I/30219/2023

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

सं. उक्षेविस/वाणिज्यिक/ 209/ आरपीसी (68 वीं)/ 2023 / दिनांकः11.09.2023

सेवामें/To,

उ.क्षे.वि.स. के सभी सदस्य एवं विशेष आमंत्रित (संलग्न सूचीनुसार)
Members of NRPC & Special Invitees (As per List)

विषय: उत्तर क्षेत्रीय विद्युत समिति की 68 वीं बैठक का कार्यवृत।
Subject: 68th meeting of Northern Regional Power Committee-MoM

महोदय/महोदया,

उत्तर क्षेत्रीय विद्युत समिति की 68 वीं बैठक दिनांक **18.08.2023 (10:30 AM)** कोउदयपुर, राजस्थान में आयोजित की गयी थी।बैठक का कार्यवृत संलग्न है।यह उ.क्षे.वि.स. की वेबसाइट (http://164.100.60.165/) पर भी उपलब्ध है।

The 68th meeting of Northern Region Power Committee (NRPC) was held on **18.08.2023 (10:30 AM)** at Udaipur, Rajasthan. MoM of the same is attached herewith. The same is also available on NRPC Sectt. website(http://164.100.60.165/).

भवदीय
Yours faithfully

Signed by Vijay Kumar Singh
Date: 11-09-2023 15:37:10
Reason: Approved
(वी.के. सिंह)
(V.K. Singh)
सदस्यसचिव
Member Secretary

प्रतिलिपि: मोहम्मद शायिन, एमडी, एचवीपीएनएल एवं अध्यक्ष, एनआरपीसी (md@hvpn.org.in)

सत्यमेव जयते

उत्तर क्षेत्रीय विद्युत समिति

NORTHERN REGIONAL POWER COMMITTEE

Minutes of

The 68th meeting of

Northern Regional Power Committee

Date: 18th August 2023

Time: 10:30 AM

Venue:

Aukira Resort

01, Kala Rohi,

Sisarma, Udaipur,

Rajasthan - 313001, India

Contents

उत्तरी क्षेत्रीय विद्युत समिति की 68वीं बैठक का कार्यवृत

Minutes of the 68th MEETING OF NORTHERN REGIONAL POWER COMMITTEE

The 68th NRPC meeting was held on 18.08.2023 at Udaipur, Rajasthan and hosted by NTPC Ltd. The list of participants is attached as **Annexure-I.**

The meeting was started with a welcome note by Director (Finance), NTPC greeting delegates from all utilities. He stated that NTPC feels privileged to host the 68th NRPC meeting at Udaipur. He highlighted that over the years, NRPC has evolved as the platform wherein all the electricity sector entities of region come together with rich experience and brightest minds to resolve the bottlenecks in the path of growth. As we embark today, we embark on a journey of exploration and collaboration to chart the course of India's Power Sector in the years to come.

He emphasized that NTPC being a partner in growth of the sector are fully committed to make available round the clock power solutions affordable. With an installed capacity of 73024 MW, our share in country's electricity generation is around 25%. Despite global energy landscape facing severe challenges, NTPC ensured that it is always available for generation overcoming fuel supply challenges. He expressed gladly that the first unit of 660 MW of NTPC JV company at Bangladesh has become operational.

He further informed that on renewable side, NTPC has formed a new company i.e. NTPC Green Energy Ltd., under which RE assets have been consolidated. NTPC has firm plan for achieving 60GW RE capacity by 2032. Apart from 2.5 GW commissioned capacity, nearly 4 GW of RE capacity is under construction and another 5GW is under tendering. We have taken steps for Green Hydrogen. In partnership with Nuclear Power Corporation of India, we are planning to set up two nuclear plants – one in Rajasthan & one in MP. He requested all the participants to explore the synergies among various stakeholders and players in the sector to achieve a common goal of affordable and reliable power supply.

Member Secretary, NRPC welcomed all the participants and thanked NTPC for splendid arrangements. He highlighted that all India peak demand as of now is 230 GW. He appreciated the collective efforts of all utilities, RLDCs, SLDCs and generating companies for successfully meeting this huge demand growth. He requested all states to strengthen grid by utilizing PSDF Fund. He encouraged utilities to come up with proposals for modernization and renovation of elements as well as reactive power capacity addition. He again thanked NTPC and wished all to have a healthy discussion on all agenda and arrive to decision with consensus.

Chairperson, NRPC and MD, HVPNL conveyed a heartfelt thanks to NTPC for good arrangements for stay for all. Further, he stressed on the issue of adverse weather condition in Northern Region such as in Haryana and Himachal Pradesh. He appreciated the excellent coordination from NRPC & neighbouring States that has helped to tackle the issue very well. He highlighted the challenges being faced by power transmission utilities in getting Right of Way and advised the forum to have a uniform policy across the region and need to have a sub-group for this policy. He encouraged all utilities to raise more issues to discuss with forum. He suggested utilities to send officers on deputation to NRPC Secretariat. Further, he highlighted the procurement and contractual related issues and mentioned that states are facing such issues, so need to have a platform to share knowledge and experience. It would also help in avoiding cost and time overrun in future.

Thereafter, agenda for the 68th NRPC Meeting was presented & deliberated as given below;

A.1 Approval of MoM of the 67th NRPC meeting

A.1.1 EE (P), NRPC apprised that minutes of the 67th NRPC meeting (held on 30.06.2023) have been issued vide letter dated 21.07.2023. No comments have been received from any utility. He requested that in view of no comments received from any utilities, the Minutes as circulated may be approved.

Decision of the Forum:

Forum approved the MoM as issued by NRPC vide letter dated 21.07.2023.

A.2 Requirement of No-Objection Certificate (NOC) for Auxiliary Power Consumption for STATCOM at 765/400/220kV Bhadla-2 Substation (agenda by POWERGRID)

A.2.1 EE (P), NRPC apprised that POWERGRID has installed 2 x ±300MVAr STATCOM at Bhadla-2 substation in Rajasthan and they have apprised issues regarding NOC for STATCOM.

A.2.2 POWEGRID submitted that Grid-India vide its order ref.no. NLDC/FTC dated 03.06.2020 has issued consolidated procedure for first time charging /energization (FTC) and integration of new or modified power system element. Section 4 of this FTC procedure provides the details of requirement for integration of a STATCOM/SVC and issue of certificate of successful trial operation by Regional Load Dispatch Centres (RLDCs).

Under para 1 of section 4, pre-charging activities are defined and as per 1(e), the following is mentioned:

"The auxiliary consumption of STATCOM is generally drawn from the tertiary of the 400/220/33kV Transformer at the substation. The meter reading of this transformer would include the auxiliary consumption of STATCOM as well. Therefore, a No Objection Certificate (NOC) from the local DISCOM and SLDC would also be provided by the owner of STATCOM."

A.2.1 POWERGRID has installed 2 x ±300MVAr STATCOM at Bhadla-2 substation in Rajasthan and similar installations are under commissioning at other pooling stations in Rajasthan i.e., Fatehgarh-2 & Bikaner-2 stations. With reference to STATCOM at Bhadla-2 substation, SE/JDVVNL (local DISCOM), vide letter dated 28.03.2023 was requested for issuance of NOC for auxiliary power consumption of STATCOM from the tertiary of the 400/220/33kV Transformer, as a part of compliance of requirement for FTC procedure. Subsequently JDVVNL representative visited Bhadla-2 substation and jointly verified the energy meters (SEM) for metering of auxiliary power consumption. Further Executive Engineer/Phalodi has forwarded a letter to SE/O&M, Jodhpur in this matter.

A.2.2 However even after several visits and communications (chronology of events tabled below), JDVVNL is yet to issue the NOC. POWERGRID has been communicated by JDVVNL officials that there are no clear instructions to JDVVNL for issuing any type of no-objection certificate.

A.2.3 The chronology of events in case of STATCOM of Bhadla-2 substation are as follows:

S.N.	Particulars	Date
1	Superintending Engineer (JDVVNL-Jodhpur) was requested for NOC of ±300 MVAR STATCOM at Bhadla-2 S/s	28-03-2023
2	Visit of JDVVNL officials (AE & JE) at POWERGRID Bhadla-2 SS for joint verification of metering system for auxiliary power consumption in STATCOM	15-05-2023
3	Letter from AE to Executive Engineer and further letter written by Executive Engineer to SE for issuance of NOC	05-06-2023
4	Letter submitted by POWERGRID to Additional Chief Engineer-JDVVNL for issuance of NOC	28-06-2023
5	Visits of POWERGRID Bhadla-2 representative to JDVVNL Jodhpur office for NOC	1st visit- 28-06-23 2nd visit- 11-07-23 3rd visit- 21-07-23
6	Submission of undertaking by POWERGRID to NRLDC towards submission of NOC	13-04-2023 29-06-2023

A.2.4 The STATCOM at Bhadla-2 has been commissioned on 02.06.2023 (STATCOM station-1) and 03.07.2023 (STATCOM station-2), however, trial run completion certificate is yet to be issued for the same.

A.2.5 Accordingly, POWERGRID requested to facilitate issuance of No-objection certificate from local DISCOM for auxiliary consumption of STATCOM. He requested Grid-India to issue certificate for completion of trial run operation for STATCOM at Bhadla-2 as the delay in submission of NOC is due to reasons, which are beyond reasonable control of POWERGRID.

A.2.6 Executive Director, NR-1, POWERGRID informed that Jodhpur Vidyut Vitran Nigam Limited (JDVNL) has issued NOC on 16.08.2023, however, he raised the concerns over delay of JDVNL.

A.2.7 JDVNL representative informed that there was lack of understanding within JDVNL for issuance of NOC. Earlier, O&M wing used to issue NOC but now Metering/ Protection wing has been allocated to handle such issues in JDVNL.

A.2.8 Member Secretary, NRPC requested utilities to apprise such issues timely as it has been observed that lot of time has been wasted before coming to this forum. Such issues may be taken up in OCC meeting beforehand.

A.2.9 POWERGRID representative requested NRLDC to give Trial Run Certificate.

A.2.10 NRLDC representative highlighted that there is CERC mandate regarding auxiliary consumption of devices to be drawn from substation transformer. He requested POWERGRID to approach Forum of Regulators (FOR) accordingly. He added that Trial Run Certificate will be issued.

Decision of the Forum:

Utilities need to devise a mechanism to expedite matters of issuance of NOC and can built a dedicated team for handling such issues.

A.3 Upgradation of Remote Gateways at HVDC Bhiwadi and Ballia Terminals for Improved Reliability of Telemetered Data (Agenda by POWERGRID)

A.3.1 POWERGRID raised issues of unreliable communication of Ballia HVDC and Bhiwadi HVDC stations.

A.3.2 He explained that during the 22nd Telecommunication, SCADA, and Telemetry sub-committee (TEST) meeting held on dated 24.05.2023, agenda for telemetry related issues from POWERGRID stations was brought by NRLDC. NRLDC informed that letter regarding Telecommunication, SCADA & Telemetry issues from POWERGRID Sub-stations was given by NRLDC vide NRLDC/Telemetry/dated 15th Dec 2021. It has also been informed by NRLDC that although there is improvement with respect to other issues raised but data from Ballia HVDC and Bhiwadi HVDC stations is still unreliable. NRLDC has further issued a letter NRLDC/SCADA/2023 dated 18th April 2023 for telemetry issues related to HVDC Ballia and Bhiwadi terminals.

A.3.3 During discussion in 22nd TEST meeting, NRLDC informed that “real-time data availability from Ballia and Bhiwadi HVDC is very poor, unreliable, and requested POWERGRID for rectification of the same”.

A.3.4 POWERGRID informed that being a proprietary product, M/s Siemens, OEM for Ballia-Bhiwadi Bi-pole link, was consulted for rectification of the same and M/s SIEMENS has informed that the present device (i.e. Remote Control Interface-RCI) installed for data communication from HVDC Bhiwadi to NRLDC was installed in

2010, which is now obsolete and there is no hardware/software support available for this product.

A.3.5 Further, OEM, M/s SIEMENS has suggested as follows:

"The existing DC SCADA and HMI system at Ballia and Bhiwadi HVDC station is running on Windows XP system from almost last 10 years. The existing hardwares spare parts for windows PC and windows XP software are obsolete and it is really tough to repair since the spare parts are no more available. Furthermore, windows XP system is also vulnerable in respect to cyber security since its news windows patches are no more available. We strongly recommend to upgrade the HMI PC's to Windows 10 and Terminal Server (Active directory server) to Windows 16 server along with spare hardwares to run the DC SCADA system smoothly at both the HVDC stations."

A.3.6 Further, as per existing communication architecture, telemetry data of HVDC Ballia is routed through HVDC Bhiwadi gateway to NRLDC. Therefore, a requirement for direct communication between HVDC Ballia and NRLDC exists to avoid dependence of HVDC Ballia on Bhiwadi end's RCI gateway. NRLDC further requires additional data points for individual branches of filter banks, which is presently not available in existing SAS architecture.

A.3.7 As OEM, M/s SIEMENS has declared the product as obsolete and has recommended for upgradation of RCI system, it is proposed to upgrade the existing remote gateways (RCI) along with old XP based SAS system at HVDC Ballia and Bhiwadi terminals for improved reliability of telemetry. This shall also take care of additional data points for filter banks, shunt filter reactors etc. as per requirement of NRLDC.

A.3.8 In view of above, POWEGRID proposed to upgrade the existing SAS system (including RCI gateways) at HVDC Ballia & Bhiwadi terminals in order to achieve improved reliability of telemetry data, direct communication of HVDC Ballia to NRLDC and for including additional data points as per requirement of NRLDC.

A.3.9 The total estimated cost for upgradation of HVDC SAS system (including RCI gateways) at HVDC Ballia and Bhiwadi terminals shall be Rs. 5.10 Cr (including GST).

A.3.10 POWERGRID highlighted that expenses shall be booked in ADD-CAP or augmented tariff.

A.3.11 Member Secretary, NRPC noted that above upgradation work belongs to proprietary nature.

A.3.12 The above proposal of POWERGRID was deliberated in the meeting and Members agreed the proposed proposal.

Decision of the Forum:

Forum accorded approval to the proposal of POWERGRID to upgrade the existing SAS system (including RCI gateways) at HVDC Ballia & Bhiwadi terminals in order to achieve improved reliability of telemetry data, direct communication of HVDC Ballia to NRLDC and for including additional data points as per requirement of NRLDC at cost of Rs. 5.10 Cr (including GST) to be booked under ADD-CAP or augmented tariff.

A.4 Upgradation of 220KV CTs in Line Feeders, Bus Coupler and TBC Bays at 400/220KV Wagoora Substation Due to Change in Rating of the Line (agenda by POWERGRID)

A.4.1 EE (P) apprised that Executive Engineer, JKPTCL vide letter no. TLMD-IV/669-72 dated 20-09-2022 has informed POWERGRID that they are going to carryout re-conductoring of 220KV Wagoora Zainakot-1 with HTLS conductor including strengthening of bays at Zainakot end and mentioned that after re-conductoring, thermal rating of 220KV Wagoora Zainakot Ckt-1 will be 1550 Amp. He further informed that CTs of Wagoora-Pampore Ckt-I & II have been upgraded from 900A to 1600A at Pampore end and he advised to strengthen 220kV Bays accordingly at Wagoora end.

A.4.2 POWERGRID submitted that 220KV Pampore 1, 2 and Zainakot 1 & 2, Bus coupler and TBC bays at Wagoora Substation were commissioned in the year 1996 and equipment in these bays had already completed 27 years of useful life. Ratio of CTs at Wagoora substation are 1000:1.

A.4.3 In line with JKPTCL requirements, it is required to upgrade the Current Transformer in 220KV Wagoora Zainakot 1&2 Bays, 220KV Wagoora Pampore 1&2 Bays, 220KV Bus Coupler Bay and 220KV TBC Bay from 1000:1 to 1600:1.

A.4.4 Apart from the above, Jack Bus, Bay jumpers, equipment connectors are also required to be replaced with higher rating in these bays.

A.4.5 In view of above, POWERGRID proposed for replacement of CTs, Jack bus, bay jumpers and equipment connectors at Wagoora Substation under ADDCAP at estimated cost of Rs. 1.4 Cr (including GST) in order to meet increasing load requirement of JKPTCL.

A.4.6 In the meeting, there was no representative from JKPTCL.

A.4.7 POWERGRID representative informed that at Wagoora end CBs have already been changed and isolators are in process of replacement.

A.4.8 After deliberation, forum approved the proposal.

Decision of the Forum:

Forum approved the proposal of POWERGRID for replacement of CTs, Jack bus, bay jumpers and equipment connectors at Wagoora Substation under ADDCAP at estimated cost of Rs. 1.4 Cr (including GST).

A.5 Communication System for LILO lines of 400kV Jallandhar (PG) – Kurukshetra (PG) line at Nakodar Sub-station of PSTCL (agenda by POWERGRID)

A.5.1 POWERGRID apprised that OPGW along with Communication equipment implementation on 400kV Jallandhar (PG) – Kurukshetra (PG) line (229km) was approved in the 57th NRPC meeting & concurred by 11th NCT for extending data & voice connectivity of upcoming PSTCL station at Dhanansu. Length of sections at Dhanansu is as below:

Line In at Dhanansu = 3.880km

Line Out at Dhanansu = 3.880km

A.5.2 During the 57th NRPC meeting, PSTCL has agreed to pay cost incurred by POWERGRID for communication system in LILO sections of PSTCL at upcoming Dhanansu through bilateral tariff mechanism and shall be shared by PSTCL as per CERC notification.

A.5.3 POWERGRID has accordingly sought inputs from PSTCL. PSTCL vide email dated 23.02.2023 has proposed communication system implementation on LILO of 400kV Jalandhar-Kurukshetra at Nakodar substation (Line In 3.047km & Line Out 3.047km) in addition to upcoming LILO of Jalandhar-Kurukshetra at Dhanansu s/s.

A.5.4 Forum may approve implementation of OPGW along with communication equipment by POWERGRID on LILO sections of Jalandhar-Kurukshetra line at Nakodar substation of PSTCL. Investment made by POWERGRID for communication system in LILO at Nakodar shall be recovered through bilateral tariff mechanism and shall be shared by PSTCL as per CERC notification.

A.5.5 Member Secretary, NRPC stated that it is a bilateral issue and approach for Dhanasu is already approved in NRPC meeting. Work at Nakodar may also be done in a similar way.

A.5.6 PSTCL representative agreed with views of POWERGRID.

Decision of the Forum:

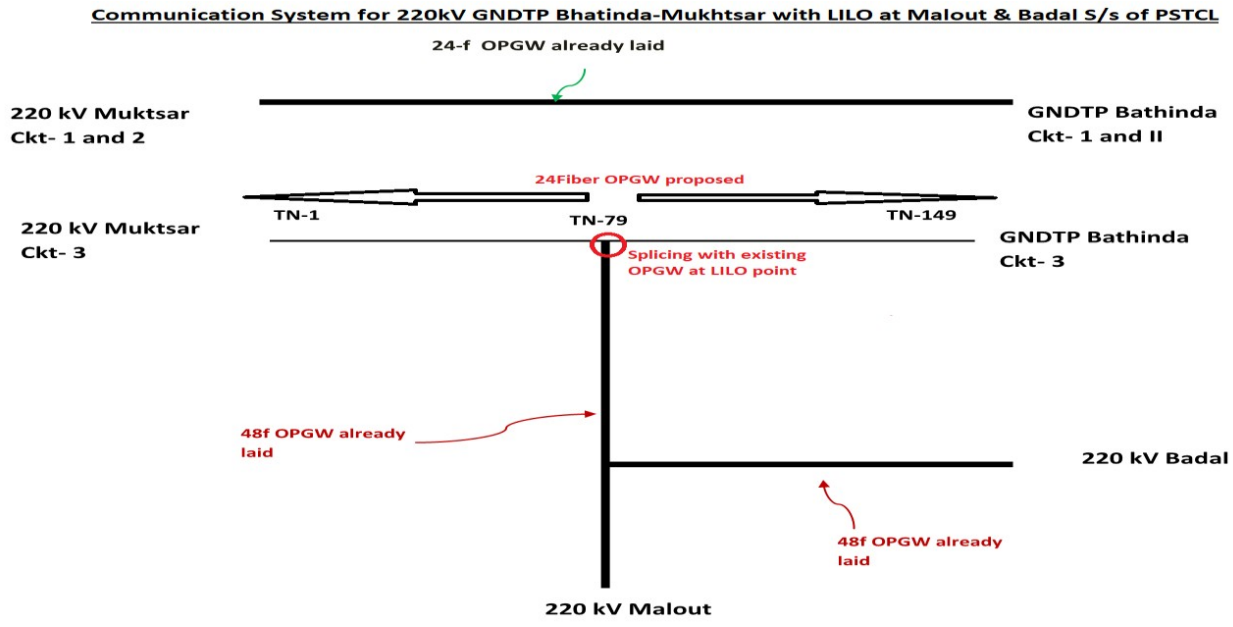
Forum agreed for implementation of OPGW along with communication equipment by POWERGRID on LILO sections of Jalandhar-Kurukshetra line at Nakodar substation of PSTCL. Investment made by POWERGRID for communication system in LILO at Nakodar shall be recovered through bilateral tariff mechanism and shall be shared by PSTCL as per CERC notification.

A.6 Communication system for 220kV GNDTP Bhatinda-Mukhtsar line (circuit-3 on Single Circuit Towers) (Length:51km) to Provide Data & Voice Connectivity to LILO Sub-Stations at Badal & Malout Recommended in the 58th NRPC (agenda by POWERGRID)

A.6.1 POWERGRID apprised that OPGW along with communication equipment implementation on 220kV single circuit GNDTP Bhatinda-Mukhtsar line (circuit-3) (Length:51km) was technically concurred in the 58th NRPC meeting.

A.6.2 58th NRPC forum had advised POWERGRID and PSTCL to discuss bilaterally for implementation of Communication System on Bhatinda – Mukhtsar line as same not being ISTS.

A.6.3 PSTCL vide email dated 02.03.2023 has accepted POWERGRID's proposal for implementation of OPGW on 3rd Circuit of 220kV GNDTP Bhatinda-Mukhtsar line and splicing with existing OPGW in LILO section at Badal & Malout (as presented in single line diagram).



A.6.4 POWERGRID requested approval for implementation of OPGW along with communication equipment by them on 3rd circuit of 220kV GNDTP Bhatinda-Mukhtsar line through bilateral tariff mechanism which shall be shared by PSTCL as per CERC notification.

A.6.5 MS, NRPC stated that the issue is of bilateral nature. If both parties agree, it may be concurred by forum.

A.6.6 PSTCL agreed on views of POWERGRID.

A.6.7 Forum approved the proposal of POWERGRID.

Decision of the Forum:

Forum approved the proposal of POWERGRID for implementation of OPGW along with communication equipment by them on 3rd circuit of 220kV GNDTP Bhatinda-Mukhtsar line through bilateral tariff mechanism which shall be shared by PSTCL as per CERC notification.

A.7 Non-Opening of Letter of Credit by JKPCL (formally PDD, J&K) for Power Supplied from NJHPS & RHPS (agenda by SJVN)

A.7.1 SJVN apprised that as per mutually signed Power Purchase Agreement and order dated 28.06.2019 issued by Ministry of Power, beneficiary is to submit a confirmed, revolving, irrevocable Letter of Credit in favour of SJVN for an amount equivalent to 105% of average monthly billing of preceding 12 months with appropriate bank as mutually acceptable to parties. The LC shall be kept valid at all the time during the validity of the Power Purchase Agreement.

A.7.2 In spite of repeated reminders, Power Development Department of J&K had not renewed their Letter of Credit after 13.11.2019 for power supplied from NJHPS and RHPS.

A.7.3 He requested that Power Development Department of J&K may be advised by the forum to submit Letter of Credit in favour of SJVN.

A.7.4 EE(P) apprised that matter is related to non-issuance of Letter of Credit to SJVN by Power Development Department of J&K. NHPC & NPCIL have also flagged same issue with J&K.

A.7.5 NHPC & NPCIL representatives also highlighted their concerns for non-opening of LC by J&K.

A.7.6 Member Secretary, NRPC said that LC is a mandatory requirement and J&K may take up the issue with higher officials of government.

A.7.7 J&K representative informed that proposal has been sent to Government in this matter.

A.7.8 Chairperson, NRPC directed J&K to take up the matter with concerned authorities and resolve it at the earliest. He asked that a DO letter may be sent to Government of Jammu & MHA from NRPC.

Decision of the Forum:

Forum decided to send a DO letter by Chairperson, NRPC to Secretary (Power), J&K and MHA, GOI highlighting the issue for early resolution.

A.8 Delay in Payment of Arrear Bills by PSPCL and Interest on Refund of Arrear Bills (agenda by SJVN)

A.8.1 EE (P) apprised the forum about the agenda of SJVN that there is delay in payment of arrear bill by PSPCL and interest on refund of arrear bill.

A.8.2 SJVN explained that they file petitions before CERC for recovery of the Expenditures incurred by SJVN over the years as per CERC regulations for Tariff Determination. If the information furnished in the petition is in accordance with the regulations and is adequate for carrying out prudence check of the claims made, the Commission considers the suggestions and objections, if any, received from the respondents, within one month from the date of filing of the petition, and any other person including the consumers or consumer associations. The Commission issues the tariff order after hearing the petitioner, the respondents and any other person specifically permitted by the Commission.

A.8.3 Currently, we are considering the Tariff regulation issued by CERC for the period 2014-19.Point 11 to 13 of Clause 8 Chapter 13 of Tariff Regulation 2014-19 is reiterated below:

(11) Where after the truing up, the tariff recovered exceeds the tariff approved by the Commission under these regulations, the generating company or the transmission licensee, shall refund to the beneficiaries or the long term transmission customers /DICs, as the case may be, the excess amount so recovered as specified in the Clause 13 of this regulation.

(12) Where after the truing up, the tariff recovered is less than the tariff approved by the Commission under these regulations, the generating company or the transmission licensee shall recover from the beneficiaries or the long term transmission customers /DICs, as the case may be, the under-recovered amount as specified in the Clause 13 of this regulation.

(13) The amount under-recovered or over-recovered, along with simple interest at the rate equal to the bank rate as on 1st April of the respective year, shall be recovered or refunded by the generating company or the transmission licensee, as the case may be, in six equal monthly instalments starting within three months from the date of the tariff order issued by the Commission.

A.8.4 As per Clause 8(13) of CERC regulation, Generators have to raise Arrear Bills within three months from the receipt of Tariff Order from CERC.

A.8.5 Based on above clauses, SJVN is raising arrear bills to its beneficiaries of NJHPS and RHPS after receipt of CERC orders from time to time. The Arrear bills are to be recovered or refunded as per CERC order in single instalments or multiple instalments.

A.8.6 PSPCL had unilaterally taken the repayment date on 90th day from the date of issue of Tariff order instead of SJVN bill issue date.

A.8.7 The Clause 8(13) of CERC regulation is very clear that arrear bills can be issued within three months from the date of tariff order rather than payment of Energy Bills from the date of Tariff order.

A.8.8 Further, PSPCL had deducted interest on negative arrear bills. This had resulted into accumulation of Late Payment Surcharge (LPS).

A.8.9 SJVN requested forum that PSPCL may be directed to treat the bill date when the bills had been issued and not to charge any interest negative bills which is contrary to any CERC regulation. Further, PSPCL may be directed to pay the LPS on delayed payments to avoid any penal action provided in CERC regulation.

A.8.10 PSPCL representative informed that they have taken up the matter and will resolve it bilaterally.

Decision of the Forum:

Forum requested both the utilities to solve the matter mutually and the same was concurred by SJVN and PSPCL.

A.9 Issues Arising Due to Non-Availability of Sufficient ERS (agenda by NRLDC)

A.9.1 NRLDC representative stated that the measures required for tower strengthening and availability of Emergency Restoration System are being regularly discussed in NRPC meetings. There have been many past events of tower collapse especially during summer and monsoon season and accordingly all utilities were requested to take necessary actions.

A.9.2 Availability and requirement of ERS to avoid transmission constraint/generation evacuation constraint in case of tower collapse or long outage of transmission line was also discussed in 62nd and 63rd NRPC meeting.

A.9.3 Extract from the 62nd NRPC Meeting (31st January 2023) was quoted as below:

"B. Tower strengthening activities:

A.11.6 NRLDC representative stated that there have been number of instances of tower collapse & damage in the past during thunder storms which resulted in constraints in supply power for extended duration of time. Number of tower collapse incidents occurred during last summer also in May/Jun 2021 & 2022 in which many EHV lines including 765kV lines were out on tower collapse.

A.11.7 All utilities were requested to ensure availability of Emergency Restoration System (ERS) for early restoration of supply. Each utility shall work on plan for tower repairing work before April. Extra precautions need to be taken care for important lines which have history of tripping during thunderstorm/ windstorm.

A.11.8 NRPC advised all utilities to ensure availability of ERS and take necessary actions for tower repairing work before April 2023."

A.9.4 Even after actions taken by utilities, it was observed that following lines were out due to tower collapse during last few months:

Sl. No.	Line Name	Owner	Outage Time Days (as on 18.08.23)	Impact on Grid
1	765 KV Phagi(RS)-Bhiwani(PG) (PG) Ckt-1	PGCIL	7	Loss of one evacuation line from Phagi, feed from Kawai-Kalisindh-Chhabra complex via 765kV Anta and RE complex via 765kV Ajmer
2	400 kV Jhajjar(APCL)-Daulatabad(HV) (HV) Ckt-2	HVPNL	18	Issue of Jhajjar evacuation under N-1 contingency of remaining lines, generation restriction during high demand season
3	400 KV Bikaner-	RRVPNL	93	Constraints in interstate &

	Bhadla (RS) Ckt-1			intrastate connected RE generation evacuation. Major issues observed when high solar generation and high wind generation occurring at the same time. During such times, RE curtailment had to be done in the past. Major issues in facilitating shutdown of 400kV Bikaner(PG)-Bikaner(RS) lines for commissioning of 400kV Bikaner-II.
4	400 KV Bikaner-Bhadla (RS) Ckt-2	RRVPNL	93	
5	400 KV Bhadla-Merta (RS) Ckt-1	RRVPNL	18, 30	
6	400 KV Bhadla-Jodhpur (RS) Ckt-1	RRVPNL	72	
7	765 kV Bikaner(PG)-Khetri (PKTSL) (BKTL) Ckt-1	BKTL	1	
8	400 kV Jaisalmer-Barmer (RS) Ckt-2	RRVPNL	43	
9	400 kV Jaisalmer-Barmer (RS) Ckt-1	RRVPNL	43	
10	400 kV Akal-Jodhpur (RS) ckt-1	RRVPNL	40	
11	400 KV Muzaffarnagar(UP)-Vishnuprayag(JP) (UP) Ckt-1	UPPTCL	7	Evacuation of Vishnuprayag generation through only single 400kV line (400kV Vishnuprayag- Alakhnanda)
12	220 KV Chamera_3(NH)-Chamba(PG) (PG) Ckt-1	PGCIL	39*	Generation evacuation issues from Chamera-III and Budhil HEP. Interim arrangement worked out to avoid generation loss
13	220 KV Chamera_3(NH)-Chamba(PG) (PG) Ckt-2	PGCIL	39*	
* these lines are still under outage				

A.9.5 He added that MoP, Govt of India had already issued instructions for procurement of ERS by all transmission utilities (attached as **Annexure-II**) which was discussed in 150th OCC meeting (held on 21.08.2018) and CEA (Grid Standards) Regulations, 2010 also suggests keeping necessary arrangement for ERS. The instructions also suggest strategy to determine ERS requirement by utilities as below:

"For any transmission utility, one set of ERS has been planned to cater to failure of towers for transmission line lengths of up to 5000 Ckt. Kms. Accordingly, two (2) sets of ERS have been planned for transmission line lengths of about 5000 to 10,000 Ckt. Kms, and three (3) sets for more than 10,000 Ckt. Kms and so on.

The transmission Utility with line length less than 500 ckt kms (of 400kV lines) may be given option either to procure ERS or have agreement with other transmission utilities for providing ERS on mutually agreed terms, when need arises."

A.9.6 He stressed on following points:

i. Outage of lines on tower collapse has led to major issues in grid operation as well as for safe evacuation of generation.

ii. Shutdown of 400kV Bikaner(PG)-Bikaner(RJ) D/C lines were also availed by POWERGRID for commissioning of 400kV Bikaner-II S/s (appreciable work helped to minimize curtailment). First time in Northern Region, ERS line of Quad-moose conductor was implemented, high current carrying capacity of Quad-moose ERS reduced the quantum of RE curtailment significantly.

iii. All other utilities were requested to ensure that they have availability of ERS, trained manpower and also gangs which can complete such tasks swiftly, in case of requirement.

iv. MoP, Govt. of India had already issued instructions for procurement of ERS (also discussed in 150th OCC meeting).

v. CEA (Grid Standards) Regulations, 2010 also suggests keeping necessary arrangement for ERS.

vi. In view of increase in line length under jurisdiction of different utilities over the years, it is suggested that the nos. of ERS requirement may be reviewed and regularly monitored at OCC level.

vii. As agreed in 63rd NRPC meeting (held on 24.02.2023), ERS availability monitoring may be included in follow up agenda in monthly OCC meetings.

A.9.7 MS, NRPC stated that ERS availability monitoring shall be included as rolling/follow-up agenda in OCC meeting.

A.9.8 Chairperson, NRPC stated that availability of suitable ERS is compulsion for all the utilities to ensure reliability of electricity supply, to avoid any power outage in case of long outage of line on tower collapse, to harness the generation in case of long outage of any evacuating line.

A.9.9 Chairperson, NRPC said that NRPC Sectt. in coordination with NRLDC, PGCIL and other stakeholders may prepare a guideline on requirement, availability and procurement of ERS for different utilities.

A.9.10 Representative from PGCIL stated that vendors are also available in India for making ERS as per required specification.

A.9.11 Representative from Rajasthan stated that one ERS set is available in Jaipur and one is proposed for Jodhpur area.

A.9.12 Member Secretary, NRPC stressed that all utilities must have sufficient ERS and should not depend on POWERGRID to make it avail at the time of emergency.

A.9.13 POWERGRID representative stated about presence of vendors related to ERS in current time.

A.9.14 CTU representative raised concern over non-availability of spare of transformers and reactors. He requested utilities to make necessary arrangements for spares also.

Decision of the Forum:

i. ERS availability monitoring shall be taken as rolling/follow-up agenda in OCC meetings for regular monitoring of ERS under different utilities in Northern region.

ii. NRPC Sectt. in coordination with NRLDC, PGCIL and other stake holders (having expertise in ERS) shall prepare a guideline on requirement of ERS for any utility based on its total ckt kms in line with CEA (Grid Standards) Regulations, 2010. Requirement, availability and procurement of ERS may also be included in the guidelines.

A.10 Issues Related to J&K (agenda by NRLDC)

A.10.1 NRLDC representative stated that the matter was most recently discussed in 64th NRPC meeting. The issues related to J&K U/T power system have been under discussion since long time in NRPC forum (recently discussed in 57th and 64th NRPC Meeting). However, the progress is very slow in this regard. Several issues have been persisting in J&K control area which have impact on reliable grid operation in their control area. Various pending issues are listed below:

J&K Telemetry Issues:

A.10.2 NRLDC representative stated following;

i. The matter was most recently discussed in 64th NRPC meeting.

ii. No update has been received from J&K till the date.

A.10.3 Representative from J&K stated that Siemens are not listening to the J&K. PGCIL need to arrange a meeting with Siemens.

A.10.4 Representative from PGCIL stated that 13 RTUs in Jammu and 14 RTUs in Kashmir have been commissioned. However, cables connected to RTU are damaged at most of the locations. Once the data comes to RTU, data will be reported.

UFR and df/dt status:

A.10.5 NRLDC representative stated following;

i. As per the agreed quantum relief for NR, total target in respect of J&K for UFR and df/dt are 336 MW and 270 MW respectively. Confirmation on relief quantum is yet to be received from J&K. Moreover, in compliance of NPC decision, NR states/constituents agreed to raise the AUFR settings by 0.2 Hz in 47th TCC/49th NRPC meetings.

ii. Status is still pending from J&K end.

Long outage of 220kV Kishenpur-Mirbazar line

A.10.6 NRLDC representative stated following;

i. 220kV Kishenpur-Mirbazar line is under long outage since 19.02.2022 due to tower collapse. It is to be noted that significant time (much higher than time specified in CEA regulations) has passed since line outage and still the line has not been revived yet.

ii. In 57th NRPC meeting held on 31.08.22, J&K representative stated that revival of 220kV Kishenpur-Mirbazar line would be completed in nearly 2-3 months. However, it is still pending.

Mock black start exercise of URI-I & URI-II HEP, Lower Jhelum HEP:

A.10.7 NRLDC representative stated following;

i. Mock black start exercise is necessary to make sure that generating units are able to start in case of requirement/ blackout of grid. Mock black start exercise of URI-I & URI-II HEP, Lower Jhelum HEP is yet to be conducted. In 198th

OCC meeting, JKPTCL representative agreed that the issue is well known and important and the same would be taken up with SLDC.

ii. As per latest discussion held with J&K & NHPC officers on 27.07.2023, the black start exercise for Uri-I & Uri-II are planned in Oct-Nov this year. As the black start exercise has not been carried out since number of years, it is requested to plan and adhere to the dates for black start exercise as number of agencies are involved in the exercise.

A.10.8 Representative from NHPC added that mock black start exercise of URI hydro plant shall be conducted in 1st week of Nov'23.

Reactive Compensation Details:

A.10.9 NRLDC representative stated following;

i. J&K grid being weakly connected from the rest of the grid and due to its isolated location suffers from issues of severe low voltage. During winter months when hydro generation is not available and demand in J&K control area is high due to heating load requirements, the issue of low voltage gets aggravated. J&K also has to pay large amounts as reactive energy charges to pool due to high MVAr drawl from ISTS grid at the time of low voltage.

ii. It has been discussed and suggested to J&K to plan & expedite commissioning of reactive power devices especially capacitors at lower voltage level to improve the voltage profile in valley area and also avoid large sums payable as reactive energy charges. J&K is requested to furnish latest status of their reactive energy management plan.

A.10.10 Concerned official from J&K and Ladakh were not present in the meeting. However, representative from J&K submitted the status of pending issues to the forum enclosed as **Annexure-III.**

A.10.11 MS, NRPC stated that J&K should apprise NRPC if any difficulties are faced by them.

A.10.12 Chairperson, NRPC advised following:

i. Concerned officials from J&K and Ladakh should highlight the problem being faced by them to resolve the pending issues. They may propose the optimal solution and may ask support at NRPC level and from Central Govt. to resolve pending issues as early as possible.

ii. MS, NRPC may call a separate meeting with concerned officials from NRLDC, J&K, Ladakh, PGCIL and other parties involved to resolve the above pending issues expeditiously.

Decision of the Forum:

A separate meeting shall be called by NRPC Sectt. with NRLDC, J&K, Ladakh, PGCIL and other stakeholders to resolve the above pending issues expeditiously.

A.11 PMU Data of RVPN Substations (Agenda by NRLDC)

A.11.1 NRLDC representative stated following:

i. Integration of PMU installed under Smart Transmission Network & Asset Management System (STNAMS) was discussed in detail in 64th NRPC Meeting held on 24th March 2023 wherein it was recorded that work would be completed by 30th April 2023.

ii. PMU data is very important to analyse transient/dynamic behaviour on fault/switching. Moreover, it is also important to analyse the recent oscillations observed in RE complex. However, data of PMUs installed in RVPN stations is still not reporting to Rajasthan SLDC/ NRLDC control room.

iii. In 66th NRPC meeting, RVPN representative stated that the work would be completed by 15th June 2023. However, the work is still pending.

A.11.2 RVPN representative stated that the project got delayed due to some cyber security issue and contractual issue with GE (General Electric). GE has said that integration of PMU with URTDSM PDC system is not in the scope of the work awarded to them. He further said that the contractor has given estimate of INR 39 lakhs to complete the work. He raised issue regarding the way to meet the cost. He added that 9 stations are already giving PMU data under STNAMS and 25 stations are still remaining.

A.11.3 Chairperson, NRPC advised that a separate meeting may be called by NRPC on this issue with concerned officials of Rajasthan and GE to discus and to resolve the contractual issues of Rajasthan with GE and other cyber security issues (if any) to implement the PMUs expeditiously.

Decision of the Forum:

NRPC Sectt. may convene a separate meeting with Rajasthan and other stakeholders for resolution of the issue.

A.12 Transmission System for Evacuation of Power from Shongtong Karchham HEP (STKHEP) and Tidong HEP in Himachal Pradesh (agenda by HPPCL)

I/30219/2023

A.12.1 HPPCL representative apprised the issue regarding evacuation of power from Shongtong Karchham HEP (450MW) and said that issue was deliberated during the 65th NRPC meeting held on 21.04.2023 wherein the following interim arrangements was agreed subject to approval of NCT:

i. Interim Part (Shongtong HEP):
   - Generation switchyard of Shongtong HEP to Wangtoo (HPPTCL) 400Kv D/c [Quad] line (about 18 kms)
   - 2 nos. of 400kV bays (GIS) at Wangtoo S/s (HPPTCL).

ii. Final System (To be matching with generation schedule i.e. with time frame of 1st July 2026).
   - Establishment of 2x315 MVA (7x105 MVA 1-ph units including one spare unit) 400/220kV GIS Pooling Station at Jhangi.
   - Extension of Wangtoo (HPPTCL)- Shongtong HEP 400Kv D/c [Quad] line uptoJhangi PS with
   - One Circuit through Shongtong HEP generation switchyard.
   - Wangtoo (HPPTCL)-Panchkula (PG) 400Kv D/c line (Twin HTLS)
   - 80 MVAR swtchable line reactor at Panchkula end on each circuit of 400kV Wangtoo (HPPTCL)-Panchkula (PG D/cline.
   - 400kV bays at Wangtoo S/s (2 nos.) and Panchkula S/s (2nos.) for termination of 400kV Wangtoo (HPPTCL)-Panchkula (PG) D/c line.
   - 125 MVAR, 420kV Bus reactor at Jhangi PS (1-ph units along with one spare unit).

A.12.2 Based on the above decision, the issue was also deliberated and agreed in principle in the 18th Consultation Meeting for Evolving Transmission Scheme in Northern Region held on 28.04.2023.

A.12.3 Subsequently, the matter was discussed in the meeting of National Committee on Transmission (NCT) held on 09.06.2023 wherein CTUIL informed that based on the preliminary survey report for 400 kV Wangtoo – Panchkula D/c line, conductor in certain portion of the transmission line may need to be different configuration (due to very high altitude encountered in certain sections) in order to avoid Corona inception gradient. The cost of the transmission scheme may also increase.

A.12.4 Accordingly, CTUIL was requested to confirm change in conductor configuration, if any, along with revised cost of the scheme based on the survey report and submit the same within two weeks. It is gathered that the details are still under finalization.

A.12.5 The construction activities of project are in full swing, to achieve the commissioning target of mid July, 2025 for which power evacuation system needs to be in place before by mid July 2025.

A.12.6 He requested that the approval of proposal for the interim arrangement for evacuation of power from Shongtong Karchham HEP and subsequent award of work may be expedited in order to ensure that Transmission System is available before Mid July 2025 matching with commissioning schedule of Shongtong Karchham HEP.

A.12.7 CTU representative mentioned that on 11th August 2023, CEA has given recommendation based on which proposal has already been given to NCT by CTUIL. The matter will get resolved in next NCT meeting.

Decision of the Forum:

Forum requested CTUIL to expedite the approval of interim arrangement for evacuation of power from Shongtong Karchham HEP and subsequent award of work.

A.13 Implementation of Islanding Scheme in Delhi (Agenda by DTL)

A.13.1 EE (P) apprised that a meeting was held on 14.07.2023 with DTL, Delhi SLDC and NRLDC wherein DTL was asked to incorporate the suggestions/observations and to put up a revised proposal of the Delhi islanding scheme.

A.13.2 DTL has submitted the proposal for revised islanding scheme (**Annexure-IV**).

A.13.3 The same was discussed in the 209th OCC meeting held on 19.07.2023. After deliberation, the OCC forum concurred the revised Delhi islanding scheme.

A.13.4 Member Secretary, NRPC highlighted that the proposed island scheme has 300MW load capacity including VVIP areas and critical locations and required to be implemented at the earliest. He requested the NRPC Forum for the approval of the proposed islanding scheme for Delhi as the detailed technical requirements has already been examined and approved in OCC meeting.

Decision of the Forum:

*Forum approved the revised islanding scheme of Delhi as enclosed at **Annexure-IV**.*

A.14 Installation of Capacitor Banks at Various Substations of RVPN and DISCOMs (Agenda by RVPN)

A.14.1 EE (P) apprised that there is proposal for installation of capacitor banks at various substations of RVPN and DISCOMs.

A.14.2 RVPN stated that as per the deliberations & discussions held during 77th TESG meeting of PSDF, RVPN had performed a combined study optimizing the locations for better placement of 33 KV and 11 KV capacitor banks and removing those capacitor banks which are causing over compensation.

A.14.3 The study was submitted to NRPC on 12.06.2023 and was discussed with NRLDC and CTUIL in meeting held on 21.06.2023 at NRPC Secretariat. NRLDC in the meeting held on 21.06.2023 has suggested inclusion of some substations which had been otherwise dropped in the optimization on the basis of the load fluctuations. The same were incorporated in the revised DPRs/BOQ (**Annexure-V**).

A.14.4 Rajasthan representative informed that after discussion, total nos. of capacitor identified for installation is 1991 for RVPN & three DISCOMs.

A.14.5 Rajasthan representative stated about high load fluctuation level in Rajasthan due to Agricultural feeders. So there is proposal of these capacitor installations at both RVPN and DISCOMs level.

A.14.6 NRLDC representative raised concern over low voltage level at Alwar and Hindaun city.

A.14.7 Member Secretary, highlighted that the agenda regarding installation of capacitor banks at various substations of RVPN and DISCOMs has already been discussed by NPC Division, CEA, wherein Rajasthan submitted a proposal to install capacitor banks separately at RVPN and DISCOMs. CEA directed Rajasthan to do combined system study to optimize the cost of this project.

A.14.8 After deliberation, forum approved the proposal.

Decision of the Forum:

Forum accorded technical approval for installation of total 1991 number of capacitor banks in Rajasthan under PSDF as detailed below:

S. No.	Entity	Voltage level of Capacitor banks	No. of Capacitor banks
1.	RVPN	33 kV	100
2.	JVVNL	11 kV	511
3.	AVVNL	11 kV	650
4.	JdVVNL	11 kV	730

A.15 Sensitization for Use of PushP Portal (Agenda by NRPC Secretariat)

A.15.1 EE (P), NRPC apprised that agenda was discussed in 64th NRPC meeting (held on 24.03.2023) wherein utilities were sensitized for use of PushP portal for Optimal Utilization of Resources & Reduction in cost of Power for Consumers.

A.15.2 Member Secretary, NRPC highlighted the discussion of PushP portal done in NPC meeting and stated that most proactive state is Telangana while Northern region has less participants. It was also discussed that State Generating Stations (SGS) units with sufficient coal storage, under RSD, may participate on this portal for meeting the peak demand of other States and National Grid.

A.15.3 It was stated that a meeting was taken by Chairperson, CEA on 08.08.2023 and he highlighted that thermal generating units may leverage the facility of PushP portal. It will ensure capacity utilization of plants and at the same time may provide cheaper power to consumers as PushP portal facilitates power at regulated tariff. Further, the States will also be benefitted as corresponding fixed charge shall be transferred to the beneficiary.

A.15.4 UPSLDC representative informed that they are not having its acces.

A.15.5 EE (C), NRPC highlighted that UPPCL power purchase cell has been given credentials for PushP portal and separate rights are given to SLDC. The main function of SLDCs is coordination.

A.15.6 Chairperson, NRPC highlighted that PushP portal may be made free of any regulatory issue so that States may feel comfortable to be on-board.

Decision of the Forum:

Forum noted the utility of PushP portal and requested utilities to utilize at maximum.

A.16 Notification of CERC Regulations (Agenda by NRPC Secretariat)

A.16.1 EE (P) apprised that CERC has notified following regulations w.e.f 01.10.2023:

i. Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2023

ii. Central Electricity Regulatory Commission (Connectivity and General Network Access to the inter-State Transmission System) (First Amendment) Regulations, 2023

A.16.2 A brief presentation was given by NRPC Secretariat on IEGC 2023 which has following chapters:

1. Preliminary (Scope & Extent of Applications, Definitions)
2. Resource planning code (NEW)
3. Connection Code
4. Protection Code (NEW)
5. Commissioning and Commercial Operation Code
6. Operating Code

7. Scheduling and Despatch Code
8. Cyber Security (NEW)
9. Monitoring and Compliance Code
10. Accounting and Pool Settlement System

A.16.3 EE (P) highlighted about three newly added chapters in IEGC 2023 are as:

i. Resource Planning Code
ii. Protection Code
iii. Cyber Security

A.16.4 EE(P) apprised about protection code and stated about Protection Protocol, Protection Settings, Protection Audit Plan, System Protection Scheme & Recording Instruments.

A.16.5 EE(C) apprised commissioning and commercial operation code and stated about Start-Up/ Infirm Power, Notice of Trial Run, Trial Run of Thermal Generating Unit, Hydro Generating Unit, Solar Generating Station, Wind Generating Station, Storage/ Hybrid Generating Station & Transmission System.

A.16.6 EE (C) subsequently, stated about Certificate of Successful Trail run, declaration by Generating Comp-any & Transmission Licensee, Declaration of Commercial Operation and Commercial Operation Date.

A.16.7 EE(O) apprised about Operation code and stated about System Security, Islanding, Under frequency and df/dt defense mechanism, frequency control and reserves, Operational Planning timeline and activity list, Demand Estimation, Generation & Adequacy Estimation, Operation Planning Study, System Restoration, Real Time Operation, Post Dispatch Analysis & Field Testing for Model validation.

A.16.8 Chairperson, NRPC highlighted that all utilities need to go through CERC Grid code.

A.16.9 Member Secretary, NRPC stressed that detailed discussion would be done and a separate workshop would be arranged in NRPC/NRLDC on IEGC 2023 for familiarization of all NR utilities.

Decision of the Forum:

Forum requested utilities to have a understanding of CERC Grid code 2023 and conveyed that a workshop shall be arranged by NRPC/NRLDC on new grid code.

A.17 Reimbursement of Expenditure of NRPC Sectt. for FY 2023-24 by the Members of NRPC (agenda by NRPC Secretariat)

I/30219/2023

A.17.1 EE (P), NRPC apprised that constituent members are required to pay annual contribution which is decided on the basis of estimated expenditure of next financial year and balance amount in the NRPC fund (if any).

A.17.2 Member Secretary, NRPC informed that current contribution has been Rs 10,00,000/- (Rs Ten Lakhs only) per member per year since financial year 2018-19.

A.17.3 During the year 2023-24 additional expenditure is required due to replacement of the lift, one hired EV vehicle for NRPC office, maintenance/painting of NRPC office & colony building, renewal of various AMCs and procurement of laptop/desktop computers etc. (Annual Budget for FY 2023-24 is attached as **Annexure-VI**.)

A.17.4 During previous years, saving are good enough to meet additional expenses, hence NRPC secretariat has decided not to increase the NRPC member contribution fee for financial year 2023-24. Accordingly, contribution amount for FY 2023-24 is proposed as INR 10,00,000/- (Rs Ten Lakhs only) per member only.

A.17.5 Member Secretary, NRPC informed that NRPC Fund is audited annually by Independent Auditor and also by GoI Auditors. Recently tender for audit has been awarded for year 2020-21 & 2021-22 and audit work is under progress.

A.17.6 EE (P) proposed that members may complete reimbursement in NRPC fund by 31.10.2023. As already decided in earlier NRPC meeting, 1% simple interest per month on late payment shall be payable. NRPC would issue demand letters by 01.09.2023 with request for payment by 31.10.2023 and interest for current FY 2023-24 would be levied from November, 2023 onwards. Payment made during month would also invite 1% interest.

Decision of the Forum:

Forum approved following:

i. *Annual contribution fee of NRPC shall be INR 10,00,000/- (Rs Ten Lakhs only) per member.*

ii. *1% simple interest per month on late payment shall be payable. NRPC would issue demand letters by 01.09.2023 and interest for current FY 2023-24 would be levied from November, 2023 onwards. Payment made during month would also invite 1% interest.*

A.18 Outstanding Contribution by the Constituent Members (Agenda by NRPC Secretariat)

I/30219/2023

A.18.1 EE (P) apprised that JKPDCL, JKPDD and DVVNL have pending membership payments of 32 lakhs, 21.8 lakhs and 10.5 lakhs respectively, details of which are mentioned below:

S. No.	Name of Constituent	Financial Year	Outstanding amount (Rs)	Penalty (Rs)
1	JKPDCL/JKPDD	2014-15	11,00,000	-
2	JKPDCL/JKPDD	2015-16	11,00,000	-
3	JKPDCL/JKPDD	2018-19	10,00,000	-
4	JKPDCL/JKPDD	2019-20	10,00,000	-
5	JKPDCL/JKPDD	2021-22	10,00,000	1,80,000
6	Dakshinanchal Vidyut Vitran Nigam Limited	2022-23	10,00,000	50,000
		Total	**64,53,000 Rs**	

A.18.2 He informed that Dakshinanchal Vidyut Vitran Nigam Limited (DVVNL) has now paid total fee of Rs 10,50,000 including penalty. However, payment is awaited from J&K.

A.18.3 He further highlighted that J&K has paid the contribution for year 2022-23 but previous huge amount is still pending.

A.18.4 Member Secretary, NRPC requested all members to contribute in the fund timely and to avoid any penalty as sufficient time is given to do the same.

A.18.5 J&K representative stated that as per their record, contribution fee for year 2021-22 is pending rest other have been paid already.

A.18.6 Member Secretary, NRPC stated that J&K may send receipt of transactions to NRPC Secretariat so that payments received from J&K can be checked again for reconciliation of the same.

Decision of the Forum:

Forum requested J&K to send a letter to NRPC Secretariat attaching proof of payment done for NRPC contribution fee for FY 2014-15, 2015-16, 2018-19, 2019-20, and 2021-22 for reconciliation at NRPC Secretariat.

A.19 Approval of Renovation Modernization & Upgradation (RMU) Works of Substations Under PSDF scheme (Agenda by Ladakh Power Development Department, UT of Ladakh)

A.19.1 EE (P), NRPC apprised that Ladakh got its first internal 66/11 KV level grid operationalized in the year 2012-13 after the commissioning of 44 MW Chutak and 45 MW Nimbo Bazgo HEP projects of NHPC and subsequently the local grid was connected to the northern grid in 2019.

A.19.2 That 66 KV line along with 66/11 KV substations were commissioned by NHPC under RGGVY scheme in FY 2012-13 however these equipment are much older (2009-19).

A.19.3 At present, LPDD is facing difficulties in operation and maintenance of these stations due to degradation. It is observed that the degradation of the substation equipment is on higher scale, due to the extreme climatic conditions of Ladakh.

A.19.4 LPDD has proposed for taking up Renovation Modernization & Upgradation (RMU) of these substations under PSDF scheme. A DPR is under preparation by Ladakh in this regard.

A.19.5 LPPD has requested forum to grant approval in favour of LPDD for preparing a DPR for taking up RMU of the same. Further, it has also been requested that a 3rd Party Protection Audit of these stations may kindly be taken up through NRPC to ascertain the claims of LPDD for going ahead with RMU of these substations.

A.19.6 Member Secretary, NRPC highlighted that Ladakh was requested to depute any official to attend the NRPC meeting but due to their prior urgent meeting no one is present in the meeting. He mentioned that a group of officers may be formed for protection audit of sub-stations of Ladakh.

A.19.7 Chairperson, NRPC stated that nominations of officials of protection domain from state utilities may also be taken in 3rd party protection audit group.

Decision of the Forum:

Forum decided to form group of officials to conduct 3rd party Protection Audit of LPPD sub-stations. LPPD was requested to facilitate protection audit. LPPD was also requested to prepare and put up DPR for RMU project for approval of NRPC in upcoming meetings.

A.20 Opening of letter of Credit (LC) in Favour of NHPC Ltd. for Power Supply to JKPCL, J&K from NHPC Power Stations (agenda by NHPC)

A.20.1 NHPC Representative stated that they are repeatedly requesting JKPCL, J&K to open letter of credit (LC) for an amount of 96.76 Crs in accordance with letter of MoP notification no. 23/22/2019- R&R (Part-4) dated 03.06.2022 “Electricity (Late Payment Surcharge and Related matters) Rules, 2022”. However JKPCL, J&K has yet not opened the LC for the requisite amount in favour of NHPC Ltd.

A.20.2 NHPC Ltd. reiterated that in accordance with the Ministry of Power (MoP), Govt. of India notification mentioned, requisite LC is necessarily required to be opened by distribution company in favour of generating company before schedule of power to them.

A.20.3 LC is to be opened by JKPCL, J&K of mentioned amount worked out on the basis of 105% of last 12 months average billing. In this regard, last reminder was sent to JKPCL, J&K on 11.08.2023.

A.20.4 Member Secretary, NRPC highlighted that the issue is same as of SJVN. So discussion on the same has already been done under agenda no. 7 of this meeting.

Decision of the Forum:

Forum decided to send a DO letter by Chairperson, NRPC to Secretary (Power), J&K and MHA, GOI highlighting the issue for early resolution.

A.21 Replacement of Various Size of ACSR Conductor (i.e. wolf/panther/zebra/moose) with Equivalent HTLS Conductor to Reduce the Overloading of Existing Transmission Lines and also to Improve the Reliability of Power System in Haryana under PSDF Grant (agenda by HVPN)

A.21.1 EE (P) apprised about agenda of HVPN regarding re-conductoring work on their line.

A.21.2 HVPN representative added that due to exponential growth in power demand, the existing lines are unable to cater power demand in the various region of Haryana. It is further submitted that erection of new lines in these regions are not feasible due to non-availability of RoW (Right of Way). Therefore, replacement of existing ACSR conductors with equivalent HTLS conductor of higher current carrying capacity is the only available option to reduce the overloading of existing lines and also to improve the reliability with capability to cater the increased load demand in Haryana.

A.21.3 He explained that the designing of HTLS conductor depends a lot on the conductors ageing effect on sag and tension, existing creep mitigation methods of the conductor and the profile of existing Transmission lines. Therefore, all the works have been packaged as per existing size (type) of the conductor i.e. wolf, Panther, Zebra &

Moose. Accordingly, following 3 no. packages have been prepared with overall estimated cost of Rs. 290 Crore (approx.) (**Annexure-VII**).

A.21.4 Chairperson, NRPC highlighted that there are multiple cases of right of way issues in NCR region so HTLS conductor is better option.

A.21.5 Member Secretary, NRPC appreciated the HVPN for their proposal and addressed the importance of PSDF for improvement of grid network.

A.21.6 CTU representative stated that intra-state network augmentation may be discussed at CEA level first for technical feasibility.

Decision of the Forum:

Forum accorded in-principal approval to proposal of HVPN for replacement of various size of ACSR conductor (i.e. wolf/panther/zebra/moose) with equivalent HTLS conductor. HVPN was requested to approach CEA for technical evaluation and accordingly, DPR for PSDF may be put up for approval of NRPC in upcoming meetings.

A.22 Non submission of Letter of Credit (LC) by M/s. JKPCL (agenda by NPCIL)

A.22.1 NPCIL representative apprised that as per Power Purchase Agreement the Discom-M/s. JKPCL is required to open LC as payment security mechanism for an amount worked out on the basis of 105% of last 12 months average billing.

A.22.2 He highlighted that LC of JKPCL has expired on 13.11.2019, and since then, inspite of various reminders, DISCOM has not acceded to open LC in favour of NPCIL for power supplied from Rajasthan Atomic Power Station and Narora Atomic Power Station.

A.22.3 He further stated that NPCIL wants to get it resolved amicably without any litigation or arbitration way. Accordingly, he requested Forum to sort the matter on its level.

A.20.5 Member Secretary, NRPC highlighted that the issue is same as of SJVN and NHPC. So discussion on the same has already been done under agenda no. 7 and 20 of this meeting.

Decision of the Forum:

Forum decided to send a DO letter by Chairperson, NRPC to Secretary (Power), J&K and MHA, GOI highlighting the issue for early resolution.

A.23 Rebate Availed by Rajasthan DISCOM (JVVNL, JDVNL & AVVNL) without LC (agenda by NPCIL)

A.23.1 NPCIL representative apprised that the LC of Rajasthan Discom expired on 31.03.2017. In the interim period before renewal of LC, the Discom settled the bill for the period April 2017 to November 2017 net of rebate at Rs. 13.79 Crs.

A.23.2 He highlighted that this rebate is not in line with PPA conditions, whereby in absence of LC, DISCOMis not eligible to claim any rebate. In spite of various follow up the Discom has failed to release the rebate amount.

A.23.3 NPCIL representative highlighted reason informed for delay in opening LC was merger of their bank SBBJ with SBI.

Decision of the Forum:

Forum decided that NRPC Sectt. may have a separate meeting for LC related issues of Rajasthan.

A.24 PPA with TATA Power, BYPL & BRPL for NAPS & RAPS (agenda by NPCIL)

A.24.1 NPCIL representative apprised that PPA with TATA Power, BYPL & BRPL for NAPS & RAPS expired on 26.04.2020 and it has been put up to DERC for consideration.

A.24.2 He highlighted that DERC hearing was scheduled on 17.11.2022 and next date of hearing is yet to be notified. Forum is requested to address DERC to do further process at the earliest.

Decision of the Forum:

Forum agreed to request DERC to expedite the matter of NPCIL regarding PPA with TATA Power, BYPL & BRPL for NAPS & RAPS.

