1. The PGCIL has intimated the Budgetary cost Rs.98.00 Crore for upgradation/ replacement of SCADA/ EMS system i.r.o. HP state (Excluding AMC cost) which seems to be on very high in view of scheme being implemented uniformly for all the constituents of Northern Region.

PGCIL may expedite and supply the cost estimate on realistic basis.

30. ULDC Arrear bill submitted by M/s PGCIL for SCADA/EMS system installed Under ULDC-II scheme in HP State (Agenda from HPSLDC)

30.1. The PGCIL has raised the bill of supply for ULDC arrear payment of Rs. 3.145 Crores as per CERC order No. 711/TT/2020 dated 16.12.2022 and requested to make the payment. At presently, HPSLDC is not able to make the payment of arrear in one instance as the funds are not available in the ARR of HPSLDC. Further, approval of Hon'ble HPERC is required to be taken for making arrangement of funds. In this regard, PGCIL is requested to not levy the surcharge on said payment.

Members may kindly deliberate.

31. Regarding procedure related to removal of advisories from External Firewall (Agenda by BBMB)

31.1. It is stated that currently Gajshield make External Firewall has been installed for maintaining the cyber security of SCADA system. Advisories in the form of suspicious IPs, URLs, emails etc. are being received from agencies such as CERT-Go, NCIIPC etc. which are being blocked in the External Firewall. Also, honeypots have been installed at the SLDCs and advisories are being issued from the data captured by honeypot. Blocking of all these is leading to slowing of operation/inefficiency in the operation of External Firewall. As such, it is requested that guidance/procedure may be adopted on the advisories which can be removed after certain time interval from the external firewall so that efficiency as well as cyber security posture of system is maintained.

Members may kindly deliberate.

32. Regarding component wise bifurcation/breakup of Cost for ULDC Phase- III scheme. (Agenda by BBMB)

32.1. The component wise bifurcation of total cost estimate of ULDC Phase-Ill scheme in respect to hardware and software equipment has not been supplied till date. BBMB has already requested PGCIL to provide the same so that the same may be apprised to higher management of BBMB. The reply from PGCIL is awaited.

Members may kindly deliberate.

33. Regarding calculation of availability computation of SCADA, /EMS system on basis of cyber security measures for ULDC Phase-III scheme. (Agenda by BBMB)

33.1. Keeping in view the stress of the MoP on the Cyber Security Posture of Critical IT-OT systems and to ensure timely compliance of the vulnerabilities/threats related to cyber security, in addition to the availability formula calculation already mentioned as per Clause No. 4.4.10 (Page-81) of Volume-II, Part-A, Section-4 of Draft Technical Specifications, it is requested to incorporate the below mentioned methodology for calculation of availability computation of SCADA/EMS system on basis of cyber security measures.

33.2. The methodology for calculation of availability computation of SCADA/EMS System specifically dedicated to ensuring compliance of cyber security related measures may also be formed as part of contract which shall include the points as per mentioned "Gravities" at **Annexure – 5.**

Members may kindly deliberate.

34. Regarding Capacity Building for central/state utilities (100% funding may be done through PSDF) (Agenda by BBMB)

34.1. With reference to the CISO/POSOCO letter mentioned in point no.3, it is suggested that the various cyber security tools, cyber security/SCADA/EMS trainings, other cyber security related measures etc. proposed Under ULDC Phase-3 scheme or be brought in future as per the need of fast evolving cyber security posture may be included and 100% funding may be done through PSDF for the same.

Members may kindly deliberate.

35. Regarding implementation of Security Operation Centre (SOC) (Agenda by BBMB)

35.1. With reference to the letter received from CISO/POSOCO office letter no. CC/Engineering/Sep2022/CERT-GO/NewDPR dated 13.9.2022 (copy enclosed), SOC has to be established for real time cyber security monitoring of SLDCs. The SCADA system installed at SLDC, BBMB has been setup under ULDC Phase-2 scheme of PGCIL, which is common for all Power Sector constituents of Northern Region.

35.2. In respect of the above scenario, it is proposed that a common SOC be prepared for all willing SLDCs (of NR) as already done for RLDCs & NLDC. It is requested that views/comments of all SLDCs may be taken on the following points: -

i As SCADA system installed under ULDC Phase-2 scheme has similar setup/infrastructure for all SLDCs, therefore the cyber security risks/threats related to SLDCs are also similar. Therefore, views on joint roadmap for establishment of SOC may be taken.

ii A common philosophy/ establishment of single SOC which can cater to the cyber security requirements of all SLDCs maybe commented upon.

iii As SCADA system setup at respective SLDCs has been installed by the same vendor i.e. M/s Siemens under ULDC Phase-2 scheme and the vendor is also going to be a single company for Phase-3 scheme also, thus issues that can arise in respect of the coordination between the firm establishing the SOC for SLDC and the vendor for the ULDC scheme maybe commented upon.

35.3. In this scenario a common SOC can be helpful for effective, timely and cost effective methodology for implementation at SLDCs.

Members may kindly deliberate.

36. SCADA Upgradation Project ULDC Phase-III (Agenda by UPSLDC)

36.1. PGCIL to expedite the upgradation of the SCADA /EMS system. So that the new SCADA/EMS System shall be operationalized before the end of the extension of the existing AMC contract with Siemens.

Members may kindly deliberate.

37. PMU integration in existing URTDSM project as per CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022) (Agenda by UPSLDC)

37.1. As per the Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022 mandate the installation of PMU along with necessary communication to the following entities-

1. 400 kV and above voltage level substations.
2. Switchyard of generating stations at 220 kV and above voltage level.
3. AC side of converter bays of HVDC stations.
4. Pooling point of RE Generating Stations of 50 MW and above.
5. Battery Energy Storage System of 50 MW and above.

37.2. Necessary instructions are to be given to M/S GE regarding the proposed new PMUs integration in existing URTDSM as per the adherence to CEA guidelines by entities.

Members may kindly deliberate.

38. PTCUL Telemetry Issues (Agenda by NRLDC)

Following Telemetry Issues from PTCUL are pending since long: -

a) Non-availability of Real-Time data from PTCUL

38.1. As per details submitted by PTCUL out of 58 Sub-Station/Generating Stations data from only 26 Sub-stations are integrated at SLDC. Also, many feeders are not integrated even at the locations where RTUs are installed.

38.2. The same issue was also informed to PTCUL vide letter (Ref: - NRLDC/SL-II/2019-20) dated: - 05.03.2020

38.3. Issue was discussed in Special Meeting with PTCUL held in July 2020 and December 2020. Subsequently issue was also discussed in 17th, 18th & 19th Test Meeting and 45th TCC-48th NRPC and 47th TCC-49th NRPC, 64th NRPC.

- During 47th TCC -49th NRPC dated 27.12.2021, representative from PTCUL informed that they are in the process of tendering of RTU and OPGW Installation work and informed that they would expedite the installation works, and is **expected to be completed in 6 months**. Further, representative from PTCUL informed that faulty CMRs/Transducers replacement work is in progress and same would be completed within 3 months.
- During 52nd dated 31.12.2022 NRPC Meeting PTCUL informed that PTCUL representative informed that they are on the verge of finalizing the OPGW project and order will be placed in one-month duration. Tender has been floated for RTU. MFT replacement is being done and will be completed in two months.
- During 20th TesT Meeting held on 09.09.2022 PTCUL informed that contract for MFT replacement has been awarded and all the faulty MFTs/transducers will be replaced within 2 months
- During 64th NRPC Meeting held on 24th March 2023, Representative from PTCUL informed that CMR/Transducers will be completed within one month. PTCUL is requested to please share station wise details of rectification.

PTCUL may update the status.

39. Non-availability of Reliable / Redundant Communication System for PTCUL, SLDC (Agenda by NRLDC)

39.1. SLDC Uttarakhand is connected to NRLDC through radial network from Roorkee- Dehradun and all services like ICCP, PMU/PDC and VOIP are working on this. Any issue in link leads to outage of Voice and Data communication between SLDC Uttarakhand and NRLDC. Matter of reliable communication to NRLDC was also discussed in Special Meeting with PTCUL on 07th July 2020 conducted by NRPC, 45th TCC/48th NRPC Meeting where PTCUL/POWERGRID assured that realiable communication link would be available in 6 months. Issue was also discussed in 47th TCC/49th NRPC Meeting where PTCUL representative informed that they are in the process of tendering of RTU and OPGW Installation work and it is expected to be completed in 6 months.

39.2. During 52nd NRPC dated 31.03.2022, PTCUL informed that they are on the verge of finalizing the OPGW project and order will be placed in one-month duration. He proposed that lease line may be used to connect NRLDC. Since Kashipur SLDC is already connected with Dehradun SLDC. Therefore, lease line from Dehradun to Kashipur SLDC may be used.

39.3. During 20th TeST Meeting held on 09.09.2022, PTCUL informed that they are in process of integrating redundant link and it shall be commissioned within one month.

39.4. During 64th NRPC Meeting held on 24th March 2023 PTCUL informed that they will arrange redundant communication within one month.

39.5. This is to inform that there is negligible improvement in telemetry from PTCUL. PTCUL to share status / reason for delay.

PTCUL/POWERGRID may update.

40. J&K Telemetry Issues (Agenda by NRLDC)

40.1. Reliability and accuracy of SCADA data and its associated communication system is essential for monitoring and coordinating operations of a large electricity grid. It helps in visualization and management of the critical grid element failure/grid incident in real time and minimizes the possibility of any untoward incidences/disturbances. Network applications in Energy management system (EMS) such as State Estimator (SE), Real Time Contingency Analysis (RTCA) also necessitate reliable and accurate real time analog and digital data. Data communication has to be made through redundant and alternate path communication channel.

40.2. Real-Time data availability from Jammu and Kashmir is very poor. There is zero visibility of data in J&K stations. With poor monitoring of data, it is very difficult to monitor grid in efficient manner.

40.3. The matter has been discussed in various TCC and TeST Meetings but there is no improvement of the same.

40.4. **Brief details are as follows:**

- Under SCADA upgrade project M/s Siemens at all 400KV / 220 KV and 132 KV sub U stations/generating Stations of J&K PDD installed 66 RTUs.
- RTUs were not integrated with Control centre due to non-availability of communication network.
- RTUs were tested locally and commissioned without data availability at Control Centre.
- **Due to Non availability of data, JK PDD is not able to monitor its drawal from grid and its generation.** It is dependent of Central sector data for monitoring of drawal.
- Matter was also discussed in Special Meeting with J&K on 28.07.2020 where in Representative of J&K informed that they have given consultancy work to POWERGRID for installation of OPGW in J&K. However, due to funding issue OPGW work has been stalled by POWERGRID. According to J&K almost 95% of the work is complete and once funding issue is resolved Non-availability of telemetry issue will be resolved.

- Further, it was informed that payment issues were resolved and many communication links were commissioned and pending link would be commissioned by December 2022.
- Matter was also discussed in 47th TCC-49th NRPC Meeting, J&K confirmed that they will resolve the issues mutually with POWERGRID so that data starts reporting to SLDC/ NRLDC.
- During 19th TeST Meeting dated 07.03.2022, J & K representative informed that by 31st December 2022 all 70 RTUs will be integrated with SLDC.
- During 20th TeST Meeting held on 09.09.2022 it was discussed that J&K informed that although some of the links have been commissioned but data reporting is yet to start due to disconnection of CT/PT cables at site / other integration issues of the RTU. Further it was informed that they are in process of rectification of RTU issues and joint visit is planned with M/s Siemens.
- During 64th TeST Meeting held on 24th March 2023 it was informed that joint visit could not be conducted and after discussions it was decided that a joint meeting shall be conducted comprising members from Siemens, POWERGRID, J&K and NRLDC to resolve the RTU integration issues.
- This is to inform that there is no improvement in this regard.

J&K/POWERGRID to update the status.

41. Communication plan for channel redundancy to NRLDC (Agenda by NRLDC)

41.1. The provision of redundant & reliable communication was discussed in various TeST Meetings. Redundant communication is to ensure that two ports at RTU end are configured for RLDC. Also, data is configured with two different communication channel for bringing redundancy into the system and increase reliability of data to NRLDC/RLDC.

41.2. The reliability of communication channel to NRLDC was discussed in various TeST Meeting since November 2016(8th TeST Meeting). It is informing that still 7 RTUs are reporting to NRLDC on single channel.

41.3. It is requested to expedite the process of providing redundant channel for the remaining locations at the earliest. It is to note that stations where second is down since long is considered as single channel only.

41.4. Thus it is requested that reliability of redundant channel may also be ensured.

41.5. List of RTUs with single channel is given below:

S.NO.	Name of RTU	Comments	Timeline
1	KISHANGANGA	NHPC	
2	PARBATI-2	NHPC	
3	BUDHIL	IPP	
4	KARCHAM WANGTOO	IPP	
5	PARBATI-3	NHPC	

6	AD Hydro	AD Hydro	
7	Bhiwadi HVDC	POWERGRID	Second gateway Faulty

41.6. Issue regarding Parbati-2, 3 and Kishanganga was discussed in detail in 21st TeST Meeting held on 13.12.2022; still there is no improvement in this regarding. Data from existing links from these stations is highly unreliable. NHPC /POWERGRID to take urgent action in this regards.
POWERGRID/Utilities are requested to please update the status.

42. Telemetry Issues from POWERGRID Stations (Agenda by NRLDC)

42.1. SCADA data is very important. Decisions in real-time are taken by Real-time engineers of NRLDC based on real-time data available to Control room. There is requirement of good quality input data for smooth grid monitoring & Control. Further, good telemetry is also essential of running of State Estimator/Energy Management System (EMS).

42.2. Since proper telemetry is not available from many POWERGRID substations, it has impact on successful running of state estimator. Correct telemetry is essential for running State Estimator/ Contingency Analysis in EMS, Better SE output will aid in situational awareness of the system operators of NRLDC.

42.3. In this regard, letter regarding Telecommunication, SCADA & Telemetry issues from POWERGRID Sub-stations was given by NRLDC vide NRLDC/Telemetry/ dated 15 Dec 2021. Altough there is improvement with respect to issues raised but data from Balia HVDC and Bhiwadi HVDC sub-station is still unreliable.

42.4. It is requested to please take up for rectification of data on priority basis and confirm the dates of resolution of the points.

42.5. During 19th/ 20th TeST Meeting POWERGRID informed that issues of Balia and Bhiwadi HVDC is in process of award for integration works at Balia and Bhiwadi HVDC and informed the work will be completed within 1-2 months.

42.6. This is to inform that there is no improvement in this regard, NRLDC has also issued a letter NRLDC/SCADA/2023 dated 18th April 2023 requesting POWERGRID to expedite the rectification works.
POWERGRID to update the status

43. Upgradation of DC Power Supply supplied under ULDC (Agenda by NRLDC)

43.1. Presently 60A DCPS is installed at NRLDC. DCPS was installed under ULDC Phase-I and is working at full load. Being obsolete, spare parts of DCPS are difficult to arrange. Any issue in DCPS may lead to failure of DC Supply to communication equipments.

43.2. POWERGRID/CTU may take necessary action for replacement /upgradation of DC power supply at the earliest.

43.3. Issue was discussed in 19th/20th TeST Meeting and POWERGRID informed that DCPS at NRLDC was missed under reliable scheme and confirmed they will procure/replace DCPS at NRLDC under upcoming project.

43.4. Issue was also discussed in 21st TesT Meeting held on 13.12.2022 where POWERGRID agreed they would install DCPS at the earliest. POWERGRID may please confirm the timelines for replacement of DCPS.
POWERGRID to update the status.

44. U-NMS remote console at NRLDC (Agenda by NRLDC)

44.1. POWERGRID is commissioning U-NMS in northern Region through M/s Sterlite. However, it is learnt that POWERGRID has not envisaged U-NMS remote console at NRLDC.

44.2. It may be noted that U-NMS is necessary for reports generation regarding non-availability of the links. It may be noted that clause 7.3 of the (Communication System for inter-State transmission of electricity) Regulations, 2017 quoted below.

44.3. “The RPC Secretariat shall certify the availability of communication equipment for CTU, ISGS, RLDCs, NLDC, SLDCs based on the data furnished by RLDC”

44.4. It is requested that remote console may be supplied under U-NMS to NRLDC also.

44.5. Matter was also discussed in 21st TeST Meeting held on 13.12.2022 wherein POWERGRID agreed to supply remote console to NRLDC.
POWERGRID/CTUIL to update the status.

45. Telemetry issue from NTPC Singrauli (Agenda by NRLDC)

45.1. Presently SCADA data from NTPC Singrauli is updating at NRLDC through two RTUs, one is old S900 RTU and other one is new Gateway, which is under commissioning at NTPC Singrauli. Some of the bays where SAS upgradation work completed data from those bays are reporting through new Gateway and remaining bays are still reporting through old RTU.

45.2. However, Old RTU was commissioning under ULDC Phase-1 and AMC for these RTU is not available. Any issue in the telemetry of bays, which are yet to be upgraded remains unattended. Matter has been taken up with NTPC many times but the issue is yet to be rectified.

45.3. NTPC is requested to take immediate action for resolution of the same.
NTPC to update the status.

46. Removal of Dismantled Material from NRLDC (Agenda by NRLDC)

46.1. In the 19th TeST Meeting held on 07th March 2022 it was discussed that POWERGRID would dismantle Nokia communication racks, which are not in use at NRLDC. Accordingly, POWERGRID has dismantled racks in April 2022. However, dismantled material are still lying at NRLDC. POWERGRID was requested for removal of dismantled rack from NRLDC. However, it is yet to be removed.

46.2. Considering, space constraint at NRLDC POWERGRID is requested to please take urgent action for removal of dismantled material.

POWERGRID to update the status.

47. Redundant communication to NRLDC (Agenda by NRLDC)

47.1. Additional fibre connectivity to NRLDC via Tughlakabad-NRLDC-R.K.Puram was approved in 19th TeST Meeting held on 07th March 2022. It may be noted that NLDC and NRLDC connectivity is very critical for real time monitoring, voice connectivity and grid operation point of view. After this connectivity, robust fiber connectivity shall be established along with existing optical paths for NLDC, RLDC and all their back up RLDCs System for grid operation.

47.2. In accordance with discussion fibre connectivity was established till NRLDC in Nov-Dec 2022. However, final commissioning is yet to be completed. NRLDC has requested POWERGRID to expedite the commissioning of this link vide letter dated: 08th Dec 2022 and 18th April 2023.

47.3. However, link is yet to be commissioned. POWERGRID is requested to please expedite the work as one of the existing communication link to NRLDC via Mahanranibagh is highly prone to cut and any outage of this links leads to radial connectivity to NRLDC/NLDC.

POWERGRID to please update the status.

48. EOL/EOS for firewalls supplied under URTDSM Project (Agenda by NRLDC)

48.1. Unified Real Time Dynamic State Measurement (URTDSM) project was implemented by POWERGRID through 70% PSDF grant and 30 % equity. Defect liability Period was completed in Dec 2019 and thereafter AMC for six years started from January 2020.

48.2. As per information received from M/s GE, System Integrator through which AMC of URTDSM is being executed; OEM of Internal & External Firewall & Firewall Management devices has declared End of Life/ end of Support of firewall versions supplied under URTDSM project and same needs to be replaced with newer version to continue subscriptions/ patches etc.

48.3. POWERGRID is requested to please take up with vendor for replacement of firewalls prior to EOL/EOS of the product.

POWERGRID to update the status.

49. Frequent Issue of Telemetry data from Amritsar Sub-Stations (Agenda by NRLDC)

49.1. Two sets of RTUs/gateways are installed at Amritsar. BCU gateway is used for reporting of Malerkotla Bays and ICT-4 bays and other data is reporting through other RTUs. It has been observed that there is frequent interruption of BCU Gateway as it goes into hanged state frequently, affecting Punjab Drawal. Details of data non-availability is given below:

S.No.	Date	Time
1.	01.03.2023	17:55-20:20
2.	10.03.2023	21:15-22:50
3.	13.03.2023	20:50-23:15
4	26.03.2023	05:45-10:25
5.	07.04.2023	06:40-17:50
6.	24.04.2023	16:25-17:25

49.2. NRLDC / PSTCL has communicated for resolution of the issues to POWERGRID many times. However, issue is persisting. POWERGRID to please expedite the resolution at the earliest.
POWERGRID to please update.

50. PMU integration of RRVPNL stations supplied under STNAMS (Agenda by NRLDC)

50.1. NRLDC representative stated that in reference to the discussion in 62nd NRPC Meeting held on 31.01.2023 & 63rd NRPC held on 24.02.2023, where representative of RRVPNL informed that around 8 PMU out total 25 PMUs under STNAMS project has been commissioned and data of same is updating at RRVPNL STNAMS control Centre. Further, STNAMS PDC will be integrated with Rajasthan SLDC PDC upon completion of Cyber Security compliances at STNAMS system. It was also informed that there is a provision to integrate new Phasor data concentrator (PDC) with existing PDC installed at Rajasthan SLDC.

50.2. During the meetings RRVPNL representative was requested to expedite the PMU data for better visibility of Rajasthan area as it is very important from grid operation point of view considering recent events in Renewable pocket.

50.3. In this regard NRLDC has also requested RRVPNL and SLDC to expedite the integration process vide letter NRLDC/SCADA/2023 dated 14.02.2023.

50.4. In view of the above it was requested that RRVPNL shall advise the concern to take necessary actions so that integration of PMU data reporting at STNAMS control Centre with Rajasthan SLDC PDC for onward transmission of data to NRLDC.

50.5. During 64th NRPC Meeting RRVPNL representative stated that PMUs has started reporting at their control centers. However, prior to integration with Rajasthan PDC cybersecurity audit was to be completed. He further informed that Cyber security audit has been completed and they are in the process of closure of Cyber Security points. On closure of points Cyber Security points, they will start the process of integration of PDC. He confirmed that integration work would be completed by 30th April 2023.

RRVPNL to please update the status.

51. Calculation of actual drawal by states based on SLDC end SCADA data (Agenda by NRLDC)

51.1. As discussed in the 6th TeST meeting all SLDCs shall maintain and monitor their own drawal calculation (alternate calculation) based on the SLDC drawal points. SLDC shall compare its own calculated value of real-time drawal from the grid with drawal computed by RLDC based on ISTS end data to ensure correct assessment of drawal in real time. Corrective measures shall be taken whenever any anomaly is detected between the two drawal computations.

51.2. UP and Delhi are using their end calculation as primary calculation for monitoring of drawal whereas Rajasthan is entirely dependent on STU data. However, Punjab, Haryana, Jammu and Kashmir, Uttarakhand are dependent on RLDC end drawal values.

51.3. All concerned were requested to please compute drawal values based on STU end SCADA also, so that same can be verified with NRLDC end value and any discrepancy can be rectified immediately. Matter was also discussed in 188th, 189th, 190th OCC meeting where it was decided that all utilities shall calculate the drawal based on STU end data and use it as primary calculation for managing drawal in real-time. SLDCs shall share the calculated values to NRLDC.

51.4. NRLDC is yet to receive calculated values from Uttarakhand, J&K, and Himanchal Pradesh. However, it is seen that Punjab & Haryana are still using NRLDC end data for drawal calculations.

51.5. All SLDCs are requested to please necessary action in this regard.

Members to please update status.

52. Telemetry Issue from Narora Generating Station (Agenda by NRLDC)

52.1. Telemetry data of Narora is reporting at NRLDC through Narora-Khurja-Muradnagar link of UPPCTCL and after Muradnagar, it is connected to ULDC network. Any issue in radial link leads to outage for longer duration. Details of outage was discussed during March-April 2023 is tabulated below:

S. No.	Down Time	Restoration Time	Outage Duration
1.	10.04.2023 14:25	13.04.2023 18:10	~~ 76 hours
2.	28.04.2023 16:45	29.04.2023 13:00	~~20 hours

52.2. POWERGRID/UPPTCL to please update the reason for outage and delay in restoration of the link. Further, Issue regarding redundant communication from Narora was also discussed in 21st TeST Meeting held on 13.12.2022. POWERGRID/UPPTCL to please update the status of redundant communication path to NRLDC.

POWERGRID/UPPTCL to please update.

53. Telemetry Status from State Sub-stations/Generating Stations (Agenda by NRLDC)

Telemetry Status as on 31.03.2023 is given below; all concerned are requested to please update the status of telemetry reliability/availability.

	Northern Region summary sheet and details of current status of implementation of telemetry system													
											Updated Till:		31.03.2023	
Sl. No.	User Name	Total Nos of Stations		Telemetry not Provided				Telemetry Intemittent				Total non-availability of data in %	
				Total nos of		Non-availability		Total nos of		Non-availability			
		GS	SS	GS	SS	GS	SS	GS	SS	GS	SS	GS	SS
1	Punjab	17	173	0	19	0.00%	10.98%	0	21	0%	12%	0%	23%
2	Haryana	5	271	-	52	-	19%	0%	13	0%	5%	0%	24%
3	Rajasthan	20	232	0	0	0.00%	0.00%	4	20	20%	9%	20%	9%
4	Delhi	7	46	---	---	0%	0%	0	14	0.0%	30.0%	0.0%	30.0%
5	UP	32	327	0	0	0%	0%	10	103	31%	31%	31%	31%
6	Uttarakhand	14	44	1	29	7%	66%	1	3	7%	7%	14%	73%
7	HP	13	35	0	10	0.00%	28.57%	0	0	0%	0%	0%	29%
8	JK	4	66	2	64	50%	97%	2	2	50%	3%	100%	100%
9	POWERGRID	-	90	-	-	-	-	-	20	-	22%	-	22%
10	NTPC	15	-		-	0%	-	8	-	53%	-	53%	-
11	NHPC	14	-		-	0%	-	10	-	71%	-	71%	-
12	NPCIL	5	-	-	-	-	-	1	-	20%	-	20%	-
13	NJPC	2	-	-	-	-	-	1.00	-	50%	-	50%	-
14	THDC	2	-	-	-	-	-	1%	-	1%	-	1%	-
15	BBMB	6	14	-	-	-	-		0	0%	0%	0%	0%
16	IPP/JV/Patran	53	9		-	0%	-	12	2	23%	22%	23%	22%
	TOTAL	209	1307	3	174	1%	13%	49.01	198	23%	15%	25%	28%
	Total (over all)	1516		177		12%		247.01		16%		28%	
	Note:												
	1. Constituentswise details is as furnished by SLDC's / as available at RLDC.												

Annexure-I

LOCATIONS WHERE INTERFACE ENERGY METERS ARE INSTALLED BY CTU								
Sl.No	Region Name	Utility Name	Substation Name	Number of Meters	Fiber optic Communication	Automatic Meter Reading(AMR) Data available(Yes/No)	AMR Comminication through Fiber optic /GPRS/NA	Remarks
1	NR	UPPCL	220kV Raniya-UPPCL	1	NA	Yes	GPRS	
2	NR	ADANI	Ad-Hydro-IPP	4	NA	Yes	GPRS	
3	NR	UPPCL	Afzalgarh-UPPCL	1	NA	Yes	GPRS	
4	NR	UPPCL	Alaknanda(GVK)-UPPCL	2	NA	Yes	GPRS	
5	NR	UPPCL	AmbalaRD(Pilakni)-UPPCL	1	NA	Yes	GPRS	
6	NR	PDD	Barn-PDD	2	NA	Yes	GPRS	
7	NR	UPCL	Bhagwanpur-UPCL	1	NA	Yes	GPRS	
8	NR	PSEB	Bhari- PSEB	1	NA	Yes	GPRS	
9	NR	UPPCL	Chandak-UPPCL	1	NA	Yes	GPRS	
10	NR	UT Chandigarh	Chandigarh-Sec.39 UT	2	NA	Yes	GPRS	
11	NR	UT Chandigarh	Chandigarh -Sec.52 UT	2	NA	Yes	GPRS	
12	NR	UT Chandigarh	Chandigarh -Sec.56 UT	1	NA	Yes	GPRS	
13	NR	UPCL	Chilla-UPCL	1	NA	Yes	GPRS	
14	NR	HPPTCL	Chhaur -HPPTCL	2	NA	Yes	GPRS	
15	NR	RAILWAYS	Dadri Railway	2	NA	Yes	GPRS	
16	NR	PSEB	Chohal-PSEB	1	NA	Yes	GPRS	
17	NR	UPCL	Dhakrani HPS-UPCL	4	NA	Yes	GPRS	
18	NR	UPCL	Dhalipur HPS-UPCL	3	NA	Yes	GPRS	
19	NR	UPPCL	Dibai-UPPCL	1	NA	Yes	GPRS	
20	NR	UPPCL	Gagalheri -UPPCL	1	NA	Yes	GPRS	
21	NR	BBMB	IT Park Chandigarh-BBMB	1	NA	Yes	GPRS	
22	NR	PDD	Jammu-PDD	6	NA	Yes	GPRS	
23	NR	PSEB	Kangra-PSEB	1	NA	Yes	GPRS	
24	NR	PDD	Kathua-PDD	1	NA	Yes	GPRS	
25	NR	UPCL	Khatima-UPCL	1	NA	Yes	GPRS	
26	NR	UPCL	Khodri HPS-UPCL	8	NA	Yes	GPRS	
27	NR	UPPCL	Kirtarpur-UPPCL	1	NA	Yes	GPRS	
28	NR	UPCL	Kulhal HPS-UPCL	4	NA	Yes	GPRS	
29	NR	UPCL	Laksar-UPCL	1	NA	Yes	GPRS	
30	NR	HEP	Lanco Budhil HEP	3	NA	Yes	GPRS	
31	NR	PDD	Mahanpur-PDD	2	NA	Yes	GPRS	
32	NR	PSEB	Mahilpur-PSEB	2	NA	Yes	GPRS	
33	NR	UPPCL	Nazibabad-UPPCL	2	NA	Yes	GPRS	
34	NR	HVPN	Mansadevi-HVPN	1	NA	Yes	GPRS	
35	NR	UPCL	Manglore-UPCL	1	NA	Yes	GPRS	
36	NR	HEP	Malana HEP-2	4	NA	Yes	GPRS	
37	NR	NHPC	Parabati-III HPS-NHPC	7	NA	Yes	GPRS	
38	NR	HPSEB	Paddhar-HPSEB	1	NA	Yes	GPRS	
39	NR	UPPCL	Richha-UPPCL	1	NA	Yes	GPRS	
40	NR	RTPS	Renusagar-RTPS-UPPCL	1	NA	Yes	GPRS	
41	NR	UPPCL	Sirshi-UPPCL	1	NA	Yes	GPRS	
42	NR	PSEB	Shanan-PSEB	4	NA	Yes	GPRS	
43	NR	PTCUL	Srinagar-PTCUL	2	NA	Yes	GPRS	
44	NR	SCL	Shree Cement Ltd	6	NA	Yes	GPRS	
45	NR	UPPCL	Thakurdwara-UPPCL	1	NA	Yes	GPRS	

DETAILED PROJECT REPORT FOR INSTALLATION OF INTERFACE ENERGY METERS ALONGWITH AMR EQUIPMENT AT INTERSTATE POINTS OF PUNJAB AT PGCIL STATIONS.

1.0 Back Ground

a) At present 28 Nos. energy meters of Wallaby make are installed at PGCIL stations on HV side of ICT's/Outgoing Feeders corresponding to SEM points feeding Punjab area as per Annexure-1.

b) These meters are used by Punjab SLDC for preparing energy account of PSTCL.

c) Data is downloaded using CMRI every month by Officials of P&M organization of PSTCL.

2.0 Requirement

a) **Requirement No.1 (calculation of voltage vise losses):** PSERC issued directives in Tariff Order 2018-19 and re-iterated in 2019-20 to PSTCL to analyze voltage wise transmission losses at 400/220/132 kV to pinpoint high loss segments. (PSERC Directives enclosed as Annexure-2). In order to comply with above directives, interface meters are required to be installed at both HV and LV side of 400 kV ICT's feeding solely to Punjab.

b) **Requirement No.2 (Automated meter reading):** Manual downloading of data from these points is required to be automated in view of reducing manpower.

c) **Requirement No.3 (Alternate data source):** Interstate points are crucial for system operation. Automatic meter reading/real-time data from meters can prove to be handy alternative data source in addition to SCADA in case the data is suspected.

3.0 PROJECT OBJECTIVE (PURPOSE OF INVESTMENT):

The objectives of subject cited project are as under:

1. Replace existing Wallaby Make meters of PSTCL installed at PGCIL sub stations on HV side of ICT's or outgoing feeders to Punjab with new Secure make interface energy meters.
2. To install new Secure make interface energy meters at LV side of ICT's at PGCIL sub stations feeding Punjab and any other point as per enclosed list as per Annexure-1.
3. To install AMR equipment like DCU, Network Switch, Wall mount enclosure and associated equipment/cabling, etc. at PGCIL sub stations for meter data transmission to data center at SLDC, Ablowal through 4G sim and/or optical network as per Schematic diagram as per Annexure-3.

4. To enable Automated Meter Reading of newly installed PSTCL meters through optical network of PGCIL for communication of meter data upto SLDC, Ablowal as per Schematic diagram as per Annexure-4.

4.0 SCOPE OF WORK

i. The scope involves installation/replacement of meters on existing control and relay panels at PGCIL sub stations including cabling/feruling/termination, etc.
ii. Installation of wall mount DCU enclosure at suitable place at PGCIL sub stations.
iii. Installation of DCU, Network switch, MCB’s, Power supply units/SMPS, inside DCU enclosure.
iv. Interconnection of all meters with DCU and network switch using CAT 6 LAN cable.
v. Providing DC supply to energy meters and DCU enclosure from metering panel/kiosk/DCDB.
vi. Connection of DCU cum Gateway through Network switch with SDH of PGCIL for meter data transmission on optical network.
vii. Installation of Optical Fiber/LIU, etc. wherever section of CAT 6 cable exceeds 70 mtr.

5.0 TARGET BENEFICIARIES

The target beneficiary of this project is the State of Punjab. Real time meter data can be shared with PGCIL and NRLDC as such all shall have the benefit of Punjab drawl visibility.

6.0 METHODOLOGY

The project is to be executed through the turnkey contractor M/s. 50 Hertz Ltd. with metering partner M/s. Secure Meters Ltd. under PSTCL Contract Agreement No. 5&6 dated 29.03.2022, under the supervision of P&M/Protection teams of PSTCL.

7.0 STATUS OF THE SCHEME

4 meters have been installed at 400kV PGCIL, Patiala. PGCIL has agreed for replacement of existing meters. However, PGCIL has raised the matter that installation of meters at new locations i.e. LV side and use of Optical network will require approval of higher authorities of PGCIL.

8.0 LEGAL FRAME WORK

The Contractor shall comply with all the rules and regulations of local authorities as well as Safety Code stipulations during the performance of assigned field activities. He shall also comply with the Minimum Wages Act, 1948 and the Payment of Wages Act (both of the Government of

India) and the rules made there under in respect of any employee or workman employed or engaged by him or his Sub-Vendor.

9.0 TECHNICAL SPECIFICATION

a) Interface Energy Meter specifications: Interface Meters comply with latest CEA metering regulation and SAMAST guidelines. Meters are 0.2s class DLMS compliant, AMR compatible, four communication port (Optical, RS232, RS485, TCP/IP), 1 Amp I_{basic}, 2 Amp I_{max}, -/110V, Wh Meter as per IS 14697.

b) All meters have unique serial number of series PST0001.

10.0 Mode of Execution

The supply/ execution of the work is to be done by the Contractor M/s. 50 Hertz Ltd. with metering partner M/s. Secure Meters Ltd. on turnkey basis under the supervision of PSTCL/ SLDC engineers as per PSTCL terms & conditions.

