File No.CEA-GO-17-14(13)/1/2023-NRPC

भारत सरकार

Government of India

विद्युत मंत्रालय

Ministry of Power

उत्तर क्षेत्रीय विद्युत समिति

Northern Regional Power Committee

सं. उक्षेविस/वाणिज्यिक/ 209/ आर पी सी (70)/ 2023 दिनांक: 08 दिसम्बर, 2023

सेवा में/To,

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

विषय: उत्तर क्षेत्रीय विद्युत समिति की 70 वीं और तकनीकी समन्वय समिति (टीसीसी) की 48 वीं बैठक का कार्यवृत।
Subject: 70th Northern Regional Power Committee (NRPC) & 48th Technical Co-ordination Committee (TCC)-MoM

महोदय/महोदया,

तकनीकी समन्वयन समिति (टीसीसी) की 48 वीं बैठक दिनॉक **17.11.2023 (सुबह 10:30 बजे)** एवं उत्तर क्षेत्रीय विद्युत समिति की 70 वीं बैठक दिनांक **18.11.2023 (सुबह 10:30 बजे)** को अमृतसर, पंजाब 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।

48th meeting of Technical Co-ordination Committee (TCC) was held on 17.11.2023 (10:30 AM) and 70th meeting of Northern Regional Power Committee (NRPC) was held on 18.11.2023 (10:30 AM) at Amritsar, Punjab. MoM of the same is attached herewith. The same is also available on NRPC Sectt. Website (http://164.100.60.165/).

भवदीय
Yours faithfully

08/12/2023

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

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

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सत्यमेव जयते

उत्तर क्षेत्रीय विद्युत समिति
NORTHERN REGIONAL POWER COMMITTEE

Minutes of
The 48th meeting of Technical Coordination Committee &
The 70th meeting of
Northern Regional Power Committee

Date: 17th & 18th November 2023
Time: 10:30 AM
Venue: Le Méridien Amritsar
Ajnala Rd, Bal Schander, Raja Sansi, Bal, Amritsar, Punjab

Contents

MINUTES

OF

48th MEETING OF TECHNICAL COORDINATION SUB-COMMITTEE

&

70th MEETING OF NORTHERN REGIONAL POWER COMMITTEE

Time & Date of TCC meeting: 10:30 Hrs. on 17.11.2023

Time & Date of NRPC meeting: 10.30 Hrs. on 18.11.2023

Venue: Amritsar, Punjab

Proceedings of 48th TCC Meeting

The meeting was started with a welcome note by Executive Director (O&M), NHPC greeting delegates from all utilities. He highlighted that RPCs are established for facilitating the integrated operation of power systems in the respective region. In this regard, NRPC is an excellent forum for all the constituents to interact on the issues of power systems be it generation, transmission or distribution and arrive at common consensus and solutions for the benefit of the region and constituent members.

He further added that NHPC being a partner in growth of the sector is wholly committed to produce clean power. NHPC plays vital role in grid stability as solar and wind are intermittent sources of power and to ensure an efficient and stable grid, we need resources to respond to the fluctuations and hydropower is one of the best solutions for this.

In recent past some regulations such as Deviation Settlement has come up which had impacted the generators but with the support of RPCs, concern of generators are being discussed and addressed to the regulatory body and amendments of those regulations are issued. He felt that it is expected to get similar support by RPCs in future for overall benefit of the constituents and great performance and reliability in northern region.

He emphasized that NHPC is contributing significantly in the power sector. Presently NHPC has 15 power stations in the region having total installed capacity of 4500 megawatt and design energy of 18,668 million unit per year. NHPC is also operating wind power project in Jaisalmer, Rajasthan of 50 megawatt and also 65 megawatt kalpi power station in Jalaun, Uttar Pradesh has partially been commissioned. He informed that NHPC has also ambitious plan for the development of hydropower in the northern region. The construction of hydro project like 1000 megawatt Pakal Dul, 850 megawatt Ratle, 620 megawatt Kiru and 540 megawatt Kwar through our joint ventures in UTs of J&K is already under full swing.

By the year end of 2026-27, the NHPC including its subsidiaries will have installed capacity of approximately 8300 MW in northern region itself. He stated that the work is going on for 300MW solar power project in Rajasthan. NHPC as RE implementing agency has to produce 2000MW solar power as an intermediary out of which 320 MW has been commissioned already. NHPC also initiated a pilot project of green hydrogen-based fuel cell of 20 kilowatt in Ladakh. NHPC is contributing towards the overall development of the region. Recent floods in the month of July in Himachal have affected the generation of NHPC in several power station like Bairasul, Parvati 3, Chamera 2, Chamera 3. NHPC has managed to restore all these power station in minimum possible time despite all odds and with the help of different constituents. At the end he once again extended warm welcome to all the dignitaries and guest and hoped for fruitful deliberation.

Member Secretary, NRPC welcomed all the delegates and representatives of TCC members. He heartly thanked to NHPC and congratulated NHPC officials for making splendid arrangements for meeting. He apprised that this TCC meeting is being held after a gap of more than 2 years. He highlighted the necessity of conducting TCC meeting in NRPC and mentioned that to have fruitful technical discussion and crucial decision, TCC meeting will be planned regularly on quarterly basis. He stressed that this time TCC meeting is very important mainly because of the implementation of the IEGC 2023 which has now become effective from 1st October 2023. He added that a lot of new work have been introduced in it. RPCs are now entrusted with bigger responsibility in operation, commercial and particularly in the protection field. NRPC Secretariat has conducted workshop also for sensitizing utilities for compliance in the month of September 2023 and there was a huge

participation from all the state utilities and SLDCs. He stated that the new Grid code also has new chapters of communication and cyber security aspect in power sector.

He appreciated that our country has a growing economy. In fact, our growth rate is more than the many of the developed economies today so uninterrupted power supply is must for all the consumer and all the sector. He mentioned that we are breaking our record of peak demand day by day. First time in the history of India, we crossed 240GW demand and we may expect even higher demand in coming years. He thanked all the transmission licensees, NRLDC, SLDCs, DISCOMS, all the states generators and central generators for their vigorous effort in meeting the above demand despite many challenges. He expected that in future also we will be able to put the same efforts.

He highlighted that despite high demand in the region it has been observed that many states are not able to utilise the full capacity of plants. This has been taken very seriously by ministry of power. He informed that as per decision of MoP, those states, which are not able to utilise their full capacity especially in thermal power plant, are not going to get their additional allocation of share from central generating stations. Chairperson CEA is also reviewing this situation regularly. One of the important reasons for not utilizing full capacity is inadequate coal supply from coal India and also the poor quality of coal. The best option is to go for the imported coal and coal blending. He mentioned that there is blending target for each generator. If generator will not able to meet its blending target, then proportional coal allocation reduction is also being considered.

He emphasized on reducing carbon emission from power plant and associated activities. He highlighted that thermal power plants need to remain viable in the present market scenario. Plants should be ready for flexible operation. Government of India has set a target of 500 gigawatt non fossil fuel addition by 2030. Due to more and more RE addition, managing the grid has become challenging day by day.

He shared that today we have dedicated agenda for compliance of CEA regulation. He highlighted that utilities should comply with these regulations for their own benefit and also for the benefit of the society. Further he added that there is a very crucial agenda from the CTU to deliberate upon the 3.6GW RE evacuation from Bikaner complex. He requested participants for serious attention to have fruitful technical deliberation. He again thanked NHPC and wished for healthy discussion.

Chairperson TCC & Director (Projects), HVPN wished warm welcome to all delegates and extended heartfelt gratitude for chairing the TCC meeting. He thanked NHPC team for the impeccable arrangements made for meeting. He stated that the journey of Indian power sector is nothing short of extraordinary with the dedicated focus on delivering reliable, affordable and sustainable energy to our citizens. He praised that the nation has successfully moved from a power deficit to the self-sustained state. This is a remarkable achievement and we all have contributed towards this. He further added that renewable energy earlier a challenge, now is playing a pivotal role in the growth. He highlighted that the integration of real time energy markets and demand response mechanism has significantly strengthened grid stability.