*****

List of addressee (via mail)

NRPC Members for FY 2023-24

S. No.	NRPC Member	Category	Nominated/ Notified/Delegated Member	E-mail
1	Member (GO&D), CEA	Member (Grid Operation & Distribution), Central Electricity Authority (CEA)	Member (GO&D), CEA	member.god@cea.nic.in
2	Member (PS), CEA	Nodal Agency appointed by the Government of India for coordinating cross-border power transactions	Member (PS), CEA	memberpscea@nic.in
3	CTUIL	Central Transmission Utility	Chief Operating Officer	pcgarg@powergrid.in
4	PGCIL	Central Government owned Transmission Company	Director (Operations)	tyagir@powergrid.in
5	NLDC	National Load Despatch Centre	Executive Director	scsaxena@grid-india.in
6	NRLDC	Northern Regional Load Despatch Centre	Executive Director	rk.porwal@grid-india.in
7	NTPC	Central Generating Company	Director (Finance)	jaikumar@ntpc.co.in
8	BBMB		Chairman	cman@bbmb.nic.in
9	THDC		ED (PSP&APP)	lpjoshi@thdc.co.in
10	SJVN		CMD	sectt.cmd@sjvn.nic.in
11	NHPC		Director (Technical)	ykchaubey@nhpc.nic.in
12	NPCIL		Director (Finance)	df@npcil.co.in
13	Delhi SLDC	State Load Despatch Centre	General Manager	gmsldc@delhisldc.org
14	Haryana SLDC		Chief Engineer (SO&C)	cesocomm@hvpn.org.in
15	Rajasthan SLDC		Chief Engineer (LD)	ce.ld@rvpn.co.in
16	Uttar Pradesh SLDC		Director	directorsldc@upsldc.org
17	Uttarakhand SLDC		Chief Engineer	anupam_singh@ptcul.org
18	Punjab SLDC		Chief Engineer	ce-sldc@punjabsldc.org
19	Himachal Pradesh SLDC		Chief Engineer	cehpsldc@gmail.com
20	DTL	State Transmission Utility	CMD	cmd@dtl.gov.in
21	HVPNL		Managing Director	md@hvpn.org.in
22	RRVPNL		CMD	cmd.rvpn@rvpn.co.in
23	UPPTCL		Managing Director	md@upptcl.org
24	PTCUL		Managing Director	md@ptcul.org
25	PSTCL		CMD	cmd@pstcl.org
26	HPPTCL		Managing Director	md.tcl@hpmail.in
27	IPGCL	State Generating Company	Managing Director	md.ipgpp@nic.in
28	HPGCL		Managing Director	md@hpgcl.org.in
29	RRVUNL		CMD	cmd@rrvun.com
30	UPRVUNL		Managing Director	md@uprvunl.org
31	UJVNL		Managing Director	md@ujvnl.com
32	HPPCL		Managing Director	md@hppcl.in
33	PSPCL	State Generating Company & State owned Distribution Company	CMD	cmd-pspcl@pspcl.in
34	DHBVN	State owned Distribution Company (alphabetical rotaional basis/nominated by state govt.)	Director (Projects)	directorprojects@dhbvn.org.in
35	Jaipur Vidyut Vitran Nigam Ltd.		Managing Director	md@jvvnl.org
36	Madhyanchal Vidyut Vitaran Nigam Ltd.		Managing Director	mdmvvnl@gmail.com
37	UPCL		Managing Director	md@upcl.org
38	HPSEB		Managing Director	md@hpseb.in
39	Prayagraj Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity	Head (Commercial & Regulatory)	sanjay.bhargava@tatapower.com
40	Aravali Power Company Pvt. Ltd		CEO	SRBODANKI@NTPC.CO.IN
41	CLP Jhajjar Power Ltd.,		CEO	rajneesh.setia@apraava.com
42	Talwandi Sabo Power Ltd.		COO	Vibhav.Agarwal@vedanta.co.in
43	Nabha Power Limited		CEO	sk.narang@larsentoubro.com
44	Lanco Anpara Power Ltd		President	sudheer.kothapalli@lancogroup.com
45	Rosa Power Supply Company Ltd		Station Director	Hirday.tomar@relianceada.com
46	Lalitpur Power Generation Company Ltd		Managing Director	vksbankoti@bajajenergy.com
47	MEJA Urja Nigam Ltd.		CEO	hopmeja@ntpc.co.in
48	Adani Power Rajasthan Limited		COO, Thermal, O&M	jayadeb.nanda@adani.com
49	JSW Energy Ltd. (KWHEP)		Head Regulatory & Power Sales	jyotiprakash.panda@jsw.in
50	RENEW POWER	IPP having less than 1000 MW installed capacity (alphabetical rotaional basis)	CEO	sumant@renew.com
51	UT of J&K	From each of the Union Territories in the region, a representative nominated by the administration of the Union Territory concerned out of the entities engaged in generation/ transmission/ distribution of electricity in the Union Territory.	Chief Engineer, JKPTCL	sojpdd@gmail.com
52	UT of Ladakh		Chief Engineer, LPDD	cepdladakh@gmail.com
53	UT of Chandigarh		Executive Engineer, EWEDC	elop2-chd@nic.in
54	BYPL	Private Distribution Company in region (alphabetical rotaional basis)	CEO	Amarjeet.Sheoran@relianceada.com
55	Bikaner Khetri Transmission Limited	Private transmission licensee (nominated by cetral govt.)	Vice-President	nihar.raj@adani.com
56	Adani Enterprises	Electricity Trader (nominated by central govt.)	Head Power Sales & Trading	anshul.garg@adani.com
57	Ajmer Vidyut Vitran Nigam Ltd.	Special Invitee	Managing Director	md.avvnl@rajasthan.gov.in

Special Invitees:

RE Holding companies in NR with installed capacity of more than 1000 MW (provsional members as decided in 59th NRPC meeting)

Special Invitees:

1. Shri. Chowna Mein, Hon'ble Dy. Chief Minister and I/C Power, Govt. of Arunachal Pradesh, Block No.2, 5th Floor, A.P. Civil Secretariat, Itangar-791111. [Email: chowna.mein@gov.in]Tel -03602212671
2. Shri Ginko Lingi, Chairman, TCC, NERPC & Chief Engineer (P), TPMZ , Department of Power, Govt. of Arunachal Pradesh, Vidyut Bhawan, zero Point, Itanagar-791111. [Email: ginko.lingi@gmail.com] Tel -9612153184
3. Shri K Vijayanand, Chairperson, SRPC, Chairman & Managing Director , Transmission Corporation of Andhra Pradesh Limited, Vidyut Soudha, Gunadala, Eluru Rd, Vijayawada, Andhra Pradesh 520004. [Email: cmd.aptransco@aptrandco.in ; vjanand@nic.in] Tel -08662429201
4. Shri AKV Bhaskar, Chairperson TCC, SRPC, Director (Trasmission & Grid Management), Transmission Corporation of Andhra Pradesh Limited, Vidyut Soudha, Gunadala,Eluru Rd, Vijayawada, Andhra Pradesh 520004. [Email: kannanvenkatabhaskar.angulabharanam@aptransco.co.in] Tel -.08662429209
5. Sri Nikunja Bihari Dhal, IAS, Chairman, ERPC, Additional Chief Secretary to Govt., Department of Energy, Govt. of Odisha, Bhubaneswar. [Email-chairman@gridco.co.in] Tel -06742540098
6. Shri Trilochan Panda, Managing Director, GRIDCO, Chairperson TCC, ERPC, GRIDCO Limited, Regd. Office: Janpath, Bhubaneswar – 751022. Tel -06742540877 [Email- md@gridco.co.in]
7. Shri Sanjay Dubey, Chairman, WRPC & Principal Secretary(Energy), GoMP, VB-2, Vallabh Bhawan Annex, Mantralay, Bhopal: 462 001 (M.P.), Email: psenergyn@gmail.com, Tel. 0755-2708031
8. Shri Raghuraj Rajendran, Chairman-TCC, WRPC & Managing Director MPPMCL, Block No-15, Shakti Bhawan, Vidyut Nagar, Rampur, Jabalpur-482008. [Email-mdofmppmcl@gmail.com]
9. Smt. Rishika Saran, Member Secretary, NPC, Sewa Bhawan, R. K. Puram, New Delhi-66 [Email-cenpc-cea@gov.in]
10. Shri Deepak Kumar, Member Secretary, WRPC, Plot No- F-3, MIDC Area, Marol, Opp. SEEPZ, Central Road, Andheri (East), Mumbai-40093.[email: ms-wrpc@nic.in] Tel - 02228221636
11. Shri Asit Singh, Member Secretary, SRPC, No.29, Race Course Cross Road, Bengaluru-560009. [Email: mssrpc-ka@nic.in] Tel -08022287205/9449047107
12. Shri N.S. Mondal, Member Secretary, ERPC,14,Golf Club Road, ERPC Building, Tollygunje,Kolkata-700033. [Email: mserpc-power@nic.in]- Tel 03324239651/9958389967
13. Shri K B Jagtap, Member Secretary, NERPC, NERPC Complex, Dong Parmaw, Lapalang, Shillong-793006. [Email: ms-nerpc@gov.in] Tel -03642534077/ 8652776033

******

Attendance Sheet					
68th NRPC Meeting					
18.08.2023					
Aurika Resort (By Lemon Tree), 01, Kala Rohi, Sisarma, Udaipur, Rajasthan - 313001, India					
Sr. No.	**Utility/Organization**	**Name of officer (Sh/Smt)**	**Designation**	**Office address**	**E-mail**
1	NRPC	Sh. Mohammed Shayin	Chairperson NRPC-cum- MD, HVPNL	Shakti Bhawan,Panchkula	md@hvpn.org.in
2		V K Singh	MS	Katwaria Sarai, New Delhi	vksinghcea@gmail.com
3		Santosh Kumar	SE	Katwaria Sarai, New Delhi	seo-nrpc@nic.in
4		Anzum Parwej	SE	Katwaria Sarai, New Delhi	anjum.parwej@nic.in
5		Reeturaj Pandey	EE	Katwaria Sarai, New Delhi	pandeyr.cea@gov.in
6		Pushpa Rani Rao	PSO	Katwaria Sarai, New Delhi	pushprrao@gmail.com
7		Rajat Dixit	AEE	Katwaria Sarai, New Delhi	dixit.rajat@gov.in
8		Omkishor	EE	Katwaria Sarai, New Delhi	
9		Praveen Jangra	EE	Katwaria Sarai, New Delhi	praveen.cea@gov.in
10		Lokesh Agrawal	AE	Katwaria Sarai, New Delhi	lokesh.cea@gov.in
11	ERPC	N S Mondal	MS, ERPC	Kolkata	
12	WRPC	Deepak Kumar	Member Secretary, WRPC	Andheri East , Mumbai	deepak.cea@gmail.com
13	NTPC	Jaikumar Srinivasan	Director (Finance)	Scope Complex, New Delhi	df@ntpc.co.in
14		Ajay Dua	ED-Commercial	Sector-24, Noida	
15		Shankar Saran	GM-C	Sector-24, Noida	
16		Parimal Piyush	AGM-C	Sector-24, Noida	
17	HPPCL	Sh. Shivam Pratap Singh (IAS)	Director (E)	Himfed Bhavan, New Shimla	dir_elect@hppcl.in
18	JSW Energy Ltd.	Mr. Jyotiprakash Panda	Vice President, Head of Power Sales ar	JSW Center, Bandra Kurla Complex, Bandra (E), Mumbai	
19	NHPC Ltd.	Sh. S. Adhikari	Executive Director (O&M)	NHPC Limited, Faridabad	sadhikari@nhpc.nic.in
20		Amitabh Jha	General Manager (Electrical)	NHPC Limited, Faridabad	amitabhjha@nhpc.nic.in
21		Sh. Vijay Kumar	GSM (E)	NHPC Limited, Faridabad	vijayk@nhpc.nic.in
22		Sh. Jagnath Pani	SM (E)	NHPC Limited, Faridabad	jaganathpani@nhpc.nic.in
23	SJVN Ltd.	Sh. Harish Sharma	Chief General Manager (C&SO)	Shimla (H.P.)	

Attendance Sheet					
68th NRPC Meeting					
18.08.2023					
Aurika Resort (By Lemon Tree), 01, Kala Rohi, Sisarma, Udaipur, Rajasthan - 313001, India					
Sr. No.	**Utility/Organization**	**Name of officer (Sh/Smt)**	**Designation**	**Office address**	**E-mail**
24		Sh. Ashok Kumar	General Manager (C&SO)	New Delhi	
25		Sh. Rajeev Agarwal	DGM(E)	Rampur HPS, Bayal	rajeev_sjvnl@rediffmail.com
26	BBMB	Er. Amarjit Singh Juneja	Member (Power)	BBMB, Chandigarh	mp@bbmb.nic.in
27		Er. Ajay Kumar Sharma	Special Secretary	BBMB, Chandigarh	spsecy@bbmb.nic.in
28		Er. Ruchi Sharma	Director / Power Regulation	BBMB, Chandigarh	dirpr@bbmb.nic.in
29		Er. Rajesh Kumar Thaman	Joint Secretary to Member (Power)	BBMB, Chandigarh	jsmp@bbmb.nic.in
30	UJVN Ltd.	Sh. K. K. Jaiswal	General manager (Commercial)	UJVN ltd., Ujjwal Maharani Bagh GMS Road, D	kkjaiswal99@gmail.com
31	BSES Yamuna Power Ltd	Sh. Jitendra Nalwaya	Vice President	BSES Yamuna Power Ltd	jitendra.nalwaya@relianceada.com
32	PTCUL	Er. H.S. Hyanki	Chief Engineer (T&C)/(O&M) Kumaon Z	PTCUL, Kumaon	hitendra0107@gmail.com
33	SLDC UTTARAKHAND	Er. Anupam Singh	Chief Engineer (SLDC & SCADA)	SLDC Uttarkhand	anupam_singh@ptcul.org
34	RUVNL	Sh. S K Singhal	TA to Chairman and MD (RUVNL)	RUVNL, Jaipur	md.ruvnl@rajasthan.gov.in
35		Sh. Ajay Kumar Sharma	Whole Time Director (Operations)	RVPN, Jaipur	dir.oper@rvpn.co.in
36	RVPN	Sh. M.K. Soni	Superintending Engineer (T&C)	RVPN, Kankani Jodhpur	se.tnc.kankani@rvpn.co.in
37		Sh. Sanjay Mathur	Executive Engineer (P&P)	RVPN, Jaipur	xen2.pp@rvpn.co.in
38	Rajasthan-SLDC	Sh. Mukul Bhargava	Superintending Engineer (SOLD)	SLDC, Rajasthan	se.sold@rvpn.co.in
39	CTUIL	Sh Kashish Bhambhani	Genaral Manager (Northern Region)	CTUIL, GURGAON	kashish@powergrid.in
40	UP-STU	Er. Pankaj Saxena	SE-STU	UP-STU	smart.saxena@gmail.com
41	UPPTCL	Er. satendra kumar	SE Planning	UPPTCL	setpps@upptcl.org
42	HPPTCL	Sh. Rajiv Sood	Director (P&C), HPPTCL	Shimla (H.P.) STU	rajivsoodhp@gmail.com
43	APCPL	Prashant Jain	AGM(EEMG)	APCPL-IGSTPP Jharli Dist.Jhajjar	prashantjain@ntpc.co.in
44	PSPCL	Er. Parmjeet Singh	Director/ Generation	PSEB Head Office, The Mall, Patiala	director-generation@pspcl.in
45	HPSLDC	Er. Karanbir Singh	Sr. Executive Engineer		kangrahills1770@gmail.com
46		Er. Rohit Kumar	Assistant Engineer		choudhary.rohit2012@gmail.com

Attendance Sheet					
68th NRPC Meeting					
18.08.2023					
Aurika Resort (By Lemon Tree), 01, Kala Rohi, Sisarma, Udaipur, Rajasthan - 313001, India					
Sr. No.	**Utility/Organization**	**Name of officer (Sh/Smt)**	**Designation**	**Office address**	**E-mail**
47	JVVNL	Sh.Rakesh Dusad	Executive Engineer(DF)	JVVNL Jaipur	sermdf@jvvnl.org
48	UPRVUNL	SUNEEL KUMAR	Executive Engineer	UPRVUNL	suneelppmm@gmail.com
49	AVVNL	Sh. Ashok Kumar	Add. Chief Engineer (Projects)		
50		Sh. Jagrat Gupta	Executive Engineer/TA		
51	UPSLDC	Er. Arshad Jamal Siddiqui	Chief Engineer	UPSLDC, Lucknow	ajsiddiqui1962@gmail.com
52	HPSEBL	Er. Manoj Upreti	Director Operation	HPSEBL	
53		Er. Mandeep Singh	Chief Engineer System Operation	HPSEBL	
54	Powergrid	Sri A.K. Mishra	Executive Director	Powergrid, NR1	akmishra2@powergrid.in
55		Sri A.K. Behera	Chief General Manager	Powergrid, NR1	akbehera@powergrid.in
56		Sh. Abhay Kumar	CGM AM NR3	Jammu	abhaykumar@powergrid.in
57	Punjab SLDC	Er.A.P.Singh	Chief Engineer	PSLDC, PSTCL, Patiala	ce-sldc@pstcl.org
58	DTL	Sh. Birendra Prasad	GM(T) Delhi Transco Limited	DTL, Delhi	bprasadgm.dtl@gmail.com
59	HVPN	Sh. Suresh Kumar Bansal	Director/Technical	Shakti Bhawan,Panchkula	directortechnical@hvpn.org.in
60		Sh. Chander Deep Sangwan	Chief Enginer	HVPNL Industrial Area Phase II, Panchkula Ha	cdsangwan@yahoo.com
61		Neeraj Hooda	Executive Engineer	Shakti Bhawan,Panchkula	xenec1@hvpn.org.in
62	CTUIL	Sh Kashish Bhambhani	General Manager	Gurgaon	jasbir@powergrid.in
63	PSPCL	Er. Ravinder Singh Saini	Director Commercial	PSEB Head Office, The Mall, Patiala	director-commercial-pspcl@pspcl.in
64	PPGCL, Bara	Sanjay Bhargava	Head - Commercial & Regulatory	PPGCL:, Bara , Prayagraj (U.P.)	sanjay.bhargava@tatapower.com
65	NRLDC	Somara Lakra	Chief General Manager	NRLDC, New Delhi	somara.lakra@grid-india.in
66		Alok Kumar	General Manager	NRLDC, New Delhi	alok.kumar@grid-india.in
67		Ibtesam Asif	Assistant Manager	NRLDC, New Delhi	asif@grid-india.in
68	JDVVNL	Mangi Lal Benda	Nodal Project Officer (Superintending E	New Power House Jodhpur	seinsjdvvnl@gmail.com

Attendance Sheet					
68th NRPC Meeting					
18.08.2023					
Aurika Resort (By Lemon Tree), 01, Kala Rohi, Sisarma, Udaipur, Rajasthan - 313001, India					
Sr. No.	**Utility/Organization**	**Name of officer (Sh/Smt)**	**Designation**	**Office address**	**E-mail**
69	CLP Jhajjar (Apraava Energy)	Shashi Saini	Sr. Manager-Electrical Maintenence	Jhajjar Power Limited, Jhajjar, Haryana	shashi.saini@apraava.com
70	NPCIL	Choudhary Nitin R	Outstanding Scientist and Executive Director (Commercial)	8th Floor, VSB, Anushkatinagar, Mumbai, 400094	edcomml@npcil.co.in,nrchoudhary@gmail.com
71	DHBVN	Er. Neeraj Ahuja	Director/Projects	DHBVN, Hisar	directorprojects@dhbvn.org.in

ANNEXURE 16

Annexure-II

2/10

प्रदीप कुमार सिन्हा
सचिव
भारत सरकार
PRADEEP K. SINHA
Secretary
Government of India

सत्यमेव जयते

Ministry of Power
Shram Shakti Bhawan
New Delhi - 110001

विद्युत मंत्रालय
श्रम शक्ति भवन
नई दिल्ली–110001
Tele : 23710271/23711316
Fax : 23721487
E-mail : secy-power@nic.in

D.O. No.20/6/2014-OM

05.12.2014

Dear Shri Negi,

As you are aware, India has one of the largest A.C. Synchronous Transmission Grids in the world with more than 3 lakhs circuit kms of 220kV and above lines which form the backbone of the Indian Power System.

2. However, this huge network needs to be operated in a sustained and secure manner, particularly, during the time of natural disasters. Failure to do so leads to severe constraints not only in meeting the power demand but also poses serious problems in maintaining safety and security of the Grid. Difficult situations came to light in the wake of recent natural disasters, such as, floods in J&K and Phailin as well as Hud-Hud cyclone in Odisha and Andhra Pradesh. These disasters caused extensive damage to transmission networks resulting in wide spread disruption of many important transmission links and substations affecting power supply for long periods due to the time taken in restoration.

3. You would appreciate that under such adverse situations, the availability of an effective mechanism for emergent restoration of transmission lines in the shortest possible time is of utmost importance. Immediate and temporary restoration of transmission networks is possible by deploying the "Emergency Restoration Systems (ERS)." Grid Standards notified by the Central Electricity Authority(CEA) stipulate that every Transmission Licensee shall have an arrangement for restoration of transmission lines of at least 220kV and above through the use of ERS. However, presently the States do not possess such ERS infrastructure. Consequently, POWERGRID becomes the last resort whose ERS infrastructure is also limited.

4. Therefore, deployment of adequate ERS infrastructure with the States is necessary. In this connection, CEA had recently convened a meeting of the representatives from State Utilities, CTUs and RPCs to deliberate and review their preparedness to effectively restore transmission networks in times of emergency. Based on the inputs received, an Indicative requirement of ERS for States has been assessed which is at Annex-I. Further, CEA has also formulated guidelines for planning, deployment and procurement of such ERS infrastructure (Annex-II).

5. I would, therefore, request you to please issue necessary directives to Transmission Utilities/ Transmission licensees operating in your State to take stock, procure appropriate number of ERS infrastructure and place them at strategic locations. Action taken by the Utilities in this regard may be informed to the CEA and the Ministry of Power, at the earliest.

With regards,

Yours sincerely,

(Pradeep K. Sinha)

Encl : as above

Shri Ramesh Negi
Chief Secretary
Govt of Arunachal Pradesh
Itanagar

Dist:- As per list attached.

RIGHT TO INFORMATION

स्वच्छ भारत
एक कदम स्वच्छता की ओर

ANNEX-I

Availability and Proposed Plan for deployment of ERS

Sl. No.	Region	State Utilities / PGCIL	Availability of ERS sets	Additional ERS set to be procured	Remark
I	Northern Region				
	PGCIL	NR1	3	1	
		NR2	1		
	1	Haryana	-	1	
	2	HP	-	1	Hilly terrain
	3	J&K	-	1	-do-
	4	Punjab	-	2	
	5	Rajsthan	-	3	
	6	Uttar Pradesh	-	3	
	7	Uttarakhand	-	1	
	8	Chandigarh	-	-	
	9	Delhi	-	1	DTL is procuring 2 ERS sets
	10	POWERLINKS	2		1 set each is located in NR and ER; each setting having 14 towers of 400 kV
	Total		6	14	
II	Western Region				
	PGCIL	WR1	2	1	
		WR2	2		
	10	Gujarat	-	3	

	11	MP	1	2	
	12	Chhattisgarh	-		
	13	Maharashtra	2	2	
	14	Goa	-	1	
	15	D&NH	-	-	
	16	Daman& Diu	-	-	
	Total		7	9	
III	Southern Region				
	PGCIL	SR1	1	2	
		SR2	1		
	17	AP	-	3	(To be located at Vishakahapatnam, Vijawada, Nellore)
	18	Telengana	-	1	
	19	Karnataka	-	2	
	20	Kerala	-	1	
	21	Tamil Nadu	-	2	
	22	Lakshadweep	-	-	
	23	Puducherry	-	-	
	Total		2	11	
IV	Eastern Region	PGCIL			
	PGCIL	ER1	1	-	
		ER2	2		
	24	Bihar	2	2	
	25	Jharkhand	-	1	
	26	Orissa	3	2(comprising of 12 nos. of 400kV towers which is in the process of procurement)	Existing ERS located at Bhubaneswar, Chatrapur and Budhipada (each with 14 ERS towers)
	27	West Bengal	-	2	
	28	DVC	-	1	

	29	A&N Island	-	-	
	30	Sikkim	-	-	
	Total		8	8	
V	North Eastern Region		-		
	PGCIL	NER	1		
	31	Assam	4		
	32	Manipur	-	2	
	33	Meghalaya	-		
	34	Nagaland	-		
	35	Tripura	-		
	36	Ar. Pradesh	-		
	37	Mizoram	-		
	Total		5	2	
	Total All India		28	44	

Note: POWERGRID has informed that they are procuring 6 additional sets of ERS for different regions.

Strategy adopted

1. The primary criterion for deciding number of ERS to be arranged by a transmission utility has to be the length of transmission line (ckt-kms) at different voltage levels (e.g 220 kV, 400 kV, 765 kV and +/- 500kV HVDC). Other factors to be taken into account while deciding the number of ERS are

   - Importance of the line considering security of Grid
   - Areas prone to tower failure and failure pattern in different areas
   - Command area of the transmission utility and transportability across the command area

2. For any transmission utility, one set of ERS has been planned to cater to failure of towers for transmission line lengths of up to 5000 Ckt. Kms.. Accordingly, two (2) sets of ERS have been planned for transmission line lengths of about 5000 to 10,000 Ckt. Kms. and three (3) sets for more than 10,000 Ckt. Kms and so on.

3. The transmission Utility with line length less than 500 ckt kms (of 400kV lines) may be given option either to procure ERS or have agreement with other transmission utilities for providing ERS on mutually agreed terms, when need arises.

ANNEX-II

GUIDELINES FOR PLANNING, PROCUREMENT AND DEPLOYMENT OF EMERGENCY RESTORATION SYSTEM (ERS)

1. One set of ERS should include all accessories [structures (Aluminum Alloy), polymer insulators & hardware, anchor assembly, guy wires, foundation plates, guy plate, other equipment & fittings, special Tools & Plants required for erection & stringing of ERS and trailer mounted detachable containers (without engine) for storage & transportation of ERS hardware / material etc.] and associated software.

2. One set of ERS shall be capable of restoring few numbers of suspension towers and tension towers of the transmission line corresponding to the highest transmission voltage in operation in the utility with required type of conductors. The same ERS can be used for lower voltage lines as well. The number of suspension, tension towers, insulators and associated hardware etc., to be included under one set of ERS, may be decided by the utilities at the time of procurement depending on their requirement.

3. Proper management of ERS and training of personnel for erection of towers on ERS and use of associated software is essential. A dedicated and specialized erection & commissioning gang, which is properly trained to execute such work, would be required.

4. ERS should be utilized only for emergency purposes and the line should be restored on normal towers as early as possible. It should not be a practice to run transmission line on ERS for a long time instead of shifting to normal towers. Moreover, ERS should not be used in new lines under construction. Otherwise, the very purpose of ERS will be defeated.

5. The deployment of ERS by any transmission utility / licensee should be reported to concerned RLDC and RPC.

6. The transmission utilities may approach Appropriate Commission for approval and initiate procurement process on urgent basis to comply with Grid Standards. Utilities may also approach State Disaster Management Authorities for funding.

7. The funding for procurement of ERS could be considered from PSDF for North Eastern States and a proposal be submitted by Member Secretary, NERPC.

S.No.	Issues	JKPTCL Remarks
01.	J&K Telemetry Issues	Till date more than 40 links have been completed (FODP-FODP) and SDH/PDH Configuration and NMS work is also progressing. The rework needed to be done by SIEMNS w.r.t. RTU at GSS's and real time data flow at SLDC is pending. However, a meeting on the initiative of NRPC was held in which PGCIL, JKPTCL and SIEMENS participated in the M/o June and the details were discussed for RTU integration. SIEMENS informed that there is some rework to be done to make the RTUs functional and they will submit the details for rework will to PGCIL and further PGCIL will submit to JKPTCL which is awaited.
02.	Ufr and df/dt status	The matter of Automatic under frequency Relays and df/dt relays installed in various GSS under the jurisdiction of JKPTCL, Jammu has been taken up NRPC authorities, so that directions for automatic load shedding in their respective systems, to arrest frequency decline that could result in a collapse/ desynchronization of the grids and ensure its effective application to prevent cascade tripping of generating units in case of any contingency. In this context, the list of the feeders along with their load parameters where the under frequency relays and df/dt relays are installed in Jammu Province was also attached, but till date no directions from NRPC authorities/CEA have been received by this wing, in the meantime 1342KVeeders are identified and detail also shared with NRLDC which are curtailed manually instantly in case of overdrawal/ low frequency.
03.	Reactive compensation details	The Distribution Wing of Jammu, i.e. JPDCL Jammu has already taken up the work of Installation of Capacitor banks at 11KV Level in approximately 90 receiving Stations in Jammu Province with approx. 350 MVAR capacity. However, JKPTCL has kept a provision in its CAPEX budget itself to get the damaged Capacitor banks rectified such as in 220/132/66/33KV GSS's i.e. Hiranagar, Bishnah, Gladni etc and to install new Capacitor banks wherever required to improve the voltage profile/ power factor at 220/132/33 or 66 KV level and 132/33 or 66 KV level Grid substations of Jammu province.

04.	Long outage of 220KV Kishenpur-Mirabazar Line	One circuit of this Transmission Line stands charged by installation of ERS Tower. For permanent restoration of Transmission line, the foundations work of 1 No. out of total 02 No's towers has been laid and foundation work on 2nd tower is in progress and shall be completed by 15th of September ,2023 subject to fair weather conditions. The work got delayed due to inclement weather conditions.

Revised

Delhi Islanding

Scheme-2023

(Agenda for 68th NRPC meeting)

CONTENTS

CHAPTER-1

INTRODUCTION

There were two major grid disturbances, one at 02.33 hrs on 30-07-2012 and second at 13.00 hrs on 31-07-2012. The first grid disturbance affected mainly Northern Region and the second disturbance resulted in collapse of Northern, Eastern, and North-Eastern regional grids.

The Enquiry Committee constituted by Ministry of Power, Govt. of India to look into the detailed causes of these disturbances and to suggest remedial measures, has also inter-alia made the following recommendation:

> **"9.12 Implementation of islanding schemes**
>
> Efforts should be made to design islanding scheme based on frequency sensing relays so that in case of imminent grid failure, electrical islands can be formed. These electrical islands can not only help in maintaining supply to essential services but would also help in faster restoration of grid.

In order to design/ review and to bring out the broad frame work of the islanding scheme for Delhi, a study group was constituted by CEA. This study group comprised representatives from Delhi SLDC, DTL, NRLDC, PGCIL (CTU), NTPC, NRPC, CEA and an expert from IIT. The islanding scheme was prepared based on the deliberations by the study group.

Based on the deliberations by the study group, DTL has prepared and finalized the Islanding scheme in consultation with CEA, PGCIL and NRPC.

As suggested by the study group, initially 4 islands were envisaged for the Delhi system namely:

1. Dadri Island
2. BTPS – Pragati
3. CCGT – Bawana
4. Jhajjar

As per the directions of NRPC, the 4 Islands were merged and a single island was implemented in the year 2016. Since then, lots of changes have taken place in the Delhi Power System and during the last 10 years, Rajghat & BTPS Power House has been de-commissioned and these Generating Stations are no longer operational. Moreover, Dadri State 2, 3 in the Dadri Complex are no longer scheduled by Delhi DISCOMs. Similarly, the DISCOMs are not scheduling from Jhajjar Thermal Power Station and the Pragati Power Station is also not generating as on date due to DISCOMs not scheduling from the station. Currently, Gas Turbine Stations are generating approximately 30MW Power and CCGT Bawana is generating approximately 270MW depending on the availability of Gas.

The Delhi Island implemented currently is a deficit island and there is severe shortage of generators in the island and the DISCOMs are not scheduling the power from the Jhajjar-Pragati – Dadri Generating stations and therefore the chances of the survival of the existing island are very less due to the non-availability of generators which is leading to severe load generation mismatch.

The issue of Delhi Islanding Scheme is regularly discussed in the NRPC OCC Meetings and over a period of time it emerged that the non availability of generation and non scheduling from the Dadri – Pragati – Jhajjar Generating stations by Delhi DISCOMs is a major issue. The issue was discussed in the 198th OCC Meeting held on 22.07.2022 and it was suggested that in view of the allocation of Dadri – II to Haryana and non scheduling of Jhajjar –Dadri-II due to high cost, the Delhi Island may not survive and that it would be better to have two small islands, one for GTs and the other with Bawana since mostly these plants are in operation and therefore survival chances for island would be more. Moreover, these islands could be controlled at 220KV level of DTL by STU and not 33KV level by DISCOM.

It was suggested that DTL may bring out proposal for further discussion at NRPC, Secretariat and NRLDC level. Considering the network availability of generation of CCGT Bawana and IP GT, scheme of a single island was formed and discussed in NRPC Secretariat on 11.11.2022 and the scheme was further modified and the same is detailed in the subsequent chapters.

CHAPTER-2

OVERVIEW OF DELHI POWER SYSTEM

The Generation & Transmission functions in Delhi power system are performed by Indraprastha Power Generation Company Limited/ Pragati Power Company Limited and Delhi Transco Ltd respectively. The distribution functions have been entrusted upon three private companies; BSES Rajdhani Power Limited distributes power in South and West part of Delhi; BSES Yamuna Power Limited distributes power in Central and East part of Delhi; and Tata Power Distribution Co. Ltd. distributes power in North and North-West part of Delhi. Besides these three private distribution companies, the power supply in New Delhi and Delhi Cantonment areas is being managed by New Delhi Municipal Council (NDMC) and Military Engineering Services (MES) respectively.

The transmission network of Delhi consists of a 400 kV ring around the periphery of Delhi inter-linked with the 220 kV network spread all over the city. Delhi meets power requirement from its own generation resources and imports at 400kV Mandola, Maharani Bagh, Bawana, Bamnauli, Ballabhgarh, Dwarka & Tughlakabad and 765 kV Jhatikara sub-stations. The power map of Delhi is attached as Annexure-C.

There has been considerable improvement in the power supply position. The peak demand is increasing every year and DTL has met a highest ever peak demand of 7695MW on 29th June,2022.

Delhi being the Capital city of the country, the importance of maintaining the uninterrupted power supply to VVIP areas like President House, Parliament House including VIP areas of NDMC is of utmost importance and driving force for an efficient islanding scheme.

Delhi meets its power requirement mainly from the following resources:

- Through own Generation,
- From its share in Central Generating Units, and
- Through bilateral agreements

The power is injected in the Delhi transmission system through 765kV, 400kV and 220kV network or in the sub-transmission network at 66kV and 33kV levels. Power injection at 765kV has also started in the NCR region from 765kV grid substation at Jhatikara being managed by PGCIL providing 400kV supply, through 765/400kV transformers, to Mundka and Bamnauli substations of DTL and newly commissioned 400kV Substations Dwarka & Tughlakabad of PGCIL.

The power received at various interconnection points on Delhi ring is directly fed into the 220kV network of DTL. The main transmission system for importing and carrying bulk power in Delhi is the 400kV Double Circuit quad Bersimis Ring which is capable of carrying 4000 MW power through it.

CHAPTER-3

PROPOSED ISLANDING SCHEME FOR DELHI-2023

As suggested by NRPC, the Islanding Scheme is to be prepared considering the available generation of Gas Turbine (GT) and CCGT Bawana in Delhi which is approximately 30MW and 270MW respectively.

Prior to the existing Islanding Scheme as discussed earlier, there was an islanding scheme for IP and Badarpur Complex of Delhi system. The scheme was implemented in 2001 and now has undergone changes from time to time after addition & deletion of generation and load, depending upon prevailing operational philosophy.

Now, the revised islanding scheme is designed for survival of GT and CCGT Bawana to meet the load of Parliament, Central Secretariat, Rashtrapati Bhawan, AIIMS, RML Hospital, Safdarjung Hospital, Sucheta Kriplani Hospital, GB Pant Hospital etc. As per this scheme, when the frequency falls to 47.9 Hz, the proposed Delhi System comprising CCGT Bawana, 400kV Bawana, 400kV Maharani Bagh and associated 220kV system will separate from Northern Grid at Bawana, Maharani Bagh, Sarita Vihar, IP Station to form a Single Island to feed the important load of VVIP establishments/ hospitals.

The load of Railways, Metro, Delhi International Airport Limited (DIAL) and Defense /MES establishment have not been included in the present islanding proposal due to limited generation of only 300MW, involvement of higher no. of elements to be tripped and high reactive power generation due to presence of large no of 220kV Underground Cables Ckts which will decrease the probability of formation of Island. All the VVIP establishments/ hospitals including Delhi International Airport are supposed to have their own back-up power supply arrangement to deal with any emergency condition and Delhi International Airport is already maintaining emergency backup system of 42MVA (14 DG Sets of 3MVA capacity each) apart from UPS for sensitive electronic equipment.

The following elements will be disconnected for formation of Island:

- All 400kV lines except 400kV Bawana-Maharani Bagh ckt- I & II at 400kV Bawana.
- All 400kV lines except 400kV Bawana-Maharani Bagh ckt- I & II at 400kV Maharani Bagh sub-station.

- 220kV BTPS Circuits-I & II will be disconnected at Sarita Vihar.
- All 220kV elements except 100MVA Transformer and 220kV Rohini-II Ckts I & II will be disconnected at Bawana.
- Both Circuits of 220kV Gazipur, Masjid Moth and Lodhi Road will be disconnected at Maharani Bagh.
- 220kV Rajghat Circuits-I&II and 220kV Patparganj Circuits-I&II will be disconnected at IP.
- All Generator Transformers will be disconnected at 220kV Pragati Station
- 220kV Dev Nagar Ckt will be disconnected at Electric Lane (HCML).
- All the Incomers from transformers will be disconnected at Sarita Vihar.
- All the 66kV and 33kV Feeders except those feeders considered for Islanding will be disconnected at IP, Park Street, Electric Lane (HCML), Trauma Center, Rohini-II and GT stations.

The Network for Islanding formation is attached as **Annexure A.**

The important points for creation of island are as under:

i. The field breaker at CCGT Bawana opens at 47.4Hz with 2 second time delay.

ii. The field breaker at GT opens at 47.5Hz with 500 mili second time delay.

iii. The proposed islanding frequency for separation of the above Delhi Network from Northern Grid will be 47.9Hz. The decision will be taken by under-frequency function enabled in two different relays. DT signal will also be sent to the remote end to ensure isolation.

iv. The Under Frequency Load Shedding scheme mandated as defense mechanism for Northern Region will remain intact as 49.4Hz, 49.2Hz, 49.0Hz, 48.8Hz.

v. The df/dt Load Shedding scheme mandated as defense mechanism for Northern Region will remain intact as 49.9Hz with slope of 0.1Hz/Sec, 0.2Hz/sec and 0.3Hz/sec.

vi. The 66kV, 33kV and 11kV feeders which are not to be considered in the Island, will be disconnected at the frequency of 48.4Hz at Park Street, IP, GT Station, Electric Lane (HCML) and Trauma Center.

vii. 220kV Bus-Coupler at 220kV S/Stn Pragati shall be closed at 48.2Hz.

viii. The bus configuration of 220kV level at 400kV S/Stn Bawana shall be such that ICTs nos 1,3 & 5 are parallel on one Bus System (Bus 1,3,5) and similarly ICTs nos 2,4 & 6 are parallel on another Bus System. The configuration is depicted in the layout of 400kV S/Stn Bawana as Annexure B.

Post islanding load-generation balancing Philosophy

For post islanding load-generation balancing, first of all, non-essential load at 400kV Bawana & 220kV S/Stn Rohini-II will be disconnected with the negative slope of 1.0 Hz/Sec to take care of the generation deficit island scenario.

Further, the selected feeders will be allocated for disconnection at Park Street, GT Station, IP, with negative slope of 0.3Hz/Sec, 0.2Hz/Sec and 0.1Hz/Sec and with additional time delay to take care of the generation deficit island scenario to make sure that the above slopes of 0.3Hz/Sec, 0.2Hz/Sec and 0.1Hz/Sec of df/dt relays operate only after formation of Island. The output will be configured with AND gate of the above slopes of df/dt and triggering of Islanding frequency of 47.9Hz.

The Delhi Island is expected to survive when the available generation is 300MW and in case of excess generation, generating units at Pragati and CCGT Bawana will act as per droop characteristics of governor.

After the formation of Island, the restoration of the Delhi system will be done as per the Standard Operating Procedure. The supply to DIAL will be restored by energizing DTLs AIIMS-R. K Puram-Vasant Kunj-Mehrauli-DIAL circuits, while keeping the 220/66kV and 220/33kV transformers at these stations in OFF condition. The supply to Defense feeders will be restored through energizing AIIMS-R.K Puram-Ridge Valley-Naraina circuits, keeping other loads in OFF condition.

CHAPTER-4

LIST OF FEEDERS TO BE DISCONNECTED DURING ISLAND FORMATION

S.No.	Name of the Substation	Name of the Bay/feeder (s) to be disconnected at 47.9Hz for Delhi Island Formation
		400kV Bahadurgarh
		400kV Bhiwani
		400kV Abdullapur
		400kV Dipalpur
		400kV Mundka Ckts-1 & 2
		220kV Rohini-1 Ckts-1 & 2
		220kV Kanjhawala Ckts-1 & 2
		220kV Shalimar Bagh Ckts-1 & 2
		220kV DSIDC Bawana Ckts-1 & 2
		400kV Ballabgarh
		400kV Dadri
		400kV Mandola Ckts-1& 2
		220kV Masjid Moth Ckts-1 & 2
		220kV Lodhi Road Ckts-1 & 2
		220kV Gazipur Ckts-1 & 2
		220kV BTPS Ckts-1 & 2
		All Incomers from 160MVA/100MVA Transformers
		220kV RPH Ckts-1 & 2
		220kV Patparganj Ckts-1 & 2
		All 33kV feeders other than designated load
		220kV Dev Nagar
		All 66kV & 33kV feeders other than designated load
		220kV RK Puram Ckts-1 & 2
		All 33kV feeders other than designated load
		220kV Dev Nagar Ckt
		All 33kV feeders other than designated load
9	220kV Pragati	All Generator Transformers

CHAPTER-5

DETAILS OF GENERATION CONSIDERED IN DELHI ISLAND

S.No.	Generating Station	Generation (MW)
1	CCGT-Bawana	270
2	GTPS	30
	Total Generation (MW):	**300**

Total Generation considered in Delhi Island is 300MW.

CHAPTER-6

LIST OF DESIGNATED ESSENTIAL LOAD CONSIDERED IN DELHI ISLAND

S. No.	Name of the Substation	Designated essential load/feeders in Revised Delhi Island	Max demand (7695 MW)	Min demand (2527 MW)	Max demand (5245 MW)	Min demand (1318 MW)
			Date-29.06.2022	Date-23.05.2022	Date-31.12.2019	Date-08.01.2022
			Time-15:10:41	Time-08:30:00	Time-10:45:48	Time-04:00:00
		33kV Bay 19, G.B Pant	19	8	10	6
		33kV Bay 34, Minto Road	16	9	10	6
		33kV Bay-29 & 33kV IG Stadium	19	6	8	4
		33kV Supreme Court	2	1.25	1	0.75
		33kV Bay-2, Nirman Bhawan	8	1	4	1
		33kV Bay-16, Nirman Bhawan	11	2	7	1
		66kV BD Marg- I & II	26	10	20	7
		66kV State Guest House	26	4	14	2
		33kV Hanuman Road	7	2	0	1
		33kV Nirman Bhawan	0	1	4	1
		66kV School Lane-I	17	4	19	1
		66kV School Lane-II	8	3	9	6
		66kV Vidyut Bhawan-I	10	18	17	10
		66kV Vidyut Bhawan-II	34	5	24	0
		33kV AIIMS- I,II&III	18	7	13	4
		33kV Trauma Centre-I & II	8.1	3	8.8	1.6
		33kV Safdarjung Hospital	1.6	1.6	-	1.6
		33kV Raisina I & II	18	5	3	2
		33kV Raja Bazar	10	3	2	1
		Total Load (MW):	**258.7**	**94.1**	**173.8**	**56.95**

Feeder wise details of Essential Load considered for Islanding

S. No.	220kV DTL S/stn	66kV / 33kV Discoms feeders	Essential Load Feeder/ Connected Grid
			Delhi Gate Booster Pump
			EDP Cellplant Hospital
			LNJP-1
			LNJP-2
			MAMC
			New LNJP Hospital
			DDU Marg Court Complex
			DJB, Ramlila Ground
			SLDC
			GB Pant Hospital
			LNJP Hospital- 110 Beds
			Maulana Azad Dental College
			CPWD-1
			CPWD-2
			DJB STP Delhi Gate
			33 KV MCD Civic Centre
		33kV Supreme court	Supreme Court
		33kV Bay-2 , Nirman Bhawan	
		33kV Bay-16 , Nirman Bhawan	
		66kV BD Marg I & II	
		66kV State Guest House	
		33kV Hanuman Road	
		33kV Nirman Bhawan	
		66kV School Lane-I	
		66kV School Lane-II	
		66kV Vidyut Bhawan-I	
		66kV Vidyut Bhawan-II	
		33kV AIIMS-I,II &III	AIIMS Hospital
		33kV Trauma Centre-I & II	AIIMS Trauma Centre
		33kV Safdarjung Hospital	Safdarjung Hospital
		33kV Raisina I & II	Parliament Annexe
		33kV Raja Bazar	Sucheta Kriplani Hospital

LIST OF DESIGNATED NON-ESSENTIAL LOAD CONSIDERED IN DELHI ISLAND FOR STABILITY OF ISLAND IN CASE OF EXCESS GENERATION

S. No.	Name of the Substation	Designated non-essential load/feeders in Revised Delhi Island	Max demand (7695 MW)	Min demand (2527 MW)	Max demand (5245 MW)	Min demand (1318 MW)
			Date-29.06.2022	Date-23.05.2022	Date-31.12.2019	Date-08.01.2022
			Time-15:10:41	Time-08:30:00	Time-10:45:48	Time-04:00:00
1	400kV Bawana	100MVA Transformer	63	15	45	25
2	220kV Rohini-II	66kV RG-28 Ckt-1	45	18	31	8
		66kV RG-28 Ckt-2	45	18	31	8
		66kV RG-30 Ckt-1	35	8	0	8
		66kV RG-30 Ckt-2	35	8	30	8
		Total Load (MW):	**235**	**67**	**137**	**57**

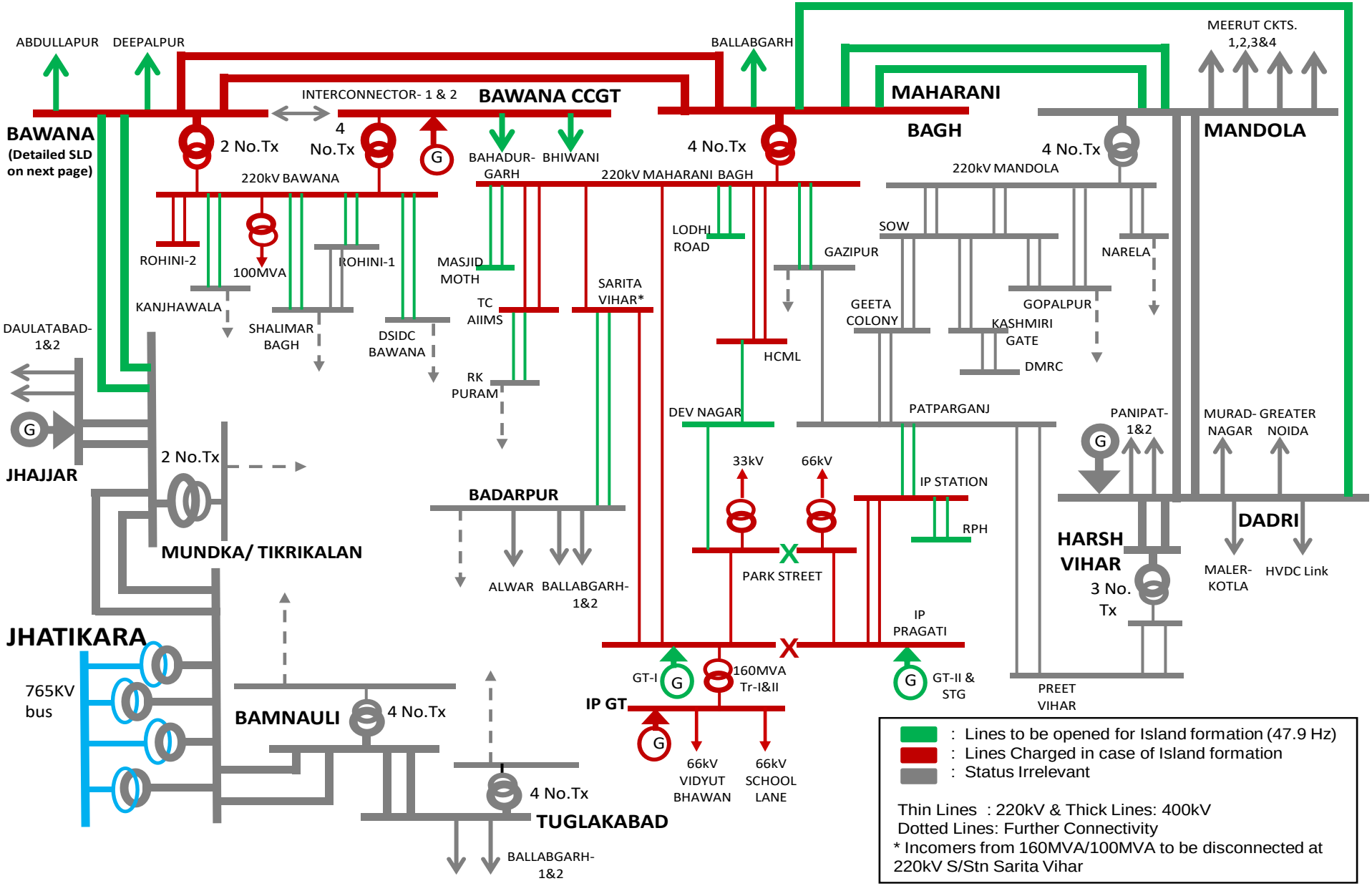
CHAPTER-7

LIST OF DESIGNATED FEEDERS AND df/dt SETTINGS FOR POST ISLANDING LOAD-GENERATION BALANCING

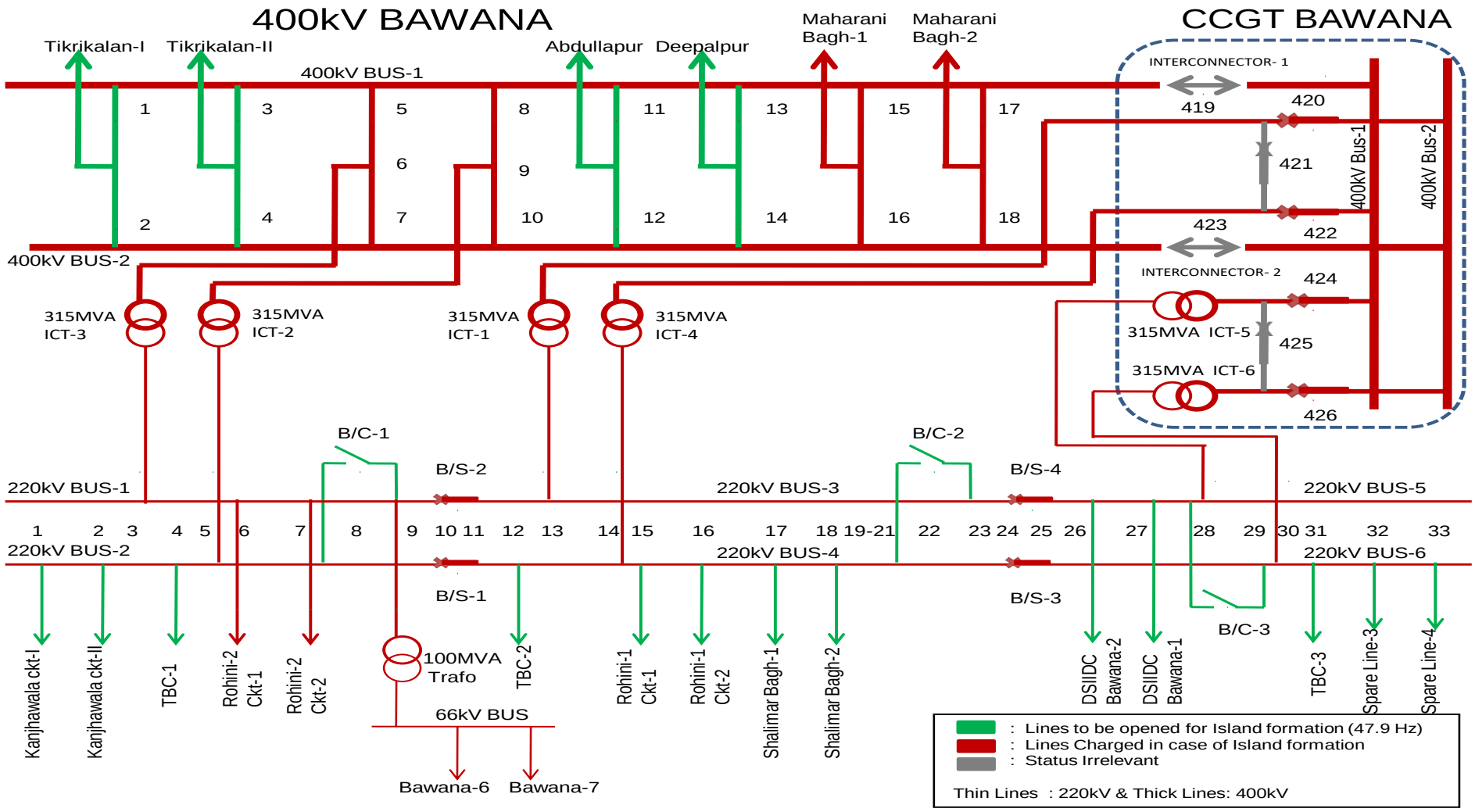
S. No.	Name of the Substation	Designated load/feeders in Revised Delhi Island	Max demand (7695 MW) Date-29.06.2022 Time-15:10:41	df/dt Setting	Time Delay
1	220kV I.P	33kV Bay 19, G.B Pant	19	0.2hz/sec	1000ms
		33kV Bay 34, Minto Road	16	0.1hz/sec	4000ms
		33kV Bay-29 & 33kV IG Stadium	19	0.3hz/sec	400ms
		33kV Supreme Court	2	0.2hz/sec	3000ms
		33kV Bay-2, Nirman Bhawan	8		
		33kV Bay-16, Nirman Bhawan	11		
2	220kV Park Street	66kV BD Marg- I & II	26	0.2hz/sec	2000ms
		66kV State Guest House	26	0.3hz/sec	-
		33kV Hanuman Road	7	0.2hz/sec	3000ms
		33kV Nirman Bhawan	0	No tripping envisaged. Feeder will always be kept ON	
3	220kV GTPS	66kV School Lane-I	17	0.3hz/sec	300ms
		66kV School Lane-II	8	0.3hz/sec	300ms
		66kV Vidyut Bhawan-I	10	0.1hz/sec	5000ms
		66kV Vidyut Bhawan-II	34	0.1hz/sec	5000ms
		33kV AIIMS- I,II&III	18		
		33kV Trauma Centre-I & II	8.1		
		33kV Safdarjung Hospital	1.6		
		33kV Raisina I & II	18		
		33kV Raja Bazar	10		
6	400kV Bawana	100MVA Transformer	63	1hz/sec	0ms
		66kV RG-28 Ckt-1	45	1hz/sec	100ms
		66kV RG-28 Ckt-2	45	1hz/sec	100ms
		66kV RG-30 Ckt-1	35	1hz/sec	200ms
		66kV RG-30 Ckt-2	35	1hz/sec	200ms

ANNEXURE-A

REVISED DELHI ISLAND - JULY 2023



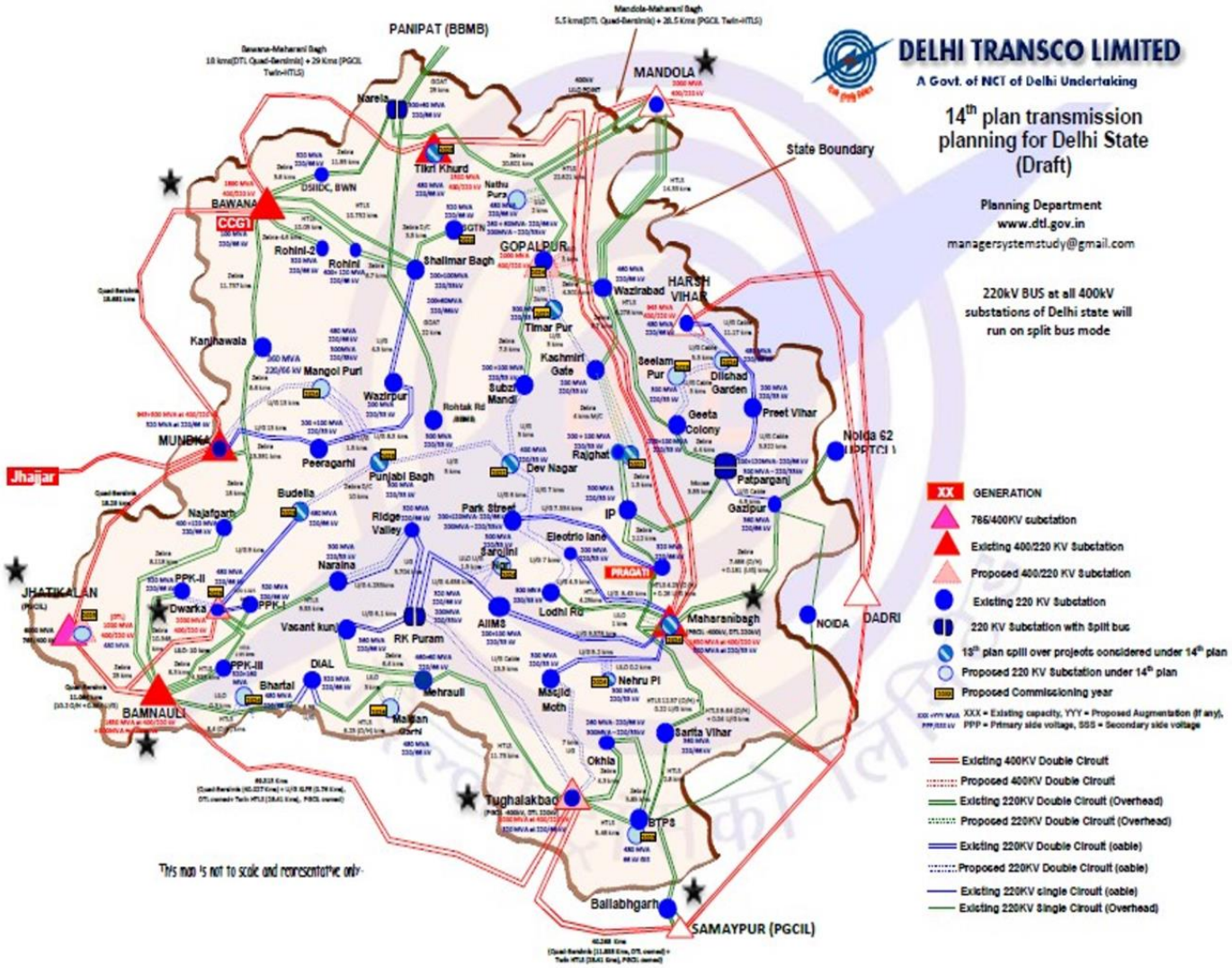
ANNEXURE-B



Note: 220kV feeders and 100MVA transformer can be kept on any of the buses as per requirement.

ANNEXURE-C

Overview of Delhi Transmission Network (Power Map)



RAJASTHAN RAJYA VIDYUT PRASARAN NIGAM LIMITED.
[Corporate Identity Number (CIN):U40109RJ2000SGC016485]
(Regd. Office: Vidyut Bhawan, Jan Path, Jyoti Nagar, Jaipur - 302 005)
OFFICE OF THE SUPERINTENDING ENGINEER (PROJECT & PLANNING)
✆ +91-141-2740623,Fax:+91-141-2740794;
e-mail: se.pp@rvpn.co.in; website:www.rvpn.co.in

RVPN
An ISO 9001:2015 Certified Company

No. RVPN/SE(P&P)/XEN -2/AE-III/ F. 51 /D *Jaipur, Dt.*

The Member Secretary (NRPC),
Northern Regional Power Committee,
A-18,Shaheed Jeet Singh Marg, Katwaria Sarai,
New Delhi-110016

Sub: Submission of the revised DPR (R-2) along with cost for proposal of installation of 33 kV & 11 kV capacitor banks in Rajasthan

Ref: 1. This office letter with RajKaj reference No. 4133888 dated 26.06.2023 regarding submission of revised DPRs (R-1).

2. Combined study performed by RVPN optimizing the locations for placement of capacitor banks submitted by RVPN vide email on 12.06.2023 with letter RajKaj reference No. 3986454.

3. NRPC e-mail dated 14.07.2023 regarding incorporating comments of NRLDC on proposed study

Area Covered: Jaipur, Ajmer & Jodhpur Zone

Proposals: 1. RRVPNL (Proposal No. 320 of PSDF)

2. JVVNL (Proposal No. 349 of PSDF)
3. AVVNL (Proposal No. 351 of PSDF)
4. JdVVNL (Proposal No. 347 of PSDF)

Dear Sir,

As per the deliberations & discussions held during 77th TESG meeting of PSDF intimated to us vide letter No. NLDC-PSDF/74th TESG/2022-23 dated 11.04.2023, RVPN had performed a combined study optimizing the locations for better placement of 33 kV & 11 kV capacitor banks and removing those capacitor banks which are causing overcompensation. This study was submitted to your good self on dated 12.06.2023 along with NRLDC & CTUIL and was discussed in meeting held on 21.06.2023 at NRPC Secretariat, New Delhi.

As per the outcome of the study & as per discussions in the meeting on 21.06.2023, revised DPRs (R-1) for three DISCOMs & RVPN was submitted on 26.06.2023 for vetting & approval by NRPC, so that the proposals can be finally submitted to PSDF for requisite grant.

NRLDC in the meeting held on dated 21.06.2023 has suggested inclusion of some substations which had been otherwise dropped in the optimization on the basis of the load fluctuations. The same

Signature valid
Digitally signed by Suresh Chand Meena
Designation : Additional Chief Engineer
Date: 2023.08.04 16:03:47 IST
Reason: Approved

RajKaj Ref No. : 4422068

communication has been received through e-mail of NRPC dated 14.07.2023 with suggestions to incorporate the comments. In this respect, comments of NRLDC have been incorporated in the revised DPRs/BoQ (R-2) being submitted.

Brief of the revised DPR/BoQ is as shown hereunder:-

S.No.	Entity	Voltage Level of Capacitor Banks	Capacitor Banks proposed earlier	Capacitor Banks proposed after optimization by STU-R1	Capacitor Banks proposed after optimization by STU-R2
1.	RVPN	33 kV	101	100	100
2.	JVVNL	11 kV	578	509	511
3.	AVVNL	11 kV	732	644	650
4.	JdVVNL	11 kV	911	730	730
Total			***2322***	***1983***	***1991***

1. **RVPNL-** RVPN has removed 01 No. of 33 kV capacitor bank from its previously proposed & NRPC vetted 101 Nos. of capacitor banks.
   Revised BoQ indicating 100 Nos. of locations & revised financial implication is placed at Annexure-I.

2. **JVVNL-** 11 kV capacitor banks at 220 kV Gangapur City & 220 kV Baran have been included in the BoQ.
   Revised DPR along with BoQ is placed at Annexure-II.

3. **AVVNL-** 11 kV capacitor banks at 220 kV Khinvsar have been included in the BoQ.
   Revised DPR along with BoQ is placed at Annexure-III.

4. **JdVVNL-** No changes in the quantity of 11 kV Capacitor banks for JdVVNL, as capacitor bank at 220 kV GSS, Sayla has been covered by RVPN.
   Revised DPR along with BoQ is placed at Annexure-IV.

Encl: As Above

(S.C. Meena)
Chief Engineer (PP&D),
RVPN

Signature valid
Digitally signed by Suresh Chand Meena
Designation : Additional Chief Engineer
Date: 2023.08.04 16:03:47 IST
Reason: Approved

RajKaj Ref No. : 4422068

Annexure-I

Revised BOQ of capacitor banks as per observations by TESG

Estimate for One No. 33 KV Capacitor Bank Bay (Departmental works)

				(Rs. in lacs.)	
S.No.	**Particulars of material**	**Qty.**	**Unit**	**Rate**	**Amount**
1	**Structures**				
a	Column-X	2	Nos.	3768	7536.00
b	Column-Y	4	Nos.	28385	113540.00
C	Column-Z	0	Nos.	22350	0.00
d	Beam-GF (5-4 mtr)	2	Nos.	18531	37062.00
e	Strs-X 15	3	Nos.	18626	55878.00
f	Strs-33 KV CT	1	Nos.	14689	14689.00
2	**Equipments and CR Panels**				
a	33 KV SF_6 Breaker, 110 V DC	1	Nos.	211810	211810.00
b	33 KV CT ratio 250/1A, 2C, 0.5C	1	Nos.	36374	36374.00
C	33 KV LA	0	Nos.	4292	0.00
d	33 KV Isolator with EB (800 A)	2	Nos.	25500	51000.00
e	33 KV Isolator without EB (800 A)	1	Nos.	19600	19600.00
f	2X24 KV Polycon Insulators	36	Stack	728	26208.00
g	33KV, 5.43MVAR Capacitor bank with all accessories	1	Set	997896	997896.00
h	1X33 KV C/R Panel 110V DC, 1 Amp. For capacitor bank	1	Nos.	318391	318391.00
i	33 KV Marshalling Kiosk	1	Nos.	15458	15458.00
3	**Control Cables**				
a	18X2.5 mm^2	0.5	Km	300900	150450.00

b	6X2.5 mm^2	0.5	Km	103250	51625.00
C	4X4 mm^2	1	Km	112690	112690.00
4	**Earthing Material**				
a	M.S. Flat 50X10 mm	2.5	MT	55814	139535.00
b	M.S. Round 28 mm dia	1	MT	51023	51023.00
5	**Hardwares Clamps and Connectors**				
a	S/S H.W. for Panther (bolted type)	0	Set	474	0.00
b	S/T H.W. for Panther (bolted type)	3	Set	1115	3345.00
C	S/T H.W. for Twin Zebra (bolted type)	0	Set	2969	0.00
d	T-Clamp P-P	9	Set	438	3942.00
e	T-Clamp Z-P	3	Set	419	1257.00
f	P.G. Clamp Z-P	3	Set	485	1455.00
g	P.G. Clamp P-P	21	Set	295	6195.00
h	P.G. Clamp Z-Z	0	Set	543	0.00
6	**Nuts and Bolts**				
a	16X35 mm	0.1	MT	93880	9388.00
b	16X40 mm	0.1	MT	93880	9388.00
C	16X45 mm	0.05	MT	93880	4694.00
d	Sp. Washer 16 mm dia	0.02	Lot	133281	2665.62
7	**Disc Insulators**				
a	120 KN	25	Nos.	502	12550.00
b	45 KN	10	Nos.	296	2960.00
8	**ACSR Panther Conductor**	0.25	Km	146858	36714.50
9	**ACSR Zebra Conductor**	0.25	Km	265592	66398.00
10	**Misc Items**	LS	LS	35000	35000.00

				Total "A"	2606717.12
11	Erection, Testing & Commissioning charges (@10%)				260671.71
12	**Total**				2867388.83
	Overhead charges (only allowable charges by PSDF have been considered) : **(i) Transportation charges @3% of Cost of Supply (A)** **(ii) Spares @3% of Cost of Supply (A)**				156403.02
				G. Total	**3023791.80**
	Cost of New Capacitor Bank Installation	**Say Rs. 30.24 lacs.**			
	Total Cost of 101 Nos. of Capacitor Banks	**30.24*100 = 30.24 Cr.**			

Funding Proposed From PSDF:-

The total cost of the scheme of Installation/ ~~Re-shuffling*~~ of 33 KV, 5.43 MVAR Capacitor Banks at various GSS of RVPN works out to be Rs. **30.24 Crore**.

***Capacitor bank diversions have been removed from the BOQ as per the TESG observations.**

Being a project of category-C, 90% funding for this project shall be allowed with a maximum limitation of **27.216 Crore**, as per PSDF norms.