11.0 TIME FRAME

The project was to be executed within 1 year from date of NOA i.e. upto 04.03.23 as such the project is already delayed and all metering points need to be covered at the earliest.

12.0 IMMEDIATE PROPOSAL

It is informed that PSTCL has already installed 4 meters at HV/LV of each ICT-1 and ICT-2 at 400kV PGCIL Patiala. It is requested to allow replacement of existing meters and installation of new energy meters alongwith AMR equipment at all interstate locations in Punjab so as to save time as shutdown will be difficult in ensuing paddy season from June'23. Shutdowns are already approved in 205th OCC Meeting.

Annexure 1: Details of meters for Interstate Boundarily points (Interstate-PSTCL points, Interstate-PSPCL points and Interstate-Generation									
Sr. No.	Utiltiy Name	Station Name	Device Type	Feeder Name	Boundary Type	Voltage Level	No of locations	Main meter required	Wallaby/EDMI meter no. already installed
1	PGCIL	400 kV Amritsar	Transmission Line	400 kV Makhu I	I-T	400kV	1	1	HT01140011
2	PGCIL	400 kV Amritsar	Transmission Line	400 kV Makhu II	I-T	400kV	1	1	HT01140016
3	PGCIL	400 kV Amritsar	Power Transformer	ICT 3 400/220 kV (HV & LV)	I-T	400kV	1	2	HT01130240
4	PGCIL	400 kV Amritsar	Power Transformer	ICT 2 400/220 kV (HV & LV)	I-T	400kV	1	2	HT01130040
5	PGCIL	400 kV Amritsar	Power Transformer	ICT 1 400/220 kV (HV & LV)	I-T	400kV	1	2	HT01130039
6	PGCIL	400 kV Amritsar	Power Transformer	ICT 4 400/220 kV (HV & LV)	I-T	400kV	1	2	HT01130923
7	PGCIL	400 kV Moga	Transmission Line	400 kV Nakodar I	I-T	400kV	1	1	HT01140007
8	PGCIL	400 kV Moga	Transmission Line	400 kV Behman Jassa	I-T	400kV	1	1	HT01140008
9	PGCIL	400 kV Moga	Power Transformer	ICT 1 400/220 kV (HV & LV)	I-T	400kV	1	2	HT01130042
10	PGCIL	400 kV Moga	Power Transformer	ICT 2 400/220 kV (HV & LV)	I-T	400kV	1	2	HT01130041
11	PGCIL	400 kV Moga	Power Transformer	ICT 3 400/220 kV (HV & LV)	I-T	400kV	1	2	HT01130043
12	PGCIL	400 kV Moga	Power Transformer	ICT 4 400/220 kV (HV & LV)	I-T	400kV	1	2	HT01130044
13	PGCIL	400 kV Jalandhar	Transmission Line	220 kV Kapurthala-1 (Kanjli)	I-T	220kV	1	1	HT01130034
14	PGCIL	400 kV Jalandhar	Transmission Line	220 kV Kapurthala-2 (Kanjli)	I-T	220kV	1	1	HT01130035
15	PGCIL	400 kV Jalandhar	Transmission Line	220 kV Kartarpur	I-T	220kV	1	1	HT01130036
16	PGCIL	400 kV Jalandhar	Transmission Line	220 kV Kotla Jangan	I-T	220kV	1	1	HT01130037
17	PGCIL	400 kV Ludhiana	Power Transformer	ICT 1 400/220 kV (HV & LV)	I-T	400kV	1	2	HT01130021
18	PGCIL	400 kV Ludhiana	Power Transformer	ICT 2 400/220 kV (HV & LV)	I-T	400kV	1	2	HT01130022
19	PGCIL	400 kV Ludhiana	Power Transformer	ICT 3 400/220 kV (HV & LV)	I-T	400kV	1	2	HT01130023
20	PGCIL	400 kV Ludhiana	Power Transformer	ICT 4 400/220 kV (HV & LV)	I-T	400kV	1	2	HT01140053
21	PGCIL	400 kV Malerkotla	Power Transformer	ICT 1 400/220 kV (HV & LV)	I-T	400kV	1	2	HT01130007
22	PGCIL	400 kV Malerkotla	Power Transformer	ICT 2 400/220 kV (HV & LV)	I-T	400kV	1	2	HT01130008
23	PGCIL	400 kV Malerkotla	Power Transformer	ICT 3 400/220 kV (HV & LV)	I-T	400kV	1	2	HT01130009
24	PGCIL	400 kV Nalagarh	Transmission Line	220 kV Mohali Ckt-1	I-T	220kV	1	1	HT01130045
25	PGCIL	400 kV Nalagarh	Transmission Line	220 kV Mohali Ckt-2	I-T	220kV	1	1	HT01130046
26	PGCIL	400 kV Patiala	Power Transformer	ICT 1 400/220 kV (HV & LV)	I-T	400kV	1	2	HT01130010
27	PGCIL	400 kV Patiala	Power Transformer	ICT 2 400/220 kV (HV & LV)	I-T	400kV	1	2	HT01130011
28	PGCIL	400 kV Patiala	Power Transformer	ICT 3 400/220 kV (HV & LV)	I-T	400kV	1	2	HT01130012
TOTAL							**28**	**46**	

PUNJAB STATE ELECTRICITY REGULATORY COMMISSION
SCO No. 220-221, SECTOR 34 A, CHANDIGARH

CONTENTS

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PUNJAB STATE ELECTRICITY REGULATORY COMMISSION
SCO NO. 220-221, SECTOR 34-A, CHANDIGARH

PETITION NO. 03 OF 2019 FILED BY PSTCL FOR TRUE-UP OF FY 2017-18, ANNUAL PERFORMANCE REVIEW FOR FY 2018-19 AND APPROVAL OF REVISED ARR AND DETERMINATION OF TARIFF FOR FY 2019-20

PRESENT: Ms. Kusumjit Sidhu, Chairperson
Sh. S.S. Sarna, Member
Ms. Anjuli Chandra, Member

Date of Order: 27th May, 2019

ORDER

The Punjab State Electricity Regulatory Commission (Commission), in exercise of powers vested in it under the Electricity Act, 2003 (Act), passes this order for determining the True-Up of FY 2017-18, Annual Performance Review (APR) for FY 2018-19, approval of Revised Annual Revenue Requirement (ARR) and determination of Tariff for FY 2019-20 for Transmission and State Load Despatch Centre (SLDC) businesses of the Punjab State Transmission Corporation Limited (PSTCL). The petition filed by PSTCL, facts presented by PSTCL in its various submissions, objections received by the Commission from consumer organizations and individuals, issues raised by the public in hearings held at Ludhiana, Amritsar, Patiala and Chandigarh, the responses of PSTCL to the objections and observations of the Government of Punjab (GoP) in this respect, have been considered. The State Advisory Committee constituted by the Commission under Section 87 of the Act has also been consulted and all other relevant facts and material on record have been considered before passing this Order.

1.1 Background

The Commission has in its previous Tariff Orders determined the tariff in pursuance to the ARRs and Tariff Applications submitted for the integrated utility by the Punjab State Electricity Board (Board) for FY 2002-03 to 2006-07, 2008-09 to 2010-11 and PSTCL for FY 2011-12 to FY 2018-19. The Tariff Order for FY 2007-08 had been passed by the Commission in suo-motu proceedings.

PSTCL has submitted that it is one of the ‘Successor Companies’ of the erstwhile

Punjab State Electricity Board (PSEB), duly constituted under the Companies Act, 1956 on 16.04.2010 after restructuring of the Board by Government of Punjab vide notification no.1/9/08-EB(PR)/196 dated 16.04.2010, under the "Punjab Power Sector Reforms Transfer Scheme" (Transfer Scheme). As per the Transfer Scheme, the erstwhile Punjab State Electricity Board (the predecessor) has been unbundled into two entities i.e. Punjab State Power Corporation Limited (PSPCL) and Punjab State Transmission Corporation Limited (PSTCL). PSPCL is assigned with the Generation, Distribution and allied activities of the erstwhile PSEB and PSTCL is assigned transmission of electricity along with operation of State Load Despatch Centre (SLDC) functions. Further, in terms of Section 39 of the Act, the Government of Punjab notified PSTCL as the State Transmission Utility (STU).

The Commission notified the Punjab State Electricity Regulatory Commission (Terms and Conditions for Determination of Generation, Transmission, Wheeling and Retail Supply Tariff) Regulations, 2014 (PSERC MYT Regulations, 2014) and vide notification dated May 28, 2015, the effective date of enforcement of these Regulations was April 1, 2017.

1.2 True Up for FY 2017-18, Annual Performance Review (APR) for FY 2018-19 and Revised Annual Revenue Requirement (ARR) for FY 2019-20

PSTCL has filed the Petition for True up of FY 2017-18, APR for FY 2018-19, Revised ARR and Determination of Tariff for FY 2019-20.

The petitioner has prayed to:

a) admit the petition seeking approval of True up for FY 2017-18, Annual Performance Review (APR) for FY 2018-19, revised ARR for FY 2019-20 and determination of Tariff for FY 2019-20 in accordance with PSERC MYT Regulations, 2014, as amended from time to time;

b) approve the Revenue Gap arising on account of True up for FY 2017-18 and Annual Performance Review (APR) for FY 2018-19 along with carrying cost and its recovery through Tariff in FY 2019-20, as worked out in this petition;

c) approve the revised capital expenditure for FY 2018-19 and FY 2019-20 submitted in the Petition;

d) approve the ARR forecast and Tariff for FY 2019-20 for Transmission Business and SLDC;

e) invoke its power under Regulations 66 and 67 in order to allow the deviations from PSERC MYT Regulations, 2014, wherever sought in this petition;

f) allow additions/alterations/modifications/changes to the petition at a future date;

g) allow any other relief, order or direction, which the Commission deems fit to be issued;

h) condone any error/omission and to give opportunity to rectify the same.

On scrutiny of the petition, it was noticed that the petition was deficient in some respects. The deficiencies were conveyed to PSTCL vide letter no. PSERC/M&F/2248 dated 11.12.2018 and memo no. 2427/PSERC/M&F dated 02.01.2019. The reply to deficiencies were furnished by PSTCL vide its Memo. No. 2996/FA/APR-2A/2018-19 dated 18.12.2018 and memo no. 63 dated 07.01.2019. Accordingly, after taking into consideration the reply of PSTCL, the petition was taken on record on 10.01.2019 as Petition No. 03 of 2019. Various meetings were taken with PSTCL on the data submitted in the ARR. The correspondence continued till end of April, 2019 and relevant correspondence between the Commission and PSTCL was placed on the website of the Commission.

1.3 Objections and Public Hearings

A public notice was published by PSTCL in The Indian Express (English), Hindustan Times (English), Punjabi Tribune (Punjabi), Jagran (Punjabi) and Dainik Jagran (Hindi) on 15.01.2019; inviting objections from the general public and stake holders on the petition filed by PSTCL. Copies of the Petition including deficiencies pointed out by the Commission and reply of PSTCL to the deficiencies were made available in the offices of the CAO (Finance & Audit), PSTCL, 3rd Floor, Shakti Sadan, Opposite Kali Mata Mandir, The Mall, Patiala; Liaison Officer, PSTCL Guest House, near Yadvindra Public School, Phase-8, Mohali; Chief Engineer/P&M, PSTCL, Ludhiana and offices of Superintending Engineers, P&M Circles, Ludhiana, Patiala, Jalandhar, Amritsar and Bhatinda. Soft Copies of the same were made available on the website of PSTCL i.e. www.pstcl.org and the Commission website i.e. www.pserc.gov.in also. The relevant correspondence with PSTCL was also uploaded on the website of the Commission. In the said public notice dated 15.01.2019, objectors were advised to file their objections with the Secretary of the Commission within 30 days of the publication of notice, with an advance copy to PSTCL. The public notice also indicated that the Commission, after perusing the objections received, may invite such objector(s) as it considers appropriate for hearing on the dates to be notified in due course.

The Commission decided to hold public hearings at Ludhiana, Amritsar, Patiala and Chandigarh, as per details hereunder:

Venue	Date & time of public hearing	Category of consumers to be heard
LUDHIANA Multi Purpose Hall, Power Colony, PSPCL, Opp. PAU, Ferozepur Road, Ludhiana	**February 20th, 2019** 2.30 PM to 4.30 PM	All consumers/ organizations of the area.
AMRITSAR VIP Guest House, PSPCL, Batala Road, Verka at Amritsar	**February 25th, 2019** 02.30 PM to 4.30 PM	All consumers/organizations of the area.
PATIALA Technical Training Institute (TTI), PSPCL Auditorium, Shakti Vihar, Badungar (near 23 No. Railway Crossing), Patiala.	**February 27th, 2019** 11.30 AM to 1.30 PM	All consumers/organizations of the area.
CHANDIGARH Commission's Office i.e. SCO 220-221, Sector 34-A, Chandigarh.	**February 28th, 2019** 11.30 AM to 1.00 PM	Industrial consumers/ organizations
	3.00 PM to 4.30 PM	Officers'/Staff Associations of PSPCL and PSTCL
	March 1st, 2019 11.30 AM to 1.00 PM	All consumers and their unions except Industry.

A public notice to this effect was uploaded on the website of the Commission as well as published in various news papers i.e. The Tribune (English), Hindustan Times (English), Ajit (Punjabi) and Punjab Kesari (Hindi) on 01.02.2019. Through this public notice, it was intimated that the Commission will also hear the comments of the Punjab State Power Corporation Limited and Punjab State Transmission Corporation Limited on the objections raised by the public besides Corporations' own point of view at Commission's office i.e. SCO 220-221, Sector 34-A, Chandigarh on 07.03.2019 from 11.00 AM to 1.00 PM (to be continued in the afternoon, if necessary).

1.4 The Commission held public hearings as per schedule from 20th February, 2019 to 1st March, 2019 at Ludhiana, Amritsar, Patiala and Chandigarh. The views of PSTCL on the objections/comments received from public and other stakeholders were heard by the Commission on 07.03.2019.

1.5 The Government of Punjab was approached by the Commission vide DO letter No. 2723-2724 dated 28.01.2019 seeking its views on the Petition No. 03 of 2019. In response, Government of Punjab, vide Memo. No. 1/2/2019-EB (PR)/472 dated 21.05.2019 submitted its comments/observations on the same.

1.6 The Commission received 4 written objections including the comments of

Government of Punjab. All objections were received after the due date. The Commission decided to take these objections into consideration.

The Number of objections/comments received from consumer groups, organizations and others are detailed below:

Sr. No.	Category	No. of Objections
1.	PSEB Engineer's Association	1
2.	Industries	2
3.	Government of Punjab	1
	Total	**4**

The complete list of objectors is given in **Annexure - I** of this Tariff Order. PSTCL submitted its comments on the objections to the Commission. PSTCL was directed to send the responses to the respective objectors. A summary of issues raised in objections, the response of PSTCL and the view of the Commission are contained in **Annexure - II** to this Tariff Order.

1.7 State Advisory Committee

A meeting of the State Advisory Committee constituted under Section 87 of the Act was convened on 12.02.2019 for taking its views on the ARR. The minutes of the meeting of the State Advisory Committee are enclosed as **Annexure - III** to this Order.

1.8 In addition, all subsequent and relevant correspondence between the Commission and PSTCL was also put on the website of the Commission. The Commission has, thus, taken the necessary steps to ensure that due process, as contemplated under the Act and Regulations framed by the Commission, is followed and adequate opportunity is given to all stakeholders to present their views.

1.9 Compliance of Directives

In its previous Tariff Orders, the Commission issued certain directives to PSTCL in the public interest. A summary of directives issued during previous years, status of compliance along with the directives of the Commission in these petitions is given in **Chapter - 4** of this Tariff Order.

Chapter 2
True up for FY 2017-18

2.1 Background

The Commission had approved the ARR and Tariff for FY 2017-18 in its MYT Order dated 23.10.2017 for the first Control Period of FY 2017-18 to FY 2019-20, which was based on expenditure and revenue, estimated by the Punjab State Transmission Corporation Limited (PSTCL) for its Transmission and SLDC Businesses. PSTCL furnished revised estimates for FY 2017-18 during the determination of ARR for FY 2018-19. The Commission, in the Tariff Order of FY 2018-19, reviewed its earlier approvals and re-determined the same based on the revised estimates made available by PSTCL. Now, PSTCL has submitted true up of FY 2017-18 with the submission that same is based on Audited Annual Accounts.

This Chapter contains a true up of FY 2017-18, based on the prudence check of figures submitted by PSTCL in Petition No. 03 of 2019.

2.2 Transmission System Availability

PSTCL has submitted its month-wise average Transmission System Availability for FY 2017-18 as under:

Table 2.1: Transmission System (TS) Availability of PSTCL for FY 2017-18

Sr. No.	Month	TS Availability (%)
I	**II**	**III**
1.	April, 2017	99.97
2.	May, 2017	99.94
3.	June, 2017	99.97
4.	July, 2017	99.99
5.	August, 2017	99.98
6.	September, 2017	99.99
7.	October, 2017	99.99
8.	November, 2017	99.96
9.	December, 2017	99.99
10.	January, 2018	99.94
11.	February, 2018	99.98
12.	March, 2018	99.99
	Average Availability	**99.97**

This is further discussed in para 2.13.

2.3 Transmission Loss

The Commission in the MYT Order dated 23.10.2017 for MYT Control period of FY 2017-18 to 2019-20 had noted that PSPCL has completed the intra-State boundary metering-cum- transmission level energy scheme, but the data from it is yet to be stabilized. The Commission had therefore approved transmission losses at 2.50% for FY 2017-18 with the observation that it would re-visit the transmission losses on the basis of stabilized transmission loss data for the full year during the true up for FY 2017-18.

PSTCL's Submissions:

PSTCL has requested the Commission to approve the transmission loss of 3.12% for FY 2017-18 with the claim that stabilized data for transmission loss is available from April, 2017 to March, 2018 as under:

Table 2.2: Transmission Loss as claimed by PSTCL

Sr. No.	Month	Energy Input (MWH)	Energy Output (MWH)	Transmission Loss (%)
I	II	III	IV	V
1.	April, 2017	3178328	3072798	3.32%
2.	May, 2017	4582304	4448238	2.93%
3.	June, 2017	4981671	4851319	2.62%
4.	July, 2017	6603951	6471100	2.01%
5.	August, 2017	6178639	5966840	3.43%
6.	September, 2017	5336484	5127861	3.91%
7.	October, 2017	3959420	3872626	2.19%
8.	November, 2017	2660262	2527512	4.99%
9.	December, 2017	2918229	2800907	4.02%
10.	January, 2018	2928285	2832306	3.28%
11.	February, 2018	2695787	2627711	2.53%
12.	March, 2018	3331106	3216383	3.44%
	Total	**49354466**	**47815601**	**3.12%**

Commission's Analysis:

The Commission noted that PSTCL has also submitted the transmission loss data for FY 2018-19 (April to August, 2018 in the APR of 2018-19 and from September to December 2018 in its reply to the directives of Tariff order for FY 2018-19). The Commission compared it with the corresponding months of FY 2017-18 as under:

Table 2.3: PSTCL Transmission Losses from April to December for FY 2017-18 & FY 2018-19

	FY 2018-19		FY 2017-18	
Sr. No.	**Month**	**Transmission Loss (%)**	**Month**	**Transmission Loss (%)**
I	**II**	**III**	**IV**	**V**
1.	April, 2018	4.67%	April, 2017	3.32%
2.	May, 2018	3.78%	May, 2017	2.93%
3.	June, 2018	3.36%	June, 2017	2.62%
4.	July, 2018	2.57%	July, 2017	2.01%
5.	August, 2018	2.66%	August, 2017	3.43%
6.	September, 2018	2.83%	September, 2017	3.91%
7.	October, 2018	2.09%	October, 2017	2.19%
8.	November, 2018	2.27%	November, 2017	4.99%
9.	December, 2018	2.38%	December, 2017	4.02%

The Commission observes that there is a huge variation in losses during same months of the FY 2017-18 and FY 2018-19 and also over the full year month wise even during the months which have comparable energy inputs. This indicates that there is still no stabilization of data.

The Commission also noticed from the letters of PSTCL that Transmission Losses are being computed based on manual readings of energy meters installed at boundary interface points. The possibility of inadvertent error in assessment of transmission losses based on manual readings cannot be ruled out.

Therefore, the Commission is of the view that the actual transmission loss could not be assessed in the absence of truly stabilised data. As such, the Commission retains the transmission loss at 2.50% as approved in Tariff order for FY 2017-18.

2.4 Capital Investment Plan (CIP) and Capital Expenditure (CAPEX):

PSTCL's Capital Investment Plan for MYT control period of FY 2017-18 to FY 2019-20 was approved by the Commission vide Order dated 13.12.2017 in Petition No. 44 of 2016. The approved Capital investment Plan (CIP) and the Capital expenditure submitted by PSTCL in its ARR for FY 2017-18 is as under:

Table 2.4: PSTCL Capital Investment Plan and Capital Expenditure for FY 2017-18

(Rs. Crore)

Sr. No.	Description	Approved CIP	Submitted by PSTCL
1.	Transmission Business	328.29	352.51
2.	SLDC Business	10.00	1.59

The Commission notes that the Capital expenditure of Transmission Business for FY 2017-18 against the approved schemes is Rs. 321.48 Crore (including Expenditure of Rs. 2.64 Crore on emergency works) against the total expenditure of Rs. 352.51 Crore shown by PSTCL.

Accordingly, the Commission decides to provisionally approve the CAPEX of Rs. 321.48 Crore for Transmission Business of PSTCL for FY 2017-18.

Further, the Commission notes that capital expenditure of SLDC business for FY 2017-18 is Rs.1.59 Crore against the approved plan of Rs.10 Crore (less by 84%), **accordingly the Commission approves the CAPEX of Rs. 1.59 Crore for SLDC business for FY 2017-18.**

2.5 Capital Works and its Funding

PSTCL's Submission

2.5.1 PSTCL submitted addition of Gross Fixed Assets during 2017-18 and closing Work - in -Progress ending March, 2018 as under:

Table 2.5: Capital Investment for FY 2017-18 claimed by PSTCL

(Rs. Crore)

Sr. No.	Particulars	Transmission	SLDC	PSTCL
I	II	III	IV	V
1.	Opening Capital Work- in- Progress	660.78	4.42	665.20
2.	Add: Addition of Capital Expenditure during the year	352.51	1.59	354.10
3.	Less: Transferred to fixed assets during the year	564.33	0.08	564.41
4.	**Closing Capital Works-in- Progress**	**448.96**	**5.93**	**454.89**

2.5.2 PSTCL has stated that it has considered funding of capital expenditure through equity at 30% of capital expenditure i.e. Rs.106.23 Crore and 70% of the capital expenditure i.e. Rs. 247.87 Crore through loan.

Commission's Analysis:

2.5.3 The Commission observes that there is an addition of Gross Fixed Assets of Rs.578.31 Crore and assets disposed off/sold of Rs.0.62 Crore during FY 2017-18 as per the Audited Annual Accounts of FY 2017-18. Addition of Gross Fixed Assets of Rs. 578.31 Crore includes Assets-not-in-use of Rs.15.44 Crore and deletion of Assets not-in-use of Rs.0.26 Crore. The Commission disagrees with the addition/deletion of Assets not-in-use. The Commission determines the net addition of Gross Fixed Assets during the year as under:

Table 2.6: Determination of net addition of Gross Fixed Assets during FY 2017-18 by the Commission

(Rs. Crore)

Sr. No.	Particulars	Amount
I	II	III
1.	Addition of Assets as per Audited Annual Accounts of FY 2017-18	578.31
2.	Less: Disposal of the Assets as per Audited Annual Accounts	0.62
3.	Net addition of Gross Fixed Assets as per Audited Annual Accounts	577.69
4.	Less: Net addition of Assets not in use (Rs.15.44 Crore-Rs.0.26 Crore)	15.18
5.	**Net allowable Addition of Gross Fixed Assets**	**562.51**

2.5.4 The Commission considers the addition of Gross Fixed Assets of Rs.562.43 Crore for Transmission Business and Rs.0.08 Crore for SLDC business of FY 2017-18. Based on provisionally approved capital expenditure, the Commission determines closing Work -in- Progress as under:

Table 2.7: Capital Work- in- Progress determined by the Commission for FY 2017-18

(Rs. Crore)

Sr. No.	Particulars	Claimed by PSTCL			Approved by the Commission		
		Trans.	SLDC	PSTCL	Trans.	SLDC	PSTCL
I	II	III	IV	V	VI	VII	VIII
1.	Opening Capital WIP	660.78	4.42	665.20	660.78	4.42	665.20
2.	Add: Capital Exp. during Year	352.51	1.59	354.10	321.48	1.59	323.07
3.	**Total**	**1013.29**	**6.01**	**1019.30**	**982.26**	**6.01**	**988.27**
4.	Less: Transferred to Fixed Assets	564.33	0.08	564.41	562.43	0.08	562.51
5.	**Closing Capital WIP**	**448.96**	**5.93**	**454.89**	**419.83**	**5.93**	**425.76**

Further, the Commission determines funding requirement of PSTCL for FY 2017-18 as under:

Table 2.8: Loan and equity requirement approved by the Commission for FY 2017-18

(Rs. Crore)

Particulars	Amount
Provisionally approved Capital Expenditure for FY 2017-18	323.07
Equity requirement i.e.30 % of capital expenditure	96.92
Loan requirement i.e. 70% of capital expenditure	226.15

Out of Rs. 226.15 Crore of loan requirements, Rs. 225.04 Crore are considered for Transmission Business and Rs. 1.11 Crore considered for SLDC Business.

2.6 Employee Cost

2.6.1 In the MYT Petition for FY 2017-18 to FY 2019-20, PSTCL had projected employee expenses of Rs. 530.43 Crore for its Transmission Business and Rs. 7.59 Crore for its SLDC Business for FY 2017-18. The Commission had approved employee cost of Rs. 430.58 Crore for Transmission Business and Rs. 6.75 Crore for SLDC Business to PSTCL for FY 2017-18.

2.6.2 In the APR for FY 2017-18, PSTCL had submitted revised estimates for employee cost of Rs. 497.91 Crore for Transmission Business and had claimed Rs.7.57 Crore for SLDC Business. The Commission approved the revised employee cost of Rs.430.58 Crore for Transmission Business and Rs.6.75 Crore for SLDC Business of PSTCL at the time of APR of FY 2017-18.

PSTCL's Submissions:

2.6.3 In the True Up Petition for FY 2017-18, PSTCL has claimed employee expenses of Rs.464.58 Crore for Transmission Business and Rs.6.51 Crore for SLDC Business based on Audited Annual Accounts for FY 2017-18 (net of capitalization of Rs.39.08 Crore).

Table 2.9: Detailed Employee Cost claimed by PSTCL for FY 2017-18 as per Audited Accounts

(Rs. Crore)

Sr. No	Particulars	Transmission	SLDC	PSTCL
I	**II**	**III**	**IV**	**V**
1.	Salaries	77.50	2.50	80.00
2.	Interim relief/ Wage Revision	-	-	-
3.	Overtime	4.66	-	4.66
4.	Dearness Allowance	94.81	3.07	97.88
5.	Other Allowances	16.13	0.50	16.63
6.	Bonus	0.06	0.00	0.06
7.	**Total (A)**	**193.16**	**6.07**	**199.23**
8.	Staff Welfare Expenses			
i	Electricity Concession to Employees	1.68	-	1.68
ii	Other Staff Welfare Expenses (Uniforms, etc.)	0.08	0.00	0.08
9.	**Total (B)**	**1.76**	**0.00**	**1.76**
10.	Medical Reimbursement	1.00	0.02	1.03
11.	LTC Expenses	0.14	0.03	0.17
12.	Payment under Workmen Compensation Act	-	-	-
13.	**Total (C)**	**1.14**	**0.05**	**1.19**
14.	**Manpower Outsourcing cost (D)**	**23.71**	**0.25**	**23.96**
15.	Less:			
16.	Employee costs capitalized	39.08	-	39.08
17.	**Total (E)**	**39.08**	**-**	**39.08**
18.	**Net Total (F=A+B+C+D-E)**	**180.68**	**6.38**	**187.06**
19.	**Terminal benefits (G)**	**283.89**	**0.13**	**284.02**
20.	**Grand Total (F+G)**	**464.58**	**6.51**	**471.08**

The detailed employee cost claimed by PSTCL for Transmission and SLDC Business for FY 2017-18 is summarized as under:

Table 2.10: Employee Cost claimed by PSTCL for FY 2017-18

(Rs. Crore)

Sr. No.	Particulars	Transmission	SLDC	PSTCL
1.	Terminal Benefits	283.89	0.13	284.02
2.	Other Employee Cost	180.68	6.38	187.06
Total Employee Cost		**464.57**	**6.51**	**471.08**

PSTCL claimed the Terminal benefits for the employees of erstwhile PSEB covered under Transfer Scheme as Rs.279.45 Crore being 11.36% of the total amount as intimated by PSPCL and also claimed the terminal liabilities towards NPS based on actual pay-out made. The terminal benefits claimed by PSTCL is as under:

Table 2.11: Terminal Benefits claimed by PSTCL for FY 2017-18

(Rs. Crore)

Sr. No.	Particulars	PSTCL
I	II	III
1.	Terminal Benefits for the Employees of erstwhile PSEB	279.45
2.	Terminal Benefits towards NPS for new employees recruited by PSTCL	4.15
3.	Terminal Benefits towards Gratuity and Leave encashment for new employees recruited by PSTCL	-*
4.	Miscellaneous -PF Inspection fees, solatium, contribution to CPF, PF, LWF, etc.	0.42
5.	**Grand Total**	**284.02**

**PSTCL has stated that employees recruited by PSTCL are covered under New Pension Scheme (NPS) and are entitled to gratuity under the provisions of Payment of Gratuity Act, 1972. However, PSTCL has not considered the Terminal Benefits of Rs.1.10 Crore on account of the provision for gratuity and leave encashment for employees recruited by PSTCL in the present Petition. PSTCL will claim such expenses on Pay as you go basis, as and when such expenses will occur, as directed by the Commission. PSTCL has not claimed any progressive funding of terminal benefits in view of the pending appeal before Hon'ble Supreme Court.*

2.6.4 PSTCL further, submitted that it is also entitled to the additional employee cost pertaining to new installations/network for the assets added during the year in accordance with Regulation 28 (3) which allows additional employee cost in case of new installations on case to case basis keeping in view the principles and methodologies enunciated in these Regulations.

2.6.5 PSTCL vide its office memo No.2956 /FA / APR-2A / 2018-19 dated 18.12.2018 in a reply to the deficiencies pointed out vide this office memo No. PSERC/M&F/2248 dated11.12.2018 submitted that PSTCL claimed 'Other Employee Cost' for FY 2017-18 based on Gross Employee Cost for FY 2016-17 on following grounds:

(a) The Capital expenditure and capitalization varies from year to year based on the capital works in progress.

(b) The Gross Employee cost includes cost towards the total employees working in projects, maintenance services, support services and head office.

(c) PSTCL further submitted the employee strength in PSTCL as on 31.03.2018 is 3011, out of which 568 Nos. (19% of total strength) of employees are posted for capital works set up i.e. TS Organization.

(d) PSTCL further submitted that PSERC MYT Regulations-2014, (as amended from time to time), do not specify, whether the base expense to be considered should be of gross or of net.

(e) PSTCL argued that normative employee expenses be permitted should be at gross level only, as the expenses capitalization depends on capital projects undertaken and staff or employee of PSTCL dedicated to such project execution.

2.6.6 PSTCL has considered 'Other Employee Cost' of Rs.215.90 Crore for FY 2016-17 for Transmission Business as base expenses after adding capitalised employee costs of Rs.43.43 Crore, as per Audited Annual Accounts. Since, no employee cost has been capitalised for SLDC for FY 2016-17 and it has considered the 'Other Employee Cost' of Rs.6.42 Crore for FY 2016-17 for SLDC as base expenses.

2.6.7 PSTCL computed the 'Gross Other Employee Cost' for FY 2017-18 as under:

Table 2.12: Computation of Gross 'Other Employee Cost' by PSTCL for FY 2017-18

(Rs. Crore)

Sr. No.	Particulars	Transmission	SLDC	PSTCL
I	II	III	IV	V
1.	Net Other Employee Cost for FY 2016-17	172.47	6.42	178.89
2.	Add: Employee Costs capitalised in FY 2016-17	43.43	-	43.43
3.	Gross Other Employee Costs allowed for FY 2016-17	215.90	6.42	222.32
4.	CPI:WPI (50:50) Increase of FY 2017-18 over FY 2016-17	3.03%	3.03%	3.03%
5.	**Gross Other Employee Cost for FY 2017-18**	**222.45**	**6.61**	**229.06**

PSTCL requests the Commission to allow actual employee cost on the basis of Audited Annual Accounts.

Commission's Analysis:

Terminal Benefits

2.6.8 The Terminal benefits expenses are to be determined as per Regulation 26.1 of PSERC MYT Regulations, 2014 (as amended from time to time). Relevant notes of Regulation 26 of MYT Regulations, 2014 are reproduced below for reference:

"Note-4: Terminal Liabilities such as death-cum-retirement gratuity, pension, commuted pension, leave encashment, LTC, medical reimbursement including fixed medical allowance in respect of pensioners will be approved as per the actuals paid by the Applicant.

Note-9: With regard to unfunded past liabilities of pension and gratuity, the Commission will follow the principle of "pay as you go". The Commission shall not allow any other amount towards creating fund for meeting unfunded past liability of pension and gratuity."

Total terminal benefits of PSPCL and PSTCL are to be apportioned in the ratio of 88.64% and 11.36% between PSPCL and PSTCL respectively as per Transfer Scheme. PSPCL has its 88.64% share of terminal benefits amounting to Rs.2180.50 Crore. Accordingly, PSTCL's share @11.36% of terminal benefit claimed as Rs.279.45 Crore (Rs.279.32 Crore for Transmission Business Rs.0.13 Crore for SLDC Business) is allowed.

In addition to the above, an amount of Rs.0.42 Crore of 'other terminal benefits' relating to Miscellaneous-P.F. inspection fees, Solatium, contribution to Contributory Provident Fund, Provident Fund, Labour Welfare Fund etc. and an amount of Rs.4.15 Crore of terminal benefits towards National Pension Fund for new employee recruited by PSTCL are also allowed for FY 2017-18.

Thus, the Commission allows terminal benefits of Rs. 283.89 Crore for Transmission Business and Rs. 0.13 Crore for SLDC Business of PSTCL for FY 2017-18.