The evolution of the power sector is an ongoing process marked by the introduction of new regulations and amendments. Rules serve as a bedrock for further development. He stressed about recently enforced Indian Electricity Grid Code 2023 which contains crucial changes and crucial chapters that all utilities must adhere to and plan for it. It contains various chapters including protection and cyber security underlining the paramount importance of the grid stability and security. He mentioned that forums like the Technical Coordination Committee and Northern Regional Power Committee serve as a stepping stones. He shared that today agenda comprises of discussion on several operational and commercial issues seeking technical recommendation. He hoped for each participant to actively engage and shape their insights when we develop discussion into conclusion. He expressed his sincere appreciation to NHPC for hosting this meeting and to all participants for joining. He thanked delegates for their presence and invaluable contributions for meeting.

Thereafter, agenda for the 48th TCC meeting was presented & deliberated. The list of participants is attached as ***Annexure-P.***

Proceedings of 70th NRPC Meeting

Director (Technical), NHPC welcome all officials to the 70th NRPC meeting and thanked forum for giving opportunity to NHPC for hosting the 48th TCC and 70th

NRPC meetings. He stated that RPCs were established for facilitating instability and a smooth operation of the integrated grid and efficiency in the operation of the power system and also to evolve consensus on all the issues in the regions. He stated that NRPC is an excellent forum for all the constituent to find solution on common issues for benefit of the northern region. He further added that NRPC is carrying out important functions such as regional level operation, analysis for improving the grid performance, facilitating Interstate and inter regional transfer of power, planning for maintenance of generating machines of the region, planning of outages of the transmission system, operational planning studies including protection study for a stable operation of grid, and planning for maintaining proper voltages in the system.

He informed that the total installed capacity of the power generating stations in the northern region connected to the regional grid is around 108GW which is around 25% of the installed capacity at national level. Central sector generating stations like NHPC, NTPC, SJVN. THDC & BBMB are located in various parts of the northern region and contribute around 27% of the total installed capacity of the region. He highlighted that India is the 3rd largest power producer and consumer in the world and with expanding economy, population urbanization, and industrialization, the power demand has increased tremendously. The Government of India is transforming the country from power deficit to power surplus state by several schemes.

He mentioned that hydropower is a critical component of the nation's electricity basket as it allows greater degree of integration of solar and wind in the grid and therefore it is required to provide impetus to the hydropower development as the solar and wind are intermittent sources of power. It has been estimated that installed capacity of renewable energy is likely to reach around 500GW by 2030 and 596GW by 2031-32 and contribution of renewable energy will be around 44% of the total energy of the country by the year 2031-32. Hydropower with his inherent capabilities to quickly ramp up and ramp down is a critical source of energy. He felt that we will have to double our hydro capacity in the next decade to integrate solar and wind into the existing grid. He conveyed that hydropower not only provides green and clean energy but also creates job opportunities during construction as well as operation and maintenance.

He ensured that NHPC being the premier hydropower organization in the country is committed towards development of the power sector. He added that apart from hydro power, NHPC has also diversified into solar, wind, pump storage projects, power trading business etc. NHPC has ambitious plan for development of hydropower in the region. Construction activities in 800 megawatt parvati 2 project, are in advanced stage of completion and as a major achievement daylighting of head race tunnel has been achieved in the last month on 22nd October 2023. It was very long awaited and challenging project due to very challenging geological setup. He stressed that with the increased quantum of solar and wind power we need large quantum of a storage through pumped storage. NHPC is working on various pump storage scheme in different states Gujarat, Maharashtra, Andhra Pradesh and Odisha. NHPC has also signed MoU with Damodar Valley Corporation for development of pump storage scheme. He informed that NHPC has completed pre-feasibility reports of 3 projects in Maharashtra and is now going ahead with the preparation of the DPR.

He highlighted that NHPC is going to ensure the quality power to the consumers and the round the clock power supply to the esteemed consumers. Under these circumstances and in this transformative era, the role of NHPC is very significant to maintain the grid frequency and providing the quality power to the consumers. He again welcomed all the participants and looked forward to meaningful deliberations.

Member Secretary, NRPC welcome all participants to the 70th NRPC meeting and thanked NHPC for hosting this meeting. He apprised the members about discussion done in TCC meeting. He stated that deliberation was centred around the new regulation introduced by the CERC i.e. IEGC 2023 which has now become effective from the 1st October 2023. He further added that total 32 numbers of agenda were discussed in the TCC meeting and reached to the conclusion on the many of the agenda items, which are being put up for the approval of the NRPC forum. In case of some agenda, the micro level discussion is required at OCC, CSC and PSC meeting.

He stated that apart from technical agenda, the agenda item on improvement of the NRPC colony and office has also been put up for the approval which were long pending. For improvement of security in the NRPC office complex, new CCTV camera around the complex has been installed and functional. In the colony very old

pipelines and water tanks leading to many problems of water shortage has been replaced now. The work for new lift was approved by this forum and work is in advanced stage and it is expected that lift will be functional by the end of December 2023. He also mentioned that NRPC Secretariat makes its best effort in furnishing various certificates particularly the monthly account, and weekly account on time.

He emphasized that NRPC is functioning with manpower strength of hardly 50 to 60% Therefore, it will be helpful if at least one working level officer is deputed from CPSUs. The NRPC fund is managed by officer deputed from POWERGRID. He requested to take decision by consensus in the meeting and deliberate upon each and every agenda with utmost attention. He conveyed that decision will be taken in the benefit of the grid. He again thanked NHPC for hosting the meeting.

Chairperson, NRPC and MD, HVPNL welcomed all delegates and thanked NHPC personally for the wonderful arrangements for meeting. He, on behalf of forum, expressed his concern on unfortunate accidents happened and loss incurred to NHPC in Sikkim and wished a best recovery appreciating technical competence and efforts of NHPC.

He highlighted that power sector is so closely knitted and everybody is dependent on the other utility for their efficiency. Especially, Northern Region power sector is as unique and diverse as a country may be. He further emphasized that power scenario in states is vast. There are places with temperature variation from 50 degree to -25 degree. Punjab and Haryana are agricultural land and Delhi as National capital is feeding different load patterns. He appreciated NRPC and NRLDC for doing commendable job in managing the Grid.

He expressed that he has learned a lot about power sector through meetings of NRPC Forum. He appreciated that this forum is right place for taking up issues cropping up in region.

He conveyed that the discussion held in the TCC meeting are eye opener for some participants. He raised concerns over junior officials attending the meeting and without information on the agenda. He stressed that in these forums, the officers should be of higher level and competent enough to take decision on behalf of the respective utility. He emphasized that utilities may depute officials in NRPC Secretariat to help them discharge their duties timely. He requested all the

participants for putting their ideas and knowledge to the forum and reach to a conclusion.

Thereafter, agenda for the 70th NRPC Meeting was presented & deliberated. The list of participants is attached as ***Annexure-Q.***

Consolidated MoM of 48th TCC and 70th NRPC Meetings

A.1 Approval of MoM of 47th TCC meeting and 69th NRPC meeting

A.1.1 EE (P), NRPC apprised that the minutes of the 47th TCC meeting (held on 23.09.2021) were issued vide letter dtd. 25.11.2021. No comment from any utilities has been received, therefore, the same may be considered to be approved.

TCC Deliberation:

A.1.2 Forum recommended for approval of the minutes of 47th TCC as issued.

NRPC Deliberation:

A.1.3 It was apprised that the minutes of the 69th NRPC meeting (held on 27.09.2023) were issued vide letter dtd. 03.11.2023. Comments received from CTU vide mail dtd. 07.11.2023 were deliberated.