S No	Name of Circle	Name of GSS	No. of Capacitor Banks proposed	
1	SE (T&C), Jodhpur	132 KV GSS S S NAGAR	1	
2		132 KV GSS BAPINI	1	
3		132 KV GSS DECHU	0	Proposed for deletion
4		132 KV GSS CHAMU	2	
5		132 KV GSS Setrawa	1	
6		132 KV GSS KALAU	1	
7		132 KV GSS LOHAWAT	1	
8	SE (T&C) KANKANI	132 KV GSS NATHDAU	1	
9		132KV GSS Bana ka Bas	1	
10		132KV GSS Bera	1	
11		132KV GSS HATUNDI	1	
12	SE (T&C) SIROHI	132 KV GSS REODAR	1	
13		132 KV GSS PALADAR	1	
14		132 kv gss bhadroona	1	
15		132 KV GSS BAGORA	1	
16		132KV GSS POONASA	1	
17		132 KV GSS Daspan	1	
18		132 KV GSS POSALIYA	1	
19		220 KV GSS SAYALA	1	

20		132 KV GSS SWAROOPGANJ	1
21	SE (T&C) BARMER	220 KV GSS DHORIMANNA	1
22		132 KV GSS SEDWA	1
23		132 KV GSS SATA	1
24		132 KV GSS RANASAR	1
25		132 KV GSS SAWA	1
26		132 KV GSS MEHLOO	1
27		132 KV GSS CHOUHTAN	1
28		132 KV GSS Gadra road	1
29	SE (T&C) BIKANER	132 KV GSS BAJJU	1
30		132 KV GSS Bhamattsar	1
31		220 KV GSS Chhattargarh	2
32		132 KV GSS DULCHASAR	1
33		132 KV GSS DESHNOK	1
34		132KV GSS KITASAR	1
35		132 KV GSS LALAMDESAR	1
36		132 KV GSS MUNDSAR	1
37		132KV GSS SHERERA	1
38	SE (T&C) JAISALMER	132 KV GSS CHANDAN	2
39		132 KV GSS SANGARH	2
40		132 KV GSS JHINJHINYALI	1
41		132 KV GSS Ajasar	1

42	SE(T&C), Hanumanarh	132 KV GSS Fatehgarh	1
43		132 KV GSS TIBBI	1
44		132 KV GSS Pallu	1
45		220 KV GSS Bhadra	1
46	SE (T&C) Ratangarh	220 KV GSS HALASAR	1
47	SE (T&C), Ajmer	132KV GSS, SAWAR	1
48		220 KV GSS Jethana	1
49		132KV GSS Roopangarh	1
50	SE (T&C), Babai	132KV GSS Nangali	1
51	SE (T&C), Merta City	220 KV GSS Khinvsar	1
52		132 KV GSS HEESABA	1
53		132KV GSS GOGELAW	1
54		132KV GSS Narwa	1
55	SE (T&C), Sikar	220KV GSS DANTARAMGARH	1
56		220KV GSS Dhod	1
57		132 KV GSS RVPN KUDAN	1
58		132 KV GSS, Ranoli	1
59		132 KV GSS, Water Works, Sikar	1
60		132KV GSS Piprali	1
61	SE (T&C), Bhilwara	132 KV GSS KOTRI	1
62		132KV GSS Beegod	1
63		132 KV GSS BEGUN	1

64	SE (T&C), Chittorgarh	132 KV GSS BAROLI	1
65		132 KV GSS Dhoriya choraha	1
66		132 KV GSS KANERA	1
67		132 KV GSS Mokhampura	1
68		132KV GSS Chhoti Sadri	1
69	SE (T&C), Kota	220 KV GSS BHAWANIMANDI	1
70		220 KV GSS Baran	1
71		132 KV GSS Kishanganj	1
72		132 kV GSS RVPN, Mangrol	1
73		132 KV GSS BAPAWAR	1
74		132KV GSS RVPN Mamoni (Baran)	1
75	SE (T&C), Alwar	132 KV GSS,GOVINDGARH(ALWAR)	1
76		132 KV GSS, RVPN, Kherli (Alwar)	1
77		132 KV GSS, Laxmangarh	1
78		132 KV GSS Ramgarh	1
79		132 KV GSS,Pinan	1
80		132 KV GSS Thanagazi	1
81		132 KV TELCO CIRCLE ALWAR	1
82		220 KV GSS, RVPN, Bansur (Alwar)	1
83	SE (T&C), Hindaun	132 KV GSS Nangal Sherpur	1
84		AEN(132 KV GSS) RVPN RIICO DHOLPUR	1
85		132 KV GSS RVPN BARI	2

86		132 KV GSS, Marena	1
87	SE (T&C), Sawai Madhopur	220 KV GSS Gangapur City	1
88		132 KV GSS Bamanwas	1
89		132 KV GSS , Keshoraipatan	2
90		132 KV GSS , Bundi	1
91		132 KV GSS DABI	1
92		132 KV GSS Baler	1
93		132 KV GSS DABLANA	1
94	SE (T&C), Jaipur Rural	220 KV GSS, RVPN, Manoharpur	1
95		220 KV GSS NIWANA	1
		Total	***100***

JAIPUR VIDYUT VITRAN NIGAM LIMITED
Office of the Addl. Chief Engineer (PPM)
CIN: U40109RJ2000SGC016486
Old Power House Premises, Near Ram Mandir Banipark, Jaipur-302016
Email- sermdf@jvvnl.org, Website: energy.rajasthan.gov.in/jvvnl

No. JPD/ACE(PPM)/SE(Reg.)/XEN(DF)/F. /D. 334 Dated : 21.07.2023

To,

Executive Director, NLDC
Member Secretary of the Appraisal Committee of PSDF
Power System Operation Corporation Ltd.
B-9, Qutub Institutional Area, Katwaria Sarai, New Delhi-110016
Tel: 011- 26524527 | Email: nldc.psdf2020@gmail.com

Sub: Submission of Revised Detailed Project Report on observationsof Northern Regional Load Despatch Centre (NRLDC) for Installation of Dynamic/ Automatic Capacitor Banks on 11 kV side of 33/11 kV Sub-stationsunder PSDF Scheme - Jaipur Discom (Proposal No. 349).

Ref:

1. Guidelines/ Procedure for Disbursement of Fund from Power System Development Fund
2. JVVNL Request Letter No: JPD/SE(Regulation)/XEN(DF)/F./D. 503 dated: 25.08.2022
3. Your Letter No. NLDC-PSDF/66th TESG/2022-23 dated 27.09.2022
4. JVVNL Clarification Letter No.: JPD/SE(Regulation)/XEN(DF)/F./D 676 dated: 07.10.2022
5. JVVNL Request to STU vide Letter No: JPD/SE(Regulation)/XEN(DF)/F./D.717 dated: 13.10.2022
6. Your Letter No. NLDC-PSDF/66th TESG/2022-23 dated: 01.11.2022
7. STU Letter No. EVPN/SE(P&P)/XEN-2/AE-III/F. 51/D. 1566 dated 22.11.2022
8. JVVNL Clarification Letter No.: JPD/SE(Regulation)/XEN(DF)/F./D.847 dated: 24.11.2022
9. NLDC-PSDF/70th TESG/2022-23 dated 16.01.2023
10. JVVNL Clarification Letter No.: JPD/ACE(PPM)/XEN(DF)/F./D 999 dated: 17.01.2023
11. NLDC-PSDF/73rdTESG/2022-23 dated 06.03.2023
12. JVVNL Clarification Letter No.: JPD/ACE(PPM)/XEN(DF)/F./D 1134 dated: 14.03.2023
13. 2nd System Studies Sub-Committee Meeting held on dated 04.04.2023
14. Your office email dated 04.05.2023 regarding observations
15. PSDF Techno-Economic Sub-Group (TESG) Physical Meeting as held on dated 08.05.2023
16. JVVNL Letter to STUvide Letter No: 114 dated: 10.05.2023 for finalization of proposed locations
17. Study Report duly conducted by Rajasthan Rajya Vidyut Prasaran Nigam Ltd. (RVPN) vide email dated 12.06.2023.
18. JVVNL Submission of Revised DPR vide Letter No: JPD/ACE(PPM)/XEN(DF)/F./D. 222 dated: 12.06.2023.
19. Northern Regional Power Committee (NRPC) Meeting as held on 21.06.2023
20. Comments of Northern Regional Load Despatch Centre (NRLDC) received vide Email Dated 20.07.2023

Addl. Chief Engineer (PPM)
JVVNL, Jaipur

Dear Sir/Ma'am,

In view of the above references and based on subsequent discussions, JVVNL had submitted the necessary details of the project pertaining to Installation of Dynamic/ Automatic Capacitor Banks on 11 kV side of 33/11 kV Sub-stations in JVVNL, including revised detailed project report,annexures and clarifications to the appraisal committee vide letter no. JPD/ACE(PPM)/XEN(DF)/F./D 999 dated 17.01.2023.

On 06.03.2023,NLDC's 73rd Meeting of the Techno-Economic Sub Group (TESG) was held whereindata gaps, observations and further requirements from the respective entity were discussed. Further, 2nd System Studies Sub-Committee Meeting held on dated 04.04.2023 for deliberately discussion on the requirement of Dynamic/ Automatic Capacitor Banks on 11 kV Side of 33/11 kV sub-stations under Power System Development Fund (PSDF)-Phase-I Scheme in Jaipur Discom. Subsequently,data gaps / observations were received on dated 04.05.2023 and request for attending PSDF Techno-Economic Sub-Group (TESG) physical meeting were made.

In reference to our physical meeting on dated 08.05.2023, the appraisal committee of PSDF decided to conduct a study of various 11 kV feeders for analyzing 33/11 kV sub-station wise Reactive Power (MVAr) requirements. Also, Rajya Vidyut Prasaran Nigam Ltd. (RVPN, Jaipur) was nominated to fix up the locations of the proposed 33/11 kV sub-stations in consultation of Rajasthan Discoms for installation of APFC.

As per directives fromappraisal committee, JVVNL submitted the detailed list of the 33/11 kV Sub-stations including 220/132/33 kV or 132/33 kV Grid Sub-stations duly mapped vide Letter No. 114 dated 10.05.2023 for vetting the locations as provided by JVVNL and also for further submission of study report to appraisal committee within the due date for the release of PSDF funds. Subsequently, JVVNL submitted revised detailed project reports including supporting documents & annexures to NLDC vide Letter No. JPD/ACE(PPM)/XEN(DF)/F./D. 222 dated: 12.06.2023.

In view of above submissions, Northern Regional Power Committee (NRPC) Meeting was held on dated 21.06.2023 where the proposed locations for installation of capacitor banks under RVPN & Rajasthan Discoms were discussed.Finally, it was analyzed that from the existing list of proposed locations, two (02) of the 33/11 kV Sub-stations (Saloda&Shyampura) were mandated due to excessive voltage fluctuationsand hence, directed to incorporate both of the sub-stations.

In view of above and based on revised inputs received from RVPN / NRLDC dated 20.07.2023, JVVNL is hereby submitting our revised proposal**(Rs. 106.99 Cr.)** including Annexures (I to IV) and detailed list of proposed 33/11 kV Sub-stations to facilitate identification, prioritization, and appraisal of the scheme by the Appraisal Committee. Hence, it is to request that in-principle approval may be granted towards release of funding for Installation of Dynamic/ Automatic Capacitor Banks at specified 33/11 kV sub-stations of **Rs.95.92 Cr. *(i.e. 90% of total estimated cost)* as a grant while balance cost of Rs. 10.66 Cr. shall be in form of internal/ externalsource of funding.**

Addl. Chief Engineer (PPM)
JVVNL, Jaipur

Enclosures:

1) Annexure A: Revised Format (I to IV) duly signed by authorized representative.
2) Annexure B: Revised Detailed Project Report including revised list of 33/11 kV Sub-stations and Cost Estimation Summary including detailed Bill of Quantity (in soft copy).

Yours Sincerely,

21/07/23

(Umesh Gupta)
ACE (PPM), JVVNL

Addl.Chief Engineer (PPM)
JVVNL, Jaipur

Copy to the following for information:

1. Director (Technical), JVVNL, Jaipur.
2. Director (Finance), JVVNL, Jaipur.
3. TA to Chairman Discom, Jaipur.
4. TA to Managing Director, JVVNL, Jaipur.
5. SE (P&P), RVPN, JVVNL, Jaipur.

ACE (PPM), JVVNL

Addl.Chief Engineer (PPM)
JVVNL, Jaipur

Cost Estimation for JVVNL, Rajasthan					
Sr. No.	Name of Items	Unit	Qty. (Nos.)	Unit Rates (In Lakhs)	Amount (In Cr.)
1	Installation of 1587 kVAr Automatic 11 kV Capacitor Bank including procurement, installation, commissioning and testing (For 3.15/5 MVA)	Nos.	498	20.85	103.81
2	Installation of 3174 kVAr Automatic 11 kV Capacitor Bank including procurement, installation, commissioning and testing (For 8 MVA)	Nos.	13	24.46	3.18
Total			**511**		**106.99**

Contribution

Grant under PSDF Scheme	**90%**	**96.29**
JVVNL Internal / External Source	**10%**	**10.70**

Addl. Chief Engineer (PPM)
JVVNL, Jaipur

BoQ for 11 kV Dynamic/Automatic Capacitor Bank (APFC) for Rural Areas - JVVNL (Cost Reference = MSEDCL Approved Rate)					
Sr. No.	Name of Items	Unit	Qty.	Unit Rates	Amount (In Rs.)
1	2	3	4	5	6
1	12.65 kV, 1587 kVAr (11 KV, 1.2 MVAR), 3-Phase, 50 Hz, Outdoor Type, CRCA panel having step as 396.75 Kvar + 396.75 kVAr +793.5 kVAr at 12.65 KV. Bank shall be complete with Capacitor units of 132.25 kVAr for 396.75 KVAR & 264.5 kVAr for 793.5 KVAR step at 7.3 KV, including allied material such as suitable size of Aluminum busbars epoxy insulators, HRC fuses, Vacuum contactor, series reactors, RVT, etc shall also be housed in same cubicle in the below mentioned quantity	Nos.	1		
a)	11 kV, 0.2%, Aluminium Wound, Dry type Series reactors suitable for 396.75 kVAr	Nos.	6	1,016,949.00	1,016,949.00
b)	11 kV, 0.2%, Aluminium Wound, Dry type Series reactors suitable for 793.5 kVAr	Nos.	3		
c)	11 kV, 1-Phase Dry, AN-Cooled RVT	No.	1		
d)	11 kV/400 Amp, Indoor type Vacuum contactor	Nos.	3		
e)	Surge Suppressor	No.	1		
f)	IP 55 , Outdoor CRCA cubicle panel for accommodating capacitors, series reactor, vacuum contactor, surge arrestor fuses along with canaopy	Set	1		
g)	C & R Panel with Automatic Control Unit with APFC relay and Neutral Displacement relay	Set	1		
2	11 KV Isolator with EB (800 A) with elevating structure	No.	1	30,025.00	30,025.00
3	11 KV Isolator without EB (800 Amp.) with elevating structure	No.	1	26,630.00	26,630.00
4	9 kV, 10 kA, Station Class, Lightning Arrestors	Set	1	10,260.00	10,260.00
5	*Cable Support Structure, Clamps, Connectors, Earthing MS Flats 50 x 6, 3 Mtr long Earthing CI Pipe Dia 150 mm, Dog Conductor	LS	1	61,506.95	61,506.95
6	11 KV, 3 x 185 sqmm, HT XLPE Cable	Mtr.	20	858.00	17,160.00
7	Outdoor cable jointing kits	No.	2	1,907.00	3,814.00
8	11 kV VCB (Kiosks Type) (800 Amp.) Switchgear with complete arrangement with adopter panel for connection with existing 11 kV bus bar	No.	1	117,466.00	117,466.00
9	**Control cables of various sizes	LS	1	43,818.20	43,818.20
10	11 kV CT 400 - 200/5 A Outdoor Type	Nos.	3	10,611.00	31,833.00
11	24 Volt / 200 AH Battery with Battery Charger (For Capacitor's VCB)	Nos.	1	69,000.00	69,000.00
	Sub-Total (A)				**1,428,462.15**
13	Transportation on material	LS	4%	-	57,138.49
14	Erection cost on material	LS	5%	-	71,423.11
15	Insurance, Labour & Finance Cost	LS	3%	-	42,853.86
	Service Cost	**LS**	**12%**	-	**171,415.46**
	Sub-Total (B)				**171,415.46**
	Total (C) = (A) + (B)				**1,599,877.61**
17	Applicable GST	-	18%	-	287,977.97
18	Price Escalation on cost of material	-	10%	-	142,846.22
19	***Civil Cost	LS	1	53,857.50	53,857.50
	Sub-Total (D)				**484,681.68**
	Grand Total (E) = (C) + (D)				**2,084,559.29**

Addl.Chief Engineer (PPM)
JVVNL, Jaipur

*Cost Structure for 11 kV Station Capacitor Bank - JVVNL					
Sr. No.	Name of Items	Unit	Qty.	Unit Rates	Amount (In Rs.)
1	2	3	4		5
1	Structure for 11 KV CT	Kg	155	51.80	8,029.00
2	Structure for 11 KV LA	Kg	155	51.80	8,029.00
3	G.I. Nut Bolts	Kg	20	82.90	1,658.00
4	Cable Support Structure (2 Nos.)	Kg	200	51.80	10,360.00
5	MS Flat 50 X 6	Kg	235.5	48.50	11,421.75
6	Earthing CI Pipe Dia 150 mm 3 Mtr long	Nos.	3	6300.00	18,900.00
7	Dog Conductor	Mtr.	60	51.82	3,109.20
Total					61,506.95

**Cost Structure for Control Cables					
Sr. No.	Name of Items	Unit	Qty.	Unit Rates	Amount (In Rs.)
1	2	3	4		5
1	2C X 2.5 Sq. mm Armoured, Copper	Mtr.	100	55.11	5,511.00
2	4C X 2.5 Sq. mm Armoured, Copper	Mtr.	275	87.60	24,090.00
3	7C X 2.5 Sq. mm Armoured, Copper	Mtr.	40	139.19	5,567.60
4	10C X 2.5 Sq. mm Armoured, Copper	Mtr.	40	216.24	8,649.60
Total					43,818.20

***Cost Structure for Civil Work					
Sr. No.	Parameters	Unit	Qty.	Unit Rates	Amount (In Rs.)
1	2	3	4		5
1	Excavation	CuM	8	150.00	1,200.00
2	PCC	CuM	2.5	4257.00	10,642.50
3	RCC	CuM	5	5255.00	26,275.00
4	Steel	Kg	300	51.80	15,540.00
5	Back Filing	CuM	2	100.00	200.00
Total					53,857.50

Annual Maintenance Charges after Guarantee Period for 05 Years (1 Year + 5 Year's) - Shall be borne by JVVNL					
Sr. No.	Parameters	Unit	Qty.	Unit Rates	Amount (In Rs.)
1	2	3	4		5
1	1st Year	Job	1	50000.00	50,000.00
2	2nd Year	Job	1	60000.00	60,000.00
3	3rd Year	Job	1	70000.00	70,000.00
4	4th Year	Job	1	80000.00	80,000.00
5	5th Year	Job	1	90000.00	90,000.00
Total					350,000.00
Total AMC Cost after considering 496 Nos. APFC					197,050,000.00

Addl.Chief Engineer (PPM)
JVVNL, Jaipur

BoQ for 11 kV Dynamic/ Automatic Capacitor Bank (APFC) for Rural Areas - JVVNL (Cost Reference - MSEDCL Approved Rate)					
Sr. No.	Name of Items	Unit	Qty.	Unit Rates	Amount (In Rs.)
1	2	3	4		5
1	12.65 kV, 3174 kVAr, 3-Phase, 50 Hz, Outdoor Type, CRCA panel having 4 step as 396.75 kVAr + 396.75 kVAr +1190.25 kVAr +1190.25 kVAr at 12.65 KV. Bank shall be complete with Capacitor units of 132.25 kVAr for 396.75 kVAr & 396.75 kVAr for 1190.25 kVAr at 7.3 kV including allied material such as suitable size of Aluminum busbars epoxy insulators, HRC fuses, Vacuum contactor, series reactors, RVT, etc. with details as under	Nos.	1	1,271,186.00	1,271,186.00
a)	11 kV, 0.2%, Aluminium Wound, Dry type Series reactors suitable for 396.75 kVAr	Nos.	6		
b)	11 kV, 0.2%, Aluminium Wound, Dry type Series reactors suitable for 1190.25 kVAr	Nos.	6		
c)	11 kV, 3-Phase dry type RVT	No.	1		
d)	11 kV/400 Amp, Indoor type Vacuum contactor	Nos.	4		
e)	Surge Suppressor	No.	1		
f)	IP 55 , Outdoor CRCA cubicle panel for accommodating capacitors, series reactor, vacuum contactor, surge arrestor fuses along with canaopy	Set	1		
g)	C & R Panel with Automatic Control Unit with APFC relay and Neutral Displacement relay	Set	1		
2	11 KV Isolator with EB (800 A) with elevating structure	No.	1	30,025.00	30,025.00
3	11 KV Isolator without EB (800 Amp.) with elevating structure	No.	1	26,630.00	26,630.00
4	9 kV, 10 kA, Station Class, Lightning Arrestors	Set	1	10,260.00	10,260.00
5	*Cable Support Structure, Clamps, Connectors, Earthing MS Flats 50 x 6, 3 Mtr long Earthing CI Pipe Dia 150 mm, Dog Conductor	LS	1	61,506.95	61,506.95
6	11 kV XLPE insulated 3x185 mm^2 Armoured	Mtr.	20	858.00	17,160.00
8	Outdoor cable jointing kits	No.	2	1,907.00	3,814.00
9	11 kV VCB (Kiosks) (800 Amp.) Switchgear with complete arrangement with adopter panel for connection with existing 11 kV bus bar	No.	1	117,466.00	117,466.00
10	**Control cables of various sizes	LS	1	43,818.20	43,818.20
11	11 kV CT 400 - 200/5 A Outdoor Type	Nos.	3	10,611.00	31,833.00
12	24 Volt / 200 AH Battery with Battery Charger (For Capacitor's VCB)	Nos.	1	69,000.00	69,000.00
	Sub-Total (A)				**1,682,699.15**
13	Transportation on material	LS	4%	-	67,307.97
14	Erection cost on material	LS	5%	-	84,134.96
15	Insurance, Labour & Finance Cost	LS	3%	-	50,480.97
	Service Cost	**LS**	**12%**	-	**201,923.90**
	Sub-Total (B)				**201,923.90**
	Total (C) = (A) + (B)				**1,884,623.05**
17	Applicable GST	-	18%	-	339,232.15
18	Price Escalation on cost of material	-	10%	-	168,269.92
19	***Civil Cost	LS	1	53,857.50	53,857.50
	Sub-Total (D)				**561,359.56**
	Grand Total (E) = (C) + (D)				**2,445,982.61**

Addl.Chief Engineer (PPM)
JVVNL, Jaipur

*Cost Structure for 11 kV Station Capacitor Bank - JVVNL					
Sr. No.	Name of Items	Unit	Qty.	Unit Rates	Amount (In Rs.)
1	2	3	4		5
1	Structure for 11 KV CT	Kg	155	51.80	8,029.00
2	Structure for 11 KV LA	Kg	155	51.80	8,029.00
3	G.I. Nut Bolts	Kg	20	82.90	1,658.00
4	Cable Support Structure (2 Nos)	Kg	200	51.80	10,360.00
5	MS Flat 50 X 6	Kg	235.5	48.50	11,421.75
6	Earthing CI Pipe Dia 150 mm 3 Mtr long	Nos.	3	6300.00	18,900.00
7	Dog Conductor	Mtr.	60	51.82	3,109.20
Total					61,506.95

**Cost Structure for Control Cables					
Sr. No.	Name of Items	Unit	Qty.	Unit Rates	Amount (In Rs.)
1	2	3	4		5
1	2C X 2.5 Sq. mm Armoured, Copper	Mtr.	100	55.11	5,511.00
2	4C X 2.5 Sq. mm Armoured, Copper	Mtr.	275	87.60	24,090.00
3	7C X 2.5 Sq. mm Armoured, Copper	Mtr.	40	139.19	5,567.60
4	10C X 2.5 Sq. mm Armoured, Copper	Mtr.	40	216.24	8,649.60
Total					43,818.20

***Cost Structure for Civil Work					
Sr. No.	Parameters	Unit	Qty.	Unit Rates	Amount (In Rs.)
1	2	3	4		5
1	Excavation	CuM	8	150.00	1,200.00
2	PCC	CuM	2.5	4257.00	10,642.50
3	RCC	CuM	5	5255.00	26,275.00
4	Steel	Kg	300	51.80	15,540.00
5	Back Filing	CuM	2	100.00	200.00
Total					53,857.50

Annual Maintenance Charges after Guarantee Period for 05 Years (1 Year + 5 Year's) - Shall be borne by JVVNL					
Sr. No.	Parameters	Unit	Qty.	Unit Rates	Amount (In Rs.)
1	2	3	4		5
1	1st Year	Job	1	50000.00	50,000.00
2	2nd Year	Job	1	60000.00	60,000.00
3	3rd Year	Job	1	70000.00	70,000.00
4	4th Year	Job	1	80000.00	80,000.00
5	5th Year	Job	1	90000.00	90,000.00
Total					350,000.00
Total AMC Cost after considering 13 Nos. APFC					4,900,000.00

Addl. Chief Engineer (P

ANNEXURE 'B'

REVISED

DETAILED PROJECT REPORT (DPR)

FOR

System Improvement Scheme

Installation of Capacitor Banks on 11 kV Side of 33/11 kV Substations for Reactive Power Compensation under Power System Development Fund (PSDF) – Phase 'I'

Estimated Cost: Rs. 106.99 Cr.

प्रभास्मि शशि सूर्यायः

JAIPUR VIDYUT VITRAN NIGAM LIMITED

Corporate Identification Number (CIN): U40109RJ2000SGC016486
Office of the Additional Chief Engineer (PPM)
Old Power House Premises, Banipark, Jaipur-302016

TELEFAX: 0141-2209533, **Email –** sermdf@ivvnl.org

Website: www.jaipurdiscom.com

DETAILED PROJECT REPORT

INTRODUCTION

Rajasthan is the largest state in the country, in terms of area, spreading across 3,42,239 Sq. km, which is 10.41% of the nation area. The total population of Rajasthan is nearly 8.1 Crores spread across 33 Districts, of which 75% is rural population. The density of population in Rajasthan is 200 per sq.km which is much lower than the national average of 382 per sq.km. The state is, predominantly, an agrarian society with majority (45%) of the population depending on agriculture activities as source of income, which accounts for around 29.5% of Gross State Domestic Product (GSDP).

Due to this spread of population, meeting power demand, distribution of electricity and maintaining quality power for every category of consumers has always remained a challenge. The state is primarily agricultural base; however, the intensive power is too supplied to the domestic, non-domestic and industrial sector. It has been identified that these loads are highly inductive in nature which need rectification. In this regard, JVVNL has proposed to install dynamic/ automatic capacitor bank under which the capacitive load helps to adjust power factor as close to **'Unity Power Factor'**. The implementation of the project/ scheme will limit the heavy drawal of reactive power from grid and mitigate the risk such as **(a) Overloading of transmission lines; (b) Overloading of transformers at different voltage levels; and (c) Increase in system losses.**

Under JVVNL Discom, efforts have continuously been made to provide requisite reactive power compensation; however, the challenge associated with low voltage at the load end and drawl of heavy reactive power from the grid still persists due to fast growing load demand. Additionally, it has been noticed that the power factor is ranging from 0.80 to 0.90 at urban feeder and 0.75 to 0.80 (or even less) at the rural feeders within the respective circles. In view of this, the **provision through submission of detailed project report has been proposed at various circles having 'power factor less than 0.85'**. The report shall consist of brief background of JVVNL Discom, geographical maps, operational profile, objective, beneficiaries, recent initiatives, technology, cost estimates, timeframe, success criteria etc.

OUR PROPOSAL

1. BACKGROUND

1.1. Introduction

Jaipur Vidyut Vitran Nigam Limited (JVVNL) is a public utility company under the Department of Energy, Government of Rajasthan and is holder of the distribution and retail supply business licenses in the State of Rajasthan *(hereafter referred as "DISCOM")*. The Distribution Company came in to existence on 19 July 2000 pursuant to the "Rajasthan Power Sector Reforms Transfer Scheme, 2000" and restructuring undertaken in the State under which the vertically integrated Electricity Board *(Rajasthan State Electricity Board)* was unbundled and the power generation, transmission and distribution business was segregated to form 05 successor companies viz.

a) **Rajasthan Rajya Vidyut Utpadan Nigam Limited (RVUN)** to manage the electricity generation business of erstwhile RSEB.

b) **Rajasthan Rajya Vidyut Prasaran Nigam Limited (RVPN)** to manage the electricity transmission and bulk supply business of erstwhile RSEB.

c) **Ajmer Vidyut Vitran Nigam Limited (AVVNL)** to manage the electricity distribution and retail supply business of erstwhile RSEB in Ajmer City Circle, Ajmer District Circle, Bhilwara, Nagaur, Jhunjhunu, Sikar, Udaipur, Chittorgarh, Rajsamand, Banswara, Pratapgarh and Dungarpur Circles.

d) **Jaipur Vidyut Vitran Nigam Limited (JVVNL)** to manage the electricity distribution and retail supply business of erstwhile RSEB in Alwar, Bharatpur, Jaipur City, Jaipur District, Dausa, Kota, Jhalawar, Sawai Madhopur, Bundi, Baran, Tonk, Karauli and Dholpur Circles.

e) **Jodhpur Vidyut Vitran Nigam Limited (JdVVNL)** to manage the electricity distribution and retail supply business of erstwhile RSEB in Sriganganagar, Hanumangarh, Churu, Bikaner District, Bikaner City, Jaisalmer, Jalore, Barmer, Jodhpur City, Jodhpur District, Sirohi, Jalore, and Pali Circles.

1.2. Geographical Map of Rajasthan Discom

Figure 1: [1]Distribution Company Operating in State of Rajasthan

All the 03 Discoms have been established with the principal object of engaging in the business of distribution and supply of uninterrupted and reliable quality electricity in different districts (JVVNL – 12 Nos., AVVNL – 11 Nos. & JdVVNL – 10 Nos.) of Rajasthan. In view of above geographic locations, the proposal will mainly focus on 'Installation of Capacitor Bank at the 11 kV Side of various 33/11 kV sub-stations' under various Circles of Jaipur Discom.

1.3. Operational Profile

The JVVNL Discom is responsible for operating the distribution assets within the area of Alwar, Baran, Bundi, Bharatpur, Dholpur, Dausa, Jhalawar, Jaipur, Kota, Karauli, Sawai Madhopur and Tonk. Its scope of work and the electricity network *(as on Dec 2021)* are as presented below.

[1] **Source:** https://energy.rajasthan.gov.in/content/raj/energy-department/en/departments/avvnl/knowledge-base/discom-map.html

Table 1: Operational Profile of JVVNL Discom

Sr. No.	Parameters	JVVNL
1	Area of Operation	72,475 Sq. KM
2	Total Population (As per 2011 Census)	256 Lakhs
3	Total Number of Consumers	59.59 Lakhs
4	Total Number of Villages	15,145 Nos.
5	Electrified Villages	14,776 Nos.
6	Circles	13 Nos.
7	33/11 kV Sub-stations	1893 Nos.
8	MVA Capacity of 33/11 kV Power Transformer	13,349 MVA
9	33 kV Line	16,529 KM
10	11 kV Line	1,85,106 KM
11	11 kV Feeders	9,466 Nos.
12	LT Line	1,60,476 KM
13	11/0.4, 6.35/0.24 kV Sub-station	8,23,939 Nos.
14	MVA Capacity of Distribution Transformer	18,636 MVA
15	Load Profile (LV) based on MU	Agriculture & Domestic loads are predominating
16	Load profile (HV) based on MU	Industrial & Non Industrial, Agriculture, Residential and Commercial

Further, in terms of electrical connectivity, the JVVNL Discom is connected to Rajasthan Rajya Vidyut Prasaran Nigam Limited network at 33 kV & 11 kV levels. Also, there are few interconnection points with other Discoms.

1.4. Customers Profile

Discom currently serves about 5,038,760 consumers with a total connected load of around 18,446,237 kW under the LT & HT categories of consumers. Hence, category wise break-up of total number of consumers with connected Load as on March 2022 is stated below:

Table 2: Customer Profile for LT & HT Consumers of JVVNL Discom

Category (LT)	Consumers (Nos)	Connected Load (kW)
Domestic	3,908,907	6,218,679
Non Domestic	452,080	2,506,429
PSL	7,201	88,901
Agri (M)	565,812	4,536,199
Agri (F)	12,264	112,833
SIP	50,115	393,001
MIP	14,050	761,591
LIP	5,026	3,463,076
PWW (S)	17,737	108,974
PWW (M)	418	20,269
PWW (L)	211	108,406
Mixed Load	4,900	127,185
EV	39	694
Total	**50,38,760**	**1,84,46,237**

2. PROJECT OBJECTIVE

JVVNL believes that there is a need for a consistent and long lasting solution in order to improve & strength the Power Distribution Network with minimum losses in the long run. Also, the distribution system has suffered various challenges such as **(a) Unbalanced Load Flow; (b) High Level of Technical Losses; (c) Less System Stability; (d) Poor Voltage Regulation; (e) Low Power Factor; (f) Low Consumer Satisfaction Level etc.** which need to be gradually resolve. In this regard, JVVNL Discom is taking up Integrated Planning for Distribution System covering the Renovation & Modernization of the overall network. This will enable relieving congestion and improving the voltage profile at the load end.

"Government of India has finalized the scheme/ guidelines for operationalization of PSDF dated 10.01.2014. The provision consists of 'Installation of Shunt Capacitors, Series Compensators and other Reactive Energy Generators including Reactive Energy Absorption, Dynamic Reactive' support etc. for improvement of voltage profile in the Grid**"**.

Hence, this report aims to provide detailed information relating to the project for which Power System Development Fund for current year sought by the JVVNL. The key activity have been identified is to improve power distribution system with the installation of **1587 kVAr & 3174 kVAr Dynamic/ Automatic Capacitor Bank** at the selected 11 kV Side of 33/11 kV Sub-stations within the respective Circle/ Division/ Sub-division which could be possible with the **Power System Development Fund (PSDF).**

Table 3: Project Estimation for Installation of Capacitor Bank under JVVNL Discom

Installation of Dynamic/ Automatic Capacitor Bank under 12 Circles of JVVNL Discom							
Power Factor	**Circle**	**Division**	**Sub Division**	**Total 33/11 kV Substation**	**Feeder Count**	**Proposed Transformer Capacity (MVA)**	**Power Transformer Count (Nos.)**
Less than 0.85	12	46	143	505	2,305	3.15/ 5	498
						8	13
						Total (In Nos.)	**511**

3. SINGLE LINE DIAGRAM FOR INSTALLATION OF APFC AT VARIOUS 33/11 KV SUB-STATIONS

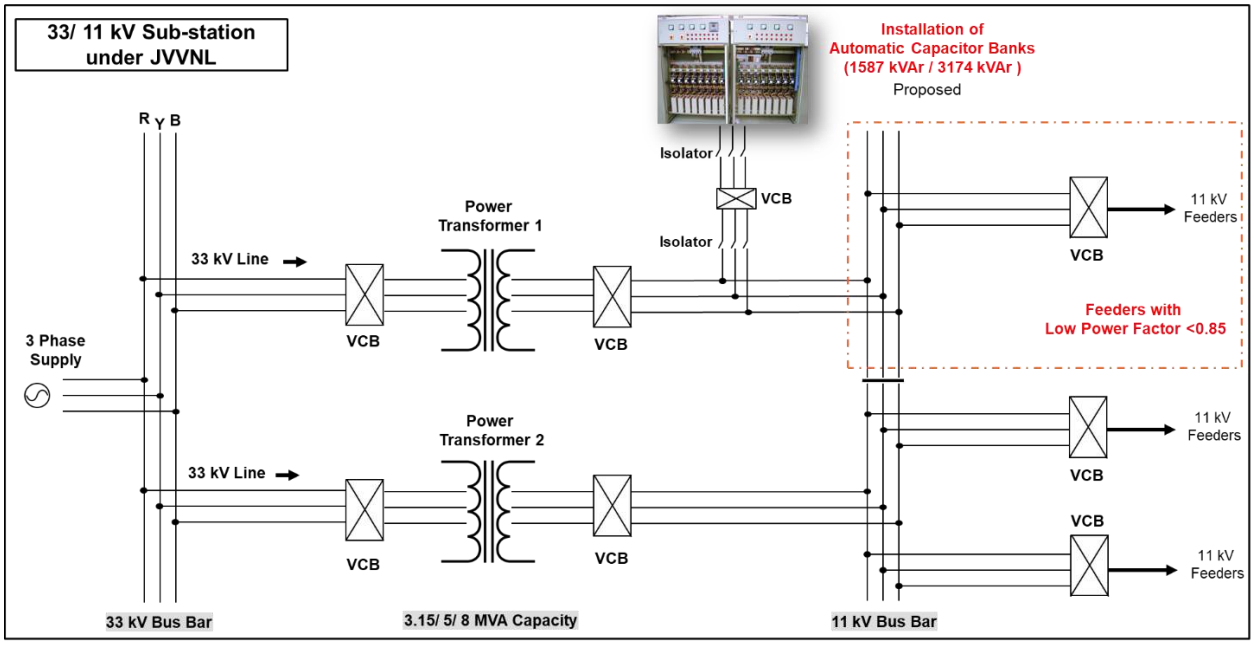


Figure 2: Single Line Diagram – Installation of Dynamic/ Automatic Capacitor Bank

4. PROPOSED SCHEMATIC DIAGRAM FOR APFC PANEL ON 3.15, 5 AND 8 MVA TRANSFORMER AT 33/11 KV SUBSTATIONS

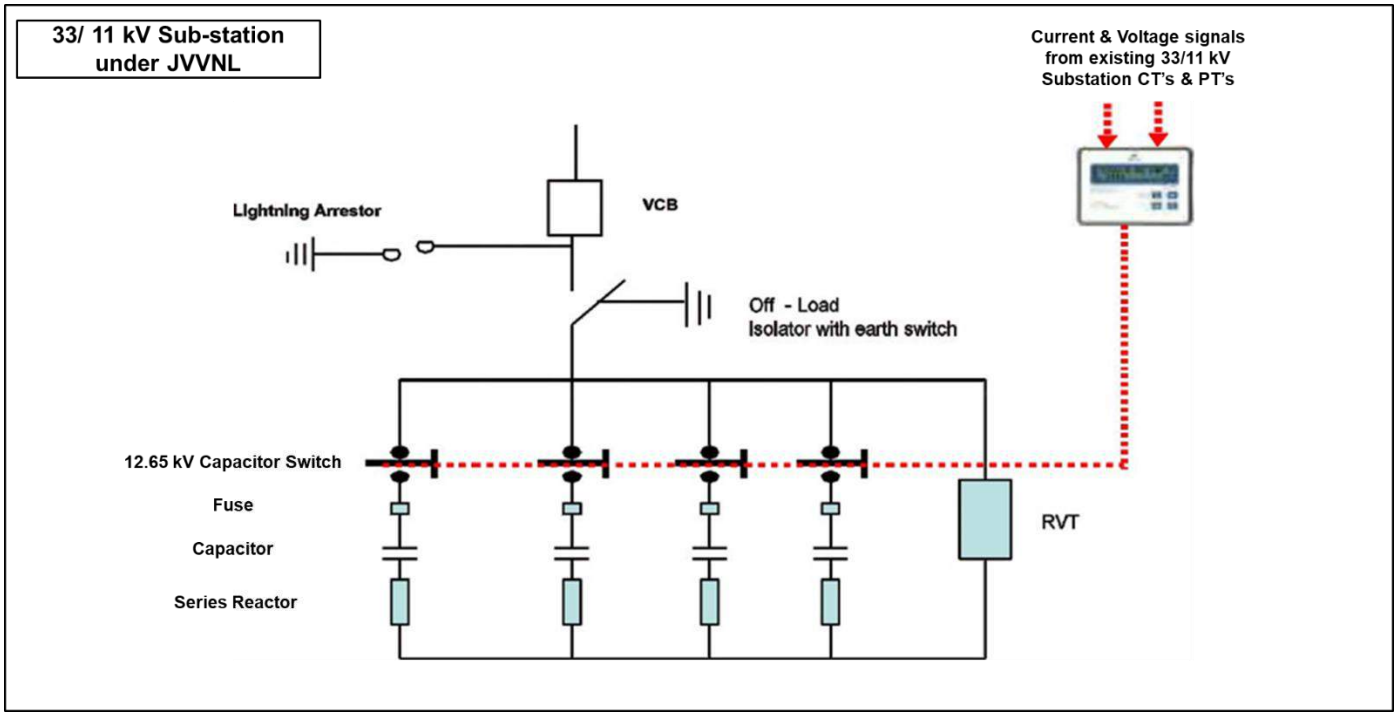


Figure 3: Proposed Schematic Diagram – APFC Panel

5. METHODOLOGY ADOPTED

The methodology as followed by JVVNL, for identification of low power factor *(i.e. below 0.85)* are as stated below.

a) JVVNL Discom has developed a **Feeder Monitoring System (FdrMS)** in order to have a **'Real Time'** power supply status of 11 kV feeders including installation status, power quality, system reliability, issue tracker, block hours supply, power factors, loan analysis, energy audit, tamper details etc.

b) With the support of FdrMS, the review reports consisting of 'Power Factors Less than 0.90' has been downloaded for the last 01 year *(i.e. from May 2021 till April 2022)*.

c) Analysis were carried-out on the Power Factor, Maximum Current (In Amp.) & Peak Load (In kW) at the various zone, circle, division, sub-division, 33/11 kV sub-stations, 11 kV feeders including its transformational capacity (In MVA).

d) The average power factor for the 12 months were calculated and finalized for 12 circles *(except Jaipur, as maximum number of 11 kV feeders are having power factor >0.85)* which is enclosed under **Annexure 'I'.**

e) Further, the automatically generated data are reliable enough for consideration however, JVVNL has taken initiative and finalized data were cross-checked on a sample basis at the various division/ sub-divisions levels.

6. VOLTAGE PROFILE

In addition to the above study, as most of the identified feeders are under rural category having block hours power supply, JVVNL analyzed phase voltage under average load and peak load conditions. In Rajasthan, 11 kV feeders are not segregated from agricultural loads, hence 3-phase supply are provided during peak/ block hours where the phase voltage lies less than 0.9 pu. However, during the non-block hours, the entire loads are shifted to 1-phase supply leading to further voltage drop below 0.9 pu at various 11 kV feeders. In this regard, analysis were carried-out between 10:00 AM – 03:00 PM (peak/ block hour) under three phase (R-Y-B) supply where the voltage at the substations were found to be below 0.9 pu (i.e. below 5.7 kV phase or 9.9 kV line voltage). Hence, the phase voltage profile for some of the feeders on sample basis are as presented below. Also, detailed voltage analysis are included in attached annexure of revised detailed project report.

(a) Feeder – Haripura (Rural) under 33/11 kV Digod Sub-station

(b) Feeder – Dindhor (Rural) under 33/11 kV Tasing Sub-station

(c) Feeder – Petrol (Rural) under 33/11 kV Railganv Sub-station

(d) Feeder – Manoharpura (Rural) under 33/11 kV Kashipur Sub-station

(e) Feeder – Ukhlana (Rural) under 33/11 kV Aligarh Sub-station

(f) Feeder – Chogai (Rural) under 33/11 kV Ranoli (Tonk) Sub-station

7. BENEFICIARIES

Adequate reactive power compensation offered salient benefits to the power system which includes voltage regulation *(i.e. voltage control within acceptable limits)*, system power losses reduction brought about by power factor improvement and it increases the utilization of connected equipments at the consumer end, improves reliability of transmission system and more importantly efficiency of real power made available at the consumer end. Hence, the major beneficiaries are as stated below.

a) Rajasthan Rajya Vidyut Prasaran Nigam Limited

b) Jaipur Vidyut Vitran Nigam Limited *(Approx. 20 Lakhs Consumers under 572 Nos. 33/11 kV Sub-stations of 12 Circles)*

8. ON-GOING INITIATIVES

JVVNL is taking active participation for the supply of quality power without compromising the technical and commercial losses in the urban and rural areas. Some of the initiatives includes village electrification, augmentation of transformational capacity, infrastructure development, privatizations through distribution franchisee, meterization, theft control, adopting schemes like Revamped Distribution Sector Scheme (RDSS), PM-KUSUM Scheme etc. Further, for the improvement of power factors at load end, JVVNL has installed approx. 5,62,323 Nos. of LT Shunt Capacitors (3 kVAr - 6 kVAr - 9 kVAr) from 2016-17 onwards. However due to smaller impact of power factor improvement, burning/ failure issue and theft of LT Shunt Capacitors have forced Discom to rethink and initiate the implementation of dynamic/ automatic capacitor bank at the various 11 kV side of the 33/11 kV sub-stations.

Apart from above, majority of the 11kV feeders in JVVNL are having high agriculture load which are being catered using 3.15/ 5 MVA power transformers at substations. **Over the decade, Discom has witnessed a growth of around ~9% in connected load thus leading to increase in power demand. Also, Government of Rajasthan has mandated supply of day-time power (two blocks supply) to agricultural farmers**. To meet this increase in demand and ensure day time supply to agriculture consumers, JVVNL need to augment its existing transformation capacities at Substation level (specifically from 3.15 MVA to 5 MVA) within next 2 years. Hence, under this detailed project report, JVVNL has considered the upcoming requirement and proposed a capacitor bank with common rated capacity for 3.15/ 5 MVA.

9. TECHNOLOGY

a) For 11 kV, 1587 kVAr & 3174 kVAr Dynamic/ Automatic Capacitor Bank shall include 11 kV Vacuum Circuit Breaker (VCB) Switchgear with complete arrangement with Adopter Panel for connection with existing 11 kV Bus Bar, Capacitor Switch, Reactor, APFC, Indoor Type Automatic Control Unit, Lightning Arrestor, Surge Arrestor, Pin & Post Insulators, PT's-CT's, Power & Control Cables, Junction Box, Supports of various types channels, Nut Bolts, Bus Bar Structure, Laying of Cables, Installation of Energy Meters, Interconnection of VCB and C&R Panel, Battery with Batter Charger etc.

b) The capacitor bank shall consist of variable steps of different kVAr *(details shared under BoQ)*. All the capacitor unit shall be controlled through separate capacitor

switch and complete capacitor bank shall be protected through a VCB suitable for capacitor duty.

c) The rated voltage of the system will be not less than 12 kV and shall be carried-out under 3-Phase Power Supply; 50 Hz frequency level.

d) The automatic power factor control unit shall continuously monitor power factor at 11 kV side of power transformer and automatically switched ON/OFF capacitors units in steps according to the requirement of KVAr to maintain the Target Power Factor *(atleast 0.98)*.

e) The automatic power factor control unit shall be programmable and have data downloading facility. Data Storage capacity of the control unit shall be at least for 45 days with every 15 minutes data. The bidder shall have to provide two data downloading instrument for data download from control unit with necessary BCS in each Circles.

f) The all display meters provided in the control panel shall be digital meters and shall be compatible for Automatic Meter Reading (AMR).

g) There are no low voltage limit for tripping of capacitor bank main VCB or capacitor switch. Also, the power factor control unit and relays provided for the protection of control unit shall be capable to store at least last 05 faults.

h) All equipment and material shall be designed, manufactured and tested in accordance with the latest applicable IS/ IEC standards.

i) The electrical installation shall meet the requirement of Indian Electricity Rules-1956/CEA safety Regulation 2010 as amended up to date; relevant IS code of practice and Indian Electricity Act-2003 in addition other rules and regulations as applicable to the work shall be followed.

10. TECHNICAL SPECIFICATION OF AUTOMATIC POWER FACTOR CAPACITOR

The technical specifications for the proposed capacitor bank are as presented below:

a) Switching Arrangement: The automatic control unit shall be mounted in the control & relay panel itself to continuously monitor total load kVAr on 11 kV side of power transformer and shall automatically switch ON or switch OFF (variable steps) through VCB operation.

b) Time Delay: The switching ON operation will take place after period of 10 minutes while switching OFF operation of relevant steps will be instantaneous.

c) Controls: The unit shall instantly switch OFF the capacitor bank when the voltage increase by 10% above the rated voltage of 11 kV etc.

d) Monitoring Facility: A suitable display should be provided to indicate the capacitor current in each phases of the complete capacitor bank. Indications shall also be provided to indicate ON & OFF status of each capacitor bank. Along with audio alarm indicating tripping of capacitor bank and ON /OFF, visual display window be provided on control panel.

e) Temperature Variation: The control equipment and associate circuitry shall be suitable for operation at an ambient temperature in the range of + 5 deg C to (+) 50 deg C.

Note: *The above proposed technology including technical specifications are indicative only, detailed version will be a part of tender documents.*

11. MANAGEMENT ARRANGEMENTS

The implementation plan for the project will be **24 months (i.e., 03 months tendering process + 21 months implementation)** from the date of approval from funding agency and shall be executed as per proposed plan. Further, the works under different activities shall be carried out on **turnkey basis** through international or national competitive bidding as per the guidelines of funding agency.

The project shall cover the overall procurement, installation, commissioning, testing and 05 years maintenance of dynamic/ automatic capacitor bank and will be divided into two phases (I & II) depending upon the total number of sub-station considered, area covered, time frame and available fund. Here, providing the estimate for **'Phase – I'**.

12. COST ESTIMATES

The cost estimation of installation of **511 Nos. of Dynamic/ Automatic 11 kV Capacitor Bank** under Power System Development Fund is stated below.

Sr. No.	Name of Work	Unit	Qty.	Unit Rate (Rs. Lakhs)	*Amount (In Rs. Cr.)
1	Installation of 1587 kVAr Automatic 11 kV Capacitor Bank including procurement, installation, commissioning and testing. (For 3.15/5 MVA)	Nos.	498	20.85	103.81
2	Installation of 3174 kVAr Automatic 11 kV Capacitor Bank including procurement, installation, commissioning and testing. (For 8 MVA)	Nos.	13	24.46	3.18

***Note:** The above estimated cost is inclusive of Transportation on material, Erection cost on material, Insurance, Labour & Finance Cost, Service Cost, Price Escalation on cost of material, Civil Cost, applicable GST and other taxes, except AMC.*

13. BILL OF QUANTITY (BOQ)

(A) Cost break-up of 11 kV Switched Capacitor Bank at 3.15 / 5 MVA Power Transformer

BoQ for 11 kV Dynamic/ Automatic Capacitor Bank (APFC) for Rural Areas - JVVNL (Cost Reference - MSEDCL Approved Rate)					
Sr. No.	**Name of Items**	**Unit**	**Qty.**	**Unit Rates**	**Amount (In Rs.)**
1	**2**	**3**	**4**	**5**	**6**
1	12.65 kV, 1587 kVAr (11 KV, 1.2 MVAR), 3-Phase, 50 Hz, Outdoor Type, CRCA panel having step as 396.75 kVAr + 396.75 kVAr +793.5 kVAr at 12.65 KV. Bank shall be complete with Capacitor units of 132.25 kVAr for 396.75 KVAR & 264.5 kVAr for 793.5 KVAR step at 7.3 KV, including allied material such as suitable size of Aluminum busbars epoxy insulators, HRC fuses, Vacuum contactor, series reactors, RVT, etc shall also be housed in same cubicle in the below mentioned quantity	Nos.	1	1,016,949.00	1,016,949.00
a)	11 kV, 0.2%, Aluminium Wound, Dry type Series reactors suitable for 396.75 kVAr	Nos.	6		

b)	11 kV, 0.2%, Aluminium Wound, Dry type Series reactors suitable for 793.5 kVAr	Nos.	3		
c)	11 kV, 1-Phase Dry, AN-Cooled RVT	No.	1		
d)	11 kV/400 Amp, Indoor type Vacuum contactor	Nos.	3		
e)	Surge Suppressor	No.	1		
f)	IP 55 , Outdoor CRCA cubicle panel for accommodating capacitors, series reactor, vacuum contactor, surge arrestor fuses along with canaopy	Set	1		
g)	C & R Panel with Automatic Control Unit with APFC relay and Neutral Displacement relay	Set	1		
2	11 KV Isolator with EB (800 A) with elevating structure	No.	1	30,025.00	30,025.00
3	11 KV Isolator without EB (800 Amp.) with elevating structure	No.	1	26,630.00	26,630.00
4	9 kV, 10 kA, Station Class, Lightning Arrestors	Set	1	10,260.00	10,260.00
5	*Cable Support Structure, Clamps, Connectors, Earthing MS Flats 50 x 6, 3 Mtr long Earthing CI Pipe Dia 150 mm, Dog Conductor	LS	1	61,506.95	61,506.95
6	11 KV, 3 x 185 sqmm, HT XLPE Cable	Mtr.	20	858.00	17,160.00
7	Outdoor cable jointing kits	No.	2	1,907.00	3,814.00
8	11 kV VCB (Kiosks Type) (800 Amp.) Switchgear with complete arrangement with adopter panel for connection with existing 11 kV bus bar	No.	1	117,466.00	117,466.00
9	**Control cables of various sizes	LS	1	43,818.20	43,818.20
10	11 kV CT 400 - 200/5 A Outdoor Type	Nos.	3	10,611.00	31,833.00
11	24 Volt / 200 AH Battery with Battery Charger (For Capacitor's VCB)	Nos.	1	69,000.00	69,000.00
Sub-Total (A)					**1,428,462.15**
13	Transportation on material	LS	4%	-	57,138.49
14	Erection cost on material	LS	5%	-	71,423.11
15	Insurance, Labour & Finance Cost	LS	3%	-	42,853.86
Service Cost		**LS**	**12%**	**-**	**171,415.46**
Sub-Total (B)					**171,415.46**
Total (C) = (A) + (B)					**1,599,877.61**

17	Applicable GST	-	18%	-	287,977.97
18	Price Escalation on cost of material	-	10%	-	142,846.22
19	***Civil Cost	LS	1	53,857.50	53,857.50
Sub-Total (D)					**484,681.68**
Grand Total (E) = (C) + (D)					**2,084,559.29**

Note 1: *As JVVNL is not under practice of regular installation of APFC, hence the cost estimation has been considered from recently approved PSDF Scheme of MSEDCL.*

Note 2: *As per the monthly Wholesale Price Index (WPI) issued by office of the Economic Adviser, Department for Promotion of Industry and Internal Trade, following variation is observed in the prices of following items:*

Commodity Name	WPI for 2020-21 (Base 2011-12)	WPI for 2021-22 (Base 2011-12)	Variation (%)
Iron Ore	102	156.2	+53%
Electric insulating material	105.4	107.1	+2%
Electrical relay/ conductor	112.3	129.1	+15%
Batteries	117.9	123.1	+5%

Therefore, looking the variations in some of the materials as required for the installation of capacitor banks at various 33/11 kV S/s over the period (24 months), JVVNL has considered price escalation of 10%.

Additionally, the cost towards annual maintenance charges (as shown below) shall be borne by JVVNL as internal / external source of funding.

Annual Maintenance Charges after Guarantee Period for 05 Years (1 Year + 5 Year's)					
Sr. No.	**Parameters**	**Unit**	**Qty.**	**Unit Rates**	**Amount (In Rs.)**
1	**2**	**3**	**4**	**5**	**6**
1	1st Year	Job	1	50000.00	50,000.00
2	2nd Year	Job	1	60000.00	60,000.00
3	3rd Year	Job	1	70000.00	70,000.00
4	4th Year	Job	1	80000.00	80,000.00
5	5th Year	Job	1	90000.00	90,000.00
Total					**350,000.00**
Total AMC Cost for 05 Years considering 563 Nos. of APFC					**197,050,000.00**

Item Wise Cost Breakup:

(A.1) *Cost Structure for 11 kV Station Capacitor Bank – For 1587 kVAr

Sr. No.	Name of Items	Unit	Qty.	Unit Rates	Amount (In Rs.)
1	2	3	4	5	6
1	Structure for 11 KV CT	Kg	155	51.80	8,029.00
2	Structure for 11 KV LA	Kg	155	51.80	8,029.00
3	G.I. Nut Bolts	Kg	20	82.90	1,658.00
4	Cable Support Structure (2 Nos.)	Kg	200	51.80	10,360.00
5	MS Flat 50 X 6	Kg	235.5	48.50	11,421.75
6	Earthing CI Pipe Dia 150 mm 3 Mtr long	Nos.	3	6300.00	18,900.00
7	Dog Conductor	Mtr.	60	51.82	3,109.20
Total					**61,506.95**

(A.2) ** Cost Structure for Control Cables – For 1587 kVAr

Sr. No.	Name of Items	Unit	Qty.	Unit Rates	Amount (In Rs.)
1	2	3	4	5	6
1	2C X 2.5 Sq. mm Armoured, Copper	Mtr.	100	55.11	5,511.00
2	4C X 2.5 Sq. mm Armoured, Copper	Mtr.	275	87.60	24,090.00
3	7C X 2.5 Sq. mm Armoured, Copper	Mtr.	40	139.19	5,567.60
4	10C X 2.5 Sq. mm Armoured, Copper	Mtr.	40	216.24	8,649.60
Total					**43,818.20**

(A.3) * Cost Structure for Civil Work – For 1587 kVAr**

Sr. No.	Parameters	Unit	Qty.	Unit Rates	Amount (In Rs.)
1	2	3	4	5	6
1	Excavation	CuM	8	150.00	1,200.00
2	PCC	CuM	2.5	4257.00	10,642.50
3	RCC	CuM	5	5255.00	26,275.00
4	Steel	Kg	300	51.80	15,540.00
5	Back Filing	CuM	2	100.00	200.00
Total					**53,857.50**

(B) Cost break-up of 11 kV Switched Capacitor Bank at 8 MVA Power Transformers

BoQ for 11 kV Dynamic/ Automatic Capacitor Bank (APFC) for Rural Areas - JVVNL (Cost Reference - MSEDCL Approved Rate)					
Sr. No.	**Name of Items**	**Unit**	**Qty.**	**Unit Rates**	**Amount (In Rs.)**
1	**2**	**3**	**4**		**5**
1	12.65 kV, 3174 kVAr, 3-Phase, 50 Hz, Outdoor Type, CRCA panel having 4 step as 396.75 kVAr + 396.75 kVAr +1190.25 kVAr +1190.25 kVAr at 12.65 KV. Bank shall be complete with Capacitor units of 132.25 kVAr for 396.75 kVAr & 396.75 kVAr for 1190.25 kVAr at 7.3 kV including allied material such as suitable size of Aluminum busbars epoxy insulators, HRC fuses, Vacuum contactor, series reactors, RVT, etc. with details as under	Nos.	1	1,271,186.00	1,271,186.00
a)	11 kV, 0.2%, Aluminium Wound, Dry type Series reactors suitable for 396.75 kVAr	Nos.	6		
b)	11 kV, 0.2%, Aluminium Wound, Dry type Series reactors suitable for 1190.25 kVAr	Nos.	6		
c)	11 kV, 3-Phase dry type RVT	No.	1		
d)	11 kV/400 Amp, Indoor type Vacuum contactor	Nos.	4		
e)	Surge Suppressor	No.	1		
f)	IP 55 , Outdoor CRCA cubicle panel for accommodating capacitors, series reactor, vacuum contactor, surge arrestor fuses along with canaopy	Set	1		
g)	C & R Panel with Automatic Control Unit with APFC relay and Neutral Displacement relay	Set	1		
2	11 KV Isolator with EB (800 A) with elevating structure	No.	1	30,025.00	30,025.00
3	11 KV Isolator without EB (800 Amp.) with elevating structure	No.	1	26,630.00	26,630.00
4	9 kV, 10 kA, Station Class, Lightning Arrestors	Set	1	10,260.00	10,260.00
5	*Cable Support Structure, Clamps, Connectors, Earthing MS Flats 50 x 6, 3 Mtr long Earthing CI Pipe Dia 150 mm, Dog Conductor	LS	1	61,506.95	61,506.95

6	11 kV XLPE insulated 3x185 mm^2 Armoured	Mtr.	20	858.00	17,160.00
8	Outdoor cable jointing kits	No.	2	1,907.00	3,814.00
9	11 kV VCB (Kiosks) (800 Amp.) Switchgear with complete arrangement with adopter panel for connection with existing 11 kV bus bar	No.	1	117,466.00	117,466.00
10	**Control cables of various sizes	LS	1	43,818.20	43,818.20
11	11 kV CT 400 - 200/5 A Outdoor Type	Nos.	3	10,611.00	31,833.00
12	24 Volt / 200 AH Battery with Battery Charger (For Capacitor's VCB)	Nos.	1	69,000.00	69,000.00
Sub-Total (A)					**1,682,699.15**
13	Transportation on material	LS	4%	-	67,307.97
14	Erection cost on material	LS	5%	-	84,134.96
15	Insurance, Labour & Finance Cost	LS	3%	-	50,480.97
Service Cost		**LS**	**12%**	**-**	**201,923.90**
Sub-Total (B)					**201,923.90**
Total (C) = (A) + (B)					**1,884,623.05**
17	Applicable GST	-	18%	-	339,232.15
18	Price Escalation on cost of material	-	10%	-	168,269.92
19	***Civil Cost	LS	1	53,857.50	53,857.50
Sub-Total (D)					**561,359.56**
Grand Total (E) = (C) + (D)					**2,445,982.61**

Note 1: *As JVVNL is not under practice of regular installation of APFC, hence the cost estimation has been considered from recently approved PSDF Scheme of MSEDCL.*

Note 2: *As per the monthly Wholesale Price Index (WPI) issued by office of the Economic Adviser, Department for Promotion of Industry and Internal Trade, following variation is observed in the prices of following items:*

Commodity Name	WPI for 2020-21 (Base 2011-12)	WPI for 2021-22 (Base 2011-12)	Variation (%)
Iron Ore	102	156.2	+53%
Electric insulating material	105.4	107.1	+2%
Electrical relay / conductor	112.3	129.1	+15%
Batteries	117.9	123.1	+5%

Therefore, looking the variations in some of the materials as required for the installation of capacitor banks at various 33/11 kV S/s over the period (24 months), JVVNL has considered price escalation of 10%.

Additionally, the cost towards annual maintenance charges (as shown below) shall be borne by JVVNL as internal / external source of funding.

Annual Maintenance Charges after Guarantee Period for 05 Years (1 Year + 5 Year's)					
Sr. No.	**Parameters**	**Unit**	**Qty.**	**Unit Rates**	**Amount (In Rs.)**
1	**2**	**3**	**4**	**5**	**6**
1	1st Year	Job	1	50000.00	50,000.00
2	2nd Year	Job	1	60000.00	60,000.00
3	3rd Year	Job	1	70000.00	70,000.00
4	4th Year	Job	1	80000.00	80,000.00
5	5th Year	Job	1	90000.00	90,000.00
Total					**350,000.00**
Total AMC Cost for 05 Years considering 14 Nos. of APFC					**4,900,000.00**

Item Wise Cost Breakup:

(B.1) *Cost Structure for 11 kV Station Capacitor Bank – For 3174 kVAr

Sr. No.	Name of Items	Unit	Qty.	Unit Rates	Amount (In Rs.)
1	**2**	**3**	**4**	**5**	**6**
1	Structure for 11 KV CT	Kg	155	51.80	8,029.00
2	Structure for 11 KV LA	Kg	155	51.80	8,029.00
3	G.I. Nut Bolts	Kg	20	82.90	1,658.00
4	Cable Support Structure (2 Nos.)	Kg	200	51.80	10,360.00
5	MS Flat 50 X 6	Kg	235.5	48.50	11,421.75
6	Earthing CI Pipe Dia 150 mm 3 Mtr long	Nos.	3	6300.00	18,900.00
7	Dog Conductor	Mtr.	60	51.82	3,109.20
Total					**61,506.95**

(B.2) **Cost Structure for Control Cables – For 3174 kVAr

Sr. No.	Name of Items	Unit	Qty.	Unit Rates	Amount (In Rs.)
1	2	3	4	5	6
1	2C X 2.5 Sq. mm Armoured, Copper	Mtr.	100	55.11	5,511.00
2	4C X 2.5 Sq. mm Armoured, Copper	Mtr.	275	87.60	24,090.00
3	7C X 2.5 Sq. mm Armoured, Copper	Mtr.	40	139.19	5,567.60
4	10C X 2.5 Sq. mm Armoured, Copper	Mtr.	40	216.24	8,649.60
Total					**43,818.20**

(B.3) ***Cost Structure for Civil Work – For 3174 kVAr

Sr. No.	Parameters	Unit	Qty.	Unit Rates	Amount (In Rs.)
1	2	3	4	5	6
1	Excavation	CuM	8	150.00	1,200.00
2	PCC	CuM	2.5	4257.00	10,642.50
3	RCC	CuM	5	5255.00	26,275.00
4	Steel	Kg	300	51.80	15,540.00
5	Back Filing	CuM	2	100.00	200.00
Total					**53,857.50**

14. TIME FRAME PERT CHART

The total duration of the project is considered as **24 months**. The tentative start date shall be considered as the date of receipt of approval from PSDF funding while the completion time is likely to by **end of July 2025.** The detailed time frame is presented below.

Sr. No.	Description	TIMELINE																							
		FY 2023-24								FY 2024-25														FY 2025-26	
		Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25
Finalization of Tender Documents & Issuance of Work Order																									
1	Project Approval																								
2	Conduct of Committee Meeting																								
3	Preparation & Release of Tender Document																								
4	Evaluation, Contract Award and Mobilization																								
Procurement, Installation, Commissioning & Testing of Equipments																									
5	1st Disbursement (30% of Grant)				D1																				
6	Procurement, Installation, Commissioning & Testing of Equipments				Progressive Basis																				
7	Bi-monthly Review Meeting																								
8	Monthly Report Submission																								
9	2nd Disbursement (60% of Grant) i.e. After Utalization of 30% Grant + 10% Self-contribution (JVVNL)										D2														
Cost Benefit Analysis & Report Submission on Improved Power Factor																									
10	Submission of Draft Report																								
11	Final Report Submission																								
12	3rd Disbursement (10% of Grant) i.e. On Completion of Scheme																								D3

15. SUCCESS CRITERIA & SUSTAINABILITY

To identify the success of any project, it is always necessary to evaluate the standards by which to examine whether the proposed objective, target or outcomes will be achieve or not. Hence, the **Cost-Benefit Analysis** for the 1587 kVAr & 3174 kVAr ratings automatic capacitor bank on the 3.15, 5 & 8 MVA power transformer has been presented below.

Payback Calculation for Installation of 11 kV Automatic Capacitor Bank at 33/11 kV Sub-station															
Assumptions - Load Factor - 80%| Avg. Loading - 54%| Average PF - 0.85 | Desired PF - 0.98 | Initial Line Losses as 20%															
Sr. No.	Transformer Rating (In MVA)	Qty	Total MVA	Load Factor	Average Loading	Average Demand (In MW) with 0.85 Power Factor	Reduction in MVA after Capacitors Bank	% Line Loss Reduction	Actual Line Loss Reduction of Initial Loss as	Total MWh Drawn in a Year	Saving in MWh	Cost of energy saved per annum @ 4.85/- (2021-22) per unit	Proposed 11 KV Automatic Capacitor Bank (In kVAr)	Supply, Installation Cost (In Lakhs)	Total Cost (In Cr.)
				80%	54%		0.98		20						
1	3.15	312	983	786	425	360.8842	368.25	24.77	4.95	3161345	156619	759,601,741	1587	20.85	65.05
2	5	186	930	744	402	341.496	348.47	24.77	4.95	2991505	148205	718,792,856	1587	20.85	38.78
3	8	13	104	83	45	38.1888	38.97	24.77	4.95	334534	16573	80,381,137	3174	24.46	3.18
Grand Total										**6487384**	**321397**	**1,558,775,734**	**-**	-	**106.99**

Total Cost of the Project : Rs. 106.99 Cr.

Total Savings with Power Factor Improvement : Rs. 155.88 Cr.

Payback Period - Approx. 09 Months

"Further, regional entities are liable for weekly settlement of 'Reactive Energy Charges' in accordance with the CERC (Indian Electricity Grid Code) Regulations, 2010 and amendments thereof, which are sometimes payable or receivable. Due to poor power factor, sometimes Rajasthan accounts for a penalty at the rate of 10 paise/kVArh *(from 03.05.2010 onwards)* reactive charges with escalation factor of 0.5 paise/ kVArh. Also, recent provision of CERC's Draft Indian Electricity Grid Code 2022 recommends the reactive charge at the rate of 5 paise/kVArh w.e.f. the date of effect of final regulations with escalation at 0.5paise/kVArh per year thereafter".