Other Employee Cost

2.6.9 The baselines values of O&M expenses are to be determined by as per Regulation 8(1) of PSERC MYT Regulations, 2014, which states as:

"8.1 Baseline values

a) *The baseline values for the control period shall be determined by Commission and the projections for the control period shall be based on these figures*

b) *The baseline values shall be inter-alia based on figures approved by the Commission in the past, latest audited accounts, estimates of the expected figures for the relevant year, industry benchmarks/norms and other factors considered appropriate by the Commission."*

2.6.10 The Commission, in its MYT Order dated 23.10.2017 has considered actual amount of employee cost of FY 2015-16 as base for deriving the allowable amount for the Control Period due to non-availability of Audited Accounts of last year. The Commission in its order recorded as under:

"5.5; *The Commission has considered actual amount of employee cost of FY 2015-16 from the Audited Annual Accounts of FY 2015-16 as base for deriving the allowable amount of employee cost for the Control Period, however, the employee cost of* ***Control Period will be re-determined after the True up of FY 2016-17, based on the Audited Annual Accounts.*****"**

Further, while considering the petition of PSTCL for APR of FY 2017-18, the Commission in its Order dated 19.04.2018 decided as under:

"3.5.6; The Commission in the MYT Order dated 23.10.2017,approved total employee cost of Rs. 437.33 Crore for FY 2017-18 and Rs. 452.67 Crore for FY 2018-19, ***based on Regulation 26 of PSERC MYT Regulations. PSTCL has not submitted Cost Audit Report for FY 2016-17. Since the financial year is not complete, the Financials of FY 2017-18 are also not available.*** *Accordingly, the Commission allows the employee cost already approved in Order dated 23.10.2017 as reproduced in Table 3.2. The Commission shall review the employee cost on the availability of aforesaid information during True Up for FY 2017-18".* ***(emphasis added)***

2.6.11 The Commission examined the actual 'Gross Other Employee Cost' Vs. 'Net Other Employee Cost' of previous years i.e. from FY 2011-12 to FY 2017-18.

Table 2.13: Other Employee Cost from FY 2011-12 to FY 2017-18

(Rs. Crore)

Sr. No.	Financial Year	Gross other employee cost	Employee cost capitalized	Net other employee cost	Other Employee cost approved by the Commission
I	**II**	**III**	**IV**	**V**	**VI**
1.	2011-12	205.84	85.15	120.69	120.69
2.	2012-13	177.77	44.80	132.97	132.99
3.	2013-14	198.34	46.12	152.22	152.22
4.	2014-15	195.04	45.00	150.04	150.02
5.	2015-16	219.17	46.59	172.58	148.82
6.	2016-17	222.47	43.43	179.04	123.30
	2017-18	**226.14**	**39.08**	**187.06**	

The Commission notes that capitalization of employee expenses i.e. Rs. 85.15 Crore in FY 2011-12 was on higher side as compared to subsequent years. The

Commission had considered the actual net employee cost i.e. Rs.120.69 Crore of FY 2011-12 for determining 'Other Employee Cost' for subsequent years as per Regulation 28 of PSERC (Terms and Conditions for Determination of Tariff) Regulations, 2005.

2.6.12 Hon'ble APTEL in its judgment dated 30.03.2015 in Review Petition No 5 of 2015 in Appeal No 174 of 2012 regarding employee cost of PSPCL held that "*actual costs need to be considered"*.

2.6.13 The issue raised by PSTCL regarding Gross Employee cost Vs. Net Employee cost has already been examined by Hon'ble APTEL in an Appeal No. 47 of 2012 in case of Maharashtra State Power Generation Company Limited Vs. Maharashtra State Regulatory Commission. The relevant extract of paragraph of said order is re-produced for reference:

"*The Annual Revenue Requirement comprises of two expenditures viz., Capital Expenditure and Revenue Expenditure. Capital Expenditure includes Return on Equity, Financing costs and Depreciation of the Capital cost of the asset. Revenue expenditure includes Operation and Maintenance (O&M) expenditure, interest on working capital etc. The O&M expenditure has three components viz., Employees Cost, Administrative and General Expenses and Repair and Maintenance costs. As the nomenclature O&M indicates, employees costs includes the salaries and other allowance payable to employees employed in Operation and Maintenance of the projects. Utilities, like the Appellant herein, have two categories of employees viz., (i) category employed in Construction and Erection of projects and (ii) category employed in Operation and Maintenance of projects. The cost of employees employed in construction activity is capitalised along with capital cost of the asset and the utility earns Return on Equity, Depreciation, financing costs etc for the life time of the project. The cost of employees involved in the O&M activity is added to O&M expenses. O&M expenses are the expenses which have been incurred in operation and maintenance of the project and would not include the expenses which had been incurred in construction of the project. All those expenses, including employees' cost, which have been capitalised and entitles the utility to earn RoE and other benefits for the life time of the project cannot be considered as O&M expenses for that year**. Only the expenditure which has been actually incurred in operation and maintenance can form part of O&M expenses. Thus, there is no such term as 'gross O&M' expense or 'net O&M' expenses.** The acceptance of the Contention of the Appellant* *would amount to allowing such amounts both as a revenue expense and also form a part of the capital base on which the Appellant could claim RoE, depreciation etc resulting in to double-accounting and, therefore, not permissible.”* ***(emphasis added)***

Accordingly, after considering the above facts the Commission considers “Other employee cost” as Rs.180.68 Crore i.e. actual ‘Other Employee Cost’ for FY 2017-18 based on Annual Audited Accounts as baseline value for FY 2017-18 and for subsequent years of Transmission Business. Similarly, the Commission considers Other Employee Cost of SLDC as Rs.6.38 Crore i.e. actual other employee cost for FY 2017-18 based on Annual Audited Accounts as baseline value for FY 2017-18 and for subsequent years for SLDC Business.

Therefore, the Commission allows total Employee Cost of Rs. 464.57 (283.89+180.68) Crore for Transmission Business and Rs. 6.51 (0.13+6.38) Crore for SLDC Business for FY 2017-18.

2.7 Repair and Maintenance (R&M) and A&G Expenses

2.7.1 In the MYT Petition for FY 2017-18 to FY 2019-20, PSTCL projected R&M and A&G Expenses of Rs.58.93 Crore for its Transmission Business and Rs.2.60 Crore for its SLDC Business for FY 2017-18. The Commission approved Rs.57.30 Crore and Rs.1.89 Crore as R&M and A&G expenses for Transmission Business and SLDC Business of PSTCL respectively.

2.7.2 In the APR Petition for FY 2017-18, PSTCL revised its claim of R&M and A&G expenses to Rs.58.83 Crore for its Transmission Business and Rs.1.85 Crore for its SLDC Business. The Commission approved the R&M and A&G expenses of Rs.57.30 Crore for Transmission Business and Rs.1.89 Crore for SLDC Business of PSTCL during the APR of FY 2017-18.

PSTCL’s Submissions:

2.7.3 In the True-up Petition for FY 2017-18, PSTCL has claimed total R&M and A&G expenses of Rs.50.78 Crore (Rs.49.43 Crore for Transmission Business and Rs.1.35 Crore for its SLDC Business) (net of capitalization of Rs.5.24 Crore) based on the Audited Annual Accounts for FY 2017-18.

Table 2.14: PSTCL’s claim of R&M and A&G expenses for FY 2017-18

(Rs. Crore)

Sr. No.	Particulars	Transmission	SLDC	PSTCL
1.	R&M expenses	22.26	0.55	22.81
2.	A&G expenses	27.17	0.80	27.97
3.	**R&M and A&G expenses**	**49.43**	**1.35**	**50.78**

2.7.4 PSTCL submits that assets funded through Contributory Works of Rs.45.55 Crore were added in fixed assets during FY 2017-18. However, the assets, including the assets funded through Contributory Works, have to be operated and maintained by PSTCL. Therefore, PSTCL has considered the impact of these assets in Gross Fixed Assets for FY 2017-18 for computing R&M and A&G expenses. PSTCL claimed normative R&M and A&G expenses for FY 2017-18 as under:

Table 2.15: Normative R&M and A&G expenses as claimed for FY 2017-18

(Rs. Crore)

Sr. No.	Particulars	Transmission	SLDC
	Transmission Business		
1.	Opening GFA	8881.83	18.47
2.	Closing GFA	9444.25	18.57
3.	Average GFA	9163.04	18.52
4.	Escalated K-factor	0.63%	7.52%
5.	**R&M and A&G expenses**	**57.53**	**1.39**
6.	Add: Audit Fee	0.26	-
7.	Add: Licence Fee and ARR Fee	0.50	-
8.	**Grand Total**	**58.29**	**1.39**

2.7.5 PSTCL requested to allow actual R&M and A&G Expenses of Rs.49.43 Crore for Transmission Business and Rs.1.35 Crore for SLDC.

2.7.6 PSTCL vide memo no. 1082/FA/MYT-1/APR-2A dated 12.04.2019 intimated that arrear amounting to Rs.3.00 Crore of electricity charges for FY 2016-17 has been claimed in the Administrative Expenses of FY 2017-18. PSTCL further submitted that Rs.3.00 Crore may be considered as Prior Period expenses.

Commission's Analysis:

2.7.7 The baselines values of O&M expenses for the control period are to be determined as per Regulation 8(1) of PSERC MYT Regulations, 2014 which states as:

"8.1 Baseline values

a) The baseline values for the control period shall be determined by Commission and the projections for the control period shall be based on these figures.

b) The baseline values shall be inter-alia based on figures approved by the Commission in the past, latest audited accounts, estimates of the expected figures for the relevant year, industry benchmarks/nd other factors considered appropriate by the Commission."

2.7.8 The Commission examined previous years i.e. FY 2011-12 to FY 2017-18 actual expenses of R&M and A&G. The same is tabulated as under:

Table 2.16: R&M and A&G Expenses from FY 2011-12 to FY 2017-18

(Rs. Crore)

Financial Year	Actual R&M & A&G Expenses		Gross R&M and A&G Expenses	Expenses capitalized	Net R&M and A&G Expenses	Net R&M and A&G Expenses approved by the Commission
	Transmission	SLDC				
I	II	III	IV	V	VI	VII
2011-12	45.99	2.49	48.48	9.39	39.07	40.00
2012-13	77.68	3.19	80.87	7.54	65.80	46.00
2013-14	93.18	2.15	95.33	10.36	68.76	53.36
2014-15	73.76	1.92	75.68	10.25	65.43	57.09
2015-16	56.04	0.83	56.87	6.55	50.32	50.35
2016-17	48.71	0.96	49.67	5.63	44.04	44.04
2017-18	54.67	1.35	56.02	5.24	50.78	

2.7.9 The Commission approves the net R&M and A&G expenses as indicated in the latest Audited Annual Accounts of FY 2017-18 for baseline value for FY 2017-18 and subsequent years. PSTCL claimed an amount of Rs.0.22 Crore towards Corporate Social Responsibility (CSR) Fund, Rs.3.00 Crore arrears of electricity charges, Rs.0.26 Crore as Audit Fee and Rs.0.50 Crore as License fee during FY 2017-18. The Commission has not considered these expenses for baseline value of FY 2017-18. However, arrears of Rs.3.00 Crore on account of electricity charges have been considered as prior period expenses. As such, the Commission determines base line value of R&M and A&G expenses for Transmission Business and SLDC Business for FY 2017-18 and subsequent years as under:

Table 2.17: Baseline values of R&M and A&G expenses approved by the Commission

(Rs. Crore)

Sr. No.	Particulars	Transmission	SLDC	TOTAL
I	II	III	IV	V
1.	R&M and A&G expenses as claimed	49.43	1.35	50.78
2.	Less: Corporate Social Responsibility	0.22	-	0.22
3.	Less : Arrear of Electricity Charges	3.00	-	3.00
4.	Less: Audit Fees	0.26	-	0.26
5.	Less License fees	0.50	-	0.50
6.	**Baseline value of R&M and A&G expenses**	**45.45**	**1.35**	**46.80**

2.7.10 Based on baseline values of FY 2017-18, the Commission determines K factor, based on provisionally approved capitalization of assets as per the Regulation 26(1)(i) of MYT Regulations, 2014 as under:

Table 2.18: Calculation of K factor for R&M and A&G expenses determined by the Commission

(Rs. Crore)

Sr. No.	Particulars	Transmission	SLDC
I	**II**	**III**	**IV**
1.	Opening GFA	8881.83	18.47
2.	Addition during the year	562.43	0.08
3.	Closing GFA	9444.26	18.55
4.	Average GFA	9163.04	18.51
5.	Baseline value of R&M and A& G expenses	45.45	1.35
6.	K factor	0.496%	7.293%

2.7.11 In addition to baseline value of Rs.45.45 Crore, Rs.0.26 Crore as Audit Fee and Rs.0.50 Crore as License fee paid during FY 2017-18 are allowed as per note 7 of Regulation 26 of PSERC MYT Regulations, 2014 for Transmission Business. The Commission determines R&M and A&G expenses for FY 2017-18 as under:

Table 2.19: R&M and A&G expenses for FY 2017-18 approved by the Commission

(Rs. Crore)

Particulars	Transmission	SLDC	TOTAL
Baseline value of R&M and A& G expenses	**45.45**	**1.35**	**46.80**
Add: Audit Fees	0.26		0.26
Add: License fess	0.50		0.50
R&M and A&G expenses	**46.21**	**1.35**	**47.56**

Thus, the Commission approves Rs.47.56 (Rs.46.21 Crore for Transmission Business + Rs.1.35 Crore for SLDC Business) Crore of R&M and A&G expense for FY 2017-18.

2.8 Depreciation Charges

In the ARR Petition of MYT period FY 2017-18, PSTCL had claimed depreciation charges of Rs.335.38 Crore for Transmission Business and Rs.2.11 Crore for SLDC Business against which the Commission had approved depreciation charges of Rs.279.94 Crore for Transmission Business and Rs.1.17 Crore for SLDC Business for FY 2017-18**.**

2.8.1 In the Review Petition for FY 2017-18, PSTCL revised its claim of depreciation to Rs.324.45 Crore for Transmission Business and Rs.1.29 Crore for SLDC Business for FY 2017-18. The Commission maintained the depreciation charges as was previously approved in Order No. 23.10.2017 i.e. Rs. 279.94 Crore for Transmission Business and Rs.1.17 Crore for SLDC Business at the time of Review of FY 2017-18.

PSTCL's Submissions:

In the True-up Petition for FY 2017-18, PSTCL has claimed Rs.267.89 Crore as depreciation charges for Transmission Business and Rs.0.94 Crore for SLDC Business as per Audited Annual Accounts for FY 2017-18 (net of capitalization of Rs.0.25 Crore). PSTCL stated that though contributory works of Rs.45.55 Crore were added in assets in FY 2017-18, however, it has not considered any depreciation on account of assets funded through contributory works in FY 2017-18.

Commission's Analysis:

2.8.2 The Depreciation has been determined as per Regulation 21 of PSERC MYT Regulations-2014 (as amended from time to time).

2.8.3 The Commission determines the average Gross Fixed Assets (net of land and land rights of Rs.2926.88 Crore and assets created from Consumer Contribution of Rs.45.35 Crore)) for FY 2017-18 as under:

Table 2.20: Gross Fixed Assets (net of Land & Land rights and Consumer contribution) for FY 2017-18 approved by the Commission.

(Rs. Crore)

Particulars	Transmission	SLDC	Total
Opening GFA	5909.60	18.47	**5928.07**
Add: Net Additions	562.43	0.08	**562.51**
Closing GFA	6472.03	18.55	**6490.58**
Average GFA	6190.82	18.51	**6209.33**

2.8.4 The Commission observes that PSTCL has claimed depreciation of Rs.7.42 Crore on assets-not-in-use & damaged/unrepairable assets and Rs.3.58 Crore on account of impairment loss. The Commission disallows depreciation of Rs.11.00 Crore as the assets have not been used. Accordingly, the Commission determines depreciation amounting to Rs.256.89 Crore for Transmission Business and Rs.0.94 Crore for SLDC Business as under:

Table 2.21: Depreciation charges for FY 2017-18 approved by the Commission

(Rs. Crore)

Particulars	Transmission	SLDC	Total
Depreciation as claimed by PSTCL	267.89	0.94	268.83
Less: Depreciation on Assets-not-in-use	7.42	-	7.42
Less : Impairment Loss	3.58	-	3.58
Depreciation allowed	**256.89**	**0.94**	**257.83**

Depreciation determined above is net of Land & Land Rights and Consumer Contribution.

The Commission further determines weighted average rate of depreciation of FY 2017-18 as under:

Table 2.22: Weighted Average rate of depreciation for FY 2017-18 approved by the Commission

(Rs. Crore)

Particulars	Transmission	SLDC
Average Gross Fixed Assets	6190.82	18.51
Depreciation allowed by the Commission	256.89	0.94
Average rate of depreciation	4.15 %	5.08%

The Commission approves depreciation of Rs.256.89 Crore for Transmission Business and Rs.0.94 Crore for SLDC Business respectively for FY 2017-18.

2.9 Interest and Finance Charges

2.9.1 In the ARR Petition for FY 2017-18, PSTCL had projected Interest and Finance charges on long term loan of Rs.407.51 Crore (net of capitalization Rs.53.50 Crore) for its Transmission Business and Rs.2.89 Crore for SLDC Business. The Commission approved interest charges of Rs.358.80 Crore for Transmission Business and Rs.1.13 Crore for SLDC Business.

2.9.2 In the Review Petition for FY 2017-18, PSTCL had claimed Interest and Finance charges on long term loan of Rs.384.75 Crore (other than interest on Working Capital loans and net of capitalization of Rs.53.50 Crore) for its Transmission Business and Rs.1.10 Crore for SLDC Business. The Commission approved the interest and finance charges of Rs.358.80 Crore for Transmission Business and Rs.1.13 Crore for SLDC Business at the time of Review of FY 2017-18.

PSTCL's Submissions:

2.9.3 In the True Up Petition for FY 2017-18, PSTCL has claimed the Interest & Finance Charges of Rs.392.11 Crore for Transmission Business and Rs.0.82 Crore for SLDC Business based on Audited Annual Accounts for FY 2017-18 (net of capitalization of Rs.39.76 Crore).

2.9.4 PSTCL submitted that it had inadvertently claimed interest on loans for purchase of assets funded through contributory works of Rs.22.78 Crore in the previous years.

2.9.5 PSTCL further stated that it has carried out the refinancing of PSPCL Loan of Rs.495.57 Crore by availing loan from PFC in FY 2017-18 on cheaper interest rate, in view of PSERC letter dated 27th March-2018. PSTCL projected savings of Rs.28.62 Crore as a result of refinancing of loans from PFC.

2.9.6 The capital expenditure of Rs.247.87 Crore in FY 2017-18 was funded by availing loans from Banks/Financial Institutions.

Commission's Analysis:

2.9.7 PSTCL has raised a loan of Rs.246.63 Crore for the Capital Expenditure of Rs.351.01 Crore for Transmission Business and SLDC Business. The Commission provisionally approved capital expenditure Rs. 321.48 Crore for Transmission Business in addition to assets created out of contributory works.

2.9.8 The Commission had determined closing balance of loans of Rs.3739.97 Crore as on 31.3.2017 in para 2.8.3 of Tariff Order dated 19.4.2019 for FY 2018-19. After deducting loans for assets funded through consumer contribution of Rs.22.78 Crore, which has been wrongly claimed as loan by PSTCL during FY 2016-17, the opening balance of loan as on 01.04.2017 works out to Rs. 3717.19 Crore.

The Commission determines the impact of excess interest charged by the PSTCL and allowed by the Commission during FY 2016-17 on loan amount of Rs.22.78 Crore for six months @ 10.59% p.a. as Rs. 1.21 Crore and the same is reduced from the Finance charges in the true up of FY 2017-18 in the Table 2.24.

2.9.9 The Commission determines interest at the weighted average rate of interest of Loans availed on allowable loan of Rs.225.04 Crore as under:

Table 2.23: Approved Long term loan and interest thereon for Transmission Business

(Rs. Crore)

Sr. No.	Particulars	Loan as on April 1, 2017	Receipt of Loan during FY 2017-18	Repayment of Loan during FY 2017-18	Loans as on March 31, 2018	Amount of Interest
I	II	III	IV	V	VI	VII
1.	As per data furnished in ARR Petition (other than WCL & GP Fund)	3955.75	246.63	281.78	3920.60	417.02
2.	**Approved by the Commission (other than WCL and GP Fund)**	**3717.19**	**225.04**	**281.78**	**3660.45**	**390.62**

2.9.10 **Interest on GP Fund**

PSTCL has claimed an interest of Rs.9.46 Crore on average GP fund of Rs.120.76 Crore during FY 2017-18.

The Commission approves interest @7.83% of Rs.9.46 Crore on GP Fund, being statutory payment, as claimed by PSTCL for FY 2017-18.

2.9.11 **Capitalization of Interest Charges**

In the True up Petition for FY 2017-18, PSTCL has capitalized Rs.39.76 Crore interest charges based on Audited Annual Accounts for FY 2017-18.

The Commission, as per past practice, approves capitalization of interest of Rs.39.76 Crore for FY 2017-18 based on the Audited Annual Accounts.

2.9.12 **Finance Charges and Guarantee Charges**

PSTCL has claimed Finance charges of Rs.0.38 Crore and Guarantee charges of Rs.5.00 Crore based on Audited Annual Accounts for FY 2017-18 for Transmission Business. PSTCL claims finance charges and Guarantee Fees as Rs. 5.38 Crore on loan requirement of Rs. 246.63 Crore whereas the Commission determines loan requirement of Rs. 225.04 Crore. Accordingly, the Commission approves proportionately the finance charges and Guarantee charges as Rs. 4.91 (5.38*225.04/246.63) Crore for Transmission Business of PSTCL.

The Commission approves interest and finance charges for Transmission Business of PSTCL for FY 2017-18 as under:

Table 2.24: Approved Interest & Finance Charges for Transmission Business for FY 2017-18

(Rs. Crore)

Sr. No.	Particulars	Interest as Claimed by PSTCL	Amount allowed by the Commission
I	**II**	**III**	**IV**
1.	Interest on Institutional Loans	417.02	390.62
2.	Interest on GP Fund	9.46	9.46
3.	Guarantee Charges and Finance Charges	5.38	4.91
4.	**Gross Interest on Long Term Loans(1+2+3+4)**	**431.86**	**404.99**
5.	Less Capitalization	39.76	39.76
6.	Less: Impact of excess interest allowed during FY 2016-17	-	1.21
7.	**Net Interest Charges on Long Term Loans (5-6-7)**	**392.10**	**364.02**

Interest on Working Capital

2.9.13 In the ARR Petition for FY 2017-18, PSTCL had claimed interest on working capital for Transmission Business of Rs.46.13 Crore for FY 2017-18, on a total working capital of Rs.386.05 Crore against which the Commission approved interest on working Capital of Rs.37.84 Crore for FY 2017-18 on total working capital of Rs.316.67 Crore.

In the Review Petition for FY 2017-18, PSTCL had revised the claim of interest on working capital to Rs.40.46 Crore against which the Commission approved Rs.37.84

Crore on working capital of Rs.316.67 Crore.

PSTCL's submissions:

2.9.14 In the True-up Petition for FY 2017-18, PSTCL has claimed interest on working capital of Rs.38.23 Crore @11.22% on the working capital loan of Rs.340.85 Crore for Transmission Business. Rate of interest on working capital is required to be calculated as per provisions contained in Regulations of PSERC MYT Regulations - 2014.

Commission's Analysis:

2.9.15 The Commission has determined the working capital requirement in accordance with the Regulation-34 of PSERC MYT Regulations-2014. Rate of interest on working capital is calculated as per provisions contained in Regulations-25.1 of PSERC MYT Regulations - 2014 (Amended vide No. PSERC/Reg./111 dated 03.02.2016). The Commission determines interest on working capital as Rs.32.97 Crore based on the weighted average rate of approved loans @10.59% on working capital requirement of Rs.311.29 Crore for Transmission Business as under:

Table 2.25: Interest on Working Capital for Transmission Business of PSTCL for FY 2017-18 approved by the Commission

(Rs. Crore)

Sr. No.	Particulars	Claimed by PSTCL	Approved by the Commission
I	II	III	IV
1.	Receivables equivalent to two months	220.92	192.10
2.	Maintenance spares @ 15% of Operation and Maintenance expenses	77.10	76.62
3.	Operation and Maintenance expenses for one month	42.83	42.57
4.	Working Capital requirement	340.85	311.29
5.	**Interest on Working Capital (@10.59% for FY 2017-18)**	**38.23**	**32.97**

The Commission approves working capital requirements of Rs.311.29 Crore and interest thereon of Rs. 32.97 Crore for Transmission Business of PSTCL for FY 2017-18.

Interest and Finance charges for SLDC Business

PSTCL's Submissions:

2.9.16 In the True-up Petition for FY 2017-18, PSTCL has submitted that it had incurred capital expenditure of Rs.1.59 Crore in the SLDC Business. Opening balance of loan is Rs.6.70 Crore, loan addition of Rs.1.24 Crore and it has claimed Rs.0.82 Crore as interest charges on long term loan during for FY 2017-18.

Commission's Analysis:

2.9.17 PSTCL has raised a loan of Rs.1.24 Crore for SLDC business. The Commission has provisionally approved capital expenditure of Rs.1.59 Crore for SLDC business. Accordingly, loan requirement of 70% of Rs.1.59 Crore works out to Rs.1.11 Crore. The Commission determines interest on allowable loans at weighted average rate of interest (other than working capital loans) as under:

Table 2.26: Approved Long term loan and interest there on for SLDC Business FY 2017-18

(Rs. Crore)

Sr. No.	Particulars	Loan as on April 01, 2017	Receipt of loan during FY 2017-18	Repayment of loan during FY 2017-18	Loan as on March 31, 2018	Amount of Interest
I	II	III	IV	V	VI	VII
1.	As per data furnished by PSTCL in ARR Petition (other than WCL)	6.70	1.24	0.32	7.62	0.82
2.	**Approved by the Commission (other than WCL)**	**5.95**	**1.11**	**0.32**	**6.74**	**0.73**

Therefore, the Commission approves interest & finance charges of Rs.0.73 Crore to PSTCL during FY 2017-18 for SLDC Business.

Interest on Working Capital for SLDC Business

2.9.18 In the ARR Petition for FY 2017-18, PSTCL had claimed interest on working capital of Rs.0.81 Crore on the total working capital of Rs.6.94 Crore. The Commission approved the working capital of Rs.5.00 Crore and interest on working capital Rs.0.59 Crore for FY 2017-18.

2.9.19 In the Review for FY 2017-18, PSTCL had claimed interest on working capital of Rs.0.56 Crore on the total working capital of Rs.5.01 Crore for its SLDC Business. The Commission determined the working capital of Rs.4.69 Crore and interest thereon of Rs.0.55 Crore for SLDC Business.

PSTCL's Submissions:

2.9.20 In the True up Petition for FY 2017-18, PSTCL has claimed Rs.0.57 Crore as interest @11.22% on Working Capital of Rs.5.08 Crore.

2.9.21 Applying the same principle as stated above for Transmission Business, the Commission works out the total working capital requirement of Rs.5.07 Crore and interest thereon works out to Rs.0.58 Crore as under:

Table 2.27: Approved Interest on Working Capital for SLDC Business for FY 2017-18.

(Rs. Crore)

Sr. No.	Particulars	FY 2017-18	
		Claimed by PSTCL for SLDC	Approved by the Commission
I	II	III	IV
1.	Receivables equivalent to two months fixed cost	3.25	3.24
2.	Maintenance spares @15% of O&M expenses	1.18	1.18
3.	Operation & Maintenance expenses for one month	0.65	0.65
4.	Working capital requirement	5.08	5.07
5.	**Interest on working capital (@ 11.45% for 2017-18)**	**0.57**	**0.58**

The Commission approves working capital requirement of Rs. 5.07 Crore and interest thereon at the weighted average rate of interest approved for loans as Rs.0.58 Crore for SLDC Business of PSTCL for FY 2017-18.

2.10 Return on Equity

2.10.1 In ARR Petition for FY 2017-18, PSTCL had claimed RoE of Rs.101.19 Crore on opening equity of Rs.605.88 Crore and on addition of Rs.93.91 Crore during FY 2017-18. The Commission had approved RoE of Rs.101.19 Crore worked out @15.50% on the opening balance of equity for full year and @15.50% on the addition to equity during the year for half year.

2.10.2 In Review Petition for FY 2017-18, PSTCL has claimed the same Return on Equity of Rs.101.19 Crore based on equity amount of Rs. 699.79 Crore (605.88+93.91) which had been allowed.

PSTCL's Submissions:

2.10.3 In the True up Petition for FY 2017-18, PSTCL has claimed additional equity of Rs.106.23 Crore for FY 2017-18 as under:

Table 2.28: Return on Equity for FY 2017-18 as claimed by PSTCL

(Rs. Crore)

Sr. No.	Particulars	PSTCL
1.	Equity at the opening of FY 2017-18	605.88
2.	Addition of equity during the year	106.23
3.	Equity at the closing of FY 2017-18	712.11
4.	Rate of Return (%) RoE	15.50%
5.	**Return on Equity**	**102.14**

2.10.4 PSTCL further stated that normative RoE as shown in above table is less than the Equity addition of Rs.106.23 Crore for FY 2017-18. However, since funding of Capital Expenditure for FY 2017-18 has to be done through reinvesting the RoE for FY 2017-18, approval of Normative RoE will lead to a shortfall in funding of Capital

Expenditure by Rs.4.09 Crore. Therefore, the Commission may allow the RoE of Rs.106.23 Crore for FY 2017-18 at the same level of addition of Equity during the year.

Commission's Analysis:

2.10.5 In accordance with the Regulation 20 of PSERC MYT Regulations, 2014, Return on equity @15.50% on the opening balance of equity for full year and @15.50% on the addition to equity during the year for half year are to be allowed. 30% of provisionally approved capital expenditure of Rs.321.48 Crore for Transmission and SLDC business works out to Rs.96.92 Crore. Accordingly, Return on Equity works out as under.

Table 2.29: Return on Equity for FY 2017-18 allowed by the Commission

(Rs. Crore)

Sr. No.	Particulars	PSTCL
1.	Equity at the opening of FY 2017-18	605.88
2.	Addition of equity during the year	96.92
3.	Equity at the closing of FY 2017-18	702.80
4.	Average Equity	654.34
5.	Rate of Return (%) RoE	15.50%
6.	**Return on Equity(15.5% of 654.34)**	**101.42**

Thus, the Commission, provisionally approves RoE of Rs.101.42 Crore to PSTCL for FY 2017-18.

2.11 Unified Load Dispatch & Communication (ULDC) Charges

2.11.1 In the ARR Petition for FY 2017-18, PSTCL claimed ULDC Charges of Rs.12.36 Crore for FY 2017-18 for its SLDC Business and the Commission approved Rs.11.76 Crore. In the Review Petition of FY 2017-18, PSTCL claimed Rs.9.93 Crore towards ULDC charges for FY 2017-18. As per Audited Annual Accounts for FY 2016-17 ULDC Charges were Rs.9.93 Crore which were allowed by the Commission at the time of Review.

In the True up Petition for FY 2017-18, PSTCL has claimed ULDC of Rs.10.73 Crore for FY 2017-18 as per Audited Annual Accounts for its SLDC Business and same is allowed.

Accordingly, the Commission approves ULDC charges of Rs.10.73 Crore to PSTCL for its SLDC Business for FY 2017-18.

2.12 Non-Tariff Income

2.12.1 In the ARR Petition for FY 2017-18, PSTCL had projected Rs.10.00 Crore of Non-

Tariff Income for its Transmission Business and Rs.1.00 Crore for SLDC Business for FY 2017-18 against which the Commission approved the Non-Tariff Income of Rs.49.25 Crore for Transmission Business and Rs.5.41Crore for its SLDC Business for FY 2017-18.

2.12.2 In the Review Petition for FY 2017-18, PSTCL claimed Rs.20.77 Crore on account of Non-Tariff Income for Transmission Business and Rs.5.41 Crore for SLDC Business against which the Commission approved Non-Tariff Income of Rs.49.25 Crore for Transmission Business and Rs.5.41 Crore for SLDC Business as was previously approved for MYT Control Period in its Tariff Order dated 23.10.2017.

PSTCL's Submissions:

2.12.3 In the True-up Petition for FY 2017-18, PSTCL has claimed Rs.20.36 Crore (Rs.18.94 Crore for Transmission Business and Rs.1.41 Crore for SLDC Business) on account of Non-Tariff Income based on Audited Annual Accounts for FY 2017-18 including income from Open Access customers as Transmission charges and operating charges.

2.12.4 PSTCL submitted that it has not considered the income towards certain heads wherein expenses were not allowed by the Commission in previous Tariff Orders which are discussed as under:

a) Income of Rs.1.92 Crore towards interest received on refund of income tax for FY 2015-16 has not been considered because the Commission did not allow expenses under the head of Income Tax in True-up for FY 2015-16.

b) Income of Rs.6.58 Crore towards provision withdrawn. On unserviceable/ obsolete items and losses under investigation.

Further, PSTCL has also not considered Non-tariff Income arising out of book adjustment, wherein expenses were not considered in previous Tariff Orders, in respect of the following:

a) Income of Rs.0.11 Crore towards Sundry Credit balances written back.

b) Income of Rs.99.84 Crore towards amount against Deposit/Contributory work written back.

c) Income of Rs.5.86 Crore towards Security deposit/EMD forfeited.

The detail of Non-Tariff Income claimed by PSTCL is as under:

Table 2.30: Non-Tariff Income claimed by PSTCL

(Rs. Crore)

Sr. No.	Particulars	Transmission Business	SLDC Business
I	II	III	IV
1.	Rental charges of staff quarters, water charges, hospital ward, guest house etc.	0.34	0.02
2.	Sale of tender forms	0.13	-
3.	Income from O&M of bays of PGCIL	5.52	-
4.	Income from open access charges i.e. application fee, cross subsidy surcharge, additional surcharge, transmission and /or wheeling charges, scheduling charges etc.	1.60	0.64
5.	Sale of scrap	1.01	-
6.	Miscellaneous income - NOC charges from Open Access customers	-	0.25
7.	Other miscellaneous income	10.34	0.50
	Total	**18.94**	**1.41**

Commission's Analysis:

2.12.5 The Non-Tariff Income has been determined as per Regulation-28 of PSERC MYT Regultions-2014 (amended from time to time).

The Commission notes that Audited Annual Accounts of PSTCL has shown 'Credit Balance Written Back' as 'Other Income' but PSTCL has not considered it as Non-Tariff in the petition. 'Credit Balance Written Back' indicate money received as advance from supplier, in previous years on different account heads, but not payable now. The Commission considers 'Credit Balance Written Back' as Non-Tariff Income. Accordingly, the Commission determines the Non-Tariff Income as under:

Table 2.31: Non-Tariff Income for FY 2017-18 approved by the Commission

(Rs. Crore)

Particulars	Transmission Business	SLDC Business
Non –Tariff Income as claimed.	18.94	1.41
Add; Credit Balance written back		-
Sundry Creditors	0.11	-
Amount against Deposit/Contributory works	99.84	
Security Deposits/EMD	5.86	-
Total	**124.75**	**1.41**

Accordingly, the Commission approves Rs. 124.75 Crore for Transmission Business and Rs. 1.41 Crore for SLDC Business as Non-Tariff Income for FY 2017-18.

2.13 Availability and Incentive on Transmission System Availability

PSTCL's Submissions:

PSTCL has submitted that as per PSERC MYT Regulations, 2014, it is eligible for incentive for over achieving the availability targets for transmission system availability and has requested the Commission to approve the incentive of Rs. 12.78 Crore for transmission system availability, for FY 2017-18. PSTCL has also submitted the computation of incentive on the basis of fixed charges for Transmission as given in Table 2.32.