Decision of NRPC forum:

i. Forum approved the minutes of 47th TCC as issued.
ii. Minutes of 69th NRPC meeting were approved with inclusion of CTUIL comments as below:

Text as per MoM Issued	***Amended Text***
Decision of the forum: Forum accorded approval to proposal of CTUIL for OPGW installation on LILOed portion of existing 400kV Kota- Merta line at Shri Cement under RTM.	*Decision of the forum: Forum accorded approval to the proposal of CTUIL for OPGW installation on existing 400kV Kota- Merta line (254 kms.) along with LILO portion of Shri Cement (54 kms.) (254+54=308Km) under RTM mode to POWERGRID.*
Decision of the forum: Forum approved the above proposal for supply and installation of OPGW on 400kV Fatehgarh I (Adani) - Fatehgarh-II (PG)	*Decision of the forum: Forum approved the above proposal for supply and installation of OPGW on 400kv Fatehgarh 1 (Adani)- Fatehgarh 2 (PG)*

line under RTM in line with decision taken in the 23rd TeST meeting held on 21.09.2023.	*line (6.5 Km on second earthwire peak) under RTM mode to ADANI Transmission Ltd. in line with decisions taken in 23rd TeST meeting held on 21.09.2023.*
Decision of the forum: Forum approved the supply and installation of 12 nos. FOTE and additional ethernet (125 nos.) cards for existing FOTE.	*Decision of the forum: Forum approved the supply and installation of 12 nos of FOTE and additional ethernet cards (125 nos.) for existing FOTE under RTM mode by POWERGRID.*
Decision of the forum: Forum approved the proposal of CTU for Supply and Installation of 11 nos. FOTE Equipment at Backup SLDCs in NR & Backup NRLDC.	*Decision of the forum: Forum approved the proposal of CTU for supply and installation of 11 nos. of FOTE equipment at backup SLDCs in NR and backup NRLDC under RTM mode by POWERGRID.*

A.2 Sensitization on CEA Regulations (agenda by CEA)

TCC Deliberation

A.2.1 CE (RA division), CEA apprised that under section 177 and other various sections of the Electricity Act, 2003 (36 of 2003), the Central Electricity Authority has notified the following regulations:

1. Central Electricity Authority (Installation & Operation of Meters), Regulations 2006
2. Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulation, 2007
3. Central Electricity Authority (Furnishing of Statistics, Returns & Information) Regulation, 2007
4. Central Electricity Authority (Grid Standards) Regulation, 2010
5. Central Electricity Authority (Safety Requirements for Construction, Operation and Maintenance of Electrical Plants and Electric Lines) Regulations, 2011
6. Central Electricity Authority (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations, 2013.
7. Central Electricity Authority (Technical Standards for Communication System in Power System Operations) Regulations, 2020

8. Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022
9. Central Electricity Authority (Flexible Operation of Coal based Thermal Power Generating Units) Regulations, 2023
10. Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulations, 2023

A.2.2 He further informed that as directed by Hon'ble Minister of Power to highlight these CEA regulations and promote awareness on their importance; and to sensitize the power utilities under administrative control of State Government/ Union Territories, a letter was sent by Chief Engineer (RA Division), CEA to all the Chief Secretaries vide no. CEA-EC-15-13/3/2018-RA Division/101 dated 03.10.2023 (copy enclosed as **Annexure**-I).

A.2.3 He highlighted that as we all are connected to grid to generate, transmit, distribute, sale, purchase and consume electricity, hence integrity of grid must be maintained by maintaining and operating plant equipment safely with compliance of CEA regulations.

A.2.4 He further emphasized that it is need of hour for all stakeholders to get well updated with these regulations and comply. There are lot of developments such as EV, RE penetration which have to be performed as per regulations. In view of above, a workshop has been planned region wise. CEA experts from the respective domains will be delivering the required information in that workshop.

A.2.5 He briefed about section 146 of Indian Electricity Act in which there is mandate of penalty for non-compliance of rules and regulations. He reproduced section 146 as below:

"Whoever, fails to comply with any order or direction given under this Act, within such time as may be specified in the said order or direction or contravenes or attempts or abets the contravention of any of the provisions of this Act or any rules or regulations made thereunder, shall be punishable with imprisonment for a term which may extend to three months or with fine, which may extend to one lakh rupees, or with both in respect of each offence and in the case of a continuing failure, with an additional fine which may extend to five thousand rupees for every day during which the failure continues after conviction of the first such offence."

A.2.6 TCC forum requested every utility to comply the CEA regulations and decided that workshop may be conducted in the mid of December 2023 by CEA at NRPC Secretariat.

NRPC Deliberation

A.2.7 Chairman, BBMB suggested to use these standards and regulations at the design stage itself otherwise these will be meaningless. He stressed on intangible benefits of hydro generators in providing the peaking support to grid, black start capability and operation on synchronous condenser mode. He further emphasized on benefits of Pump Storage Plants in the upcoming future to tackle intermittency of solar/wind.

A.2.8 Forum noted the CEA regulation for compliance and concurred with the deliberation held in the TCC meeting.

Decision of NRPC Forum:

i. Members noted the CEA regulations for compliance.

ii. Workshop may be planned in mid-December 2023 at NRPC Conference Hall for sensitization of utilities.

A.3 Provision of Banking of Power feature under the PUSHP Portal (agenda by NRPC Secretariat)

TCC Deliberation

A.3.1 EE (P), NRPC apprised that PUShP portal (https://nationalsurpluspower.in/) has been launched on 09th March, 2023 by Hon'ble Minister of Power and NRE. Portal is a single window system providing services to diverse domains of all the entities involved and to reallocate and transfer the power in minimum time from one surplus entity to deficit entity.

A.3.2 He further briefed that in the same PUSHp portal, a facility has been added to the states through which the states may intimate the surplus power available to bank for a certain duration. Any other state interested in acquiring this surplus power in deficit scenario and willing to undergo for banking with surplus state, may give requisition for this surplus power for the same duration in the Portal as per mutual agreement.

A.3.3 He informed that NPC Division, CEA has circulated procedure for availing facility of banking vide their letter dtd. 02.11.2023 (attached as **Annexure-II**).

A.3.4 BSES Yamuna representative raised concern that separate login for DISCOMs have not been provided yet and SOP has been received from Delhi SLDC on 15.11.2023 and submitted to NRPC secretariat.

A.3.5 MS, NRPC conveyed that the issue has already been discussed and will be resolved at the earliest.

A.3.6 CGM, NRLDC expressed issue of less volume of power being requisitioned on the PUSHP portal. He further stressed that utilities may take care of load management by application of the same with great extent.

A.3.7 SE(O), NRPC highlighted that weather forecasting is not proper, so utilities are not able to anticipate the power demand.

A.3.8 CE (GM division), CEA highlighted that generating company may gear up the maintenance of units in this lean period and may be prepared for meeting the load demand in upcoming summer period.

A.3.9 MS, NRPC appreciated that Punjab and UP are utilising this portal at good extent. So, all utilities should make use of it. He requested utilities to use newly added feature of power banking to avoid shortage of power supply. Utilities should not hesitate to use this because it will support the Grid stability and load balancing.

A.3.10 Forum noted the new feature added in PUSHp portal.

NRPC Deliberation

Forum concurred on discussion in TCC.

Decision of NRPC Forum:

i. Forum noted the new feature of banking added in PUSHP portal.

ii. BYPL issue for separate login for Delhi DISCOMs shall be taken up by NRPC Secretariat with NPC Division, CEA as SOP has been received from Delhi SLDC on 15.11.2023.

A.4 Scheduling, accounting and other treatment of the legacy shared projects in Northern Region (agenda by NRPC Secretariat)

TCC Deliberation

A.4.1 EE (C), NRPC apprised that the issue of scheduling, accounting and other treatment of the legacy shared projects in Northern Region has been deliberated in various CSC/TCC/NRPC meetings. The details are attached as **Annexure-III**.