Hence, the draft provision to rate reduction along with saving achieved through installation of capacitor bank will definitely lower down the overall penalty impact. These shall be the contributing factor for the Improvement of Financial Health of Discoms and will leading to a sustainable implementation structure. *(Note: The NRLDC charges is not taken into consideration in above payback calculation).*

Moreover, the capacitor units are used in these capacitor banks are manufactured with the latest design and tested to meet or exceed the requirement of applicable IEC & IS

Standards, it is rated in continuous kVAr, voltage and frequency for operating within the -200 ^{o}C to +500 ^{o}C ambient temperature rage & designed to produce not less than rated kVA at rated voltage and frequency.

Capacitors will operate safely at 135% of kVAr rating under following condition as:

- kVAr caused by excess at rated frequency.
- kVAr added by the harmonic voltage superimposed on the power frequency voltage.
- kVAr attributable to manufacturing tolerances.

The maximum recommended working voltage of capacitor is 110% of rated voltage. The capacitors include a safely factor that permits them to tolerate without damage momentary over voltage caused due to switching/ load fluctuation.

Thus, it is quite successful and sustainable in the high voltage system.

ANNEXURE 'I'

List of Various 33/11 kV Sub-stations considered for Power Factor Improvement

AJMER VIDYUT VITRAN NIGAM LIMITED
Corporate Identification Number (CIN)- U40109RJ2000SGC016482
Regd. off. Vidyut Bhawan, Panchsheel Nagar, Makarwali Road, ajmer-305004
Office of the Add. Chief Engineer (Projects)
Phone:- 0145-2644551, Email Id:- ceprojectavvnl2023@gmail.com, Website –http://energy.rajasthan.gov.in/avvnl

No. AVVNL/ACE(Projects)/Ajmer/F.PSDF/D- 494 **Dt.** 27 JUL 2023

Sh. Debasis De
Executive Director, NLDC
Member Secretary of the Appraisal Committee of PSDF
Power System Operation Corporation Ltd.
B-9, Qutub Institutional Area, Katwaria Sarai,
New Delhi-110016

Sub: Submission of revised DPR for installation of dynamic/ automatic Capacitor Banks on 11 kV Side of selected 33/11 kV sub-stations of AVVNL under Power System Development Fund (PSDF Scheme)

Ref: 1. DPR submitted vide this office letter No. D-545 dated 08-09-2022
2. PSDF TESG meeting held at New Delhi on 08-05-2023
3. Study report conducted by RVPNL
4. This office letter No. D-332 dated 23-06-2023

Kindly find enclosed herewith the revised DPR for installation of dynamic/ automatic Capacitor Banks on 11 kV Side of selected 33/11 kV sub-stations of AVVNL under Power System Development Fund (PSDF Scheme) amounting to Rs 135.99 Cr for further needful at your level and fund approval.

As discussed and decided in the TESG meeting dated 08-05-2023, the revised DPR has been prepared in accordance with the inputs received from RVPNL (STU), initially for installation of capacitor banks on 644 Nos. sub-stations and later for 650 Nos. sub-stations. It is further submitted that the DPR has been prepared in line with JVVNL.

Enclosed: As above

(Ashok Kumar)
Add. Chief Engineer (Projects)
AVVNL, Ajmer

Copy submitted / forwarded to the following:

1. The TA to Managing Director, AVVNL, Ajmer for kind perusal of MD Sb.
2. The Add. Chief Engineer (Projects), JVVNL, Jaipur
3. The Superintending Engineer (PP), RVPNL, Jaipur

Add. Chief Engineer (Projects)
AVVNL, Ajmer

REVISED DETAILED PROJECT REPORT (DPR)

FOR

System Improvement Scheme

Installation of Capacitor Banks on 11 kV Side of 33/11kV Substations for Reactive Power Compensation under Power System Development Fund (PSDF) – Phase 'I'

Estimated Cost: Rs. 135.99 Cr.

AJMER VIDYUT VITRAN NIGAM LIMITED

Corporate Identification Number (CIN): U40109RJ2000SGC016482
Office of the Add. Chief Engineer (Projects)
VidyutBhawan, Panchsheel Nagar, Makarwali Road, Ajmer-305004

Email –ceprojectavvnl2023@gmail.com

Website:www.energy.rajasthan.gov.in/avvnl

DETAILED PROJECT REPORT

INTRODUCTION

Rajasthan is the largest state in the country, in terms of area, spreading across 3,42,239 Sq. km, which is 10.41% of the nation area. The total population of Rajasthan is nearly 8.1 Crores spread across 33 Districts, of which 75% is rural population. The density of population in Rajasthan is 200 per sq.km which is much lower than the national average of 382 per sq.km. The state is, predominantly, an agrarian society with majority (45%) of the population depending on agriculture activities as source of income, which accounts for around 29.5% of Gross State Domestic Product (GSDP).

Due to this spread of population, meeting power demand, distribution of electricity and maintaining quality power for every category of consumers has always remained a challenge. The state is primarily agricultural base; however, the intensive power is too supplied to the domestic, non-domestic and industrial sector. It has been identified that these loads are highly inductive in nature which need rectification. In this regard, AVVNL has proposed to install dynamic/ automatic capacitor bank under which the capacitive load helps to adjust power factor as close to **'Unity Power Factor'**. The implementation of the project/ scheme will limit the heavy drawl of reactive power from grid and mitigate the risk such as **(a) Overloading of transmission lines; (b) Overloading of transformers at different voltage levels; and (c) Increase in system losses.**

Under AVVNL Discom, efforts have continuously been made to provide requisite reactive power compensation; however, the challenge associated with low voltage at the load end and drawl of heavy reactive power from the grid still persists due to fast growing load demand. Additionally, it has been noticed that the power factor is ranging from 0.80 to 0.90 at urban feeder and 0.75 to 0.80 (or even less) at the rural feeders within the respective circles. In view of this, the **provision through submission of detailed project report has been proposed at various circles having 'power factor less than 0.85'**. The report shall consist of brief background of AVVNL Discom, geographical maps, operational profile, objective, beneficiaries, recent initiatives, technology, cost estimates, timeframe, success criteria etc.

OUR PROPOSAL

1. BACKGROUND

1.1. Introduction

Ajmer Vidyut Vitran Nigam Limited (AVVNL) is a public utility company under the Department of Energy, Government of Rajasthan and is holder of the distribution and retail supply business licenses in the State of Rajasthan *(hereafter referred as "DISCOM")*. The Distribution Company came in to existence on 19 July 2000 pursuant to the "Rajasthan Power Sector Reforms Transfer Scheme, 2000" and restructuring undertaken in the State under which the vertically integrated Electricity Board *(Rajasthan State Electricity Board)* was unbundled and the power generation, transmission and distribution business was segregated to form 05 successor companies viz.

a) **Rajasthan Rajya Vidyut Utpadan Nigam Limited (RVUN)** to manage the electricity generation business of erstwhile RSEB.

b) **Rajasthan Rajya Vidyut Prasaran Nigam Limited (RVPN)** to manage the electricity transmission and bulk supply business of erstwhile RSEB.

c) **Ajmer Vidyut Vitran Nigam Limited (AVVNL)** to manage the electricity distribution and retail supply business of erstwhile RSEB in Ajmer City Circle, Ajmer District Circle, Bhilwara, Nagaur, Jhunjhunu, Sikar, Udaipur, Chittorgarh, Rajsamand, Banswara, Pratapgarh and Dungarpur Circles.

d) **Jaipur Vidyut Vitran Nigam Limited (JVVNL)** to manage the electricity distribution and retail supply business of erstwhile RSEB in Alwar, Bharatpur, Jaipur City, Jaipur District, Dausa, Kota, Jhalawar, Sawai Madhopur, Bundi, Baran, Tonk, Karauli and Dholpur Circles.

e) **Jodhpur Vidyut Vitran Nigam Limited (JdVVNL)** to manage the electricity distribution and retail supply business of erstwhile RSEB in Sriganganagar, Hanumangarh, Churu, Bikaner District, Bikaner City, Jaisalmer, Jalore, Barmer, Jodhpur City, Jodhpur District, Sirohi, Jalore, and Pali Circles.

1.2. Geographical Map of RajasthanDiscom

Figure 1: [1]Distribution Company Operating in State of Rajasthan

All the 03 Discoms have been established with the principal object of engaging inthe business of distribution andsupply ofuninterrupted and reliable quality electricity in differentdistricts (JVVNL – 12 Nos., AVVNL – 11 Nos. & JdVVNL – 10 Nos.) of Rajasthan. In view of above geographic locations, the proposal will mainly focus on'Installation of Capacitor Bank at the 11 kV Side of various 33/11 kV sub-stations' under various Circles of Ajmer Discom.

1.3. Operational Profile

The AVVNL Discom is responsible for operating the distribution assets within the areaofAjmer, Bhilwara, Nagaur, Jhunjhunu, Sikar, Udaipur, Chittorgarh, Rajsamand, Banswara, Pratapgarh and Dungarpur districts. Its scope of work and the electricity network *(as on Mar23)* are as presented below.

[1] **Source:** https://energy.rajasthan.gov.in/content/raj/energy-department/en/departments/avvnl/knowledge-base/discom-map.html

Table 1: Operational Profile of AVVNL Discom

Sr. No.	Parameters	AVVNL
1	Area of Operation	87,256 Sq. KM
2	Total Population (As per 2011 Census)	229 Lakhs
3	Total Number of Consumers	54.73 Lakhs (Regular)
4	Total Number of Villages	15379 Nos.
5	Electrified Villages	15272 Nos. (The balance 107 Nos. villages are unpopulated)
6	Circles	12 Nos.
7	33/11 kV Sub-stations	1974 Nos.
8	MVA Capacity of 33/11 kV Power Transformer	10276.70MVA
9	33 kV Line	16821.30 KM
10	11 kV Line	162143.59 KM
11	11 kV Feeders	9443 Nos.
12	LT Line	199117.66 KM
13	11/0.4, 6.35/0.24 kV Sub-station	537494 & 185452 Nos.
14	MVA Capacity of Distribution Transformer	17713.45MVA
15	Load Profile (LV) based on MU	Agriculture & Domestic loads are predominating
16	Load profile (HV) based on MU	Industrial & Non Industrial, Agriculture, Residential and Commercial

Further, in terms of electrical connectivity, the AVVNL Discom is connected to Rajasthan Rajya Vidyut Prasaran Nigam Limited network at 33kV & 11kV levels. Also, there are few interconnection points with other Discoms.

1.4. Customers Profile

Discom currently serves about 5473245 regularconsumers with a total connected load of around 1,44,21,291 kW under the LT & HT categories of consumers. Hence, category wise break-up of total number of consumers with connected Load as on March 2023 is stated below:

Table 2: Customer Profile for LT&HT Consumers of AVVNL Discom

Category (LT)	Consumers (Nos)	Connected Load (kW)
Domestic	4393918	3943062
Non Domestic	392589	1527874
PSL	6851	138677
Agri (M)	579349	3973100
Agri (F)	453	5341
Agri (P)	1512	9385
SIP	50619	386441
MIP	10414	630158
LIP	5398	3413773
SIP(WW)	22314	164336
MIP(WW)	321	15829
LIP(WW)	197	80542
Mixed Load	9301	91520
EV	4	55
Railway Traction	**5**	**41198**
Total	**54,73,245**	**1,44,21,291**

2. PROJECT OBJECTIVE

AVVNL believes that there is a need for a consistent and long lasting solution in order to improve & strengthen the Power Distribution Network with minimum losses in the long run. Also, the distribution system has suffered various challenges such as **(a) Unbalanced Load Flow; (b) High Level of Technical Losses; (c) Less System Stability; (d)Poor Voltage Regulation; (e) Low Power Factor; (f) Low Consumer Satisfaction Level etc.** which need to be gradually resolved. In this regard, AVVNL is taking up Integrated Planning for Distribution System covering the Renovation & Modernization of the overall network. This will enable relieving congestion and improving the voltage profile at the load end.

"Government of India has finalized the scheme/ guidelines for operationalization of PSDF dated 10.01.2014. The provision consists of 'Installation of Shunt Capacitors, Series Compensators and other Reactive Energy Generators including Reactive Energy Absorption, Dynamic Reactive' support etc. for improvement of voltage profile in the Grid**"**.

Hence, this report aims to provide detailed information relating to the project for which Power System Development Fund for current year sought by the AVVNL. The key activity identified is to improve power distribution system with the installation of **1587 kVAr &**

3174 kVAr Dynamic/ Automatic Capacitor Bank at the selected 11kV Side of 33/11 kV Sub-stations within the respective Circle/ Division/ Sub-division which could be possible with the **Power System Development Fund (PSDF).**

Table 3: Project Estimation for Installation of Capacitor Bank under AVVNL Discom

Installation of Dynamic/ Automatic Capacitor Bank under 12 Circles of AVVNL Discom							
Power Factor	**Circle**	**Division**	**Sub Division**	**Total 33/11 kV Substation**	**Feeder Count**	**Proposed Transformer Capacity (MVA)**	**Power Transformer Count (Nos.)**
Less than 0.85	12	39	127	650	1826	3.15/ 5	637
						8	13
						Total (In Nos.)	**650**

3. METHODOLOGY ADOPTED

The methodology as followed by AVVNL, for identification of low power factor *(i.e. below 0.85)* is as stated below.

a) AVVNL Discom has developed a **Feeder Monitoring System (FMS)**in order to have a **'Real Time'** power supply status of 11 kV feeders including installation status, power quality, system reliability, issue tracker, block hours supply, power factors, loan analysis, energy audit, tamper details etc.

b) With the support of RFMS, the review reports consisting of 'Power Factors Less than 0.90' has been downloaded for the last 01 year *(i.e. from May 2022 till April 2023)*.

c) Analysis were carried-out on the Power Factor, Maximum Current (In Amp.) & Peak Load (In kW) at the various zone, circle, division, sub-division, 33/11 kV sub-stations, 11 kV feeders including its transformational capacity (In MVA).

d) The average power factor for the 12 months were calculated and finalized for 12 circles which is enclosed under **Annexure 'I'.**

e) Further, the automatically generated data are reliable enough for consideration however, AVVNL has taken initiative and finalized data were cross-checked on a sample basis at the various division/ sub-divisions levels.

4. BENEFICIARIES

Adequate reactive power compensation offered salient benefits to the power system which includes voltage regulation *(i.e. voltage control within acceptable limits)*, system power losses reduction brought about by power factor improvement and it increases the utilization of connected equipments at the consumer end, improves reliability of transmission system and more importantly efficiency of real power made available at the consumer end. Hence, the major beneficiaries are as stated below.

a) Rajasthan Rajya Vidyut Prasaran Nigam Limited

b) Ajmer Vidyut Vitran Nigam Limited *(Approx. 20 Lakhs Consumers under 650 Nos. 33/11 kV Sub-stations of 12 Circles)*

5. ON-GOING INITIATIVES

AVVNL is taking active participation for the supply of quality power without compromising the technical and commercial losses in the urban and rural areas. Some of the initiatives include village electrification, augmentation of transformational capacity, infrastructure development, privatizations through distribution franchisee, metering, theft control, adopting schemes like Revamped Distribution Sector Scheme (RDSS), PM-KUSUM Scheme etc. Further, for the improvement of power factors at load end, AVVNL has installed approx. 195242 Nos. . of LT Shunt Capacitors (3 kVAr / 6 kVAr / 9 kVAr) till date. However due to smaller impact of power factor improvement, burning/ failure issue and theft of LT Shunt Capacitors have forced Discom to rethink and initiate the implementation of dynamic/ automatic capacitor bank at the various 11 kV side of the 33/11 kV sub-stations.

Apart from above, majority of the 11kV feeders in AVVNL are having high agriculture load which are being catered using 3.15/ 5 MVA power transformers at substations. Over the decade, Discom has witnessed a growth of around ~9% in connected load thus leading to increase in power demand. Also, Government of Rajasthan has mandated supply of day-time power (two blocks supply) to agricultural farmers. To meet this increase in demand and ensure day time supply to agriculture consumers, AVVNL need to augment its existing transformation capacities at Substation level (specifically from 3.15MVA to 5 MVA) within next 2 years. Hence, under this detailed project report, AVVNL has considered the upcoming requirement and proposed a capacitor bank with common rated capacity for 3.15/ 5 MVA.

6. TECHNOLOGY

a) For 11kV, 1587 kVAr & 3174 kVAr Dynamic/ Automatic Capacitor Bank shall include 11kV Vacuum Circuit Breaker (VCB) Switchgear with complete arrangement with Adopter Panel for connection with existing 11 kV Bus Bar, Capacitor Switch, Reactor, APFC, Indoor Type Automatic Control Unit, Lightning Arrestor, Surge Arrestor, Pin & Post Insulators, PT's-CT's, Power &Control Cables, Junction Box, Supports of various types channels, Nut Bolts, Bus Bar Structure, Laying of Cables, Installation of Energy Meters, Interconnection of VCB and C&R Panel, Battery with Batter Charger etc.

b) The capacitor bank shall consist of variable steps of different kVAr *(details shared under BoQ)*. All the capacitor unit shall be controlled through separate capacitors witch and complete capacitor bank shall be protected through a VCB suitable for capacitor duty.

c) The rated voltage of the system will be not less than 12 kV and shall be carried-out under 3-Phase Power Supply; 50 Hz frequency level.

d) The automatic power factor control unit shall continuously monitor power factor at11kV side of power transformer and automatically switched ON/OFF capacitors units in steps according to the requirement of KVAr to maintain the Target Power Factor *(atleast 0.98)*.

e) The automatic power factor control unit shall be programmable and have data down loading facility. Data Storage capacity of the control unit shall be at least for45 days with every 15 minutes data. The bidder shall have to provide two data downloading instrument for data download from control unit with necessary BCS in each Circles.

f) The all display meters provided in the control panel shall be digital meters and shall be compatible for Automatic Meter Reading (AMR).

g) There are no low voltage limit for tripping of capacitor bank main VCB or capacitor switch. Also, the power factor control unit and relays provided for the protection of control unit shall be capable to store at least last 05 faults.

h) All equipment and material shall be designed, manufactured and tested in accordance with the latest applicable IS/IEC standards.

i) The electrical installation shall meet the requirement of Indian Electricity Rules-1956/CEA safety Regulation 2010 as amended up to date; relevant IS code of

practice and Indian Electricity Act-2003 in addition other rules and regulations as applicable to the work shall be followed.

Note: *The above proposed technology is indicative only, detailed version will be a part of tender documents.*

7. MANAGEMENT ARRANGEMENTS

The implementation plan for the project will be **24 months (i.e 03 months tendering process + 21 months implementation)** from the date of approval from funding agency and shall be executed as per proposed plan. Further, the works under different activities shall be carried out on **turnkey basis** through international or national competitive bidding as per the guidelines of funding agency.

The project shall cover the overall procurement, installation, commissioning, testing and 05 years maintenance of dynamic/ automatic capacitor bank and will be divided into two phases (I& II)depending upon the total number of sub-station considered, area covered, time frame and available fund. Here, providing the estimate for **'Phase – I'**.

8. COST ESTIMATES

The cost estimation of installation of **650 Nos. of Dynamic/ Automatic 11 kV Capacitor Bank** under Power System Development Fund is stated below.

Sr. No.	Name of Work	Unit	Qty.	Unit Rate (Rs. Lakhs)	*Amount (In Rs. Cr.)
1	Installation of 1587 kVAr Automatic 11 kV Capacitor Bank including procurement, installation, commissioning and testing. (For 3.15/5 MVA)	Nos.	637	20.85	132.81
2	Installation of 3174 kVAr Automatic 11 kV Capacitor Bank including procurement, installation, commissioning and testing. (For 8 MVA)	Nos.	13	24.46	3.18
	Total		650		135.99

***Note:** The above estimated cost is inclusive of transportation of material, erection cost, insurance, labour & finance cost, service cost, price escalation, civil cost, applicable GST and other taxes, except AMC.*

9. BILL OF QUANTITY (BOQ)

(A) Cost break-up of 11 kV Switched Capacitor Bank at 3.15 / 5 MVA Power Transformer

BoQ for 11 kV Dynamic/ Automatic Capacitor Bank (APFC) for Rural Areas - AVVNL (Cost Reference - MSEDCL Approved Rate)					
Sr. No.	**Name of Items**	**Unit**	**Qty.**	**Unit Rates**	**Amount (In Rs.)**
1	**2**	**3**	**4**	**5**	**6**
1	12.65 kV, 1587 kVAr (11 KV, 1.2 MVAR), 3-Phase, 50 Hz, Outdoor Type, CRCA panel having step as 396.75 kVAr + 396.75 kVAr +793.5 kVAr at 12.65 KV. Bank shall be complete with Capacitor units of 132.25 kVAr for 396.75 KVAR & 264.5 kVAr for 793.5 KVAR step at 7.3 KV, including allied material such as suitable size of Aluminum busbars epoxy insulators, HRC fuses, Vacuum contactor, series reactors, RVT, etc shall also be housed in same cubicle in the below mentioned quantity	Nos.	1	1,016,949.00	1,016,949.00
a)	11 kV, 0.2%, Aluminium Wound, Dry type Series reactors suitable for 396.75 kVAr	Nos.	6		
b)	11 kV, 0.2%, Aluminium Wound, Dry type Series reactors suitable for 793.5 kVAr	Nos.	3		
c)	11 kV, 1-Phase Dry, AN-Cooled RVT	No.	1		
d)	11 kV/400 Amp, Indoor type Vacuum contactor	Nos.	3		
e)	Surge Suppressor	No.	1		
f)	IP 55 , Outdoor CRCA cubicle panel for accommodating capacitors, series reactor, vacuum contactor, surge arrestor fuses along with canaopy	Set	1		
g)	C & R Panel with Automatic Control Unit with APFC relay and Neutral Displacement relay	Set	1		
2	11 KV Isolator with EB (800 A) with elevating structure	No.	1	30,025.00	30,025.00
3	11 KV Isolator without EB (800 Amp.) with elevating structure	No.	1	26,630.00	26,630.00
4	9 kV, 10 kA, Station Class, Lightning Arrestors	Set	1	10,260.00	10,260.00
5	*Cable Support Structure, Clamps, Connectors, Earthing MS Flats 50 x 6, 3 Mtr long Earthing CI Pipe Dia 150 mm, Dog Conductor	LS	1	61,506.95	61,506.95
6	11 KV, 3 x 185 sqmm, HT XLPE Cable	Mtr.	20	858.00	17,160.00
7	Outdoor cable jointing kits	No.	2	1,907.00	3,814.00
8	11 kV VCB (Kiosks Type) (800 Amp.) Switchgear with complete arrangement with adopter panel for connection with existing 11 kV bus bar	No.	1	117,466.00	117,466.00

9	**Control cables of various sizes	LS	1	43,818.20	43,818.20
10	11 kV CT 400 - 200/5 A Outdoor Type	Nos.	3	10,611.00	31,833.00
11	24 Volt / 200 AH Battery with Battery Charger (For Capacitor's VCB)	Nos.	1	69,000.00	69,000.00
Sub-Total (A)					**1,428,462.15**
13	Transportation on material	LS	4%	-	57,138.49
14	Erection cost on material	LS	5%	-	71,423.11
15	Insurance, Labour & Finance Cost	LS	3%	-	42,853.86
Service Cost		**LS**	**12%**	**-**	**171,415.46**
Sub-Total (B)					**171,415.46**
Total (C) = (A) + (B)					**1,599,877.61**
17	Applicable GST	-	18%	-	287,977.97
18	Price Escalation on cost of material	-	10%	-	142,846.22
19	***Civil Cost	LS	1	53,857.50	53,857.50
Sub-Total (D)					**484,681.68**
Grand Total (E) = (C) + (D)					**2,084,559.29**

Note 1: *As AVVNL is not under practice of regular installation of APFC, hence the cost estimation has been considered from recently approved PSDF Scheme of MSEDCL.*

Note 2: *As per the monthly Wholesale Price Index (WPI) issued by office of the Economic Adviser, Department for Promotion of Industry and Internal Trade, following variation is observed in the prices of following items:*

Commodity Name	WPI for 2020-21 (Base 2011-12)	WPI for 2021-22 (Base 2011-12)	Variation (%)
Iron Ore	102	156.2	+53%
Electric insulating material	105.4	107.1	+2%
Electrical relay/conductor	112.3	129.1	+15%
Batteries	117.9	123.1	+5%

Therefore, looking the variations in some of the materials as required for the installation of capacitor banks at various 33/11 kV S/s over the period (24 months), AVVNL has considered price escalation of 10%.

Additionally, the cost towards annual maintenance charges (as shown below) shall be borne by AVVNL as internal / external source of funding.

Annual Maintenance Charges after Guarantee Period for 05 Years (1 Year + 5 Year's)					
Sr. No.	**Parameters**	**Unit**	**Qty.**	**Unit Rates**	**Amount (In Rs.)**
1	**2**	**3**	**4**	**5**	**6**
1	1st Year	Job	1	50000.00	50,000.00
2	2nd Year	Job	1	60000.00	60,000.00
3	3rd Year	Job	1	70000.00	70,000.00
4	4th Year	Job	1	80000.00	80,000.00
5	5th Year	Job	1	90000.00	90,000.00
Total					**350,000.00**
Total AMC Cost for 05 Years considering 631 Nos. of APFC					**2208,50,000.00**

Item Wise Cost Breakup:

(A.1) *Cost Structure for 11 kV Station Capacitor Bank – For 1587 kVAr

Sr. No.	**Name of Items**	**Unit**	**Qty.**	**Unit Rates**	**Amount (In Rs.)**
1	**2**	**3**	**4**	**5**	**6**
1	Structure for 11 KV CT	Kg	155	51.80	8,029.00
2	Structure for 11 KV LA	Kg	155	51.80	8,029.00
3	G.I. Nut Bolts	Kg	20	82.90	1,658.00
4	Cable Support Structure (2 Nos.)	Kg	200	51.80	10,360.00
5	MS Flat 50 X 6	Kg	235.5	48.50	11,421.75
6	Earthing CI Pipe Dia 150 mm 3 Mtr long	Nos.	3	6300.00	18,900.00
7	Dog Conductor	Mtr.	60	51.82	3,109.20
Total					**61,506.95**

(A.2) **Cost Structure for Control Cables – For 1587 kVAr

Sr. No.	**Name of Items**	**Unit**	**Qty.**	**Unit Rates**	**Amount (In Rs.)**
1	**2**	**3**	**4**	**5**	**6**
1	2C X 2.5 Sq. mm Armoured, Copper	Mtr.	100	55.11	5,511.00
2	4C X 2.5 Sq. mm Armoured, Copper	Mtr.	275	87.60	24,090.00
3	7C X 2.5 Sq. mm Armoured, Copper	Mtr.	40	139.19	5,567.60
4	10C X 2.5 Sq. mm Armoured, Copper	Mtr.	40	216.24	8,649.60
Total					**43,818.20**

(A.3) ***Cost Structure for Civil Work – For 1587 kVAr

Sr. No.	Parameters	Unit	Qty.	Unit Rates	Amount (In Rs.)
1	2	3	4	5	6
1	Excavation	CuM	8	150.00	1,200.00
2	PCC	CuM	2.5	4257.00	10,642.50
3	RCC	CuM	5	5255.00	26,275.00
4	Steel	Kg	300	51.80	15,540.00
5	Back Filing	CuM	2	100.00	200.00
Total					**53,857.50**

(B) Cost break-up of 11 kV Switched Capacitor Bank at 8 MVA Power Transformers

BoQ for 11 kV Dynamic/ Automatic Capacitor Bank (APFC) for Rural Areas - AVVNL (Cost Reference - MSEDCL Approved Rate)					
Sr. No.	Name of Items	Unit	Qty.	Unit Rates	Amount (In Rs.)
1	2	3	4		5
1	12.65 kV, 3174 kVAr, 3-Phase, 50 Hz, Outdoor Type, CRCA panel having 4 step as 396.75 kVAr + 396.75 kVAr +1190.25 kVAr +1190.25 kVAr at 12.65 KV. Bank shall be complete with Capacitor units of 132.25 kVAr for 396.75 kVAr & 396.75 kVAr for 1190.25 kVAr at 7.3 kV including allied material such as suitable size of Aluminum busbars epoxy insulators, HRC fuses, Vacuum contactor, series reactors, RVT, etc. with details as under	Nos.	1	1,271,186.00	1,271,186.00
a)	11 kV, 0.2%, Aluminium Wound, Dry type Series reactors suitable for 396.75 kVAr	Nos.	6		
b)	11 kV, 0.2%, Aluminium Wound, Dry type Series reactors suitable for 1190.25 kVAr	Nos.	6		
c)	11 kV, 3-Phase dry type RVT	No.	1		
d)	11 kV/400 Amp, Indoor type Vacuum contactor	Nos.	4		
e)	Surge Suppressor	No.	1		
f)	IP 55 , Outdoor CRCA cubicle panel for accommodating capacitors, series reactor, vacuum contactor, surge arrestor fuses along with canaopy	Set	1		
g)	C & R Panel with Automatic Control Unit with APFC relay and Neutral Displacement relay	Set	1		
2	11 KV Isolator with EB (800 A) with elevating structure	No.	1	30,025.00	30,025.00

3	11 KV Isolator without EB (800 Amp.) with elevating structure	No.	1	26,630.00	26,630.00
4	9 kV, 10 kA, Station Class, Lightning Arrestors	Set	1	10,260.00	10,260.00
5	*Cable Support Structure, Clamps, Connectors, Earthing MS Flats 50 x 6, 3 Mtr long Earthing CI Pipe Dia 150 mm, Dog Conductor	LS	1	61,506.95	61,506.95
6	11 kV XLPE insulated 3x185 mm^2 Armoured	Mtr.	20	858.00	17,160.00
8	Outdoor cable jointing kits	No.	2	1,907.00	3,814.00
9	11 kV VCB (Kiosks) (800 Amp.) Switchgear with complete arrangement with adopter panel for connection with existing 11 kV bus bar	No.	1	117,466.00	117,466.00
10	**Control cables of various sizes	LS	1	43,818.20	43,818.20
11	11 kV CT 400 - 200/5 A Outdoor Type	Nos.	3	10,611.00	31,833.00
12	24 Volt / 200 AH Battery with Battery Charger (For Capacitor's VCB)	Nos.	1	69,000.00	69,000.00
Sub-Total (A)					**1,682,699.15**
13	Transportation on material	LS	4%	-	67,307.97
14	Erection cost on material	LS	5%	-	84,134.96
15	Insurance, Labour & Finance Cost	LS	3%	-	50,480.97
Service Cost		**LS**	**12%**	**-**	**201,923.90**
Sub-Total (B)					**201,923.90**
Total (C) = (A) + (B)					**1,884,623.05**
17	Applicable GST	-	18%	-	339,232.15
18	Price Escalation on cost of material	-	10%	-	168,269.92
19	***Civil Cost	LS	1	53,857.50	53,857.50
Sub-Total (D)					**561,359.56**
Grand Total (E) = (C) + (D)					**2,445,982.61**

Note 1: *As AVVNL is not under practice of regular installation of APFC, hence the cost estimation has been considered from recently approved PSDF Scheme of MSEDCL.*

Note 2: *As per the monthly Wholesale Price Index (WPI) issued by office of the Economic Adviser, Department for Promotion of Industry and Internal Trade, following variation is observed in the prices of following items:*

Commodity Name	WPI for 2020-21 (Base 2011-12)	WPI for 2021-22 (Base 2011-12)	Variation (%)
Iron Ore	102	156.2	+53%
Electric insulating material	105.4	107.1	+2%

Electrical relay / conductor	112.3	129.1	+15%
Batteries	117.9	123.1	+5%

Therefore, looking the variations in some of the materials as required for the installation of capacitor banks at various 33/11 kV S/s over the period (24 months), AVVNL has considered price escalation of 10%.

Additionally, the cost towards annual maintenance charges (as shown below) shall be borne by AVVNL as internal / external source of funding.

Annual Maintenance Charges after Guarantee Period for 05 Years (1 Year + 5 Year's)					
Sr. No.	**Parameters**	**Unit**	**Qty.**	**Unit Rates**	**Amount (In Rs.)**
1	**2**	**3**	**4**	**5**	**6**
1	1st Year	Job	1	50000.00	50,000.00
2	2nd Year	Job	1	60000.00	60,000.00
3	3rd Year	Job	1	70000.00	70,000.00
4	4th Year	Job	1	80000.00	80,000.00
5	5th Year	Job	1	90000.00	90,000.00
Total					**350,000.00**
Total AMC Cost for 05 Years considering 13 Nos. of APFC					**45,50,000.00**

Item Wise Cost Breakup:

(B.1) *Cost Structure for 11 kV Station Capacitor Bank – For 3174 kVAr

Sr. No.	**Name of Items**	**Unit**	**Qty.**	**Unit Rates**	**Amount (In Rs.)**
1	**2**	**3**	**4**	**5**	**6**
1	Structure for 11 KV CT	Kg	155	51.80	8,029.00
2	Structure for 11 KV LA	Kg	155	51.80	8,029.00
3	G.I. Nut Bolts	Kg	20	82.90	1,658.00
4	Cable Support Structure (2 Nos.)	Kg	200	51.80	10,360.00
5	MS Flat 50 X 6	Kg	235.5	48.50	11,421.75
6	Earthing CI Pipe Dia 150 mm 3 Mtr long	Nos.	3	6300.00	18,900.00
7	Dog Conductor	Mtr.	60	51.82	3,109.20
Total					**61,506.95**

(B.2) **Cost Structure for Control Cables – For 3174 kVAr

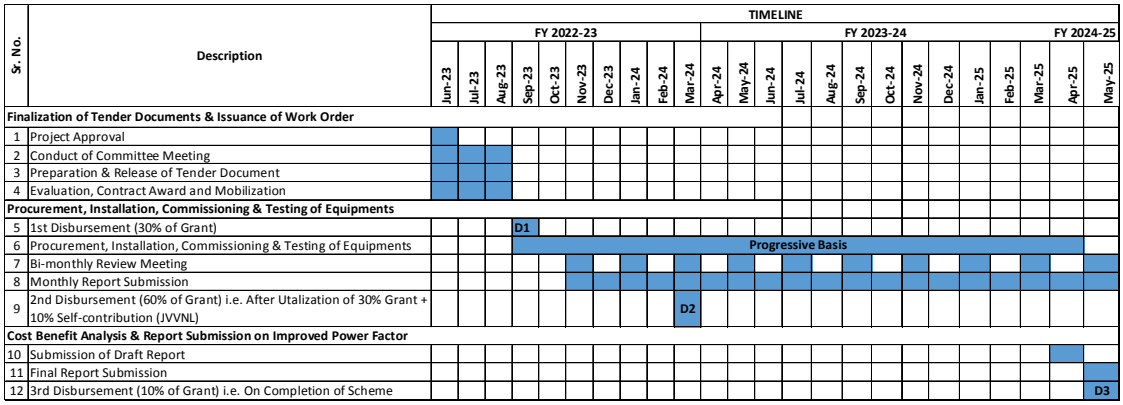
Sr. No.	Name of Items	Unit	Qty.	Unit Rates	Amount (In Rs.)
1	2	3	4	5	6
1	2C X 2.5 Sq. mm Armoured, Copper	Mtr.	100	55.11	5,511.00
2	4C X 2.5 Sq. mm Armoured, Copper	Mtr.	275	87.60	24,090.00
3	7C X 2.5 Sq. mm Armoured, Copper	Mtr.	40	139.19	5,567.60
4	10C X 2.5 Sq. mm Armoured, Copper	Mtr.	40	216.24	8,649.60
Total					**43,818.20**

(B.3) ***Cost Structure for Civil Work – For 3174 kVAr

Sr. No.	Parameters	Unit	Qty.	Unit Rates	Amount (In Rs.)
1	2	3	4	5	6
1	Excavation	CuM	8	150.00	1,200.00
2	PCC	CuM	2.5	4257.00	10,642.50
3	RCC	CuM	5	5255.00	26,275.00
4	Steel	Kg	300	51.80	15,540.00
5	Back Filing	CuM	2	100.00	200.00
Total					**53,857.50**

1. TIME FRAME PERT CHART

The total duration of the project is considered as **24 months**. The tentative start date shall be considered as the date of receipt of approval from PSDF funding while the completion time is likely to by **end of May 2025.** The detailed time frame is presented below.



2. SUCCESS CRITERIA&SUSTAINABILITY

To identify the success of any project, it is always necessary to evaluate the standards by which to examine whether the proposed objective, target or outcomes will be achieve or not. Hence, the **Cost-Benefit Analysis** for the 1980 kVAr &3168 kVAr ratings automatic capacitor bank on the 3.15, 5 & 8 MVA power transformer has been presented below.

Payback Calculation for Installation of 11 kV Automatic Capacitor Bank at 33/11 kV Sub-station

Assumptions - Load Factor - 80% | Avg. Loading - 54% | Average PF - 0.85 | Desired PF - 0.98 | Initial Line Losses as 20%

Sr. No.	Transformer Rating (In MVA)	Qty	Total MVA	Load Factor	Average Loading	Average Demand (In MW) with 0.85 Power Factor	Reduction in MVA after Capacitors Bank	% Line Loss Reduction	Actual Line Loss Reduction of Initial Loss as	Total MWh Drawn in a Year	Saving in MWh	Cost of energy saved per annum @ 4.85/- (2022-21) per unit	Proposed 11 KV Automatic Capacitor Bank (In kVAr)	SITC cost with 5 Yr AMC (In Lakhs)	Total Cost (In Cr.)
				80%	54%		0.98		20						
1	3.15	380	1197	958	517	439.5384	448.51	24.77	4.95	3850356	190754	9251,55,967	1587	20.85	79.23
2	5	257	1285	1028	555	471.852	481.48	24.77	4.95	4133424	204777	9931,70,774	1587	20.85	53.58
3	8	13	104	83	45	38.1888	38.97	24.77	4.95	334534	16573	803,81,137	3174	24.46	3.18
Grand Total										**8318314**	**412105**	**19987,07,878**	**-**	-	**135.99**

Total Cost of the Project : Rs. 135.99 Cr.

Total Savings with Power Factor Improvement : Rs. 199.87 Cr

Payback Period - Approx. 9 Months

"Further, regional entities are liable for weekly settlement of 'Reactive Energy Charges' in accordance with the CERC (Indian Electricity Grid Code)Regulations, 2010 and amendments thereof, which are sometimes payable or receivable. Due to poor power factor, sometimes Rajasthan accounts for a penalty at the rate of 10 paise/kVArh *(from 03.05.2010 onwards)* reactive charges with escalation factor of 0.5 paise/ kVArh. Also, recent provision of CERC's Draft Indian Electricity Grid Code 2022 recommends the reactive charge at the rate of 5 paise/kVArh w.e.f. the date of effect of final regulations with escalation at 0.5paise/kVArh per year thereafter".

Hence, the draft provision to rate reduction along with saving achieved through installation of capacitor bank will definitely lower down the overall penalty impact. These shall be the contributing factor for the Improvement of Financial Health of Discoms and will leading to a sustainable implementation structure.*(Note: The NRLDC charges is not taken into consideration in above payback calculation).*

Moreover, the capacitor units are used in these capacitor banks shall be manufactured with the latest design and tested to meet or exceed the requirement of applicable IEC & IS Standards, it is rated in continuous kVAr, voltage and frequency for operating within the -200^{o}C to +500^{o}Cambient temperature range &shall be designed to produce not less than rated kVA at rated voltage and frequency.

Capacitors will operate safely at 135% of kVAr rating under following condition as:

- kVAr caused by excess at rated frequency.
- kVAr added by the harmonic voltage superimposed on the power frequency voltage.
- kVAr attributable to manufacturing tolerances.

The maximum recommended working voltage of capacitor is 110% of rated voltage. The capacitors include a safely factor that permits them to tolerate without damage momentary over voltage caused due to switching/load fluctuation.

Thus, it is quite successful and sustainable in the high voltage system.

List of Various 33/11 kV Sub-stations considered for Power Factor Improvement

JODHPUR VIDYUT VITRAN NIGAM LTD.
Corporate Identity Number (CIN) -U40109RJ2000SGC016483
Office of Superintending Engineer (I&S)
Regd. Office: New Power House, Jodhpur- 342003
Phone No: 0291- 2742343 : Fax No: 0291-2742228
E-mail:- seinsjdvvnl@gmail.com Web site: www.jdvvnl.com

No.JdVVNL/SE (I&S)/F.PSDF/ /D. 403 Dt. 30.06.2023

REVISED

Sh. Debasis De
Executive Director NLDC
Member Secretary of the Appraisal Committee PSDF
B-9, Qutub Institutional Area, Katwaria Sarai,
New Delhi – 110016

Sub : Re-Submission of revised proposal for approval of project for implementation of Automatic Reactive Power solution on 33/11 KV substations of Jodhpur DISCOM (Proposal No. 347) after removal of typological errors.

Ref : 1. DPR submitted vide letter No. 1747 dated 03.08.2022
2. PSDF TESG meeting held at New Delhi on 08.05.2023
3. Study report conducted by RVPNL
4. This office Letter D. 392 Dt: 23.06.2023

Under reference to the subject cited above to bring down the AT&C losses in the state and to strengthen the medium voltage network of the state which in turn will be of benefit to Jodhpur DISCOM, we have planned to implement the automatic/dynamic reactive power solution (Capacitor Banks) on 11 kV side of 33/11 KV substations of Jodhpur DISCOM under Power System Development Fund (PSDF) amounting to Rs. 216.38 Crores excluding AMC.

As discussed and decided in the TESG meeting held on 08.05.2023 the detailed revised project report in accordance with the inputs received from RVPN (STU) for 730 nos. 33/11 KV substations of Jodhpur DISCOM selected for implementation is submitted herewith for further needful at your level and for approval of funds.

Encl: The Complete Revised DPR
Page 1 to 110

30/6/2023
(M.L. BENDA)
Project Nodal Officer
Superintending Engineer (I&S),
Jodhpur DISCOM, Jodhpur

Er. M.L. Benda
SE (I&S), JdVVNL

JODHPUR VIDYUT VITRAN NIGAM LTD.
(A Govt. of Rajasthan undertaking)
Corporate Identity Number (CIN) –U40109RJ2000SGC016483
Regd. Office: New Power House, Jodhpur- 342003
Office of the Superintending Engineer (I&S)
Phone No: 0291-2745801/+919413359036
E-mail: seinsjdvvnl@gmail.com, Web site: www.jdvvnl.com

REVISED

DETAILED PROJECT REPORT (DPR)

FOR

IMPLEMENTATION OF AUTOMATIC REACTIVE POWER SOLUTION ON 33/11 KV SUB STATIONS IN JODHPUR DISCOM (JdVVNL)

TOTAL ESTIMATED COST: **Rs. 216.38 crores**

Key Glances:

Existing Avg. Power Factor	Transformer Rating (MVA)	Qty.	Proposed 11 KV Automatic Capacitor Bank (KVAr)	Supply Installation Cost per Unit (In Lakh)	Total Cost of Project (In Cr.)	Cost of Energy Saving per Year (In Cr.)	Payback Period
0.84	1.6	1	1980	29.57	216.38	108.29	2 Year
	2.5	1	1980	29.57			
	3.15	559	1980	29.57			
	5.00	156	1980	29.57			
	8.00	06	3960	33.75			
	10.00	07	3960	33.75			

30/6/2023

Jodhpur, June 2023

Er. M.L. Benda
SE (I&S), JdVVNL, JU

SUMMARY OF PROPOSAL

For Official Use- To be filled by the Nodal Agency of PSDF	
Project Proposal No: ----------	Date of Receipt: ----------

To be filled by the Requesting Organization / Project Entity		
1.	Name of the requesting Organization / Utility	Jodhpur Vidyut Vitran Nigam Limited., Jodhpur
2.	Summary of Project/ Scheme / Activity	
a.	Name and location of the Project/Scheme/Activity:	**Implementation of Automatic Reactive Power Solution on 33/11 KV substations in Jodhpur DISCOM**
b.	Objective of the Project/Scheme/Activity.	The objective is to automate the reactive power and optimize the performance of the distribution grid of Sub Stations of JdVVNL, Jodhpur
c.	Authorized person for this Project/Scheme/Activity:	Name: Sh. Pramod Tak, Managing Director, JDVVNL E-mail ID: md.jdvvnl@rajasthan.gov.in Land Line: +91 291 2742229 Mobile No: +91 9413359001 Fax No : +91 291 2741870
d.	Nature of the Project/Scheme/Activity: Interstate/Intra-State	Intra-State
e.	Identified Beneficiaries	The State Grid of Rajasthan and Regional Grid of Northern Region of India. The Project will strengthen the Medium Voltage Network of the State which will in turn benefit the Distribution Licensees, the JdVVNL, Jodhpur.
f.	Merits of the scheme	Better Management of Volt-VAR
g.	Limitations, if any	Installation process may take considerable time.
h.	Time frame of Implementation	24 months
i.	Estimated Cost of Project/Scheme/Activity:	**Rs. 216.38 Crores**
j.	Category under which the project is classified (Please refer Para 5.1 of the Guidelines/Procedure)	5.1 (b) as per Guidelines/Procedure for Disbursement of Fund from Power System Development Fund

Er. M.L. Benda
SE (I&S), JdVVNL, JU

DETAILED PROPOSAL (DP)

1. DETAILS OF THE REQUESTING ORGANIZATION / PROJECT ENTITY

1.1 Details of Organization / Entity

Name of Organization / Entity	Jodhpur Vidyut Vitran Nigam Limited, Jodhpur
Acronym or Abbreviation (if applicable)	JdVVNL

1.2 Details of Head of the Organization

Name (Mr/Ms/Mrs)	Mr. Pramod Tak
Designation	Managing Director
E-mail Address	md.jdvvnl@rajasthan.gov.in
Land line No	+91 291 2742229
Fax No.	+91 291 2741870
Address	New Power House, Basni, JODHPUR
City	Jodhpur
Postal Code	342003

1.3 Details of Project Incharge/ Project Manager (Authorized Person) for this project / scheme / activity (Not below the rank of Dy. General Manager / Superintending Engineer)

Name (Mr/Ms/Mrs)	Mr. M.L. Benda
Designation	Superintending Engineer (I&S)
E-mail Address	seinsjdvvnl@gmail.com
Land Line No.	
Mobile No	9413359036
Fax No.	NA
Address	2nd Floor, Old Generation Building, New Power House, Basni, Jodhpur
City	Jodhpur
Postal Code	342003

Any change in above mentioned details may be notified to the Nodal agency of PSDF immediately.

Er. M.L. Benda

2. Justification of the Proposal

2.1 Analysis of the Objective

GENERAL PROFILE OF JODHPUR DISCOM			
S.No.	Particular	UNIT	March, 2022
1	Area	Sq. Km	182509
2	Population 2011(as per 2011 Census)	Crore	2,00 (2,00,10,828)
3	Nos. of O & M Circles	Nos.	12
4	Nos. of O & M Divisions	Nos.	48
5	Nos. of O & M Sub-Divisions	Nos.	193
6	Nos. of 33KV Sub Stations	Nos.	2337
7	Nos. of Consumers (Regular)	Lacs	45.61
8	No. of Ag. Consumers (Regular)	Lacs	4.26
9	Average Monthly Energy Draw (LU)	LU	24478.40
10	Average Monthly Energy Sold (LU)	LU	19312.16
11	Average Monthly Rev Assessed (Rs. Crores)	CR.	1472.71
12	Average Monthly Rev. Realisation (Rs. Crores)	CR.	1480.90
13	Percentage Realisation	%	100.56
14	T&D losses As on MAR 2022.	%	21.11
15	No. of 11kv Feeders	Nos.	11690
16	No. of Urban 11kv Feeders	Nos.	1253
17	No. of Rural 11kv Feeders	Nos.	10437

The problem / constraint to be addressed:

The reasons for high AT&C Losses in the state are primarily the following:

- Non – availability of reliable Reactive Power compensation solution, resulting in high technical losses.
- Deficiency in the organizational setup (O & M) & Financial Support from Govt. Power Dept.
- Electricity consumer in the state consists mainly of domestic (17.84%), Agriculture (60.52%), industrial/commercial consumer (10.10%) and water works and other (11.54%).

Er. M.L. Benda
SE (I&S)

- The Dept is also plagued by shortage of manpower. All these factors lead to inefficiency of the power sector. Therefore reduction of AT&C Losses requires a very committed road map/policy of the Govt by considering electricity as a business commodity for essential contribution towards the growth of the economy (resources) while notwithstanding the social obligation in providing energy as a basic need.
- The state is forced to maintain a high HT line length ratio owing to the extremely extended area 182509 KM where electricity is transmitted to long distances due to which frequency and voltage could not be maintained to specified limits.. Hence voltage at receiving end drastically drops and leads to drawl to excess current. Same can be understand by formula of Power, $P(KW) = \sqrt{3} x V x I x Cos\phi$, according to this formula $V \propto I$.
- This distributed population not only increased the capital investment requirements of the state but also makes the maintenance and monitoring of the network very difficult.

- Defective meters, tampering and power theft are the main causes for high AT&C losses. With prepaid metering the AT&C losses in the State may improve drastically and also alleviate shortage of manpower.

Er. M.L. Benda
SE (I&S), JdVVNL, JU

JdVVNL have envisaged following measures for bringing down AT&C losses;

- Installation of Automatic Power Factor Control (APFC) Capacitor banks at all 33/11 kV transformers.
- Identification of loss prone area by tagging of consumers with DTs and feeders for energy accounting.
- Load verification of agriculture category during peak session and ensuring billing accordingly.
- Improvement in HT/LT ratio.
- Formation of Special Task Force for raid against theft.
- Implementation of IT enabled services for power consumers. This has great potential in reducing losses and providing consumer friendly services.
- Smart Metering under RDSS Scheme.
- Feeder and DT metering for accurate energy accounting.
- Introduction of modern technologies to monitor reliable and quality power supply.

Er. M.L. Benda
SE (I&S), JdVVNL, JU

Introduction Of APFC Panel

In present condition, the 11 KV capacitor bank is controlled by manually switched devices like Isolators/Load Break Switch or circuit breakers. This old practice has disadvantage as compared to modern automatically switched Capacitor Bank.

- The ON/OFF operation of capacitor bank is depending on one operator and it is difficult to control on switching ON/OFF the capacitor bank as per varying load condition.
- There are only two possible conditions in manually switched banks, complete bank is either fully in their circuit or out of circuit and reactive power compensation cannot be closely matched with the varying load condition.
- This results in over compensation or under compensation of reactive power at varying load condition.
- If one of the capacitor units from the capacitor bank is failed, whole capacitor bank will become idle.

Following are the some advantages to propose the Automatic power factor correction systems up to 11 KV.

The APFC scheme is to provide an effcetive control of capacitor bank installations in Substations to maintain power factor under varying load conditions, for any sub- station load on Transformer changes during a 24 Hour daily load cycle. This variation of load depends upon type of load i.e. Urban Load, Rural load, Agricultural Load, Industrial load etc. The load pattern will be different for different loads. Thus load variation will follow certain pattern and which could be divided into four or six periods in a 24 Hour daily load cycle. Power factor would also vary and at the same time actual requirement of Capacitors in circuit will also vary. If steps are provided with capacitor banks to switch them as required it will help the Electricity Supply Authority to maintain the power factor at desired level throughout the day.

This load variation has been observed to change from 8 % to 68 %. When conventional fixed type capacitor banks are used the capacitor bank will provide compensation of certain level and in an event the bank is not removed from the circuit at low load, it will provide overcompensation to the system. In conventional fixed type capacitor bank removing required capacitor cells from circuit is very cumbersome process as the lineman/operator has to switch on Breaker, Isolator, disconnect the fuse to isolate the capacitor cells and switch ON all the equipments once again. This will again depend upon availability of trained man power for such purpose.

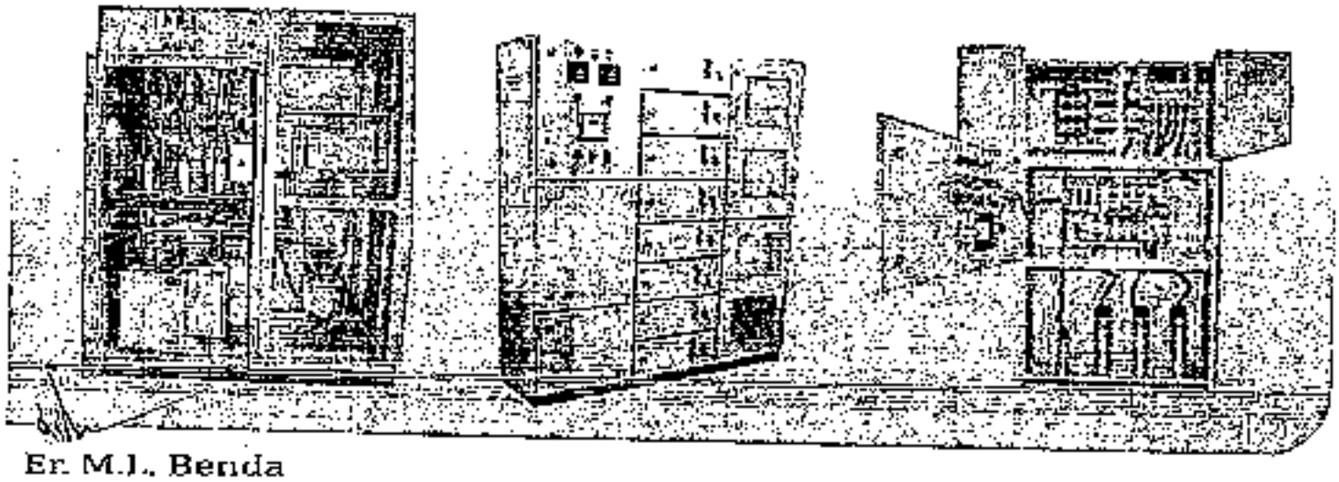
Overcompensation has harm full effects on Capacitors, switching devices. Outdoor type H.T. Capacitor bank with facility of automatic switching of required number of steps with the help of capacitor switch. The bank comprising of externally single star connected Capacitor bank, 0.2% to 0.4% Series Reactors for switching inrush current suppression at neutral end, RVT for unbalance protection.

CEA Regulation

(2) Capacitors and the residual voltage transformer shall be as per standard IS.

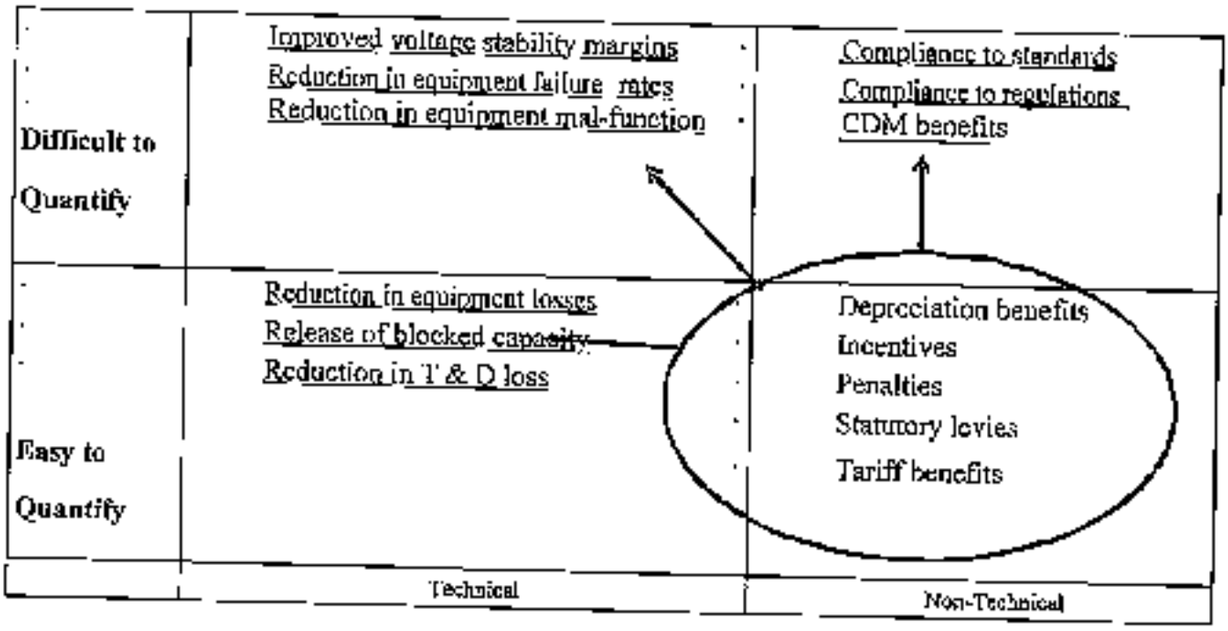
(3) The capacitors shall be of automatic switched type for sub-stations of 5 MVA and higher capacity.

(4) Where non-switched (fixed) capacitors are provided, the rating shall be chosen so as to prevent over compensation during off peak periods.



Er. M.L. Benda
SE (I&S), JdVVNL, JU

BENEFITS OF POWER QUALITY IMPROVEMENT



Er. M.L. Benda
SE (I&S), JdVVNL, JU

DETERMINATION OF THE CAPACITOR BANK RATING

The size of capacitor unit (or Bank) required may be determined from the following formula:

$$Q = P(\tan\theta - \tan\theta c)$$

Where:

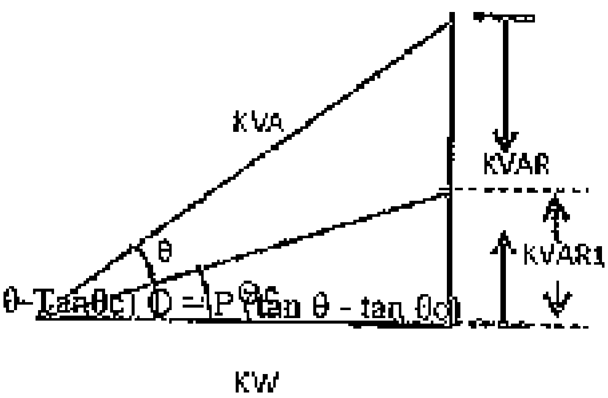
Q = KVAR required

P = Active power in KW

Cos θ = Power factor before compensation

Cos θc = Power factor after compensation

Tan θ = Perpendicular/Base



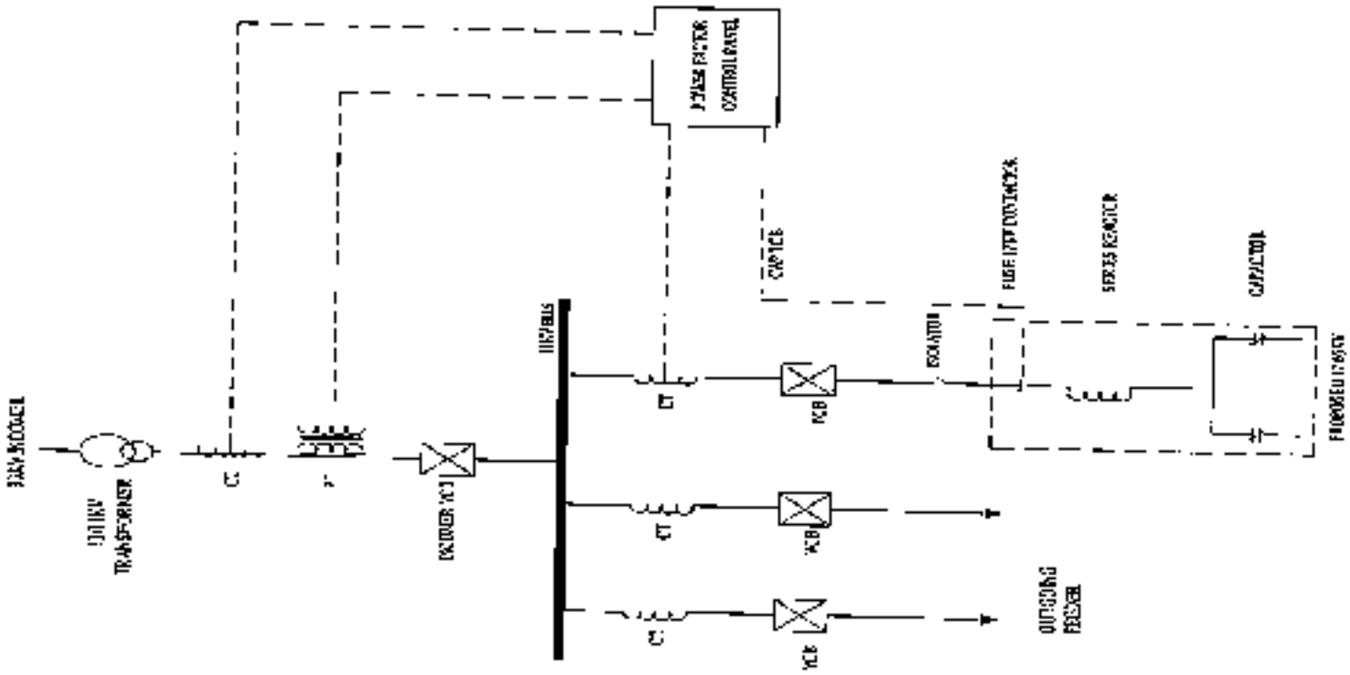
Tan θ = KVAR/KW Tan θc = KVAR1 /KW KVAR = KW (Tan θ) KVAR1 = KW (Tan θc) (KVAR-KVAR1) = KW (Tan

Er. M.L. Benda

Table Indicating capacitor size in KVAR for each KW Load for correction from different P.F to higher P.F

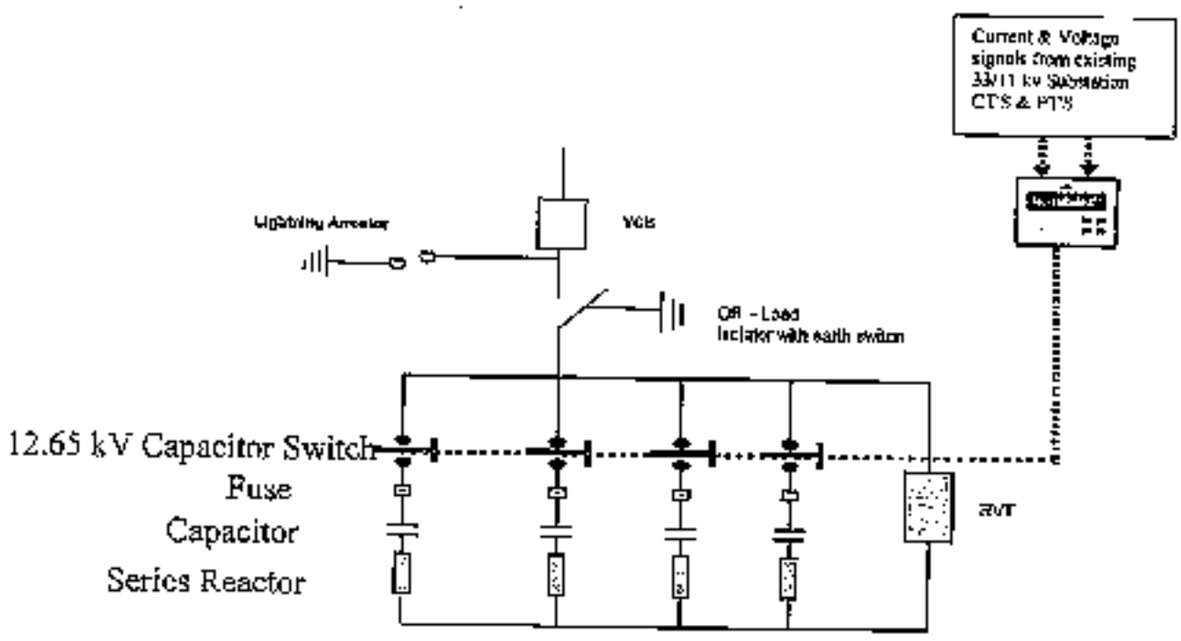
tan φ	cos φ	0.80	0.82	0.85	0.88	0.90	0.92	0.94	0.96	0.98	1.00
3.18	0.30	2.43	2.48	2.56	2.64	2.70	2.75	2.82	2.89	2.98	3.18
2.96	0.32	2.21	2.26	2.34	2.42	2.48	2.53	2.60	2.67	2.76	2.96
2.77	0.34	2.02	2.07	2.15	2.23	2.28	2.34	2.41	2.48	2.56	2.77
2.59	0.36	1.84	1.89	1.97	2.05	2.10	2.17	2.23	2.30	2.39	2.59
2.43	0.38	1.68	1.73	1.81	1.89	1.95	2.01	2.07	2.14	2.23	2.43
2.29	0.40	1.54	1.59	1.67	1.75	1.81	1.87	1.93	2.00	2.09	2.29
2.16	0.42	1.41	1.46	1.54	1.62	1.68	1.73	1.80	1.87	1.96	2.16
2.04	0.44	1.29	1.34	1.42	1.50	1.56	1.61	1.68	1.75	1.84	2.04
1.93	0.46	1.18	1.23	1.31	1.39	1.45	1.50	1.57	1.64	1.73	1.93
1.83	0.48	1.08	1.13	1.21	1.29	1.34	1.40	1.47	1.54	1.62	1.83
1.73	0.50	0.98	1.03	1.11	1.19	1.25	1.31	1.37	1.44	1.53	1.73
1.64	0.52	0.89	0.94	1.02	1.10	1.16	1.22	1.28	1.35	1.44	1.64
1.56	0.54	0.81	0.86	0.94	1.02	1.07	1.13	1.20	1.27	1.36	1.56
1.48	0.56	0.73	0.78	0.86	0.94	1.00	1.05	1.12	1.19	1.28	1.48
1.40	0.58	0.65	0.70	0.78	0.86	0.92	0.98	1.04	1.11	1.20	1.40
1.33	0.60	0.58	0.63	0.71	0.79	0.85	0.91	0.97	1.04	1.13	1.33
1.30	0.61	0.55	0.60	0.68	0.76	0.81	0.87	0.94	1.01	1.10	1.30
1.27	0.62	0.52	0.57	0.65	0.73	0.78	0.84	0.91	0.98	1.06	1.27
1.23	0.63	0.48	0.53	0.61	0.69	0.75	0.81	0.87	0.94	1.03	1.23
1.20	0.64	0.45	0.50	0.58	0.66	0.72	0.77	0.84	0.91	1.00	1.20
1.17	0.65	[illegible]	[illegible]	0.55	[illegible]	0.68	[illegible]	[illegible]	0.88	[illegible]	1.17
1.14	0.66	0.39	0.44	[illegible]	0.60	0.65	0.71	0.78	0.85	0.94	1.14

SINGLE LINE DIAGRAM PALACMENT OF APFC PANEL AT 33/11 KV SUBSTATIONS

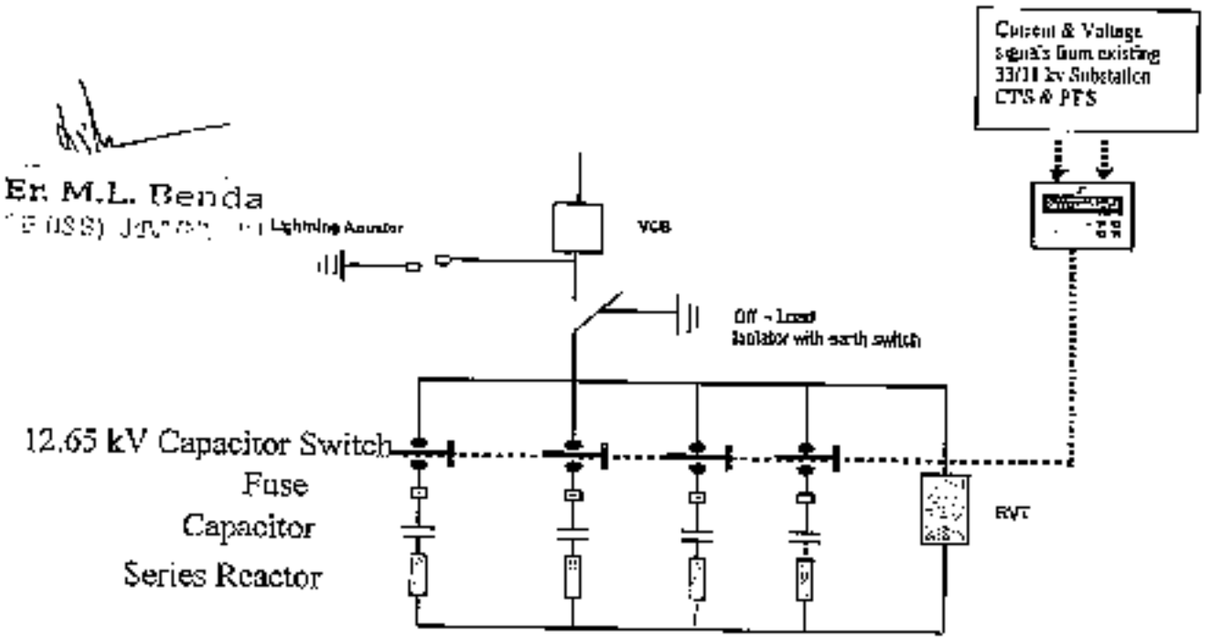


Er. M.L. Benda
SE (I&S), JdVVNL, JU

SINGLE LINE DIAGRAM PROPOSED for APFC PANEL ON 3.15, 5.8 and 10 MVA TRANSFORMER AT 33/11 KV SUBSTATIONS



1980 KVAR APFC Bank with 3 Steps of 396+792÷792kVAr for , 33/11 KV, 3.15& 5 MVA Transformer



3960 KVAR APFC Bank with 4 Steps of 792+792+1188+1188kVAr for , 33/11 KV, 8 & 10 MVA Transformer

Objective of the project / scheme/ activity:

Maintaining voltage by reactive power management

Voltage Control in an electrical power system is important for proper operation for electrical power equipment to reduce technical losses, prevent damage to equipment's, overhead lines etc. In general terms, decreasing reactive power causes voltage to fall while increasing it causes voltage to rise. When reactive power supply lowers voltage, current must increase to maintain power supplied, causing system to consume more reactive power and the voltage drops further. If the current increases too much, transmission lines go off line, overloading other lines and potentially causing cascading failures.