Table 2.32: Incentive on Transmission System (TS) Availability for FY 2017-18 submitted by PSTCL

(Rs. Crore)

Sr. No.	Month	TS Availability (%)	Monthly Transmission Charges	Transmission Charges including Incentive	Incentive
I	**II**	**III**	**IV**	**V**	**VI**
1.	April, 2017	99.97	106.81	107.86	1.05
2.	May, 2017	99.94	110.37	111.42	1.05
3.	June, 2017	99.97	106.81	107.86	1.05
4.	July, 2017	99.99	110.37	111.47	1.10
5.	August, 2017	99.98	110.37	111.47	1.10
6.	September, 2017	99.99	106.81	107.88	1.07
7.	October, 2017	99.99	110.37	111.47	1.10
8.	November, 2017	99.96	106.81	107.84	1.03
9.	December, 2017	99.99	110.37	111.47	1.10
10.	January, 2018	99.94	110.37	111.41	1.04
11.	February, 2018	99.98	99.69	100.67	0.98
12.	March, 2018	99.99	110.37	111.47	1.10
	Total		**1299.52**	**1312.30**	**12.78**

Commission's Analysis:

The Commission observe that MYT Regulations, 2014, specifies that Normative Annual Transmission System Availability Factor (NATAF) for the Control Period shall be 99% for incentive consideration. And, the transmission system availability of PSTCL has been verified by SLDC vide its Letter No. 949 dated 06.07.2018, as shown in Column III of Table 2.33. Accordingly, the Commission determines the incentive for over achievement of transmission system availability by PSTCL, on the basis of ARR of Transmission Business approved in Table 2.34 of this Tariff Order, as under:

Table 2.33: Incentive on Transmission System (TS) Availability for FY 2017-18 determined by the Commission

Sr. No.	Month	TS Availability (%)	Monthly Transmission Charges (Rs. Crore)	Transmission Charges inclusive of Incentive (Rs. Crore)	Incentive (Rs. Crore)
I	II	III	IV	V	VI
1.	April, 2017	99.97	93.80	94.72	0.92
2.	May, 2017	99.94	96.94	97.86	0.92
3.	June, 2017	99.97	93.80	94.72	0.92
4.	July, 2017	99.99	96.94	97.91	0.97
5.	August, 2017	99.98	96.94	97.90	0.96
6.	September, 2017	99.99	93.80	94.74	0.94
7.	October, 2017	99.99	96.94	97.91	0.97
8.	November, 2017	99.96	93.80	94.71	0.91
9.	December, 2017	99.99	96.94	97.91	0.97
10.	January, 2018	99.94	96.94	97.86	0.92
11.	February, 2018	99.98	87.55	88.41	0.86
12.	March, 2018	99.99	96.94	97.91	0.97
	Total		**1141.33**	**1152.56**	**11.23**

Thus, the Commission allows the incentive of Rs. 11.23 Crore to PSTCL for achieving transmission system availability higher than the norms laid by the Commission during FY 2017-18.

2.14 Prior Period Expenses

PSTCL vide memo no. 1082/FA/MYT-1/APR-2A dated 12.04.2019 intimated that arrear amounting to Rs.3.00 Crore of electricity charges for FY 2016-17 has been claimed in the Administrative expenses of FY 2017-18. PSTCL further submitted that Rs.3.00 Crore may be considered as Prior Period Expenses**.**

Accordingly, the Commission approves Rs.3.00 Crore for Transmission Business as Prior Period Expenses for FY 2017-18.

2.15 Interest Due to Late Payment by PSPCL

2.15.1 **PSTCL Submission:**

PSTCL claimed as Rs.13.21 Crore on account of late payments (payment after more than 30 days from date of billing) as per Regulations 31 of PSERC MYT Regulations, 2014

Commission's Analysis

2.15.2 Late payment surcharge is payable as per Regulations 31 of PSERC MYT

Regulations, 2014, which states as:

31. BILLING AND PAYMENT OF CHARGES AND LATE PAYMENT SURCHARGE

31.1 All bills for capacity charges, energy charges, transmission charges and other charges shall be raised on monthly basis and payments shall be made by the beneficiaries on monthly basis.

31.2 In case, the payment of any bill for charges payable under these regulations is delayed by a beneficiary beyond a period of 30 days from the date of billing, a late payment surcharge at the rate of 1.25% per month or part thereof on the unpaid amount shall be levied by the generating company or transmission licensee, as the case may be.

2.15.3 The Commission is of the considered view that payment is to be released by PSPCL as per regulations. The Commission has allowed interest on working capital requirement of PSPCL which includes the transmission charges payable to PSTCL.

2.15.4 Late payment surcharge cannot be consider as an item of Revenue Requirement of PSTCL as the same is not a pass through item of expenditure of PSPCL.

2.15.5 **The Commission recognizes the late payment surcharge as per Regulations but the same will be treated as Non-tariff income as and when received.**

2.16 Annual Revenue Requirement

The summary of the Annual Revenue Requirement for Transmission Business, SLDC Business and overall business of PSTCL for FY 2017-18 is shown in the following tables:

Table 2.34: Annual Revenue Requirement for Transmission Business for FY 2017-18

(Rs. Crore)

Sr. No.	Particulars	For Transmission Business				
		Approved in Tariff Order for FY 2017-18	Revised Estimate by PSTCL for FY 2017-18 (APR)	Approved by the Commission in the review of FY 2017-18	Claimed by PSTCL in the true up of FY 2017-18	Approved by the Commission
I	II	III	IV	V	VI	VII
1.	Employee Cost	430.58	497.91	430.58	464.58	464.57
2.	R&M and A&G expenses	57.30	58.83	57.30	49.43	46.21
3.	Depreciation	279.94	324.45	279.94	267.89	256.89
4.	Interest charges	358.80	384.75	358.80	392.11	364.02
5.	Interest on Working Capital	37.84	40.46	37.84	38.23	32.97
6.	Return on Equity	101.78	101.19	101.78	106.23	101.42

Sr. No.	Particulars	For Transmission Business				
		Approved in Tariff Order for FY 2017-18	Revised Estimate by PSTCL for FY 2017-18 (APR)	Approved by the Commission in the review of FY 2017-18	Claimed by PSTCL in the true up of FY 2017-18	Approved by the Commission
I	II	III	IV	V	VI	VII
7.	**Annual Revenue Requirement**	**1266.24**	**1407.59**	**1266.24**	**1318.46**	**1266.08**
8.	Less: Non tariff Income	49.25	20.77	49.25	18.94	124.75
9.	**Net Revenue Requirement**	**1216.99**	**1386.82**	**1216.99**	**1299.52**	**1141.33**
10.	Incentive				12.78	11.23
11.	Interest due to delayed payments by PSPCL	-	-	-	13.21	-
12.	Prior Period expenses					3.00
13.	**Gross ARR**	**1216.99**	**1386.82**	**1216.99**	**1325.51**	**1155.56**

Table 2.35: Annual Revenue Requirement for SLDC for FY 2017-18

(Rs. Crore)

Sr. No.	Particulars	For SLDC Business				
		Approved in Tariff Order for FY 2017-18	Revised Estimate by PSTCL for FY 2017-18 (APR)	Approved by the Commission in the review of FY 2017-18	Claimed by PSTCL in the true up of FY 2017-18	Approved by the Commission
I	II	III	IV	V	VI	VII
1.	Employee Cost	6.75	7.57	6.75	6.51	6.51
2.	R&M and A&G expenses	1.89	1.85	1.89	1.35	1.35
3.	Depreciation	1.17	1.29	1.17	0.94	0.94
4.	Interest charges	1.13	1.10	1.13	0.82	0.73
5.	Interest on Working Capital	0.59	0.56	0.55	0.57	0.58
6.	Return on Equity	0.00	0.00	0.00	0.00	0.00
7.	ULDC Charges	11.76	9.93	9.93	10.73	10.73
8.	**Annual Revenue Requirement**	**23.29**	**22.30**	**21.42**	**20.92**	**20.84**
9.	Less: Non tariff Income	5.41	5.41	5.41	1.41	1.41
10.	**Net Revenue Requirement**	**17.88**	**16.89**	**16.01**	**19.51**	**19.43**

The summary of the Annual Revenue Requirement of PSTCL as a whole for FY 2017-18 is as under:

Table 2.36: Annual Revenue Requirement for PSTCL for FY 2017-18

(Rs. Crore)

Sr. No.	Particulars	For PSTCL				
		Approved in Tariff Order for FY 2017-18	Revised Estimate by PSTCL for FY 2017-18 (APR)	Approved by the Commission in the review of FY 2017-18	Claimed by PSTCL in the true up of FY 2017-18	Approved by the Commission
I	II	III	IV	V	VI	VII
1.	Employee Cost	437.33	505.48	437.33	471.08	471.08
2.	R&M and A&G expenses	59.19	60.68	59.19	50.78	47.56
3.	Depreciation	281.11	325.74	281.11	268.84	257.83
4.	Interest charges	359.93	385.85	359.93	392.93	364.75
5.	Interest on working capital	38.43	41.03	38.39	38.80	33.55
6.	Return on Equity	101.78	101.19	101.78	106.23	101.42
7.	ULDC Charges	11.76	9.93	9.93	10.73	10.73
8.	**Annual Revenue Requirement**	**1289.53**	**1429.90**	**1287.66**	**1339.38**	**1286.92**
9.	Less: Non tariff income	54.66	26.18	54.66	20.36	126.16
10.	**Total Revenue Requirement**	**1234.87**	**1403.72**	**1233.00**	**1319.03**	**1160.76**
11.	Incentive				12.78	11.23
12.	Interest due to delayed payments by PSPCL	-	-	-	13.21	-
13.	Prior Period Expenses					3.00
14.	**Net Revenue Requirement**	**1234.87**	**1403.72**	**1233.00**	**1345.02**	**1174.99**

The Commission vide Order dated 23rd Oct, 2017 had approved the Net Revenue Requirement (NRR) of Rs. 1234.87 Crore for FY 2017-18. Net Revenue Requirement determined during Annual Performance Review by the Commission on its Order dated 19.04.2018 as Rs. 1233.00 Crore for FY 2017-18. Now the Net ARR after truing up exercise for FY 2017-18 is re-determined as Rs.1174.99 Crore which was payable by PSPCL as Transmission & SLDC Charges of FY 2017-18.

Chapter 3

Annual Performance Review of FY 2018-19 and Revised Estimates for FY 2019-20

3.1 Background

PSTCL has projected the Annual Performance Review (APR) for FY 2018-19 and Revised Estimates for FY 2019-20, separately for its Transmission business and SLDC business. The Commission has analyzed the same in this chapter.

3.2 Transmission System Availability

PSTCL has submitted that Regulation, 55 of PSERC MYT Regulations, 2014 specifies the Normative Annual Transmission Availability Factor (NATAF) of 98% for recovery of Annual Fixed Charges and 99% for incentive on account of higher Transmission Availability. The average transmission system availability of PSTCL from April to September 2018 (H1) is as per below table:

Table 3.1: Transmission System (TS) Availability of PSTCL for FY 2018-19(H1)

Sr. No.	Month	TS Availability (%)
I	II	III
1.	April, 2018	99.98
2.	May, 2018	99.96
3.	June, 2018	99.96
4.	July, 2018	99.97
5.	August, 2018	99.98
6.	September, 2018	99.98
	Average Availability	**99.97**

PSTCL has further submitted that it has maintained the transmission availability well above the Normative Annual Transmission Availability Factor as mandated by PSERC MYT Tariff Regulations, 2014.

The Commission has taken note of the submission of PSTCL and shall consider its actual Transmission System Availability for FY 2018-19 and FY 2019-20 for incentive, if permissible as per PSERC MYT Regulations, 2014 at the time of true up for the respective years.

3.3 Transmission Loss

PSTCL, in the ARR for MYT Control Period had projected the transmission loss of 2.60% for FY 2018-19 and 2.50% for FY 2019-20. The Commission in the MYT Order for 1st Control Period and Tariff Order for FY 2018-19 had approved the

Transmission loss of 2.40% for FY 2018-19 and 2.30% for FY 2019-20 respectively.

PSTCL's Submissions:

PSTCL submitted that it has completed the Intra-State Boundary Metering cum Transmission Level Energy Scheme and the actual transmission loss for the period from April 2018 to August 2018 is as under:

Table 3.2: Transmission Loss submitted by PSTCL

Sr. No.	Month	Energy Input (MWH)	Energy Output (MWH)	Transmission Loss (%)
I	**II**	**III**	**IV**	**V**
1.	April, 2018	3203851	3054345	4.67
2.	May, 2018	4484416	4314916	3.78
3.	June, 2018	5273076	5096183	3.36
4.	July, 2018	6417829	6252985	2.57
5.	August, 2018	7622336	7419277	2.66
	Total	**27001508**	**26137706**	**3.20**

PSTCL further submitted that the losses in the transmission network depend upon various factors such as shift of load centres, energy injection and drawl into the network and the extent of inherent technical losses pertaining to the transmission equipments in use. PSTCL continuously strives to reduce the technical losses in the system. PSTCL is regularly monitoring the loading of transmission lines and power transformers/ICTs and makes all possible efforts to optimize the loading of this equipment to reduce the technical losses in the system.

The trajectory approved by the Commission is very low compared to the actual transmission loss. Further, reduction in transmission losses from such low level of transmission loss would be much more difficult and require significant additional capital investment. PSTCL requested the Commission to approve the Transmission Loss of 2.80% for FY 2018-19 and 2.70% for FY 2019-20.

Commission's Analysis:

The Commission has observed in para 2.3 of this tariff order that although PSTCL has completed the Intra-State Boundary metering cum Transmission Level Energy Scheme but the data is yet to be stabilised.

Further Regulations 8.1 (MYT approach) of the PSERC (Terms and Conditions for Determination of Generation, Transmission, Wheeling and Retail Supply Tariff) Regulations, 2014 states that

8.1. ***Baseline Values***

(a) *The baseline values for the control period shall be determined by the*

Commission and the projections for the Control Period shall be based on these figures.

(b) *The baseline values shall be inter-alia based on figures approved by the Commission in the past, latest audited accounts, estimate of the expected figures for the relevant year, industry benchmarks/norms and other factors considered appropriate by the Commission.*

As the baseline figure of transmission loss of PSTCL is yet to be ascertained, the Commission is of the view that it would not be fair to fix the trajectory for reduction of transmission loss. As such, the Commission approves the transmission loss level of 2.50% for FY 2018-19 and for FY 2019-20 and it would re-visit the transmission losses on the basis of stabilized transmission loss data for the full year during true up for these years.

3.4 Capital Investment Plan (CIP):

PSTCL's Capital Investment Plan for MYT control period of FY 2017-18 to FY 2019-20 was approved by the Commission vide its Order dated 13.12.2017 in Petition No. 44 of 2016. The approved Capital investment Plan (CIP) and the Capital plan submitted by PSTCL in its ARR for FY 2018-19 & FY 2019-20 is as under:

Table 3.3: PSTCL Capital Investment Plan (CIP) of PSTCL

(Rs. Crore)

Sr. No.	Description	Approved CIP		Capital plan submitted by PSTCL in ARR	
		FY 2018-19	FY 2019-20	FY 2018-19	FY 2019-20
1.	Transmission Business	248.01	202.64	303.93	509.31
2.	SLDC Business	10.00	10.00	6.79	12.21

The above approved plan of PSTCL included works related to "Addition of Bays/System Strengthening", Augmentation/ Strengthening of Bus Bars" and "Unforeseen emergency works" as per details given under:

Table 3.4: Provision of urgent/unforeseen/feasibility related works in CIP

Sr. No. of the approved plan	Description	Provision in MYT CIP (Rs. Crore)	
		FY 2018-19	FY 2019-20
140, 155 & 175	Addition of Bays/System Strengthening	4.00	4.00
137, 152 & 172	Augmentation/Strengthening of Bus Bars	5.00	5.00
182	Unforeseen emergency works	5.00	5.00
Total		**14.00**	**14.00**

PSTCL submitted 2 decisions of Board of Directors of PSTCL in which urgent, unforeseen and feasibility related works chargeable to the head "Addition of

Bays/System Strengthening", Augmentation/Strengthening of Bus Bars" and "Unforeseen emergency works" were segregated as Category 1 and the total amount spent is as under:

Table 3.5: PSTCL projected capital expenditure on urgent/ unforeseen/ feasibility related works

Category No.	Description	Provision in MYT CIP (Rs. Crore)		Projected Capital Expenditure (Rs. Crore)	
		FY 2018-19	FY 2019-20	FY 2018-19	FY 2019-20
Category 1	Urgent/ Unforeseen/ feasibility related works	14.00	14.00	17.393	31.83

The Commission notes that the Capital Investment Plan of Transmission Business for FY 2018-19 including category 1 works, comes out to be Rs. 251.403 Crore (Rs. 248.01 Crore - Rs. 14.0 Crore + Rs. 17.393 Crore and for FY 2019-20, Rs. 220.47 Crore (Rs. 202.64 Crore - Rs. 14.0 Crore + Rs. 31.83 Crore).

Regulations 9.9 (Capital Investment Plan) of the PSERC (Terms and Conditions for Determination of Generation, Transmission, Wheeling and Retail Supply Tariff) Regulations, 2014 provides that the emergency works can be treated as part of the approved capital expenditure provided that the emergency nature of the scheme has been approved by its Board of Directors.

The Commission further decides that the difference of Rs. 6.81 Crore between the approved CIP (Rs. 328.29 Crore) and actual expenditure (Rs. 321.48 Crore) during FY 2017-18 will be included in the CIP for FY 2019-20. Accordingly, the Commission approves provisionally Capital Investment of FY 2018-19 and FY 2019-20 for Transmission Business as Rs. 251.403 Crores and Rs. 227.28 Crores (Rs. 220.47 Crore + Rs. 6.81 Crore) respectively.

Regulations 9.8 (Capital Investment Plan) of the PSERC (Terms and Conditions for Determination of Generation, Transmission, Wheeling and Retail Supply Tariff) Regulations, 2014 provides that the Commission shall not revisit the approved capital investment unless capital expenditure incurred is less by 15% of the approved cumulative capital expenditure.

Accordingly, the Commission decides to consider the capital plan of SLDC business for FY 2018-19 as Rs. 6.79 Crore against approved plan of Rs. 10 Crore (less by 32%) and retains the already approved Capital investment Plan of Rs. 10 Crore for FY 2019-20.

3.5 Capital Expenditure and its Funding

PSTCL's Submission

3.5.1 PSTCL submitted addition of Gross Fixed Assets during FY 2018-19 and FY 2019-20 and closing Work- In- Progress as under:

Table 3.6: Capital Work–in- Progress ending FY 2018-19 as claimed

(Rs. Crore)

Sr. No.	Particulars	Transmission	SLDC	PSTCL
I	**II**	**III**	**IV**	**V**
1.	Opening Capital Work –In-Progress	448.96	5.93	454.89
2.	Add: Addition of Capital Expenditure during the year	303.93	6.79	310.72
3.	Less: Transferred to fixed assets during the year	572.91	5.59	578.50
4.	**Closing Capital Works- In- Progress**	**179.98**	**7.13**	**187.11**

Table 3.7: Closing Work-In-Progress ending FY 2019-20 as claimed by PSTCL

(Rs. Crore)

Sr. No.	Particulars	Transmission	SLDC	PSTCL
I	**II**	**III**	**IV**	**V**
1.	Opening Capital Work In Progress	179.98	7.13	187.11
2.	Add: Addition of Capital Expenditure during the year	509.31	12.21	521.52
3.	Less: Transferred to fixed assets during the year	163.92	19.34	183.26
4.	**Closing Capital Works- In- Progress**	**525.37**	**0.00**	**525.37**

PSTCL stated that it has considered funding of capital expenditure through equity at 30% of capital expenditure i.e. Rs.93.22 Crore for FY 2018-19 and Rs.156.46 Crore for FY 2019-20 and through loan as 70% of the capital expenditure i.e. Rs.217.50 Crore for FY 2018-19 and Rs. 365.07 Crore for FY 2019-20.

Commission's Analysis

3.5.2 PSTCL claimed addition of Gross Fixed Assets of Rs. 572.91 Crore against capital expenditure of Rs.303.93 Crore whereas the Commission approved the capital expenditure of Rs.251.40 Crore for Transmission Business for FY 2018-19. Similarly, PSTCL claimed addition of Gross Fixed Assets of Rs.5.59 Crore against the capital expenditure of Rs.6.79 Crore for SLDC Business. The Commission determines proportionate addition of Gross Fixed Assets and Closing Work-In Progress based on capital expenditure approved by the Commission as under:

Table3.8: Capital expenditure and Capital Work -In- Progress approved Commission for FY 2018-19

(Rs. Crore)

Sr. No.	Particulars	FY 2018-19					
		Claimed by PSTCL			Approved by the Commission		
		Trans.	SLDC	PSTCL	Trans.	SLDC	PSTCL
I	II	III	IV	V	VI	VII	VIII
1.	Opening Capital WIP*	448.96	5.93	454.89	419.83	5.93	425.76
2.	Add: Capital Exp. during the year	303.93	6.79	310.72	251.40	6.79	258.19
3.	Total	**752.89**	**12.72**	**765.61**	**671.23**	**12.72**	**683.95**
4.	Less: Transferred to Fixed Assets	572.91	5.59	578.50	510.77	5.59	516.36
5.	**Closing Capital WIP**	**179.98**	**7.13**	**187.11**	**160.46**	**7.13**	**167.59**

PSTCL claimed addition of Gross Fixed Assets of Rs.163.92 Crore against capital expenditure of Rs.509.31 Crore whereas the Commission approved the capital expenditure of Rs.227.28 Crore for Transmission Business for FY 2019-20. Similarly, PSTCL claimed addition of Gross Fixed Assets of Rs.19.34 Crore against the capital expenditure of Rs.12.21 Crore for SLDC Business. The Commission determines proportionate addition of Gross Fixed Assets and Closing Work-In Progress based on capital expenditure approved by the Commission as under:

Table 3.9: Capital expenditure and Capital Work- In- Progress approved by the Commission for FY 2019-20

(Rs. Crore)

Sr. No.	Particulars	FY 2019-20					
		Claimed by PSTCL			Approved by the Commission		
		Trans.	SLDC	PSTCL	Trans.	SLDC	PSTCL
I	II	III	IV	V	VI	VII	VIII
1.	Opening Capital WIP	179.98	7.13	187.11	160.46	7.13	167.59
2.	Add: Capital Exp. during the year	509.31	12.21	521.52	227.28	10.00	237.28
3.	**Total**	**689.29**	**19.34**	**708.63**	**387.74**	**17.13**	**404.87**
4.	Less: Transferred to Fixed Assets	163.92	19.34	183.26	92.21	17.13	109.34
5.	**Closing Capital WIP**	**525.37**	**0.00**	**525.37**	**295.53**	**0.00**	**295.53**

Funding of Capital Expenditure

3.5.3 **PSTCL submission:**

PSTCL submitted that it will utilise the profit, being internal accruals, as equity infusion for the capital expenditure during the FY 2018-19 and FY 2019-20. PSTCL has considered the equity amount at 30% of the capital expenditure, in accordance to the methodology followed by the Commission in its MYT Order dated October 23, 2017 and Tariff Order dated April 19, 2018.

The remaining funding i.e. 70% of capital works shall be carried out by taking loans from banks and/or financial institutions. The funding of capital expenditure as proposed for FY 2018-19 and FY 2019-20 claimed as under:

Table 3.10: Funding of Capital Expenditure for FY 2018-19 and FY 2019-20 as claimed by PSTCL

(Rs. Crore)

Sr. No.	Particulars	FY 2018-19		FY 2019-20	
		MYT Order	APR	MYT Order	Projected
	Transmission				
1.	Equity	74.40	91.18	60.79	152.79
2.	Debt	173.61	212.75	141.85	356.51
3.	**Total**	**248.01**	**303.93**	**202.64**	**509.31**
	SLDC				
4.	Equity	3.00	2.04	3.00	3.66
5.	Debt	7.00	4.75	7.00	8.55
6.	**Total**	**10.00**	**6.79**	**10.00**	**12.21**

3.5.4 **Commission's Analysis**

The Commission considered PSTCL's debt equity ratio of 70:30 to fund its capital expenditure during FY 2018-19 and FY 2019-20. Based on approved amount of capital expenditure of Rs.258.19 Crore for FY 2018-19 and Rs.237.28 Crore for FY 2019-20, the Commission determines funding of capital expenditure for FY 2018-19 and FY 2019-20 as under:

Table 3.11: Debt and Equity approved by the Commission for FY 2018-19 and FY 2019-20

(Rs. Crore)

Sr. No.	Particulars	FY 2018-19	FY 2019-20
1.	Capital Expenditure	258.19	237.28
2.	Debt @70% of CAPEX	180.73	166.10
3.	Equity up to 30% of CAPEX	77.46	71.18

The Commission allows loan requirement of Rs.175.98 Crore for Transmission Business & Rs.4.75 Crore for SLDC Business for FY 2018-19 and Rs.159.10 Crore for Transmission Business and Rs.7.00 Crore for SLDC business for FY 2019-20.

3.6 Employee Cost

PSTCL's Submissions:

3.6.1 The Commission approved the Employee Cost of Rs.452.67 Crore for FY 2018-19 and Rs.472.82 Crore for FY 2019-20 against PSTCL's claim of Rs. 564.17 Crore for FY 2018-19 and Rs.595.92 Crore for FY 2019-20 in MYT Order dated 23.10.2017.

3.6.2 In the current Petition, PSTCL has claimed employee cost for Transmission Business and SLDC Business for FY 2018-19 and FY 2019-20 as under:

Table 3.12: Employee Expenses as claimed for FY 2018-19 and FY 2019-20

(Rs. Crore)

Sr. No.	Particulars	FY 2018-19		FY 2019-20	
		Transmission	SLDC	Transmission	SLDC
1.	Terminal Benefits	296.00	0.00	311.68	0.00
2.	Other Employee Cost	191.77	6.86	200.48	7.12
3.	Impact of new recruitment	0.89	0.00	12.30	0.00
4.	**Total Employee Cost**	**488.66**	**6.86**	**524.46**	**7.12**

3.6.3 PSTCL submitted that employees recruited by PSTCL are covered under New Pension Scheme (NPS) and are entitled to gratuity under the provisions of the Payment of Gratuity Act, 1972 and the leave salary under the Leave Rules of the Corporation. It has considered the Terminal benefits for employees of erstwhile PSEB as approved by the Commission in its Order dated 23.10.2017. Claim of terminal liabilities of new employees is based on actual payout. PSTCL claimed terminal benefits as under:

Table 3.13: Terminal Benefits for FY 2018-19 and FY 2019-20

(Rs. Crore)

Sr. No.	Particulars	FY 2018-19			FY 2019-20	
		MYT Order	Revised ARR	APR	MYT Order	Projected
I	II	III	IV	V	VI	VII
1.	Terminal benefits for employees of erstwhile PSEB	291.65	291.65	291.65	307.10	307.10
2.	Terminal benefit towards NPS for new employees recruited by PSTCL	-	-	4.35	-	4.57
3.	Terminal benefits towards Gratuity and Leave encashment for new employees recruited by PSTCL	-	-	-*		-*
4.	**Total**	**291.65**	**291.65**	**296.00**	**307.10**	**311.68**

** PSTCL stated that it has not considered the Terminal Benefits on account of the provision for gratuity and leave encashment for employees recruited by PSTCL for FY 2018-19 and FY 2019-20 in the present Petition. However, PSTCL will claim such expenses on "Pay as you go" basis, as and when such expenses will occur, as directed by the Commission.*

3.6.4 Since the Commission disallowed the impact of progressive funding and the matter is pending before the Hon'ble Supreme Court, PSTCL has not considered the impact of progressive funding for the Control Period. However, PSTCL reserves the right to claim the impact of progressive funding subject to the decision of the Hon'ble Supreme Court.

3.6.5 PSTCL has requested the Commission that Normative Employee Costs as projected by PSTCL for FY 2018-19 and FY 2019-20 may be approved.,

Commission's Analysis:

Terminal Benefits

3.6.6 PSTCL's share of @11.36% of terminal benefits of employee of erstwhile PSEB cannot be ascertained for Transmission Business as the Audited Annual Accounts of FY 2018-19 for PSTCL are not available at this stage. The Commission allows terminal benefits as claimed Rs.291.65 Crore for FY 2018-19 and Rs.307.10 Crore for FY 2019-20 for Transmission Business. Terminal benefits towards NPS for new employees recruited by PSTCL will be allowed as per actual during True-Up based on Annual Audited Accounts.

Thus, the Commission allows terminal benefits of Rs.291.65 Crore and Rs.307.10 Crore for FY 2018-19 and FY 2019-20 respectively for Transmission Business.

Other Employee Cost

3.6.7 Base of 'Other Employee Cost' for control period has been determined in this order in Chapter 2 in the True-Up of FY 2017-18. Regulation - 26.1 of PSERC MYT Regulations-2014 specifies that increase in 'other employee cost' is to be limited to the average Wholesale Price Index (WPI) and Consumer Price Index.

3.6.8 The average increase of index from FY 2016-17 to FY 2017-18 is considered due to non–availability of index for FY 2018-19. However, actual increase will be considered during True-up of the respective year. The Commission determines the average increase of Consumer Price Index and Wholesale Price Index as under:

Table 3.14: Increase in price index determined by the Commission

(Rs. Crore)

Particulars	**FY 2016-17**	**FY 2017-18**	**Increase in %**
Consumer Price Index	284.41	275.92	3.08
Whole Sale Price Index	111.60	114.90	2.96
Average Increase			3.02

3.6.9 The 'Other Employee Cost' in the true up for FY 2017-18 has been determined as Rs.180.68 Crore for Transmission Business and Rs.6.38 Crore for SLDC Business in this Tariff Order. By applying the increase due to indexation, the Commission determines the 'Other Employee Cost' for Transmission Business and SLDC Business as under:

Table 3.15: Other Employee cost for FY 2018-19 and FY 2019-20 approved by the Commission

(Rs. Crore)

Particulars	Transmission	SLDC
Base Line Values (Rs. Crore)(FY 2017-18)	180.68	6.38
Multiplying factor for FY 2018-19	1.0302	1.0302
Other Employee Cost for FY 2018-19 (Rs. Crore)	186.14	6.57
Multiplying factor for FY 2019-20	1.0302*1.0302	1.0302*1.0302
Other Employee cost for FY 2019-20 (Rs. Crore)	191.76	6.77

Accordingly, the Commission determines Employee Cost of Transmission Business and SLDC Business on normative basis for FY 2018-19 and FY 2019-20 as under:

Table 3.16: Employee Expense approved for FY 2018-19 and FY 2019-20

(Rs.Crore)

Particulars		FY 2018-19	FY 2019-20
(I)	**Transmission**		
1.	Salaries & other employee cost	186.14	191.76
2.	Terminal Benefits	291.65	307.10
	Total	**477.79**	**498.86**
(II)	**SLDC**		
3.	Salaries & other employee cost	6.57	6.77
	Grand Total	**484.36**	**505.63**

Thus, the Commission approves Employee Cost of Rs.477.79 Crore and Rs. 498.86 Crore for Transmission Business and Rs.6.57 Crore and Rs.6.77 Crore for SLDC Business for FY 2018-19 and FY 2019-20 respectively.

3.7 Repair & Maintenance (R&M) and Administrative and General (A&G) expenses

PSTCL's Submissions:

3.7.1 PSTCL submitted that the Commission in its MYT Order dated 23.10.2017, approved R&M and A&G Expenses of Rs.63.59 Crore for FY 2018-19 and Rs.67.71 Crore for FY 2019-20 against its claim of Rs.64.27 Crore for FY 2018-19 and Rs.66.86 Crore for FY 2019-20 respectively.

3.7.2 PSTCL further submitted that the Commission in its Tariff Order dated 19.04.2018 approved R&M and A&G expenses as Rs.63.59 Crore against PSTCL's claim of Rs.66.14 Crore for FY 2018-19 and retained the already approved amount of Rs.67.71 Crore for FY 2019-20.

3.7.3 In the current Petition, PSTCL has claimed R&M and A&G expenses for FY 2018-19 and FY 2019-20 as under:

Table 3.17: R&M and A&G expenses claimed by PSTCL for FY 2018-19 and FY 2019-20

(Rs. Crore)

Particulars		FY 2018-19	FY 2019-20
(I)	**Transmission**		
1.	R&M and A&G expenses	63.39	68.27
2.	Add: Audit Fee	1.00	1.00
3.	Add: License / ARR fee	0.50	0.50
4.	Total	64.89	69.77
(II)	**SLDC**		
5.	R&M and A&G expenses	1.67	2.74
6.	Grand Total	66.56	72.51

3.7.4 PSTCL has submitted that R&M and A&G expenses have been linked to “K” and WPI index, where “K” is constant governing relationship between R&M and A&G expenses and Gross Fixed Assets. PSTCL has considered figures of FY 2017-18 for computing “K”. Further, PSTCL has considered the escalation index of 2.92% based on WPI increase up to September, 2018 for the purpose of projection of R&M and A&G expenses.

Commission’s Analysis:

3.7.5 As per 26.1 Regulation of PSERC MYT Regulations, R&M and A&G expenses are to be determined as under:

(i) R&Mn + A&Gn = K*GFA*(WPIn/WPIn-1)

Where,

- ***‘K’*** *is a constant (expressed in %) governing the relationship between R&M and A&G expenses and Gross Fixed Assets (GFA) for the nth year. The value of “K” will be specified by the Commission in the MYT order.*
- ***‘GFA’*** *is the average value of the Gross Fixed Assets of the nth year.*
- ***‘WPIn’*** *means the average rate (on monthly basis) of Wholesale Price Index (all commodities over the year for the nth year.*

Note 7: Any expenditure on account of license fee, initial or renewal, fee for determination of tariff and audit fee shall be allowed on actual basis, over and above the A&G expenses approved by the Commission.”

‘K’ has been determined during True-up of FY 2017-18 in this order. R&M and A&G

expenses for FY 2018-19 and FY 2019-20 are determined by multiplying K factor with their respective values of Average Gross Fixed Assets. The Commission considers WPI increase of 2.96% for FY 2018-19 and 6.00%(102.96%*1.0296%-100.00).The Commission determines R&M and A&G expenses for FY 2018-19 and FY 2019-20 as under:

Table 3.18: R&M and A&G expenses based on K Factor and indexation for FY 2018-19 determined by the Commission

(Rs. Crore)

Particulars	Transmission	SLDC	Total
Opening GFA (1.4.2018)	9444.26	18.55	9462.81
Closing GFA (31.3.2019)	9955.03	24.14	9979.17
Average GFA	9699.65	21.35	9720.99
K factor	**0.496%**	**7.29%**	
Base R&M and A&G expenses	48.11	1.56	
WPI increase	2.96%	2.96%	
R&M after WPI increase	**49.53**	**1.60**	**51.13**

Table 3.19: R&M and A&G expenses for FY 2019-20 based on K factor and indexation determined bythe Commission

(Rs. Crore)

Particulars	Transmission	SLDC	Total
Opening GFA (1.4.2019)	9955.03	24.14	9979.17
Closing GFA (31.3.2020)	10047.24	41.27	10088.51
Average GFA	10001.14	32.71	10033.84
K factor	**0.496%**	**7.29%**	
R&M and A&G	49.60	2.39	
WPI increase	6.00%	6.00%	
R&M and A&G expenses after WPI increase	**52.58**	**2.53**	**55.11**

The Commission determines R&M and A&G expenses after incorporating Audit Fee and license fee as under:

Table 3.20: R&M and A&G expenses approved by the Commission for FY 2018-19 and FY 2019-20

(Rs. Crore)

Particulars	FY 2018-19		FY 2019-20	
	Transmission	SLDC	Transmission	SLDC
R&M and A&G Expenses	49.53	1.60	52.58	2.53
Add: Audit fee	0.26	0.00	0.26	0.00
Add: License fee	0.50	0.00	0.50	0.00
Total R&M and A&G expenses	50.29	1.60	53.34	2.53

The Commission approves R&M and A&G expenses of Rs.50.29 Crore for FY 2018-19 and Rs.53.34 Crore for FY 2019-20 of Transmission Business & Rs.1.60 Crore for FY 2018-19 and Rs. 2.53 Crore for FY 2019-20 of SLDC Business.