A.4.2 In the 52nd NRPC meeting held on 31.03.2022, it was informed that GNA Regulations will do away with the requirement of grant of LTA from particular stations, the issue of levy of transmission charges and RLDC fee & charges would be resolved for category 2, 3 and 4 projects. With reference to post-facto change in schedules based on actual generation for projects under Category-4, it was decided to be discussed in upcoming NRPC meetings.

A.4.3 He further added that in 47th CSC meeting held on 28.08.2023, HP SLDC apprised that some projects in respective control area having bilateral shares in HP State are not revising their updated schedule in real time as per IEGC timeline on the WBES portal of NRLDC, which is resulting into huge financial loss to HP State. The issue of huge penalty to HP due to non-availability of metering data of Khara HEP was also deliberated. It was decided that a separate meeting may be held with concerned SLDCs, NRLDC, Gencos and NRPC sectt. to resolve the issue of shared project.

A.4.4 Subsequently, a meeting was held on 06.11.2023 wherein following was deliberated:

a) post-facto change in schedules based on actual generation for projects under Category-4 will be stopped w.e.f. 04.12.2023.

b) Scheduling of these plants will be done on real-time basis and revision of schedule will be made available to HPSLDC. Punjab has informed that scheduling of RSD on real-time basis is already being done. It was deliberated that these plants may be brought under DSM of respective states.

c) Actual generation of plants in category – 4 is being published in monthly REA (Table - G and H). It was deliberated that these plants being in state control area, their energy account may be issued by States. Accordingly, REA will be issued from December, 2023.

A.4.5 HPSEB representative requested not to remove these two columns from REA account as these are being used in anticipation of bills. He stated that if the real time data for bill processing is being made available by other state SLDCs timely, then there is no issue in removing these columns.

A.4.6 Uttarakhand representative also raised the concern to share the actual generation data for plants where CTU meters are installed.

A.4.7 MS, NRPC conveyed to use uniform approach across all RPCs in account issuance and proposed for not publishing the data in REA. However, NRLDC may share meter data to states.

A.4.8 Forum agreed on the decision taken in meeting held on 06.11.2023 and NRLDC agreed to share the meter data for shared projects.

NRPC Deliberation

Forum approved the deliberation held in TCC meeting.

Decision of NRPC Forum:

i. NRPC will not publish Table-G & H in REA from December 2023 onwards.

ii. NRLDC will share meter data to states for these bilateral projects.

A.5 Guidelines/ Procedure for Certification of Open Cycle Operation of Combined Cycle Gas Based Generating Stations (agenda by NRPC Secretariat)

TCC Deliberation

A.5.1 EE (C), NRPC apprised that Regulation 43.2 of CERC (T&C of Tariff) Regulations, 2019, provides that

"*Energy charge rate for a gas or liquid fuel-based station shall be adjusted for open cycle operation based on certification of Member Secretary of respective Regional Power Committee during the month".*

A.5.2 He added further that Guidelines/ Procedure for Certification of Open Cycle Operation of Combined Cycle Gas Based Generating Stations were finalised in 35th Commercial Sub-Committee Meeting of NRPC held on 19.02.2018 (agenda item-T1) (copy enclosed at **Annexure-IV).** Timelines defined under guidelines for certification of open cycle operation are as under:

Type of Start-up	Time period upto which open cycle generation is to be certified	
	Part-module (i.e. 1st GT)	Full-module (i.e. 2nd GT onwards)
Hot	Upto 1 hour	Upto 1 hour
Warm	Upto 2.5 hours	Upto 2 hours
Cold	Upto 4 hours	Upto 2.5 hours

A.5.3 It has been noticed for past 2 years that NTPC Gas Power plants in NR, namely Anta GPP, Auraiya GPP and Dadri GPP are regularly getting schedule under TRAS-shortfall/ emergency cases (earlier RRAS) only where the gas turbines are operating under open cycle for longer duration. A brief description of the schedule given and open cycle generation by these stations is as under:

Period	Description	Anta	Auraiya	Dadri
April-Sept' 2022	Percentage of instances of total open cycle generation where RRAS/ TRAS schedule was > 5 hours	44.83%	44.56%	52.63%
	Average hours of open cycle generations in these cases	6.58 hours	6.67 hours	7.23 hours
April-	Percentage of instances of	35.94%	9.57%	29.17%

Sept' 2023	total open cycle generation where RRAS/ TRAS schedule was > 5 hours			
	Average hours of open cycle generations in these cases	10.80 hours	7.78 hours	7.49 hours

A.5.4 An aggregate additional RRAS charges due to open cycle generation only- over and above to that due to closed cycle ECR- amounting to ₹453.53 crores was received by RRAS providers (Anta GPP, Auraiya GPP, and Dadri GPP) from Deviation and Ancillary Pool of NR Open Cycle Generation for FY 2022-23. Such is a huge financial implication on Deviation and Ancillary pool Account.

A.5.5 However, aforesaid guidelines do not cover scheduling under TRAS-shortfall/ emergency cases (earlier RRAS). Thus, there is no mechanism to certify Open Cycle Operation for schedule given under TRAS only. There is a need review the aforesaid Guidelines for Certification of Open Cycle Operation by NRPC sectt. of Combined Cycle Gas Based Generating Stations.

A.5.6 In view of this, it is proposed to constitute a committee of members from NLDC, NRLDC, NTPC and NRPC sectt. to formulate revised 'Guidelines for Certification of Percentage of Open Cycle Generation' which may then be vetted in TCC & NRPC meeting.

A.5.7 Brief ToR of the committee may be as under:

a. SOP for schedule to be given by NLDC to gas plants in open cycle generation under TRAS (Shortfall/ Emergency).

b. SOP for furnishing data by Generator for seeking certification of Open Cycle operation.

c. Guidelines for Certification of Percentage of Open Cycle Generation for schedule given by beneficiary as well as under TRAS by NRPC.

A.5.8 ED, NRLDC stated that TRAS is a corrective measure and it may be used as long as grid conditions demand and frequency get corrected. Hence decision to run a plant under open cycle should be taken at national level.

A.5.9 EE(C), NRPC highlighted that there is a need to define maximum hours of operation of gas plant in open cycle under TRAS schedule as is the case for beneficiary schedule after which Steam turbine should come to operate. This would help in optimizing DSM pool funds which can be utilized in PSDF for other power sector developments. Operation of gas plant in closed cycle operation as a corrective

measure in TRAS schedule should be out of scope of ToR of the proposed committee.

A.5.10 MS, NRPC expressed concern that over running a gas plant continuously in open cycle may depreciate the Pool fund at the faster rate. Therefore, formation of committee to prepare SOP for scheduling of gas plants in open cycle operation mode is need of hour.

A.5.11 NTPC representative commented that operation of gas plant on closed cycle would depend upon the grid conditions and demand scenario.

A.5.12 It was also discussed that gas plants are in other regions also. Therefore, SOP on national level may be made for uniformity.

A.5.13 Forum agreed for formation of committee having members from NRPC Sectt., NRLDC, NLDC, NTPC, and IPGCL to formulate revised guidelines under the chairmanship of MS, NRPC. The same shall be informed to NPC.

NRPC Deliberation

A.5.14 Chairperson, NRPC and MD, HVPN suggested to include CEA in the committee.

A.5.15 CE (RA division), CEA conveyed to include members from other gas stations in the committee.

A.5.16 Member Secretary, WRPC and NERPC, and representative from IPGCL raised their willingness to be included in the committee.

Decision of NRPC Forum:

i. Committee shall be constituted under MS, NRPC having members from CEA, NRPC Sectt., WRPC Sectt., NERPC Sectt., NRLDC, NLDC, NTPC and IPGCL.

ii. ToR of the committee shall be to devise guidelines for Certification of Percentage of Open Cycle Generation for schedule given by beneficiary as well as under TRAS by RPC.

iii. NPC Division, CEA may be intimated on the issue for common SOP.