This can be controlled by managing the reactive power in the system. To introduce Reactive Power, capacitors are the cheapest and the simplest means. By introducing Switched Capacitor Banks, precise and real time compensation of Reactive Power can be achieved. By achieving precise Reactive Power Compensation, overall healthy voltage profile can be achieved.

Advantages to JDVVNL:

a. Improvement in Voltage level.

b. Reduction of losses in lines and transformers.

c. Reduction of over loading means less heating cables, conductors, transformers etc.

d. A better utilization of the capacity of the generators, transformers, switchgear, cables lines, etc., means increase in efficiency of the system.

e. Reduced depreciation charges on capital outlay and less capital investment.

f. Reduced reactive power drawn charges to NRLDC

g. Reduction in T & D loss (through reduction in current)
   i. Additional units available for sale
   ii. Lower Impact on environment

h. Release of Blocked Capacity (through reduction in apparent power)
   i. Defer Capital Investment
   ii. Better utilization of fixed asset/capital investment

i. Better asset management (operation at lower temperatures)
   i. Lower life cycle cost
   ii. Longer life of equipment & lower replecement cost Better voltage profile

Er. M.L. Benda
SE (I&S), JdVVNL, JU

Date: 30.06.2023

Signature:_____
Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

Required physical additions/equipment in power system

As per BOQ and the DPR.

- **Financing and other commercial details**
  90% grant under PSDF.

- **Merits and limitations (if any) in the implementation of the project / scheme / activity**
  The deficiencies in the old system are expected to be remove provided the project is funded with full grant. However, training of the engineers to familiarize with the new state of art equipment's will have to be looked into.

2.2 Identified Beneficiaries of the Project

The beneficiary of the schemes is Jodhpur Vidyut Vitran Nigam Limited. Jodhpur, State Power utilities suffer from frequent load shedding, tripping due to over loading of transformer resulting in loss of revenue. This system will provide much needed relief to the already overloaded and stressed grid sub stations of JdVVNL.

2.3 Identified Source of funding

90% funding is being proposed through PSDF for installation of 730 Nos. Automatic Reactive Power Solution on 33/11 KV substation in Jodhpur DISCOM in the general interest of providing better power supply to the consumers as JdVVNL is not financially sound.

Contribution from Internal Sources:

10% through internal funding.

Contribution from External Sources:

No external borrowing is envisaged as the project is planned for 90% funding through PSDF and 10% through internal funding.

2.4 Details of Activities for project / Scheme / Activity

Process of implementation

The project will be implemented in following phases:

• Installation of automatic reactive power solution system equipment; S/I/T/C and FMS of Capacitor Cubical Panels, Outdoor Kiosk VCB, Isolator and allied equipment's.

Date: 30.06.2023

Signature:
Name: M.L. Benda- Benda
SE (I&S) JdVVNL, JU
(Project Nodal Officer)
(Authorized Representative)

Present the voltage profile for SS worsened due to load growth in last 5 years and need to install Capacitor Banks in s/s where the voltage profile needs improvement.

To achieve Volt/ volt ampere reactive optimization and Energy conservation through voltage reduction JdVVNL is proposing 730 sub stations for Automatic Reactive Power Solution system as per below list:

Sr. No.	Name of Substations	Transformer Capacity (MVA)	Sub Station/ Transformer Peak Loading (MW)	Voltage During Average / No Load	Voltage During Peak Load
1	MATPANIA	5	4.56	10.3	9.1
2		5	4.47	10.3	9.7
3	UMMED NAGAR (JOOD)	5	4.52	10.2	8.9
4	RAMPURA+RICO	5	4.98	10.2	9.7
5		5	5	10.2	9.7
6	RAJASANI	3.15	2.78	10.2	8.9
7		3.15	2.83	10.2	9
8	NEWRA ROAD	3.15	3.12	10.5	8.9
9		3.15	3.09	10.5	9
10		3.15	3.05	10.5	9.1
11	KIRMARSAIYA	5	4.78	10.5	9.3
12		5	4.87	10.5	9.8
13	BHENSER KOOTRI	3.15	2.94	10.3	9
14		3.15	2.98	10.3	9
15	JOOD	3.15	2.94	10.3	9
16		3.15	2.8	10.3	8.9
17	KHARDA	3.15	2.95	10.2	9
18		3.15	3.02	10.2	8.9
19	NEWRA GAON	3.15	3.05	10.3	9
20		5	3	10.3	8.9
21	GAGADI	3.15	2.82	10.5	9.2
22		3.15	2.8	10.5	9.2
23	MANDIYAL KALLA	5	4.78	10.5	8.9
24		5	4.82	10.5	9
25	BALARWA	3.15	2.75	10.5	9.1
26		3.15	2.69	10.5	9
27		3.15	2.89	10.5	9
28	MINIYARD TINWARI	5	4.69	10.5	8.9
29		5	4.78	10.5	9.1
30	GHEWARA	3.15	2.74	10.2	9
31		5	4.34	10.2	8.9
32	PANCHALA	3.15	2.62	10.2	9
33	BADA KOTHCHA-II	3.15	2.81	10.2	9.2
34		3.15	2.76	10.2	9

Signature: _____

Date: 30.06.2023

Name: M.L. Benda
(Project Nodal Officer) JdVVNL, JU
(Authorized Representative)

35	BADLA BASNI	3.15	2.81	10.3	9
36		3.15	2.77	10.3	9.1
37		3.15	2.72	10.3	8.9
38	MANDIYAI KHURD	3.15	2.94	10.2	9
39		3.15	3.01	10.2	9
40	MALUNGA	3.15	3.1	10.2	8.9
41	GOPASARIYA	3.15	3	10.3	9
42		3.15	3.05	10.3	8.9
43	BHALASARIYA	3.15	3.09	10.2	9
44	THOB	3.15	2.82	10.2	9.3
45		3.15	2.73	10.2	8.9
46	HARLAYA	3.15	3.01	10.5	9
47	OSIAN	3.15	2.99	10.5	9.1
48		5	4.7	10.5	9
49	CHERAI	3.15	2.77	10.5	9
50	SINWARO KI DHANI (SIRMANDI)	3.15	2.85	10.3	8.9
51		3.15	2.88	10.3	9.2
52	SOMERI BHAKARI	3.15	2.88	10.3	9
53	BHIMSAGAR	3.15	2.92	10.4	8.9
54		3.15	3.01	10.4	9
55	BERDO KA BAS	3.15	2.98	10.3	8.9
56		3.15	2.89	10.3	9
57	RAWAT BERA	3.15	2.77	10.4	8.9
58	JAKIIRO KI DHANI	3.15	2.78	10.4	9.3
59	BARAKALLA	3.15	2.54	10.5	9.3
60		3.15	2.59	10.5	9.2
61	DHANARI KALLA	3.15	2.75	10.5	9
62		5	4.31	10.5	9.2
63	CHINDARI	3.15	2.71	10.2	9
64		3.15	2.75	10.2	9
65	NANDIYA KHURD	3.15	3.01	10.3	9.3
66	JELAV NADI	3.15	2.91	10.2	9.2
67		3.15	2.66	10.2	9
68	JETIYAWAS	3.15	2.91	10.3	9.3
69		3.15	3.03	10.3	9
70	SELVI NADI(RAIKORIYA)	3.15	2.98	10.3	8.9
71	TAPL	3.15	3.08	10.4	9.3
72		3.15	3.15	10.4	9.1
73	NOSER	3.15	3.09	10.2	8.9
74		5	4.75	10.2	9
75	KANKRALA	3.15	2.8	10.5	9.1
76		3.15	2.95	10.5	9
77		3.15	2.77	10.5	9
78	PADASALA	3.15	2.62	10.2	9
79		3.15	2.78	10.2	8.9
80		3.15	2.68	10.2	9
81	NIMBO KA TALAB	3.15	2.82	10.2	9.2

Date: 30.06.2023

Signature:

Name: M.L. Benda

(Project Nodal Officer)

SE (R&S) JdVVNL, JU

(Authorized Representative)

82		3.15	3.02	10.2	9
83	KHEDAPA	3.15	2.69	10.5	9.3
84		5	4.24	10.5	9.3
85	ANWANA OLD	3.15	2.88	10.4	9
86		3.15	2.83	10.4	9.1
87	BIRAI	3.15	2.9	10.2	9
88		3.15	2.86	10.2	9
89	DANWARA	3.15	2.73	10.2	9
90		3.15	2.82	10.2	9.1
91	BAORI	5	4.74	10.5	8.9
92		5	4.83	10.5	9
93	POONIYO KI BASNI	3.15	2.91	10.3	9
94	KAJNAU KHURD	3.15	2.88	10.5	8.9
95		3.15	2.8	10.5	9
96	KAJNAU KALLA	3.15	3.02	10.3	9.3
97		3.15	2.72	10.3	9
98	ANWANA NEW	3.15	2.94	10.4	9.2
99	MANAI	3.15	2.86	10.5	9
100		3.15	2.72	10.5	8.9
101	INDROKA	5	4.94	10.5	9
102	SALAWAS	3.15	3.14	10.2	9
103		5	5.04	10.2	9
104		5	5.13	10.2	9.7
105	DHANDHORA	5	4.08	10.5	9.2
106	HEERADESHAR	3.15	2.86	10.2	9.3
107		3.15	2.78	10.2	9
108	DHORU	3.15	2.69	10.2	8.9
109	RAJLANI	3.15	2.77	10.2	9
110		3.15	2.6	10.2	8.9
111	DEVARI	3.15	2.83	10.2	8.9
112	HINGOLI	5	4.47	10.2	9
113	GAJSINGHPURA	3.15	2.98	10.2	9.1
114		3.15	2.72	10.2	9
115	RAMPURA	5	4.56	10.2	8.9
116	ASOP	3.15	2.89	10.2	8.9
117		5	4.56	10.2	9.1
118	ARTIYA KALLAN	3.15	2.74	10.2	9
119	BARNI KHURD	3.15	2.91	10.2	9.1
120		5	4.51	10.2	8.9
121	MANGERIYA	3.15	2.68	10.3	9
122	BILARA	5	4.43	10.5	9
123		5	4.34	10.5	8.9
124	SOJATI GATE	5	4.58	10.5	9
125		5	4.56	10.5	8.9
126	DIWAN JI KI PIAO	3.15	2.67	10.5	9
127		3.15	2.51	10.5	9.1
128	KHARIYA M. THAPUR	3.15	2.78	10.5	9

Date: 30.06.2023

Signature:

Name: Er. M.L. Benda

(Project In-charge) SE (O&M)/JdVVNL, JU

(Authorized Representative)

129		5	4.5	10.5	9.2
130	JHAK	3.15	2.84	10.5	9
131	UDALIYAWAS	3.15	2.69	10.5	9.3
132		3.15	2.63	10.5	9
133	RANSI GAON	3.15	2.71	10.5	8.9
134		5	4.27	10.5	9
135	PIPAR CITY	5	4.75	10.5	8.9
136		5	4.66	10.5	9
137	SATHIN	1.6	1.46	10.5	8.9
138		3.15	2.94	10.5	9
139	KHARIYA KHANGAR	3.15	2.71	10.2	8.9
140	PABUNAGAR	3.15	2.74	10.5	8.9
141	AMRIT NAGAR	3.15	3.14	10.5	9.1
142	RATORI GAL (BASTWA)	3.15	3.06	10.5	9
143		3.15	3.08	10.5	9.3
144	CHIDWAI	3.15	2.72	10.2	9
145	DERIYA	3.15	2.67	10.4	9
146	KERU	3.15	2.85	10.5	8.9
147	GODELAI	3.15	2.68	10.3	9.2
148	BHOMSAGAR	3.15	2.88	10.5	9
149	GUMANPURA	3.15	2.93	10.5	9
150	PABUSAGAR UNTHAWALIYA	5	4.15	10.2	9
151	BABA KI	3.15	2.8	10.3	9.1
152	NIMBARI(DHEERPURA)	3.15	3.03	10.6	9
153	KANODIYA PUROHITAN	3.15	3.1	10.6	9.2
154	BHALU KALLA	3.15	2.82	10.2	9
155	KHIRJAKHAS	3.15	2.88	10.5	9.2
156	CHABA	3.15	3.01	10.5	9.2
157	SOINTRA	3.15	2.91	10.5	9
158	KHIRIA TIBNA	3.15	2.9	10.3	8.9
159	NOKHDADA BHATIYA	3.15	2.95	10.1	8.9
160		3.15	2.81	10.3	8.9
161	RAD KA BERA	3.15	2.88	10.3	9
162	CHHITERBERA	5	4.54	10.4	9.1
163		3.15	2.85	10.3	9
164	CHADI	3.15	2.76	10.3	9
165		3.15	2.83	10.4	8.9
166	KRISHAN NAGAR	3.15	2.93	10.4	9
167		3.15	3.02	10.2	9.2
168	RIDMALSAR	3.15	3.05	10.2	9
169		3.15	2.78	10.4	8.9
170	MANASAR	3.15	2.71	10.4	9.3
171		3.15	2.7	10.5	8.9
172	BOONGADI	3.15	2.59	10.5	8.9
173	INDO KA NAS	3.15	2.59	10.2	9
174		3.15	2.62	10.2	9.1
175	IGNP PHALODI	3.15	2.62	10.2	9

Date: 30.06.2023

Signature:
Name: Er. LA Benda
(Project Monitoring Officer)/NL, JU
(Authorized Representative)

176	(BAP) R.D.1120	3.15	2.27	10.8	8.9
177	DURGANI	3.15	3.01	10.2	9
178		3.15	2.78	10.2	9.1
179	SHEKHASAR	3.15	2.82	10.2	9
180		3.15	2.75	10.5	8.9
181	ANOP NAAGAR	3.15	2.8	10.5	9
182		3.15	2.88	10.2	9.1
183	RIN SALT	3.15	2.85	10.2	9
184	JHARASAR KALLA	3.15	2.89	10.3	9
185		3.15	2.7	10.2	9.3
186	Rampura(Raneri)	3.15	2.62	10.2	9.2
187	JETERI	5	4.65	10.3	9
188		3.15	2.85	10.3	8.9
189	PALINA	3.15	2.85	10.3	8.9
190	KUSHLAWA	3.15	2.82	10.2	9.1
191	BHOJAKOR	5	4.61	10.3	9.2
192	MORIYA	3.15	2.88	10.5	9.1
193	AMLA	3.15	3.02	10.3	9
194	Chainpura	5	4.7	10.4	8.9
195	SHIVSAR	3.15	2.8	10.5	8.9
196		5	4.08	10.5	9
197	SAORI KALLA	3.15	2.48	10.5	9.2
198	RAYADA	5	4.46	10.2	8.9
199		3.15	2.98	10.2	9
200	MARJAT	3.15	3.01	10.2	9.1
201	JALODA	3.15	2.77	10.2	9
202		3.15	2.83	10.2	8.9
203	UNTHWALIYA	3.15	2.88	10.2	9
204	MANDLA KHURD	3.15	2.89	10.2	9
205		3.15	2.98	10.2	9.1
206	KHARA	3.15	2.98	10.2	9
207		3.15	2.89	10.2	8.9
208	KOLU PABUJI	3.15	2.95	10.2	9
209	BENGTI KHURD	3.15	2.89	10.2	9
210		5	4.56	10.2	9
211	SIHRA	3.15	2.91	10.2	9
212		5	4.61	10.2	8.9
213	MANDLA KALLAN	3.15	2.95	10.2	9.2
214	EKA BHATIYA	3.15	2.91	10.2	9
215	JEMALA	5	4.54	10.3	8.9
216		3.15	2.85	10.3	9
217	GAJJA	3.15	2.94	10.5	8.9
218		3.15	3.01	10.5	8.9
219	BARSANADA	3.15	2.94	10.5	9
220		3.15	3	10.5	9.1
221	KAPADISAR	3.15	2.67	10.5	9.3
222		3.15	2.7	10.5	8.9

Date: 30.06.2023

Signature:

Name: M. L. Benda
(Project Nodal Officer)
SE (RS), JDVVNL, JU
(Authorized Representative)

223	SADAWATA	3.15	2.78	10.5	9.1
224	Goyali Road	5	4.12	10.58	9.5
225		3.15	3	10.58	9.7
226	Sirohi City	5	4.74	10.62	9.6
227	Sindrath	3.15	2.74	10.41	9.6
228	Jawal	5	4	10	9.5
229		3.15	2.78	10	9.7
230	Padiv	3.15	2.5	10	9.7
231	Varada	3.15	2.7	10	9.5
232	SheoganjRiico	5	4.34	10	9.6
233		3.15	2.78	10	9.6
234	Palori	3.15	2.7	10	9.6
235		3.15	2.78	10	9.6
236		3.15	2.6	10	9.7
237	Sawali	3.15	2.5	10	9.5
238	Kalandari	3.15	2.8	10	9.6
239		3.15	2.23	10	9.6
240	Krishnaganj	3.15	2.56	10	9.5
241		3.15	2.7	10	9.7
242	MerMandwara	3.15	2.5	10	9.6
243		3.15	2.4	10	9.6
244	Tanwari	3.15	2.23	10	9.6
245	Sirohi Road	3.15	2.5	10	9.6
246		3.15	2.6	10	9.5
247		5	4.65	10	9.7
248	Pindwara City	5	4.34	10	9.7
249	Banas	5	4.6	10	9.5
250	Veerwada	3.15	2.38	10	9.6
251	Nadiya	3.15	2.8	10	9.5
252	Gandhi Nagar	10	6.2	9.78	9.7
253	IOCL	5	3.2	9.7	9.6
254	AmbajiIndAr	10	7.8	9.7	9.6
255	Khara	10	7.38	9.7	9.6
256	Manpur	10	6.87	10.5	9.8
257	Deldar	3.15	2.25	9.7	9.6
258	Karoli	3.15	2.34	9.7	9.7
259	Moogthala	3.15	2.4	9.7	9.5
260		3.15	2.34	9.7	9.5
261	Girwar	3.15	2.43	9.7	9.5
262	Mawal	3.15	1.98	9.7	9.7
263	Mt. Abu	5	3.5	9.7	9.6
264		5	3.4	9.7	9.6
265	Mandar	3.15	2.88	10.2	9.6
266	Bant	3.15	2.35	10.2	9.6
267	Jethawada	3.15	2.5	9.8	9.6
268		5	4.5	9.8	9.6
269	Marwada	3.15	2.45	9.6	9.7

Date: 30.06.2023

Signature:

Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

Er. M.L. Benda
SE (SS), JdVVNL, JU

270	Magriwada	3.15	2.7	9.8	9.6
271		3.15	2.55	9.8	9.7
272		3.15	2.86	9.8	9.5
273	GusaisarBeda	3.15	2.67	9.8	9
274		3.15	2.78	9.8	9.1
275	Mankrasar	3.15	2.97	9.8	8.9
276		3.15	3	9.8	9
277	Binjasar 1st	3.15	2.37	9.8	9.2
278	Binjasar 2nd	3.15	2.27	9.8	8.9
279		3.15	2.47	9.8	9
280	Benisar	3.15	2.4	10	8.9
281		3.15	2.78	10	9
282	Dusarna-1	3.15	2.85	10	9.1
283		3.15	2.8	10	9.3
284	Jetasar	5	4	10	8.9
285		3.15	2.7	10	9
286	THUKRIYASAR-1	3.15	2.61	9.9	9
287	THUKRIYASAR-II	3.15	2.8	10	9
288	Jai salSar	3.15	2.33	10	8.9
289	Gopalsar - I	3.15	2.71	9.9	9
290		3.15	2.66	9.9	8.9
291	SATTSAR	3.15	2.62	10	9
292		3.15	2.38	10	8.9
293	DHEERDESAR PURIHITAN	3.15	2.58	10.1	9.2
294	LIKHMADESAR-1	5	3.57	10.1	9.2
295		3.15	2.69	10.1	8.9
296	LIKHMADESAR-III	3.15	2.78	10	9
297		3.15	2.42	10	9.1
298	AADSAR	3.15	2.52	10	9
299		3.15	2.6	10	9
300		3.15	2.4	10	8.9
301	UDRASAR	3.15	2.85	10	9.1
302	LALASAR	3.15	2.71	10	9
303	SARNA JOHAD	3.15	2.87	10	8.9
304	Ramdevra	3.15	2.47	10	9
305		3.15	2.6	10	9.2
306	Seruna 1	5	4.2	10	9.2
307	Seruna 2	3.15	2.4	10	9.1
308	Derajsar - I	5	4.23	10	8.9
309	Gogana	3.15	2.19	10	8.9
310		3.15	2.47	10	9
311	Sarunda	3.15	2.4	10	8.9
312	Siniyala - I	5	4.36	10	9
313		3.15	2.5	10	8.9
314	Hanuman Nagar	3.15	2.4	10	9
315	Bhadla	3.15	2.13	10	8.9
316	Nathusar	3.15	2.35	10	9

Date: 30.06.2023

Signature:

Name: Mr. L. Benda Er. L. Benda
(Project Nodal Officer) SE (R&S), JdVVNL, JU
(Authorized Representative)

317	Salsar	3.15	2.39	10	8.9
318		3.15	2.49	10	9.1
319	Ratriyaphanta	3.15	2.4	10	8.9
320		3.15	2.8	10	9
321	LalasarSathri	5	4.23	10	9.4
322	Bhedkitalai	3.15	2.32	10	8.9
323	Mainsar	5	4.24	10	9
324	Jharell -I	5	4.45	10	8.9
325		3.15	2.4	10	9
326	Gundusar	3.15	2.3	10	9.1
327		5	4.3	10	8.9
328	Udsar	3.15	2.6	10	9
329		5	2.4	10	9.2
330	Jharell-II	3.15	2.85	10	8.9
331	Shiv Mandir	3.15	2.19	10	9
332	Bhagwatikund	3.15	2.7	10	8.9
333	SUJASAR	3.15	2.67	10	9.1
334	2. SURDHNA -II	3.15	2.85	10	9
335	1. K.D JATAN -II	3.15	2.8	10	8.9
336	1. NAPASAR	3.15	2.7	10	8.9
337		3.15	2.47	10	9
338	Gunsalsar-I	5	4.27	10	8.9
339		3.15	2.19	10	9.2
340	Nourangdesar	5	4.36	10	9.2
341		3.15	2.76	10	8.9
342	NAPASAR - II	3.15	2.44	10	9
343	2. RAMSAR -I	5	4.35	10	9.1
344		5	4.48	10	9
345	3. RAMSAR-II	3.15	2.67	10	9
346		3.15	2.5	10	8.9
347	1.K.D.Baran-I	3.15	2.43	10	9.1
348	2.K.D. Jatan -I	5	4.54	10	9
349	1. K.D.Jatan-IV	3.15	2.51	10	8.9
350	2. KILCHU	5	3.8	10	9
351	1. TEJRASAR - I	5	3.89	10	9.2
352		3.15	2.44	10	9.2
353	2. TEJRASAR - III	5	4.57	10	9.5
354	4. BELASAR	5	3.42	10	9
355	2. TEJRASAR - II	5	4.57	10	9.5
356	2. SINTHAL	3.15	2.57	10	9
357	L D MAGARA	5	4.38	10	9.5
358		3.15	2.57	10	9.2
359	JD MEGRA	5	3.8	10	8.9
360	MEGHASAR	5	3.9	10	9.2
361		5	4.23	10	8.9
362	BARSINGHSAR	5	4.49	10	9
363		5	4.34	10	8.9

Signature:

Date: 30.06.2023

Name: M.L. Behda. Bendia
(Project Office), VVNL, JU
(Authorized Representative)

364	SWAROOPDESAR	3.15	2.23	10	9.3
365	BHANEKA	3.15	2.49	10	9.2
366		3.15	2.45	10	9
367	RANERI	5	4.44	10	9
368		5	4.28	10	9.1
369	HADDA	3.15	2.28	10	8.9
370	LOHIYA	5	3.81	10	9.2
371	KHINDASAR	5	4	10	9.2
372	DHELU	5	4.57	10	9.5
373	SERPURA	3.15	3.71	10	9.6
374	KISHANASAR	3.15	2.73	10	8.9
375		3.15	2.46	10	9
376	DANTOR	3.15	2.67	10	9.1
377	28 KID	3.15	2.48	10	9.2
378	3 PWM	3.15	2.29	10	9
379	1 ADM	3.15	2.67	10	9.1
380	Jamsar	3.15	2.36	10	9
381		3.15	2.3	10	8.9
382	1. GADHWALA - I	3.15	2.45	10	9
383		5	4	10	9.1
384	2 GADHWALA - II	5	3.81	10	9.3
385		3.15	2.5	10	8.9
386	Pugal	3.15	2.48	10	9
387	RD 710	3.15	2.48	10	9
388	RD 750	3.15	2.29	10	9
389	RADERAN	3.15	2.5	10	8.9
390	JETPUR	3.15	2.34	10	8.9
391		3.15	2.19	10	9
392	ARJUNSAR	3.15	2.45	10	8.9
393	Lalera	3.15	2.35	10	9
394	Mahajan	3.15	1.71	10	8.9
395	JAWAHARNAGAR	5	4.45	10	9
396		5	4.34	10	9
397		5	4.3	10	9.1
398		5	4.3	10.5	9.2
399	MAUSAM VIBHAG	8	6.3	10.5	9.8
400		5	4.2	10.5	9.5
401	MAHALAXMI ENCLAV	5	4.45	10.5	9.4
402	AGRAWAL COLONY	5	3.42	10.5	9.4
403	2 ML NATHAWAU	5	2.88	10.5	9.5
404		3.15	2.3	10.5	9
405	RIICO-I	3.15	2.4	10.5	9.1
406		8	5.89	10.5	9.8
407		5	4.17	10.5	9.3
408		5	4.3	10.5	9.2
409	RIICO-II	8	6.7	10.5	9.8
410		5	4.38	10.5	9

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

(Authorized Representative)

M. L. Benda
SE (T&S) JdVVNL, JU

411	SHANI MANDIR	5	4.44	10.5	9.4
412		5	4.34	10.5	9
413	SABJI MANDI	10	8.78	10.5	9.2
414		5	3.8	10.5	9.1
415	KUNJ VIHAR	3.15	3	10.5	9.3
416	JCT	10	7.8	10.5	9.5
417		5	4.3	10.5	9.2
418	3 PUU	10	8	10.5	9.2
419	BHAGAT SINGH CHOCK	8	6.6	10.5	9.8
420		8	6.5	10.5	9.8
421	KUMS	5	4.13	10.5	9
422		5	3.89	10.5	9.1
423	HOSPITAL	5	3.9	10.5	9.3
424		5	4.67	10.5	9.8
425	SADBHAWANA NAGAR	5	4.56	10.5	9
426		5	4.35	10.5	9
427	V.K. CITY	5	4.48	10.5	9
428	PHG	5	4.45	10.5	9
429		5	4	10.5	9.1
430	kaliyan	3.15	2.8	10.5	9.6
431	khatlabana	3.15	2.9	10.8	9.6
432	dulapurkeri	3.15	2.03	10.6	9.6
433	hindumalkot	3.15	2.46	10.7	9.6
434	sadhuwali	3.15	2.6	10.9	9.6
435	7A	3.15	2.6	10.8	9.6
436	BURJAWALI	3.15	1.9	10.6	9.6
437	CHUNAWAD	3.15	2.4	10.7	9.6
438	15Z	3.15	2.2	10.9	9.6
439	HOMELAND	5	3.4	10.8	9.6
440	RISHI SIDHI	5	3.7	10.8	9.6
441	NETEWALA	3.15	2.4	10.7	9.6
442		3.15	2.8	10.7	9.1
443	7 ML	3.15	2.6	10.9	9.3
444		3.15	2.5	10.9	9.5
445	25 ML	3.15	2.8	10.6	9.4
446	DHINGAWALI	3.15	2.1	10.7	9
447	JODHEWALA	3.15	2.2	10.9	9.2
448	SADULSAHAR	2.5	1.6	10.5	9.1
449	RIICO	5	4.11	10.8	9.3
450	4 KRW	3.15	2.74	10.3	9.5
451	PARTAP PURA	3.15	2.22	10.5	9
452	BUDHIWALI	3.15	2.37	10.5	9
453	PATALI	3.15	2.05	10.3	9.1
454	MANNIWALI	3.15	2.37	10.3	9.2
455	IPDS KESRISINGHPUR	5	3.1	10.3	9
456	V HEAD	3.15	2.6	10.3	9.5
457	DHNOOR	3.15	1.9	10.3	9.4

Date: 30.06.2023

Signature:

Name: M. Benda

(Project Nodal Officer), JdVVNL, JU

(Authorized Representative)

458	DALPATSINGHPUR	3.15	2.4	10.3	9.4
459	KAMINPURA	3.15	2.2	10.3	9.5
460	ARAYAN	3.15	2.4	10.3	9
461	MALKANA	3.15	2.4	10.3	9.1
462	MIRJEWALA	5	3.85	10.3	9.3
463	18P	3.15	2.2	10.3	9.3
464	KONI	3.15	2.8	10.3	9.2
465	DAULATPURA	3.15	2.1	10.3	9.4
466	MANFOOLSINGHWALA	5	4.5	10.3	9
467	GANESHGARH	3.15	2.24	10.3	9.4
468	GANESHGARH	3.15	2.6	10.3	9.3
469	LALGARH	3.15	2.4	10.3	9.3
470	PANNIWALI	3.15	2.2	10.3	9.2
471	BANWALI	3.15	2.4	10.3	9.4
472	MAMMAR	3.15	2.49	10.3	9
473	KHARACHAK	3.15	2.02	10.3	9.4
474	5 LNP	3.15	2.3	10.3	9
475	SAMEJA	3.15	2.24	10.3	9.2
476	BAJUWALA	3.15	2.71	10.3	9.1
477	SATJANDA	3.15	2.52	10.3	9.3
478	DABLA	3.15	2.61	10.3	9.5
479	MUKLAWA	3.15	2.43	10.3	9.2
480	LOONEWALA	3.15	1.49	10.3	9.2
481	1EPS	3.15	2.22	10.3	9
482	UDSAR	3.15	2.33	10.3	9.5
483	BHOMPURA	3.15	2.4	10.3	9
484	RAISINGHNAGAR	8	7.72	10.3	9.8
485		3.15	2.7	10.3	9.3
486	BADA MANDIR	5	4.24	10.3	9.3
487	RIICO	5	4.21	10.3	9.5
488	PADAMPUR	5	4	10.3	9
489	24 BB	5	3	10.3	9
490	4 JJ	3.15	2.5	10.3	9.1
491	4 DD	3.15	2.3	10.3	9.2
492	CHANNADHAM	3.15	2.7	10.3	9
493	CC HEAD	3.15	2	10.3	9.5
494	3 RB	3.15	2.2	10.3	9.4
495	P S HEAD	3.15	2.3	10.3	9.4
496		3.15	2.5	10.3	9.5
497	JIVANDESAR	3.15	2.1	10.3	9
498	69 LNP	3.15	2.3	10.3	9.1
499	BINJHBAYLA	3.15	2.9	10.3	9.3
500		3.15	2.5	10.3	9.3
501	GHAMURWALI	3.15	2.19	10.3	9.2
502	SAWANTSAR	3.15	2.1	10.3	9.4
503	MANJHUWASS	3.15	2.3	10.3	9
504	SKPR	5	4.1	10.3	9.3

Date: 30.06.2023

Signature:

Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

SE (T&S), JdVVNL, JU

505			3.15	2.9	10.3	9.2
506	39H		3.15	2.8	10.3	9.4
507	2FC		3.15	2.75	10.3	9
508	52GG		3.15	2.95	10.3	9.4
509	48GG		3.15	2.9	10.3	9.1
510	42F		3.15	2.7	10.3	9.3
511	5"O"		3.15	2.7	10.3	9.5
512	GAJSINGHPUR		5	3.5	10.3	9
513			5	4.6	10.3	9
514	SANGRAMA		3.15	1.9	10.3	9.1
515	BALARAJPURA		3.15	2.28	10.3	9.2
516	JORAWAR		3.15	2	10.3	9
517	CCBF		3.15	2.7	10.3	9.5
518	PAUWALA		3.15	2.57	10.3	9.4
519			3.15	2.63	10.3	9.4
520	SARDARPURA BKA		3.15	2.03	10.3	9.5
521	NIRWANA		3.15	2.46	10.3	9.1
522	DHABA		3.15	2.54	10.3	9.4
523	GURUSAR MODIA		3.15	2.46	10.3	9
524	BOOPAL ROAD GSS		5	4.49	10.3	9.2
525			5	4.34	10.3	9.1
526	RIICO GSS		5	4.67	10.3	9.3
527			5	4.52	10.3	9.5
528	PHED GSS		5	4.6	10.3	9
529	STADIUM GROUND GSS		5	3.33	10.3	9
530	SOMASAR		5	4.42	10.3	9.1
531			5	3.98	10.3	9.2
532	KALUSAR		3.15	2.5	10.3	9
533	THETHAR		3.15	2.44	10.3	9.5
534	RAIYAWALI		3.15	2.67	10.3	9.4
535	UDAIPUR		3.15	2.7	10.3	9.4
536	BIRMANA		3.15	2.6	10.3	9.5
537	2 GPN		3.15	2.62	10.3	9
538	19.600 RDR		3.15	2.5	10.3	9.1
539	RAJASAR		3.15	2.38	10.3	9.3
540			3.15	2.58	10.3	9.3
541	DEEDWANA		3.15	2.4	10.3	9.2
542	BACHHRAR		3.15	2.22	10.3	9.4
543	BHOJUSAR		3.15	2.4	10.3	9
544			3.15	2.3	10.3	9.3
545	GOVINDSAR		3.15	2.3	10.3	9.5
546			3.15	2.35	10.3	9.2
547	RAGHUNATHPURA		3.15	2.15	10.3	9.2
548	SILWANI		3.15	2.5	10.3	9
549	SRI VIJAYNAGAR		5	4.17	10.3	9.5
550			5	4.11	10.3	9.1
551	29 GB		5	3.8	10.3	9.3

Date: 30.06.2023

Signature:

Name: M. Ebelida L. Banda
(Project Nodal Officer), JdVVNL, JU
(Authorized Representative)

552	44 GB	3.15	4.3	10.3	9.8
553	KUPLI	3.15	2.3	10.3	9.4
554	PURANA BIJLI BOARD	5	4.1	10.3	9
555	2 DAM	5	4.45	10.3	9.2
556		3.15	2.13	10.3	9.1
557	ANOOPGARH	5	4.43	10.3	9.5
558		3.15	2.5	10.5	9.4
559	RIICO	5	4.34	10.5	9
560		3.15	2.65	10.5	9.2
561	PREM NAGAR	5	4.45	10.5	9.1
562	7SGB	3.15	2.5	10.7	9.3
563	BANDA COLONY	3.15	2.6	10.7	9.5
564	10A	3.15	2.65	10.7	9
565	27A	3.15	2.45	10.7	9
566		3.15	2.5	10.7	9.1
567	61GB	3.15	2.5	10.9	9.2
568	RAMSINGHPUR	3.15	2.3	10.9	9
569	NHARAWALI	3.15	2.58	10.9	9.5
570	RAWLA MANDI	3.15	2.5	10.5	9.4
571		3.15	2.45	10.5	9.4
572	3 KD	3.15	2.45	10.5	9.5
573	7 KND	3.15	2.03	10.5	9
574	365 HED	3.15	2.46	10.5	9.1
575	NEW MANDI GHARSANA	3.15	2.4	10.5	9.3
576		3.15	2.6	10.5	9.3
577	OLD MANDI GHARSANA	3.15	2.4	10.5	9.2
578	6 DD	3.15	2.15	10.5	9.4
579	PATRODA	3.15	2.45	10.5	9
580	281 HEAD	3.15	2.35	10.5	9.4
581	JALWALI	3.15	1.98	10.5	9.3
582	ROJARY	3.15	2.95	10.5	9.3
583	4 STR	3.15	2.82	10.5	9.2
584	CHAWA	3.15	2.72	10.2	9.4
585	KAWAS	3.15	2.83	10.4	9
586	BATADOO	3.15	2.45	9.8	9.3
587		3.15	2.8	9.8	9.5
588	BHIMADA	3.15	2.5	9.8	9
589		3.15	2.45	9.5	9
590	KHANI KA TALLA	3.15	2.75	10.5	9.1
591	JETANIYON KI DHANI	3.15	2.39	10.1	9.2
592		3.15	2.5	10.1	9
593	BHADAKHA	5	2.45	10.2	9.5
594		5	2.3	10.2	9.4
595	HADWA HADVECHA	3.15	2.5	10.5	9.4
596	SAJITARA	5	2.7	10.2	9.5
597		5	2.67	10.2	9
598	BHIYAND	3.15	2.34	9.8	9.1

Date: 30.06.2023

Signature:
Name: M. L. Benda
(Project Nodal Officer)/JdVVNL, JU
(Authorized Representative)

599		3.15	2.45	9.8	9.3
600	CHOCHRA	3.15	2.89	10.2	9.3
601		3.15	2.45	10.2	9.2
602	DHEERJI KI DHANI	3.15	2.65	9.8	9.4
603	KANASAR	3.15	2.7	10.2	9
604		3.15	3.9	10.2	9.6
605	MOKHAB	5	4.45	10.1	9
606		5	4.6	10.1	9.1
607	PRAHLADPURA	3.15	2.81	10.3	9.3
608	ASOTRA	3.15	2.85	10.3	9.4
609	BITHUJA	3.15	2.88	10.1	9
610	BRAHMAJI KA MANDIR	3.15	2.54	10.1	9.2
611	BUDIWARA	3.15	2.7	10.4	9.1
612		3.15	2.45	10.4	9.3
613	JAGSA	3.15	2.56	10.2	9.5
614		3.15	2.45	10.2	9
615	JASOL	3.15	2.68	10.7	9
616		3.15	2.7	10.7	9.1
617	KANANA	3.15	2.88	10.3	9.2
618	KITHNOD	3.15	2.92	10.4	9
619	PADROD-FANTA	3.15	3	10.4	9.5
620		3.15	2	10.4	9.4
621	SARANA	3.15	2.98	10.3	9.4
622	KALYANPUR	3.15	2.77	10.4	9.5
623	NAGANA	3.15	2.51	10.2	9
624	PACHPADRA	3.15	2.56	10.2	9.1
625		3.15	2.67	9.8	9.3
626	PATODI	3.15	2.78	10.4	9.3
627	THOMBLI	3.15	2.71	10.5	9.2
628	KANOD	3.15	2.59	10.3	9.4
629	RATEU	3.15	2.98	10.4	9
630		3.15	2.16	10.4	9.4
631	BHAGWA	3.15	3	10	9.3
632		3.15	2.01	10	9.3
633	DHEERA	3.15	2.41	10.2	9.2
634	GUDANAAL	3.15	2.74	10.2	9.4
635	GUNGROT	5	4.23	10.5	9
636	INDRANA	3.15	2.92	10.5	9.4
637	KATHADI	3.15	2.45	10.5	9
638		3.15	2.67	10.5	9.2
639	KERLI NADI	3.15	2.46	10.2	9.1
640	MELI	3.15	2.71	10.2	9.3
641	MOKALSAR	5	4.52	10.1	9.5
642	MUTHALI	3.15	2.89	10.3	9.2
643	AJEET	3.15	2.91	10.2	9.2
644	KARMAWAS	3.15	2.65	10	9
645	RAKHI	3.15	2.91	10.3	9.5

Date: 30.06.2023

Signature:

Name: M.L. Benda

(Project Head/Engineer)/VNL, JU

(Authorized Representative)

646	SAMDARI	3.15	2.75	10.2	9
647		3.15	2.56	10.2	9.1
648	SILORE	3.15	2.74	10.3	9.3
649	DHARANA	3.15	2.69	10.4	9.5
650		3.15	2.29	10.4	9.4
651	ITAWAYA-FANTA	3.15	2.26	10.4	9
652		3.15	2.88	10.4	9.2
653	KHANKHI	3.15	2.87	10.2	9.1
654		3.25	2.56	10.2	9.3
655	XUNDAL	3.15	2.53	10.4	9.5
656		3.15	2.4	10.4	9.3
657	MITHORA	3.15	2.9	10.5	9.5
658		3.15	2.06	10.5	9.1
659	RELO KI DHANI	3.15	2.77	10	9.4
660	SAILA	3.15	2.62	10.2	9
661	SINER	3.15	2.67	9.78	9.2
662		3.15	2.61	9.78	9.1
663	VAV NAGAR	3.15	2.68	10	9.3
664	ADEL	3.15	2.82	10.2	9.5
665	BHATTA	3.15	2.43	10.1	9.1
666		3.15	2.79	10.1	9.3
667	CHADON KI DHANI	3.15	2.91	10.3	9.5
668	CHAUDHARIYON KI DHANI	3.15	2.61	10.5	9.4
669	DHANWA-FANTA	3.15	2.63	10.5	9
670	DHUDIA MOTI S	5	4.24	10	9.2
671	J.M.K.	3.15	2.23	10.4	9.1
672		3.15	2.25	10.4	9.3
673	SARNU-PANJI	3.15	2.83	10	9.5
674	BHATALA	3.15	2.86	10.3	9
675	BADON-KA-TALA	3.15	2.73	10.2	9
676	BAMNOR	5	4.23	10.1	9.1
677	BAMRLA	5	4.62	10.5	9.2
678	BHAG BHERE KI BERI	3.15	2.3	10.4	9
679	BISARNIYA	3.15	2.52	10.3	9.5
680		3.15	2	10.3	9.4
681	DHUDHU	3.15	3	9.9	9.4
682		3.15	2.23	9.9	9.5
683	KEKAR	3.15	2.28	9.8	9
684		3.15	3	9.8	9.1
685	KITHNORIYA	3.15	2.94	10.4	9.3
686	KOIA	3.15	2.86	10.5	9.3
687	LUKHU	3.15	2.65	10.5	9.2
688	RELO KI BERI	3.15	2.8	9.6	9.4
689	ROHILA (EAST)	3.15	2.82	10.2	9
690	SACHI KI BERI	3.15	2.81	10.5	9.4
691	SAUAN KI BERI	3.15	2.65	10.2	9.1
692		3.15	2.35	10.2	9.3

Date: 30.06.2023

Signature:

Name: M.Lr. Behda. Benda

(Project Nodal Officer) VVNL, JU

(Authorized Representative)

693	BORCHARNAN	3.15	2.78	10	9.5
694	BHEDANA	3.15	2.78	9.4	9
695		3.15	2.45	9.4	9
696	GADEVI	3.15	2.83	10.2	9.1
697	LUNWA- CHARNAN	3.15	2.98	10.2	9.2
698	NAGAR	3.15	2.72	10.1	9
699	PANEL KI BERI	3.15	2.98	10.2	9.5
700	RAM JI GOAL	3.15	2.89	10.2	9.4
701	SALLU KI BERI	3.15	2.95	9.7	9.4
702	SINDHASWA-CH.	3.15	2.13	10.2	9.5
703		3.15	2.88	10.2	9.1
704	ANDANIYO KI BERI	3.15	2.05	10.2	9.3
705		3.15	3	10.2	9.5
706	JALI KHERA	3.15	2.96	10	9.4
707	MALPURA	3.15	2.68	10.3	9
708	NOKHARA	3.15	2.23	10.5	9.2
709		3.15	2.2	10.5	9.1
710	AKAL	3.15	2.91	9.5	9.3
711	GANGASARA	3.15	2.9	10.5	9.5
712	GORA	3.15	2.81	9.8	9
713	GULE KI BERI	3.15	2.67	10.5	9
714	SOBHALA-DARSHAN	3.15	2.78	10.5	9.1
715	SONARI	5	4.5	10.3	9.2
716	BHANWAR	3.15	2	10.5	9
717		3.15	3	10.5	9.5
718	BISASAR	3.15	2.69	10.5	9.4
719	DHURAWA	3.15	2.5	10.1	9.4
720		3.15	2.52	10.1	9.5
721	FAGALIYA	3.15	2.78	10.5	9
722		3.15	2.28	10.5	9.1
723	HARPALIYA	3.15	2.56	10	9.3
724	JANPALIYA	3.15	2.63	10.5	9.3
725		3.15	2.6	9.9	9.2
726	MAN JI KA TALLA	3.15	2.06	9.9	9.4
727	SALARIYA	5	3.89	10.5	9
728	SARLA	3.15	2.94	10.1	9.4
729		3.15	2.57	10.5	9
730	SEDWA	5	4.1	10.5	9.2

Signature: ______

Date: 30.05.2023

Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

As a constituent of NER grid, it is required to operate the power system as per IEGC Code and all equipment as specified by CEA Technical Standards Regulation (2010).

In order to increase the power factor (near to unity) and hence resulting in low losses, efficient system and better voltage profile, introduction of reactive (capacitors) component (kVAR) are the cheapest and simplest means of power compensation. Hence, the objective of the project is to give better power supply with better voltage regulation to the consumers in the Jodhpur DISCOM region.

The problem / constraint would be addressed through the project / scheme / activity:

- Introduction of Automatic Switched Capacitor Banks.
- Precise and real time compensation of reactive power.
- Establishment of reliable Reactive Power in System.
- Improvement in line losses.
- Existing infrastructure can accommodate more consumers.
- Less loading of transformers.
- Better utilization of Capacitors.

Training System: The Training System is an offline environment used for training users in the operation of the system. On-site training of equipment to users for operation of equipment's.

Execution and Implementation

While finalizing technical specifications of the system, care has been taken to realize 100% success and sustainability. Considering 24 x 7, 365 days working of system, system will be procured with 5 Years support scheme is with online monitoring facility, in case of failure of field equipment control station raise alarm . It will be helpful to take corrective action in time. Only authorized users will be permitted to change operating limits and other features of software. Also, one-year warranty for all hardware is ensured and there is a comprehensive AMC with executing agency for 5 years after 1-year warranty excluding communication link for reliable operation of scheme.

2.5 Executing Agency

JDVVNL shall be the executing authority. Presently, JdVVNL owns and operate more than 2335 Power Stations of voltage level 33kv. It may be noted that JdVVNL has introduced SAS/SCADA and substation projects in past. Being the state distribution utility, JdVVNL has had vast experiences in executing dozens of such projects in energy sector under the fund mode available by REC/PFC or through other government grants. Further, it is worth mentioning that JdVVNL has a track- record of maintaining the time-schedule for completion of its various projects with its strong engineering and commissioning staff.

2.6 Time line for Implementation of Project /Scheme/Activity

Time line of the Project / Scheme / Activity	
Likely Duration of Project (in months)	24 (Twenty-Four) months
Likely Start Date	On accord of Administrative & Financial Approval
Likely Completion Date	June 2026

Date: 30.06.2023

Signature:

Name: M.L. Benda

(Project Nodal Officer) JdVVNL, JU

(Authorized Representative)

Timeline of Activities

Sl. No.	Description	Year / Month	2023-24 QTR3	2023-24 QTR4	2024-2025 QTR1	2024-2025 QTR2	2024-2025 QTR3	2024-2025 QTR4	2025-2026 QTR1	2025-2026 QTR2
1	Project Approval									
2	Bid Preparation									
3	Bidding Period									
4	Evaluation, Contract Award and Mobilization									
5	1st Disbursement									
6	Project Status Report									
7	2nd Disbursement									
8	Project Status Report									

Date: 30.06.2023

Signature:
Name: M. L. Benda
Er. M.L. Benda
SE (IRS) ...VNL, JU
(Project Nodal Officer)
(Authorized Representative)

9	3rd Disbursement
10	Project Status Report
11	4th Disbursement
12	Project Status Report

Date: 30.06.2023

Signature: _____
Name: M. J. Benda
(Project Nodal Officer)
(Authorized Representative)

Summary of Detailed Project Report (DPR)

The revised DPR is prepared for installation of reactive power solution on 33/11 kV substations in Jodhpur DISCOM with the ratings as per CEA's Regulations.

Summary of DPR given – Yes **Copy of DPR attached – Yes**

Implementation Schedule / Milestones

Target for Physical Milestones

Particulars (No. of)	Total	Quarter 1 of 2024-25 & Quarter 4 of 2024-25	Quarter 2&4 of 2024-25	Quarter 2 of 2025-26
MV APFC Panels		Completion of Supply	Erection	Testing & Commissioning

Target for Financial Milestones

(₹in Crores)

Description of Amount Required	Total	Quarter 1 of 2024-25	Quarter 2 of 2024-25	Quarter 4 of 2024-25& Quarter 1 2025-26 out of which 10% through internal sources.	Quarter 1 of 2025-26
Supply and erection of materials and equipment covered under the scheme	216.38	10% of total project cost i.e. 21.64	20% of total project cost i.e. 43.28	60 % of total project cost i.e. 129.83 (108.19 from PSDF & 21.64 from internal sources)	10% of total project cost i.e. 21.64

Financial Implication of the Scheme

1. **Summary**

Sl. No.	Item	Amount (Rs. 216.38 in Crore)
1.	Total Cost Estimate	216.38 Cr.
2.	Funding Proposed from PSDF	90%
3.15.	External Borrowing	Nil, being 90% funded under PSDF & 10% through internal funding.

Date: 30.06.2023

Signature:
Name: M.L. Berda
SE (Est.) JdVVNL, JU
(Project Nodal Officer)
(Authorized Representative)

2. Details:

2.1 Cost Estimate: The detailed cost estimate prepared for implementation of the project is given below:

COST ESTIMATE FOR 1.98 & 3.96 MVAR

Sl. No.	Item Description	Quantity	Units	Quoted Currency In INR / Other Currency	BASIC RATE include of F&I and erection charges In Figures Rs. P	Any Other Taxes/Duties/Levies	TOTAL AMOUNT Without Taxes include of F&I and erection charges in Rs. P	TOTAL AMOUNT With Taxes include of F&I and erection charges
1	2	4	5	6	7	8	9	10
1	A 3.96MVAr							
2	12.65 kV, 3960 kVAr, 3-Phase, 50 C/s housed in Outdoor Type CRCA Panel, Capacitor bank having two variable step of 792 Kvar& two Variable steps of 1188 kVAr. Bank shall be complete with Capacitor units of 396/264 kVAr, Aluminium busbars, Epoxy insulators, HT HRC fuse, Surge Suppressor etc.with details as follows-(1) 11 kV, Aluminium Wound, Dry type Series reactors a) 0.528 kVAr for 792 kVAr step - 6 Nos. , b) 0.792 kVAr for 1188 kVAr step - 6 Nos. (2) 11 kV, 3-Phase OIL COOLED Type RVT - 1 No. (3) 12 kV 3 Phase Indoor type metal enclosed Vacuum Contactor - 4 Nos. (4) Indoor Type Automatic Control Unit - 1 No.(5) IP 55 , Outdoor CRCA cubicle Panel for accommodating capacitors, Series Reactor, Vacuum contactor, Surge Suppressor etc., along with FRP Canopy- 1 set	13.000	Set	INR	3375355.78	0.00	3375355.78	43879625.14
3	1.98 MVAr							
4	12.65 kV, 1980 kVAr, 3-Phase, 50 C/s housed in Outdoor Type CRCA Panel,	717.000	Set	INR	2956766.12		2956766.12	2120001308.04

Date: 30.06.2023

Signature:
Name: Er. M.K. Benda
(Project Nodal Officer) EE, ... JU
(Authorized Representative)

	Capacitor bank having two variable step of 792 Kvar& one Variable steps of 396 kVAr. Bank shall be complete with Capacitor units of 264/132 kVAr, Aluminium busbars, Epoxy insulators, HT HRC fuse,Surge Suppressor etc. With details as follows-(1) 11 KV, Aluminium Wound, Dry type Series reactors (a) 0.528 kVAr for 792 kVAr step-6 nos. (b) 0.264 kVAr for 396 kVAr step-3 nos. (2) 11 kV, 3-Phase Indoor OIL COOLED Type RVT-1 nos. (3) 12 kV 3 Phase Indoor type metal enclosed Vacuum Contactor-5 nos. (4) Indoor Type Automatic Control Unit-1 No. (5) IP 55, outdoor CRCA cubicle panel for accommodating capacitors, series reactors, vacuum contactor, surge supressor etc., alongwith FRP canopy-1 No.							
5	**Annual Maintenance of 3.96 MVAR Capacitor Bank in all respect including materiel, installation, erection & FMS :- For 5 years**	13.000	Set	INR	354000.00		354000.00	4602000.00
6	**Annual Maintenance of 1.98 MVAR Capacitor Bank in all respect including material, installation, erection & FMS :- For 5 years**	717.000	Set	INR	295000.00		295000.00	211515000.00
7	**Total for Supply**							216,38,80,933.18
8	**Total for AMC**							21,61,17,000.00
9	**Total in Figures**							237,99,97,933.18

Signature:

Date: 30.06.2023

Name: [illegible] Benda
(Project Head Office), JVNL, JU
(Authorized Representative)

COST ESTIMATE FOR 1.98 MVAR ONE SET

Sl. No.	Item Description	Item Code / Make	Quantity	Units	Currency in INR / Other Currency	BASIC RATE include of F&I and erection charges In Figures Rs. P	Any Other Taxes/Duties/Levies	TOTAL AMOUNT Without Taxes include of F&I and erection charges in Rs. P	TOTAL AMOUNT With Taxes include of F&I and erection charges
1	2	3	4	5	6	7	8	9	10
1	A 1.98 MVAr	0							
2	12.65 kV, 1980 kVAr, 3-Phase, 50 C/s housed in Outdoor Type CRCA Panel, Capacitor bank having two variable step of 792 Kvar& one Variable steps of 396 kVAr. Bank shall be complete with Capacitor units of 264/132 KVAr, Aluminium bushars, Epoxy insulators, HT HRC fuse,Surge Suppressor etc. With details as follows-(1) 11 KV, Aluminium Wound, Dry type Series reactors (a) 0.528 kVAr for 792 kVAr step-6 nos. (b) 0.264 kVAr for 396 kVAr step-3 nos. (2) 11 kV, 3-Phase Induor OIL COOLED Type RVT-1 nos. (3) 12 kV 3 Phase	1	1.000	Set	INR	1317055.00	237069.9000	1317055.00	1554124.9

Date: 30.06.2023

Signature:
Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

	Indoor type metal enclosed Vacuum Contactor-3 nos. (4) Indoor Type Automatic Control Unit-1 No. (5) IP 55, outdoor CRCA cubicle panel for accommodating capacitors, series reactors, vacuum contactor, surge supressor etc., alongwith FRP canopy-1 No.								
3	11 kV, 400 Amp, Off Load Isolator with earth switch and mounting structure.	2	1.000	No.	INR	56800.00	10224.0000	56800.00	67024.00
4	9 kV, 10 kA, Class III Lightning Arrestor	3	3.000	No.	INR	4970.00	2683.8000	14910.00	17593.80
5	Control cables, lugs/thimble, Junction Box etc.	4	1.000	set	INR	92300.00	16614.0000	92300.00	108914.00
6	11 KV 3 Core Al. XLPE Insulated 3x120 mm sq. Cable	5	90.000	Mtr	INR	1562.00	25304.4000	140580.00	165884.40
7	11KV XLPE Cable (3x120 sq.mm.) Heat Shrinkable Jointing kit Indoor	6	1.000	No.	INR	3550.00	639.0000	3550.00	4189.00
8	11KV XLPE Cable (3x120 sq.mm.) Heat Shrinkable	7	5.000	No.	INR	3550.00	3195.0000	17750.00	20945.00

Date: 30.06.2023

Signature:
Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

	Jointing kit Outdoor									
9	11 KV VCB/Kiosk Switchgear for Capacitor Bank with complete arrangement of connection.	8	1.000	No.	INR	651780.00	117320.4000	651780.00	769100.40
10	Casting of Civil foundations	9	1.000	Job	INR	109340.00	19681.2000	109340.00	129021.20
11	Cable trench for laying of power/control cables.	10	50.000	Rmt.	INR	403.00	3627.0000	20150.00	23777.00
12	Earthing by Chemical pipe earthing	11	12.00	No.	INR	4970.00	10735.20	59640.00	70375.20
13	GI Strip of size-50 x 6 mm for Connection of Earthing with euipment	12	300.000	Rmt.	INR	72.93	3938.22	21879.00	25817.22
14	**Total for Supply**								**2956766.12**
15	**Annual Maintenance of 1.98 MVAR Capacitor Bank in all respect including material, installation, erection & FMS :-**	13					**0.0000**	**0.00**	
15.01	1st Year (Rs. per unit)	14	1	set	INR	40000.00	7200.0000	40000.00	47200.00
15.02	2nd Year (Rs. per unit)	15	1	set	INR	45000.00	8100.0000	45000.00	53100.00
15.03	3rd Year (Rs. per unit)	16	1	set	INR	50000.00	9000.0000	50000.00	59000.00
15.04	4th Year (Rs. per unit)	17	1	set	INR	55000.00	9900.0000	55000.00	64900.00
15.05	5th Year (Rs. per unit)	18	1	set	INR	60000.00	10800.0000	60000.00	70800.00
	Total for AMC								**295000.00**
Total in Figures									**3251766.12**

Date: 30.06.2023

Signature:
Name: M. L. Bende
(Project Nodal Officer)

(Authorized Representative)

COST ESTIMATE FOR 3.96 MVAR ONE SET

Sl. No.	Item Description	Item Code / Make	Quantity	Units	Quoted Currency in INR / Other Currency	BASIC RATE include of F&I and erection charges In Figures Rs. P	Any Other Taxes/Duties/Levies	TOTAL AMOUNT Without Taxes include of F&I and erection charges in Rs. P	TOTAL AMOUNT With Taxes include of F&I and erection charges
1	2	3	4	5	6	7	8	9	10
1	A 3.96MVAr								
2	12.65 kV, 3960 kVAr, 3-Phase, 50 C/s housed in Outdoor Type CRCA Panel, Capacitor bank having two variable step of 792 Kvar& two Variable steps of 1188 kVAr. Bank shall be complete with Capacitor units of 396/264 kVAr, Aluminium busbars, Epoxy insulators, IIT HRC fuse, Surge Suppressor etc.with details as follows- (1) 11 kV, Aluminium Wound, Dry type Series reactors a) 0.528 kVAr for 792 kVAr step - 6 Nos. , b) 0.792 kVAr for 1188 kVAr step - 6 Nos. (2) 11 kV, 3-Phase OIL COOLED Type RVT - 1 No. (3) 12 kV 3 Phase Indoor type metal enclosed Vacuum	1	1.000	Set	INR	1671792.00	300922.56	1671792.00	1972714.56

Date: 30.06.2023

Signature:
Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

E.E. M. L. Benda
SE (ES), JdVVNL, /U

	Contactor - 4 Nos. (4) Indoor Type Automatic Control Unit - 1 No.(5) IP 55 , Outdoor CRCA cubicle Panel for accommodating capacitors, Series Reactor, Vacuum contactor, Surge Suppressor etc., along with FRP Canopy- 1 set								
3	11 kV, 400 Amp, Off Load Isolator with earth switch and mounting structure.	2	1.000	No.	INR	56800.00	10224.00	56800.00	67024.00
4	9 kV, 10 kA, Class III Lightning Arrestor	3	3.000	No.	INR	4970.00	2683.80	14910.00	17593.80
5	Control cables, lugs/thimble, Junction Box etc.	4	1.000	set	INR	92300.00	16614.00	92300.00	108914.00
6	11 KV 3 Core Al. XLPE Insulated 3x120 mm sq. Cable	5	90.000	Mtr	INR	1562.00	25304.40	140580.00	165884.40
7	11KV XLPE Cable (3x120 sq.mm.) Heat Shrinkable Jointing kit Indoor	6	1.000	No.	INR	3550.00	639.00	3550.00	4189.00

Date: 30.06.2023

Signature:

Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

Er. M. L. Benda
SE (PSS), JdVVNL, JU

8	11KV XLPE Cable (3x120 sq.mm.) Heat Shrinkable Jointing kit Outdoor	7	5.000	No.	INR	3550.00	3195.00	17750.00	20945.00
9	11 KV VCB/Kiosk Switchgear for Capacitor Bank with complete arrangement of connection.	8	1.000	No.	INR	651780.00	117320.40	651780.00	769100.40
10	Casting of Civil foundations	9	1.000	Job	INR	109340.00	19681.20	109340.00	129021.20
11	Cable trench for laying of power/control cables.	10	50.000	Rmt.	INR	403.00	3627.00	20150.00	23777.00
12	Earthing by Chemical pipe earthing	11	12.00	No.	INR	4970.00	10735.20	59640.00	70375.20
13	GI Strip of size-50 x 6 mm for Connection of Earthing with euipment	12	300.000	Rmt.	INR	72.93	3938.22	21879.00	25817.22
14	**Total for Supply**								3375355.78
15	**Annual Maintenance of 1.98 MVAR Capacitor Bank in all respect including material, repair, erection & FMS :-**	13							
15.01	1st Year (Rs. per unit)	14	1	set	INR	50000.00	9000.00	50000.00	59000.00
15.02	2nd Year (Rs. per unit)	15	1	set	INR	55000.00	9900.00	55000.00	64900.00
15.03	3rd Year (Rs. per unit)	16	1	set	INR	60000.00	10800.00	60000.00	70800.00
15.04	4th Year (Rs. per unit)	17	1	set	INR	65000.00	11700.00	65000.00	76700.00
15.05	5th Year (Rs. per unit)	18	1	set	INR	70000.00	12600.00	70000.00	82600.00
	Total for AMC								354000.00
	Total in Figures								**3729355.78**

Signature:

Name: M. L. Banda
(Project Nodal Officer)

Er. M.L. Banda
(Authorized Representative)

Date: 30.06.2023

Format A4
Page 1 of 6

2.2 Cost Estimate

The detailed cost estimate prepared for implementation of the Project is given below.
(Amount is in Crore)

Rs. 216.38 crore
(Say Rupees Two Hundred Sixteen Crores) only

The BOQ of capacitor bank are attached as Annexure I. Also enclosed the list of Present & Proposed Status for capacitor bank of Sub Stations having more than 2.5 MVA Transformer in JdVVNL as per Annexure-II and the present voltage profile and anticipated voltage profile after installing the capacitor bank are attached as Annexure – III.

The costs for installation of 1980 kVAr and 3960 kVAr and their associated equipment are based on the rate of recent LOAs awarded by PVVVNL and approved by PSDF in year 2021.

3.1 FUNDING

3.1.1 Funding Proposed from PSDF as grant

90% funding is being proposed through PSDF for implementation of 730 solution on 33/11 kV substation Jodhpur in the general interest for strengthening the medium voltage network of the state and to automate reactive power and to optimize the performance of the distribution grid of JdVVNL sub stations.

3.1.2 Contribution from Internal Sources

10% funding through internal funding.

3.1.3External Borrowings

No external borrowing is envisaged as the project is planned for 90% funding through PSDF and 10% through internal funding.