3.8 Depreciation

3.8.1 PSTCL's Submissions:

In the current Petition, PSTCL has claimed depreciation charges for its Transmission Business and SLDC Business for FY 2018-19 and FY 2019-20 as under:

Table 3.21: Depreciation claimed by PSTCL for FY 2018-19 and FY 2019-20

(Rs. Crore)

Particulars		FY 2018-19	FY 2019-20
(I)	**Transmission**		
1.	Opening GFA (net of land and land rights)	6477.62	7050.53
2.	Add: Additions during the year	572.91	163.92
3.	Closing GFA	7050.53	7214.45
4.	**Depreciation @4.31%**	**291.37**	**307.24**
(II)	**SLDC**		
5.	Opening GFA	12.96	18.55
6.	Add: Additions to GFA during the year	5.59	19.34
7.	Closing GFA	18.55	37.89
8.	**Depreciation @7.32%**	**1.15**	**2.07**
9.	**Total Depreciation**	**325.74**	**351.20**

Commission's Analysis:

3.8.2 The Commission determines depreciation for Transmission and SLDC Business, based on actual average rate of depreciation 4.15% for Transmission Business and 5.08% for SLDC Business determined during True-Up of FY 2017-18 of PSTCL, as under.

Table 3.22: Depreciation approved by the Commission for FY 2018-19 and FY 2019-20

(Rs. Crore)

Particulars		FY 2018-19	FY 2019-20
(I)	**Transmission**		
1.	Opening GFA (excluding land and land rights and Consumer Contribution)	6472.03	6982.80
2.	Add: Additions to GFA during the year	510.77	92.21
3.	Closing GFA	6982.80	7075.01
4.	Average GFA	6727.42	7028.91
5.	**Depreciation @4.15% of average GFA**	**279.16**	**291.67**
(II)	**SLDC**		
6.	Opening GFA	18.55	24.14
7.	Add: Additions to GFA during the year	5.59	17.13
8.	Closing GFA	24.14	41.27
9.	Average GFA	21.35	32.71
10.	**Depreciation @5.08% of average GFA**	**1.08**	**1.66**

Thus, the Commission approves depreciation charges of Rs.279.16 Crore for FY 2018-19 and Rs.291.67 Crore for FY 2019-20 for Transmission Business and Rs.1.08 Crore for FY 2018-19 and Rs.1.66 Crore for FY 2019-20 for SLDC Business.

3.9 Interest and Finance charges

3.9.1 PSTCL's Submissions:

In the MYT Petition for the Control Period, the Commission approved the Interest and Finance charges of Rs.354.63 Crore for FY 2018-19 and Rs.353.51 Crore for FY 2019-20 as against Rs.408.24 Crore for FY 2018-19 and Rs.405.35 Crore for FY 2019-20 claimed by PSTCL.

3.9.2 The Commission in its Tariff Order dated 19.04.2018 approved the Interest and Finance Charges of Rs.354.62 Crore for FY 2018-19 against PSTCL's claim of Rs.386.99 Crore.

3.9.3 In the current Petition, PSTCL has claimed interest charges of Rs.375.18 Crore for FY 2018-19 and Rs.366.07 Crore for FY 2019-20 in the Transmission Business & Rs.0.82 Crore for FY 2018-19 and Rs.1.53 Crore for FY 2019-20 in the SLDC Business.

3.9.4 PSTCL claimed interest on long-term loan for Transmission & SLDC Business as under:

Table 3.23: Interest on loan claimed by PSTCL for Transmission Business for FY 2018-19 and FY 2019-20

(Rs. Crore)

Sr. No.	Particulars	FY 2018-19	FY 2019-20
1.	Opening balance of long term loan	3920.60	3815.90
2.	Add: Receipt of loan during the year	212.75	356.51
3.	Less: Repayment of loan during the year	317.45	299.95
4.	Closing balance of loan	3815.90	3872.46
5.	Gross Interest	393.97	390.09
6.	Less: Capitalization	31.94	35.55
7.	Add; GPF interest	7.77	6.15
8.	Add: Finance and Guarantee Charges	5.38	5.38
9.	**Net Interest Charges**	**375.18**	**366.07**

Table 3.24: Interest on loan claimed by PSTCL for SLDC Business for FY 2018-19 and FY 2019-20

(Rs. Crore)

Sr. No.	Particulars	FY 2018-19	FY 2019-20
I	II	III	IV
1.	Opening balance of long term loan	7.62	12.02
2.	Add: Receipt of loan during the year	4.75	8.55
3.	Less: Repayment of loan during the year	0.35	2.71
4.	Closing balance of loan	12.02	17.86
5.	**Net Interest Charges**	**0.82**	**1.53**

3.9.5 The outstanding existing loan includes loan from REC, LIC, PFC, Commercial banks, Loan from PSPCL and GPF Liability. The repayment of these existing loans and interest expenses has been considered as per their repayment schedule.

3.9.6 PSTCL has proposed new loans for the proposed investments from Banks/Financial Institution at actual weighted average rate of Interest.

3.9.7 It has also stated that three years moratorium period has been considered for the new loan taken for funding of capital expenditure for FY 2018-19 and FY 2019-20.

Commission's Analysis:

3.9.8 The Commission has approved the receipt of loan during FY 2018-19 and FY 2019-20 of the Control Period by adjusting the approved amount of capital expenditure in the debt-equity ratio(i.e.70:30).

3.9.9 The repayment of loans for the respective years of the Control Period has been considered as per claim for the respective years i.e. FY 2018-19 and FY 2019-20. The weighted average rate of interest considered as claimed by PSTCL. Loan addition for the year has been calculated in accordance with the capital expenditure during FY 2018-19 and FY 2019-20.

3.9.10 The Commission determines Interest on long term loans weighted average rate of interest @ 10.16% for Transmission Business and @ 8.35% for SLDC Business for FY 2018-19. Similarly, the Commission determines Interest on long term loans weighted average rate of interest @ 10.16% for Transmission Business and @ 8.35% for SLDC Business for FY 2019-20 as under:

Table 3.25: Interest on long term loan for Transmission Business approved by the Commission for FY 2018-19 and FY 2019-20

(Rs.Crore)

Particulars		FY 2018-19	FY 2019-20
1.	Opening balance of loan	3660.45	3540.94
2.	Add: Receipt of loan during the year	175.98	159.10
3.	Less: Repayment of loan during the year	295.49	278.00
4.	Closing balance of loan	3540.94	3422.04
5.	Average Loan	3600.69	3481.48
6.	**Interest Charges**	**365.79**	**350.26**

Table 3.26: Interest on long term loan for SLDC Business approved by the Commission for FY 2018-19 and FY 2019-20

(Rs. Crore)

Sr. No.	Particulars	FY 2018-19	FY 2019-20
I	**II**	**III**	**IV**
1.	Opening Loan balance	6.74	11.15
2.	Add: Receipt of loan during the year	4.75	7.00
3.	Less: Repayment of loan during the year	0.35	2.71
4.	Closing Loan balance	11.15	15.44
5.	Average Loan	8.94	13.29
6.	**Interest Charges**	**0.75**	**1.36**

Interest on GPF Fund

3.9.11 Interest of Rs.7.77 Crore on @ 7.86% on average amount of GPF Fund of Rs.98.80 Crore for FY 2018-19 and Rs.6.15 Crore @ 8.00% for FY 2019-20 on average amount Rs.76.84 Crore has been claimed for Transmission Business.

The Interest on GPF being statutory payments are allowed for FY 2018-19 and FY 2019-20 as claimed by the PSTCL.

Finance and Guarantee charges

3.9.12 PSTCL claimed finance charges and guarantee fee of Rs.5.38 Crore for FY 2018-19 and the same for FY 2019-20 on loan requirement of Rs.212.75 Crore for FY 2018-19 and Rs.356.51 Crore for FY 2019-20. The Commission has approved Finance charges and guarantee fees of Rs.4.91 Crore on loan requirement of Rs.225.04 Crore for FY 2017-18. Accordingly, the Commission determines proportional Finance and Guarantee Fee as Rs.3.94 Crore for loan requirement of Rs.180.73 Crore for FY 2018-19 and Rs.3.62 Crore for loan requirement of Rs.166.10 Crore for FY 2019-20. **Accordingly, the Commission approves finance charges and guarantee fees as Rs.3.94 Crore for FY 2018-19 and as Rs.3.62 Crore for FY 2019-20.**

Capitalization of Interest Charges

3.9.13 Capitalization of interest and finance charges of Rs. 31.94 Crore for FY 2018-19 and Rs. 35.55 Crore for FY 2019-20 as claimed are approved as per past practice for FY 2018-19 and FY 2019-20.

Accordingly, the Commission determines Interest and Finance Charges for Transmission Business as under:

Table 3.27: Interest and Finance charges approved by the Commission

(Rs. Crore)

Sr. No	Particulars	FY 2018-19	FY 2019-20
1.	Interest charges	365.79	350.26
2.	Interest on GP Fund	7.77	6.15
3.	Add Finance/Guarantee charges	3.94	3.62
4.	Total Interest charges	377.50	360.03
5.	Less: Interest capitalized	31.94	35.55
6.	**Net Interest charges**	**345.56**	**324.48**

3.10 Interest on Working Capital

3.10.1 PSTCL's Submissions:

PSTCL has claimed interest on working capital of Rs.35.46 Crore for FY 2018-19 & Rs.36.88 Crore for FY 2019-20 for Transmission Business, on normative basis, on a total working capital of Rs.354.87 Crore for FY 2018-19 & Rs.375.72 Crore for FY 2019-20. The details of claim of working capital requirement and Interest on working capital for FY 2018-19 and FY 2019-20 as under:

Table3.28: Interest on working capital for Transmission Business for FY 2018-19 and FY 2019-20 claimed by PSTCL

(Rs. Crore)

Particulars		FY 2018-19	FY 2019-20
1.	Receivables for two months	225.70	237.07
2.	Maintenance spares @15% of O&M expenses	83.03	89.13
3.	O&M expenses for one month	46.13	49.52
4.	Working capital requirement	354.87	375.72
5.	**Interest on working capital**	**35.46**	**36.88**

3.10.2 Similarly, PSTCL claimed interest on working capital of Rs.0.54 Crore for FY 2018-19 & Rs.0.61 Crore for FY 2019-20 for SLDC Business, on normative basis, on a total working capital of Rs.5.38 Crore for FY 2018-19 & Rs.6.20 Crore for FY 2019-20. The details of claim of working capital requirement and Interest on working capital for FY 2018-19 and FY 2019-20 as under:

Table 3.29: Interest on working capital for SLDC Business for FY 2018-19 and FY 2019-20 claimed by PSTCL

(Rs. Crore)

Sr. No.	Particulars	FY 2018-19	FY 2019-20
1.	Receivables for two months	3.39	3.90
2.	Maintenance spares @15% of O&M expenses	1.28	1.48
3.	O&M expenses for one month	0.71	0.82
4.	Working capital requirement	5.38	6.20
5.	**Interest on working capital**	**0.54**	**0.61**

3.10.3 PSTCL has submitted that it has computed the working capital requirement in accordance with Regulation 54 of PSERC MYT Regulations, 2014 for Transmission and SLDC Business. PSTCL, further stated that as per Regulation 54.2, the rate of interest on working capital shall be as per regulation 25.1 which is as under:

"25.1 The rate of interest on working capital shall be equal to the weighted average rate of interest paid/payable on loans by the licensee/generating company/SLDC or the State Bank of India Advance Rate as on April 1 of the relevant year, whichever is less. The interest on working capital shall be payable on normative basis, notwithstanding that the licensee/generating company/SLDC has not taken working capital loan from any outside agency or has exceeded the working capital loan amount worked out on the normative figures."

3.10.4 PSTCL has considered the actual weighted average rate of rate of interest based on actual working capital loans.

3.10.5 **Commission's Analysis:**

The Commission has computed the interest on working capital considering the average rate of interest for the respective year for the Transmission Business. The Commission determines Interest on working capital approved as under:

Table 3.30: Interest on working capital for Transmission Business approved by the Commission

(Rs. Crore)

Particulars		FY 2018-19	FY 2019-20
1.	Receivables for two months	213.85	218.52
2.	Maintenance spares @15% of O&M expenses	79.21	82.83
3.	O&M expenses for one month	44.01	46.02
4.	Working capital requirement	337.07	347.37
5.	Rate of Interest (%)	10.18%	10.15%
6.	**Interest on working capital**	**34.31**	**35.26**

The Commission approves Rs. 34.31 Crore for FY 2018-19 & Rs.35.26 Crore for FY 2019-20 on working capital requirement of Rs.337.07 Crore for FY 2018-19 & Rs.347.37 Crore for FY 2019-20 for Transmission Business of PSTCL.

The Commission determines interest on working capital for SLDC business as under:

Table 3.31: Interest on working capital for SLDC Business approved by the Commission

(Rs. Crore)

	Particulars	FY 2018-19	FY 2019-20
1.	Receivables for two months	3.29	3.71
2.	Maintenance spares @15% of O&M expenses	1.23	1.39
3.	O&M expenses for one month	0.68	0.77
4.	Working capital requirement	5.20	5.87
5.	Rate of Interest (%)	8.35%	10.24%
6.	**Interest on working capital (4*5)**	**0.43**	**0.60**

The Commission, thus, approves Rs.0.43 Crore for FY 2018-19 & Rs.0.60 Crore for FY 2019-20 on working capital requirement of Rs.5.20 Crore for FY 2018-19 & Rs.5.87 Crore for FY 2019-20 for SLDC business of PSTCL.

3.11 Return on Equity (RoE)

3.11.1 **PSTCL's Submissions:**

The Commission in its MYT Order dated 23.10.2017, approved Return on Equity of Rs.115.64 Crore for FY 2018-19 and Rs.126.58 Crore for FY 2019- 20 against PSTCL's Claim of Rs.114.34 Crore for FY 2018-19 and Rs.123.83 Crore for FY 2019-20 for Transmission Business.

Further, the Commission in its tariff Order dated 19.04.2018 retained the RoE as Rs.115.64 Crore for FY 2018-19 and Rs. 126.58 Crore for FY 2019-20.

In the current Petition, PSTCL has claimed RoE of Rs.117.60 Crore for FY 2018-19 and Rs.136.95 Crore for FY 2019-20 as under:

Table 3.32: Return on Equity claimed by PSTCL for FY 2018-19 and FY 2019-20

(Rs. Crore)

	Particulars	FY 2018-19	FY 2019-20
Transmission			
1.	Opening Equity	712.11	805.33
2.	Add: Addition of equity during the year	93.22	156.45
3.	Closing Equity	805.33	961.79
4.	Rate of RoE	15.50%	15.50%
5.	**Return on Equity**	**117.60**	**136.95**

3.11.2 PSTCL has considered the addition of equity equivalent to 30% of capital expenditure to the extent for Return of Equity.

Commission's Analysis:

3.11.3 The Commission has to determine the Return on Equity for the Control Period in accordance with Regulation 20 of PSERC MYT Regulations, 2014.

3.11.4 The Commission determines Return on Equity @15.50% on the opening balance of equity for full year and @15.50% on the addition to equity during the year for half year as under:

Table 3.33: Return on Equity approved by the Commission

(Rs. Crore)

Sr. No.	Particulars	FY 2018-19	FY 2019-20
	Transmission		
1.	Opening Equity	702.80	780.26
2.	Add: Addition to equity during the year	77.46	71.18
3.	Closing Equity	780.26	851.44
4.	Average Equity	741.53	815.85
5.	Rate of RoE	15.50%	15.50%
6.	**Return on Equity**	**114.94**	**126.46**

The Commission, thus, approves RoE of Rs.114.94 Crore for FY 2018-19 and Rs.126.46 Crore for FY 2019-20.

3.11.5 **Unified Load Dispatch & Communication (ULDC) Charges**

PSTCL has claimed Rs.10.73 Crore each for FY 2018-19 and FY 2019-20 towards ULDC charges based on Audited Annual Accounts of FY 2017-18.

Since ULDC Charges are decided by CERC from time to time, the Commission finds it appropriate to allow ULDC charges as proposed based on Audited Annual Accounts of FY 2017-18 of Rs.10.73 Crore each for FY 2018-19 and FY 2019-20.

3.12 Non-Tariff Income

3.12.1 **PSTCL's Submissions:**

The Commission in its Tariff Order dated 23.10.2017 has approved Non-tariff Income of Rs.49.25 Crore each for Transmission Business and Rs.5.41 Crore for SLDC Business for FY 2018-19 and FY2019-20 as against PSTCL's claim of Non-Tariff Income of Rs.10 Crore each for Transmission Business and Rs.1 Crore each for SLDC Business for FY 2018-19 and FY 2019-20.

Further, the Commission in its Tariff Order dated 19.04.2018 has approved Non-Tariff Income for FY 2018-19 as Rs.54.66 Crore as against PSTCL's claim of Rs.26.18 Crore.

3.12.2 PSTCL has claimed Non-Tariff Income of Rs.18.94 Crore each for FY 2018-19 & FY

2019-20 for Transmission Business and Rs.1.41 Crore each for FY 2018-19 and FY 2019-20 for SLDC Business. PSTCL further submitted that it has claimed Non-Tariff Income at the same level as actual Non-Tariff Income for FY 2017-18 based on the audited accounts.

Commission's Analysis:

3.12.3 Non-Tariff Income is determined as per PSERC Regulation-28 of MYT Regulations-2014. The Commission notes that there is abnormal increase in Non Tariff Income for FY 2017-18 due to adjustment of previous years. The Commission allows the non - tariff income as claimed by PSPCL for FY 2018-19 and FY 2019-20.

Accordingly, the Commission determines and approves Non-tariff Income as Rs.18.94 Crore each for FY 2018-19 and FY 2019-20 for Transmission Business and Non-Tariff Income of Rs.1.41 Crore each for FY 2018-19 and FY 2019-20 for SLDC Business.

3.13 Carrying Cost on Revenue Gap

3.13.1 True up of FY 2017-18

The Commission vide Order dated 23rd Oct, 2017 had approved the Net Revenue Requirement (NRR) of Rs.1234.87 Crore for FY 2017-18 and approved Net Revenue Requirement of Rs.1233.00 Crore during Annual Performance Review for FY 2017-18. Now the Net ARR after truing up exercise for FY 2017-18 has been re-determined as Rs.1174.99 Crore which was payable by PSPCL as Transmission Charges of FY 2017-18. The Commission in its order dated 19th April, 2018 has already allowed Revenue Surplus of Rs.1.87 (1234.87-1233.00) Crore and carrying cost on revenue surplus of Rs. 1.87 Crore.

The Commission determines a Surplus of Rs.58.01 (1233.00-1174.99) Crore in True up of FY 2017-18 between Net Revenue Requirement determined during Annual Performance Review and True-up. Accordingly, the Commission calculates carrying cost on the revenue surplus of Rs.58.01@10.18% (rate of interest of working capital requirement) of FY 2018-19 for six months (i.e.Rs.2.95 Crore) and @10.15% (rate of interest of working capital requirement) for six months of FY 2019-20((i.e.Rs.2.94 Crore) . Thus, the total recoverable carrying cost for FY 2017-18 works out to (-) Rs.5.89 Crore.

3.13.2 Annual Performance Review of FY 2018-19

The Commission vide its Order dated 19th April, 2018 had approved the Net Revenue Requirement (NRR) of Rs.1282.00 Crore for FY 2018-19. The Commission after review re-determined Net Revenue Requirement of Rs.1302.86 Crore for FY 2018-19. Thus, the Commission determines a Revenue Gap of Rs.20.86 (1282.00-1302.86) Crore.

Accordingly, the Commission allows carrying cost of Rs.2.12 Crore on revenue gap of Rs.20.86 Crore @10.18% of FY 2018-19 for six months (i.e. Rs.1.06 Crore) and @10.15% for six months of FY 2019-20(i.e. Rs.1.06 Crore).

3.13.3 Total recoverable carrying cost works out to Rs.3.77 (5.89-2.12) Crore.

3.14 Aggregate Revenue Requirement (ARR)

The summary of the ARR for Transmission Business, SLDC Business and for overall PSTCL for FY 2018-19 and FY 2019-20 is in the following tables

Table 3.34: Aggregate Revenue Requirement of Transmission Business

(Rs. Crore)

Sr. No.	Particulars	FY 2018-19		FY 2019-20	
		Claimed by PSTCL in APR of FY 2018-19	Approved by the Commission for FY 2018-19	Claimed by PSTCL in RE of FY 2019-20	Approved by the Commission for FY 2019-20
I	II	III	IV	V	VI
1.	Employee cost	488.86	477.79	524.46	498.86
2.	R&M and A&G expenses	64.89	50.29	69.77	53.34
3.	Depreciation	291.37	279.16	307.24	291.67
4.	Interest charges	375.18	345.56	366.07	324.48
5.	Interest on working capital	35.46	34.31	36.88	35.26
6.	Return on Equity	117.60	114.94	136.95	126.46
7.	**Total Revenue Requirement**	**1373.36**	**1302.05**	**1441.37**	**1330.07**
8.	Less: Non-Tariff Income	18.94	18.94	18.94	18.94
9.	**Less: Carrying Cost (recoverable)**				3.77
10.	**Net Revenue Requirement**	**1354.42**	**1283.11**	**1422.43**	**1307.36**

Table 3.35: Aggregate Revenue Requirement of SLDC Business for FY 2018-19 and FY 2019-20

(Rs. Crore)

Sr. No.	Particulars	FY 2018-19		FY 2019-20	
		Claimed by PSTCL in APR of FY 2018-19	Approved by the Commission for FY 2018-19	Claimed by PSTCL in RE of FY 2019-20	Approved by the Commission for FY 2019-20
I	II	III	IV	V	VI
1.	Employee cost	6.86	6.57	7.12	6.77
2.	R&M and A&G expenses	1.67	1.60	2.74	2.53
3.	Depreciation	1.15	1.08	2.07	1.66
4.	Interest charges	0.82	0.75	1.53	1.36
5.	Interest on working capital	0.54	0.43	0.61	0.60
6.	ULDC charges	10.73	10.73	10.73	10.73
7.	**Total Revenue Requirement**	**21.77**	**21.16**	**24.80**	**23.65**
8.	Less: Non-Tariff Income	1.41	1.41	1.41	1.41
9.	**Net Revenue Requirement**	**20.36**	**19.75**	**23.39**	**22.24**

Table 3.36: Aggregate Revenue Requirement of PSTCL for FY 2018-19 and FY 2019-20 approved by the Commission

(Rs. Crore)

Sr. No.	Particulars	FY 2018-19		FY 2019-20	
		Claimed by PSTCL in APR of FY 2018-19	Approved by the Commission for FY 2018-19	Claimed by PSTCL in RE of FY 2019-20	Approved by the Commission for FY 2019-20
I	II	III	IV	V	VI
1.	Employee cost	495.52	484.36	531.58	505.63
2.	R&M and A&G expenses	66.56	51.89	72.51	55.87
3.	Depreciation	292.52	280.24	309.31	293.33
4.	Interest charges	376.00	346.31	367.60	325.84
5.	Interest on working capital	36.00	34.74	37.49	35.86
6.	Return on Equity	117.60	114.94	136.95	126.46
7.	ULDC charges	10.73	10.73	10.73	10.73
8.	**Total expenses**	**1394.93**	**1323.21**	**1466.17**	**1352.72**
9.	Less: Non-Tariff Income	20.35	20.35	20.35	20.35
10.	**Less: Carrying Cost (recoverable)**				3.77
11.	**Revenue Requirement**	**1374.58**	**1302.86**	**1445.82**	**1329.60**

Chapter 4
Directives

Compliance of Commission's Directives

The Commission has a statutory function under the Electricity Act, 2003 to guide the State Transmission Utility to ensure the overall development of an efficient, coordinated and economical system of Intrastate Transmission lines for smooth flow of electricity to the Load Centres. The Commission issues various directives to PSTCL through its Tariff Order each year to facilitate the transmission licensee/STU to achieve these milestones. The status of compliance of directives issued in the Tariff Order for FY 2018-19 and PSERC comments along with further directives for compliance by PSTCL during FY 2019-20 is summarized as under:

Directive No. 4.1: Boundary metering, Energy Audit and Reduction in Transmission Losses.

PSERC Comments & Directive for FY 2018-19:

The Commission notes the reasons explained for high losses during low load conditions during winter period. The audit/analysis of voltage wise transmission losses needs to be done with proper installation of ABT meters on boundaries of different voltage levels. The roadmap to reduce the transmission losses below 2.5% along with the roadmap to complete installation of requisite ABT meters on the boundaries of different voltage levels may be submitted to the Commission within 2 months.

Reply of PSTCL:

Study and efforts are being made to reduce the transmission losses and optimization of the system adopting relevant methodologies. Accordingly, a comparison of the last few months is as depicted in the table below:-

Sr. No.	Month	FY 2017-18	FY 2018-19
1.	Aug	3.42%	2.66%
2.	Sep	3.90%	2.83%
3.	Oct	2.19%	2.09%
4.	Nov	4.99%	2.27%
5.	Dec.	4.02%	2.38%

Monthly transmission losses of PSTCL are being calculated with the data obtained from ABT meters installed at various boundary points.

As per directions of the PSERC, project SAMAST is under process which will also cover voltage levels at all the locations under consideration. The voltage wise transmission losses of Punjab transmission network can be calculated after the completion/implementation of SAMSAT scheme.

PSERC Comments & Directive

The reply of PSTCL is incomplete. PSTCL has neither supplied the roadmap to reduce transmission losses below 2.5% nor the analysis of voltage wise transmission losses with proper installation of ABT meters on all boundary points of different voltage levels. The Commission further observes that there is a huge variation in losses during same months of the FY 2017-18 and FY 2018-19 and also over the full year month wise even during the months which have comparable energy inputs. This indicates that there is still no stabilization of data. The Commission also noticed from the letters of PSTCL that Transmission Losses are being computed based on manual readings of energy meters installed at boundary interface points. The possibility of inadvertent error in assessment of transmission losses read manually cannot be ruled out.

For determination of the trajectory of transmission losses, the stabilised data of one complete year is required as this will become the basis of projections for the succeeding years. The Commission reiterates its directive to PSTCL to analyse voltage wise transmission losses and give a roadmap to reduce to losses below 2.5% within one month of issue of Tariff Order. The Commission directs PSTCL to take utmost care to collect and compile the data from all the energy meters to remove any probable errors so that correct and reliable data is available for calculation of transmission losses.

Directive No.4.2: a) Man power:

PSERC Comments & Directive for FY 2018-19:

Detailed explanation for increase in employee cost despite the reduction in actual employee strength should be submitted to the Commission. A year wise chart of actual employee strength plus additions and minus attrition by way of retirement and employee cost & terminal costs from 2010 onwards, may be supplied to the Commission within a month.

Reply of PSTCL:

Particulars	16.04.2010 to 31.03.2011	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
Actual Employee strength at the beginning of the year	3717	4210	3328	3699	3853	3737	3557	3507
Employee added during the year	493		371	154				68
Less: Attrition during the year		882			116	180	50	
Actual Employee strength at the end of the year	4210	3328	3699	3853	3737	3557	3507	3575
Employee Cost (Rs. Crore) excluding terminal benefits	104.54	122.42	134.98	155.89	154.97	174.48	187.65	192.72
Terminal benefit (Rs. Crore) @11.36 X Share	127.78	141.23	165.14	183.55	200.66	229.40	254.31	279.45

PSERC Comments & Directive

The Commission notes the compliance and hence the directive is dropped.

Directive No.4.2: b) Unmanned Sub-stations:

PSERC Comments & Directive for FY 2018-19:

The Commission observes that there is no tangible progress in the execution of work in the last one year. The work of three substations is yet to start. PSTCL is directed to supply timelines for completion/commissioning of all the five Sub Stations.

Reply of PSTCL:

Tender Enquiry STQ-7019 was floated and Work Order No.STW-7001 dated 16.10.2015 was awarded to M/S Siemens Ltd. for Substation Automation System, including video monitoring system, for five 220 kV Substations (220 kV substation Mohali-1, 220 kV substation Mohali-2, 220 kV substation Kharar, 220 kV substation Dera Bassi and 220 kV substation Lalru). The project has been delayed by Siemens. The company has completed Substation Automation System on all the substations. However, implementation of remote control of the substations from Remote Control Centre (RCC) is pending. The company has been asked to finish the project at the earliest.

PSERC Comments & Directive

PSTCL has not provided any timelines for implementation of remote control of the substations from Remote Control Centre (RCC). The Commission directs PSTCL to complete the implementation of Remote Control of all the five Sub-stations from Remote Control Centre and share the progress within two months of the issue of this Tariff Order.

Directive No.4.2: c) Training:

PSERC Comments & Directive for FY 2018-19:

From the scrutiny of the reply of PSTCL, it appears that the licensee does not have any definite roadmap for training of its employees/officers. PSTCL is directed to submit its plan for training of their employees/officers.

Reply of PSTCL:

Regarding Training Calendar for year 2018-19

1. PSTCL does not have any Training Institute of its own. As per decision dated 10.11.2017 of the Committee of WTDs PSTCL, the decision of construction/ establishment of PSTCL's Advanced Training & Research Institute at 220 KV Substation, Ablowal has been scrapped.

2. As desired by CMD, PSTCL, a joint committee of PSPCL and PSTCL Officers was formulated to explore the Common Training Facilities between PSPCL and PSTCL & it was decided that in co-ordination with PSPCL, Induction Training as well as Refresher Courses of PSTCL employees shall be carried out at PSPCL training facilities.

3. In compliance to the above decision, 4 batches of (apprx.25 participants each) of SSA's of PSTCL have been sent for training at Technical Training Institute, PSPCL, Patiala in the year 2018.

4. Also the modules of Training for officers/officials of various other categories are being worked out mutually with PSPCL as per PSTCL's requirements.

5. Modalities for Common batches of PSPCL & PSTCL employees for same training are also under consideration.

6. **Training Calendar for Year 2018-19**

I. GEO Spatial Awareness Workshop conducted by PEC, Chandigarh on 19th April at Chandigarh.

II. Five days (7th May to 11th May, 2018) Communication Equipments Training, organized by M/s ECI Telecom India Pvt. Ltd at Gurgaon.

III. "Renewable Energy Generation-Integration with Grid and Storage Batteries" from 05-08 June, 2018 at ESCI Campus Hyderabad.

IV. Three Days Training Program on "Fibre Optic Cabling and Splicing of FO Cable during Installation" from 18.06.18 to 20.06.18 at Gurgaon.

V. 4 weeks Training Program of SSAs of PSTCL(Total 100) has been conducted at Technical Training Institute (TTI), PSPCL, Patiala in year 2018 (Four Batches of 25 participants each).

VI. One Day Training on EAT Module for PSDF Scheme conducted by Chief Controller of Accounts(CCA), Ministry of Power, on 27.07.18 at Institute of Government Accounts and Finance (INGAF), Block-IV, Old J.N.U. Campus, New Delhi.

VII. Seminar on Road safety Talk by "SADAK" Patiala Foundation Society at Shakti Sadan, Patiala in July, 2018.

VIII. One day Training Program on Medium Term Expenditure Framework (MTEF) under the Asian Development, Govt. of Punjab, on 07.09.18 at PEDA-Auditorium, Chandigarh.

IX. Six days Training Program on Power System logistics by National Power Training Institute (NPTI), Faridabad in September,2018.

X. Two weeks Training on Power system Operation by Power System Training Institute (PSTI), Bangalore in October, 2018.

XI. Two weeks Training on Power system Operation by Power System Training Institute (PSTI), Bangalore in December, 2018.

XII. Six days Training Program on Regulatory Framework in Power Sector by National Power Training Institute (NPTI), Faridabad in December, 2018.

XIII. Six days Training on Renewable Energy Sources & grid Integration by Power System Training Institute (PSTI), Bangalore in January, 2019.

XIV. Two weeks Training on Power system Operation by National Power Training Institute (NPTI), Guwahati in February, 2019.

XV. One Day Training Program on "Medium Term Expenditure Framework (MTEF)" under the Asian Development Bank(ADB) supported 'Punjab Development Finance Program' of Finance Department, Govt. of Punjab on 07.09.2018 at PEDA-Auditorium, Solar Passive Complex, Plot No.1-2, Sector-33-D, Chandigarh.

XVI. Three Day Workshop on Electricity Markets" from 8th to 10th October' 2018 at The Energy and Resource Institute (TERI) RETREAT CENTRE, Gwal Pahari, Gurgaon-Faridabad Road, Gurgaon, Haryana being organised by KMPG India.

XVII. One Day Training Programme on "Gender Mainstreaming in Climate Change Adaptation Actions" on 05.10.2018 to be jointly organised by Punjab State Council for Science & Technology(PSCST) & Mahatma Gandhi State Institute of Public Administration(MGSIPA) at MGSIPA, Institutional Area, Sector 26, Chandigarh-160019 .

XVIII. One Day Seminar on "Recent Trends on Condition Monitoring in Power Equipment", being organized by Central Power Research Institute (CPRI) Noida at SCOPE Convention Centre, Core-8, Ground Floor, 7, Lodhi Road, New Delhi-110003, on 12.10.2018.

XIX. "6th Annual Conference on Transmission Lines, Towers and Sub Stations" on 30-31st Oct'2018 at The Leela Ambience, Gurugram.

XX. "Five Days Capacity Building Programme on Contract Management" from 21st to 25th January'2019 at Rajiv Gandhi National University of Law, Patiala.

7. **Proposed Trainings for year 2018-19**

i. One week training program on "Enhancing Managerial Excellence" at Engineering Staff College of India, Hyderabad in batches (20 participants per batch) for Officers of PSTCL. Already 5 batches have undergone training at ESCI, Hyderabad in year 2016-17 & 2017-18.

ii. Training of JEs & SSAs of PSTCL at TTI PSPCL.

8. It is also worth mentioning here that, it is mentioned in the Joint Director/Finance, Punjab Govt. letter dated 16.01.2015 that expenditure on conferences/ seminars/ workshops shall be curtailed and employees shall be sent for extremely essential training programs. In this regard, Requisite agenda has been sent to the office of Company Secretary for consideration and approval with regard to various trainings of PSTCL employees.

Hence, from time to time, PSTCL sends its employees, for training and other mandatory programs to PSPCL training facilities and on essential training programmes to other Institutions of India, as per the approval of higher authorities

PSERC Comments & Directive

The Commission notes the action taken. Training of personnel is an ongoing activity and PSTCL shall ensure regular training of its staff. The directive is dropped.

Directive No.4.2: d) Implementation of ERP:

PSERC Comments & Directive for FY 2018-19:

No tangible progress has been made by PSTCL after scrapping of bids of ERP work in March, 2017. The Commission directs PSTCL to submit the action plan on ERP project within a month of issue of this Tariff Order.

Reply of PSTCL:

The Tender process for selection of implementation partner had to be scrapped due to inadequate number of bids. The Board of Directors was requested to decide on further course of action. "Board decided that proposal for ERP implementation in PSTCL shall be taken up later.

PSERC Comments & Directive

In view of the decision of Board of Directors of PSTCL, the directive is dropped.