A.6 Issue of transmission deviation charges imposed on hydro generators (agenda by THDC & SJVN)

TCC Deliberation

(a) Issue of transmission deviation charges imposed on Tehri HPP & Koteshwar HEP

A.6.1 THDCIL India Limited (THDCIL) representative stated that they are supplying energy in Northern Grid from its operating Tehri HPP and Koteshwar HEP generating stations to the beneficiaries of Northern Region. Both Tehri HPP and Koteshwar HEP projects are also providing primary (FGMO) and secondary (AGC) responses to the grid in compliance of the Indian Electricity Grid Code (IEGC).

A.6.2 As per IEGC, 2010, if the ex-bus injection exceeds the sum of LTA, MTOA & STOA then charges are levied to the generating station beyond ex-bus injection in a time block in accordance with provision of Sharing of Inter-State Transmission Charges and Losses Regulations, 2020. Further, Hon'ble Commission issued amendment vide Central Electricity Regulatory Commission (Sharing of Inter-State Transmission Charges and Losses) (First Amendment) Regulations, 2023 and allowed that transmission deviation charges shall not be levied for the quantum of over-injection for providing primary response by a generating station, subject to verification of such over-injection by concerned RPC.

A.6.3 Despite, Tehri HPP & Koteshwar HEP are supporting the grid by providing primary (FGMO) and secondary response (Automatic Generation Control), both plants are being penalized by imposition of transmission deviation charges. It is worth mentioning here that as per the above amendment w.e.f. 01.10.2023, transmission deviation charges shall not be levied for the quantum of over-injection for providing primary response by a generating station. This exclusion shows that grid support should not be penalized.

A.6.4 Therefore, THDCIL representative requested that the transmission deviation charges shall not be levied for the quantum of over-injection provided for primary and secondary response in past and secondary response to be provided in future by a generating station. Furthermore, the charges previously remitted for transmission deviation may be revoked and refunded to the hydro-generator.

(b) Issue of Transmission Deviation charges imposed on RHPS and NJHPS

A.6.5 SJVN representative apprised that Central Electricity Regulatory Commission (Sharing of Inter-State Transmission Charges and Losses) Regulations, 2020 was notified on 04.05.2020 with applicability from 01.11.2020 onwards. The relevant provisions of aforesaid Regulations are reproduced here as under:

Regulation (12): Transmission Deviation

(1) Transmission Deviation, in MW, shall be computed as under

a) *For a generating station, net metered ex-bus injection, in a time block in excess of the sum of Long Term Access, Medium Term Open Access and Short Term Open Access:*

Provided that for a hydro-generating station, overload capacity of 10% during peak season shall be taken into account.

(2) Transmission deviation rate in Rs./MW, for a State or any other DIC located in the State, for a time block during a billing month shall be computed as under:

1.05 X (transmission charges of the State for the billing month in Rs.)/ (quantum in MW of Long Term Access plus Medium Term Open Access of the State for the corresponding billing period X 2880)

A.6.6 Further, CERC vide notification dated 07.02.23 has issued first amendment of 'Sharing of Inter-State Transmission Charges and Losses' Regulations, 2020, which is applicable from 01.10.2023 onwards. The relevant clauses of Regulation impacting Hydro power generating stations are as under:

10. Amendment to Regulation 12 of the Principal Regulations*:*

(1) Clauses (1) a n d (2) of Regulation 12 of the Principal Regulations shall be substituted as under:

"(1) Transmission Deviation, in MW, shall be computed as under:

(a) For a generating station including ESS and captive generating plant, transmission deviation shall be net metered ex-bus injection, in a time block in excess of GNA of such entity:

Provided that for a hydro-generating station, schedules for overload capacity as permissible under the Grid Code during peak season shall not be considered for computing the transmission deviation:

Provided further that transmission deviation charges shall not be levied for the quantum of over-injection for providing primary response by a generating station, subject to verification of such over-injection by concerned RPC:

Provided also that each RPC shall issue necessary guidelines for furnishing the data by the generating stations regarding their primary response.

2) Transmission deviation rate in Rs./MW, for a State or any other DIC located in the State, for a time block during a billing month shall be computed as under:

1.25 X (total transmission charges for all drawee DICs located in the State, (as calculated in accordance with Regulation 5 to 8 of these regulations) for the billing month in Rs.)/ (GNA and GNARE quantum in MW of such entities located in the State, considered for billing, for the corresponding billing period X number of days in a month X 96).”

A.6.7 The relevant provisions of Central Electricity Regulatory Commission (Indian Electricity Grid Code) (Fifth Amendment) Regulations, 2015 are reproduced here as under:

Quote:

(7) The first sentence of Regulation 5.2(h) of Part 5 of the Principal Regulations, shall be substituted as under:

"All coal/lignite based thermal generating units of 200 MW and above, Open Cycle Gas Turbine/Combined Cycle generating stations having gas turbines of more than 50 MW each and all hydro units of 25 MW and above operating at or up to 100% of their Maximum Continuous Rating (MCR) shall have the capability of (and shall not in any way be prevented from) instantaneously picking up to 105%, 105% and 110% of their MCR, respectively, when the frequency falls suddenly.”

(8) *The following shall be added at the end of Regulation 5.2 (h) of Part 5 of the Principal Regulations:*

"For the purpose of ensuring primary response, RLDCs/SLDCs shall not schedule the generating station or unit(s) thereof beyond ex-bus generation corresponding to 100% of the Installed capacity of the generating station or unit(s) thereof. The generating station shall not resort to Valve Wide Open (VWO) operation of units

whether running on full load or part load, and shall ensure that there is margin available for providing Governor action as primary response……

Provided that scheduling of hydro stations shall not be reduced during high inflow period in order to avoid spillage:

Provided further that the VWO margin shall not be used by RLDC to schedule Ancillary Services."

Unquote

A.6.8 In compliance of aforesaid Regulations, during lean season/less inflow period, RLDC giving schedule up to Ex -bus installed capacity to the Hydro generating stations by keeping margin up to 110% of the MCR of the generating stations or unit thereof, for getting primary response, when frequency falls suddenly in the Grid.

A.6.9 From the above, it can be inferred that there is a contradiction in both the Regulations viz Sharing of Transmission Charges and Losses and IEGC Regulations. In accordance with the provisions of IEGC Regulations, RLDC is giving schedule to the generating stations corresponding to the 100 % of the Ex-bus Installed capacity of generating stations during peaking hrs and margin of 10 % overloading is utilized for giving primary support by the generating station. However, as per the provision of Sharing of Transmission Charges and Losses Regulations, transmission deviation charges were levied on generating station beyond ex-bus injection in a time block in excess of the sum of Long-Term Access, Medium-Term Open Access and Short-Term Open Access for giving primary support by the generating station.

A.6.10 CERC vide notification dtd.07.02.2023 has issued first amendment of 'Sharing of Inter-State Transmission Charges and Losses' Regulations, 2020, effective from 01.10.2023 onwards, wherein primary response given by generating stations has been excluded for calculating the transmission deviation charges. However, in terms of CERC Sharing of Transmission Charges and Losses Regulations, transmission deviation charges more than crores of Rupees have been levied to NJHPS and RHPS from 01.11.2020 to 30.09.2023 by giving primary support to the Grid.

A.6.11 Issue of Transmission Deviation charges imposed on RHPS and NJHPS was also taken up in previous 47th Commercial Sub-committee meeting held on 28.08.2023. Decision of Sub-Committee as given in MOM, as under:

Letter be written to CERC regarding Transmission deviation charges of all hydro generators for the period from implementation of Sharing of Inter-State Transmission Charges and Losses Regulations, 2020 to 30th September 2023 due to primary response.