Date: 30.06.2023

Signature:-
Name: M. L. Benda
(Project Nodal Officer)
Er. M. L. Benda
SE (O&S) JdVVNL, JU
(Authorized Representative)

Brief Details of the Project Appraisal by CTU / STU / RPC

Item	Details to be filled by Applicant Utility
Appraisal By:	CTU ☐ STU ☑ RPC ☐
Date of Submission to CTU/STU/RPC for approval	Submitted on .....
Name of the Scheme	IMPLEMENTATION OF AUTOMATIC REACTIVE POWER SOLUTIONS AT 33/11kV SUBSTATIONS IN JODHPUR
Details of the Appraisal Report by CTU/STU/RPC	Reference no.- Date:
Summary of observation from CTU / STU / RPC Appraisal Report	**Summary of Proposal Appraised** The DPR has been prepared so as to improve & strengthen the operational reliability, enhancement of system, real-time data capturing and better management of volt-var. **Technical Observations** The system will enable to maintain proper voltage profile automatically at the respective 33/11 kV substation thereby reducing reactive power losses to the minimum and to strengthen the medium voltage network of the state which will in turn benefit the distribution licensee i.e. JdVVNL. **Financial Observations** The costs for installation of 1980kVAr and 3960 kVAr and their associated equipment are based on the rate of recent LOAs awarded by PVVNL and approved by PSDF in year 2021 The prices have been escalated @42% (Price Variation clause applicable only on capacitor cell but in PVVNL considered same PV escalation factor on complete panels) on in allied equipment and in automatic capacitor panels due to inflation in raw material cost since the last order placed to the vendor in FY 20-21. The price inflation in raw material that is Aluminum and Copper since 2020 has been considered. Also, the drastically increased terrain factor has been inculcated for supply and commissioning of equipment's in the state. **Compliance of Grid Standards / Codes by the Applicant** All the grid standards as per IEGC, 2010 shall be complied. **Limitations / Shortcomings pointed out by CTU/STU/RPC if any** Installation process may take considerably time **Recommendations of CTU/STU/RPC**

Date: 30.06.2023

Signature:

Name: M. M. Benda

(Project Head Officer) JdVVNL, JU

(Authorized Representative)

Format AG
Page 1 of 1

UNDERTAKING

I, Mr. Pramod Tak son of L.Sh. A.S. Tak resident of Jodhpur and presently working as Managing Director in Jodhpur Vidyut Vitran Nigam Ltd., Jodhpur hereby undertake to comply with the following terms and conditions with regard to funding of the **"Installation of Reactive Power Solution on 33/11 kV substation in Jodhpur"** with disbursement from PSDF:

- **No tariff shall be claimed for the portion of the scheme funded from PSDF.**
- **Amount of grant shall be refunded in case of transfer/disposal of the facility being created under this proposal to any other scheme for funding.**
- **Shall specifically mention if for the scheme under the proposal, the grant from any other agency is being taken/proposed to be taken.**

  The scheme under the proposal has neither been applied for grant from any other agency nor being proposed to any agency.

- **The grant shall be refunded back to PSDF in case of non-utilization of the grant within one year of release of installment.**

Date: 30.06.2023

Signature:

Name: M.L. Benda
(Project Nodal Officer)
(Authorized Representative)

BoQ for 1980 & 3960 kVAr Capacitor Panels Required on 33/11 kV Sub Station of Jodhpur DISCOM

Sr. No.	Name of Substations	Transformer Capacity (MVA)	1980 kVAr APFC	3960 kVAr APFC	11kV, 630 Amps Outdoor VCB Kiosk	11kV 630 Amp. Off Load Isolator with earth switch and mounting structure	9kV,25 kA, Station class (DI), Lightning Arrester	11 KV XLPE insulated 3x120 mm2 Armoured	11 KV XLPE insulated 3x185 mm2 Armoured	Control Cables, Logs/Thimble, Junction Box, 2 nos. Cable support structure etc.	Heat Shrinkable Jointing kit for 11 KV XLPE Cable (Indoor termination Kit)	Heat Shrinkable Jointing kit for 11 KV XLPE Cable (Outdoor termination Kit)	Civil work (including foundation, plinth of Capacitor Cubical etc. as per drawing	Cable trench for lying of Power / control cables	CHEMICAL Earth Pit	(a) Installation of Earthing Flats) (Size 35X6sqmm)
1	MATHANIA	5	2	-	1	1	1	90		1	1	5	1	50	6	300
2	UMMED NAGAR (JOOD)	5	1	-	1	1	1	90		1	1	5	1	50	6	300
3	RAMPURA+RUCO	5	1	-	1	1	1	90		1	1	5	1	50	6	300
4		5	1	-	1	1	1	90		1	1	5	1	50	6	300
5		5	1	-	1	1	1	90		1	1	5	1	50	6	300
6	RAJASANI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
7		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300

Date: 30.06.2023

Signature:

Name: M.L. Benda
(Project Nodal Officer)
(Authorized Representative)

8	NEWRA ROAD	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
9		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
10		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
11	KIRMARSAIYA	5	1	-	1	1	1	90		1	1	5	1	50	6	300
12		5	1	-	1	1	1	90		1	1	5	1	50	6	300
13	BHENSER KOOTRI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
14		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
15	JOOD	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
16		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
17	KHARDA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
18		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
19	NEWRA GAON	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
20		5	1	-	1	1	1	90		1	1	5	1	50	6	300
21	GAGADI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
22		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
23	MANDIYAI KALLA	5	1	-	1	1	1	90		1	1	5	1	50	6	300
24		5	1	-	1	1	1	90		1	1	5	1	50	6	300
25	BALARWA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
26		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
27		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
28	MINIYARD TINWARI	5	1	-	1	1	1	90		1	1	5	1	50	6	300
29		5	1	-	1	1	1	90		1	1	5	1	50	6	300
30	GHEWARA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
31		5	1	-	1	1	1	90		1	1	5	1	50	6	300
32	PANCHALA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
33	BADA KOTECHA-II	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
34		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
35	BADLA BASNI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
36		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
37		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
38	MANDIYAI KHURD	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300

Date: 30.06.2023

Signature:
Name: M. L. Benda
(Project Nodal Officer)
(Authorised Representative)

39		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
40	MALUNGA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
41	GOPASARIYA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
42		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
43	BHALASARIYA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
44	THOB	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
45		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
46	HARLAYA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
47	OSIAN	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
48		5	1	-	1	1	1	90		1	1	5	1	50	6	300
49	CHERAI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
50	SINWARO KI DHANI (SIRMANDI)	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
51		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
52	SOMERI BHAKARI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
53	BHIMSAGAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
54		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
55	BERDO KA BAS	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
56		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
57	RAWAT BERA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
58	JAKHRO KI DHANI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
59	BARAKALLA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
60		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
61	DHANARI KALLA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
62		5	1	-	1	1	1	90		1	1	5	1	50	6	300
63	CHINDARI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
64		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
65	NANDIYA KHURD	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
66	JELAV NADI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
67		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
68	JETIYAWAS	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
69		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300

Date: 30.06.2023

Signature: ____

Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

SE M.L. Benda
SE (I&S) JdVVNL, JU

70	SELVI NADI(RAIKORIYA)	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
71	TAPU	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
72		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
73	NOSER	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
74		5	1	-	1	1	1	90	1	1	5	1	50	6	300
75	KANKRALA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
76		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
77		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
78		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
79	PADASALA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
80		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
81	NIMBO KA TALAB	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
82		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
83	KHEDAPA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
84		5	1	-	1	1	1	90	1	1	5	1	50	6	300
85	ANWANA OLD	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
86		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
87	BIRAI	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
88		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
89	DANWARA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
90		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
91	BAORI	5	1	-	1	1	1	90	1	1	5	1	50	6	300
92		5	1	-	1	1	1	90	1	1	5	1	50	6	300
93	POONIYO KI BASNI	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
94	KAJNAU KHURD	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
95		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
96	KAJNAU KALLA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
97		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
98	ANWANA NEW	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
99	MANAI	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
100		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

M. L. Benda

(Authorized Signatory) JVVNL, JU

101	INDROKA	5	1	-	1	1	1	90		1	1	5	1	50	6	300
102		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
103	SALAWAS	5	1	-	1	1	1	90		1	1	5	1	50	6	300
104		5	1	-	1	1	1	90		1	1	5	1	50	6	300
105	DHANDHORA	5	1	-	1	1	1	90		1	1	5	1	50	6	300
106	HEERADESHAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
107		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
108	DHORU	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
109	RAJLANI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
110		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
111	DEVARI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
112	HINGOLI	5	1	-	1	1	1	90		1	1	5	1	50	6	300
113	GAJSINGHPURA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
114		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
115	RAMPURA	5	1	-	1	1	1	90		1	1	5	1	50	6	300
116	ASOP	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
117		5	1	-	1	1	1	90		1	1	5	1	50	6	300
118	AKTIYA KALLAN	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
119	BARNI KHURD	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
120		5	1	-	1	1	1	90		1	1	5	1	50	6	300
121	MANGERIYA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
122	BILARA	5	1	-	1	1	1	90		1	1	5	1	50	6	300
123		5	1	-	1	1	1	90		1	1	5	1	50	6	300
124	SOJATI GATE	5	1	-	1	1	1	90		1	1	5	1	50	6	300
125		5	1	-	1	1	1	90		1	1	5	1	50	6	300
126	DIWAN JI KI PAO	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
127		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
128	KHARIYA MITHAPUR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
129		5	1	-	1	1	1	90		1	1	5	1	50	6	300
130	JHAK	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
131	UDALIYAWAS	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)... Benda

(Authorized Representative)/ML. JU

132		3.15	1	-	2	1	1	90		1	1	5	1	50	6	300
133	RANSI GAON	3.15	1	-	1	1	2	90		1	1	5	1	50	6	300
134		5	1	-	1	1	1	90		1	1	5	1	50	6	300
135	PIPAR CITY	5	1	-	1	1	1	90		1	1	5	1	50	6	300
136		5	1	-	1	1	1	90		1	1	5	1	50	6	300
137	SATHIN	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
138	KHARIYA KHANGAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
139	PABUNAGAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
140		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
141	RATORI GAL (BASTWA)	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
142		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
143	CHIDWAI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
144	NATHARAU	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
145	KERLI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
146		5	1	-	1	1	2	90		1	1	5	1	50	6	300
147	RAMSAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
148	BHOMSAGAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
149	CHEELA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
150	UNTHWALIYA	5	1	-	1	1	1	90		1	1	5	1	50	6	300
151	BABA KI NIMBARI (DHEERPURA)	3.15	1	-	2	1	1	90		1	2	5	1	50	6	300
152		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
153	SEKHALA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
154	BHALU KALAN	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
155	KHIRJAKHAS	3.15	1	-	1	2	1	90		1	1	5	1	50	6	300
156	SOMESAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
157	SOINTRA	3.15	1	-	1	1	1	90		1	2	5	1	50	6	300
158	KHIRJA TIBNA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
159	DEVRAJGARH	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
160	NOKHDADA BHATIYA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
161	RAD KA BERA	5	1	-	1	1	1	90		1	1	5	1	50	6	300
162	CHHITERBERA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

(Authorized Representative)

M. L. Benda
(AEN), JDVVNL, JU

163		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
164	CHADI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
165		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
166	KRISHAN NAGAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
167		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
168	RIDMALSAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
169		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
170	MANASAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
171		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
172	BOONGADI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
173	INDO KA BAS	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
174		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
175	IGNP PHALODI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
176	(BAP) R.D.1120	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
177	DURGANI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
178		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
179	SHEKHASAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
180		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
181	ANOP NAAGAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
182		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
183	RIN SALT	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
184	JHARASAR KALLA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
185		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
186	RAMPURA(RANERI)	5	1	-	1	1	1	90		1	1	5	1	50	6	300
187	JETERI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
188		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
189	POONASAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
190	PALINA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
191	KUSHLAWA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
192	BHOJAKOR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
193	MORIYA	5	1	-	1	1	1	90		1	1	5	1	50	6	300

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

(Authorized Representative)

M. L. Benda
SE (M-S), JdVVNL, JU

194	DELANA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
195	CHAINPURA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
196	SHIVSAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
197	BAORI KALLA	5	1	-	1	1	1	90	1	1	5	1	50	6	300
198	RAYADA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
199		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
200	MARJAT	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
201	JALODA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
202		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
203	MANDLA KHURD	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
204		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
205	KHARA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
206		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
207	KOLU PABUJI	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
208	BENGTI KHURD	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
209		5	1	-	1	1	1	90	1	1	5	1	50	6	300
210	SIHRA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
211		5	1	-	1	1	1	90	1	1	5	1	50	6	300
212	MANDLA KALLAN	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
213		5	1	-	1	1	1	90	1	1	5	1	50	6	300
214	JEMALA	5	1	-	1	1	1	90	1	1	5	1	50	6	300
215		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
216	GAJJA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
217		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
218	BARSANADA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
219		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
220	KAPADISAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
221		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
222	SADAWATA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
223	GOYALI ROAD	5	1	-	1	1	1	90	1	1	5	1	50	6	300
224		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer) Benda

(Authorized Representative)

225	SIROHI CITY	5	1	-	1	1	1	90		1	1	5	1	50	6	300
226	SINDRATH	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
227	JAWAL	5	1	-	1	1	1	90		1	1	5	1	50	6	300
228		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
229	PADIV	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
230	VARADA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
231	SHEOGANJRICO	5	1	-	1	1	1	90		1	1	5	1	50	6	300
232		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
233	POSALIYA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
234	PALARI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
235		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
236	ANDOR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
237	JHADOLI VEER	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
238	KALANDARI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
239	KRISHNAGANJ	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
240		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
241	MER MANDWARA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
242		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
243	TANWARI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
244	SWAROOPGANJ	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
245	SIROHI ROAD	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
246		5	1	-	1	1	1	90		1	1	5	1	50	6	300
247	PINDWARA CITY	5	1	-	1	1	1	90		1	1	5	1	50	6	300
248	BANAS	5	1	-	1	1	1	90		1	1	5	1	50	6	300
249	VEERWADA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
250	NADIYA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
251	GANDHI NAGAR	10	-	1	1	1	1		90	1	1	5	1	50	6	300
252	IOCL	5	1		1	1	1	90		1	1	5	1	50	6	300
253	AMBAJIINDAR	10	-	1	1	1	1		90	1	1	5	1	50	6	300
254	KHARA	10	-	1	1	1	1		90	1	1	5	1	50	6	300
255	MANPUR	10	-	1	1	1	1		90	1	1	5	1	50	6	300

Date: 30.06.2023

Signature:

Name: M. L. Benda
(Project Nodal Officer)
SE (I&S), JdVVNL, JU
(Authorized Representative)

256	DELDAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
257	KAROLI	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
258	MOOGTHALA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
259		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
260	GURWAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
261	MAWAL	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
262	MT. ABU	5	1	-	1	1	1	90	1	1	5	1	50	6	300
263		5	1	-	1	1	1	90	1	1	5	1	50	6	300
264	REODAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
265	BANT	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
266	JETHAWADA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
267		5	1	-	1	1	1	90	1	1	5	1	50	6	300
268	MORWADA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
269		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
270	RAHUA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
271	MAGRIWADA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
272	GUSAISAR BADA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
273		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
274	MANKRASAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
275		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
276	BINJASAR 1ST	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
277	BINJASAR 2ND	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
278		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
279	BENISAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
280		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
281	Dusama-I	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
282		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
283	JETASAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
284		5	1	-	1	1	1	90	1	1	5	1	50	6	300
285	THUKRIYASAR-I	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
286	THUKRIYASAR-II	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300

Date: 30.06.2023

Signature:

Name: M. L. Benda
(Project Nodal Officer)
SE (I&S) JdVVNL, JU
(Authorized Representative)

Er. M. L. Benda
SE (I&S) JdVVNL, JU

287	JAISAL SAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
288	GOPALSAR – I	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
289		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
290	SATTSAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
291		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
292	DHEERDESAR PUROHITAN	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
293	LIKHMADESAR-I	5	1	-	1	1	1	90	1	1	5	1	50	6	300
294		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
295	LIKHMADESAR-III	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
296		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
297	AADSAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
298		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
299		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
300	UDRASAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
301	LALASAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
302	SARNA JOHAD	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
303	RAMDEVRA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
304		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
305	SERUNA 1	5	1	-	1	1	1	90	1	1	5	1	50	6	300
306	SERUNA 2	5	1	-	1	1	1	90	1	1	5	1	50	6	300
307	DERAJSAR – I	5	1	-	1	1	1	90	1	1	5	1	50	6	300
308		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
309	GOGANA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
310	SARUNDA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
311	SINIYALA – I	5	1	-	1	1	1	90	1	1	5	1	50	6	300
312		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
313	HANUMAN NAGAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
314	BHADLA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
315	NATHUSAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
316	SAISAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
317		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300

Date: 30.06.2023

Signature:

Name: M. L. Bonda
(Project Nodal Officer)
(Authorized Representative)

318	RATRIYAPHANTA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
319		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
320	LALASARSATHRI	5	1	-	1	1	1	90		1	1	5	1	50	6	300
321	BHEDKITALAI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
322	MAINSAR	5	1	-	1	1	1	90		1	1	5	1	50	6	300
323	JHARELI -I	5	1	-	1	1	1	90		1	1	5	1	50	6	300
324		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
325	GUNDUSAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
326		5	1	-	1	1	1	90		1	1	5	1	50	6	300
327	UDSAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
328		5	1	-	1	1	1	90		1	1	5	1	50	6	300
329	JHARELI-II	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
330	SHIV MANDIR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
331	BHAGWATI KUND	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
332	AMBASAR	5	1	-	1	1	1	90		1	1	5	1	50	6	300
333	GIGASAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
334	1. K.D JATAN -II	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
335		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
336	1. NAPASAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
337	GUNSAISAR-I	5	1	-	1	1	1	90		1	1	5	1	50	6	300
338		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
339	NAURANGDESAR	5	1	-	1	1	1	90		1	1	5	1	50	6	300
340		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
341	NAPASAR – II	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
342	2. RAMSAR -I	5	1	-	1	1	1	90		1	1	5	1	50	6	300
343		5	1	-	1	1	1	90		1	1	5	1	50	6	300
344	3. RAMSAR-II	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
345		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
346	I.K.D.Boran-I	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
347	2.K.D. JATAN -I	5	1	-	1	1	1	90		1	1	5	1	50	6	300
348	I. K.D.JATAN-IV	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300

Date: 30.06.2023

Signature:

Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

M.L. Benda
SE (T&S), JdVVNL, JU

349	2. KILCHU	5	1	-	1	1	1	90		1	1	5	1	50	6	300
350	1. TEJRASAR - I	5	1	-	1	1	1	90		1	1	5	1	50	6	300
351		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
352	2. TEJRASAR - III	5	1	-	1	1	1	90		1	1	5	1	50	6	300
353	4. DELASAR	5	1	-	1	1	1	90		1	1	5	1	50	6	300
354	2. TEJRASAR - II	5	1	-	1	1	1	90		1	1	5	1	50	6	300
355	RANISAR	5	1	-	1	1	1	90		1	1	5	1	50	6	300
356	L D MAGARA	5	1	-	1	1	1	90		1	1	5	1	50	6	300
357		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
358	JD MEGRA	5	1	-	1	1	1	90		1	1	5	1	50	6	300
359	MEGHASAR	5	1	-	1	1	1	90		1	1	5	1	50	6	300
360		5	1	-	1	1	1	90		1	1	5	1	50	6	300
361	BARSINGHSAR	5	1	-	1	1	1	90		1	1	5	1	50	6	300
362		5	1	-	1	1	1	90		1	1	5	1	50	6	300
363	SWAROOPDESAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
364	BHANEKA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
365		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
366	RANERU	5	1	-	1	1	1	90		1	1	5	1	50	6	300
367		5	1	-	1	1	1	90		1	1	5	1	50	6	300
368	HADDA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
369	LOHIYA	5	1	-	1	1	1	90		1	1	5	1	50	6	300
370	KHINDASAR	5	1	-	1	1	1	90		1	1	5	1	50	6	300
371	BHELU	5	1	-	1	1	1	90		1	1	5	1	50	6	300
372	SERPURA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
373	KISHANASAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
374		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
375	DANTOR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
376	28 KJD	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
377	3 PWM	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
378	1 ADM	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
379	RANIBETPURA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300

Date: 30.06.2023

Signature:

Name: Mr. Benda

(Project National Officer) WWNL, JU

(Authorized Representative)

380	JAMSAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
381	1. GADHWALA - I	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
382		5	1	-	1	1	1	90		1	1	5	1	50	6	300
383	2 GADHWALA - II	5	1	-	1	1	1	90		1	1	5	1	50	6	300
384		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
385	PUGAL	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
386	RD 710	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
387	RD 750	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
388	BADERAN	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
389	JETPUR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
390		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
391	ARJUNSAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
392	LALERA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
393	MAHAJAN	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
394	JAWAHARNAGAR	5	1	-	1	1	1	90		1	1	5	1	50	6	300
395		5	1	-	1	1	1	90		1	1	5	1	50	6	300
396		5	1	-	1	1	1	90		1	1	5	1	50	6	300
397		5	1	-	1	1	1	90		1	1	5	1	50	6	300
398	MAUSAM VIBHAG	8	-	1	1	1	1		90	1	1	5	1	50	6	300
399		5	1	-	1	1	1	90		1	1	5	1	50	6	300
400	MAHALAXMI ENCLAV	5	1	-	1	1	1	90		1	1	5	1	50	6	300
401	AGRAWAL COLONY	5	1	-	1	1	1	90		1	1	5	1	50	6	300
402	2 ML NATHAWALI	5	1	-	1	1	1	90		1	1	5	1	50	6	300
403		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
404	RIICO-I	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
405		8	-	1	1	1	1		90	1	1	5	1	50	6	300
406		5	1	-	1	1	1	90		1	1	5	1	50	6	300
407		5	1	-	1	1	1	90		1	1	5	1	50	6	300
408	RIICO-II	8	-	1	1	1	1		90	1	1	5	1	50	6	300
409		5	1	-	1	1	1	90		1	1	5	1	50	6	300
410	SHANI MANDIR	5	1	-	1	1	1	90		1	1	5	1	50	6	300

Date: 30.06.2023

Signature:
Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

M. L. Benda
SE (IAS) JVVNL, JU

411		5	1	-	1	1	1	90		1	1	5	1	50	6	300
412	SABJI MANDI	10	-	1	1	1	1		90	1	1	5	1	50	6	300
413		5	1	-	1	1	1	90		1	1	5	1	50	6	300
414	KUNJ VIHAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
415	JCT	10	-	1	1	1	1		90	1	1	5	1	50	6	300
416		5	1	-	1	1	1	90		1	1	5	1	50	6	300
417	3 PULI	10	-	1	1	1	1		90	1	1	5	1	50	6	300
418		8	-	1	1	1	1		90	1	1	5	1	50	6	300
419	BHAGAT SINGH CHOCK	8	-	1	1	1	1		90	1	1	5	1	50	6	300
420		5	1	-	1	1	1	90		1	1	5	1	50	6	300
421	KUMS	5	1	-	1	1	1	90		1	1	5	1	50	6	300
422		5	1	-	1	1	1	90		1	1	5	1	50	6	300
423	HOSPITAL	5	1	-	1	1	1	90		1	1	5	1	50	6	300
424		5	1	-	1	1	1	90		1	1	5	1	50	6	300
425	SADBHAWANA NAGAR	5	1	-	1	1	1	90		1	1	5	1	50	6	300
426	V.K. CITY	5	1	-	1	1	1	90		1	1	5	1	50	6	300
427		5	1	-	1	1	1	90		1	1	5	1	50	6	300
428	PHG	5	1	-	1	1	1	90		1	1	5	1	50	6	300
429	KALIYAN	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
430	KHATLABANA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
431	DULAPURKERI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
432	HINDUMALKOT	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
433	SADHUWALI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
434	7A	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
435	BURJAWALI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
436	CHUNAWAD	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
437	15Z	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
438	HOMELAND	5	1	-	1	1	1	90		1	1	5	1	50	6	300
439	RISHI SIDHI	5	1	-	1	1	1	90		1	1	5	1	50	6	300
440	NETEWALA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
441		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer) M. L. Benda

(Authorized Representative) VNL, JU

442	7 ML	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
443		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
444	25 ML	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
445	DHINGAWALI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
446	JODHEWALA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
447	SADULSAHAR	2.5	1	-	1	1	1	90		1	1	5	1	50	6	300
448	RIICO	5	1	-	1	1	1	90		1	1	5	1	50	6	300
449	4 KRW	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
450	PARTAPPURA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
451	BUDHRWALI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
452	PATALI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
453	MANNIWALI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
454	IPDS KESRISINGHPUR	5	1	-	1	1	1	90		1	1	5	1	50	6	300
455	V HEAD	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
456	DHNOOR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
457	DALPATSINGHPUR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
458	KAMINPURA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
459	ARAYAN	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
460	MALKANA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
461	MIRJEWALA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
462	18F	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
463	KONI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
464	DAULATPURA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
465	MANFOOLSINGHWALA	5	1	-	1	1	1	90		1	1	5	1	50	6	300
466	GANESHGARH	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
467	GANESHGARH	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
468	LALGARH	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
469	LALGARH	1.6	1	-	1	1	1	90		1	1	5	1	50	6	300
470	PANNIWALI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
471	DANWALI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
472	MAMMAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

M.L. Benda
SE (RE)

(Authorized Representative) JdVVNL, JU

473	KHARACHAK	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
474	5 LNP	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
475	SAMEJA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
476	BAJUWALA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
477	SATJANDA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
478	DABLA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
479	MUKLAWA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
480	LOONEWALA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
481	16PS	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
482	UDSAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
483	BHOMPURA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
484	RAISINGHNAGAR	8	-	1	1	1	1		90	1	1	5	1	50	6	300
485		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
486	BADA MANDIR	5	1	-	1	1	1	90		1	1	5	1	50	6	300
487	RIICO	5	1	-	1	1	1	90		1	1	5	1	50	6	300
488	PADAMPUR		1	-	1	1	1	90	90	1	1	5	1	50	6	300
489	24 BB	5	1	-	1	1	1	90		1	1	5	1	50	6	300
490	4 JJ	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
491	4 DD	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
492	CHANNADHAM	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
493	CC HEAD	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
494	3 RB	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
495	P S HEAD	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
496		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
497	JIVANDESAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
498	69 LNP	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
499	BINJHBAYLA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
500		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
501	GHAMURWALI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
502	SAWANTSAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
503	MANJHUWASS	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

M. L. Benda
SE (I&S), RVUNL, JU

(Authorized Representative)

504	SKPR	5	1	-	1	1	1	90	1	1	5	1	50	6	300
505		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
506	39H	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
507	2FC	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
508	52GG	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
509	48GG	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
510	42F	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
511	5"O"	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
512	GAJSINGHPUR	5	1	-	1	1	1	90	1	1	5	1	50	6	300
513		5	1	-	1	1	1	90	1	1	5	1	50	6	300
514	SANGRANA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
515	BALARAJPURA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
516	JORAWAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
517	CCBF	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
518	PALIWALA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
519		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
520	SARDARPURA BIKA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
521	NIRWANA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
522	DHABA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
523	GURUSAR MODIA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
524	BDOPAL ROAD GSS	5	1	-	1	1	1	90	1	1	5	1	50	6	300
525		5	1	-	1	1	1	90	1	1	5	1	50	6	300
526	RIICO GSS	5	1	-	1	1	1	90	1	1	5	1	50	6	300
527		5	1	-	1	1	1	90	1	1	5	1	50	6	300
528	PHED GSS	5	1	-	1	1	1	90	1	1	5	1	50	6	300
529	STADIUM GROUND GSS	5	1	-	1	1	1	90	1	1	5	1	50	6	300
530	SOMASAR	5	1	-	1	1	1	90	1	1	5	1	50	6	300
531		5	1	-	1	1	1	90	1	1	5	1	50	6	300
532	KALUSAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
533	THETHAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
534	RAIYAWALI	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer/Vendor)

(Authorized Representative)

535	UDAIPUR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
536	BIRMANA	3.15	2	-	1	2	1	90	1	1	5	1	50	6	300
537	2 GPN	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
538	19.600 RDR	3.15	2	-	1	1	1	90	1	1	5	1	50	6	300
539	RAJIASAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
540		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
541	DEEDWANA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
542	BACHHRAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
543	BHOJUSAR	3.15	2	-	1	1	1	90	1	1	5	1	50	6	300
544		3.15	1	-	1	1	2	90	1	1	5	1	50	6	300
545	GOVINDSAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
546		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
547	RAGHUNATHPURA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
548	SILWANI	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
549	SRI VIJAYNAGAR	5	1	-	1	1	1	90	1	1	5	1	50	6	300
550		5	1	-	1	1	1	90	1	1	5	1	50	6	300
551	29 GB	5	1	-	1	1	1	90	1	1	5	1	50	6	300
552	44 GB	5	1	-	1	1	1	90	1	1	5	1	50	6	300
553	KUPLI	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
554	PURANA BIJLI BOARD	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
555	2 DAM	5	1	-	1	1	1	90	1	1	5	1	50	6	300
556		5	1	-	1	1	1	90	1	1	5	1	50	6	300
557	ANOOPGARH	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
558		5	1	-	1	1	1	90	1	1	5	1	50	6	300
559	RIICO	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
560		5	1	-	1	1	1	90	1	1	5	1	50	6	300
561	PREM NAGAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
562	76GB	5	1	-	1	1	1	90	1	1	5	1	50	6	300
563	BANDA COLONY	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
564	10A	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
565	27A	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

(Authorized Representative)

566		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
567	61GB	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
568	RAMSINGHPUR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
569	NHARAWALI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
570	RAWLA MANDI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
571		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
572	3 KD	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
573	7 KND	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
574	365 HED	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
575	NEW MANDI GHARSANA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
576		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
577	OLD MANDI GHARSANA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
578	6 DD	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
579	PATRODA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
580	281 HEAD	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
581	JALWALI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
582	ROJARY	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
583	4 STR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
584	CHAWA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
585	KAWAS	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
586	BATADOO	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
587		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
588	BHIMADA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
589		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
590	KHANJI KA TALLA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
591	JETANIYON KI DHANI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
592		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
593	BHADAKHA	5	1	-	1	1	1	90		1	1	5	1	50	6	300		
594		5	1	-	1	1	1	90		1	1	5	1	50	6	300		
595	HADWA HADVECHA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
596	SAJITARA	5	1	-	1	1	1	90		1	1	5	1	50	6	300		

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Head Office) Benda

(Authorized Representative)

597		5	1	-	1	1	1	90		1	1	5	1	50	6	300		
598	BHIYAND	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
599		3.15	1	-	1	1	2	90		1	1	5	1	50	6	300		
600	CHOCHRA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
601		3.15	1	-	1	1	2	90		1	1	5	1	50	6	300		
602	DHEERJI KI DHANI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
603	KANASAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
604		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
605	MOKHAB	5	1	-	1	1	1	90		1	1	5	1	50	6	300		
606		5	1	-	1	1	2	90		1	1	5	1	50	6	300		
607	PRAHLADPURA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
608	ASOTRA	3.15	1	-	1	1	2	90		1	1	5	1	50	6	300		
609	BITHUJA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
610	BRAHMAJI KA MANDIR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
611	BUDIWARA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
612		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
613	JAGSA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
614		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
615	JASOL	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
616		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
617	KANANA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
618	KITHNOD	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
619	PADROO-PANTA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
620		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
621	SARANA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
622	KALYANPUR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
623	NAGANA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
624	PACHPADRA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
625		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
626	PATODI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		
627	THOMBLI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300		

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

(Authorized Representative)

M. L. Benda

628	KANOD	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
629	RATEU	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
630		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
631	BHAGWA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
632		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
633	DHEERA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
634	GUDANAAL	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
635	GUNGROT	5	1	-	1	1	1	90	1	1	5	1	50	6	300
636	INDRANA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
637	KATHADI	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
638		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
639	KERLI NADI	3.15	1	-	1	1	1	90	1	1	5	1	30	6	300
640	MELI	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
641	MOKALSAR	5	1	-	1	1	1	90	1	1	5	1	50	6	300
642	MUTHALI	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
643	AJEET	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
644	KARMAWAS	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
645	RAKHI	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
646	SAMDARI	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
647		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
648	SILORE	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
649	DHARANA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
650		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
651	ITAWAYA-PANTA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
652		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
653	KHANKHI	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
654		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
655	KUNDAL	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
656		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
657	MITHORA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
658		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

M. L. Benda

(Authorized Representative) NL, JU

659	RELO KI DHANI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
660	SAILA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
661	SINER	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
662		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
663	VAV NAGAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
664	ADEL	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
665	BHATTA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
666		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
667	CHADON KI DHANI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
668	CHAUDHARIYON KI DHANI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
669	DHANWA-FANTA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
670	DHUDIA MOTI S	5	1	-	1	1	1	90		1	1	5	1	50	6	300
671	J.M.K.	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
672		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
673	SARNU-PANJI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
674	BHATALA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
675	DADON-KA-TALA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
676	BAMNOR	5	1	-	1	1	1	90		1	1	5	1	50	6	300
677	BAMRLA	5	1	-	1	1	1	90		1	1	5	1	50	6	300
678	BHAG BHERE KI BERI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
679	BISARNIYA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
680		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
681	DHUDHU	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
682		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
683	KEKAR	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
684		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
685	KITHNORIYA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
686	KOJA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
687	LUKHU	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
688	RELO KI BERI	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
689	ROHLA (EAST)	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)-I/C

(Authorised Representative)

690	SACHI KI BERI	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
691	SAUAN KI BERI	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
692		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
693	BORCHARNAN	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
694	BHEDANA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
695		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
696	GADEVI	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
697	LUNWA- CHARNAN	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
698	NAGAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
699	PANEL KI BERI	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
700	RAM JI GOAL	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
701	SALLU KI BERI	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
702	SINDHASWA-CH.	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
703		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
704	ANDANIYO KI BERI	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
705		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
706	JALI KHERA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
707	MALPURA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
708	NOKHARA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
709		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
710	AKAL	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
711	GANGASARA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
712	GORA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
713	GULE KI BERI	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
714	SOBHALA-DARSHAN	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
715	SONARI	5	1	-	1	1	1	90	1	1	5	1	50	6	300
716	DHANWAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
717		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
718	BISASAR	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
719	DHURAWA	3.15	1	-	1	1	1	90	1	1	5	1	50	6	300
720		3.15	1	-	1	1	1	90	1	1	5	1	50	6	300

Date: 30.06.2023

Signature:

Name: M.L. Berda

(Project Nodal Official)

Sr. M.(SIS) SIL. JU

(Authorized Representative)

721	FAGALIYA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
722		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
723	HARPALIYA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
724	JANPALIYA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
725		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
726	MAN JI KA TALLA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
727	SALARIYA	5	1	-	1	1	1	90		1	1	5	1	50	6	300
728	SARLA	3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
729		3.15	1	-	1	1	1	90		1	1	5	1	50	6	300
730	SEDWA	5	1	-	1	1	1	90		1	1	5	1	50	6	300
	Total		717	13	730	730	730	64530	1170	730	730	3650	730	36500	4380	109500

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

(Authorized Representative)

Annexure-II

Status of Existing Equipment Installed Under Jodhpur DISCOM:

Sr. No.	Name of Substations	Transformer Capacity (MVA)	Status of Capacitor Bank
1	MATHANIA	5	Not Installed
2		5	Not Installed
3	UMMED NAGAR (JOOD)	5	Not Installed
4		5	Not Installed
5	RAMPURA-RICO	5	Not Installed
6		3.15	Not Installed
7	RAJASANI	3.15	Not Installed
8		3.15	Not Installed
9	NEWRA ROAD	3.15	Not Installed
10		5	Not Installed
11	KIRMARSAIYA	5	Not Installed
12		3.15	Not Installed
13	BHENSER KOOTRI	3.15	Not Installed
14		3.15	Not Installed
15	JOOD	3.15	Not Installed
16		3.15	Not Installed
17	KHARDA	3.15	Not Installed
18		3.15	Not Installed
19	NEWRA GAON	5	Not Installed
20		3.15	Not Installed
21	GAGADI	3.15	Not Installed
22		5	Not Installed
23	MANDIYAI KALLA	5	Not Installed
24		3.15	Not Installed
25	BALARWA	3.15	Not Installed
26		3.15	Not Installed
27		5	Not Installed
28	MUNIYARD TENWARI	5	Not Installed
29		3.15	Not Installed
30	GHEWARA	5	Not Installed
31		3.15	Not Installed
32	PANCHALA	3.15	Not Installed
33		3.15	Not Installed
34	BADA KOTECHA-II	3.15	Not Installed
35		3.15	Not Installed
36	BADLA BASNI	3.15	Not Installed
37		3.15	Not Installed
38	MANDIYAI KHURD	3.15	Not Installed

Date: 30.06.2023

Signature:

Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

E/ M. L. Benda
SE (I&S), JdVVNL, JU

39		3.15	Not Installed
40	MALUNGA	3.15	Not Installed
41	GOPASARIYA	3.15	Not Installed
42		3.15	Not Installed
43	BHALASARIYA	3.15	Not Installed
44	THOR	3.15	Not Installed
45		3.15	Not Installed
46	HARLAYA	3.15	Not Installed
47	OSIAN	3.15	Not Installed
48		3.15	Not Installed
49	CHERAI	5	Not Installed
50	SINWARO KI DHANI (SIRMANDI)	3.15	Not Installed
51		3.15	Not Installed
52	SOMERI BHAKARI	3.15	Not Installed
53	BHIMSAGAR	3.15	Not Installed
54		3.15	Not Installed
55	BERDO KA BAS	3.15	Not Installed
56		3.15	Not Installed
57	RAWAT BERA	3.15	Not Installed
58	JAKHRO KI DHANI	3.15	Not Installed
59	BARAKALLA	3.15	Not Installed
60		3.15	Not Installed
61	DHANARI KALLA	3.15	Not Installed
62		3.15	Not Installed
63	CHINDARI	5	Not Installed
64		3.15	Not Installed
65	NANDIYA KHURD	3.15	Not Installed
66	JELAV NADI	3.15	Not Installed
67		3.15	Not Installed
68	JETIYAWAS	3.15	Not Installed
69		3.15	Not Installed
70	SELVI NADI(RAIKORIYA)	3.15	Not Installed
71	TAPU	3.15	Not Installed
72		3.15	Not Installed
73	NOSER	3.15	Not Installed
74		5	Not Installed
75	KANKRALA	3.15	Not Installed
76		3.15	Not Installed
77		3.15	Not Installed
78	PADASALA	3.15	Not Installed
79		3.15	Not Installed
80		3.15	Not Installed
81	NIMBO KA TALAB	3.15	Not Installed
82		3.15	Not Installed

Date: 30.06.2023

Signature:

Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

Er. M. L. Benda
SE (E&S), JdVVNL, JU

83	KHEDAPA	3.15	Not Installed
84		5	Not Installed
85	ANWANA OLD	3.15	Not Installed
86		3.15	Not Installed
87	BIRAJ	3.15	Not Installed
88		3.15	Not Installed
89	DANWARA	3.15	Not Installed
90		3.15	Not Installed
91	BAORI	3.15	Not Installed
92		5	Not Installed
93	POONIYO KI BASNI	5	Not Installed
94	KAJNAU KHURD	3.15	Not Installed
95		3.15	Not Installed
96	KAJNAU KALLA	3.15	Not Installed
97		3.15	Not Installed
98	ANWANA NEW	3.15	Not Installed
99	MANAI	3.15	Not Installed
100		3.15	Not Installed
101	INDROKA	3.15	Not Installed
102	SALAWAS	5	Not Installed
103		3.15	Not Installed
104	DHANDHORA	5	Not Installed
105		5	Not Installed
106	HEERADESHAR	5	Not Installed
107		3.15	Not Installed
108	DHORU	3.15	Not Installed
109	RAJLANI	3.15	Not Installed
110		3.15	Not Installed
111	DEVARI	3.15	Not Installed
112	HINGOLI	5	Not Installed
113	GAJSINGHPURA	3.15	Not Installed
114		3.15	Not Installed
115	RAMPURA	5	Not Installed
116	ASOP	3.15	Not Installed
117		5	Not Installed
118	ARTIYA KALLAN	3.15	Not Installed
119	BARNI KHURD	3.15	Not Installed
120		5	Not Installed
121	MANGERIYA	3.15	Not Installed
122	BILARA	5	Not Installed
123		5	Not Installed
124	SOJATI GATE	5	Not Installed
125		5	Not Installed
126	DIWAN JI KI PLAO	3.15	Not Installed

Date: 30.06.2023

Signature:

Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

Er. M.L. Benda
SE (RS) JdVVNL, JO

127		3.15	Not Installed
128	KHARIYA MITHAPUR	3.15	Not Installed
129		5	Not Installed
130	JHAK	3.15	Not Installed
131	UDALIYAWAS	3.15	Not Installed
132		3.15	Not Installed
133	RANSI GAON	3.15	Not Installed
134		5	Not Installed
135	PIPAR CITY	5	Not Installed
136		5	Not Installed
137	SATHIN	3.15	Not Installed
138	KHARIYA KHANGAR	3.15	Not Installed
139	PABUNAGAR	3.15	Not Installed
140		3.15	Not Installed
141	RATORI GAL (BASTWA)	3.15	Not Installed
142		3.15	Not Installed
143	CHIDWAI	3.15	Not Installed
144	NATHARAU	3.15	Not Installed
145	KERLI	3.15	Not Installed
146		5	Not Installed
147	RAMSAR	3.15	Not Installed
148	BHOMSAGAR	3.15	Not Installed
149	CHEELA	3.15	Not Installed
150	UNTHWALIYA	5	Not Installed
151	BABA KI	3.15	Not Installed
152	NIMBARI(DHEERPURA)	3.15	Not Installed
153	SEKHALA	3.15	Not Installed
154	BHALU KALLA	3.15	Not Installed
155	KHIRJAKHAS	3.15	Not Installed
156	SOMESAR	3.15	Not Installed
157	SOINTRA	3.15	Not Installed
158	KHIRJA TIBNA	3.15	Not Installed
159	DEVRAJGARH	3.15	Not Installed
160	NOKHDADA BHATIYA	3.15	Not Installed
161	RAD KA BERA	5	Not Installed
162	CHITTERBERA	3.15	Not Installed
163		3.15	Not Installed
164	CHADI	3.15	Not Installed
165		3.15	Not Installed
166	KRISHAN NAGAR	3.15	Not Installed
167		3.15	Not Installed
168	RIDMALSAR	3.15	Not Installed
169		3.15	Not Installed
170	MANASAR	3.15	Not Installed

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

(Authorized Representative)

171			
172	BOONGADI	3.15	Not Installed
173		3.15	Not Installed
174	INDO KA BAS	3.15	Not Installed
175		3.15	Not Installed
176	IGNP PHALODI (BAP) R.D.0120	3.15	Not Installed
177		3.15	Not Installed
178	DURGANI	3.15	Not Installed
179		3.15	Not Installed
180	SHEKHASAR	3.15	Not Installed
181		3.15	Not Installed
182	ANOP NAAGAR	3.15	Not Installed
183	RIN SALT	3.15	Not Installed
184		3.15	Not Installed
185	JHARASAR KALLA	3.15	Not Installed
186	RAMPURA(RANERI)	3.15	Not Installed
187		5	Not Installed
188	JETERI	3.15	Not Installed
189	POONASAR	3.15	Not Installed
190	PALINA	3.15	Not Installed
191	KUSHLAWA	3.15	Not Installed
192	BHOJAKOR	3.15	Not Installed
193	MORIYA	3.15	Not Installed
194	DELANA	5	Not Installed
195	CHAINPURA	3.15	Not Installed
196	SHIVSAR	3.15	Not Installed
197	BAORI KALLA	3.15	Not Installed
198		5	Not Installed
199	RAYADA	3.15	Not Installed
200	MARJAT	3.15	Not Installed
201		3.15	Not Installed
202	JALODA	3.15	Not Installed
203		3.15	Not Installed
204	MANDLA KHURD	3.15	Not Installed
205		3.15	Not Installed
206	KHARA	3.15	Not Installed
207	KOLU PABUJI	3.15	Not Installed
208		3.15	Not Installed
209	BENGTI KHURD	3.15	Not Installed
210		5	Not Installed
211	SIHRA	3.15	Not Installed
212		5	Not Installed
213	MANDLA KALLAN	3.15	Not Installed
214	JEMALA	5	Not Installed
		5	Not Installed

Date: 30.06.2023

Signature:

Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

M. L. Benda
SE (R&S), SBV/VNL, JU

215		3.15	Not Installed
216	GAJJA	3.15	Not Installed
217		3.15	Not Installed
218	BARSANADA	3.15	Not Installed
219		3.15	Not Installed
220	KAPADISAR	3.15	Not Installed
221		3.15	Not Installed
222	SADAWATA	3.15	Not Installed
223	GOYALI ROAD	5	Not Installed
224		3.15	Not Installed
225	SIROHI CITY	5	Not Installed
226	SINDRATH	3.15	Not Installed
227	JAWAL	5	Not Installed
228		3.15	Not Installed
229	PADIV	3.15	Not Installed
230	VARADA	3.15	Not Installed
231	SHEOGANJRICO	5	Not Installed
232		3.15	Not Installed
233	POSALIYA	3.15	Not Installed
234	PALARI	3.15	Not Installed
235		3.15	Not Installed
236	ANDOR	3.15	Not Installed
237	JHADOLI VEER	3.15	Not Installed
238	KALANDARI	3.15	Not Installed
239	KRISHNAGANJ	3.15	Not Installed
240		3.15	Not Installed
241	MER MANDWARA	3.15	Not Installed
242		3.15	Not Installed
243	TANWARI	3.15	Not Installed
244	SWAROOPGANJ	3.15	Not Installed
245	SIROHI ROAD	3.15	Not Installed
246		5	Not Installed
247	PINDWARA CITY	5	Not Installed
248	BANAS	5	Not Installed
249	VEERWADA	3.15	Not Installed
250	NADIYA	3.15	Not Installed
251	GANDHI NAGAR	10	Not Installed
252	IOCL	5	Not Installed
253	AMBAJIINDAR	10	Not Installed
254	KHARA	10	Not Installed
255	MANPUR	10	Not Installed
256	DELDAR	3.15	Not Installed
257	KAROLI	3.15	Not Installed
258	MOOGTHALA	3.15	Not Installed

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

(Authorized Representative)

259		3.15	Not Installed
260	GIRWAR	3.15	Not Installed
261	MAWAL	3.15	Not Installed
262	MT. ABU	5	Not Installed
263		5	Not Installed
264	REODAR	3.15	Not Installed
265	BANT	3.15	Not Installed
266	JETHAWADA	3.15	Not Installed
267		5	Not Installed
268	MORWADA	3.15	Not Installed
269		3.15	Not Installed
270	RAHUA	3.15	Not Installed
271	MAGRIWADA	3.15	Not Installed
272	GUSAISAR BADA	3.15	Not Installed
273		3.15	Not Installed
274	MANKRASAR	3.15	Not Installed
275		3.15	Not Installed
276	BINJASAR 1ST	3.15	Not Installed
277	BINJASAR 2ND	3.15	Not Installed
278		3.15	Not Installed
279	BENISAR	3.15	Not Installed
280		3.15	Not Installed
281	DUSARNA-1	3.15	Not Installed
282		3.15	Not Installed
283	JETASAR	3.15	Not Installed
284		5	Not Installed
285	THUKRIYASAR-I	3.15	Not Installed
286	THUKRIYASAR-II	3.15	Not Installed
287	JALSAL SAR	3.15	Not Installed
288	GOPALSAR - I	3.15	Not Installed
289		3.15	Not Installed
290	SATTSAR	3.15	Not Installed
291		3.15	Not Installed
292	DHEERDESAR PURIHITAN	3.15	Not Installed
293	LIKHMADESAR-I	3.15	Not Installed
294		5	Not Installed
295	LIKHMADESAR-III	3.15	Not Installed
296		3.15	Not Installed
297	AADSAR	3.15	Not Installed
298		3.15	Not Installed
299		3.15	Not Installed
300	UDRASAR	3.15	Not Installed
301	LALASAR	3.15	Not Installed
302	SARNA JOHAD	3.15	Not Installed

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

(Authorized Representative), JU

303	RAMDEVRA	3.15	Not Installed
304		3.15	Not Installed
305	SERUNA 1	5	Not Installed
306	SERUNA 2	5	Not Installed
307	DERAJSAR - I	5	Not Installed
308		3.15	Not Installed
309	GOGANA	3.15	Not Installed
310	SARUNDA	3.15	Not Installed
311	SINIYALA - I	5	Not Installed
312		3.15	Not Installed
313	HANUMAN NAGAR	3.15	Not Installed
314	BHADLA	3.15	Not Installed
315	NATHUSAR	3.15	Not Installed
316	SAJSAR	3.15	Not Installed
317		3.15	Not Installed
318	RATRIYAPHANTA	3.15	Not Installed
319		3.15	Not Installed
320	LALASARSATHRI	5	Not Installed
321	BHEDKITALAI	3.15	Not Installed
322	MAINSAR	5	Not Installed
323	JHARELI -I	5	Not Installed
324		3.15	Not Installed
325	GUNDUSAR	3.15	Not Installed
326		5	Not Installed
327	UDSAR	3.15	Not Installed
328		5	Not Installed
329	JHARELI-II	3.15	Not Installed
330	SHIV MANDIR	3.15	Not Installed
331	BHAGWATI KUND	3.15	Not Installed
332	AMBASAR	5	Not Installed
333	GIGASAR	3.15	Not Installed
334	I. K.D JATAN -II	3.15	Not Installed
335		3.15	Not Installed
336	1. NAPASAR	3.15	Not Installed
337	GUNSAISAR-I	5	Not Installed
338		3.15	Not Installed
339	NAURANGDESAR	5	Not Installed
340		3.15	Not Installed
341	NAPASAR - II	3.15	Not Installed
342	2. RAMSAR -I	5	Not Installed
343		5	Not Installed
344	3. RAMSAR-II	3.15	Not Installed
345		3.15	Not Installed
346	I.K.D.Borun-I	3.15	Not Installed

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer) / Executive Engineer

(Authorized Representative)

347	2.K.D. JATAN -I	5	Not Installed
348	1. K.D. JATAN-IV	3.15	Not Installed
349	2. KILCHU	5	Not Installed
350	1. TEJRASAR - I	5	Not Installed
351		3.15	Not Installed
352	2. TEJRASAR - III	5	Not Installed
353	4. BELASAR	5	Not Installed
354	2. TEJRASAR - II	5	Not Installed
355	RANISAR	5	Not Installed
356	L D MAGARA	5	Not Installed
357		3.15	Not Installed
358	JD MEGRA	5	Not Installed
359	MEGHASAR	5	Not Installed
360		5	Not Installed
361	BARSINGHSAR	5	Not Installed
362		5	Not Installed
363	SWAROOPDESAR	3.15	Not Installed
364	BHANEKA	3.15	Not Installed
365		3.15	Not Installed
366	RANERI	5	Not Installed
367		5	Not Installed
368	HADDA	3.15	Not Installed
369	LOHIYA	5	Not Installed
370	KHINDASAR	5	Not Installed
371	BHELU	5	Not Installed
372	SERPURA	3.15	Not Installed
373	KISHANASAR	3.15	Not Installed
374		3.15	Not Installed
375	DANTOR	3.15	Not Installed
376	28 KJD	3.15	Not Installed
377	3 PWM	3.15	Not Installed
378	1 ADM	3.15	Not Installed
379	RANJEETPURA	3.15	Not Installed
380	JAMSAR	3.15	Not Installed
381	1. GADHWALA - I	3.15	Not Installed
382		5	Not Installed
383	2 GADHWALA - II	5	Not Installed
384		3.15	Not Installed
385	PUGAL	3.15	Not Installed
386	RD 710	3.15	Not Installed
387	RD 750	3.15	Not Installed
388	BADERAN	3.15	Not Installed
389	JETPUR	3.15	Not Installed
390		3.15	Not Installed

Signature:

Date: 30.06.2023

Name: M.L. Benda
(Project Nodal Officer)
SE (I&S), RVWNL, JU
(Authorized Representative)

391	ARJUNSAR	3.15	Not Installed
392	LALERA	3.15	Not Installed
393	MAHAJAN	3.15	Not Installed
394		5	Not Installed
395	JAWAHARNAGAR	5	Not Installed
396		5	Not Installed
397		5	Not Installed
398	MAUSAM VIBHAG	8	Not Installed
399		5	Not Installed
400	MAHALAXMI ENCLAV	5	Not Installed
401	AGRAWAL COLONY	5	Not Installed
402	2 ML NATHAWALI	5	Not Installed
403		3.15	Not Installed
404	RICO-I	3.15	Not Installed
405		8	Not Installed
406		5	Not Installed
407		5	Not Installed
408	RICO-II	8	Not Installed
409		5	Not Installed
410	SHANI MANDIR	5	Not Installed
411		5	Not Installed
412	SABJI MANDI	10	Not Installed
413		5	Not Installed
414	KUNJ VIHAR	3.15	Not Installed
415	JCT	10	Not Installed
416		5	Not Installed
417	3 PULI	10	Not Installed
418	BHAGAT SINGH CHOCK	8	Not Installed
419		8	Not Installed
420	KUMS	5	Not Installed
421		5	Not Installed
422	HOSPITAL	5	Not Installed
423		5	Not Installed
424	SADBHAWANA NAGAR	5	Not Installed
425		5	Not Installed
426	V.K. CITY	5	Not Installed
427	PHG	5	Not Installed
428		5	Not Installed
429	KALIYAN	3.15	Not Installed
430	KHATLADANA	3.15	Not Installed
431	DULAPURKERI	3.15	Not Installed
432	HINDUMALKOT	3.15	Not Installed
433	SADHUWALI	3.15	Not Installed
434	7A	3.15	Not Installed

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer) Benda

(Authorized Representative) L, JU

435	BURJAWALI	3.15	Not Installed
436	CHUNAWAD	3.15	Not Installed
437	15Z	3.15	Not Installed
438	HOMELAND	5	Not Installed
439	RISHI SIDHI	5	Not Installed
440	NETEWALA	3.15	Not Installed
441		3.15	Not Installed
442	7 ML	3.15	Not Installed
443		3.15	Not Installed
444	25 ML	3.15	Not Installed
445	DHINGAWALI	3.15	Not Installed
446	JODHEWALA	3.15	Not Installed
447	SADULSAHAR	2.5	Not Installed
448	RIICO	5	Not Installed
449	4 KRW	3.15	Not Installed
450	PARTAP PURA	3.15	Not Installed
451	BUDHIRWALI	3.15	Not Installed
452	PATALI	3.15	Not Installed
453	MANNIWALI	3.15	Not Installed
454	IPDS KESRISINGHPUR	5	Not Installed
455	V HEAD	3.15	Not Installed
456	DHNOOR	3.15	Not Installed
457	DALPATSINGHPUR	3.15	Not Installed
458	KAMINPURA	3.15	Not Installed
459	ARAYAN	3.15	Not Installed
460	MALKANA	3.15	Not Installed
461	MERIEWALA	3.15	Not Installed
462	18F	3.15	Not Installed
463	KONI	3.15	Not Installed
464	DAULATPURA	3.15	Not Installed
465	MANFOOLSINGHWALA	5	Not Installed
466	GANESHGARH	3.15	Not Installed
467	GANESHGARH	3.15	Not Installed
468	LALGARH	3.15	Not Installed
469	LALGARH	1.6	Not Installed
470	PANNIWALI	3.15	Not Installed
471	BANWALI	3.15	Not Installed
472	MAMMAR	3.15	Not Installed
473	KHARACHAK	3.15	Not Installed
474	5 LNP	3.15	Not Installed
475	SAMEJA	3.15	Not Installed
476	BAJUWALA	3.15	Not Installed
477	SATJANDA	3.15	Not Installed
478	DABLA	3.15	Not Installed

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

Er. M. L. Benda
Sr.(I&S), JdVVNL, JH

(Authorized Representative)

479	MUKLAWA	3.15	Not Installed
480	LOONEWALA	3.15	Not Installed
481	16PS	3.15	Not Installed
482	UDSAR	3.15	Not Installed
483	BHOMPURA	3.15	Not Installed
484	RAISINGHNAGAR	8	Not Installed
485		3.15	Not Installed
486	BADA MANDIR	5	Not Installed
487	RIICO	5	Not Installed
488	PADAMPUR		Not Installed
489	24 BB	5	Not Installed
490	4 JJ	3.15	Not Installed
491	1 DD	3.15	Not Installed
492	CHANNADHAM	3.15	Not Installed
493	CC HEAD	3.15	Not Installed
494	3 RB	3.15	Not Installed
495	P S HEAD	3.15	Not Installed
496		3.15	Not Installed
497	JIVANDESSAR	3.15	Not Installed
498	69 LNP	3.15	Not Installed
499	BINJHBAYLA	3.15	Not Installed
500		3.15	Not Installed
501	GHAMURWALI	3.15	Not Installed
502	SAWANTSAR	3.15	Not Installed
503	MANJHUWASS	3.15	Not Installed
504	SKPR	5	Not Installed
505		3.15	Not Installed
506	39H	3.15	Not Installed
507	2FC	3.15	Not Installed
508	52GG	3.15	Not Installed
509	48GG	3.15	Not Installed
510	42F	3.15	Not Installed
511	5"O"	3.15	Not Installed
512	GAJSINGHPUR	5	Not Installed
513		5	Not Installed
514	SANGRANA	3.15	Not Installed
515	BALARAJPURA	3.15	Not Installed
516	JORAWAR	3.15	Not Installed
517	CCBF	3.15	Not Installed
518	PALIWALA	3.15	Not Installed
519		3.15	Not Installed
520	SARDARPURA BIKA	3.15	Not Installed
521	NIRWANA	3.15	Not Installed
522	DHABA	3.15	Not Installed

Date: 30.06.2021

Signature:

Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

Er. M.L. Benda
SE (I&S) JdVVNL, JO

523	GURUSAR MODIA	3.15	Not Installed
524	BDOPAL ROAD GSS	5	Not Installed
525		5	Not Installed
526	RIICO GSS	5	Not Installed
527		5	Not Installed
528	PHED GSS	5	Not Installed
529	STADIUM GROUND GSS	5	Not Installed
530	SOMASAR	5	Not Installed
531		5	Not Installed
532	KALUSAR	3.15	Not Installed
533	THETHAR	3.15	Not Installed
534	RATYAWALI	3.15	Not Installed
535	UDAIPUR	3.15	Not Installed
536	BIRMANA	3.15	Not Installed
537	2 GPN	3.15	Not Installed
538	19.600 RDR	3.15	Not Installed
539	RAJASAR	3.15	Not Installed
540		3.15	Not Installed
541	DEEDWANA	3.15	Not Installed
542	BACHHRAR	3.15	Not Installed
543	BHOJUSAR	3.15	Not Installed
544		3.15	Not Installed
545	GOVINDSAR	3.15	Not Installed
546		3.15	Not Installed
547	RAGHUNATHPURA	3.15	Not Installed
548	SILWANI	3.15	Not Installed
549	SRI VIJAYNAGAR	5	Not Installed
550		5	Not Installed
551	29 GB	5	Not Installed
552	44 GB	3.15	Not Installed
553	KUPLI	3.15	Not Installed
554	PURANA BIJLI BOARD	5	Not Installed
555	2 DAM	5	Not Installed
556		3.15	Not Installed
557	ANOOPGARH	5	Not Installed
558		3.15	Not Installed
559	RIICO	5	Not Installed
560		3.15	Not Installed
561	PREM NAGAR	5	Not Installed
562	76GB	3.15	Not Installed
563	BANDA COLONY	3.15	Not Installed
564	10A	3.15	Not Installed
565	27A	3.15	Not Installed
566		3.15	Not Installed

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

(Authorized Representative)

567	61GB	3.15	Not Installed
568	RAMSINGHPUR	3.15	Not Installed
569	NHARAWALI	3.15	Not Installed
570	RAWLA MANDI	3.15	Not Installed
571		3.15	Not Installed
572	3 KD	3.15	Not Installed
573	7 KND	3.15	Not Installed
574	365 HED	3.15	Not Installed
575	NEW MANDI GHARSANA	3.15	Not Installed
576		3.15	Not Installed
577	OLD MANDI GHARSANA	3.15	Not Installed
578	6 DD	3.15	Not Installed
579	PATRODA	3.15	Not Installed
580	281 HEAD	3.15	Not Installed
581	JALWALI	3.15	Not Installed
582	ROJARY	3.15	Not Installed
583	4 STR	3.15	Not Installed
584	CHAWA	3.15	Not Installed
585	KAWAS	3.15	Not Installed
586	BATADOO	3.15	Not Installed
587		3.15	Not Installed
588	BHIMADA	3.15	Not Installed
589		3.15	Not Installed
590	KHANJI KA TALLA	3.15	Not Installed
591	JETANIYON KI DHANI	3.15	Not Installed
592		3.15	Not Installed
593	BHADAKHA	5	Not Installed
594		5	Not Installed
595	HADWA HADVECHA	3.15	Not Installed
596	SAJITARA	5	Not Installed
597		5	Not Installed
598	BHIYAND	3.15	Not Installed
599		3.15	Not Installed
600	CHOCHRA	3.15	Not Installed
601		3.15	Not Installed
602	DHEER JI KI DHANI	3.15	Not Installed
603	KANASAR	3.15	Not Installed
604		3.15	Not Installed
605	MOKHAB	5	Not Installed
606		5	Not Installed
607	PRAHLADPURA	3.15	Not Installed
608	ASOTRA	3.15	Not Installed
609	BITHUJA	3.15	Not Installed
610	BRAHMAJI KA MANDIR	3.15	Not Installed

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

M. L. Benda
SE (I&S) JdVVNL, JH

(Authorized Representative)

611	BUDIWARA	3.15	Not Installed
612		3.15	Not Installed
613	JAGSA	3.15	Not Installed
614		3.15	Not Installed
615	JASOL	3.15	Not Installed
616		3.15	Not Installed
617	KANANA	3.15	Not Installed
618	KITHNOD	3.15	Not Installed
619	PADROO-FANTA	3.15	Not Installed
620		3.15	Not Installed
621	SARANA	3.15	Not Installed
622	KALYANPUR	3.15	Not Installed
623	NAGANA	3.15	Not Installed
624	PACHPADRA	3.15	Not Installed
625		3.15	Not Installed
626	PATODI	3.15	Not Installed
627	THOMBLI	3.15	Not Installed
628	KANOD	3.15	Not Installed
629	RATEU	3.15	Not Installed
630		3.15	Not Installed
631	BHAGWA	3.15	Not Installed
632		3.15	Not Installed
633	DHEERA	3.15	Not Installed
634	GUDANAAL	3.15	Not Installed
635	GUNGROT	5	Not Installed
636	INDRANA	3.15	Not Installed
637	KATHADI	3.15	Not Installed
638		3.15	Not Installed
639	KERLI NADI	3.15	Not Installed
640	MELI	3.15	Not Installed
641	MOKALSAR	5	Not Installed
642	MUTHALI	3.15	Not Installed
643	AJEET	3.15	Not Installed
644	KARMAWAS	3.15	Not Installed
645	RAKHI	3.15	Not Installed
646	SAMDARI	3.15	Not Installed
647		3.15	Not Installed
648	SILORE	3.15	Not Installed
649	DHARANA	3.15	Not Installed
650		3.15	Not Installed
651	ITAWAYA-FANTA	3.15	Not Installed
652		3.15	Not Installed
653	KHANKHI	3.15	Not Installed
654		3.15	Not Installed

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

M.L. Benda

(Authorized Representative)

655	KUNDAL	3.15	Not Installed
656		3.15	Not Installed
657	MITHORA	3.15	Not Installed
658		3.15	Not Installed
659	RELO KI DHANI	3.15	Not Installed
660	SAILA	3.15	Not Installed
661	SINER	3.15	Not Installed
662		3.15	Not Installed
663	VAV NAGAR	3.15	Not Installed
664	ADEL	3.15	Not Installed
665	BHATTA	3.15	Not Installed
666		3.15	Not Installed
667	CHADON KI DHANI	3.15	Not Installed
668	CHAUDHARIYON KI DHANI	3.15	Not Installed
669	DHANWA-PANTA	3.15	Not Installed
670	DHUDIA MOTI S	5	Not Installed
671	J.M.K.	3.15	Not Installed
672		3.15	Not Installed
673	SARNU-PANJI	3.15	Not Installed
674	BHATALA	3.15	Not Installed
675	BADON-KA-TALA	3.15	Not Installed
676	BAMNOR	5	Not Installed
677	BAMRLA	5	Not Installed
678	BHAG BHERE KI BERI	3.15	Not Installed
679	BISARNIYA	3.15	Not Installed
680		3.15	Not Installed
681	DHUDHU	3.15	Not Installed
682		3.15	Not Installed
683	KEKAR	3.15	Not Installed
684		3.15	Not Installed
685	KITHNORIYA	3.15	Not Installed
686	KOJA	3.15	Not Installed
687	LUKHU	3.15	Not Installed
688	RELO KI BERI	3.15	Not Installed
689	ROHILA (EAST)	3.15	Not Installed
690	SACHI KI BERI	3.15	Not Installed
691	SAUAN KI BERI	3.15	Not Installed
692		3.15	Not Installed
693	BORCHARNAN	3.15	Not Installed
694	BHEDANA	3.15	Not Installed
695		3.15	Not Installed
696	GADEVI	3.15	Not Installed
697	LUNWA- CHARNAN	3.15	Not Installed
698	NAGAR	3.15	Not Installed

Date: 30.06.2023

Signature:

Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

Er. M. L. Benda
SE (AS) JVVNL, JU

699	PANEL KI BERI	3.15	Not Installed
700	RAM JI GOAL	3.15	Not Installed
701	SALLU KI BERI	3.15	Not Installed
702	SINDHASWA-CH.	3.15	Not Installed
703		3.15	Not Installed
704	ANDANIYO KI BERI	3.15	Not Installed
705		3.15	Not Installed
706	JALI KHERA	3.15	Not Installed
707	MALPURA	3.15	Not Installed
708	NOKHARA	3.15	Not Installed
709		3.15	Not Installed
710	AKAL	3.15	Not Installed
711	GANGASARA	3.15	Not Installed
712	GORA	3.15	Not Installed
713	GULE KI BERI	3.15	Not Installed
714	SOBHALA-DARSHAN	3.15	Not Installed
715	SONARI	5	Not Installed
716	BHANWAR	3.15	Not Installed
717		3.15	Not Installed
718	BISASAR	3.15	Not Installed
719	DHURAWA	3.15	Not Installed
720		3.15	Not Installed
721	FAGALIYA	3.15	Not Installed
722		3.15	Not Installed
723	HARPALIYA	3.15	Not Installed
724	JANPALIYA	3.15	Not Installed
725		3.15	Not Installed
726	MAN JI KA TALLA	3.15	Not Installed
727	SALARIYA	5	Not Installed
728	SARLA	3.15	Not Installed
729		3.15	Not Installed
730	SEDWA	5	Not Installed