Directive No. 4.3: Loading Status of PSTCL Transmission lines and Substations:

PSERC Comments & Directive for FY 2018-19:

The Commission observes that the 220 kV Dhandari-PGCIL, Ludhiana and the 220 kV Lalton-PGCIL, Ludhiana ckt-1 are overloaded by 116.3% and 104.4%, respectively and all other 220 kV and 132 kV transmission lines and Substations of PSTCL remained below 100% loading during paddy 2017. PSTCL should share the timelines to deload the overloaded lines within one month of the issue of this tariff order. PSTCL should regularly upload the quarterly status of loading conditions of Sub-stations and Transmission lines on its website also.

Reply of PSTCL:

The Quarterly status (ending December-2018) of loading conditions of Sub-station & Transmission lines has been uploaded on PSTCL website and is reproduced below:

Sr. No.	P&M Circle	Name of Transmission Lines	%loading as compared with the standard design Parameter of Conductor i.e. 45ºC	Remarks	Remedial Action
1	Ludhiana	220 kV G-1 Rajpura ckt-1	570A (102%) at 15ºC ambient temperature	Due to inadequate generation from GGSSTP end.	Adequate generation to be ensured by PSPCL at GGSSTP.
	2	220 kV G-1 Rajpura ckt-2	570A (105%) at 32ºC ambient temperature	-do-	-do-
	3	220 kV RTP Ghulal	665A (102%) at 17ºC ambient temperature	-do-	-do-
2	Jalandhar	Nil			
3	Patiala	Nil			
4	Amritsar	Nil			
5	Bathinda	Nil			
NOTE: All the 220 kV as well as 132 kV substations of PSTCL remained loaded below 100%.					

Regarding 220 kV Dhandari - PGCIL Ludhiana and 220 kV Lalton PGCIL - Ludhiana (ckt 1), tender were opened in Feb. 2019 but no firm had qualified. Also PSDF grant has not been approved till date. The tenders will be floated again after getting the approval of BoD.

PSERC Comments & Directive

The Commission notes that both 220 kV Ckt 1 & 2 from 220 kV Gobindgarh-1 to Rajpura and 220 kV line from RTP to Ghulal remained overloaded even at ambient temp of 15^{o} C to 17ºC. The generation at GGSSTP depends upon merit order dispatch and cannot be regulated according to loading conditions of the lines. PSTCL is directed to take remedial measures to deload the above mentioned circuits under intimation to the Commission.

Directive No. 4.4: Maintenance of category wise details of fixed assets:

PSERC Comments & Directive for FY 2018-19:

The Commission is not satisfied with the reply and further directs PSTCL to complete the task and submit a status report within one month from the issue of Tariff Order.

Reply of PSTCL:

Copy of the Fixed Assets register (FAR) has already been supplied to the Commission.

PSERC Comments & Directive

The Commission notes the compliance. PSTCL is directed to supply the voltage wise updated information on line, every year.

Directive No. 4.5: Reactive Compensation.

PSERC Comments & Directive for FY 2018-19:

PSTCL is directed to share the timelines for implementing the recommendations of the latest study report of CPRI.

Reply of PSTCL:

1. This office submitted DPR for funding through PSDF in respect of 35 Nos. 66 KV shunt capacitor banks of 10.86 MVAR rating at 17 no. 220 KV sub-stations in the month of June 2015 with a total cost of Rs.8.35 Cr approx. on the basis of Empirical formulae/Mathematical calculations for Capacitor banks. Subsequently, the work of system studies for capacitor requirement was entrusted to CPRI by NRPC.
2. The draft Capacitor study report was submitted by CPRI in the month of April 2017. The draft report was deliberated in the OCC meeting held in April 2017, wherein OCC noted that the capacitors proposed for PSDF funding by Haryana, Punjab and UP were less than that assessed based on the CPRI report. Therefore OCC recommended the proposal of these states for the approval of NRPC. Subsequently, in the 39th NRPC/35th TCC meeting, NRPC approved the proposal of Haryana, Punjab and UP for installation of capacitors for funding through PSDF. The final report was submitted by CPRI in the month of August 2017.
3. In the 41st NRPC/38th TCC meeting held on 27.02.2018, Techno Economic Sub Group (TESG) raised certain queries on the proposal submitted for PSDF funding by Haryana, UP, Punjab and J&K regarding capacitor installation by them wherein TESG asked certain information from the entities including PSTCL as follows:

a) Study report based on which requirement has been projected,

b) Location wise details of existing capacitor banks with age and health report,

c) Present voltage profile at 11 KV/33 KV, projected voltage levels after installation of capacitors,

d) Schematic for automatic power factor correction,

e) SLDC report,

f) STU approval,

g) Basis of Cost estimates,

h) Grant from any other scheme of GOI (IPDS, DDUGVY).

However, the same could not be furnished as the DPR was submitted much in advance by PSTCL i.e. in June 2015 (almost 2 years before the CPRI study report was submitted) based on Empirical formulae/Mathematical calculations for Capacitor banks.

4. It is further added that PSTCL submitted all the data in the given format as required by CPRI for conducting the study of capacitor banks as desired by NLDC but the same was actually not considered in the study report by CPRI.

   The CPRI in its study report issued on August 2017 considered MVAR Compensation at existing Capacitor banks of PSTCL 'network to be 1563.9 MVAR and around 1039.26 MVAR has been additionally recommended to make the voltage profile stable making the total reactive compensation as 1563.9+1039.26=2603.16 MVAR. However, the actual operational MVAR of PSTCL network as submitted to CPRI for carrying out the study was around 3556.69 MVAR.

5. As mentioned in CERC (Indian Electricity Grid Code), Regulation 2010, the reactive compensation i.e. Shunt Capacitors shall be provided by STU & users connected to Inter State Transmission System as far as possible in the low voltage system close to the load points.

6. In compliance to CERC regulations, the reactive Compensation in PSTCL is being provided at low voltage level i.e 11KV & 66 KV). However, CPRI in its study report recommended reactive compensation at high voltage level also i.e.220 KV voltage level as well as 132 KV voltage level (As per the recommendations, 220 KV shunt capacitors were recommended at 220 KV S/S & 132 KV shunt capacitors were recommended at 132 KV S/S.) However, as per the CERC guidelines, it is appropriate to install shunt capacitors at lower voltage level i.e 66 kv capacitor bank at 220 KV S/S with 220/66

KV T/F(s) and 11 KV capacitor banks at 132 KV S/S with 132/11 KV T/F(s).This set up is economical as well as it requires less space.

7. In the 37th TCC/ 40th NRPC meeting held on 11.01.18, it was decided that for obtaining more feasible and practical requirement of capacitors, the study shall be conducted at 220/132 KV level as well as 11/33/66 KV level for the year 2019-20 based on the data to be submitted by N-R utilities.

8. The matter was further discussed in the 42nd NRPC meeting held on 13.08.18, wherein the PSTCL representative stated that even though the requirement in the study conducted by CPRI was far greater than that proposed by PSTCL, still they had not allowed the funding for the same.

9. A letter in this regard has been written to the Member Secretary, Power System Operation Corporation Limited, NLDC, New Delhi vide this office memo no. 1440 dt. 26.10.18, wherein it was requested that the PSDF Funding may be allowed based on the earlier DPR submitted by PSTCL in respect of 35 Nos. 66 KV Shunt capacitors of 10.86 MVAR rating at 17 no. 220 KV sub-stations with a total cost of 8.35 Cr approx. Shortfall, if any projected by M/s CPRI based on their study report for the year 2019-20 as and when submitted shall be duly added subsequently. The reply in this regard is still awaited.

10. The new reactive compensation study for PSTCL/PSPCL at 220/132 KV level as well as 11/33/66 KV level for the year 2019-20 has been initiated by M/s CPRI and the requisite input data is being arranged by the 0/o SLDC PSTCL.

PSERC Comments & Directive

PSTCL is directed to share the new reactive compensation study being conducted by CPRI for PSPCL/PSTCL at 220/132 kV level as well as 11/33/66 kV level for the year 2019-20 as per the decision taken in 37th Technical Coordination Committee (TCC) meeting/40th NRPC meeting. PSTCL may also keep the Commission informed regarding PSDF funding and approval of the project.

Directive No.4.6: Transmission System for evacuation of power from IPPs.

PSERC Comments & Directive for FY 2018-19:

The Commission observes that the target of November, 2016, which was earlier shifted to December, 2017 has now been deferred to 28.02.2018. Only about 61% stringing work has been completed. PSTCL is directed to intimate the progress on commissioning of the above circuit immediately.

Reply of PSTCL:

Name of Work	Total No of Towers	No. of Towers Stubbed	No. of Towers Erected	Stringing & Sagging (in ckt. Km)	Expected Date of Commissioning	Remarks
220 KV Goindwal Sahib (TPS) – 220 KV Bottian Wala DC line = 64.735 Km length=64.735 X 2=129.47 ckt.kms.	203	203	203	129.47	31.01.2019	Line work has been energized on 06.03.2019 from Botiwala end but synchronization of line is pending due to non-installation of communication equipment by Goindwal Plant. Notice has been issued Plant authorities.

PSERC Comments & Directive

The Commission notes the compliance. The directive is dropped.

Directive No.4.7: Replacement of defective energy meters:

PSERC Comments & Directive for FY 2018-19:

The Commission in its order dated 19.04.2017 in Petition No. 42 of 2016 (Suo-moto) read with letter dated 15.10.2015 had issued various directions to PSPCL/PSTCL for accurate recording of pumped energy of AP feeders. PSTCL should ensure its implementation.

Reply of PSTCL:

It is certified that various directions issued by the commission to PSTCL for accurate recording of pumped energy of AP feeders are being implemented at all the Substations under P&M Organization, PSTCL.

PSERC Comments & Directive

The Commission notes the action taken and directive is dropped.

Directive No. 4.8: Preventive maintenance of transmission lines.

PSERC Comments & Directive for FY 2018-19:

PSTCL is directed to clarify the percentage of Disc Insulators replaced with Anti-Fog Disc Insulators in polluted areas and timelines to replace remaining Disc Insulators with Anti-Fog Disc Insulators in polluted areas.

Reply of PSTCL:

Amritsar Circle	100% of Disc Insulators replaced with anti fog Disc insulators in polluted areas in respect of all 220/132 KV Transmission lines.
Bathinda Circle	100% of ordinary porcelain Disc Insulators replaced with Anti fog/Polymer insulator Disc strings in polluted areas in respect of all 400/220/132KV Transmission lines.
Jalandhar Circle	100% of Disc Insulators replaced with anti fog Disc insulators in polluted areas in respect of all 220/132 KV Transmission lines.
Ludhiana Circle	100% of Disc Insulators replaced with anti fog Disc insulators in polluted areas in respect of all 400/220/132 KV Transmission lines.
Patiala Circle.	100% of Disc Insulators replaced with anti fog Disc insulators in polluted areas in respect of all 400/220/132 KV Transmission lines.

PSERC Comments & Directive

During public hearings, number of complaints regarding failure of supply were received by the Commission from the large industrial consumers fed from 132/220 kV lines. In a surplus power scenario, failure to provide uninterrupted power supply to large industrial units not only results in loss of industrial production but loss of revenue to the distribution licensee also. PSTCL is directed to start a special drive for upkeep of all transmission lines and particularly those lines supplying power to industrial units in the State. PSTCL is further directed to supply quarterly information regarding detail of trippings/breakdowns on each 132/220/400 kV line along with duration of interruption and reason for the same.

New Directive:

4.9 Strengthening of State Load Despatch Centre (SLDC):

The State Load Despatch Centers (SLDCs) have been established under Section 31 of the Electricity Act, 2003 to perform functions as directed in Section 32 of the Act. The SLDC has a pivotal role to ensure integrated, secure, reliable and efficient operation of the Power System in the State. With the large scale of integration of RE power, automization and real time operation of the grid system in the near future, SLDC is required to be manned by well trained staff with long term commitment and motivation to work in this field.

PSTCL is directed to ensure achievement of the above referred goals by effectively ring fencing the SLDC and ensuring adequate well trained manpower. Regular training with inbuilt system of incentives/rewards to the personnel manning SLDC should be ensured. PSTCL shall submit a complete plan to ensure compliance of the directive within four months from the date of issue of this Tariff Order.

Chapter 5
Determination of Transmission Charges and SLDC Charges

5.1 Annual Revenue Requirement

The Commission has determined the ARR for PSTCL for FY 2019-20 as Rs. 1329.60 Crore, comprising of Rs. 1307.36 Crore for Transmission business & Rs. 22.24 Crore for SLDC business.

The Commission vide interim Order dated 18.03.2019 had decided to continue with the existing transmission tariff till the Tariff Order for FY 2019-20 is issued. Now, the Commission decides to implement the new tariff rates with prospective effect i.e. w.e.f. 01st June, 2019. Accordingly, the ARR for Transmission Business and SLDC Business required to be recovered in the remaining 10 months of the year is as under:

Table 5.1: ARR for Transmission Business and SLDC Business

(Rs. Crore)

Sr. No.	Particulars	Transmission Business	SLDC Business
1.	ARR approved for FY 2019-20	1307.36	22.24
2.	Less revenue recovered during 2 months (April, 2019 and May, 2019) with transmission tariff as per Tariff Order FY 2018-19	210.60 (105.30 x 2)	3.06 (1.53 x 2)
3.	Net ARR recoverable during remaining 10 months (June, 2019 to March, 2020)	1096.76	19.18

As, there is only one Distribution Licensee (PSPCL) in the State of Punjab, all the SLDC charges and transmission charges will be borne by PSPCL during FY 2019-20.

5.2 Transmission System Capacity

The Commission has determined the Transmission capacity (net) of PSTCL system from the data submitted by PSTCL as 11956.32 MW for FY 2019-20.

5.3 Determination of Transmission Tariff

PSERC MYT Regulations, 2014 specify that transmission tariff will have the following components:

i) SLDC Operation Charges

ii) Reactive Energy Charges

iii) Charges for use of network

5.3.1 **SLDC Operation Charges:** The Commission has approved the ARR of SLDC business for FY 2019-20 at Rs. 22.24 Crore in Table 3.35 of this Tariff Order. **Accordingly, the Commission determines the SLDC Operation Charges as under:**

Table 5.2: SLDC Operation Charges

(Rs. Crore/Month)

Sr. No.	Particular	Existing Charges as per T.O. for FY 2018-19 continued from 01.04.2019 to 31.05.2019	New charges w.e.f. 01.06.2019 to 31.03.2020
1.	**SLDC Operation Charges**	1.53	1.918

5.3.2 **Reactive energy charges:** The reactive energy charges, if any, raised by NRLDC on PSTCL will be recoverable from PSPCL directly by PSTCL.

5.3.3 **Charges for use of Network:** The ARR for the Transmission Business of PSTCL has been determined at Rs. 1307.36 Crore for FY 2019-20 as shown in Table 3.34 of this Tariff Order.

Accordingly, the Commission determines the Transmission Charges as under:

Table 5.3: Transmission Operation Charges

(Rs. Crore/Month)

Sr. No.	Particular	Existing Charges as per T.O. for FY 2018-19 continued from 01.04.2019 to 31.05.2019	New charges w.e.f 01.06.2019 to 31.03.2020
1.	**Transmission Charges**	105.30	109.676

5.4 Determination of Open Access Transmission and SLDC Charges

As per the provisions of Open Access Regulations notified by the Commission SLDC Operation Charges and Transmission Charges for Open Access customers are determined as under:

5.4.1 On the basis of approved ARR for SLDC business of PSTCL, the SLDC Operation Charges for Open Access customers during FY 2019-20 are determined as under:

Table 5.4: SLDC Operation Charges for Open Access Customers for FY 2019-20

Sr. No.	Particulars	Unit	Quantum
I	II	III	IV
1.	Annual Revenue Requirement (ARR) of SLDC business for FY 2019-20	Rs. Crore	22.24
2.	Transmission System Capacity (net)	MW	11956.32
3.	SLDC Operation Charges for Long Term and Medium Term Open Access customers	Rs./MW/Month	1550
4.	Composite operating charges to be paid by Short Term Open access Customers to the SLDC for each transaction	Rs. Per day or part of the day	2000

5.4.2 On the basis of approved ARR for Transmission Business of PSTCL, the Transmission Charges for Open Access customers for use of the transmission system during FY 2019-20 are determined as under:

Table 5.5: Open Access Transmission Charges for FY 2019-20

Sr. No.	Particulars	Units	Quantum
I	II	III	IV
1.	Annual Revenue Requirement (ARR) of Transmission Business for FY 2019-20	Rs. Crore	1307.36
2.	Transmission System Capacity (net)	MW	11956.32
3.	Transmission charges for Long Term and Medium Term Open Access customers	Rs./MW/ Month	91121
4.	Transmission Charges for Short Term Open Access Customers (based on 56746.49 MkWh of energy input at transmission boundary for sale in the State, as approved in Table 3.3 B of PSPCL Tariff Order for FY 2019-20)	Rs./MWh	230.39

5.5 Date of Effect

The Commission, decides to make the revised Transmission Charges and SLDC Charges determined above applicable w.e.f. 1st June, 2019 and these shall remain operative till March 31, 2020. For the month of April and May 2019, the tariff shall remain as per Tariff Order for FY 2018-19 as specified by the Commission in the Interim Order dated 18.03.2019.

This Order is signed and issued by the Punjab State Electricity Regulatory Commission on this day, the 27th day of May, 2019.

Date: May 27, 2019

Place: CHANDIGARH

Sd/-	**Sd/-**	**Sd/-**
(Anjuli Chandra)	**(S.S. Sarna)**	**(Kusumjit Sidhu)**
MEMBER	**MEMBER**	**CHAIRPERSON**

Certified

Sd/-

Secretary

Punjab State Electricity Regulatory Commission,
Chandigarh.

ANNEXURE - I

LIST OF OBJECTORS

Objection No.	Name & Address of Objector
1.	Khanna Paper Mills Limited, NH-3 Bye Pass, Opp. Metro Cash & Carry, Amritsar-143001, Punjab.
2.	Mawana Sugars Ltd, Unit: SIEL Chemical Complex, Charatrampur, Village Khadauli/Sardargarh, Post Box No. 52 Rajpura, Distt. Patiala, Punjab-140401.
3.	PSEB Engineers Association (Regd.), 45, Ranjit Bagh, Near Modi Mandir, Passey Road, Patiala.
	(Additional Comments): PSEB Engineers Association (Regd)
4.	Comments/Observations of Government of Punjab, Department of Power, (Power Reforms Wing), Chandigarh.

ANNEXURE - II

OBJECTIONS – PSTCL

Objection No. 1 : Khanna Paper Mills Limited, NH-3 Bye Pass, Opp. Metro Cash & Carry, Amritsar-143001, Punjab.

Issue No. 1: Transmission Losses

PSTCL has submitted the transmission loss of 3.12% (actual) for FY 2017-18, 2.80% (RE) for 2018-19 and 2.70% (proj.) for 2019-20. PSTCL has itself offered 2.80% transmission loss for 2017-18 in ARR of FY 2018-19 but now increased to 3.12% and a target of 2.80% has been proposed for FY 2018-19. PSTCL has not achieved the set target of transmission loss despite approval of Capital Investment Plan as requested by PSTCL. The losses have increased when same system transmitted higher quantum of energy and the losses are varying in some months though quantity of electricity transmitted is almost same.

The skewed figures of Transmission loss indicates that the transmission system is not being put to use in an efficient manner and needs to be operated to minimize the transmission losses. The trajectory proposed by the Commission needs to continued. Further new lines and substations needs to be developed so as to reduce losses.

Reply of PSTCL:

Transmission losses are higher as demand curve is not uniform having peak of 12000 MW and crest of 3000 MW. Thermal generation is costly and plants are shut down even when running of these are compulsory for reducing transmission losses.

PSTCL has calculated theoretical transmission losses to be 2.776% for FY 2017-18 which can safely be concluded in range of 3%.

View of the Commission:

The value of the trajectory of transmission loses, which should become the basis of projections of the Control Period, will only be fixed on the basis of truly stabilised data. Meanwhile the transmission loss has been fixed at 2.50%. Also refer para No. 2.3 at page 8 and para 3.3 at page 37 of this Tariff Order.

Issue No. 2: Funding of Capital expenditure

PSTCL is funding Capital expenditure with normative 30% equity and 70% funding. ARR figures reveal that PSTCL is funding equity through Return on Equity earned during the period. Return on Equity belongs to GOP which has invested equity in PSTCL and PSTCL on its own cannot make paper adjustments of ROE. Share capital on 31.03.17 and 31.03.18 remains same i.e. Rs. 605.38 Crores. PSTCL has neither approval to invest on equity nor having equity shares been issued to GOP on account of investment.

As per audited profit & loss statement, PSTCL has earned profit of only Rs. 5 Crores whereas PSTCL has been granted ROE of Rs. 101.78 Crore for FY 2017-18. The equity shown as invested on normative basis for capital expenditure is Rs. 106.23 Crores. PSTCL carried out paper adjustments to convert loans of capital investment into equity to gain differential of interest and ROE. When there is only Rs. 5 Crore profit, how it can be allowed to invest Rs. 106.23 Crores as equity.

PSPCL is also incurring capital expenditure but not adopting such practice and so all capital expenditure needs to be treated as long term loans.

Reply of PSTCL:

Funding of Capital expenditure in ratio of 70:30 is strictly in line with the MYT Regulations, 2014 wherein Return on Equity is considered as the regulatory profit for the respective year which cannot be compared with profit in audited accounts as the principles and basis for both are different. For example, the Commission considers Interest on Working Capital on normative basis, and not as per actuals. Therefore, it will be prudent to consider regulatory profit approved by the Commission, instead of the book profit of Rs. 5.00 Crore, while approving the normative equity addition during the

year for partial funding of Capital Expenditure.
PSTCL has claimed addition of normative equity of Rs. 106.23 Crores for FY 2017-18 for partial funding of Capital Expenditure for FY 2017-18 as per MYT Regulations, 2014.

View of the Commission:

The Commission has considered Return on equity as per Regulation 20 of PSERC MYT Regulations – 2014 in Para 2.10 of the Tariff Order at page 28.

Issue No. 3: Employee Cost

PSTCL has some reservation on value of GFA to be taken for calculation of employee cost. PSTCL has raised issue with regards to MYT Regulations to work out higher normative Employee cost and then has justified its actual employee cost. PSPCL has not raised any such issue in its ARR. This needs to be dealt strictly as per MYT Regulations and if PSTCL has some issues with Regulations, it may file a separate plea for amendment in Regulation.

Reply of PSTCL:

PSTCL‘s computation of normative employee cost are as per MYT Regulations 2014 and therefore are independent of GFA.

View of the Commission:

The Commission has determined the employee cost in line with Regulation 26 of PSERC (amended from time to time) Regulations 2014.

Issue No. 4: Funding of Loans

Paper adjustment is evident as there is no mention of funding through equity and interest charges have been claimed on all the loans. If some loans have been funded through equity then equivalent loans should have been reduced and this should have been mentioned distinctly. PSTCL should not be allowed to carry out such adjustments as per Regulations, which require that equity needs to be invested through cash flow from GOP.

Reply of PSTCL:

PSTCL has not replaced loan with equity and considered funding of capital expenditure through loan and equity. PSTCL has incurred capital expenditure of Rs. 354.10 Crores for FY 2017-18 excluding consumer contribution of Rs. 22.78 Crores. The funding of capital expenditure for FY 2017-18 is done through equity addition of Rs. 106.23 Crores and addition of loan of Rs. 247.87 Crores. Further, PSTCL undertook refinancing of PSPCL loan of Rs. 495.57 Crores from PFC to avail the benefit of lower interest rate offered by PFC.

View of the Commission:

The Commission has determined the Debt and equity ratio as per Regulation 19 of PSERC MYT Regulations 2014.

Issue No. 5: Return on Equity (ROE)

ROE needs to be granted only on the Equity actually invested by GOP and not on normative figures.

Reply of PSTCL:

PSTCL has funded 30% capital expenditure through equity in FY 2017-18 by re-investing RoE.

View of the Commission:

ROE is allowed by the Commission in line with Regulation 20 of PSERC MYT Regulations 2014.

Issue No. 6: Reserves and Surpluses

As per its balance sheet, PSTCL has reserves and surpluses of Rs. 2858.93 Crore and Equity of Rs. 605.88 Crore which works out to 4.39 times the equity amount. Consumers are being made to pay 15.50% RoE on equity amount, whereas Reserves and Surplus are not earning any revenue for PSTCL or the consumers. PSTCL should explore liquidation of some equity to GoP to reduce the burden of RoE and for lowering of tariff.

Reply of PSTCL:

PSTCL has major part of the reserves and surplus of Rs. 2858.93 Crore is in the nature of capital reserve represented by fixed assets which cannot be liquidated.

View of the Commission:

The Commission has determined the Debt and equity ratio as per Regulation 19 of PSERC MYT Regulations 2014.

Issue No. 7: Transformation Capacity

PSTCL has transformation capacity of 34954 MW at 220/132 KV levels on 31.03.2018 against 13562 WM contracted demand of PSPCL. Peak demand served by PSPCL during last paddy is 12650MW. In view of huge transformation capacity compared with peak demand being about 2.76 times, the capital investment plan needs to be reviewed critically for pay back as the assets created will require operation and maintenance and interest pay out etc. but may not be used to their capacity.

Reply of PSTCL:

The objection with respect to Transformation Capacity of 34954 MVA against peak demand of 12560 MW is not tenable as the same has not been supported by any technical reasons. The transformation capacity of PSTCL is on lesser side as per the following table.

Description	National Source - Water & Energy International Journal Vol. 61	PSTCL
Transformation Capacity on 31.12.2018	8,75,013 MVA	35,839 MVA
Demand Met	1,60,752 MW	12,650 MW

View of the Commission:

PSTCL should ensure that any transformation capacity to be added in future should be based on load flow studies and in consultation with PSPCL.

Objection No. 2: Mawana Sugars Ltd, Unit: SIEL Chemical Complex, Charatrampur, Village Khadauli/Sardargarh, Post Box No. 52 Rajpura, Distt. Patiala, Punjab-140401.

Issue No. 1: Interest on Working Capital

PSTCL has challenged the disallowances of some of minimum alternate tax on various counts in Tariff Order for FY 2014-15 in APTEL which has decided all issues on 14.01.2016 except issue of calculation of interest of working capital @ 6.75% instead of SBI rate. Same issues also relate to present ARR for FY 2016-17 under consideration. It is requested that the decision of the APTEL on the issues be kept in view while deciding the present ARR.

Reply of PSTCL:

PSTCL Petition is regarding True up of FY 2017-18, APR of FY 2018-19 and determination of revised ARR and Tariff for FY 2019-20, and doesn’t involve FY 2016-17. Further, PSTCL submits that it has made detailed submission in its Petition, and requests the Commission to take appropriate view on it.

View of the Commission:

Noted.

Issue No. 2: Return on Equity

The Commission has approved 15.5% return on equity for 2010-11 to 2018-19 purportedly as per PSERC regulations as per FRP approved by GOP increasing cost of assets by their revaluation and merging the Consumer Contributions, subsidies and grants with GOP equity leading to increase in equity share capital of PSTCL from Rs. 328.50 Crores to Rs. 605.88 Crores, as per FRP and ROE has been increased from Rs. 45.99 Crores to Rs. 93.91 Crores i.e. an increase of 204% without any fresh investment or infusion of cash by GOP or PSTCL. A similar case of PSPCL is pending in Hon’ble Supreme Court and the Order of APTEL is under Stay.

Reply of PSTCL:

It has made detailed submissions in its Petition regarding RoE as per approach adopted by the Commission in previous Order, in line with PSERC MYT Regulations, 2014. Further, since the appeal in similar case of PSPCL is pending with Hon’ble Supreme Court, the Commission may take appropriate view in this regard.

View of the Commission:

The Commission has considered return on equity as per PSERC MYT Regulations 2014. The decision of the Hon'ble Supreme Court is awaited.

Issue No. 3: Transmission Losses

PSTCL has submitted the transmission loss of 3.12% (actual) for FY 2017-18, 2.80% (RE) for 2018-19 and 2.70% (proj.) for 2019-20. PSTCL has itself offered 2.80% transmission loss for 2017-18 but now increased to 3.12% and a target of 2.80% has been proposed for FY 2018-19. PSTCL has not achieved the set target of transmission loss despite approval of Capital Investment Plan as requested by PSTCL. The losses have increased when same system transmitted higher quantum of energy and the losses are varying in some months though quantity of electricity transmitted is almost same.

The skewed figures of Transmission loss indicates that the transmission system is not being put to use in an efficient manner and needs to be operated to minimize the transmission losses. The trajectory proposed by the Commission needs to continued. Further new lines and substations needs to be developed so as to reduce losses.

Reply of PSTCL:

Refer reply of PSTCL in issue No. 1 of Objection No. 1 at page 79.

View of the Commission:

Refer view of the Commission in issue No. 1 of Objection No. 1 at page 79.

Issue No. 4: Employee Cost

PSTCL has some reservation on value of GFA to be taken for calculation of employee cost and raised some issues with regards to MYT Regulations to work out higher normative employee cost and then justifies its actual employee cost. This needs to be dealt strictly as per MYT Regulations and if PSTCL has some issues with Regulations, it may file a separate plea for amendment in Regulations.

Reply of PSTCL:

Refer reply of PSTCL in issue No. 3 of Objection No. 1 at page 80.

View of the Commission:

Refer view of the Commission in issue No. 3 of Objection No. 1 at page 80.

Issue No. 5: Funding of Capital expenditure

PSTCL is considering funding of its capital expenditure with 30% equity and 70% funding and this equity is being funded through return of equity earned during this period. ROE belongs to GoP which has invested in PSTCL. Equity share capital as on 31.03.2017 and 31.03.2018 remains same i.e. Rs. 605.38 Crores. Thus neither there is any approval of GOP to invest in equity nor have equity shares been issued to GOP on account of investment. PSTCL has been granted ROE of Rs. 101.78 Crores for FY 2017-18. The profit is only Rs. 5.00 Crores whereas equity invested for capital expenditure is Rs. 106.23 Crores. PSTCL has carried out jugglery of figures to convert loans of capital investment into equity to gain differential of interest and ROE.

PSPCL is also incurring capital expenditure but not adopting such practice and so all capital expenditure needs to be treated as long term loans.

Reply of PSTCL:

Refer reply of PSTCL in issue No. 2 of Objection No. 1 at page 79.

View of the Commission:

Refer view of the Commission in issue No. 2 of Objection No. 1 at page 79.

Issue No. 6: Funding of Loans

There is no mention of funding through equity but interest charges have been claimed on all the loans.

Reply of PSTCL:

Refer reply of PSTCL in issue No. 4 of Objection No. 1 at page 80.

View of the Commission:

Refer view of the Commission in issue No. 4 of Objection No. 1 at page 80.

Issue No. 7: Return on Equity (ROE)

ROE needs to be granted only on the Equity actually invested by GoP and not on normative figures.

Reply of PSTCL:

Refer reply of PSTCL in issue No. 5 of Objection No. 1 at page 80.

View of the Commission:

Refer view of the Commission in issue No. 5 of Objection No. 1 at page 80.

Issue No. 8: Reserves and Surpluses

As per its balance sheet, PSTCL has reserves and surpluses of Rs. 2858.93 Crores and Equity of Rs. 605.88 Crores which works out to 4.39 times the equity amount. Consumers are being made to pay 15.50% RoE on equity amount, whereas Reserves and Surplus has no returns. PSTCL should explore liquidation of some equity to GoP to reduce the burden of RoE and for lowering of tariff.

Reply of PSTCL:

Refer reply of PSTCL in issue No. 6 of Objection No. 1 at page 80.

View of the Commission:

Refer view of the Commission in issue No. 6 of Objection No. 1 at page 80.

Issue No. 9: Transformation Capacity

PSTCL has transformation capacity of 34954 MW at 220/132 KV levels on 31.03.2018 against 13562 WM contracted demand of PSPCL. Peak demand served by PSTCL during last paddy is 12650MW. In view of huge transformation capacity compared with peak demand being about 2.76 times, the capital investment plan needs to be reviewed critically for pay back as the assets created will required operation and maintenance and interest pay out etc. but may not be used to their capacity

Reply of PSTCL:

Refer reply of PSTCL in issue No. 7 of Objection No. 1 at page 81.

View of the Commission:

Refer view of the Commission in issue No. 7 of Objection No. 1 at page 81.

Objection No. 3: PSEB Engineers Association (Regd.), 45, Ranjit Bagh, Near Modi Mandir, Passey Road, Patiala.

Issue No. 1: O&M charges of PSTCL

New CERC Tariff Norms for period 2019-24 will become effective from 01.04.2019. As per draft notification of CERC regarding various norms the total O&M charges for PSTCL admissible per year are Rs. 500 Crores whereas amount stated in ARR (which is employee cost, R&M and A&G expenses) works out to be Rs. 594.23 Crores. PSTCL may check up whether any expenses out of O&M charges are required to be Capitalized and hence reduced from the ARR table.

Reply of PSTCL:

PSTCL has computed the Net Employee Costs and Net R&M and A&G Expenses for FY 2019-20 strictly in accordance with PSERC MYT Regulations, 2014, as amended from time to time.

View of the Commission:

The Commission has determined O&M expenses in line with Regulation 26 (amended from time to time) of PSERC MYT Regulations 2014.

Issue No. 2: O&M charges

The O&M charges are to be seen with respect to the salient outlines of the PSTCL system.

Reply of PSTCL:

No Comments.

View of the Commission:

Refer to the views of the Commission in issue no. 1 above.

Issue No. 3: Transmission Losses

Monthly transmission losses of PSTCL are varying from 2.01 to 4.99% with average loss of 3.12%. CERC has discussed transmission losses in a discussion paper which states that transmission losses considered in present scheduling framework is 4.5 to 5% for inter-State transmission system and 4 to 4.5% for intra State transmission system. The net power delivered to distribution periphery is reduced by 9-10%, which has an impact on cost of supply. An option could be to introduce the norms for inter State transmission losses based on factor within control and International benchmarks.

Reply of PSTCL:

Transmission losses are higher as demand curve is not uniform having peak of 12000 MW and crest of 3000 MW. Thermal generation is costly and plants are shut down even when running of these are compulsory for reducing transmission losses.

PSTCL has calculated theoretical transmission losses to be 2.776% for FY 2017-18 which can safely be concluded in range of 3%.

View of the Commission:

There is a huge variation in losses during same months of the FY 2017-18 and FY 2018-19 and even during the months which have comparable energy inputs.

True up value of the trajectory of transmission loses, which should become the basis of projections of the Control Period, will only be fixed on the basis of truly stabilised data.

Also refer para No. 2.3 at page 8 and para 3.3 at page 37 of this Tariff Order.

Issue No. 4: Depreciation

As per CERC methodology for year 2014-19, the generation/transmission assets are having 70% debt and 30% equity. Amount recovered through depreciation is used to repay debt. Total depreciation is limited to 90% of the capital cost of asset. An anomalous situation may arise in case of assets which are in service for 25 years or more. When depreciation accumulates more than 70%, outstanding loans would get reduce to zero. So while depreciation is recovered every year through tariff but there is no corresponding reduction in debt and capital cost because the debt of 70% has already been recovered/repaid. By this State beneficiary have to pay higher tariff while corresponding tariff relief is not given.

In amended methodology proposed by CERC, residual value of asset of generation or transmission will be 5% instead of 10%. Further, the depreciation will be used to reduce loan and when loans reduced to zero then further depreciation is utilized to reduce equity amount which will ultimately reduced to 5%. With this beneficiaries would have to pay lower tariff by way of reduced ROE component, while licensee would suffer reduced profit and inadequate funds for O&M.