A.6.12 In compliance of CERC IEGC Regulation prevailing during the period from 01.11.2020 to 30.09.23, generator was giving peaking support to the Grid up to 10 % overloading beyond Ex-bus installed capacity, as per the droop setting defined in the CERC Regulation. Therefore, generator should not be penalized during such period from 01.11.2020 to 30.09.2023 for giving primary response to the Grid. Also, in case of reduction of frequency of Grid and generator is giving more primary support to the Grid, then such quantum may also be excluded for calculating the transmission deviation charges. Hence, some methodology/procedure may be adopted by NRPC for calculation of transmission deviation charges based on frequency of the Grid.

A.6.13 In view of above, SJVN requested forum to deliberate on following provisions of CERC Sharing of Transmission Charges and Losses Regulations:

a) For the period from 01.11.2020 to 30.09.2023, imposition of transmission deviation charges on NJHPS and RHPS, in-spite of giving primary support to the Grid in compliance of CERC IEGC Regulations.
b) Procedure for calculating primary response in consonance with CERC IEGC regulations and CERC DSM regulations especially during frequency reduction, so that imposition of transmission deviation charges on generator may be avoided for giving peaking support to the Grid.

A.6.14 EE (C), NRPC informed that in 2020 regulation, there was no mechanism to waive off the deviation caused by Primary response. However, since the enactment of 1st amendment to ISTS sharing regulations from 01.10.2023, PRAS will be waved off from RTDA.

A.6.15 DGM, SJVN highlighted that despite their support to Grid, they were being penalized, and deviation charges should be exempted and procedure for this is to be defined.

A.6.16 GM, NRLDC opined that SCADA data for unit load set point and set point taken due to PRAS, frequency change during PRAS action, and droop setting of generators may be utilized in calculating waiver for PRAS response in RTDA.

A.6.17 GM, NHPC stated that additional tabs will be added in SCADA software such as set point, actual generation and dip rate.

A.6.18 EE (C), NRPC stated that methodology for waving off this deviation will be discussed in the next Commercial Sub Committee meeting to be scheduled in 1st week of December 2023. All GENCOs were requested to send their inputs such as droop, set value etc. to NRPC Secretariat.

A.6.19 MS, NRPC suggested utilities to approach the Honorable CERC for getting waiver on the deviation charges imposed before 1.10.2023. A petition may be filed.

A.6.20 CE (GM division), CEA mentioned that DVC had such issues which were taken into consideration of Chairperson, CEA.

A.6.21 Forum decided to send a letter to Chairperson, CEA about this matter for waiving off deviation charges as Chairperson, CEA is ex-officio member of CERC.

NRPC Deliberation

Forum concurred on deliberation held in the TCC meeting.

Decision of NRPC Forum:

i. Forum acknowledged the issue of generators and agreed that generators shall not be penalized for supporting grid. However, relaxation from regulation is not mandate of NRPC. Therefore, for waiver of transmission deviation charges for the period 01.11.2020 to 30.09.2023, generators may approach CERC.

ii. Chairperson, CEA may be apprised this issue of generators as he is ex-officio member of CERC.

iii. The methodology for waving off these deviation charges starting from 01.10.2023 will be discussed in the next Commercial Sub-Committee meeting, to be scheduled in 1st week of December.

iv. Generators were asked to provide input such as set value, droop, etc. to NRPC Sectt.

A.7 Technical constraints in context to transmission deviation charge on Koteshwar HEP (agenda by THDCIL)

TCC Deliberation

A.7.1 THDC representative apprised that the CTU's bus reactor (125 MVAR) is installed at Koteshwar HEP switchyard and energy consumed/drawn by bus Reactor is being calculated in account of Koteshwar HEP as per the RTDA issued by NRPC.

A.7.2 As bus reactor is CTU's assets hence the deviation caused by this shouldn't be accounted to generating plant.

A.7.3 In view of above, THDCIL requested that suitable metering mechanism may be explore/devised to exclude such drawl/consumption from Koteshwar HEP and the charges previously remitted for transmission deviation may be revoked and refunded to the generator.

A.7.4 Forum deferred the agenda for discussion in the next Commercial sub-Committee meeting to be scheduled in first week of December 2023.

A.7.5 Forum requested CTU to take part in the CSC meeting regularly.

NRPC Deliberation

Forum concurred the discussion held in the TCC meeting.

Decision of NRPC Forum:

i. Forum deferred the agenda for discussion in the next Commercial sub-Committee meeting to be scheduled in first week of December 2023.

A.8 Exemption of the Tehri pumped storage plant (PSP) under the regulation 12 of CERC regulation on "sharing of interstate transmission charges and losses regulation 2020" and any subsequent amendments thereof (agenda by THDCIL)

TCC Deliberation

A.8.1 THDC representative apprised that the (4x250) MW Tehri Pumped Storage Plant (PSP) is an interstate grid connected Energy Storage System linked to the Northern Region transmission corridor. The Tehri PSP has been designed to function effectively under varying gross head conditions, ranging from 127.5m to 224m throughout the entire year, following the reservoir rule curve.

A.8.2 He further informed that the rated parameters of the Tehri PSP were set at a net rated head of 188m, allowing it to both draw and inject a rated 1000 MW of power to and from the power system. The gross head for the PSP naturally reaches up to 224m in the month of September every year and consistently remains within the maximum head range of 210-224m from September to January.

A.8.3 Due to the reversible nature of the PSP turbine, cavitation limits are provided on both the pressure and suction sides. These limits may change with respect to variations in head, and these characteristics are illustrated in the operating zone curve for

mechanical input and model test for conversion loss at different head enclosed in **Annexure-V**.

A.8.4 As per the cavitation limit curve and model tests, the Tehri PSP can draw power from the grid in the range of 1064.4 MW to 1141.2 MW when the head reaches its maximum level, ranging from 210m to 224m, during the period from September to January.

A.8.5 However, it is important to note that during this specific head range, the Tehri PSP in pumping mode cannot be operated at rated power of 1000 MW due to technical minimum limitations, falling within the range of 1064.4 to 1141.2MW of pumping power. This limitation could potentially result in the imposition of transmission deviation charges due to drawing of overcapacity beyond the rated capacity. Since the pumping power is arranged by beneficiary states, they may request to inject power at the same capacity as they have arranged power for pumping.

A.8.6 It is also pertinent to mention here that the work for the Tehri Pumped Storage Plant (PSP) was awarded in 2011, and all design aspects had been finalized before the notification of these transmission deviation regulation. Given the advanced construction stage of the project and completion of manufacturing, supply & erection of two units, modifications in the plant design at this stage is not feasible.

A.8.7 In light of the aforementioned concerns and recognizing the unique characteristics of the Tehri PSP, especially within the context of the multipurpose Tehri Reservoir exemption may be granted for Tehri PSP from the imposition of transmission deviation charges for over-drawl and over-injection during periods of higher head conditions beyond the rated head under the regulation 12 of CERC Regulation on "Sharing of Interstate Transmission Charges and Losses Regulation 2020" and any subsequent amendments thereof.

A.8.8 EE (C), NRPC commented that generally PSPs are designed to draw more power in pumping mode than the rated generation capacity. Further, THDC was advised to look into the matter as a buyer and not a generator during pumping mode. Accordingly, for scheduling of drawl of pumping power, THDC would have to arrange GNA/T-GNA for that quantum of power. In this manner, transmission deviation would not be levied for drawl of power within GNA/T-GNA quantum. He advised THDCIL to look into GNA regulations and power purchasing mechanism or other such arrangement for drawl of pumping power.

A.8.9 CGM, NRLDC stated that there is no mandate for such exemption in present regulation. Therefore, he advised THDCIL to refer to Honorable CERC.

A.8.10 GM, CTU requested THDCIL to provide the connection details of the new generating plant to the NRLDC as early as possible.