Date: 30.06.2023

Signature:

Name: M. L. Benda
(Project Nodal Officer)

M. L. Benda
SE (S&S) JdVVNL, JU
(Authorized Representative)

Sr. No.	Name of Substations	Transformer Capacity (In MVA)	Sub Station/ Transformer Peak Loading (MW)	Before Installation of Capacitor Bank: Voltage During Average / No Load	Voltage During Peak Load	MVA	PF	Peak Amp. Loading	MVAr Required	MVAr Proposed	% Loading on Transformer (MVA)	After Installation of Capacitor Panels: Load (MVA)	Improvement in Loading (MVA)	Power Factor	Voltage	% Improvement in Voltage	% Loading on Transformer (MVA)
1	MATHANIA	5	4.56	10.3	9.1	5.12	0.89	287	2.5	1.98	102.39	4.7	7.76	0.95	10.52	3.08	94.42
2		5	4.47	10.3	9.7	5.02	0.89	281.4	2.3	1.98	100.45	4.6	8.1	0.97	10.62	3.08	92.28
3	UMMED NAGAR (JOOD)	5	4.52	10.2	8.9	5.02	0.9	284.4	2.2	1.98	100.47	4.6	8.1	0.98	10.51	3.08	92.34
4		5	4.98	10.2	9.2	5.66	0.88	320.2	2.7	1.98	113.14	5.3	6.33	0.94	10.51	3.08	105.99
5	RAMPURA PEECO	5	5	10.2	9.2	5.68	0.88	321.4	2.7	1.98	113.57	5.3	6.28	0.94	10.51	3.08	106.44
6		3.15	2.98	10.2	8.9	3.32	0.89	176.8	1.4	1.98	99.17	2.8	11	1	10.55	3.44	88.26
7	RAJASANI	3.15	2.82	10.2	9	3.18	0.89	180.1	1.5	1.98	100.98	2.8	11	1	10.55	3.5	89.87
8		3.15	3.12	10.5	8.8	3.59	0.87	197.2	1.8	1.98	113.85	3.1	13	1	10.95	4.27	99.05
9	NEVRA ROAD	3.15	3.09	10.5	9	3.43	0.9	188.5	1.5	1.98	108.85	3.1	10	1	10.88	3.61	97.95
10		3.15	3.05	10.5	9.1	3.35	0.9	186.4	1.5	1.98	107.61	3.1	10	1	10.87	3.57	96.85
11	KRIMARSATYA	5	4.78	10.5	9.3	5.37	0.89	295.5	2.5	1.98	107.49	5	7.03	0.96	10.82	3.08	99.92
12		5	4.87	10.5	9.8	5.56	0.88	304.4	2.6	1.98	111.71	5.2	6.62	0.94	10.82	3.08	103.39
13	BHENSER KHOTRI	3.15	2.94	10.3	9	3.27	0.9	183.4	1.4	1.98	103.84	2.9	10	2	10.65	3.44	93.46
14		3.15	2.98	10.3	9	3.31	0.9	185.5	1.4	1.98	105.08	3	10	1	10.65	3.49	94.57
15	JOOD	3.15	2.94	10.3	9	3.35	0.88	187.5	1.6	1.98	106.2	2.9	12	1	10.7	3.84	93.46
16		3.15	2.8	10.3	8.9	3.19	0.88	178.6	1.5	1.98	101.15	2.8	12	1	10.68	3.66	89.01
17	KHARDA	3.15	2.93	10.2	9	3.29	0.9	185.3	1.4	1.98	103.94	2.9	10	1	10.55	3.45	93.54
18		3.15	3.02	10.2	8.9	3.35	0.9	189.7	1.5	1.98	106.36	3	10	1	10.56	3.53	95.75
19	NEVRA GAON	3.15	3.05	10.3	9	3.39	0.9	190	1.5	1.98	107.61	3.1	10	1	10.67	3.57	96.85
20		3	3	10.3	8.9	3.33	0.9	186.8	1.5	1.98	66.54	3	10	1	10.53	2.26	99.97
21	GAGADI	3.15	2.82	10.5	9.2	3.2	0.88	176	1.5	1.98	102.39	2.8	12	1	10.89	3.67	89.4
22		3.15	2.8	10.5	9.2	3.18	0.88	174.9	1.5	1.98	100.98	2.8	12	1	10.88	3.65	88.86

Date: 30.06.2023

Signature:

Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

Er. M.L. Benda
SE (I&S), JdVVNL, JU

23	MANDIYAI KALAN	5	4.78	10.5	8.9	5.44	0.88	298.0	2.6	1.98	108.7	5.1	6.87	0.94	10.82	3.08	101.23
24		5	4.82	10.5	9	5.41	0.89	297.2	2.5	1.98	108.28	5	6.93	0.96	10.82	3.08	100.77
25	BALARWA	3.15	2.75	10.5	9.2	3.05	0.9	167.8	1.3	1.98	96.85	2.7	10	1	10.84	3.21	97.17
26		3.15	2.66	10.5	9	2.99	0.9	164.5	1.3	1.98	94.98	2.7	10	1	10.83	3.15	95.48
27		3.15	2.83	10.5	9	3.15	0.9	173.2	1.4	1.98	99.97	2.8	10	1	10.85	3.32	99.68
28	MINIYA KI TINWARI	5	4.69	10.5	8.9	5.37	0.89	295	2.4	1.98	105.49	4.9	7.01	0.96	10.82	3.08	97.77
29		5	4.78	10.5	9.1	5.37	0.89	295.5	2.5	1.98	107.48	5	7.03	0.96	10.82	3.09	99.92
30	GHEWARA	3.15	2.74	10.2	9	3.18	0.86	180.1	1.6	1.98	100.98	2.7	14	1	10.6	3.92	96.85
31		5	4.24	10.2	8.9	5.05	0.86	285.3	2.6	1.98	100.95	4.6	8.01	0.93	10.51	3.08	92.86
32	PANCHALA	3.15	2.82	10.2	9	3.05	0.89	172.5	1.6	1.98	96.75	2.6	14	1	10.58	3.76	93.2
33	BADA KOTDIBA-II	3.15	2.81	10.2	9.2	3.16	0.89	179	1.4	1.98	100.58	2.8	11	1	10.56	3.48	89.34
34		3.15	2.76	10.2	9	3.1	0.89	175.7	1.4	1.98	98.56	2.8	11	1	10.55	3.47	87.72
35	BADLA HASNI	3.15	2.81	10.3	9	3.23	0.87	180.9	1.6	1.98	102.46	2.8	13	1	10.7	3.84	89.14
36		3.15	2.77	10.3	9.1	3.19	0.87	178.7	1.6	1.98	101.2	2.8	13	1	10.69	3.8	88.04
37		3.15	2.72	10.3	8.9	3.13	0.87	175.3	1.5	1.98	99.3	2.7	13	1	10.68	3.73	86.39
38	MANDIYAI KHURD	3.15	2.94	10.2	9	3.27	0.9	186.9	1.4	1.98	103.22	2.9	10	1	10.55	3.44	93.35
39		3.15	3.01	10.2	9	3.33	0.9	189.4	1.5	1.98	106.22	3	10	1	10.55	3.52	95.6
40	MALUNDA	3.15	3.1	10.2	8.9	3.49	0.89	197.3	1.6	1.98	110.67	3.1	11	1	10.59	3.84	98.5
41	GOPASARIYA	3.15	3	10.3	9	3.37	0.89	188.7	1.5	1.98	106.89	3	11	1	10.68	3.71	95.13
42		3.15	3.05	10.3	8.5	3.46	0.88	194.2	1.6	1.98	110	3	12	1	10.71	3.98	96.8
43	BHALASARIYA	3.15	3.09	10.2	9	3.45	0.9	194.1	1.5	1.98	108.84	3.1	10	1	10.57	3.61	97.35
44	THOD	3.15	2.82	10.2	9.3	3.24	0.87	183.3	1.6	1.98	102.8	2.8	13	1	10.59	3.86	89.43
45		3.15	2.71	10.2	8.9	3.14	0.87	177.9	1.5	1.98	99.77	2.7	13	1	10.58	3.74	86.8
46	HARLAYA	3.15	3.01	10.5	9	3.35	0.9	184.2	1.5	1.98	106.32	3	10	1	10.67	3.53	95.69
47	OSIAN	3.15	2.99	10.5	9.1	3.32	0.9	182.4	1.4	1.98	105.32	3	10	1	10.67	3.49	94.78
48		5	4.7	10.5	9	5.23	0.9	287.4	2.3	1.98	104.55	4.8	7.45	0.97	10.82	3.08	96.76
49	CEERAI	3.15	2.77	10.5	9	3.15	0.88	173.3	1.5	1.98	100.95	2.6	12	1	10.68	3.62	88.04
50	SINWARO KI DHANI (SIRMANDI)	3.15	2.85	10.3	8.9	3.2	0.89	179.4	1.5	1.98	101.59	2.8	11	1	10.66	3.52	90.41
51		3.15	2.88	10.3	9.2	3.26	0.89	181.5	1.5	1.98	102.8	2.9	11	1	10.67	3.57	91.49
52	SOMERI BHAKARI	3.15	2.88	10.3	9	3.24	0.89	181.5	1.5	1.98	102.8	2.9	11	1	10.67	3.57	91.49
53	BHIMSAGAR	3.15	2.92	10.4	9.0	3.25	0.9	180.5	1.4	1.98	103.1	2.9	10	1	10.76	3.42	92.79

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

Er. M.L. Benda
SE(BS), JdVVNL, JU.
(Authorized Representative)

54		3.15	3.01	10.4	9	3.35	0.9	185.8	1.5	1.98	106.22	3	10	1	10.77	3.52	95.6
55	BERDO KA BAS	3.15	2.98	10.3	8.9	3.31	0.5	185.4	1.4	1.98	104.97	3	10	1	10.66	3.48	94.48
56		3.15	2.89	10.3	9	3.21	0.9	179.8	1.4	1.98	101.55	2.9	10	1	10.65	3.38	91.66
57	RAWAT BERA	3.15	2.77	10.4	8.9	3.12	0.89	173	1.4	1.98	98.52	2.8	11	1	10.75	3.43	88.04
58	JAKHRO KI DHANI	3.15	2.78	10.4	9.3	3.12	0.89	173.4	1.4	1.98	99.17	2.8	11	1	10.76	3.46	88.26
59	BARAKALLA	3.15	2.84	10.5	8.3	2.95	0.86	162.3	1.5	1.98	93.73	2.5	14	1	10.88	3.64	80.6
60		3.15	2.59	10.5	9.7	3.01	0.86	166.5	1.5	1.98	95.54	2.6	14	1	10.89	3.71	82.16
61	DHANARI KALLA	3.15	2.75	10.5	9	3.24	0.85	178.1	1.7	1.98	102.8	2.8	15	1	10.93	4.12	87.38
62		5	4.31	10.5	9.2	5.07	0.85	278.6	2.7	1.98	161.32	4.7	7.95	0.92	10.87	3.08	93.28
63	CHONDARI	3.15	2.71	10.2	9	3.05	0.85	172.5	1.4	1.98	98.75	2.7	11	1	10.56	3.36	86.11
64		3.15	2.75	10.2	9	3.09	0.89	176.7	1.4	1.98	97.95	2.7	11	1	10.55	3.4	87.18
65	NANDIYA KHURD	3.15	3.01	10.3	9.3	3.35	0.9	187.7	1.5	1.98	106.52	3	10	1	10.66	3.53	95.69
66	JELAV NADI	3.15	2.91	10.2	9.2	3.24	0.97	183.5	1.4	1.98	102.8	2.9	10	1	10.55	3.41	92.52
67		3.15	2.66	10.2	9	2.95	0.9	167.1	1.3	1.98	93.73	2.7	10	1	10.52	3.11	84.35
68	JETIYAWAS	3.15	2.91	10.3	9.3	3.31	0.85	185.5	1.6	1.98	105.05	2.9	12	1	10.68	3.8	92.44
69		3.15	3.03	10.3	9	3.45	0.88	193.2	1.6	1.98	109.43	3	12	1	10.71	3.96	96.3
70	SELVI NADI(RAIKORIYA)	3.15	2.98	10.3	8.9	3.39	0.88	189.6	1.6	1.98	107.47	3	12	1	10.1	3.88	94.57
71	TAPU	3.15	3.08	10.4	9.3	3.47	0.89	192.4	1.6	1.98	110.01	3.1	11	1	10.8	3.82	92.91
72		3.15	3.15	10.4	9.1	3.54	0.89	196.8	1.6	1.98	112.51	3.2	11	1	10.81	3.9	100.14
73	NOSER	3.15	3.09	10.2	8.9	3.47	0.89	195.2	1.6	1.98	110.05	3.1	11	1	10.59	3.82	97.95
74		5	4.75	10.3	9	5.33	0.89	301.9	2.4	1.98	166.67	5	9.85	0.96	10.51	3.08	99.01
75	KANKRALA	3.15	2.8	10.5	9.1	3.18	0.88	174.9	1.5	1.96	100.98	2.8	12	1	10.38	3.65	88.86
76		3.15	2.96	10.5	9	3.35	0.88	186.3	1.6	1.98	105.42	3	12	1	10.9	3.85	93.65
77		3.15	2.77	10.5	9	3.14	0.88	172.8	1.5	1.98	99.77	2.8	12	1	10.88	3.61	87.8
78	PADASALA	3.15	2.62	10.2	9	3.24	0.81	183.5	1.9	1.98	102.8	2.6	19	1	10.67	4.19	83.27
79		3.15	2.76	10.2	8.9	3.43	0.81	194.1	2	1.98	108.84	2.8	18.35	0.99	10.69	4.78	88.86
80		3.15	2.68	10.2	9	3.31	0.81	187.6	1.9	1.98	105.22	2.7	19	1	10.68	4.7	85.23
81	NIMBO KA TALAB	3.15	2.82	10.2	9.2	3.24	0.87	183.3	1.6	1.98	102.8	2.8	13	1	10.99	3.86	89.43
82		3.15	3.02	10.2	9	3.47	0.87	196.2	1.7	1.98	110.05	3	13	1	10.62	4.13	95.75
83	KHEDAPA	3.15	2.63	10.5	9.3	2.95	0.89	162.3	1.9	1.98	93.73	2.6	11	1	10.84	3.25	83.42

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

(Authorized Representative)

Dr. M.L. Benda

84		5	4.24	10.5	9.3	4.76	0.89	261.8	2.2	1.98	95.24	4.3	9.05	0.98	10.82	3.08	86.61
85	ANWANA OLD	3.15	2.85	10.4	9	3.2	0.9	177.2	1.4	1.98	101.59	2.9	10	1	10.75	3.37	91.43
86		3.15	2.83	10.6	9.1	3.16	0.9	174.5	1.4	1.98	99.77	2.8	10	1	10.74	3.31	89.8
87	BIRAI	3.15	2.9	10.2	9	3.22	0.9	182.1	1.4	1.98	102.12	2.9	10	1	10.55	3.39	91.91
88		3.15	2.86	10.2	9	3.18	0.9	179.8	1.4	1.98	100.85	2.9	10	1	10.54	3.35	90.76
89	DANWARA	3.15	2.73	10.2	9	3.04	0.87	171.9	1.5	1.98	99.27	2.7	13	1	10.55	3.74	86.8
90		3.15	2.82	10.2	9.1	3.24	0.87	183.3	1.6	1.98	102.8	2.8	13	1	10.59	3.86	89.43
91	BADRI	5	4.74	10.5	8.5	5.27	0.9	289.9	2.3	1.98	105.14	4.9	7.32	0.97	10.82	3.08	97.72
92		5	4.83	10.5	9	5.37	0.9	295.4	2.3	1.98	107.45	5	7.04	0.97	10.82	3.08	99.86
93	POONTYO KI BARNT	3.15	2.91	10.3	9	3.24	0.9	181.4	1.4	1.98	102.72	2.9	10	1	10.65	3.41	92.44
94	KAINAU KHURD	3.15	2.86	10.5	8.9	3.24	0.89	178.1	1.5	1.98	102.8	2.9	11	1	10.87	3.57	91.09
95		3.15	2.8	10.5	9	3.14	0.89	172.8	1.4	1.98	99.77	2.8	11	1	10.86	3.46	88.8
96	KAINAU KALLA	3.15	3.02	10.3	9.3	3.45	0.88	192.2	1.6	1.98	108.84	3	13	1	10.71	3.93	95.78
97		3.15	2.72	10.3	9	3.09	0.88	173	1.5	1.98	97.56	2.7	12	1	10.66	3.54	86.2
98	ANWANA NEW	3.15	2.94	10.4	9.2	3.31	0.89	183.6	1.5	1.98	105.01	2.9	11	1	10.78	3.64	93.46
99	MANAI	3.15	2.86	10.5	9	3.22	0.89	177	1.5	1.98	102.19	2.9	11	1	10.87	3.55	90.94
100		3.15	2.72	10.6	8.9	3.02	0.9	166.3	1.3	1.98	96	2.7	10	1	10.83	3.16	86.6
101	INDROKA	5	4.94	10.5	9	5.49	0.9	301.6	2.4	1.98	109.71	5.1	5.79	0.97	10.82	3.08	102.32
102	SALAWAS	3.15	3.14	10.2	9	3.48	0.9	197.2	1.5	1.98	110.62	3.1	10	1	10.57	3.67	99.56
103		5	5.04	10.2	9	5.6	0.9	317	2.4	1.98	112	5.2	6.46	0.96	10.51	3.08	104.77
104		5	5.13	10.2	9.7	5.7	0.9	322.9	2.5	1.98	114.07	5.3	6.22	0.96	10.51	3.08	106.98
105	DHANDHORA	5	4.68	10.5	9.2	4.86	0.84	267.1	2.5	1.98	97.14	4.4	8.69	0.92	10.82	3.08	88.7
106	HEERADEESHAR	3.15	2.86	10.2	9.3	3.05	0.94	172.5	1	1.98	96.75	2.9	6	1	10.46	2.51	93.94
107		3.15	2.78	10.2	9	3.17	0.89	176.3	1.4	1.98	98.99	2.8	11	1	10.55	3.43	88.1
108	DISHO	3.15	2.69	10.2	8.8	3.06	0.88	170.2	1.5	1.98	97.13	2.7	12	1	10.56	3.51	85.48
109	RAJLANI	3.15	2.77	10.2	9	3.08	0.9	174.4	1.3	1.98	97.82	2.8	10	1	10.55	3.24	88.04
110		3.15	2.6	10.2	8.9	2.89	0.9	163.5	1.3	1.98	91.71	2.6	10	1	10.58	3.04	82.54
111	DEVANI	3.15	2.83	10.2	8.5	3.14	0.9	177.9	1.4	1.98	99.79	2.8	10	1	10.54	3.31	89.8
112	HINGOLI	5	4.47	10.2	9	4.97	0.9	281	2.2	1.98	99.3	4.6	8.3	0.98	10.51	3.08	91.06
113	GAISINGHPURA	3.15	2.98	10.2	9.1	3.31	0.9	187.4	1.4	1.98	105.09	3	10	1	10.56	3.49	94.57
114		3.15	2.72	10.2	9	3.02	0.9	170.8	1.3	1.98	95.81	2.7	10	1	10.52	3.18	86.23

Signature:

Date: 30.06.2023

Name: M. L. Benda

(Project Nodal Officer) M. L. Benda

(Authorized Representative)

115	RAMPURA	5	4.56	10.2	8.9	5.06	0.9	286.6	2.2	1.98	301.75	4.7	7.97	0.98	10.51	3.08	93.18
116	ASOP	3.15	2.89	10.2	8.9	3.21	0.9	181.9	1.4	1.98	191.99	2.9	10	1	10.55	3.38	91.79
117		5	4.56	10.2	9.1	5.06	0.9	286.6	2.2	1.98	302.25	4.7	7.97	0.98	10.51	3.08	93.18
118	ARTOLA KALLAN	3.15	2.74	10.2	9	3.05	0.9	172.5	1.3	1.98	96.75	2.7	10	1	10.54	3.21	87.07
119	BARNI KHURD	3.15	2.91	10.2	9.1	3.24	0.9	183.1	1.4	1.98	192.72	2.9	10	1	10.55	3.41	92.44
120		5	4.51	10.2	8.9	5.01	0.9	283.4	2.2	1.98	100.15	4.6	8.15	0.96	10.51	3.08	91.56
121	MANGERIYA	3.15	2.68	10.3	9	3.01	0.89	169.7	1.4	1.98	95.54	2.7	11	1	10.64	3.32	85.03
122	BILARA	5	4.43	10.5	9	4.98	0.89	279.6	2.3	1.98	99.52	4.6	8.26	0.97	10.82	3.08	91.3
123		5	4.34	10.5	8.9	4.88	0.89	268.1	2.2	1.98	97.53	4.5	8.61	0.97	10.82	3.08	89.83
124	SOJATI GATE	5	4.58	10.5	9	5.21	0.88	286.3	2.5	1.98	104.14	4.8	7.51	0.95	10.82	3.08	96.32
125		5	4.66	10.5	8.9	5.27	0.88	293.9	2.5	1.98	105.82	4.9	7.27	0.95	10.82	3.08	98.13
126	DIWANJI KI PAD	3.15	2.67	10.5	9	3.14	0.85	172.8	1.7	1.98	99.99	2.7	15	1	10.92	4	80.81
127		3.15	2.51	10.5	9.1	2.95	0.85	162.5	1.6	1.98	93.73	2.5	15	1	10.89	3.76	79.67
128	KHARIYA MOHABUR	3.15	2.78	10.5	9	3.24	0.86	178.1	1.7	1.98	102.8	2.8	14	1	10.92	3.99	88.41
129		5	4.5	10.5	9.2	5.24	0.86	288	2.7	1.98	104.76	4.8	7.42	0.93	10.82	3.08	96.99
130	JHAK	3.15	2.94	10.5	9	3.26	0.9	179.5	1.4	1.98	103.62	2.9	10	1	10.86	3.44	93.26
131	UDALIYAWAS	3.15	2.69	10.5	9.5	2.99	0.9	164.2	1.3	1.98	94.77	2.7	10	1	10.83	3.14	85.29
132		3.15	2.63	10.5	9	2.93	0.9	161	1.3	1.98	92.93	2.5	10	1	10.82	3.08	83.64
133	RANSI GAON	3.15	2.71	10.5	8.9	3.05	0.89	167.6	1.4	1.98	96.75	2.7	11	1	10.85	3.36	86.31
134		5	4.27	10.5	9	4.8	0.89	263.9	2.2	1.98	96	4.4	8.9	0.96	10.82	3.08	87.15
135	PIPAR CITY	5	4.75	10.5	8.9	5.28	0.9	290.5	2.3	1.98	105.65	4.9	7.29	0.97	10.82	3.08	97.95
136		5	4.66	10.5	9	5.18	0.9	284.9	2.3	1.98	103.62	4.8	7.59	0.93	10.82	3.08	95.75
137	SATJIN	1.6	1.46	10.5	8.5	1.46	0.88	91.4	0.8	1.98	103.9	1.5	12	1	10.5	0	91.43
138		3.15	2.94	10.5	9	3.35	0.88	184	1.6	1.98	106.2	2.9	12	1	10.9	3.84	93.46
139	KHARIYA KHANDAR	3.15	2.71	10.2	8.9	3.05	0.89	172.5	1.4	1.98	96.75	2.7	11	1	10.54	3.36	86.11
140	TABUNAGAR	3.15	2.74	10.5	8.9	3.22	0.85	177	1.7	1.98	102.19	2.7	15	1	10.93	4.1	86.85
141	AMRIT NAGAR	3.15	3.14	10.5	9.1	3.43	0.9	191.6	1.5	1.98	110.62	3.1	10	1	10.89	3.67	99.56
142	RATORI DAL (BASTWA)	3.15	3.06	10.5	9	3.4	0.9	187	1.5	1.98	107.98	3.1	10	1	10.88	3.56	97.19
143		5.15	3.08	10.5	9.3	3.42	0.9	188.2	1.5	1.98	108.64	3.1	10	1	10.88	3.6	97.78
144	CHIDWAI	3.15	2.72	10.2	9	3.2	0.85	181.1	1.7	1.98	101.59	2.7	15	1	10.62	4.07	85.35
145	DERIYA	3.15	2.67	10.4	9	3.1	0.86	172.4	1.6	1.98	98.56	2.7	14	1	10.8	3.83	84.76

Signature:

Date: 30.06.2023

Name: M. L. Benda

(Project Nodal Officer)

For M.L. Benda
SE (RS) JVVNL

(Authorized Representative)

146	KERLI	3.15	2.85	10.5	8.9	3.24	0.88	178.7	1.5	1.98	102.8	2.8	12	1	10.89	3.72	90.46
147	GODELAI	3.15	2.68	10.3	9.2	3.05	0.88	170.8	1.4	1.98	96.73	2.7	12	1	10.66	3.5	85.14
148	BIJOMSAGAR	3.15	2.88	10.5	9	3.35	0.86	184.3	1.7	1.98	105.42	2.9	14	1	10.93	4.15	91.53
149	GUMANPURA	3.15	2.93	10.5	9	3.3	0.89	181.2	1.6	1.98	104.61	2.9	11	1	10.88	3.63	93.1
150	UNTDIWALIYA	5	4.15	10.2	9	5.07	0.82	286.6	2.9	1.98	101.33	4.7	7.95	0.89	10.51	3.08	93.28
151	BABUSAGAR UNTRAWALIYA	3.85	2.8	10.3	9.1	3.26	0.85	182.6	1.7	1.98	103.4	2.8	14	1	10.71	4.02	88.93
152	BABA KI NIMBARJODHEERPUR A)	3.15	3.03	10.6	9	3.27	0.9	183.6	1.5	1.98	107	3	10	1	10.98	3.55	96.3
153		3.15	3.1	10.6	9.2	3.45	0.9	187.8	1.5	1.98	109.44	3.1	10	1	10.98	3.63	98.5
154	KANODIYA PUROHITAN	3.15	2.82	10.2	9	3.24	0.87	183.3	1.6	1.98	102.8	2.8	13	1	10.59	3.46	89.43
155	BHALU KALLA	3.15	2.88	10.5	9.2	3.28	0.88	180.1	1.6	1.98	104.01	2.9	12	1	10.89	3.76	91.53
156	KHUMAKHAS	3.15	3.01	10.5	9.2	3.35	0.9	184.2	1.5	1.98	106.33	3	10	1	10.87	3.55	95.69
157	CHABA	3.15	2.91	10.5	9	3.24	0.9	177.9	1.4	1.98	102.72	2.9	10	1	10.86	3.41	92.44
158	SOINTRA	3.15	2.9	10.3	8.9	3.35	0.89	182.6	1.5	1.98	103.4	2.9	11	1	10.67	3.59	92.03
159	KHERJA TRANA	3.15	2.95	10.4	8.9	3.31	0.89	180.5	1.5	1.98	105.22	2.9	11	1	10.47	3.65	93.64
160	NOKHDADA DHATIYA	3.15	2.81	10.3	8.9	3.16	0.89	177.2	1.4	1.98	100.38	2.8	11	1	10.66	3.48	89.34
161		3.15	2.85	10.5	9	3.24	0.89	181.5	1.5	1.98	102.8	2.9	11	1	10.67	3.57	91.49
162	RAD KA BERA	5	4.54	10.4	9.1	5.05	0.9	280.2	2.2	1.98	100.95	4.6	8.01	0.98	10.72	5.08	92.85
163	CHHITERBERA	3.15	2.85	10.3	9	3.2	0.89	175.4	1.5	1.98	101.59	2.8	11	1	10.66	3.52	90.41
164		3.15	2.76	10.3	9	3.1	0.88	174	1.4	1.98	98.56	2.8	11	1	10.55	3.62	87.72
165	CHADI	3.15	2.83	10.4	8.9	3.14	0.9	174.3	1.4	1.98	99.66	2.8	10	1	10.74	3.31	89.69
166		3.15	2.93	10.6	9	3.25	0.9	180.7	1.4	1.98	103.33	2.9	10	1	10.76	3.43	92.99
167	KRISHAN NAGAR	3.15	3.02	10.7	9.2	3.43	0.85	194.1	1.6	1.98	108.84	3	12	1	10.6	3.93	95.78
168		3.15	3.05	10.7	9	3.47	0.88	196.2	1.6	1.98	110.05	3.1	13	1	10.61	3.98	96.85
169	BIDMALSAR	3.15	2.78	10.4	8.9	3.12	0.89	173.4	1.4	1.98	99.17	2.8	11	1	10.75	3.44	88.26
170		3.15	2.71	10.4	9.3	3.05	0.89	169.2	1.4	1.98	96.75	2.7	11	1	10.75	3.36	85.11
171	MANASAR	3.15	2.7	10.5	8.9	3.04	0.86	172.8	1.6	1.98	95.13	2.7	14	1	10.91	3.87	85.8
172		3.15	2.59	10.5	8.9	3.01	0.86	165.5	1.5	1.98	95.54	2.6	14	1	10.89	3.71	82.16
173	BOONGADI	3.15	2.59	10.3	9	3.09	0.84	174.7	1.7	1.98	97.96	2.6	16	1	10.61	4.01	82.29
174	INDOKA BAS	3.15	2.62	10.2	9.1	3.2	0.82	181.1	1.8	1.98	101.59	2.6	18	1	10.55	4.42	89.3
175		3.15	2.62	10.2	9	3.2	0.82	181.1	1.8	1.98	101.59	2.6	18	1	10.65	4.42	89.3

Signature:

Date: 30.06.2023

Name: M. L. Bendo
(Project Nodal Officer)

Name: M. L. Bendla
SE (O&S), JdVVNL, JU
(Authorized Representative)

176	IGNP PHASE-IX	3.15	2.27	10.8	8.9	2.67	0.85	142.6	1.4	1.98	84.55	2.3	15	1	11.17	3.39	71.56
177	(BAP) R.D.1120	3.15	3.01	10.2	9	3.34	0.9	189.2	1.5	1.98	106.1	3	10	1	10.55	3.52	95.49
178	DURGANI	3.15	2.75	10.3	9.2	3.31	0.86	183.3	1.7	1.98	102.8	2.8	14	1	10.61	3.99	85.61
179		3.15	2.82	10.2	9	3.28	0.86	185.4	1.7	1.98	104.01	2.8	14	1	10.61	4.04	89.45
180	SHEKHASAR	3.15	2.75	10.5	8.9	3.24	0.85	178.1	1.7	1.98	100.8	2.8	15	1	10.99	4.12	87.28
181		3.15	2.8	10.5	9	3.3	0.85	281.2	1.7	1.98	104.61	2.8	15	1	10.94	4.19	88.52
182	ANUP NAAGAR	3.15	2.86	10.2	9.1	3.24	0.89	185.3	1.5	1.98	102.8	2.9	11	1	10.55	3.57	91.49
183		3.15	2.85	10.2	9	3.2	0.89	181.1	1.5	1.98	101.59	2.8	11	1	10.56	3.52	90.41
184	RIN SALT	3.15	2.59	10.3	9	3.21	0.9	180.1	1.4	1.98	101.99	2.9	10	1	10.65	3.38	91.79
185	JHARASAR KALLA	3.15	2.7	10.2	9.3	3.14	0.86	177.9	1.6	1.98	99.77	2.7	14	1	10.6	3.87	85.8
186		3.15	2.62	10.2	9.2	3.05	0.86	172.5	1.6	1.98	96.75	2.6	14	1	10.58	3.76	83.2
187	Rampura(Karan)	5	4.65	10.3	9	5.1	0.91	286.9	2.1	1.98	102.1	4.7	7.83	0.99	10.62	3.08	94.1
188	JETSAR	3.15	2.85	10.3	8.9	3.26	0.88	183.5	1.5	1.98	102.8	2.8	12	1	10.68	3.72	90.46
189		3.15	2.85	10.3	8.8	3.24	0.88	181.5	1.5	1.98	102.8	2.8	12	1	10.68	3.72	90.46
190	PALINA	3.15	2.82	10.2	9.1	3.24	0.87	183.3	1.6	1.98	102.8	2.8	13	1	10.59	3.86	89.43
191	KUSHLAWA	5	4.61	10.3	9.2	5.24	0.88	293.7	2.3	1.98	104.79	4.9	7.42	0.95	10.62	3.08	97.02
192	BHOJAKOR	3.15	2.83	10.5	9.1	3.24	0.89	178.1	1.5	1.98	102.8	2.9	11	1	10.67	3.57	91.49
193	MORIYA	3.15	3.02	10.3	9	3.43	0.83	192.2	1.5	1.98	108.84	3	12	1	10.71	3.93	95.78
194	AMLA	5	4.7	10.4	8.9	5.22	0.9	289.7	2.3	1.98	101.36	4.8	7.48	0.97	10.72	3.08	96.56
195	Chainpura	3.15	2.8	10.5	8.9	3.33	0.84	183.3	1.8	1.98	105.82	2.8	16	1	10.96	4.37	88.89
196	SHIVSAR	5	4.08	10.5	9	4.86	0.84	267.1	2.6	1.98	97.14	4.4	8.69	0.92	10.82	3.08	83.7
197		3.15	2.48	10.5	9.2	2.95	0.84	162.3	1.6	1.98	93.73	2.5	16	1	10.91	3.87	78.73
198	BAORI KALLA	5	4.46	10.2	8.9	4.95	0.9	280.3	2.2	1.98	99.05	4.5	8.34	0.98	10.51	3.08	90.76
199	RAYADA	3.15	2.98	10.2	9	3.34	0.89	189.3	1.5	1.98	106.15	3	11	1	10.58	3.68	96.48
200		3.15	3.01	10.2	9.1	3.38	0.89	191.5	1.5	1.98	107.42	3	11	1	10.58	3.73	95.6
201	MARIAT	3.15	2.77	10.2	9	3.08	0.9	174.4	1.3	1.98	97.82	2.8	10	1	10.53	3.24	88.04
202	JALODA	3.15	2.85	10.2	8.9	3.14	0.9	177.9	1.4	1.98	99.77	2.8	10	1	10.58	3.31	89.8
203		3.15	2.85	10.2	9	3.2	0.9	181.1	1.6	1.98	101.59	2.9	10	1	10.54	3.37	91.43
204	MANDLA KHURD	3.15	2.85	10.2	9	3.25	0.89	183.9	1.5	1.98	103.14	2.9	11	1	10.57	3.58	91.75
205		3.15	2.98	10.2	9.1	3.35	0.89	189.5	1.5	1.98	106.26	3	11	1	10.58	3.69	94.57
206	KHARA	3.15	2.98	10.2	9	3.39	0.88	191.6	1.6	1.98	107.47	3	12	1	10.6	3.83	94.57

Signature:

Date: 30.06.2023

Name: M. L. Benda

(Project Nodal Officer)

Er. M. L. Benda
SE (W&S), JdVVNL, JU

(Authorized Representative)

207		3.15	2.85	10.2	8.5	3.39	0.88	186	1.6	1.98	104.31	2.9	12	1	10.58	3.72	91.79
208	KOLUTABUT	3.15	2.96	10.2	9	3.4	0.87	192.7	1.7	1.98	106.07	3	13	1	10.61	4.05	94.02
209	BENGTI KHURD	3.15	2.89	10.2	9	3.25	0.89	183.9	1.5	1.98	100.14	2.9	11	1	10.57	3.58	91.79
210		5	4.56	10.2	5	5.12	0.89	289.8	2.5	1.98	102.39	4.7	7.78	0.97	10.51	3.08	94.42
211	SEHRA	3.15	2.91	10.2	9	3.42	0.85	193.7	1.8	1.98	108.64	2.9	15	1	10.64	4.36	92.35
212		5	4.61	10.2	8.9	5.02	0.85	306.9	2.9	1.98	102.44	5	6.91	0.91	10.51	3.08	100.95
213	MANDLA KALLAN	3.15	2.95	10.2	9.2	3.28	0.9	185.4	1.4	1.98	104.01	2.9	10	1	10.55	3.45	93.61
214	EKA BHATIYA	3.15	2.91	10.2	9	3.24	0.9	183.1	1.4	1.98	102.72	2.9	10	1	10.55	3.41	92.44
215	JEMALA	5	4.58	10.3	8.9	5.1	0.89	286.1	2.3	1.98	102.1	4.7	7.83	0.97	10.52	3.08	94.1
216		3.15	2.85	10.3	9	3.2	0.89	179.4	1.5	1.98	101.99	2.8	11	1	10.66	3.52	93.41
217	GAJJA	3.15	2.94	10.5	8.9	3.27	0.9	179.7	1.4	1.98	103.32	2.9	10	1	10.86	3.44	93.35
218		3.15	3.01	10.5	8.9	3.35	0.9	184	1.5	1.98	105.22	3	10	1	10.87	3.52	95.6
219	BARSANADA	3.15	2.94	10.5	9	3.27	0.9	179.9	1.4	1.98	103.84	2.9	10	1	10.86	3.44	93.46
220		3.15	3	10.5	9.2	3.33	0.9	183.1	1.5	1.98	105.7	3	10	1	10.87	3.51	95.13
221	KAPADISAR	3.15	2.67	10.5	9.3	3.14	0.85	172.8	1.7	1.98	99.77	2.7	15	1	10.92	4	84.81
222		3.15	2.7	10.5	8.9	3.18	0.85	174.9	1.7	1.98	100.98	2.7	15	1	10.93	4.05	85.84
223	SADAWATA	3.15	2.78	10.5	9.3	3.24	0.86	178.1	1.7	1.98	102.8	2.8	14	1	10.92	3.99	88.41
224	Gayeli Road	5	4.12	10.58	9.5	4.65	0.85	264.5	2.6	1.98	56.94	4.4	8.72	0.93	10.91	3.08	85.08
225		3.15	3	10.58	9.7	3.53	0.85	192.6	1.9	1.98	112.04	3	15	1	11.06	4.49	95.24
226	Sirohi City	5	4.74	10.62	9.6	5.39	0.88	292.8	2.6	1.98	107.73	5	7	0.95	10.95	3.08	100.18
227	Sirohi	3.15	2.74	10.43	9.6	3.34	0.82	185.5	1.9	1.98	106.06	2.7	15	1	10.89	4.52	86.98
228	Jhwal	5	4	10	9.5	4.62	0.83	278.2	2.7	1.98	96.39	4.4	8.85	0.91	10.38	3.08	87.87
229		3.15	2.78	10	9.7	3.35	0.83	193.4	2.9	1.98	106.13	2.8	17	1	10.45	4.51	88.25
230	Paliv	3.15	2.5	10	9.7	2.91	0.86	167.8	1.5	1.98	92.28	2.5	14	1	10.36	3.58	79.27
231	Varada	3.15	2.7	10	9.5	3.34	0.86	181.3	1.6	1.91	99.67	2.7	14	1	10.39	3.87	85.71
232	Sheoganj Rikco	5	4.34	10	9.6	5.11	0.85	264.8	2.7	1.98	102.82	4.7	7.83	0.92	10.31	3.08	94.13
233		3.15	2.78	10	9.6	3.27	0.85	188.8	2.7	1.98	103.53	2.8	15	1	10.42	4.16	88.25
234	Palari	3.15	2.7	10	9.6	3	0.9	173.2	1.5	1.98	95.24	2.7	10	1	10.32	3.16	85.71
235		3.15	2.78	10	9.6	3.09	0.9	178.5	1.1	1.98	98.06	2.8	10	1	10.33	3.25	88.25
236		3.15	2.6	10	9.7	2.89	0.9	166.9	1.3	1.98	91.71	2.6	10	1	10.3	3.04	82.54
237	Sarodi	3.15	2.5	10	9.5	2.94	0.85	169.8	1.5	1.98	93.37	2.5	15	2	10.37	3.74	79.37

Date: 30.06.2023

Signature:

Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

M. L. Benda
SE (T&S) JdVVNL, JU

238	Kukundan	3.15	2.5	10	9.6	3.29	0.85	195.2	1.7	1.98	104.58	2.8	15	1	10.42	4.19	88.89
239		3.15	2.23	10	9.6	2.52	0.85	151.5	1.4	1.98	83.29	2.2	15	1	10.33	3.34	70.79
240	Krishnaganj	3.15	2.55	10	9.6	2.91	0.88	168	1.4	1.98	92.35	2.6	12	1	10.33	3.34	81.27
241		3.15	2.7	10	9.7	3.07	0.88	177.7	1.5	1.98	97.4	2.7	12	1	10.35	3.52	85.71
242	Mordandwara	3.15	2.5	10	9.6	2.87	0.87	165.9	1.4	1.98	91.22	2.6	13	1	10.34	3.42	79.37
243		3.15	2.4	10	9.6	2.75	0.87	159.3	1.4	1.98	87.58	2.4	13	1	10.33	3.29	76.19
244	Tasvar	3.15	2.25	10	9.6	2.51	0.88	146.3	1.2	1.98	80.45	2.2	10	1	10.29	2.91	70.79
245	Sirohi Road	3.15	2.5	10	9.6	2.84	0.88	164	1.3	1.98	90.29	2.5	12	1	10.33	3.26	79.37
246		3.15	2.6	10	9.5	2.95	0.88	170.6	1.4	1.98	93.8	2.6	12	1	10.34	3.39	82.54
247		5	4.65	10	9.7	5.22	0.89	301.7	2.4	1.98	164.49	4.8	7.46	0.96	10.31	3.06	96.7
248	Pindwara City	5	4.36	10	9.7	4.99	0.87	288	2.5	1.98	99.77	4.6	8.21	0.95	10.31	3.08	91.57
249	Bums	5	4.6	10	9.5	5.23	0.88	301.8	2.5	1.98	104.55	4.8	7.45	0.95	10.31	3.08	96.76
250	Veerwada	3.15	2.38	10	9.6	2.67	0.89	154.4	1.2	1.98	84.85	2.4	11	1	10.29	2.95	75.56
251	Nadiya	3.15	2.8	10	9.5	3.18	0.88	183.7	1.5	1.95	101.01	2.8	12	1	10.37	3.63	88.89
252	Gandhi Nagar	10	6.2	9.78	9.7	6.97	0.89	401.3	3.2	3.96	69.65	6.7	4.72	0.93	9.94	1.61	66.79
253	IOCL	5	3.2	9.7	9.6	3.6	0.89	214	1.6	1.98	71.91	3.2	11	1	9.95	2.55	64
254	Ambaji Ind Ar	10	7.8	9.7	9.6	8.86	0.88	527.6	4.2	3.95	88.64	8.6	2.53	0.9	9.86	1.61	86.4
255	Rohra	10	7.38	9.7	9.5	8.2	0.9	488.1	3.6	3.95	82	8	2.96	0.93	9.85	1.51	79.57
256	Manpur	10	3.87	10.5	9.8	4.3	0.9	255.9	1.9	3.96	43	3.9	10	1	9.85	1.53	38.7
257	DeDar	3.15	2.25	9.7	9.6	2.5	0.9	148.8	1.1	1.98	79.37	2.3	10	1	9.96	2.68	71.43
258	Kerali	3.15	2.34	9.7	9.7	2.6	0.9	154.8	1.1	1.98	82.54	2.3	10	1	9.97	2.74	74.29
259	Moogthala	3.15	2.4	9.7	9.5	2.67	0.9	158.7	1.2	1.98	84.66	2.4	10	1	9.97	2.81	76.19
260		3.15	5.4	9.7	9.5	6	0.9	357.1	2.6	1.98	190.48	5.7	5.6	0.95	10.16	4.78	179.81
261	Girwar	3.15	2.43	9.7	9.5	2.7	0.9	160.7	1.3	1.98	85.71	2.4	10	1	9.98	2.84	77.14
262	Mawal	3.15	1.98	9.7	9.7	2.2	0.9	130.9	1	1.98	69.84	2	10	1	9.92	2.32	62.86
263	Mt. Abu	5	3.5	9.7	9.6	3.93	0.89	234.1	1.8	1.98	98.65	3.5	11	1	9.97	2.79	70
264		5	3.4	9.7	9.6	3.78	0.9	224.9	1.6	1.98	95.56	3.4	10	1	9.95	2.56	68
265	Merdar	3.15	2.83	10.2	9.6	3.2	0.9	181.1	1.4	1.98	101.59	2.9	10	1	10.54	3.37	91.43
266	Barr	3.15	2.35	10.2	9.6	2.61	0.9	147.8	1.1	1.98	82.89	2.4	10	1	10.48	2.75	74.6
267	Jethiwada	3.15	2.5	9.8	9.6	2.78	0.9	163.7	1.2	1.98	88.18	2.5	10	1	10.09	2.99	79.37
268		5	4.5	9.8	9.6	5	0.9	294.6	2.2	1.98	100	4.6	8.17	0.98	10.1	3.08	91.82

Date: 30.06.2023

Signature:

Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

Er. M.L. Benda
SE (I&S), JdVVNL, Jo

269	Motwan	3.15	2.45	9.6	9.7	2.75	0.89	162.2	1.3	1.98	87.39	2.5	11	-	10.1	3.03	77.78
270		3.15	2.7	9.8	9.5	3	0.9	176.7	1.3	1.98	95.24	2.7	10	1	10.11	3.16	85.71
271	Mogriwadi	3.15	2.55	9.8	9.7	2.87	0.89	158.8	1.5	1.98	90.96	2.6	11	1	10.11	3.16	80.95
272		3.15	2.46	9.8	9.5	3.18	0.9	167.2	1.4	1.98	100.88	2.9	10	1	10.13	3.25	90.79
275	Gadarwar Bada	3.15	2.67	9.8	9	3.14	0.85	185.1	1.7	1.98	99.72	2.7	15	2	10.19	4	84.76
274		3.15	2.78	9.8	9.1	3.27	0.85	192.7	1.7	1.98	103.83	2.8	15	1	10.21	4.16	88.25
275	Mrekmasar	3.15	2.97	9.8	8.9	3.49	0.85	205.9	1.8	1.98	110.92	3	15	1	10.24	4.45	94.25
276		3.15	3	9.8	9	3.53	0.85	207.9	1.9	1.98	112.04	3	15	1	10.24	4.49	95.24
277	Binjasar 1st	3.15	2.37	9.8	9.2	2.75	0.85	164.3	1.5	1.98	88.52	2.4	15	1	10.15	3.55	75.21
278	Binjasar 2nd	3.15	2.27	9.8	8.9	2.7	0.84	159.2	1.5	1.98	85.79	2.3	16	1	10.13	3.54	72.86
279		3.15	2.47	9.8	9	2.91	0.85	171.2	1.5	1.98	92.25	2.5	15	1	10.16	3.7	78.41
280	Benisar	3.15	2.4	10	8.9	2.82	0.85	163	1.5	1.98	89.64	2.4	15	1	10.36	3.59	76.19
281		3.15	2.78	10	9	3.27	0.85	188.8	1.7	1.98	102.81	2.8	15	1	10.42	4.16	88.25
282	Dusmet	3.15	2.86	10	9.1	3.4	0.84	196.6	1.8	1.98	108.05	2.9	16	1	10.45	4.46	90.79
283		3.15	2.8	10	9.3	3.29	0.85	190.2	1.7	1.98	104.58	2.8	15	1	10.42	4.19	88.89
284	Jetsar	5	4	10	8.9	4.71	0.85	271.7	2.5	1.98	54.12	4.3	9.28	0.94	10.31	3.08	85.28
285		3.15	2.7	10	9	3.25	0.85	187.8	1.8	1.98	102.27	2.7	17	1	10.44	4.36	85.71
286	TRIKRIYASAR-I	3.15	2.61	9.9	9	3.26	0.8	190.3	2	1.98	103.57	2.6	20	1	10.37	4.23	82.86
287	TRIKRIYASAR-II	3.15	2.8	10	9	3.5	0.8	202.1	2.1	1.98	111.11	2.9	19.64	0.97	10.48	4.76	91.62
288	Jetsar Sta	3.15	2.33	10	8.9	2.74	0.85	158.3	1.4	1.98	87.02	2.3	15	1	10.35	3.49	73.97
289	Gopalpur - I	3.15	2.71	9.9	9	3.23	0.84	184.8	1.8	1.98	102.42	2.7	16	1	10.32	4.23	86.05
290		3.15	2.66	9.9	8.9	3.13	0.85	182.5	1.6	1.98	99.35	2.7	15	1	10.29	3.98	84.44
291	SATESAR	3.15	2.62	10	9	3.03	0.85	178	1.6	1.98	97.83	2.6	15	1	10.39	3.92	83.17
292		3.15	2.35	10	8.5	2.8	0.85	165.7	1.5	1.98	88.89	2.4	15	1	10.36	3.56	75.56
293	DHEERDESAR PUROHITAN	3.15	2.58	10.1	9.2	3.04	0.85	173.5	1.6	1.98	96.36	2.6	15	1	10.49	3.86	81.9
294	LIKHMADESAR-I	5	3.57	10.1	9.2	4.46	0.8	255.1	2.7	1.98	89.25	4	10.38	0.89	10.41	3.08	79.98
295		3.15	2.69	10.1	8.9	3.36	0.8	192.2	2	1.98	106.75	2.7	19.18	0.99	10.58	4.76	86.28
296	LIKHMADESAR-II	3.15	2.76	10	9	3.27	0.83	188.8	1.7	1.98	103.83	2.8	15	1	10.42	4.16	88.25
297		3.15	2.42	10	9.1	2.85	0.85	164.4	1.5	1.98	90.36	2.4	15	1	10.36	3.62	76.83
298	AADSAR	3.15	2.52	10	9	3.15	0.8	181.9	1.9	1.98	100	2.5	20	1	10.46	4.57	80
299		3.15	2.6	10	9	3.25	0.8	187.6	2	1.98	103.17	2.6	20	1	10.47	4.71	82.54

Signature:

Date: 30.06.2023

Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

Er. M.L. Benda
SE (I&S), JdVVNL, JU

300		3.15	2.4	10	8.9	3	0.8	173.2	1.8	1.98	95.24	2.4	20	1	10.43	4.35	76.19
301	UDRASAR	3.15	2.85	10	9.1	3.35	0.85	193.6	1.8	1.98	106.44	2.9	15	1	10.43	4.27	90.48
302	LALASAR	3.15	2.71	10	9	3.19	0.85	184.1	1.7	1.98	101.21	2.7	15	1	10.41	4.06	86.03
303	SARNA JOHAD	3.15	2.37	10	8.9	3.59	0.8	207.1	2.2	1.98	113.89	3	16.61	0.96	10.48	4.78	94.97
304	Roadwara	3.15	2.47	10	9	2.91	0.85	167.8	1.5	1.98	92.25	2.5	15	1	10.37	3.7	78.41
305		3.15	2.5	10	9.2	3.02	0.86	174.6	1.5	1.98	95.98	2.6	14	1	10.37	3.73	82.54
306	Serwa 1	5	4.2	10	9.7	4.88	0.88	282	2.5	1.98	97.67	4.5	8.55	0.94	10.31	3.08	89.29
307	Serwa 2	3.15	2.4	10	9.1	2.79	0.86	161.1	1.4	1.98	88.59	2.4	14	1	10.36	3.44	75.19
308	Derajsar - I	5	4.73	10	8.9	4.98	0.85	287.3	2.6	1.98	99.53	4.6	8.25	0.93	10.31	3.08	97.31
309	Gogana	3.15	2.19	10	8.8	2.56	0.85	148.8	1.4	1.98	81.79	2.2	15	1	10.33	3.38	69.52
310		3.15	2.47	10	9	2.91	0.85	167.8	1.5	1.98	92.25	2.5	15	1	10.37	3.7	78.41
311	Sarunda	3.15	2.4	10	8.9	3	0.8	173.2	1.8	1.98	95.24	2.4	20	1	10.43	4.35	76.19
312	Sinlyala - I	5	4.36	10	9	5.13	0.85	296.2	2.7	1.98	102.59	4.7	7.75	0.92	10.31	3.08	94.04
313		3.15	2.5	20	8.0	2.94	0.85	169.8	1.5	1.98	93.37	2.5	15	1	10.37	3.74	79.37
314	Hanuman Nagar	3.15	2.4	10	9	2.82	0.85	163	1.5	1.98	89.64	2.4	15	1	10.36	3.59	76.19
315	Bhedia	3.15	2.13	10	8.9	2.51	0.85	144.7	1.3	1.98	79.55	2.1	15	1	10.32	3.19	67.62
316	Nathuasar	3.15	2.35	10	9	2.94	0.8	169.6	1.8	1.98	93.25	2.4	20	1	10.43	4.26	74.6
317	Saisar	3.15	2.39	10	8.9	2.99	0.8	172.5	1.8	1.98	94.84	2.4	20	1	10.43	4.33	75.87
318		3.15	2.49	10	9.1	2.93	0.85	169.1	1.5	1.98	93	2.5	15	1	10.37	3.73	79.05
319	Ritriyo pharia	3.15	2.4	10	8.9	2.82	0.85	163	1.5	1.98	89.64	2.4	15	1	10.36	3.59	76.19
320		3.15	2.8	10	8	3.29	0.85	190.2	1.7	1.98	104.58	2.8	15	1	10.42	4.19	88.89
321	Lalasar Sathi	5	4.23	10	9.4	5.29	0.8	305.3	3.2	1.98	105.75	4.9	7.28	0.86	10.31	3.08	98.06
322	Pheli ki Talai	3.15	2.32	10	8.9	2.73	0.85	157.6	1.4	1.98	86.65	2.3	15	1	10.35	3.47	73.65
323	Mairon	5	4.24	10	9	4.99	0.85	288	2.6	1.98	99.76	4.5	8.22	0.93	10.31	3.08	91.57
324	Jasrasar-I	5	4.45	10	8.9	5.24	0.85	302.3	2.8	1.98	104.71	4.8	7.45	0.92	10.32	3.08	96.93
325		3.15	2.4	10	9	2.82	0.85	163	1.5	1.98	89.64	2.4	15	1	10.36	3.59	76.19
326	Gudasar	3.15	2.3	10	9.1	2.71	0.85	156.2	1.4	1.98	85.9	2.3	15	1	10.34	3.44	73.02
327		5	4.3	10	8.5	5.06	0.85	292.3	2.7	1.98	101.18	4.7	7.98	0.92	10.31	3.08	93.1
328	Udsar	3.15	2.6	10	9	3.1	0.84	178.7	1.7	1.98	98.26	2.6	16	1	10.41	4.06	82.54
329		5	2.4	10	9.2	2.82	0.85	163	1.5	1.98	56.47	2.4	15	1	10.23	2.31	48
330	Jharel-II	3.15	2.85	10	8.9	3.35	0.85	193.6	1.8	1.98	106.44	2.9	15	1	10.43	4.27	90.48

Date: 30.06.2023

Signature:

Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

Er. M.L. Benda
SE (I&S), JdVVNL, JU

331	Shiv Mandir	3.15	2.19	10	9	2.58	0.85	143.8	1.4	1.98	81.79	2.2	15	1	10.33	3.31	69.52
332	Bhagwan Rupd	3.15	2.7	10	8.9	3.18	0.85	183.4	1.7	1.98	100.84	2.7	15	1	10.4	4.04	85.71
333	SUVASAR	3.15	2.67	10	9.1	3.04	0.8	252.7	2	1.98	105.95	2.7	19.5	0.99	10.48	4.78	85.29
334	2. SURDHNA -II	3.15	2.85	10	9	3.56	0.8	205.7	2.1	1.98	113.1	3	16.87	0.96	10.48	4.78	94.02
335	1. K.D.JATAN -II	3.15	2.8	10	8.9	3.5	0.8	202.1	2.1	1.98	111.11	2.9	17.54	0.97	10.48	4.78	91.62
336	1. NAPASAR	3.15	2.7	10	8.9	3.18	0.85	183.4	1.7	1.98	100.84	2.7	15	1	10.4	4.04	85.71
337		3.15	2.47	10	9	2.91	0.85	167.8	1.5	1.98	92.25	2.5	15	1	10.37	3.7	78.41
338	Ginsalsar-I	5	4.27	10	8.9	5.04	0.8	320.2	3.2	1.98	176.75	5	7.14	0.86	10.31	3.08	99.13
339		3.15	2.13	10	9.2	2.74	0.8	158.1	1.6	1.98	86.9	2.2	20	1	10.4	3.97	69.52
340	Ramsargdesar	5	4.25	10	9.2	5.45	0.8	314.7	3.1	1.98	109	5.1	6.83	0.86	10.31	3.08	101.53
341		3.15	2.76	10	8.9	3.25	0.85	187.5	1.7	1.98	103.08	2.8	15	1	10.41	4.13	87.62
342	NAPASAR - II	3.15	2.44	10	9	2.87	0.85	165.7	1.5	1.98	91.13	2.4	15	1	10.37	3.65	77.46
343	2. RAMSAR -I	5	4.25	10	9.1	5.12	0.85	295.5	2.7	1.98	162.35	4.7	7.79	0.92	10.31	3.08	94.98
344		5	4.48	10	9	5.27	0.85	304.3	2.8	1.98	165.41	4.9	7.32	0.92	10.31	3.08	97.69
345	3. RAMSAR-II	3.15	2.67	10	9	3.34	0.8	192.7	2	1.98	105.95	2.7	19.5	0.99	10.48	4.78	85.29
346		3.15	2.5	10	8.9	3.03	0.8	160.4	1.9	1.98	99.21	2.5	20	1	10.45	4.53	79.37
347	I.K.D.Baran-I	3.15	2.43	10	9.1	2.86	0.85	165.1	1.5	1.98	90.76	2.4	15	1	10.36	3.64	77.14
348	2.K.D Jatan -I	5	4.54	10	9	5.24	0.85	308.4	2.8	1.98	166.82	5	7.12	0.92	10.31	3.08	99.21
349	1. K.D.Jatan-IV	3.15	2.51	10	8.9	3.14	0.8	181.1	1.9	1.98	99.6	2.5	20	1	10.45	4.55	79.56
350	2. KHUCHU	5	3.8	10	9	4.47	0.85	258.1	2.4	1.98	89.45	4	10.34	0.95	10.31	3.08	80.16
351	1. TEJRASAR - I	5	3.89	10	9.2	4.58	0.85	264.2	2.4	1.98	91.53	4.1	9.84	0.94	10.31	3.08	82.52
352		3.15	2.64	10	9.2	2.87	0.85	165.7	1.5	1.98	91.13	2.4	15	1	10.37	3.65	77.46
353	2. TEJRASAR - III	5	4.57	10	9.5	5.71	0.8	329.8	3.4	1.98	114.25	5.4	6.2	0.85	10.31	3.08	107.17
354	4. BELASAR	5	3.42	10	9	4.08	0.8	246.8	2.6	1.98	85.5	3.8	11.27	0.9	10.31	3.08	75.76
355	2. TEJRASAR - II	5	4.57	10	9.5	5.71	0.8	329.8	3.4	1.98	114.25	5.4	6.2	0.85	10.31	3.08	107.17
356	2. SINTHAL	3.15	2.57	10	9	3.02	0.85	174.6	1.6	1.98	95.99	2.6	15	1	10.38	3.85	81.59
357	J.D MAGARA	5	4.08	10	9.5	5.48	0.8	316.1	3.3	1.98	109.5	5.1	6.77	0.86	10.31	3.08	102.09
358		3.15	2.57	10	9.2	3.21	0.8	185.5	1.9	1.98	101.98	2.6	20	1	10.47	4.66	81.59
359	JD MEGRA	5	3.8	10	8.9	4.47	0.85	258.1	2.4	1.98	89.41	4	10.34	0.95	10.31	3.08	80.16
360	MEGHASAR	5	3.9	10	9.2	4.88	0.8	281.5	2.9	1.98	97.5	4.5	8.62	0.89	10.31	3.08	89.1
361		5	4.23	10	8.9	5.29	0.8	305.3	3.2	1.98	105.75	4.9	7.28	0.86	10.31	3.08	98.06

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

Er. M.L. Benda
SE (I&S), JdVVNL, JU

(Authorized Representative)

362	BARSINGESAR	5	4.69	10	9	5.6	0.8	324	3.4	1.98	112.25	5.3	6.43	0.85	10.31	3.08	105.04
363		5	4.31	10	8.9	5.43	0.8	313.2	3.3	1.98	108.5	5.1	6.9	0.86	10.31	3.08	101.02
364	SWAROOPDESAR	3.15	2.25	10	9.3	2.79	0.8	160.9	1.7	1.98	88.49	2.2	20	1	10.4	4.04	20.79
365	BIKANERA	3.15	2.49	10	9.2	3.11	0.8	179.7	1.9	1.98	98.81	2.5	20	1	10.45	4.31	22.05
366		3.15	2.45	10	9	3.06	0.8	176.8	1.8	1.98	97.22	2.5	20	1	10.44	4.44	22.58
367	RANERI	5	4.44	10	9	5.29	0.84	305.2	2.9	1.98	105.71	4.9	7.28	0.91	10.31	3.08	98.02
368		5	4.28	10	9.1	5.15	0.8	309.9	3.5	1.98	107	5	7.7	0.86	10.31	3.08	99.4
369	HAGDA	3.15	2.28	10	8.9	2.68	0.85	151.9	1.4	1.98	85.15	2.0	15	1	10.34	3.41	72.38
370	LOHIYA	5	3.81	10	9.2	4.76	0.8	274.9	2.9	1.98	95.24	4.3	9.05	0.88	10.31	3.08	86.61
371	KHINDASAR	5	4	10	9.2	5	0.8	288.7	3	1.98	100	4.6	8.17	0.87	10.31	3.08	91.83
372	BEELU	5	4.57	10	9.5	5.71	0.8	329.9	3.4	1.98	114.29	5.4	6.2	0.93	10.31	3.08	107.21
373	SIKHPURA	3.15	3.91	10	9.6	4.37	0.85	252.3	2.3	1.98	108.72	3.9	10.85	0.95	10.48	4.78	123.65
374	KISHANASAR	3.15	2.73	10	8.9	3.21	0.85	185.4	1.7	1.98	101.96	2.7	15	1	10.41	4.09	86.57
375		3.15	2.46	10	9	2.89	0.85	167.1	1.5	1.98	91.88	2.5	15	1	10.37	3.68	78.1
376	DANTOR	3.15	2.67	10	9.1	3.33	0.8	192.5	2	1.98	105.82	2.7	19.55	0.99	10.48	4.78	85.13
377	28 KJD	3.15	2.48	10	9.2	3.1	0.8	178.7	1.9	1.98	98.25	2.5	20	1	10.45	4.49	78.61
378	3 PWM	3.15	2.29	10	9	2.86	0.8	165	1.7	1.98	90.7	2.3	20	1	10.43	4.14	72.56
379	1 ADM	3.15	2.67	10	9.1	3.14	0.85	181.1	1.7	1.98	99.6	2.7	15	1	10.4	3.99	84.66
380	Jansar	3.15	2.36	10	9	2.78	0.85	160.3	1.5	1.98	88.14	2.4	15	1	10.35	3.93	74.92
381		3.15	2.3	10	8.9	2.71	0.85	156.2	1.4	1.98	85.9	2.3	15	1	10.34	3.44	73.02
382	1. GADHWALA - I	3.15	2.45	10	9	2.88	0.85	166.4	1.5	1.98	91.5	2.5	15	1	10.37	3.67	77.78
383		5	4	10	9.1	4.71	0.85	271.7	2.5	1.98	94.12	4.3	9.28	0.94	10.41	3.98	85.38
384	2 GADHWALA - II	5	3.81	10	9.3	4.48	0.85	258.8	2.4	1.98	89.55	4	10.29	0.95	10.35	3.98	80.43
385		3.15	2.5	10	8.9	2.94	0.85	169.8	1.5	1.98	93.37	2.5	15	1	10.37	3.74	79.37
386	Pugal	3.15	2.48	10	9	3.1	0.8	178.7	1.9	1.98	98.26	2.5	20	1	10.45	4.49	78.61
387	RD 710	3.15	2.48	10	9	2.91	0.85	168.2	1.5	1.98	92.48	2.5	15	1	10.37	3.71	78.61
388	RD 750	3.15	2.29	10	9	2.86	0.8	165	1.7	1.98	90.7	2.3	20	1	10.43	4.14	72.56
389	BAGERAN	3.15	2.5	10	8.9	2.94	0.85	169.8	1.5	1.98	93.37	2.5	15	1	10.37	3.74	79.37
390	JETPUR	3.15	2.34	10	8.9	2.93	0.8	168.9	1.8	1.98	92.86	2.3	20	1	10.42	4.24	74.29
391		3.15	2.19	10	9	2.58	0.85	148.8	1.4	1.98	81.79	2.2	15	1	10.33	3.28	69.52
392	ARJUNSAR	3.15	2.45	10	8.9	2.88	0.85	166.4	1.5	1.98	91.5	2.5	15	1	10.37	3.67	77.78

Signature:

Date: 30.06.2023

Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)