Reply of PSTCL:

PSTCL has followed the methodology given in PSERC MYT Regulations, 2014 and as amended from time to time for the 1st Control Period from FY 2017-18 to FY 2019-20.

View of the Commission:

The Commission has determined the expenses as per PSERC MYT Regulations 2014.

Objection No. 3 (Additional Comments): PSEB Engineers Association (Regd).

Issue No. 1: Spare ICT of 400 kV class, 315 or 500 MVA for PSTCL.

Presently PSTCL has about 30 ICTs of 315 or 500MVA, 400/220 kV by which power from 400 kV system is delivered to 220 kV network of PSTCL. In case there is breakdown or outage of even one ICT it could lead to crisis in meeting load and power cuts. With 30 transformers in service it would be desirable to have one spare ICT of 500 MVA 400/220 KV. However this would be expensive. PSTCL may explore the alternative of pooling of spares with PGCIL so that spare ICT being maintained by PGCIL (for northern region) could also be used for PSTCL as and when required for PSTCL. The commercial terms can be worked out mutually.

Reply of PSTCL:

The 400 kV systems is designed confirming to MVA contingency criteria and once the system is designed and approved by NLDC for N-1 contingency there is no need of any spare ICT.

View of the Commission:

The objector may note the response of PSTCL.

Issue No. 2: Loading of ICTs beyond 70%

PSTCL should put on its website a list of ICTs which have been loaded beyond 70% capacity in the past. This will become basis for determining future ICTs requirement to avoid overloading.

Reply of PSTCL:

PSTCL is regularly up loading the loading status of PSTCL Transmission Lines and Sub Stations with respect to any line and any Sub Station getting over loaded on its website, as per PSERC Directive.

View of the Commission:

The objector may note the response of PSTCL.

Issue No. 3: Emergency Restoration System (ERS)

PGCIL maintains ERS Emergency restoration system to restore 400 kV line in case of tower failure, in least possible time. PSTCL may consider having one ERS (or tie up arrangement with PGCIL).

Reply of PSTCL:

PSTCL had already procured two sets of ERS systems way back of in 2017 and the same are operational.

View of the Commission:

The objector may note the response of PSTCL.

Objection No. 4: Government of Punjab, Department of Power, (Power Reforms Wing).

Issue No. 1: Revenue Gap

Presently, the financial position of PSTCL is not so good. While PSTCL has been showing improvement in its fiscal health, this trend needs to be supported and encouraged. A utility can best serve its consumers when it is financially viable.

In the Revised Estimates for FY 2018-19, PSTCL has depicted revenue gap as Rs.137.56 Crore approximately. The increase in the gap is mainly because of increase in Employee Cost, Interest Charges, Return on Equity etc. It is the statutory duty of the State Government to promote the Financial, Operational and Technical viability of PSTCL. Hence, in terms of Section 86 of the Electricity Act, 2003, the Commission in pursuance to its duties is requested to suggest a road map to meet this goal.

View of the Commission:

PSTCL has accumulated profit of Rs. 394.82 Crore as per Audited Annual Accounts FY 2017-18. PSTCL is also able to invest 30% of capital expenditure out of profit accumulated. The finances of PSTCL are sufficient to meet the expenditure as per Audited profit & loss account of FY 2017-18. Revenue Gap is determined keeping in view the expenses and income approved by the Commission as per PSERC Regulations.

Issue No. 2: Disallowances

The Commission while determining electricity tariff has been making some disallowances. These have been mainly related to employee costs and interest charges. Disallowance in Actual expenses such as Employee Costs, Interest Charges etc. affects financial position of Utility and erode its capacity to make investments that would help it provide quality and affordable power to the consumers in the State.

View of the Commission:

The Commission processes the ARR as per the notified regulations and accordingly determines the ARR on prudent check of the expenses projected in the ARR. The justified costs are allowed to the utility after processing the ARR as per notified regulations (amended from time to time). The Commission has stressed upon PSTCL in its various Tariff Orders to improve its working by limiting its expenses within the approved amount and improving its performance parameters. The utility has to improve its performance through various efficiency measures and achieve the targets in respect of various parameters fixed by the Commission.

Issue No. 3: Employee Cost

The Commission has been consistently disallowing the Employee Cost to the Utility, which can in no way be reduced, since the terms and conditions of an employee once recruited cannot be changed to his disadvantage during the course of his service. Further, the employees who are retiring are also contributing to increase in employee cost of PSTCL by way of payment of Gratuity, Pension etc. The actual employee cost should be allowed as pass through as it is a legitimate historical component of the cost of supply and a committed liability of PSTCL.

PSTCL has proposed employees cost for 2019-20 at Rs.531.58 Crore against 2018-19 (RE) of Rs.495.53 Crore. PSTCL is striving hard to reduce employee cost and bring in efficiency, but it will take time for PSTCL to reduce the employee cost and bring it at par with other advanced State Utilities. Till then, the Employee Cost, which is a genuine cost of Utility, must be passed on to the end consumers on an actual basis keeping in view the APTEL Judgments and genuine requirements which are statutory in nature. Therefore, the Commission is requested to allow employee cost as projected by PSTCL.

View of the Commission:

The Commission allows employee cost as per PSERC MYT Regulations-2014 (amended from time to time)/APTEL Judgment. While approving employee cost, terminal benefits are allowed on actual basis.

Issue No. 4: Administration and General (A&G) expenses and Repair & Maintenance (R&M)

The PSTCL has submitted the Administration and General (A&G) expenses and Repair & Maintenance (R&M) expenses and to provide quality, uninterrupted and affordable power to its valuable consumers in the State, special Repair & Maintenance works in addition to General Repair& Maintenance that has to be carried out. The State Government has been taking huge initiative for providing quality, uninterrupted and affordable power to its valuable consumers in the State and the transmission system needs to maintain at its best. Repair & Maintenance of Transmission System with appropriate replacements of equipments and renovations is of great importance so that uninterrupted supply can be maintained and grid failure be avoided. The Commission is requested to allow Administration and General (A&G) expenses and Repair & Maintenance (R&M) Expenses as submitted by PSTCL.

View of the Commission:

The Commission allows R&M and A&G Expenses as per Regulation-26 of PSERC MYT Regulations-2014 (amended from time to time) after prudent check.

Issue No. 5 & 6: Capital Expenditure/Capacity Addition

The PSTCL has submitted Capital Expenditure of Rs. 310.72 Crore and Rs.521.62 Crore during FY 2018-19 and FY 2019-20 respectively which includes works related with construction of new Sub-Stations, new lines, addition and augmentation of transmission system to cope up with the growing demand, Automation of Five 220 KV Sub-Stations, ERP etc., laying of transmission network for evacuation of power from generation projects in the State as well as for evacuation of power share of Punjab from various Central Sector Projects.

Because of the capacity addition in the State Generation, appropriate Transmission capacity is also required to be created. The Commission is requested to allow these expenses keeping in view the overall expenditure of the utility.

View of the Commission:

The Commission allows the capital expenditure after prudence check as per PSERC Regulations. Refer para 3.4 and 3.5 of this Tariff Order (Page 39 to 43).

Issue No. 7: SLDC Business

PSTCL is discharging the statutory functions of the State Load Dispatch Centre (SLDC) in the State of Punjab. SLDC in Punjab has started working independently since FY 2011-12. PSTCL has submitted the revised estimates for SLDC to the tune of Rs.23.39 Crore for FY 2018-19 and total revenue requirement of Rs. 20.36 Crore for FY 2019-20 for monitoring grid operations, supervision and control over the intra state transmission system, carrying out real time operations for grid control and dispatch of electricity within the state through secure and economic operation of the State grid in accordance with Grid Standards and State Grid Code. The SLDC is pivotal to the State's power sector. Its financial, operational and technical viability has to be maintained at every cost. The Commission is requested to approve the expenditure as detailed in the ARR for smooth functioning of SLDC.

View of the Commission:

The Commission separately approves the expenses projected in the ARR for SLDC business of

PSTCL in accordance with PSERC Regulations after prudence check.

Issue No. 8:

The Commission is requested to keep in view above aspects, overall expenditure of the utility and various guidelines/ instructions issued by Ministry of Power, Government of India and various Judgments by APTEL and other Courts so that a financial, operational and technical viability of PSTCL is maintained while finalizing the tariff for FY 2019-20.

View of the Commission:

The Commission determines the net revenue requirement keeping in view the PSERC Regulations, guidelines /instruction issued by MoP, GoI, as well as the judgment of the APTEL and other Courts.

<u>ANNEXURE - III</u>

Minutes of the Meeting of State Advisory Committee of Punjab State Electricity Regulatory Commission, Chandigarh held on 12th February, 2019.

The meeting of the PSERC, State Advisory Committee was held in the office of the Commission at Chandigarh on 12th February, 2019 to discuss Petition of True up for FY 2017-18, Annual Performance Review and Annual Revenue Requirement for FY 2018-19 and FY 2019-20 respectively filed by PSPCL and PSTCL. The following were present/ represented:

Sr. No.	Name and Address	Designation
1.	Ms. Kusumjit Sidhu Chairperson, PSERC, SCO 220-221, Sector-34-A, Chandigarh.	Ex-officio Chairperson
2.	Er. S.S. Sarna Member, PSERC, SCO 220-221, Sector-34-A, Chandigarh.	Ex-officio Member
3.	Er. Anjuli Chandra Member, PSERC, SCO 220-221, Sector-34-A, Chandigarh.	Ex-officio Member
4.	Principal Secretary Department of Power, Government of Punjab, Chandigarh.	Member
5.	Principal Secretary New and Renewable Sources of Energy (NRSE), Govt. of Punjab, Chandigarh (Represented by Sh. R.S. Randhawa, CEO, PEDA)	Member
6.	Smt. Parneet Mahal Suri, Secretary, PSERC, SCO 220-221, Sector-34-A, Chandigarh.	Ex-officio Secretary
7.	Chairman-cum-Managing Director, PSPCL, The Mall, Patiala.	Member
8.	Chairman-cum-Managing Director, PSTCL, The Mall, Patiala	Member
9.	Labour Commissioner, Deptt. of Labour & Employment, Government of Punjab, Chandigarh (Represented by Mr. Vikas Kumar, Labour-cum-Conciliation Officer)	Member
10.	Chairman, Punjab Farmers' Commission for the State of Punjab, Punjab Mandi Board, Bhawan and Sector-65 A, Phase-XI, Mohali, Punjab.	Member
11.	S. Bhupinder Singh Mann, Ex-MP, (Rajya Sabha), National President (BKU), Chairman, National Kisan Coordination Committee, Outside Qazi Mori Gate, Batala, District Gurdaspur	Member
12.	Chairman, CII, Punjab State Council, Sector 31-A, Chandigarh (Represented by Dr. Harish Anand, of CII Punjab State Council)	Member

Sr. No.	Name and Address	Designation
13.	Chairman, PHDCCI, Punjab Committee, Sector 31-A, Chandigarh	Member
14.	Director, Local Govt. Department, Punjab, Chandigarh. (Represented by Sh. S.P. Singh, Executive Engineer)	Member
15.	Director, Agriculture Department of Agriculture Govt. of Punjab, Chandigarh. (Represented by Sh. Bhagwant Singh Kalsi, Agriculture Engineer, Punjab)	Member
16.	Indian Energy Exchange Limited, Fourth Floor, TDI Centre, Plot No.-7, Jasola, New Delhi-110025	Member
17.	Chief Engineer, Punjab Agriculture University, Ludhiana	Member
18.	Sh. P.P. Singh Vice President (E&U) Nahar fibers, Ludhiana	Member
19.	Sh. P.S. Virdi, President, The Consumer Protection Federation (Regd.), Kothi No. 555, Phase-1, Sector-55, Mohali.	Member
20.	Mr. Nitin Bhatt, Regional Manager – Punjab/Haryana, Chandigarh. Energy Efficiency Services Limited, 4th floor, IWAI Building, A-13, Sector-1, Noida-201301	Member
21.	Sh. Mohinder Gupta, President, Mandi Gobindgarh, Induction Furnaces Association, Gobindgarh	Member

At the outset, the Chairperson welcomed the members of the State Advisory Committee to the meeting of the newly constituted Committee and thanked everyone present for having taken out time to attend the meeting. The Chairperson thereafter requested the members to offer suggestions/comments on the Petitions of True Up for FY 2017-18, APR for FY 2018-19 and Revised Estimates for the MYT control period financial year 2019-20 filed by PSPCL and PSTCL. The Chairperson appreciated the progress shown by Punjab State Power Corporation Limited in the sale of surplus power out of Punjab. Sh. S.S. Sarna, Member/PSERC highlighted the Commission's concern for the protection of consumers' interest and grievances redressal in an effective manner and sought views/suggestions of the Members of the State Advisory Committee to ensure speedy resolution of complaints of power consumers of State of Punjab Smt. Anjuli Chandra, Member/PSERC also welcomed State Advisory Committee Members requested them to give their suggestions for promoting industry in the State of Punjab. Smt. Anjuli Chandra sought the views of the Members for optimum utilization of available power by enhancing consumption by the existing industry as well as by ensuring that the sick/shutdown industry is revived.

The Chairperson informed that the Commission has set up a Consumer Advocacy Cell headed by Dy. Director/M&F, Nodal Officer, with the primary object of generating consumer awareness and educating them on the process of consumer grievance redressal and other matters relating to their rights and duties. The Chairperson further stated that the Commission, recently, commissioned a "***Survey on Electricity Consumer Satisfaction in the State of Punjab***" through University Business School, Punjab University, Chandigarh. The Commission is of the belief that the benefit of electricity reforms can reach the consumers only when they participate effectively in the regulatory process and considering the special nature of the Electricity Act, consumers need to be educated & empowered by way of information to play their vital role.

Thereafter, the members gave their valuable suggestions / views as under:

1. **Principal Secretary / Department of Power** stated that PSPCL tariff rates are competitive and less than most of the States except the hill States. He also high-lighted the following issues :

- PSPCL has reduced its employee cost and T&D losses.
- 70% of our power requirement is met through power purchase. Cost of generation is going up day by day due to increase in coal cost and Railway freight charges. PSPCL's generating plants are suffering losses of around 60-70 paise per unit.
- Power grid has also revised the methodology of charging transmission charges from Stamp method to PoC method and States like Punjab are the worst sufferer. Moreover, Central Utilities are earning profit at the cost of State Utilities.
- PSPCL was expecting to be in profit during FY 2018-19. But, on account of BBMB arrears, interest liability due to non-receipt of funds under UDAY Scheme and increase in cost of power by Central Utilities, an increase in tariff by 20% in the ARR filed by PSPCL for FY 2019-20 has been envisaged. However, in view of the overall position of State Consumers, an increase in tariff of 6 to 8% may be considered to avoid the tariff shock to the consumers.

2. **Sh. Bhupinder Singh Mann** stated that agriculture be considered as an industry. It is contributing to the state as well as to the nation through taxes collected through Punjab Mandi Board and Food Corporation of India. It was also stated that

agriculture is not being subsidized free of cost by the Govt. and that approximately, 7000-7500 crore p.a. is being paid by the Farmers through local taxes, charges etc. to the Govt. Agencies as and when agriculture goods, equipments are purchased by the farmers and also through proceeds of crops sold in the market. He further informed the committee about the hardships being faced by the agriculture sector.

3. **Sh. Ajay Vir Jakhar, Chairman of Punjab State Farmers Commission** stressed the importance of transparency in the process of decision making.

4. **Sh. Rajesh Mendiratta of Indian Energy Exchange Limited, New Delhi** informed about the latest trend in the electricity transactions w.r.t. intra-day market. He further stated that non-solar RPO compliance should be adjustable against Solar RPO compliance and vice-versa. It was informed by him that renewable energy will be available soon through trading on the power exchanges. The obligated entities will have the choice of purchasing RE power through exchange or purchase of RECs for RPO compliance.

   It was discussed that the Commission has already allowed adjustment of the shortfall in non-solar RPO compliance against the surplus solar RPO compliance by the distribution licensee in the State in FY 2016-17 and FY 2017-18.

5. **Sh. R.S. Sachdeva, Chairman/PHDCCI** congratulated the Commission for efforts made by it during the last 2 years as also the PSPCL for substantial reduction in employee strength. He further suggested that:

   - Tariff Order for this year should also be issued in time and in case it is delayed due to any exigency it should be made applicable only prospectively.
   - Expenses once denied to PSPCL should not be reiterated in the future ARR's as it gives wrong indication about the tariff requirement.
   - Benefit of exceeding the threshold consumption should be continued and there should be a provision in PSPCL software for giving automatic benefit of the same to the consumers crossing the threshold limit. Proper Ledgers in these regard be maintained by licensee.
   - Maximum Overall Rate (MOR) should be specified for the industry.
   - Rationalization of voltage surcharges and rebates.
   - Prepaid meter system be implemented for Industrial Consumers.
   - Solar generation especially in DS Category be encouraged rather made mandatory

6. **Dr. Harish Anand of CII, Punjab State Council** made the following suggestions:

- Being surplus in power, efforts should be made to increase the consumption in the State i.e.:
    - Incentive for higher consumption including to those who shifts from captive power should be provided on the pattern of Gujarat/ Madhya Pradesh.
    - Open Access should be minimized.
    - Create a new tariff or provide a concessional tariff for those who want to shift their Industrial Plants from other states to Punjab.
- Detail of surplus power / cost of surrendered power to be provided in Tariff Order.
- PSPCL has not submitted any proposal for increasing the consumption within the State.
- Provision should be made in the billing software for assessment of load on the basis of consumption and based on the same consumer should be asked to get their load regularized. Spot billing in case of Industry should also be implemented to avoid delay in bill distribution.
- Continue with rebate on threshold consumption as it has given good dividend.
- Provision of incentive/ disincentive should be made for the areas having low/ high distribution losses.
- Power cut timings be reduced to avoid revenue losses.
- New Technology meters, which record the load also should be installed, so as to detect the excess load connected by some of the consumers.
- Dispute Settlement Mechanism should be strengthened in such as a way that same nature of dispute should not arise twice as dispute between PSPCL and consumer arises due to
    - Lack of clarity in Supply Code/wrong interpretation of supply code
    - Lack of understanding of the field officer.
    - Lack of awareness at consumer end.
    - Arrangement of Lok Adalat can be worked out with the help of the Commission, GoP and PSPCL. All disputes of commercial nature pending for more than 5-7 years or 10 years may be got settled through them.
    - Region wise list of T&D losses be prepared to identify regions of high T&D

losses and corrective action taken to bring them down to average level.

7. **Sh. P.P. Singh, Vice-President, Nahar Fibers** congratulated the Commission for solving various tariff related issues in the tariff order and appreciated CMD-PSPCL for selling surplus power. He made the following suggestions:

- ToD surcharge be reduced. Further, in view of change in Time of Paddy Transplantation, period of ToD surcharge should be made applicable from 15th June instead of 1st June.
- Clarification needs to be issued regarding charging of fixed charges subject to the maximum period of 365 days in a year for which PSPCL confirmed to issue the clarification.
- Agriculture consumption needs to be recorded in kVAh to account for low power factor in the AP Sector.
- Highlighted the importance of installing capacitors on the AP motors and also suggested that power factor at the feeder level may be monitored regularly by PSPCL.

He also added that it is clear that Commission and Punjab Government are interested in establishing industry in Punjab. PSPCL has taken some initiatives for sale of surplus power which is evident from the Petition filed by PSPCL. He further expressed more confidence in the working of the Commission from Industry point of view. He also suggested that Tariff should be announced well in time.

He appreciated the constitution of Consumer Advocacy Cell in the Commission and stated that:

1. There is no denying the fact that consumer needs awareness regarding the latest rules and regulations and participation in the regulatory process as a stake holder.
2. The industry has no problem with senior PSPCL officers but at ground level there are many problems. He requested that a separate meeting be convened in this regard, in the presence of PSERC as well as PSPCL officers and representatives of industry, to have better understanding between consumers and PSPCL.

8. **Er P.S. Virdi** suggested that installation of rooftop solar PV power plants should be made mandatory for houses in Punjab. Sh. N.S. Randhawa, Chief Executive, PEDA informed that the Govt. of Punjab has made mandatory the installation of rooftop solar PV plants for Govt. buildings. However, it is not possible in case of old

buildings. In this regard, he was informed that the Commission's role is limited to Tariff fixation, specifying RPO and its compliance.

9. **Sh. Mohinder Gupta, President Mandi Gobindgarh Induction Furnaces Association, Gobindgarh,** he made following suggestions:

- Tariff should be same for Power Intensive Unites (PIU) and General Industry Units.
- Tariff Order for 2019-20 to be made effective prospectively.
- Period of exclusive night category be increased from the existing period of 8 hours.
- Power cuts/break-downs of transmission lines be eliminated/controlled as these cause lot of hardship to the industries.
- Every year the night rebate becomes effective from 00 Hrs of 1st Oct. and peak charges ceases from 24 Hrs of 30th Sept. The billing software needs to be adjusted for automatically record readings as on 00 Hrs of changeover.
- To extend night rebate period from 31st May to 15th of June in view of shifting of paddy sowing.
- MOR be specified for the industrial category or freeze the fixed charges at the present levels.
- Staff shortages at 66 KV Grid Sub- stations needs attention

10. **Sh. Nitin Bhatt, Regional Manager, Punjab/Haryana, Chandigarh, Energy Efficiency Services Limited, Noida,** stressed upon the need for reduction in cost of supply by reducing T&D losses and adopting energy efficient appliances.

While sharing progress of distribution of LED lamps in the State of Punjab, he requested the Commission that proposal of PSPCL for free distribution of LED lamps to Below Poverty Line (BPL) families be sympathetically considered.

11. **Sh. Vijay Talwar** did not attend. But sent his views/suggestions which are as under:

- Appreciated the formation of Consumer Advocacy Cell in PSERC which will further strengthened to help, guide and watch the interest of electricity consumers.
- To ease out the burden of expenses paid for surplus power that causes increase in Tariff every year, he suggested that :

- Tariff for Power Intensive Unit and General Industry under LS category should be the same so as to encourage PIU to use more power which will ultimately let Industry to compete with similar industry in other States such as Himachal, Jharkhand, Chhattisgarh, Madhya Pradesh and J&K etc.
- PIU Industry should be allowed to install independent feeder exceeding Contract Demand of 1000kVA, which will solve problem of harmonics generation and it will increase the usage of surplus power by getting un-interrupted supply.
- T.O.D. tariff and Threshold limit rebates should be allowed to all the consumers irrespective of load/voltage so as to encourage usage of electricity during night hours by switching electric appliances and replacing the gas burners with electric heater/induction heater for cooking food.
- Consumers should be allowed to increase 10% load/demand every year without any service connection charges to meet demand which will ultimately benefit PSPCL by way of additional fixed charges on extended Load/demand.
- PSPCL should release electricity connection within 30 days from receipt of Application (A&A Form) as mandated U/S 43 of Indian Electricity Act-2003.
- Feeder length should not be more than 2 KM to save line losses. Consumers near or far away from sub-stations should be charged proportionately the cost of feeder assuming 2 KM as length of feeder irrespective of actual length. This will encourage consumers to install new connections and extension in load/demand which will reduce surplus power.
- Permissible supply voltage for 11 kV should be increased to 6000kVA from 4000kVA, since 150MM2XLPE cable can take load up to 9000 kVA which will boost the installation of composite plants comprising of induction furnace with rolling mill as well as General Industry.
- LT supply should be given for getting the load sanctioned up to 150 kVA instead of 99kVA so that consumer may extend their load/demand.
- Consumers with load up to 7kW may be allowed to have 3 phase connection at their option so that consumers having single phase supply, able to install electric installations such as geysers, air conditions etc. within sanctioned load less than 7 kW.

- PSPCL should provide technical staff in the field offices especially in North Zone for the maintenance of Sub-stations and distribution lines to give un-interrupted supply.
- Fixed charges should be 40% of sanctioned contract demand instead of 80% because sanctioned load/demand of all the consumers is approximately 4000 MV/MVA which they have paid service connection charges however, capacity to cater supply by PSPCL/PSTCL is only upto maximum 13000 MV/MVA.
- PSPCL should not be allowed to charge late payment surcharge for bills more than 2 months period to avoid accumulation of defaulting amount.
- All consumers irrespective of category should be metered. To discourage un-metered supply, Tariff for flat rate supply should be increased by 25% every year. Prepaid meters are the need of the day. PSPCL should install the same immediately.
- Tariff category should be made simple and voltage wise for all consumers. Proposed categories are LT Supply: Single Phase. LT Supply: 3 Phase, HT supply: 11kV to 33 kV, EHT Supply: 66 kV and Extra EHT Supply: 132 kVA and above.

12. **Sh. N.S.Randhawa Chief Executive, PEDA** stated that requirement of non-solar and solar renewable energy will increase in view of the amended RPO trajectory by PSERC for FY 2019-20 to FY 2022-23. PEDA has to ensure that the projected capacity is added in the respective years to achieve the targets. However, PSPCL is not signing PPAs for procurement of RE power as PSPCL has not signed PPA with the selected Developers of 100% Rice Straw based plants on the plea that the rate of Rs.8.16 is very high. PEDA approached MNRE for grant of VGF for 100% Rice Straw based plants to which MNRE agreed in principle. PSPCL put a pre condition that they will purchase power from proposed projects on fixed tariff of Rs.5/- per unit. Regarding purchase of surplus power from Cogeneration power plants, PSPCL has been conducting negotiations with the Cogeneration plant developers on the rate of purchase of power instead of signing PPAs on the generic tariff notified by the Commission.

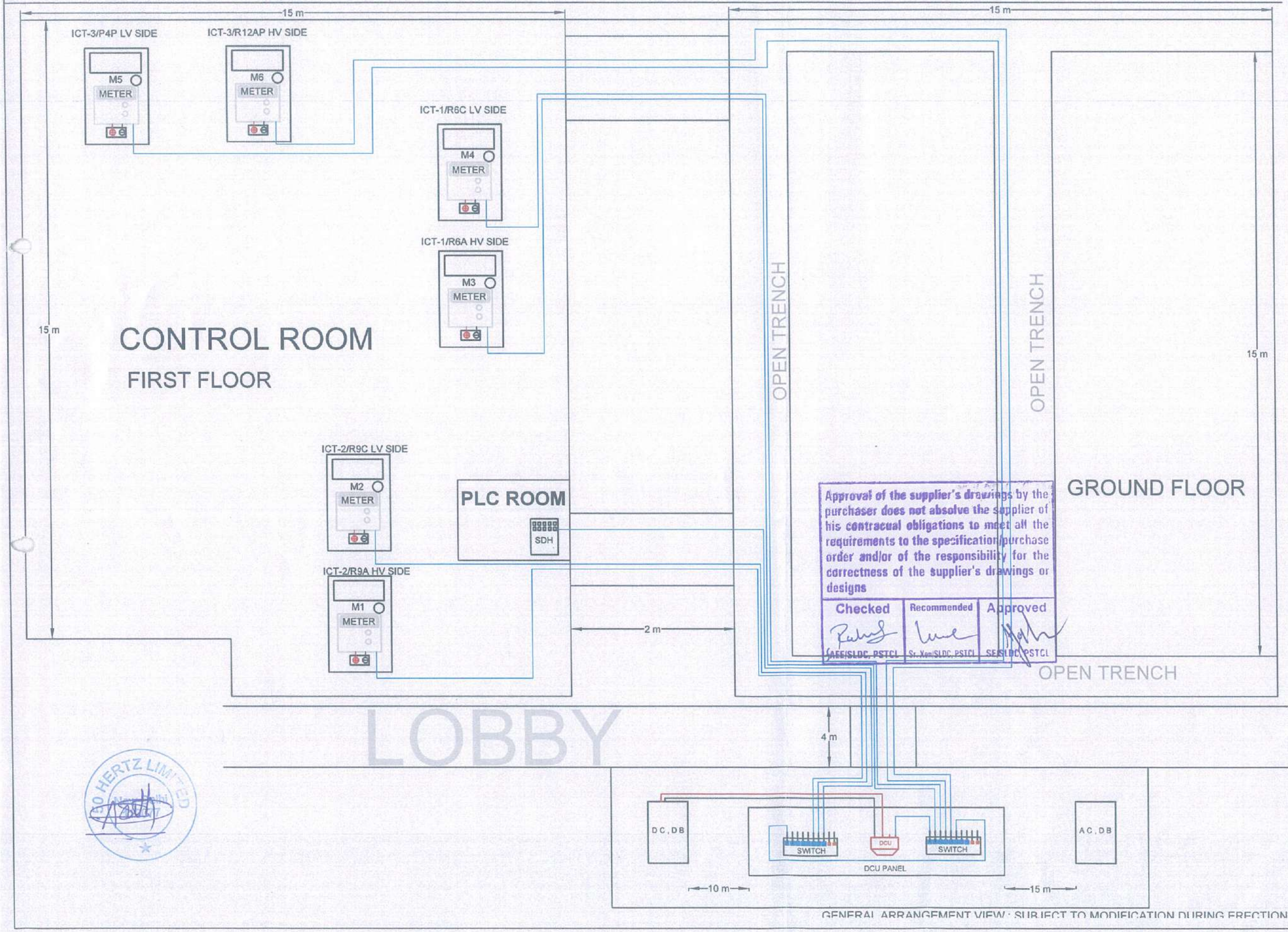
Sh. Baldev Singh Sran, CMD, PSPCL responded by stating that purchasing of costly renewable energy from the developers selected by PEDA would load the consumers of the State. The purchase of costly non-solar renewable energy is possible with the support of the State/Central Govt. through Viability Gap Funding (VGF). The rates of solar power have come down on all India basis and it is prudent to purchase solar power from the most economical sources across the country. PSPCL has no compulsion to buy renewable energy from the developers selected by PEDA and as such PSPCL should not be forced to buy the same.

13. **Sh. Baldev Singh Sran, CMD/PSPCL,** while welcoming the feedback of the committee members, informed as under:

- Typical load pattern of the State, wherein maximum demand varies from 5000-5500 MW in winter to around 12000 MW in the summer. Also there is wide variation load pattern during day and night in the winter. With this type of load, it is difficult to optimize the generation capacity of own sources and power procurement from other sources. As a result, we have surplus power during the winter.
- PSPCL is trying its best to decrease the burden of surrendered power by selling power through exchange.
- Hon'ble Supreme Court's decision regarding the payment of coal washing charges to IPPs has resulted in increased cost of power from IPPs.
- Operationalization of Pachhwara coal mine and Shahpur Kandi Hydel Project will substantially reduce cost of supply.
- PSPCL is committed to give quality supply to its consumers.
- Suitable action is being taken regarding recovery of arrears.
- The Commission has specified RPO as a percentage of the total consumption of electricity in the area of PSPCL after excluding energy from hydro sources. The percentage of RPO should be fixed by excluding all the renewable power from the total consumption of electricity in the area of PSPCL.

The meeting ended with a vote of thanks to the Chair.

400 KV S/S PATIALA



Approval of the supplier's drawings by the purchaser does not absolve the supplier of his contracual obligations to meet all the requirements to the specification/purchase order and/or of the responsibility for the correctness of the supplier's drawings or designs

Checked	Recommended	Approved
AEE/SLDC, PSTCL	Sr. Xen/SLDC, PSTCL	SE/SLDC, PSTCL

50 HERTZ LIMITED

GENERAL ARRANGEMENT VIEW : SUBJECT TO MODIFICATION DURING ERECTION

DCU	DATA CONCENTRATING UNIT
SDH	PSTCL PANEL (OPTICAL COMMUNICTION)
METER	INTERFACE ENERGY METER
SWITCH	8+2 PORT NETWORK SWITCH
	CONTROL & RELAY PANEL
MCB	MINIATURE CIRCUIT BREAKER
LIU	LIGHT INTERFACE UNIT
DC.DB	DC DISTRIBUTION BOX
	CRP DC SUPPLY
	2 IN 1 NEW METER PANEL
	4 IN 1 NEW METER PANEL
	1C*2.5 sq mm
	1C*2.5 sq mm
	4C*2.5 sq mm
	7C*2.5 sq mm
	OFC
	CAT6

BILL OF QUANTITY

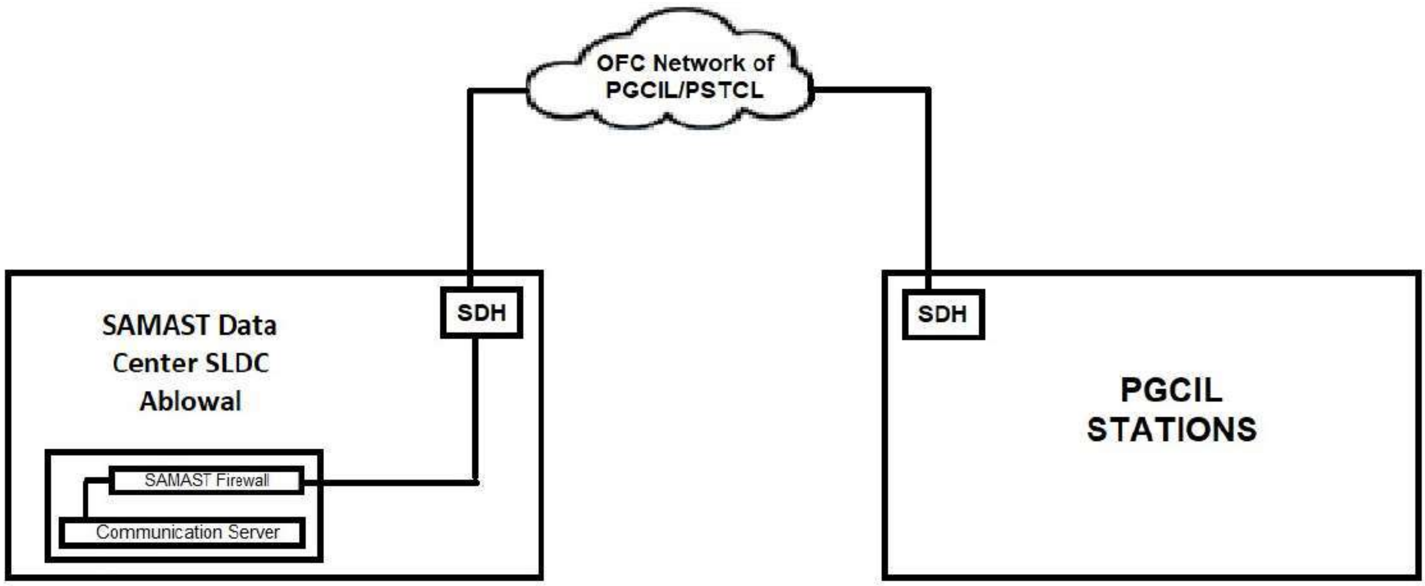
ITEM	QTY
METERS:	6 Nos
SWITCH:	2 Nos
DCU:	1 Nos
CAT 6:	277 m
PVC CONDUIT PIPE:	318 m
1C*2.5 SQ MM:	400 m
4C*2.5 SQ MM PT WIRE:	
7C*2.5 SQ MM CT WIRE:	
OFC ARMOURED:	
HDPE PIPE :	
2 NOS METER PANEL:	
4 NOS METER PANEL:	
8 NOS METER PANEL:	
LIU:	

DISMANTLE MATERIALS

1. 4 nos of old meter
2.
3.
4.
5.