A.8.11 MS, NRPC advised other generators to look into this aspect as they may also face similar issue as many Pump Storage Plants are planned in near future.

A.8.12 Forum decided to discuss the apprehensions of THDCIL in detail considering GNA Regulations in next Commercial Sub-Committee meeting.

NRPC Deliberation

Forum concurred the discussion held in the TCC meeting and decided to take up the matter in next Commercial Sub-Committee meeting.

Decision of NRPC Forum:

i. THDC was advised to look into the matter as a buyer during pumping mode. Accordingly, issue wouldn't crop up as GNA/T-GNA may suffice.

ii. Further, THDC may take up the matter in next Commercial Sub-Committee meeting for detailed deliberation.

A.9 Non opening of Letter of Credit by JKPCL (formally PDD, J & K) for power supplied from NJHPS & RHPS (agenda by SJVN)

TCC Deliberation

A.9.1 SJVN apprised that as per mutually signed Power Purchase Agreement and MOP, GOI various order/ gazette Notifications (e.g. 28.06.2019, 21.02.2021 and 03.06.2022), beneficiary has to establish Letter of Credit in line with payment security Mechanism.

A.9.2 The established LC should be confirmed, revolving, irrevocable and 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 both the parties. The LC shall be kept valid at all the time during the validity of the Power Purchase Agreement.

A.9.3 He further highlighted that in spite of repeated reminders, JKPCL had not opened Letter of Credit after 13.11.2019 for power supplied from NJHPS and RHPS. As such JKPCL may be advised to submit Letter of Credit in favour of SJVN at the earliest.

A.9.4 He also conveyed that the same matter has already been brought into kind notice of forum in the 68th NRPC meeting held on 18.08.2023.

A.9.5 SJVN representative informed that every month letter is being sent to the J&K officials. But no action has been taken.

A.9.6 He further commented that in absence of LC, J&K is not liable to claim rebate in bill.

A.9.7 CE, J&K informed that the matter is being taken up with Government representative and due to unbundling of state, LC issue is pending at Government level.

A.9.8 MS, NRPC requested J&K to expedite the matter and issue the LC before the next NRPC meeting possibly.

A.9.9 Forum requested J&K to expedite the process for issuance of LC to concerned parties.

NRPC Deliberation

A.9.10 Chairperson, NRPC and MD, HVPN stressed that this matter shall be apprised to government at appropriate level.

A.9.11 In line with TCC, NRPC forum also requested J&K to expedite the issuance of LC to concern parties.

A.9.12 NPCIL representative raised concern of outstanding dues of 14 crores on JVVNL, AVVNL and JdVVNL availed by them as rebate. She stated that these DISCOMs have not issued LC for 8 months during 2017. Therefore, they are not eligible to get rebate on payment for power taken from Rajasthan atomic power station.

A.9.13 There was no representative from Rajasthan DISCOMs present in the meeting.

A.9.14 Forum decided to discuss the matter in the upcoming Commercial sub-Committee meeting.

A.9.15 Further, NPCIL representative raised the issue of non-issuance of LC by J&K for NAPS also.

A.9.16 MS, NRPC conveyed that matter has already been discussed and requested J&K to expedite the LC process.

A.9.17 NPCIL representative expressed concern over PPA expired in 2020 of BSES and Tata Power.

A.9.18 BSES representative informed that they have some observation on the draft PPA prepared by NPCIL. That may be discussed separately. Tata Power has submitted draft PPA to DERC and approval is pending from commission.

Decision of NRPC Forum:

i. J&K was requested to escalate the issue at appropriate level in government regarding disadvantages due to no LC such as ineligibility of rebate etc.

ii. BSES and NPCIL may discuss mutually PPA modalities.

iii. Forum requested all parties to try to resolve the issue mutually. Thereafter, parties may approach this forum.

A.10 Conditional payment of energy bills by BRPL (agenda by SJVN)

TCC Deliberation

A.10.1 SJVN representative apprised that they are supplying power to Delhi's DISCOMS from Nathpa Jhakri Hydro Power Project as per allocation order issued by MOP, GOI. Further, DERC had assigned power of Delhi (formally DTL) to BRPL, BYPL and TPDDL**.**

A.10.2 SJVN representative commented that energy bills are being raised as per the terms of PPA and tariff determined by CERC. The payments are to be made by the beneficiaries as per the CERC rules and regulation and terms of the Power Purchase Agreement.

A.10.3 He further informed that SJVN is receiving timely payments from these DISCOMS, however, BRPL is making the conditional payments without assigning any reason and by mentioning in their letter "Without Prejudice". BRPL should specifically address the concern or objection through letters and correspondences.

A.10.4 SJVN representative requested BRPL to kindly issue Payment Receipt Letters without mentioning of the "Without Prejudice" remark as it leads to audit Objection by the SJVN auditors and BRPL may be asked to dissuade from mentioning of "Without Prejudice" in their payment intimation letters.

A.10.5 THDCIL representative also commented that they are also facing similar issues with BRPL.

A.10.6 BRPL informed that they have regulatory issues with the state government. Writ has been filed in Supreme Court in 2014. In March 2016, Supreme Court has directed to pay current dues. However past dues are still pending. Therefore, these words have been used.

A.10.7 CE (GM division), CEA expressed that there is no meaning to mention such word due to regulatory issues.

A.10.8 MS, NRPC conveyed that payment may be made as per CERC regulation.

A.10.9 Forum suggested BRPL to not use such words if SJVN is not a party to writ.

NRPC Deliberation

Forum concurred the deliberation held in the TCC meeting.

Decision of NRPC Forum:

i. Forum suggested BRPL to not use such words (i.e. “Without Prejudice) if SJVN is not a party to writ.

A.11 Uprating of low rating switchgear at 400 kV Mahendragarh (agenda by Adani Transmission India Limited)

TCC Deliberation

A.11.1 EE (P) apprised that in the minutes of the 39th meeting of Standing Committee on Power system planning of Northern Region (held on 29th & 30th may 2017) dated 28.07.2017 **(Annexure-VI)**, the issue regarding low rating of switchgear of 400 kV Mahendragarh- Dhanoda D/C line at Mahendragarh and Dhanoda end was discussed, and it was approved that the switchgear at both the Substations shall be upgraded.

A.11.2 The same was further clarified in the 40th meeting of Standing Committee on Power system planning of Northern Region (held on 22nd June 2018) wherein it was specified that since 400 kV Mahendragarh Substation is an ISTS Substation, the 400 kV equipment upgradation shall be carried out under ISTS (point no 1.2 of the minutes) **(Annexure-VI)**.

A.11.3 Further, BKTL representative informed that the issue was discussed in the 208th OCC meeting of NRPC held on 20.06.2023 (Agenda no 17 c) and its was decided that upgradation for bays at Mahendragarh shall be carried out by Adani Transmission India Limited. This was followed by a letter from NRLDC dated 23.06.2023 wherein ATIL was asked to carry out the upgradation of switchgear at Mahendragarh Substation.

A.11.4 In compliance with the above requirements, ATIL has prepared the estimate for upgradation of Switchgear of 400 kV Mahendragarh Dhanoda line at Mahendragarh end and the same comes out to approx. Rs 7.0 crore (BoQ enclosed at **Annexure-VI**).

A.11.5 He further stated that the Isolators, Current Transformers and bay equipments other than Circuit breakers of 400 kV Mahendragarh Bhiwani Line (Mahendragarh end) are also of low rating, the upgradation of which would require additional 1.4 crore.

A.11.6 BKTL representative highlighted that HVPN has already augmented switchgears at their end. HVPN was requested to confirm in this regard.

A.11.7 Therefore, BKTL has requested for approval of upgradation at Mahendragarh for Dhanoda and Bhiwani bays with above cost as additional scope for which necessary

approval is granted so that Adani Transmission India Limited shall proceed for implementation after necessary regulatory approval.