Er. M.L. Benda
SE (I&S) JdVVNL. JU

393	Lokra	3.15	2.35	10	9	2.76	0.85	139.6	1.5	1.98	87.77	2.4	15	1	10.35	3.52	74.6
394	Mahajan	3.15	1.70	10	8.9	2.02	0.85	116.4	1.1	1.98	64.03	1.7	15	1	10.26	2.57	58.42
395	JAWAHARNAGAR	5	4.45	10	9	5.55	0.8	321.2	3.3	1.98	111.25	5.2	6.55	0.86	10.31	3.08	103.96
396		5	4.36	10	9	5.43	0.8	313.2	3.3	1.98	108.5	5.1	6.9	0.86	10.31	3.08	101.02
397		5	4.3	10	9.1	5.38	0.8	310.3	3.2	1.98	107.5	5	7.09	0.86	10.31	3.08	99.94
398		5	4.1	10.5	9.2	4.78	0.9	282.7	2.1	1.98	95.56	4.5	8.99	0.99	10.82	3.08	86.96
399	MAUSAM VIBHAG	8	6.3	10.5	9.8	7	0.9	384.9	3.1	3.96	87.5	6.7	4.08	0.94	10.71	2.01	53.95
400		5	4.2	10.5	9.5	4.67	0.9	255.6	2	1.98	93.33	4.2	9.45	0.99	10.82	3.08	84.57
401	MAHALAXMI ENCLAV	5	4.15	10.5	9.4	4.04	0.9	271.9	2.2	1.98	98.89	4.5	8.37	0.98	10.82	3.08	90.61
402	AGRAWAL COLONY	5	3.42	10.5	9.4	3.8	0.9	209	1.7	1.98	76	3.4	10	1	10.77	2.58	68.4
403	SMT. NATHIBAWALI	5	2.88	10.5	9.5	3.2	0.9	176	1.4	1.98	64	2.9	20	1	10.73	2.17	57.6
404		3.15	2.3	10.5	9	2.56	0.9	140.5	1.1	3.96	81.13	2.3	10	1	10.78	3.69	73.02
405		3.15	2.4	10.5	9.1	2.67	0.9	146.6	1.2	3.96	84.66	2.4	10	1	10.79	2.81	76.19
406	RIICO-I	8	5.89	10.5	9.8	6.60	0.89	363.9	3	1.98	82.32	6.3	4.58	0.93	10.71	2.01	74.04
407		5	4.17	10.5	9.3	4.69	0.89	257.6	2.1	1.98	93.71	4.2	9.37	0.98	10.82	3.08	84.93
408		5	4.3	10.5	9.2	4.83	0.89	265.2	2.2	1.98	96.63	4.4	8.78	0.98	10.82	3.08	88.14
409	RIICO-II	8	6.7	10.5	9.0	7.52	0.89	413.9	3.4	3.96	94.1	7.3	3.52	0.92	10.71	2.01	80.29
410		5	4.38	10.5	9	4.87	0.9	267.6	2.1	1.98	97.33	4.4	8.65	0.99	10.82	3.08	88.91
411	SHANI MANDIR	5	4.44	10.5	9.4	4.93	0.9	271.3	2.2	1.98	98.67	4.5	8.41	0.98	10.82	3.08	90.57
412		5	4.34	10.5	9	4.82	0.9	266.2	2.1	1.98	96.44	4.4	8.82	0.99	10.82	3.08	87.94
413	SABJI MANDI	10	8.78	10.5	9.2	9.76	0.9	536.4	4.3	3.96	97.56	9.0	2.08	0.92	10.67	1.61	95.53
414		5	3.8	10.5	9.1	4.22	0.9	232.2	1.8	1.98	84.44	3.8	10	1	10.8	2.86	76
415	KUNJ VIHAR	3.15	3	10.5	9.3	3.33	0.9	183.3	1.5	1.98	105.82	3	10	1	10.87	3.51	95.24
416	JCT	10	7.8	10.5	9.5	8.67	0.9	476.5	3.8	3.96	86.67	8.0	2.91	0.92	10.67	1.61	84.37
417		5	4.3	10.5	9.2	4.78	0.9	262.7	2.1	1.98	95.56	4.5	8.99	0.99	10.82	3.08	86.96
418	3 PUMP	10	8	10.5	9.2	8.89	0.9	488.8	3.9	3.96	88.89	8.7	2.51	0.92	10.67	1.51	86.66
419	BHAGAT SINGH CHOCK	8	6.6	10.5	9.8	7.42	0.89	400.8	3.4	3.96	92.7	7.1	3.82	0.92	10.71	2.01	89.33
420		8	6.5	10.5	9.8	7.3	0.89	401.6	3.3	3.96	91.29	7	3.35	0.92	10.71	2.01	87.67
421	KUMS	5	4.13	10.5	9	4.69	0.88	258.1	2.2	1.98	93.86	4.3	9.34	0.97	10.82	3.04	83.1
422		5	3.89	10.5	9.1	4.42	0.89	243.1	2.1	1.98	88.41	4	10.99	0.98	10.82	3.08	79.04
423	HOSPITAL	5	3.9	10.5	9.3	4.88	0.8	268.1	2.9	1.98	97.5	4.5	8.62	0.88	10.82	3.08	89.2

Signature:

Date: 30.06.2023

Name: M. L. Benda

(Project Nodal Officer)

Sd/- M.L. Benda
SE (S)
(Authorized Representative), JdVVNL, JU

424		5	4.67	10.5	5.8	5.84	0.8	321	3.5	1.98	116.75	5.5	5.93	0.85	10.82	3.05	109.83
425	SADBHAWANA NAGAR	5	4.56	10.5	9	5.36	0.85	295	2.8	1.98	100.29	5	7.06	0.91	10.82	3.08	99.52
426		5	4.35	10.5	9	5.12	0.85	281.4	2.7	1.98	102.35	4.7	7.79	0.92	10.82	3.06	98.78
427	V.K. CITY	5	4.48	10.5	9	5.03	0.89	276.8	2.3	1.98	100.67	4.6	8.06	0.97	10.82	3.08	92.56
428	PUG	5	4.45	10.5	9	5	0.89	274.9	2.3	1.98	100	4.6	8.87	0.97	10.82	3.08	91.83
429		5	4	10.5	9.1	4.49	0.89	247.1	2	1.98	89.89	4	10.25	0.99	10.82	3.08	90.69
430	kaliyan	3.15	2.5	10.5	9.6	3.11	0.9	171.1	1.4	1.98	98.27	2.8	10	1	10.84	3.28	88.89
431	Khalibani	3.15	2.9	10.8	9.6	3.22	0.9	177.3	1.4	1.98	102.29	2.9	10	1	11.17	3.39	92.06
432	dadapur 3rd	3.15	2.03	10.6	9.6	2.26	0.9	122.9	-	1.98	71.6	2	10	1	10.85	2.58	64.44
433	Vinduvalbel	3.15	2.66	10.9	9.6	2.73	0.9	147.5	1.2	1.98	85.27	2.5	10	1	11.01	2.88	78.1
434	sachuwali	3.15	2.6	10.9	9.6	2.69	0.9	153	1.3	1.98	98.71	2.6	10	1	11.03	3.04	82.54
435	7A	3.15	2.6	10.8	9.5	2.89	0.9	154.4	1.3	1.98	91.71	2.6	10	1	11.13	3.04	82.54
436	BORJAWALI	3.15	1.9	10.6	9.6	2.11	0.9	115	0.9	1.98	67.02	1.9	10	1	10.84	2.22	60.32
437	CHUNAWAD	3.15	1.4	10.7	9.6	1.56	0.9	83.9	0.7	1.98	49.38	1.4	10	1	10.88	1.64	44.44
438	15Z	3.15	2.2	10.9	9.6	2.44	0.9	129.5	1.1	1.98	77.6	2.2	10	1	11.08	2.57	69.84
439	HOMELAND	5	3.4	10.8	9.6	3.78	0.9	202	1.6	1.98	75.55	3.4	10	1	11.08	2.55	68
440	RISHI SIDHI	5	3.7	10.8	9.6	4.11	0.9	219.8	1.8	1.98	82.22	3.7	10	1	11.1	2.79	74
441	MEDEWALA	3.15	2.4	10.7	9.6	2.67	0.9	143.9	1.2	1.98	84.66	2.4	10	1	11	2.81	76.19
442		3.15	2.8	10.7	9.1	3.11	0.9	167.9	1.4	1.98	98.77	2.8	10	1	11.05	3.28	88.89
443	7 ML	3.15	2.6	10.9	9.6	2.89	0.9	153	1.3	1.98	91.71	2.6	10	1	11.23	3.04	82.54
444		3.15	2.5	10.9	9.5	2.78	0.9	147.2	1.2	1.98	88.18	2.5	10	1	11.22	2.93	79.37
445	25 ML	3.15	2.8	10.6	9.4	3.13	0.9	169.5	1.4	1.98	98.77	2.8	10	1	10.95	3.28	88.89
446	DHINGAWALI	3.15	2.1	10.7	9	2.33	0.9	125.9	1	1.98	74.07	2.1	10	1	10.95	2.46	66.67
447	JODHEWALA	3.15	1.2	10.5	9.2	1.33	0.9	70.6	0.6	1.98	42.33	1.2	10	1	11.05	1.4	38.1
448	SADULSAHAR	2.5	1.6	10.5	9.2	1.78	0.9	97.8	0.8	1.98	71.11	1.6	10	1	10.75	2.36	64
449	ROOD	5	4.11	10.8	9.3	4.57	0.9	244.1	2	1.98	91.33	4.1	9.89	1	11.13	3.05	82.3
450	4 KRW	3.15	2.74	10.9	9.5	3.04	0.9	170.7	1.3	1.98	96.65	2.7	10	1	10.63	3.21	86.98
451	PARTAP PURA	3.15	2.22	10.5	9	2.47	0.9	135.6	1.1	1.98	78.31	2.2	10	1	10.77	2.6	70.48
452	BUDHAWALI	3.15	1.57	10.5	9	1.52	0.9	83.7	0.7	1.98	48.32	1.4	10	1	10.57	1.6	43.49
453	PATALI	3.15	2.05	10.8	9.1	2.58	0.9	127.7	1	1.98	72.31	2.1	10	1	10.35	2.4	65.08
454	MANNIWALI	3.15	1.57	10.8	9.2	1.52	0.9	85.3	0.7	1.98	45.32	1.4	10	1	10.47	1.6	43.49

Signature:

Name: M. L. Benda

(Project Nodal Officer)

Dy. M. L. Benda
SE (RS) JDVVNL, JU

(Authorized Representative)

Date: 30.06.2023

455	IPDS KESRISINGHPUR	5	2.1	10.3	9	3.44	0.9	193.1	1.5	1.98	68.89	3.1	10	1	10.54	2.34	62
456	VIRDAD	3.15	2.6	10.3	9.6	2.89	0.9	161.9	1.3	1.98	91.71	2.6	10	1	10.61	3.04	82.34
457	DHNDOR	3.15	3.9	10.3	9.8	2.11	0.9	218.3	0.9	1.98	97.02	1.9	10	1	10.53	2.22	60.32
458	DALPATSINGHPUR	3.15	1.4	10.3	9.4	1.66	0.9	87.2	0.7	1.98	46.38	1.4	10	1	10.47	1.64	44.44
459	KAMINPURA	3.15	2.2	10.3	9.5	2.44	0.9	137	1.1	1.98	77.6	2.2	10	1	10.57	2.57	69.84
460	ARAYAN	3.15	2.4	10.3	9	2.67	0.9	149.5	1.2	1.98	84.66	2.4	10	1	10.59	2.81	76.19
461	MADRANA	3.15	2.4	10.3	9.1	2.67	0.9	149.5	1.2	1.98	84.66	2.4	10	1	10.59	2.81	76.19
462	MORJEWALA	5	3.85	10.3	9.5	4.28	0.9	239.6	1.9	1.98	85.56	3.9	10	1	10.6	3.5	77
463	IBP	3.15	1.2	10.3	9.3	1.33	0.9	74.7	0.6	1.98	42.33	1.2	10	1	10.46	1.4	38.1
464	KONI	3.15	2.8	10.3	9.2	3.11	0.9	174.4	1.4	1.98	98.77	2.8	10	1	10.64	3.28	88.89
465	DAULATPURA	3.15	2.3	10.3	9.4	2.33	0.9	130.8	1	1.98	74.07	2.1	10	1	10.55	2.46	66.67
466	MANPHOOLSINGHWALA	5	4.5	10.3	9	5.06	0.89	283.4	2.3	1.98	101.13	4.7	7.99	0.97	10.62	3.08	53.05
467	GANESHGARH	3.15	1.26	10.3	9.4	1.39	0.89	78.1	0.6	1.98	44.23	1.2	11	1	10.66	1.53	39.37
468	GANESHGARH	3.15	2.5	10.3	9.3	2.95	0.88	166.6	1.4	1.98	93.8	2.6	12	1	10.66	3.25	82.54
469	LALGARH	3.15	2.4	10.3	9.3	2.7	0.89	151.2	1.2	1.98	85.61	2.4	11	1	10.61	2.57	76.19
470	JANNIWALI	3.15	2.2	10.3	9.2	2.44	0.9	137	1.1	1.98	77.6	2.2	10	1	10.57	2.57	69.84
471	BANWALI	3.15	2.4	10.3	9.4	2.79	0.86	156.4	1.4	1.98	88.59	2.4	14	1	10.65	3.44	76.19
472	MAMMAR	3.15	2.49	10.3	9	2.8	0.89	156.8	1.3	1.98	88.82	2.5	11	1	10.62	3.08	79.05
473	KHARAOTIAK	3.15	2.02	10.3	9.4	2.3	0.88	128.7	1.1	1.98	72.87	2	12	1	10.57	2.63	64.13
474	SLNP	3.15	2.3	10.3	9	2.55	0.9	143.3	1.1	1.98	81.23	2.3	10	1	10.58	2.69	73.02
475	SAMEJA	3.15	2.24	10.3	9.2	2.49	0.9	139.5	1.1	1.98	79.03	2.2	10	1	10.57	2.62	71.13
476	BAUDWALA	3.15	2.71	10.3	9.5	3.01	0.9	168.6	1.3	1.98	95.5	2.7	10	1	10.63	3.17	85.95
477	SATYANDA	3.15	2.52	10.3	9.3	2.8	0.9	157	1.2	1.98	88.91	2.5	10	1	10.6	2.95	80.02
478	DADLA	3.15	2.67	10.3	9.5	2.9	0.9	162.8	1.3	1.98	92.2	2.6	10	1	10.62	3.06	82.98
479	MURLAWA	3.15	2.43	10.3	9.2	2.7	0.9	151.2	1.2	1.98	85.62	2.4	10	1	10.59	2.84	77.05
480	LOONEWALA	3.15	1.19	10.3	9.2	1.66	0.9	93	0.7	1.98	52.69	1.5	10	1	10.48	1.75	47.42
481	IBPS	3.15	1.12	10.3	9	1.24	0.9	69.8	0.5	1.98	39.52	1.1	10	1	10.44	1.31	35.56
482	UDSAR	3.15	2.33	10.3	9.5	2.59	0.9	145.4	1.1	1.98	82.32	2.3	10	1	10.58	2.73	74.09
483	DHONDPURA	3.15	1.4	10.3	9	1.56	0.9	87.2	0.7	1.98	49.39	1.4	10	1	10.47	1.64	44.45
484	RAISINGHNAGAR	8	7.72	10.3	9.8	8.67	0.89	486.2	4	1.98	108.43	8.4	2.64	0.91	10.51	2.01	105.56
485		3.15	2.7	10.3	9.3	3.03	0.89	170.1	1.4	3.55	96.31	2.7	11	1	10.64	3.34	85.71

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

(Authorized Representative)

Er. M.L. Benda
SE (O&S) JdVVNL, JU

486	BADA MANDIR	5	4.24	10.3	9.3	4.71	0.9	264.1	2.1	1.98	94.22	4.3	9.26	0.99	10.62	3.08	85.5
487	RICO	5	4.27	10.3	9.5	4.68	0.9	262.9	2	1.98	93.56	4.2	9.4	0.99	10.62	3.08	84.76
488	PATAMPUR	5	4	10.3	9	4.49	0.89	251.9	2	1.98	89.89	4	10.23	0.99	10.62	3.08	80.69
489	26 DB	5	3	10.3	9	3.33	0.9	186.9	1.5	1.98	66.67	3	10	1	10.53	2.26	60
490	4 JJ	3.15	2.5	10.3	9.1	2.78	0.9	155.7	1.2	1.98	88.18	2.5	10	1	10.6	2.93	79.37
491	4 DD	3.15	2.3	10.3	9.2	2.56	0.9	143.3	1.1	1.98	81.13	2.3	10	1	10.58	2.69	73.02
492	CHANNADHAM	3.15	2.7	10.3	9	3	0.9	168.2	1.3	1.98	95.24	2.7	10	1	10.63	3.16	85.71
493	CC HEAD	3.15	2	10.3	8.5	2.22	0.9	124.6	1	1.98	70.55	2	10	1	10.54	2.34	63.49
494	2 RB	3.15	2.2	10.3	9.4	2.44	0.9	137	1.1	1.98	77.5	2.2	10	1	10.57	2.57	69.84
495	PS HEAD	3.15	2.3	10.3	9.4	2.58	0.89	144.9	1.2	1.98	82.04	2.3	10	1	10.58	2.45	73.02
496		3.15	2.5	10.3	9.5	2.78	0.9	155.7	1.2	1.98	88.18	2.5	10	1	10.6	2.93	79.37
497	JIVANDESAR	3.15	2.1	10.3	9	2.33	0.9	130.8	1	1.98	74.07	2.1	10	1	10.55	2.46	66.67
498	69 LNP	3.15	2.3	10.3	9.1	2.56	0.9	143.3	1.1	1.98	81.13	2.3	10	1	10.58	2.69	73.02
499	BONBAYLA	3.15	2.9	10.3	9.3	3.22	0.9	180.6	1.4	1.98	102.29	2.9	10	1	10.65	3.39	92.06
500		3.15	2.5	10.3	9.3	2.84	0.88	159.2	1.3	1.98	90.19	2.5	12	1	10.64	3.26	79.37
501	GHAMUDWALI	3.15	2.19	10.3	9.2	2.43	0.9	136.4	1.1	1.98	77.25	2.2	10	1	10.56	2.56	69.52
502	SAWANTSAR	3.15	2.1	10.3	9.4	2.33	0.9	130.8	1	1.98	74.07	2.1	10	1	10.55	2.45	66.67
503	MANEHUWASS	3.15	2.3	10.3	9	2.56	0.9	143.3	1.1	1.98	81.13	2.3	10	1	10.58	2.69	73.02
504	SKER	5	4.1	10.3	5.3	4.56	0.9	255.4	2	1.98	91.11	4.1	9.94	1	10.62	3.08	82.66
505		3.15	2.9	10.3	9.2	3.22	0.9	180.6	1.4	1.98	102.29	2.9	10	1	10.65	3.39	92.06
506	39H	3.15	2.8	10.3	9.4	3.11	0.9	174.4	1.4	1.98	98.77	2.8	10	1	10.64	3.28	88.89
507	25C	3.15	2.75	10.3	9	3.06	0.9	171.3	1.3	1.98	97	2.8	10	1	10.63	3.22	87.3
508	52GF	3.15	2.95	10.3	9.4	3.28	0.9	183.7	1.4	1.98	104.06	3	10	1	10.65	3.45	93.65
509	48GG	3.15	2.9	10.3	9.1	3.22	0.9	180.6	1.4	1.98	102.29	2.9	10	1	10.65	3.39	92.06
510	42F	3.15	2.7	10.3	9.3	3	0.9	168.2	1.3	1.98	95.24	2.7	10	1	10.63	3.16	85.71
511	3"O"	3.15	2.7	10.3	9.5	3	0.9	168.2	1.3	1.98	95.24	2.7	10	1	10.63	3.15	85.71
512	GAMSINGHPUR	3	3.5	10.3	9	3.89	0.9	218	1.7	1.98	77.78	3.5	10	1	10.57	2.64	70
513		5	4.6	10.3	9	5.11	0.9	286.5	2.2	1.98	102.22	4.7	7.81	0.98	10.62	3.08	94.26
514	SANGRANA	3.15	1.9	10.3	9.1	2.11	0.9	118.3	0.9	1.95	67.02	1.9	10	1	10.53	2.22	60.32
515	BALARAJPURA	3.15	2.28	10.3	9.2	2.53	0.9	142	1.1	1.98	80.42	2.3	10	1	10.57	2.67	72.38
516	JORAWAR	3.15	2	10.3	9	2.22	0.9	124.6	1	1.98	70.55	2	10	1	10.54	2.34	63.49

Signature:

Date: 30.06.2023

Name: M. L. Benda

(Project Nodal Officer): M.L. Benda

(Authorized Representative), JdVVNL, JU

517	CCBT	3.15	2.7	10.3	9.5	3	0.9	168.2	1.3	1.98	95.24	2.7	10	1	10.53	3.16	85.71
518	PALIWALA	3.15	2.57	10.3	9.4	2.89	0.89	161.9	1.3	1.98	91.67	2.6	10	1	10.63	3.18	81.59
519		3.15	2.63	10.3	9.4	2.96	0.96	165.6	1.3	1.98	93.81	2.6	10	1	10.61	3.25	83.49
520	SARDARPURA RIKA	3.15	2.03	10.3	9.5	2.26	0.9	126.4	1	1.98	71.6	2	10	1	10.56	2.38	64.48
521	NIRWANA	3.15	2.46	10.3	9.1	2.73	0.9	153.2	1.2	1.98	86.77	2.5	10	1	10.6	2.88	78.1
522	DHABA	3.15	2.59	10.3	9.6	2.82	0.9	158.2	1.2	1.98	89.59	2.5	10	1	10.57	2.97	80.63
523	GURUSAR MODIA	3.15	2.46	10.3	9	2.73	0.9	153.2	1.2	1.98	86.77	2.5	10	1	10.6	2.88	78.1
524	BHOPAL ROAD GSS	5	4.49	10.3	9.2	4.59	0.9	279.7	2.2	1.98	99.78	4.6	8.21	0.98	10.62	3.08	91.58
525		5	4.34	10.3	9.1	4.82	0.9	270.3	2.1	1.98	96.44	4.4	8.82	0.99	10.62	3.08	87.94
526	BIKED GSS	5	4.67	10.3	9.3	5.25	0.89	294.1	2.4	1.98	104.94	4.9	7.39	0.96	10.62	3.08	97.19
527		5	4.52	10.3	9.5	5.08	0.89	284.7	2.3	1.98	101.57	4.7	7.91	0.97	10.62	3.08	93.54
528	PEED GSS	5	4.6	10.3	9	5.17	0.89	289.7	2.4	1.98	103.37	4.8	7.63	0.95	10.62	3.08	95.48
529	STADIUM GROUND GSS	5	3.33	10.3	9	3.74	0.89	209.7	1.7	1.98	74.89	3.3	11	1	10.57	2.65	66.6
530	SOMASAR	5	4.42	10.3	9.1	4.91	0.9	275.5	2.1	1.98	98.22	4.5	8.49	0.98	10.62	3.08	89.89
531		5	3.98	10.3	9.2	4.42	0.9	247.9	1.9	1.98	88.44	4	10	1	10.61	3	79.6
532	KALUSAR	3.15	2.5	10.3	9	2.78	0.9	155.7	1.2	1.98	88.88	2.5	10	1	10.6	2.93	79.37
533	THETHAR	3.15	2.44	10.3	9.5	2.71	0.9	152	1.2	1.98	86.69	2.4	10	1	10.59	2.85	77.46
534	RAIYAWALI	3.15	2.67	10.3	9.4	2.97	0.9	166.3	1.3	1.98	94.18	2.7	10	1	10.62	3.12	84.76
535	UDAIPUR	3.15	2.7	10.3	9.4	3	0.9	168.2	1.3	1.98	95.24	2.7	10	1	10.63	3.16	85.71
536	BIRMANA	3.15	2.6	10.3	9.5	2.89	0.9	161.9	1.3	1.98	91.71	2.6	10	1	10.61	3.04	82.54
537	2 GEN	3.15	2.62	10.3	9	2.91	0.9	163.2	1.3	1.98	92.42	2.6	10	1	10.62	3.07	83.17
538	19 600 RDR	3.15	2.5	10.3	9.1	2.78	0.9	155.7	1.2	1.98	88.18	2.5	10	1	10.6	2.93	79.37
539	RAJASAR	3.15	2.38	10.3	9.3	2.64	0.9	148.2	1.2	1.98	83.95	2.4	10	1	10.59	2.78	75.56
540		3.15	2.58	10.3	9.3	2.87	0.9	160.7	1.2	1.98	91.01	2.6	10	1	10.61	3.02	81.9
541	DEEDWANA	3.15	2.6	10.3	9.2	2.67	0.9	149.5	1.2	1.98	84.66	2.4	10	1	10.59	2.81	76.19
542	BACHERAR	3.15	2.22	10.3	9.4	2.47	0.9	138.3	1.1	1.98	78.31	2.2	10	1	10.57	2.6	70.48
543	BHOJUSAR	3.15	2.4	10.3	9	2.67	0.9	149.5	1.2	1.98	84.66	2.4	10	1	10.59	2.81	76.19
544		3.15	2.3	10.3	9.3	2.56	0.9	143.9	1.1	1.98	81.13	2.3	10	1	10.58	2.69	73.02
545	GOVINDSAR	3.15	2.3	10.3	9.5	2.56	0.9	143.5	1.1	1.98	81.33	2.3	10	1	10.58	2.69	73.02
546		3.15	2.35	10.3	9.2	2.61	0.9	146.4	1.1	1.98	82.89	2.4	10	1	10.58	2.75	74.6
547	RAGHUNATHPURA	3.15	2.15	10.1	9.2	2.39	0.9	133.9	1	1.98	75.84	2.2	10	1	10.56	2.52	68.25

Signature:

Date: 30.06.2023

Name: M. L. Bendu
(Project Nodal Officer)
(Authorized Representative)

Er. M.L. Bendu
SE (I&S), JdVVNL, JU

548	SILWANI	3.15	2.5	10.3	9	2.78	0.9	153.7	1.2	1.98	88.18	2.5	10	1	10.6	2.93	79.37
549	SRI VIJAYNAGAR	5	4.17	10.3	9.5	4.09	0.89	262.6	2.1	1.98	90.71	4.2	9.17	0.98	10.62	3.08	81.93
550		5	4.11	10.3	9.5	4.57	0.9	256	2	1.98	91.33	4.1	9.89	1	10.62	3.06	82.3
551	29 GD	5	3.8	10.9	9.9	4.22	0.9	216.7	1.8	1.98	84.44	3.8	10	1	10.99	2.85	76
552	44 GB	3.15	4.3	10.3	9.8	4.78	0.9	267.8	2.1	1.98	151.68	4.3	8.99	0.99	10.79	4.78	138.04
553	KUPLI	3.15	1.3	10.3	9.4	1.44	0.9	81	0.6	1.98	45.86	1.3	10	1	10.46	1.52	41.27
554	PURANA BOLE BOARD	5	4.1	10.3	9	4.56	0.9	255.4	2	1.98	91.11	4.1	9.54	1	10.62	3.08	82.06
555	2 DAM	5	4.45	10.3	9.2	5	0.85	280.3	2.3	1.98	100	4.6	8.17	0.97	10.62	3.08	91.83
556		3.15	2.15	10.3	9.1	2.37	0.9	132.7	1	1.98	75.13	2.1	10	1	10.56	2.49	57.62
557	ANOOPGARH	5	4.43	10.3	9.5	4.98	0.89	279	2.3	1.98	99.55	4.6	8.25	0.97	10.62	3.06	91.34
558		3.15	2.5	10.5	9.4	2.78	0.9	152.7	1.2	1.95	88.18	2.5	10	1	10.81	2.93	79.37
559	RIICO	5	4.34	10.5	9	4.82	0.9	265.2	2.1	1.98	96.44	4.4	8.82	0.99	10.82	3.08	87.94
560		3.15	2.65	10.5	9.2	2.94	0.5	161.9	1.3	1.98	93.47	2.7	10	1	10.81	3.1	84.13
561	PREM NAGAR	5	4.45	10.5	9.1	4.94	0.9	271.0	2.2	1.98	98.89	4.5	8.37	0.98	10.62	3.08	90.61
562	76GB	3.15	2.5	10.7	9.3	2.78	0.9	149.9	1.2	1.98	88.18	2.5	10	1	11.01	2.93	79.37
563	BANDA COLONY	3.15	2.6	10.7	9.5	2.89	0.9	155.9	1.3	1.98	91.71	2.6	10	1	11.03	3.04	82.54
564	10A	3.15	2.68	10.7	9	2.94	0.9	158.9	1.3	1.98	93.47	2.7	10	1	11.05	3.1	84.13
565	27A	3.15	2.45	10.7	9	2.75	0.89	148.5	1.3	1.98	87.39	2.5	11	1	11.02	3.33	77.78
566		3.15	2.5	10.7	9.1	2.78	0.9	149.9	1.2	1.98	88.18	2.5	10	1	11.01	2.93	79.37
567	61GB	3.15	2.5	10.9	9.2	2.78	0.9	147.1	1.2	1.98	88.18	2.5	10	1	11.22	2.93	79.37
568	RAMSINGHPUR	3.15	2.5	10.9	9	2.78	0.9	147.1	1.2	1.98	88.18	2.5	10	1	11.22	2.93	79.37
569	NHARAWALI	3.15	2.53	10.9	9.5	2.87	0.9	151.5	1.2	1.98	91.01	2.6	10	1	11.23	3.02	81.9
570	RAWLA MANDI	3.15	2.5	10.5	9.4	2.78	0.9	152.7	1.2	1.98	88.18	2.5	10	1	10.81	2.93	79.37
571		3.15	2.45	10.5	9.4	2.75	0.89	151.4	1.3	1.98	87.39	2.5	11	1	10.92	3.03	77.78
572	3 KD	3.15	1.45	10.5	5.5	1.61	0.9	88.6	0.7	1.98	51.15	1.5	10	1	10.68	1.7	46.03
573	7 KND	3.15	2.03	10.5	9	2.26	0.9	124	1	1.98	71.5	2	10	1	10.75	2.38	64.44
574	365 HED	3.15	2.46	10.5	9.1	2.73	0.9	150.3	1.2	1.98	86.77	2.5	10	1	10.8	2.88	78.1
575	NEW MANDI GHARSANA	3.15	2.4	10.5	9.3	2.67	0.9	146.6	1.2	1.98	84.66	2.4	10	1	10.79	2.81	76.19
576		3.15	2.6	10.5	9.3	2.89	0.9	158.9	1.3	1.98	91.71	2.6	10	1	10.82	3.04	82.54
577	OLD MANDI GHARSANA	3.15	2.4	10.5	9.2	2.67	0.9	146.6	1.2	1.98	84.66	2.4	10	1	10.79	2.81	76.19
578	6 DD	3.15	2.15	10.5	9.4	2.39	0.9	131.4	1	1.98	75.84	2.2	10	1	10.76	2.52	68.25

Signature:

Date: 30.06.2023

Name: M. L. Benda

(Project Nodal Officer) Er. M.L. Benda

(Authorized Representative) SE (IGS) JdVVNL

579	PATRODA	3.15	2.45	10.5	9	2.72	0.9	149.7	1.3	1.98	86.42	2.5	10	1	10.8	2.87	77.78
580	PALI HEAD	3.15	2.55	10.4	9.4	2.61	0.9	143.6	1.1	1.98	82.85	2.4	10	1	10.79	2.75	74.5
581	JALWALI	3.15	1.98	10.5	9.3	2.2	0.9	121	1	1.98	69.84	2	10	1	10.74	2.32	62.86
582	ROJARY	3.15	2.95	10.5	9.7	3.28	0.9	180.2	1.4	1.98	104.06	3	10	1	10.86	3.45	93.65
583	4 STR	3.15	2.82	10.5	9.2	3.13	0.9	172.3	1.4	1.95	99.47	2.8	10	1	10.85	3.3	89.53
584	CHAWA	3.15	2.77	10.2	9.4	3.02	0.9	171.1	1.3	1.98	95.94	2.7	10	1	10.52	3.18	86.35
585	KAWAS	3.15	2.83	10.4	9	3.15	0.9	174.6	1.4	1.96	99.86	2.8	10	1	10.74	3.32	89.87
586	BATADON	3.15	2.45	9.8	9.8	2.72	0.9	160.4	1.2	1.98	86.42	2.5	10	1	10.08	2.87	77.78
587		3.15	2.8	9.8	9.5	3.11	0.9	183.2	1.4	1.56	98.74	2.8	10	1	10.13	3.28	88.86
588	BHIMADA	3.15	2.5	9.8	5	2.81	0.89	163.5	1.3	1.99	89.17	2.5	11	1	10.1	3.09	79.37
589		3.15	2.45	9.5	9	2.72	0.9	166.4	1.2	1.98	86.42	2.5	10	1	9.77	2.87	77.78
590	KHANII KA TALLA	3.15	2.75	10.5	9.2	3.05	0.9	187.8	1.3	1.98	96.85	2.7	10	1	10.84	3.21	87.17
591	JETANIYON KI DHANI	3.15	2.39	10.1	9.2	2.55	0.9	151.8	1.2	1.98	84.0	2.4	10	1	10.38	2.8	75.87
592		3.15	2.5	10.1	9	2.78	0.9	158.8	1.2	1.98	88.12	2.5	10	1	10.4	2.93	79.37
593	BHADA KHA	5	2.45	10.2	9.5	2.75	0.89	155.8	1.3	1.98	55.06	2.5	11	1	20.4	1.95	49
594		5	2.3	10.2	9.4	2.58	0.88	146.3	1.2	1.98	51.60	2.9	11	1	10.39	1.85	45
595	HADWA HADVECHA	3.15	2.5	10.5	9.4	2.81	0.89	156.5	1.1	1.98	69.17	2.5	11	1	10.82	3.09	79.37
596	SAJITARA	5	2.7	10.2	9.5	3.03	0.89	171.7	1.4	1.98	60.67	2.7	11	1	10.42	2.15	51
597		5	2.67	10.2	9	3.03	0.88	171.7	1.4	1.98	60.68	2.7	12	1	10.43	2.24	53.4
598	BHIYAND	3.15	2.34	9.0	9.1	2.66	0.88	156.7	1.3	1.98	84.42	2.7	12	1	10.1	3.05	74.29
599		3.15	2.45	9.8	9.3	2.78	0.88	164	1.3	1.98	88.38	2.5	12	1	10.11	3.19	77.78
600	CHOCHRA	3.15	2.89	10.7	9.3	3.28	0.88	185.9	1.6	1.98	104.26	2.9	12	1	10.58	3.17	91.75
601		3.15	2.45	10.2	9.2	2.72	0.9	156.1	1.2	1.98	86.42	2.5	10	1	10.49	2.87	77.78
602	DHEERO KI DHANI	3.15	2.65	9.8	5.4	2.95	0.9	173.7	1.3	1.98	93.61	2.7	10	1	10.1	3.11	84.24
603	KANASAR	3.15	2.7	10.2	9	3.07	0.85	173.7	1.5	1.98	97.4	2.7	12	1	10.56	3.52	83.71
604		3.15	3.9	10.2	9.6	4.33	0.9	245.3	1.9	1.58	137.57	3.9	10	1	10.67	4.55	123.81
605	MOKHAB	5	4.45	10.1	9	5	0.89	285.4	2.3	1.98	109	4.6	8.17	0.97	10.44	3.08	91.83
606		5	4.6	10.1	9.1	5.11	0.9	290.2	2.2	1.98	102.22	4.7	7.81	0.95	10.41	3.05	91.24
607	PRAHLADPURA	3.15	2.81	10.3	9.3	3.12	0.9	174.9	1.4	1.78	59.63	2.8	10	1	10.64	3.29	89.14
608	ASOTRA	3.15	2.85	10.3	9.4	3.16	0.9	177.4	1.4	1.98	100.46	2.8	10	1	10.64	3.31	90.41
609	BITHUJA	3.15	2.88	10.2	9	3.2	0.9	183	1.4	1.98	101.68	2.9	10	1	10.44	3.37	91.49

Date: 30.06.2023

Signature:
Name: M. L. Benda
(Project Nodal Officer)
(Authorized Representative)
Er. M.L. Benda
SE (I&S), JdVVNL, JU

610	BHAKMAJI KA MANDIR	3.15	2.54	10.1	9.2	2.82	0.9	161.3	1.2	1.98	85.59	2.5	10	1	10.4	2.97	80.63	
611	HUDIWARA	3.15	2.7	10.4	9.1	3	0.9	166.5	1.3	1.98	95.24	2.7	10	1	10.73	3.16	85.71	
612		3.15	2.45	10.4	9.3	2.72	0.9	151.1	1.2	1.98	86.42	2.5	10	1	10.7	2.87	77.78	
613	JAGSA	3.15	2.56	10.2	9.5	2.86	0.89	162.8	1.3	1.98	91.31	2.6	11	1	10.92	3.17	87.27	
614		3.15	2.45	10.2	9	2.72	0.9	154.1	1.2	1.98	86.42	2.5	10	1	10.49	2.87	77.78	
615	JASOL	3.15	2.68	10.7	9	3.05	0.88	164.3	1.4	1.98	96.68	2.7	12	1	11.07	3.49	85.06	
616		3.15	2.7	10.7	9.1	3.07	0.88	165.6	1.5	1.98	97.4	2.7	12	1	11.08	3.52	85.71	
617	KANANA	3.15	2.88	10.3	9.2	3.27	0.88	169.6	1.6	1.98	103.96	2.9	12	1	10.69	3.36	91.49	
618	KITHNOD	3.15	2.82	10.4	9	3.25	0.9	180.3	1.4	1.98	100.1	2.9	10	1	10.76	3.42	92.79	
619	PADKOT-PANTA	3.15	3	10.4	9.5	3.33	0.9	185.1	1.5	1.98	105.82	3	10	1	10.77	3.51	95.24	
620		3.15	2	10.4	9.4	2.22	0.9	123.4	1	1.98	70.55	2	10	1	10.64	2.34	63.49	
621	SARANA	3.15	2.98	10.3	9.4	3.31	0.9	185.4	1.4	1.98	104.97	3	10	1	10.66	3.48	94.48	
622	SAUYANPUR	3.15	2.77	10.4	9.5	3.16	0.87	177	1.6	1.98	101.2	2.8	13	1	10.79	3.8	88.04	
623	NAGANA	3.15	2.51	10.2	9	2.79	0.9	157.9	1.2	1.98	88.54	2.5	10	1	10.5	2.98	79.68	
624	PACHPADRA	3.15	2.56	10.2	9.1	2.88	0.89	162.8	1.3	1.98	91.31	2.6	11	1	10.52	3.17	91.27	
625		3.15	2.67	9.8	8.3	3.07	0.87	230.8	1.5	1.98	97.43	2.7	13	1	10.16	3.66	84.76	
626	PATODI	3.15	2.78	10.4	9.3	3.09	0.9	177.5	1.3	1.98	98.07	2.8	10	1	10.74	3.25	88.25	
627	TIHOMBLI	3.15	2.71	10.5	8.2	3.05	0.89	267.6	1.4	1.98	96.75	2.7	11	1	10.85	3.36	86.81	
628	KANOD	3.15	2.59	10.3	9.4	2.91	0.89	163	1.3	1.98	92.52	2.6	11	1	10.63	3.2	82.16	
629	RATBU	3.15	2.98	10.4	9	3.35	0.89	185.9	1.5	1.98	106.3	3	11	1	10.78	3.69	94.6	
630		3.15	2.36	10.4	9.4	2.45	0.89	134.7	1.1	1.98	77.05	2.2	11	1	10.68	2.67	68.57	
631	BHAGWA	3.15	3	10	9.1	3.35	0.9	198.3	1.5	1.98	105.82	3	10	1	10.35	3.51	95.24	
632		3.15	2.01	10	9.3	2.23	0.9	128.9	1	1.98	70.9	2	10	1	10.24	2.35	63.82	
633	DHEMA	3.15	2.41	10.2	9.2	2.68	0.9	151.6	1.2	1.98	85.01	2.4	10	1	10.49	2.82	76.51	
634	GUDANAAL	3.15	2.79	10.2	9.4	3.08	0.89	174.5	1.4	1.98	97.73	2.7	11	1	10.55	3.39	86.98	
635	GUNGROT	5	4.23	10.5	9	4.7	0.9	258.4	2	1.98	94	4.3	9.31	0.99	10.82	3.08	89.25	
636	INDRANA	3.15	2.92	10.5	9.4	3.24	0.9	178.1	1.4	1.98	102.83	2.5	10	1	10.86	3.41	92.57	
637	KATHADI	3.15	2.45	10.5	9	2.72	0.9	149.7	1.2	1.98	86.42	2.5	10	1	10.8	2.87	77.78	
638		3.15	2.67	10.5	9.2	2.97	0.9	163.1	1.3	1.98	94.18	2.7	10	1	10.83	3.12	84.76	
639	KERLI NADI	3.15	2.46	10.2	9.1	2.76	0.89	156.5	1.3	1.98	87.75	2.5	11	1	10.51	3.04	78.1	
640	MELI	3.15	2.71	10.2	9.3	3.05	0.89	172.5	1.4	1.98	95.75	2.7	11	1	10.54	3.36	86.11	

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

(Authorized Representative)

M.L. Benda
SE (RS), JdVVNL, JU

641	MOKALSAR	5	4.52	10.2	9.5	5.24	0.86	293.6	2.4	1.98	102.73	4.7	7.73	0.95	10.42	3.08	94.78
642	MOTEALI	3.15	2.89	10.3	9.2	3.29	0.88	184.2	1.6	1.98	104.31	2.9	12	1	10.69	2.77	91.59
643	AJEET	3.15	2.91	10.2	9.2	3.27	0.89	185.4	1.5	1.98	103.95	2.9	11	1	10.57	3.67	92.52
644	KARMAWAS	3.15	2.66	10	9	2.99	0.89	172.4	1.4	1.98	94.78	2.7	11	1	10.33	3.29	84.33
645	RAKHI	3.15	2.91	10.3	9.5	3.39	0.86	189.8	1.7	1.98	107.49	3.9	14	1	10.73	4.87	92.44
646	SAMDARI	3.15	2.75	10.2	9	3.2	0.86	181	1.6	1.98	101.58	2.8	13	1	10.6	3.94	87.3
647		3.15	2.55	10.2	9.1	2.98	0.86	168.5	1.5	1.98	94.5	2.6	14	1	10.57	3.67	81.27
648	STORE	3.15	2.74	10.3	9.3	3.26	0.84	182.9	1.8	1.98	103.35	2.7	15	1	10.74	4.23	86.08
649	DHARANA	3.15	2.69	10.4	9.5	3.2	0.84	179.8	1.7	1.98	101.66	2.7	16	1	10.84	4.2	85.4
650		3.15	2.29	10.4	9.4	2.71	0.84	153.3	1.5	1.98	86.55	2.3	16	1	10.77	3.57	72.7
651	ITAWAYA-PANTA	3.15	2.26	10.4	9	2.76	0.82	150	1.6	1.98	87.5	2.3	18	1	10.8	3.81	71.75
652		3.15	2.88	10.4	9.2	3.51	0.82	195	2	1.98	111.5	2.9	17.41	0.99	10.9	4.78	92.09
653	KHANKHI	3.15	2.87	10.2	9.1	3.38	0.85	191.1	1.8	1.98	107.19	2.9	15	1	10.64	4.3	91.11
654		3.15	2.55	10.2	9.3	3.01	0.85	170.5	1.6	1.98	95.61	2.6	15	1	10.59	3.83	81.27
655	KUNDAL	3.15	2.53	10.4	9.5	2.98	0.85	168.9	1.6	1.98	94.45	2.5	15	1	10.79	3.79	80.32
656		3.15	2.4	10.6	9.8	2.82	0.85	156.8	1.5	1.98	89.64	2.4	15	1	10.77	3.59	76.19
657	MITHORA	3.15	2.9	10.5	9.5	3.22	0.9	177.2	1.4	1.98	102.29	2.9	16	1	10.86	3.39	92.05
658		3.15	2.06	10.5	9.1	2.29	0.9	125.9	1	1.98	72.66	2.1	10	1	10.75	2.41	65.4
659	RELO KI DHANI	3.15	2.77	10	9.4	3.22	0.86	185.7	1.6	1.98	102.09	2.8	14	1	10.4	3.96	87.8
660	SAILA	3.15	2.62	10.2	9	3.05	0.85	172.6	1.6	1.98	96.82	2.6	14	1	10.58	3.76	83.27
661	SINER	3.15	2.67	9.78	9.2	3.1	0.86	183.3	1.6	1.98	98.56	2.7	14	1	10.35	3.83	84.76
662		3.15	2.61	9.78	9.1	3.01	0.86	179.2	1.5	1.98	96.35	2.6	14	1	10.15	3.74	82.86
663	VAV NAGAR	3.15	2.68	10	9.3	3.16	0.85	182.4	1.7	1.98	100.26	2.7	15	1	10.4	4.02	85.22
664	AUER	3.15	2.82	10.2	9.5	3.31	0.85	187.5	1.7	1.98	105.22	2.8	15	1	10.65	4.12	89.42
665	BHATTA	3.15	2.43	10.1	9.1	2.73	0.89	156.1	1.2	1.98	86.68	2.4	11	1	10.4	3.01	77.14
666		3.15	2.79	10.1	9.1	3.12	0.89	179.2	1.6	1.98	99.52	2.8	17	1	10.45	3.45	88.57
667	CHADDI KI DHANI	3.15	2.91	10.3	9.5	3.27	0.89	183.6	1.5	1.98	101.95	2.9	11	1	10.67	3.68	92.52
668	CHAUDHARIYON KI DHANI	3.15	2.61	10.5	9.4	2.9	0.9	159.5	1.3	1.98	92.66	2.6	10	1	10.42	3.05	82.86
669	DHANWA-PANTA	3.15	2.63	10.5	9	2.92	0.9	160.5	1.3	1.98	92.63	2.6	10	1	10.82	3.07	83.42
670	DHUDIA MOTI B	5	4.24	10	9.2	4.71	0.9	271.9	2.1	1.98	94.18	4.3	9.27	0.99	10.31	3.09	85.45
671	J.M.K.	3.15	2.23	10.4	9.1	2.48	0.9	137.6	1.1	1.95	78.65	2.2	10	1	10.67	2.61	70.79

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

(Authorized Representative)

Er. M.L. Benda
SE (P&S), JdVVNL, JU

672		3.15	2.25	10.4	9.8	2.5	0.9	135.8	1.1	1.58	79.37	2.1	10	1	10.67	2.61	71.47
673	SARSU-PANTI	3.15	2.83	10	9.5	3.14	0.9	181.5	1.4	1.98	95.77	2.8	10	1	10.33	3.31	89.8
674	BHATALA	3.15	2.86	10.3	9	3.18	0.9	176.1	1.4	1.98	100.85	2.9	10	1	10.64	3.35	90.75
675	BADON-KA-TALA	3.15	2.73	10.2	9	3.04	0.9	172	1.3	1.98	96.45	2.7	10	1	10.53	3.2	86.8
676	BAMNOL	5	4.23	10.1	9.4	4.7	0.9	268.7	2	1.98	94	4.3	9.31	0.99	10.41	3.08	85.25
677	BAMRLA	5	4.52	10.5	9.2	5.13	0.9	282.3	2.2	1.98	102.67	4.7	7.74	0.99	10.82	3.06	94.72
678	BHAKHERE KI BERI	3.15	2.0	10.4	9	2.55	0.89	143.5	1.2	1.95	82.04	2.3	11	1	10.7	2.85	73.02
679	BISARNIYA	3.25	2.57	10.3	9.5	2.83	0.89	1257.5	1.3	1.98	89.89	2.5	13	1	8.34	3.12	80
680		3.15	2	10.3	9.4	2.25	0.89	125	1	1.98	71.34	2	11	1	10.55	2.45	63.49
681	DHUDHU	3.15	3	9.9	9.4	3.41	0.88	198.8	1.6	1.98	108.23	3	12	1	10.39	3.91	95.24
682		3.15	2.23	9.9	9.5	2.53	0.89	147.8	1.2	1.98	80.45	2.2	12	1	10.19	2.91	70.79
683	KEKAR	3.15	2.28	9.8	9	2.59	0.88	152.6	1.2	1.98	82.23	2.3	12	1	10.09	2.97	72.08
684		3.15	3	9.8	9.4	3.41	0.85	200.8	1.6	1.98	108.23	3	12	1	10.18	3.91	95.24
685	KITHONKIYA	3.15	2.94	10.4	9.8	3.35	0.88	195.7	1.6	1.98	106.2	2.9	12	1	10.8	3.84	93.46
686	KOJA	3.15	2.86	10.5	9.3	3.34	0.81	194.5	2.1	1.98	112.28	2.9	17.84	0.96	11	4.78	95.03
687	LUKIU	3.15	2.65	10.5	9.2	3.03	0.81	179.9	1.9	1.98	103.86	2.7	19	1	10.99	4.64	94.83
688	RELO KI BERI	3.15	2.8	9.6	9.4	3.46	0.81	207.9	2	1.98	109.74	2.8	18.03	0.99	10.06	4.78	89.95
689	ROHILA (EAST)	3.15	2.82	10.2	9	3.04	0.87	183.5	1.6	1.98	102.9	2.8	13	1	10.59	3.86	89.52
690	SACHI KI BERI	3.15	2.81	10.5	9.4	3.23	0.87	177.6	1.6	1.98	102.54	2.8	13	1	10.9	3.85	89.21
691	SADAN KI BERI	3.15	2.65	10.2	9.1	3.05	0.87	172.4	1.5	1.98	96.7	2.7	13	1	10.57	3.63	84.13
692		3.15	2.55	10.2	9.3	2.76	0.85	159.5	1.5	1.98	87.77	2.4	15	1	10.55	3.32	76.6
693	BORCHARNAN	3.25	2.75	10	9.5	3.26	0.85	188.5	1.7	1.98	103.65	2.8	15	1	10.42	4.16	88.1
694	BHEDANA	3.15	2.78	9.4	9	3.27	0.85	200.9	1.7	1.98	103.83	2.8	15	1	9.79	4.16	88.25
695		3.15	2.43	9.4	9	2.75	0.89	169.1	1.3	1.98	87.59	2.5	11	1	9.69	3.03	77.28
696	GADEVI	3.15	2.83	10.2	9.1	3.18	0.89	179.9	1.4	1.98	100.89	2.8	11	1	10.56	3.5	89.8
697	LUNWA-CHARNAN	3.15	2.98	10.3	9.2	3.31	0.9	187.4	1.4	1.98	105.08	3	10	1	10.56	3.49	92.57
698	NAGAR	3.15	2.72	10.1	9	3.02	0.9	172.5	1.3	1.98	95.81	2.7	10	1	10.42	3.18	86.23
699	PANEL KI BERI	3.15	2.58	10.2	9.5	3.31	0.9	187.4	1.4	1.98	106.31	3	10	1	10.56	3.49	94.6
700	RAM JI GOAL	3.15	2.89	10.2	9.4	3.21	0.9	181.9	1.4	1.98	101.99	2.9	10	1	10.55	3.38	91.59
701	SALLU KI BERI	3.15	2.95	9.7	9.4	3.39	0.87	201.8	1.7	1.98	107.64	3	13	1	10.09	4.04	93.65
702	SINGHASWA-CH.	3.15	2.15	10.2	9.5	2.45	0.87	136.6	1.2	1.98	77.72	2.2	13	1	10.5	2.92	67.62

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

Dr. M.L. Benda

(Authorized Representative)

703		3.15	2.68	10.2	9.1	3.31	0.87	187.4	1.6	1.98	105.09	2.9	12	1	10.6	3.94	91.42
704	ANDANIYO KI BERI	3.15	2.85	10.2	9.9	2.28	0.9	128.9	1	1.98	72.31	2.1	10	1	10.44	2.4	66.08
705		3.15	3	10.2	9.5	3.33	0.9	188.7	1.5	1.98	105.82	3	10	1	10.56	3.51	95.24
706	JALI KHERA	3.15	2.96	10	9.4	3.29	0.9	189.9	1.6	1.98	204.41	3	10	1	10.35	3.46	93.97
707	MALPURA	3.15	2.68	10.3	9	2.98	0.9	166.8	1.3	1.98	94.48	2.7	10	1	10.65	3.13	85.03
708	NOKHARA	3.15	2.25	10.5	9.2	2.57	0.88	132.5	1.1	1.98	79.51	2.2	11	1	10.79	2.76	70.75
709		3.15	2.2	10.5	9.1	2.47	0.89	125.9	1.1	1.98	78.67	2.2	11	1	10.79	2.72	69.84
710	AKAL	3.15	2.91	9.5	9.2	3.27	0.89	198.7	1.5	1.98	103.8	2.9	11	1	9.84	3.6	92.38
711	GANGASARA	3.15	2.9	10.5	9.5	3.3	0.88	181.2	1.6	1.98	104.62	2.9	12	1	10.9	3.78	92.06
712	GORA	3.15	2.81	9.8	9	3.19	0.88	185.1	1.5	1.98	101.37	2.8	12	1	10.16	3.66	89.21
713	GURU KI BERI	3.15	2.67	10.5	9	2.67	0.9	163.2	1.3	1.98	94.23	2.7	10	1	10.83	3.03	84.81
714	SODHALA-DARSHAN	3.15	2.78	10.5	9.1	3.09	0.9	190.1	1.5	1.98	98.23	2.8	10	1	10.84	3.36	88.41
715	SONARI	5	4.5	10.3	9.2	5.01	0.9	280.6	2.2	1.98	100.11	4.6	8.16	0.98	10.62	3.08	91.04
716	BITARWAR	3.15	3	10.5	9	2.35	0.89	121.6	1	1.98	71.34	2	11	1	10.75	2.48	68.49
717		3.15	3	10.5	9.5	3.37	0.89	183.4	1.5	1.98	107.01	3	11	1	10.89	3.91	95.24
718	BISASAR	3.15	2.69	10.5	9.4	2.99	0.9	164.1	1.3	1.98	94.77	2.7	10	1	10.82	3.14	83.29
719	DHERAWA	3.15	2.5	10.1	9.4	2.78	0.9	158.8	1.2	1.98	88.18	2.5	10	1	10.4	2.93	79.37
720		3.15	2.52	10.1	9.5	2.8	0.9	160.1	1.2	1.98	88.89	2.5	10	1	10.4	2.95	80
721	PAGALIYA	3.15	2.78	10.5	9	3.12	0.89	171.8	1.4	1.98	99.16	2.8	11	1	10.86	3.04	80.25
722		3.15	2.78	10.5	9.1	2.56	0.89	140.9	1.2	1.98	81.33	2.3	11	1	10.8	2.82	72.53
723	HARPALIYA	3.15	2.55	10	9.3	3.05	0.64	176	1.7	1.98	96.75	2.6	16	1	10.4	3.99	82.27
724	JANPALIYA	3.15	2.63	10.5	9.3	2.92	0.9	260.7	1.9	1.98	92.77	2.6	10	1	10.82	3.01	83.49
725		3.15	2.6	9.5	9.2	2.89	0.9	168.5	1.3	1.98	91.71	2.6	10	1	10.2	3.04	82.54
726	MANJI KA TALLA	3.15	2.06	9.9	9.4	2.29	0.9	133.5	1	1.98	72.66	2.1	10	1	10.14	2.41	65.4
727	SALARIYA	5	3.89	10.5	9	4.32	0.9	237.7	1.9	1.98	86.44	3.5	10	1	10.83	2.93	77.8
728	SARLA	3.15	2.94	10.1	9.4	3.27	0.9	187	1.6	1.98	103.84	2.9	10	1	10.45	3.44	93.46
729		3.15	2.57	10.5	9	2.86	0.9	157	1.2	1.98	90.65	2.6	10	1	10.82	3.01	81.59
730	SEDWA	5	4.1	10.5	9.2	4.56	0.9	250.5	2	1.98	97.11	4.1	9.94	1	10.82	3.68	92.06

Date: 30.06.2023

Signature:

Name: M. L. Benda

(Project Nodal Officer)

(Authorized Representative)

M. L. Benda
SE (I&S) JdVVNL. JU

Name of the Section/Division in CEA, New Delhi: NRPC, New Delhi				
S.No	**Objective Head**	**Estimated Budget 2023-24**	**Expenditure Done till 03.08.2023**	**Balance**
1	Salary	19500000	5516609	13983391
2	Rewards	120000	0	120000
3	Medical Treatment	500000	114694	385306
4	Allowances	13500000	3928333	9571667
5	LTC	850000	146004	703996
6	Training Expenses	100000	0	100000
7	DTE	1000000	161013	838987
8	OE	8800000	4862406	3937594
9	RENT&TAXES	380000	0	380000
10	Digital Equipments	500000	24445	475555
11	Minor civil & Electrical Works	23300000	0	23300000
12	Repair & Maintenance	2500000	33350	2466650
13	OTHER REVENUE EXPENDITURE [49]	500000	15633	484367
14	Machinery & Equipment	2600000	0	2600000
15	Information ICT Equipments	1500000	64093	1435907
16	Furniture & Fixtures	1200000	0	1200000
17	Rent for others	650000	0	650000
	Total	**77500000**	**14866580**	**62633420**
	Balance till 4th August 2023			**26188938.6**
				41055519
	Additional amount Required			**36444481**

AGENDA FOR 68TH MEETING OF NORTHERN REGIONAL POWER COMMITTEE

Subject: Agenda to be placed before the 68th NRPC meeting -For the replacement of various size of ACSR conductor (i.e. wolf/panther/zebra/moose) with equivalent HTLS conductor to reduce the overloading of existing transmission lines and also to improve the reliability of power system in Haryana.

1. On the subject cited above, it is submitted that due to exponential growth in power demand the existing lines are unable to cater power demand in the various region of Haryana. It is further submitted that erection of new lines in these regions are not feasible due to non-availability of RoW (Right of Way). Therefore, replacement of existing ACSR conductors with equivalent HTLS conductor of higher current carrying capacity is the only available option to reduce the overloading of existing lines and also to improve the reliability with capability to cater the increased load demand in Haryana.
2. Various inter-utility meetings were conducted between the officers of HVPNL & DISCOMs for integrated planning to review the district-wise distribution and transmission infrastructure for the strengthening of power system in Haryana.
3. During the meetings, proposals for creation of new substation/augmentation of existing substation and also augmentation of existing transmission line were discussed and it was decided in-principle that HVPNL may replace the ACSR conductors of existing transmission lines with HTLS conductors wherein erection of new lines is not feasible due to non-availability of RoW (Right of Way).
4. Accordingly, various existing overloaded lines wherein erection of new tower/lines is not feasible due to RoW issue were identified by the field offices of HVPNL & DISCOMs. A detailed proposal was prepared area-wise and same was got approved from the WTDs of concerned DISCOMs & HVPNL.
5. It has been observed that the designing of HTLS conductor depends a lot on the conductors ageing effect on sag and tension, existing creep mitigation methods of the conductor and the profile of existing Transmission lines. Therefore, all the works were packaged as per existing size (type) of the conductor i.e. wolf, Panther, Zebra & Moose.
6. In view of the above, the following 3 no. packages have been prepared with overall estimated cost of Rs. 290 crore (approx.) (**Annexure-I**)
   I. **Package-A (Tentative estimate cost: Rs. 44.57 Crore)**
   Augmentation works of 07 no. Transmission lines with **existing Wolf conductor** to HTLS conductor.
   line-wise estimated cost of Package-A is attached at **Annexure-II**

   II. **Package-B (Tentative Estimate cost: Rs. 103 Crore).**
   Augmentation works of 17 no. Transmission lines **with existing Panther and AL-59 conductor** to HTLS conductor.
   line-wise estimated cost of Package-B is attached at **Annexure-III**

   III. **Package-C (Tentative estimate cost: Rs 142 crore).**
   Augmentation works of 07 no. Transmission lines with **existing Zebra and Moose conductor** to HTLS conductor.
   line-wise estimated cost of Package-C is attached at **Annexure-IV**

7. Replacement of existing ACSR conductors of above transmission lines with equivalent HTLS conductor of higher current carrying capacity is the best possible solution to reduce the overloading of existing lines and provide reliable power to the consumers of these regions of Haryana.
8. In view of above facts, it can be observed that aforementioned works at para-6 above is for power system strengthening & improvement in Haryana. Therefore, the work is eligible for 100% funding from PSDF and it is requested that NRPC forum may kindly recommend the proposal for PSDF grant.

Annexure-I

Sr. No.	Name of Package	Tentative Estimate Amount
1	Package-A **(Annexure-II)** Augmentation works of the Transmission lines with existing 0.15 sq" conductor	445764486
2	Package-B **(Annexure-III)** Augmentation works of the Transmission lines with existing 0.2 sq" and AL-59 conductor	1031225621
3	Package-C **(Annexure-IV)** Augmentation works of the Transmission lines with existing 0.4" sq and 0.5" sq conductor	1421144793
	Total	**2898134899**

Line wise Estimated Cost for Package-A **Annexure-II**

Sr. No.	Name of Line	Amount (in Rs.)
1	Augmentation of 66kV D/C Palwal-Mandkola with HTLS Conductor equivalent to ACSR Wolf having current capacity equivalent to 600 Amp on the existing towers	95213956
2	Replacement of existing conductor 0.15 SQ"ACSR Conductor of 66 KV D/C LINE FROM 220 KV S/STN BADSHAHPUR -66 KV S/STN SOHNA with HTLS Conductor.	126851721
3	Replacement of existing conductor 0.15 SQ"ACSR Conductor of 66 KV S/C LINE FROM 220 KV S/STN Palwal -66 KV S/STN Hathin with HTLS Conductor	61487680
4	Augmentation of 66kV S/C Badshahpur-Sector-35-Farrukh Nagar line-provision of HTLS conductor of size 0.15 sq. inch (having ampacity of 600Amp thereoff) alongwith raising of height at some locations	58805808
5	Augmentation of existing conductor 0.15 SQ"ACSR Conductor on HSEB Towers of 132 KV S/C Khokrakot-Sector-3 Rohtak Line with HTLS Conductor.	26129687
6	Augmentation of conductor of 66 kV S/C Harsaru – Farukhnagar line from 0.15 Sq. Inch ACSR conductor to 0.15 Sq. inch HTLS conductor having capacity of 600 amp in FY 2022-23	54673021
7	Replacement of 0.15 AAAC Conductor with HTLS from LILO point to 66kV S/Stn of one circuit of 66kV Madanpur-Barwala line with HTLS Conductor equivalent to 600 Amp on the existing towers	22602613
	Total	**445764486**

Line wise Estimated Cost for Package-B **Annexure-III**

Sr. No.	Name of Line (Package- B)	Amount (in Rs.)
1	Replacement of existing conductor 0.2 SQ'' inch ACSR Conductor of 132KV Chormar-Dabwali S/Ckt line with HTLS Conductor.	136559787
2	Replacement of existing conductor 0.2 SQ'' inch ACSR Conductor of 132 KV Shahpur Begu-Sirsa S/Ckt line with HTLS conductor	55448097
3	Replacement of existing conductor 0.2 SQ'' ACSR Conductor of 132 KV Jiwan Nagar -Rania S/Ckt line with HTLS conducotr	79040896
4	Augmentation of 66kV D/C A4-Ford line having 0.2 sq. inch ACSR conductor with 0.2 sq. inch HTLS conductor having current capacity equivalent for 600 Amp on the existing towers	4393504
5	Augmentation of 66kV D/C Palla-Sec-31, Faridabad line having 0.2 sq. inch ACSR conductor with 0.2 sq. inch HTLS conductor having current capacity equivalent for 600 Amp on the existing towers	48205279
6	Augmentation of existing 0.2 sq" AL-59 conductor on HSEB Design towers of 132 kV Rohtak (220 kV) - Khorkrakot Rohtak CKt-1	10833234
7	Augmentation of existing 0.2 sq" AL-59 conductor on HSEB Design towers of 132 kV Rohtak (220 kV) - Khorkrakot Rohtak CKt-2	9118955
8	Augmentation of 132 kV Kaithal-Khanpur Line having 0.2 Sq" ACSR conductor with HTLS conductor equivalent to 0.2 sq" ACSR conductor	121010271
9	Augmentation of 132 kV Nissing-Jalmana S/C 0.2 Sq" AL-59 conductor of 132 kV S/C Nunamajra –MIE Bahadurgarh line with 0.2 sq inch AL-59 quivalent HTLS conductor	39126875
10	To replace the existing 0.2 sq" ACSR conductor of 132 kV S/C Isherwal-Behal Line with 0.2 sq" HTLS conductor	109750570
11	Augmentation of existing 0.2 sq" ACSR conductor of 132 kV S/C Chhajpur-Chandoli line with HTLS conductor	48306679
12	Replacement of 0.2 sq" ACSR conductor of 132 kV S/C Bastara-Madhuban	35124260
13	Replacement of 0.2 sq" ACSR conductor of 132 kV S/C Karnal-Madhuban line with high capacity conductor nearly equivalent to 0.4 sq inch ACSR conductor	69374082
14	Augmentation of 132 kV Nissing-Jalmana S/C 0.2 Sq" AL-59 conductor of 132 kV S/C Nunamajra –MIE Bahadurgarh line with 0.2 sq inch AL-59 quivalent HTLS conductor having ampacity 600A	70331682
15	Replacement of existing 0.2sq" Conductor of 132kV S/C line from 220kV Bapora-Tosham line from TL no. 69-92 with OPGW with HTLS conductor of equivalent size of 0.2Sq" conductor with current capacity equivalent to 0.4sq" ACSR Conductor (600Amp).	36384742
16	Replacement of LILO section of Narwana- Jind line at Uchana will be converted from 0.2sq" Conductor to 0.2sq" HTLS conductor of having current capacity equivalent to 600Amp without replacement of towers	15776902
17	Replacement of existing conductor 0.2SQ'' inch ACSR Conductor of 132 KV D/C Nuhiyawali Khairekan line with HTLS conductor	142439804
	Total	**1031225621**

Line wise Estimated Cost for Package-C **Annexure-IV**

Sr. No.	Name of Line	Amount (in Rs.)
1	Augmentation of Conductor of 220 kV D/C Daultabad-IMT Manesar line with allied equipment along with LILO of one circuit of said line at 220 kV Substation Sector-85, Gurugram from 0.4 sq" ACSR conductor to 0.4 sq" HTLS conductor (Capacity 1200 A) in FY 2024-25.	329328061
2	Creation of one Ckt. of 220 kV D/C Daultabad-IMT Manesar Line at 220 kV Substation Sector-99, Gurugram (alternate to circuit which is LILO at Sector-85, Gurugram) with 0.4 sq" HTLS Conductor (capacity 1200A) by using 220 kV D/C/M/C/Monopoles towers as per requirement in FY 2024-25.	147774281
3	Augmentation of existing 3 no 220kv S/C link between 400kV substation sector-72 Gurgaon (PGCIL) & 220kV substation sector-72 Gurgaon (HVPNL) from single Moose ACSR to Single HTLS conductor having current carrying capacity equivalent to twin Moose conductor	4500000
4	Augmentation of 220 kV D/C Sector-46-Palli line with 0.4 sq" ACSR conductor to 0.4 sq" HTLS conductor (1200 Amp) in FY 2023-24.	166524600
5	Augmentation of 220 kV Samaypur-Palli line with 0.4 sq" ACSR conductor to 0.4 sq" HTLS conductor (1200 Amp) in FY 2023-24	185501884
6	Replacement of existing 0.4sq” Conductor of 220kv D/C PGCIL (Khanpur)-Kaithal line with HTLS conductor of equivalent size of Zebra conductor with current bearing capacity of 1200A along with the replacement of existing insulators.	406807353
7	Creation of LILO of one circuit of 220 kV Nuna Majra - daultabad D/C Line with HTLS conductor equivalent to Zebra conductor having ampacity of twin moose ACSR conductor (1262 amp) at 400 kV substation Bahadurgarh (PGCIL) approx. 2.0 kMs (LILO point just outside 220 kV substation Nunamajra) along with augmentation of existing conductor of same circuit which is being LILOed for the section from 220 kV substation NunaMajra to the LILO point (2L2830*) in FY 2023-24.	180708613
	Total	**1421144793**