SECURE METERS LTD .	
PSTCL CONTRACT NO: 5-6/SLDC-D/140/(SAMAST)	
DATED :	29-03-2022
GENERAL LAYOUT DRAWING (NOT TO SCALE)	
DRAWING NO :	SAMAST/42
REVISION :	REV-A

25


OFC Network of
PGCIL/PSTCL
SDH
SAMAST Data
Center SLDC
Ablowal
SAMAST Firewall
Communication Server
SDH
PGCIL
STATIONS

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/C&M/22-23/P/9004/AMC Extension/610683 **DT:29.03.2023**

M/s Siemens Ltd,
Plot 6A, Sector-18
Huda, Gurgaon-122015
Haryana

Sub: **Extension of AMC (2 Years) for Expansion and Up-gradation of existing SCADA/EMS System at NRLDC and SLDCs Project of Northern Region**

Dear Sir,

1.0 This has reference to the following / निम्नलिखित के संदर्भ मे:

1.1 CA No.: CC-CS/275-NR1/SCADA-1602/3/G5/CA-III/4444 dated 18.10.2012

1.2 Final Amendment dated 06.09.2017

1.3 GST Amendment dated 03.01.2019

2.0 Based on requirement, the AMC Contract under subject package has been extended for further period of 2 years in line with provisions of the Contract. On account of the above, the Contract Price of the above referred LOA has been revised from Original Contract price of INR 9,30,65,286/- to INR 11,33,28,112/- plus applicable GST as per following details:

आवश्यकता के आधार पर, विषय पैकेज के तहत एएमसी अनुबंध को 2 वर्ष की अवधि के लिए अनुबंध के प्रावधानों के अनुसार। बढ़ा दिया गया है। उपरोक्त के कारण, उपरोक्त संदर्भित अनुबंध मूल्य को 9,30,65,286/- रुपये से 11,33,28,112/- और लागू जीएसटी से निम्नलिखित विवरणों के अनुसार संशोधित किया गया है

All Values are in INR / *सभी मूल्य भारतीय रुपये में*

Description	Value as per Original Award	Value as per Instant Amendment
Annual Maintenance Contract	9,30,65,286	11,33,28,112

Further, the amended BOQ for on account payment purpose has been attached at Annexure-I
इसके अलावा, खाता भुगतान के उद्देश्य से संशोधित बीओक्यू को एनेक्सचर- I में संलग्न किया गया है।

3.0 Accordingly, the contract performance guarantee shall be revised in line with the provisions of the Contract
तदनुसार, अनुबंध निष्पादन गारंटी को अनुबंध के प्रावधानों के अनुरूप संशोधित किया जाएगा।

4.0 The Commencement date of extended AMC shall be as follows:
विस्तारित एएमसी की प्रारंभ तिथि इस प्रकार होगी:

Sr No.	Name of Constituents	Effective Date of 2 years Extension
1	HPSEBL	01.01.2023
2	DTL, UPPTCL, RRVPNL, HVPNL, PSTCL and J&K PDD	01.04.2023
3	BBMB	09.06.2023

29/03/2023

पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लि. उत्तरी क्षेत्र-I वित्त एवं लेखा फरीदाबाद

5.0 This Amendment shall form an integral part of CA No.: CC-CS/275-NR1/SCADA-1602/3/G5/CA-III/4444 dated 18.10.2012 Save & except above, all other terms and conditions of the CA shall remain unchanged.

यह संशोधन अनुबंध संदर्भ संख्या CC-CS/275-NR1/SCADA-1602/3/G5/CA-III/4444 dated 18.10.2012 का अभिन्न हिस्सा होगा | ऊपर दिये गए संशोधन छोड़कर, अनुबंध के अन्य सभी नियम और शर्तें अपरिवर्तित रहेंगी ।

6.0 This amendment is being issued to you in duplicate. Please return the duplicate copy of this amendment duly signed and stamped on each page as a token of your acknowledgement.
यह पत्र दो प्रतियों में दिया जा रहा है. हम आपसे अनुरोध करते है कि आप दूसरी प्रति विधिवत हस्ताक्षर और मुहर लगा कर रसीद की निशानी के रूप में लौटा दे I

Thanking you, / धन्यवाद

Yours faithfully,
29/03/2023

Gaurav Kumar
Ch. Manager (C&M)

पावर ग्रिड कॉरपोरेशन ऑफ इंडिया लि.
उत्तरी क्षेत्र-1
वित्त एवं लेखा
फरीदाबाद

In case of any discrepancy, English version will prevail

Copy to:
CGM (AM & ULDC)/ CGM(F&A) / Sr.GM(PPPFC, Manesar)

Expansion and Upgradation of existing SCADA/EMS Systems at SLDCs of Northern Region.

Contract Agreement No.: CC-CS/275-NR1/SCADA-1602/3/G5/CA-III/4444 dtd 18.10.2012

Price Break-up of annual Maintenance Charges Constituent wise

All Values in INR

Schedules	Description	Total Price As per LOA	Revised Price (with 2 Yrs of Extension)		
			Pre-GST	Post GST-Instant Proposal	Total
Appendix-10A (BBMB)	Price Break-up of annual Maintenance Charges including manpower and spare	92,89,025	13,10,662	96,60,210	1,09,70,872
Appendix-10A (DTL)	Price Break-up of annual Maintenance Charges including manpower and spare	92,89,025	12,86,806	95,07,016	1,07,93,822
Appendix-10A (HPSEBL)	Price Break-up of annual Maintenance Charges including manpower and spare	92,89,025	12,69,824	93,97,965	1,06,67,789
Appendix-10A (HVPNL)	Price Break-up of annual Maintenance Charges including manpower and spare	92,89,025	15,42,834	1,11,51,099	1,26,93,933
Appendix-10A (J&KPDD)	Price Break-up of annual Maintenance Charges including manpower and spare	1,85,78,050	25,93,010	1,91,38,597	2,17,31,608
Appendix-10A (RRVPNL)	Price Break-up of annual Maintenance Charges including manpower and spare	92,89,025	13,79,810	1,01,04,243	1,14,84,054
Appendix-10A (PSTCL)	Price Break-up of annual Maintenance Charges including manpower and spare	92,89,025	12,36,121	91,81,543	1,04,17,664
Appendix-10A (UPPTCL)	Price Break-up of annual Maintenance Charges including manpower and spare	1,87,53,086	28,74,328	2,11,48,028	2,40,22,356
Appendix-10A (CS)	Price Break-up of annual Maintenance Charges including manpower and spare	-	-	5,46,014	5,46,014
	Total Price Break-up of Annual Maintenance Charges including manpower and spare	**9,30,65,286**	**1,34,93,397**	**9,98,34,715**	**11,33,28,112**

24/03

पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लि.
उत्तरी क्षेत्र-I
वित्त एवं लेखा
फरीदाबाद

Expansion and Upgradation of Existing SCADA/EMS systems of NRLDC and SLDCs of Northern Region

Contract Agreement No.: CC-CS/275-NR1/SCADA-1602/3/G5/CA-III/4444 dtd 18.10.2012

Sl. No.	Region	Description of Item as per LOA	HSN/SAC code	Unit	As per LOA			Instant Amendment (with 2 Yrs Extension)		Unit Price	Revised Price (with 2 Yrs of Extension)	
					Qty	Unit Rate	Total Price	Qty Executed prior to 30.06.2017	Post GST Qty. with 2 Yrs of Extension	GST complied unit price	Total Pre GST	Total Post GST
1.1	BBMB	Annual maintenance Contract of SCADA/EMS System during 1 year Warranty Period	995469	Lot	1	12,17,246	12,17,246	1	-	11,39,752	13,10,662	-
1.2	BBMB	Annual maintenance Contract of SCADA/EMS System for 6 year after expiry of Warranty Period	995469	Lot	1	67,41,499	67,41,499	-	1	63,12,313	-	63,12,313
1.2(a)	BBMB	Annual maintenance Contract of SCADA/EMS System for 2 years Extension period	995469	Lot				-	1	21,04,104	-	21,04,104
1.3	BBMB	ICCP Integration for 7 years	995469	Nos.	14	20,004	2,80,056	-	14	17,395	-	2,43,537
1.4	BBMB	RTU Integration for 7 years including cabling at Control Centre	995469	Nos.	140	5,001	7,00,140	-	140	4,349	-	6,08,842
1.5	BBMB	Yearly Cyber Security Audit by Cert-IN certified Auditors	995469	Nos.	7	50,012	3,50,084	-	9	43,490	-	3,91,414
1.6	BBMB	Patch Management including Signature updates for all cyber security equipment for 9 years (7 + 2 yrs)	995469	Lot	1	Included						
		Total					92,89,025				13,10,662	96,60,210
										GST	-	17,38,838
										Sub-Total	13,10,662	1,13,99,047
										Grand Total		1,27,09,710

* Note: Unit Rates of ICCP Integration and RTU Integration shall also be applicable for next 2 years of extension period

पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लि.
उत्तरी क्षेत्र-1
वित्त एवं लेखा
फरीदाबाद

Expansion and Upgradation of Existing SCADA/EMS systems of NRLDC and SLDCs of Northern Region

Contract Agreement No.: CC-CS/275-NR1/SCADA-1602/3/G5/CA-III/4444 dtd 18.10.2012

Sl. No.	Region	Description of Item as per LOA	HSN /SAC code	Unit	As per LOA			Instant Amendment (with 2 Yrs Extension)		GST unit price	Revised Price (with 2 Yrs of Extension)	
					Qty	Unit Rate	Total Price	Qty Executed prior to 30.06.2017	Post GST Qty. with 2 Yrs of Extension	GST complied unit price	Total Pre GST	Total Post GST
1.1	DTL	Annual maintenance Contract of SCADA/EMS System during 1 year Warranty Period	995469	Lot	1	12,17,246	12,17,246	1	-	11,19,007	12,86,806	-
1.2	DTL	Annual maintenance Contract of SCADA/EMS System for 6 year after expiry of Warranty Period	995469	Lot	1	67,41,499	67,41,499	-	1	61,97,418	-	61,97,418
1.2(a)	DTL	Annual maintenance Contract of SCADA/EMS System for 2 years Extension period	995469	Lot					1	20,65,806	-	20,65,806
1.3	DTL	ICCP Integration for 7 years	995469	Nos.	14	20,004	2,80,056	-	14	17,395	-	2,43,537
1.4	DTL	RTU Integration for 7 years including cabling at Control Centre	995469	Nos.	140	5,001	7,00,140	-	140	4,349	-	6,08,842
1.5	DTL	Yearly Cyber Security Audit by Cert-IN certified Auditors	995469	Nos.	7	50,012	3,50,084	-	9	43,490	-	3,91,414
1.6	DTL	Patch Management including Signature updates for all cyber security equipment for 9 years (7 + 2 yrs)	995469	Lot	1	Included						
		Total					92,89,025				12,86,806	95,07,016
										GST	-	17,11,263
										Sub-Total	12,86,806	1,12,18,279
										Grand Total		1,25,05,085

* Note: Unit Rates of ICCP Integration and RTU Integration shall also be applicable for next 2 years of extension period

पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लि.
उत्तरी क्षेत्र-1
वित्त एवं लेखा
फरीदाबाद

Expansion and Upgradation of Existing SCADA/EMS systems of NRLDC and SLDCs of Northern Region

Contract Agreement No.: CC-CS/275-NR1/SCADA-1602/3/G5/CA-III/4444 dtd 18.10.2012

Sl. No.	Region	Description of Item as per LOA	HSN /SAC code	Unit	As per LOA			Instant Amendment (with 2 Yrs Extension)		GST unit price	Revised Price (with 2 Yrs of Extension)	
					Qty	Unit Rate	Total Price	Qty Executed prior to 30.06.2017	Post GST Qty. with 2 Yrs of Extension	GST complied unit price	Total Pre GST	Total Post GST
1.1	HPSEBL	Annual maintenance Contract of SCADA/EMS System during 1 year Warranty Period	995469	Lot	1	12,17,246	12,17,246	1	-	11,04,239	12,69,824	-
1.2	HPSEBL	Annual maintenance Contract of SCADA/EMS System for 6 year after expiry of Warranty Period	995469	Lot	1	67,41,499	67,41,499	-	1	61,15,630	-	61,15,630
1.2(a)	HPSEBL	Annual maintenance Contract of SCADA/EMS System for 2 years Extension period	995469	Lot					1	20,38,543	-	20,38,543
1.3	HPSEBL	ICCP Integration for 7 years	995469	Nos.	14	20,004	2,80,056	-	14	17,395	-	2,43,537
1.4	HPSEBL	RTU Integration for 7 years including cabling at Control Centre	995469	Nos.	140	5,001	7,00,140	-	140	4,349	-	6,08,842
1.5	HPSEBL	Yearly Cyber Security Audit by Cert-IN certified Auditors	995469	Nos.	7	50,012	3,50,084	-	9	43,490	-	3,91,414
1.6	HPSEBL	Patch Management including Signature updates for all cyber security equipment for 9 years (7 + 2 yrs)	995469	Lot	1	Included						
		Total					92,89,025				12,69,824	93,97,965
										GST	-	16,91,634
										Sub-Total	12,69,824	1,10,89,599
										Grand Total		1,23,59,423

* Note: Unit Rates of ICCP Integration and RTU Integration shall also be applicable for next 2 years of extension period

पावर ग्रिड कॉरपोरेशन ऑफ इंडिया लि.
उत्तरी क्षेत्र-1
वित्त एवं लेखा
फरीदाबाद

Expansion and Upgradation of Existing SCADA/EMS systems of NRLDC and SLDCs of Northern Region

Contract Agreement No.: CC-CS/275-NR1/SCADA-1602/3/G5/CA-III/4444 dtd 18.10.2012

Sl. No.	Region	Description of Item as per LOA	HSN /SAC code	Unit	As per LOA			Instant Amendment (with 2 Yrs Extension)		GST unit price	Revised Price (with 2 Yrs of Extension)	
					Qty	Unit Rate	Total Price	Qty Executed prior to 30.06.2017	Post GST Qty. with 2 Yrs of Extension	GST complied unit price	Total Pre GST	Total Post GST
1.1	HVPNL	Annual maintenance Contract of SCADA/EMS System during 1 year Warranty Period	995469	Lot	1	12,17,246	12,17,246	1	-	13,41,648	15,42,834	-
1.2	HVPNL	Annual maintenance Contract of SCADA/EMS System for 6 year after expiry of Warranty Period	995469	Lot	1	67,41,499	67,41,499	-	1	74,30,480	-	74,30,480
1.2(a)	HVPNL	Annual maintenance Contract of SCADA/EMS System for 2 years Extension period	995469	Lot					1	24,76,827	-	24,76,827
1.3	HVPNL	ICCP Integration for 7 years	995469	Nos.	14	20,004	2,80,056	-	14	17,395	-	2,43,537
1.4	HVPNL	RTU Integration for 7 years including cabling at Control Centre	995469	Nos.	140	5,001	7,00,140	-	140	4,349	-	6,08,842
1.5	HVPNL	Yearly Cyber Security Audit by Cert-IN certified Auditors	995469	Nos.	7	50,012	3,50,084	-	9	43,490	-	3,91,414
1.6	HVPNL	Patch Management including Signature updates for all cyber security equipment for 9 years (7 + 2 yrs)	995469	Lot	1	Included						
		Total					92,89,025				15,42,834	1,11,51,099
										GST	-	20,07,198
										Sub-Total	15,42,834	1,31,58,296
										Grand Total		1,47,01,130

* Note: Unit Rates of ICCP Integration and RTU Integration shall also be applicable for next 2 years of extension period

पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लि.
उत्तरी क्षेत्र-1
वित्त एवं लेखा
फरीदाबाद

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Expansion and Upgradation of Existing SCADA/EMS systems of NRLDC and SLDCs of Northern Region

Contract Agreement No.: CC-CS/275-NR1/SCADA-1602/3/G5/CA-III/4444 dtd 18.10.2012

Sl. No.	Region	Description of Item as per LOA	HSN /SAC code	Unit	As per LOA			Instant Amendment (with 2 Yrs Extension)		GST unit price	Revised Price (with 2 Yrs of Extension)	
					Qty	Unit Rate	Total Price	Qty Executed prior to 30.06.2017	Post GST Qty. with 2 Yrs of Extension	GST complied unit price	Total Pre GST	Total Post GST
1.1	J&K PDD	Annual maintenance Contract of SCADA/EMS System during 1 year Warranty Period	995469	Lot	2	12,17,246	24,34,492	2	-	11,27,441	25,93,010	-
1.2	J&K PDD	Annual maintenance Contract of SCADA/EMS System for 6 year after expiry of Warranty Period	995469	Lot	2	67,41,499	1,34,82,998	-	2	62,44,130	-	1,24,88,259
1.2(a)	J&K PDD	Annual maintenance Contract of SCADA/EMS System for 2 years Extension period	995469	Lot					2	20,81,377	-	41,62,753
1.3	J&K PDD	ICCP Integration for 7 years	995469	Nos.	28	20,004	5,60,112	-	28	17,395	-	4,87,073
1.4	J&K PDD	RTU Integration for 7 years including cabling at Control Centre	995469	Nos.	280	5,001	14,00,280	-	280	4,349	-	12,17,683
1.5	J&K PDD	Yearly Cyber Security Audit by Cert-IN certified Auditors	995469	Nos.	14	50,012	7,00,168	-	18	43,490	-	7,82,828
1.6	J&K PDD	Patch Management including Signature updates for all cyber security equipment for 9 years (7 + 2 yrs)	995469	Lot	2	Included						
		Total					1,85,78,050				25,93,010	1,91,38,597
										GST	-	34,44,948
										Sub-Total	25,93,010	2,25,83,545
										Grand Total		2,51,76,555

* Note: Unit Rates of ICCP Integration and RTU Integration shall also be applicable for next 2 years of extension period

पावर ग्रिड कार्पोरेशन ऑफ इंडिया लि.
उत्तरी क्षेत्र-I
वित्त एवं लेखा
फरीदाबाद

Expansion and Upgradation of Existing SCADA/EMS systems of NRLDC and SLDCs of Northern Region

Contract Agreement No.: CC-CS/275-NR1/SCADA-1602/3/G5/CA-III/4444 dtd 18.10.2012

Contract Agreement No.: CC-CS/275-NR1/SCADA-1602/3/G5/CA-III/4444 dtd 18.10.2012 (Last amendment: Ref no-N1/C&M/17-18/P/9004/Maintenance/2 Yrs Extension)

Sl. No.	Region	Description of Item as per LOA	HSN /SAC code	Unit	As per LOA			Instant Amendment (with 2 Yrs Extension)		GST unit price	Revised Price (with 2 Yrs of Extension)	
					Qty	Unit Rate	Total Price	Qty Executed prior to 30.06.2017	Post GST Qty. with 2 Yrs of Extension	GST complied unit price	Total Pre GST	Total Post GST
1.1	RRVPNL	Annual maintenance Contract of SCADA/EMS System during 1 year Warranty Period	995469	Lot	1	12,17,246	12,17,246	1	-	11,99,883	13,79,810	-
1.2	RRVPNL	Annual maintenance Contract of SCADA/EMS System for 6 year after expiry of Warranty Period	995469	Lot	1	67,41,499	67,41,499	-	1	66,45,338	-	66,45,338
1.2(a)	RRVPNL	Annual maintenance Contract of SCADA/EMS System for 2 years Extension period	995469	Lot					1	22,15,113	-	22,15,113
1.3	RRVPNL	ICCP Integration for 7 years	995469	Nos.	14	20,004	2,80,056	-	14	17,395	-	2,43,537
1.4	RRVPNL	RTU Integration for 7 years including cabling at Control Centre	995469	Nos.	140	5,001	7,00,140	-	140	4,349	-	6,08,842
1.5	RRVPNL	Yearly Cyber Security Audit by Cert-IN certified Auditors	995469	Nos.	7	50,012	3,50,084	-	9	43,490	-	3,91,414
1.6	RRVPNL	Patch Management including Signature updates for all cyber security equipment for 9 years	995469	Lot	1	Included						
		Total					92,89,025				13,79,810	1,01,04,243
										GST	-	18,18,764
										Sub-Total	13,79,810	1,19,23,007
										Grand Total		1,33,02,818

* Note: Unit Rates of ICCP Integration and RTU Integration shall also be applicable for next 2 years of extension period

पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लि.
उत्तरी क्षेत्र-I
वित्त एवं लेखा
फरीदाबाद

Expansion and Upgradation of Existing SCADA/EMS systems of NRLDC and SLDCs of Northern Region
Contract Agreement No.: CC-CS/275-NR1/SCADA-1602/3/G5/CA-III/4444 dtd 18.10.2012
Contract Agreement No.: CC-CS/275-NR1/SCADA-1602/3/G5/CA-III/4444 dtd 18.10.2012 (Last amendment: Ref no-N1/C&M/17-18/P/9004/Maintenance/2 Yrs Extension)

Sl. No.	Region	Description of Item as per LOA	HSN/SAC code	Unit	As per LOA			Instant Amendment (with 2 Yrs Extension)		GST unit price	Revised Price (with 2 Yrs of Extension)	
					Qty	Unit Rate	Total Price	Qty Executed prior to 30.06.2017	Post GST Qty. with 2 Yrs of Extension	GST complied unit price	Total Pre GST	Total Post GST
1.1	PSTCL	Annual maintenance Contract of SCADA/EMS System during 1 year Warranty Period	995469	Lot	1	12,17,246	12,17,246	1	-	10,74,931	12,36,121	-
1.2	PSTCL	Annual maintenance Contract of SCADA/EMS System for 6 year after expiry of Warranty Period	995469	Lot	1	67,41,499	67,41,499	-	1	59,53,313	-	59,53,313
1.2(a)	PSTCL	Annual maintenance Contract of SCADA/EMS System for 2 years Extension period	995469	Lot					1	19,84,438	-	19,84,438
1.3	PSTCL	ICCP Integration for 7 years	995469	Nos.	14	20,004	2,80,056	-	14	17,395	-	2,43,537
1.4	PSTCL	RTU Integration for 7 years including cabling at Control Centre	995469	Nos.	140	5,001	7,00,140	-	140	4,349	-	6,08,842
1.5	PSTCL	Yearly Cyber Security Audit by Cert-IN certified Auditors	995469	Nos.	7	50,012	3,50,084	-	9	43,490	-	3,91,414
1.6	PSTCL	Patch Management including Signature updates for all cyber security equipment for 9 years (7 + 2 yrs)	995469	Lot	1	Included						
		Total					92,89,025				12,36,121	91,81,543
										GST	-	16,52,678
										Sub-Total	12,36,121	1,08,34,220
										Grand Total		1,20,70,342

* Note: Unit Rates of ICCP Integration and RTU Integration shall also be applicable for next 2 years of extension period

पावर ग्रिड कॉरपोरेशन ऑफ इंडिया लि. उत्तरी क्षेत्र-1 वित्त एवं लेखा फरीदाबाद

Expansion and Upgradation of Existing SCADA/EMS systems of NRLDC and SLDCs of Northern Region
Contract Agreement No.: CC-CS/275-NR1/SCADA-1602/3/G5/CA-III/4444 dtd 18.10.2012

Sl. No.	Region	Description of Item as per LOA	HSN/SAC code	Unit	As per LOA			Instant Amendment (with 2 Yrs Extension)		GST unit price	Revised Price (with 2 Yrs of Extension)	
					Qty	Unit Rate	Total Price	Qty Executed prior to 30.06.2017	Post GST Qty. with 2 Yrs of Extension	GST complied unit price	Total Pre GST	Total Post GST
1.1	UPPTCL	Annual maintenance Contract of SCADA/EMS System during 1 year Warranty Period	995469	Lot	2	12,17,246	24,34,492	2	-	12,49,758	28,74,328	-
1.2	UPPTCL	Annual maintenance Contract of SCADA/EMS System for 6 year after expiry of Warranty Period	995469	Lot	2	67,41,499	1,34,82,998	-	2	69,21,561	-	1,38,43,121
1.2(a)	UPPTCL	Annual maintenance Contract of SCADA/EMS System for 2 years Extension period	995469	Lot					2	23,07,187	-	46,14,374
1.3	UPPTCL	ICCP Integration for 7 years	995469	Nos.	28	20,004	5,60,112	-	28	17,395	-	4,87,073
1.4	UPPTCL	RTU Integration for 7 years including cabling at Control Centre	995469	Nos.	280	5,001	14,00,280	-	280	4,349	-	12,17,683
1.5	UPPTCL	Yearly Cyber Security Audit by Cert-IN certified Auditors	995469	Nos.	14	50,012	7,00,168	-	18	43,490	-	7,82,828
1.6	UPPTCL	Patch Management including Signature updates for all cyber security equipment for 9 years (7 + 2 yrs)	995469	Lot	2	Included						
1.7	UPPTCL	AMC for existing VPS System at UPPTCL	995469	Lot	1	1,75,036	1,75,036	-	1	1,52,211	-	1,52,211
1.7(a)	UPPTCL	AMC for existing VPS System at UPPTCL (for 2 yrs of Extension period)	995469	Lot					1	50,737	-	50,737
		Total					1,87,53,086				28,74,328	2,11,48,028
										GST	-	38,06,645
										Sub-Total	28,74,328	2,49,54,673
										Grand Total		2,78,29,001.06

* Note: Unit Rates of ICCP Integration and RTU Integration shall also be applicable for next 2 years of extension period

पावर ग्रिड कार्पोरेशन ऑफ इंडिया लि.
उत्तरी क्षेत्र-I
वित्त एवं लेखा
फरीदाबाद

Expansion and Upgradation of Existing SCADA/EMS systems of NRLDC and SLDCs of Northern Region

Contract Agreement No.: CC-CS/275-NR1/SCADA-1602/3/G5/CA-III/4444 dtd 18.10.2012

Sl. No.	Region	Description of Item as per LOA		Unit	As per LOA			Instant Amendment (with 2 Yrs Extension)		GST unit price	Revised Price (with 2 Yrs of Extension)	
			HSN /SAC code		Qty	Unit Rate	Total Price	Qty Executed prior to 30.06.2017	Post GST Qty. with 2 Yrs of Extension	GST complied unit price	Total Pre GST	Total Post GST
1.1	CS	Annual maintenance Contract of SCADA/EMS System during 1 year Warranty Period	995469	Lot	1	-	-	-	1	65,122	-	65,122
1.2	CS	Annual maintenance Contract of SCADA/EMS System for 6 year after expiry of Warranty Period	995469	Lot	1	-	-	-	1	3,60,669	-	3,60,669
1.2(a)	CS	Annual maintenance Contract of SCADA/EMS System for 2 years Extension period	995469	Lot					1	1,20,223	-	1,20,223
		Total					-				-	5,46,014
										GST	-	98,283
										Sub-Total	-	6,44,297
										Grand Total		6,44,297

उत्तरी क्षेत्र-I
वित्त एवं लेखा
फरीदाबाद

Annexure - 4

SIEMENS

Smart Infrastructure

Name:	Sumit Bhatnagar
Department:	SI GSW GC LM
Email:	sumit.bhatnagar@siemens.com
Mobile:	+91 9999452888
Our reference:	GC LM ULDC-II/PGCIL/15/23
Date:	20-Apr-23

To,
Sh. A.K. Behera CGM (AM & ULDC)
Power Grid Corporation of India Limited
NRTS-I, RHQ,
SCO bay no 5 to 10, Sector-16A
Faridabad 121002

Subject: Cyber Security risk post End of Subscription of Internal Firewalls and External Firewalls.

Letter Copy: 1. S.E. UPSLDC
2. S.E., SLDC RRVPN
3. Sr. Xen, SLDC PSTCL
4. CISO, DTL
5. XEN, SLDC HVPNL
6. Dy. Dir, BBMB
7. A.E. JKPTCL
8. XEN, HPSLDC

Dear Sir,

Greeting from Siemens Ltd.

Based on multiple earlier communications, We would request Power Grid to decide on two mentioned points on priority.

1. Internal Firewall: Subscription is expiring on 30-Apr-2023. The Firewall is already declared End of Life by OEM and is required to be replaced ASAP. This may pose Cyber Security risks, please be informed that Siemens will not be liable for any vulnerability arising once Active Subscription ends.
   Also, once active subscription ends, Firewall may block some of the communications.

2. External Firewall: Subscription renewal date was 31-Mar-2023. As the subscription is not paid to Siemens till now, we haven't paid to our vendor yet. In all probability, the subscription will be disconnected by the end of Apr 23. Once subscription is ended, latest patches won't be available from OEM.
   Please be informed that Siemens will not be liable for any vulnerability arising once Active Subscription ends.

We request Power Grid and NR constituents to take up the above matters with highest priority.

Thanking you and assuring you our best attention at all the times.

Best Regards,

For Siemens Ltd.

Bhatnagar Sumit

Digitally signed by Bhatnagar Sumit
Date: 2023.04.20 18:26:25 +05'30'

Sumit Bhatnagar

Lifecycle Project Manager

Annexure - 5

निदेशक / विद्युत विनियम
भाखड़ा ब्यास प्रबन्ध बोर्ड
Director / Power Regulation
Bhakra Beas Management Board
SLDC Complex, Industrial Area, Phase – I
Chandigarh - 160002.
Tel.: 0172-2652820 (Tel. FAX)
E-mail: dirpr@bbmb.nic.in

प्रेषिती

सदस्य सचिव,
उत्तरी क्षेत्रीय शक्ति समिति,
18-ए, शहीद जीत सिंह मार्ग,
कटवारिया सराय, नई दिल्ली-110016

पत्र क्रमांक 1902-03 एलडी./जी-158 दिनांक 5/5/23

विषय:- Agenda points of BBMB for 22nd Telecommunication, SCADA & Telemetry (TeST) Sub-Committee.

Kindly refer your office letter no. NRPC/OPR/108/04/2023/4468-4502 dated 28.04.2023 vide which it was intimated that 22nd meeting of TeST sub-Committee will be held in 3rd week of May, 2023. In this regard, the agenda points for discussion w.r.t. BBMB are listed below-

1. Regarding expiry of license of Fortigate make Internal Firewall.

The current license of Fortigate Make Internal Firewall installed for SCADA system of SLDC BBMB expired on 30.04.2023. The same was also discussed in 21st TeST meeting. BBMB has already requested POWERGRID & POSOCO to ensure that M/s Siemens takes all necessary steps and measures to renew the license of the internal firewall at the earliest so that cyber security posture of the system is maintained.

2. AMC extension of SCADA/EMS System under ULDC Phase-II scheme.

The existing AMC of SCADA/EMS System under ULDC Phase-II scheme for BBMB is going to expire on 08.06.2023. PGCIL has sent a letter to M/s Siemens stating that the contract has been extended for 2 years at the same rates/terms and conditions. PGCIL is kindly requested to submit the reply received from M/s Siemens regarding the extension of AMC so that the same can be apprised to higher management of BBMB.

3. Regarding procedure related to removal of advisories from External Firewall

It is stated that currently Gajshield make External Firewall has been installed for maintaining the cyber security of SCADA system. Advisories in the form of suspicious IPs, URLs, emails etc. are being received from agencies such as CERT-Go, NCIIPC etc. which are being blocked in the External Firewall. Also, honeypots have been installed at the SLDCs and advisories are being issued from the data captured by honeypot. Blocking of all these is leading to slowing of operation/inefficiency in the operation of External Firewall. As such, it is requested that guidance/procedure maybe adopted on the advisories which can be removed after certain time interval from the external firewall so that efficiency as well as cyber security posture of system is maintained.

4. Regarding component wise bifurcation/breakup of Cost for ULDC Phase-III scheme.

The component wise bifurcation of total cost estimate of ULDC Phase-III scheme in respect to hardware and software equipment has not been supplied till date. BBMB has already requested PGCIL to provide the same so that the same may be apprised to higher management of BBMB. The reply from PGCIL is awaited.

5. Regarding calculation of availability computation of SCADA/EMS system on basis of cyber security measures for ULDC Phase-III scheme.

Keeping in view the stress of the MoP on the Cyber Security Posture of Critical IT-OT systems and to ensure timely compliance of the vulnerabilities/threats related to cyber security, in addition to the availability formula calculation already mentioned as per Clause No. 4.4.10 (Page-81) of Volume-II, Part-A, Section-4 of Draft Technical Specifications, it is requested to incorporate the below mentioned methodology for calculation of availability computation of SCADA/EMS system on basis of cyber security measures.

The methodology for calculation of availability computation of SCADA/EMS system specifically dedicated to ensuring compliance of cyber security related measures may also be formed as part of contract which shall include the points as per below mentioned "Gravities".

Gravity Levels

Category	Definition
Gravity-1 Urgent	Non restoration after hacking of the complete system or a part of SCADA system such as main or redundant firewall, router, switch, critical server etc.
Gravity-2 Serious	Non-compliance of Very High or High level of vulnerabilities reported by cyber security auditor, NCIIPC, CERT-In, CSK, CSIRT,SOC, NOC,VAPT tool or any other auditor/ agency which may report such vulnerabilities from time-to-time.
Gravity-3	Non-compliance of medium level vulnerabilities reported by

Minor	cyber security auditor, NCIIPC, CERT-In, CSK, CSIRT,SOC, NOC,VAPT tool or any other auditor/ agency which may report such vulnerabilities from time-to-time. Further, the non-reporting of logs of security devices such as Firewalls, IPS, Routers etc. in SIEM tool/CMC server etc.
Gravity-4 General	Non-compliance of low level of vulnerabilities reported by cyber security auditor, NCIIPC, CERT-In, CSK, CSIRT,SOC, NOC,VAPT tool or any other auditor/agency which may report such vulnerabilities from time-to-time. Further, Non-compliance of signature updation of various Software Licenses, firewall, routers, switches, antivirus and any other security devices (including their operating system and firmwares).

Emergency Support Response/Resolution Time

Gravity	Initial Response Time	Action Resolution Time	Action
Gravity-1	1 Hour	2 Hours after completion of 1 hour Initial Response Time	An urgent or emergency situation requiring continuous attention from necessary support staff until system restoration is restored subject to the satisfaction of owner.
Gravity-2	5 days	10 days after completion of 5 days Initial Response Time	Compliance of vulnerability as quickly as possible subject to the satisfaction of owner.
Gravity-3 (for complian ce of vulnerabi lity)	10 days	20 days after completion of 10 days Initial Response Time	Compliance of vulnerability as quickly as possible subject to the satisfaction of owner.
Gravity-3 (non-reporting of logs)	2 days	5 days after completion of 2 days Initial Response Time	Reporting of logs to be restored subject to the satisfaction of owner.
Gravity-4 (for complian ce of vulnerabi lity)	10 days	20 days after completion of 10 days Initial Response Time	Compliance of vulnerability as quickly as possible subject to the satisfaction of owner.
Gravity-4 (for up-	3 days	5 days after completion of 3	Compliance of updation as quickly as possible subject

dation of licenses etc.)		days Initial Response Time	to the satisfaction of owner.

Availability computation of SCADA/EMS system on basis of cyber security measures

Availability per quarter yearly (per site) = $\frac{THQ-(G1*1+G2*0.4+G3*0.3+G4*0.1)}{THQ} \times 100\%$

Note:-

- The computation of availability on the contractor will be subject to the intimation of the incident to the representative of the contractor (AMC Engineer) via media of communication such as telephonic communication (on call) or via email.
- In case the penalty is already being levied via Severity based system as already mentioned in the draft Technical Specifications, then only penalty vide 1 no. methodology either through Severity or Gravity (whichever is higher in nature) will be applicable.

The above mentioned methodology has already been shared with PGCIL but its incorporation in the Technical specifications/reply on the above is still awaited.

निदेशक/विघुत विनियम,
बी.बी.एम.बी. चण्डीगढ़।

प्रतिलिपि:- प्रमुख अभियन्ता/प्रणाली परिचालन, बी.बी.एम.बी. चण्डीगढ़।