A.11.8 NRLDC representative stated that upgradation in respect of Mahendargarh – Bhiwani may be scrutinized as it has not been discussed in OCC.

A.11.9 CTU representative desired to have SLD for Mahendargarh S/s so as to analyze the proposal comprehensively.

A.11.10 Forum requested BKTL to send the SLD for 400 kV Mahendragarh S/s for analysis of switchgear upgradation for Mahendragarh -Bhiwani Line to CTU, NRLDC and NRPC Secretariat and referred for discussion in the next OCC meeting.

NRPC Deliberation

Forum concurred the discussion held in the TCC meeting and decided to deliberate the matter in the next OCC meeting.

Decision of NRPC Forum:

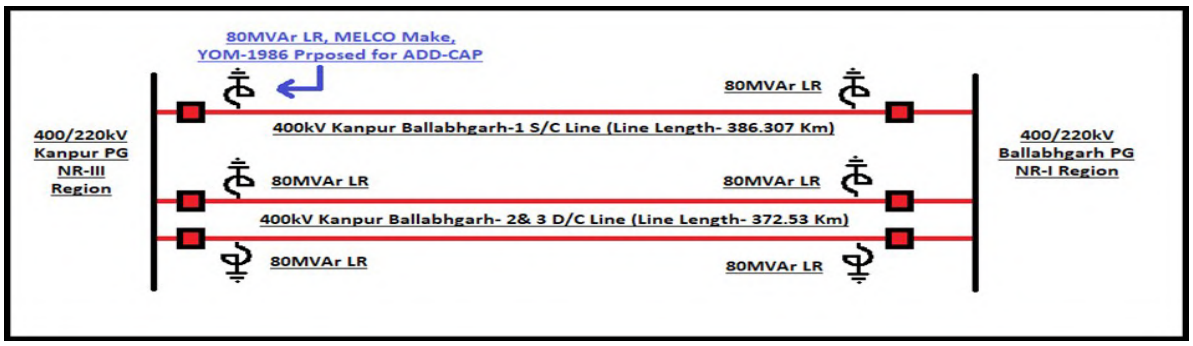
i. Forum accorded technical approval of the proposal of uprating of low rating switchgears at Mahendragarh end for Mahendragarh-Dhanoda Line.

ii. Forum also requested ATL to bring the matter related to Mahendragrah Bhiwani Line, in the next OCC meeting. ATL was requested to share SLD and rating of switchgear with CTU/NRLDC/NRPC Sectt.

A.12 Replacement of 420kV 80MVAR Line reactor of 400kV Kanpur-Ballabgarh-1 line at Kanpur end under Add-Cap 2024-2029 (Agenda by POWERGRID)

TCC Deliberation

A.12.1 POWERGRID representative apprised that 400/220kV Kanpur (PG) is connected to 400/220kV Ballabhgarh (PG) through 01 No. 400kV S/C Kanpur (PG)-Ballabhgarh (PG) CKT-1 (Line Length- 386.307Km) and 01 No. 400kV D/C Kanpur Ballabhgarh-CKT-2 & 3 (Line Length- 372.536Km each). Due to the longer lines, all 3 Circuit have been provided with non-switchable 80MVAr Line Reactors at both ends as shown in diagram below:



A.12.2 He further informed that 400kV, 80MVAR, MELCO (Japan) Make Line Reactor installed in 400kV S/C Kanpur Ballabhgarh-1 Line at Kanpur 400kV end is commissioned since 03.10.1988 (Year of Manufacture – 1986) in the above line. After serving a life of more than 35 years, sudden rise in fault gases observed in DGA sample dated 12.08.2023 and same was confirmed in confirmatory sample dated 21.08.2023 as per details given below:

Date of Testing	H2	CH4	C2H2	C2H4	C2H6	CO	CO2
21/08/2023	1195.50	158.00	0.0	3.80	137.10	120.00	1820.00
12/08/2023	1083.60	146.40	0.0	3.80	131.40	121.00	1801.00
07/06/2023	0.00	59.10	0.0	2.70	95.00	77.90	1891.90

A.12.3 Based on the sudden rise in DGA gas, forced shutdown of reactor was taken on 29.08.2023 to investigate the reason of rise in fault gases. During the testing, Tan Delta violation was observed in B-phase Bushing which was replaced with healthy spare bushing and reactor taken into service after oil filtration. During the replacement of bushing, internal inspection of the reactor was also carried out and no major abnormality observed. However, even after replacement of bushing, there is steep rise in H2 (467PPM dated 12.10.2023).

Date of Testing	H2	CH4	C2H2	C2H4	C2H6	CO	CO2
12/10/2023	467.60	51.60	0.0	1.00	17.70	86.20	1074.20
04/10/2023	327.20	35.90	0.0	0.70	11.40	70.60	798.50
26/09/2023	204.70	23.50	0.0	0.80	6.90	77.20	688.90
19/09/2023	79.80	10.10	0.0	0.50	3.30	54.10	473.80

A.12.4 He conveyed that the rising trend of fault gases indicates partial discharges inside

the Reactor which is alarming and may result in failure of the Reactor.

A.12.5 400kV S/C Kanpur Ballabhgarh Line is a long line and operation of the same without line reactor at each end is very difficult and could result in overvoltage conditions in the line.

A.12.6 As aforementioned line reactor has already completed 35 years of service life and based on current DGA trend it may fail at any point of time.

A.12.7 In view of the above and to avoid major failure & to prevent consequential damage, POWERGRID proposed to replace the existing 420kV 80MVAR MELCO make reactor with new reactor under Add-Cap 2024-2029.

A.12.8 He stated that matter has already been deliberated in the 212th OCC meeting on dated 20.10.2023, wherein it was principally agreed.

A.12.9 Forum approved the replacement of 420kV 80MVAR MELCO make reactor under Add-Cap 2024-2029 and recommended for approval of NRPC forum.

NRPC Deliberation

Forum concurred with decision of TCC.

Decision of NRPC Forum:

Forum approved the replacement of 420kV 80MVAR MELCO make reactor under Add-Cap 2024-2029.

A.13 Implementation of Automatic Demand Management System (ADMS) in NR states/UT's (agenda by NRPC Secretariat)

TCC Deliberation

A.13.1 EE (P) apprised that as per Regulation 36(2) of CERC (Indian Electricity Grid Code) Regulations, 2023 SLDC, in coordination with STU and Distribution Licensee (s), shall develop Automatic Demand Management scheme with emergency controls at SLDC.

A.13.2 He conveyed that initial deadline for ADMS implementation was 01.01.2011.

A.13.3 In CERC order dated 31st December 2015 in suomotu petition no. 05/SM/2014 in the matter of "Non-compliance of Regulation 5.4.2 (d) of the CERC (IEGC) Regulations, 2010" following have been directed as quoted below:

"…….*However, considering the request of the respondents to grant time to implement ADMS, we grant time till 31.06.2016 to the respondents to implement ADMS, failing which they will be liable for action under Section 142 of the Act for*

noncompliance of the Regulation 5.4.2 (d) of the Grid Code and order of the Commission.

A.13.4 EE (O) stated that status of implementation of ADMS in NR is regularly taken up as follow up agenda in the monthly OCC meetings of NRPC. Further, status of ADMS implementation in NR has also been reviewed by Member Secretary, NRPC in the special meetings held on 13.06.2023 and 17.10.2023 (MoM attached at **Annexure-VII**).

A.13.5 Subsequently, the updated status of ADMS implementation was discussed as below-

Uttar Pradesh-

- CE, SLDC apprised that road map about ADMS is not clear to SLDC. A SOP or methodology is required to determine the load shedding protocol i.e. at 33kV or 11kV voltage level and the quantum of load shedding. He stated that in absence of uniform protocol, it will lead to difference in operation of ADMS in each state.
- SE(O), NRPC stated that a uniform methodology may not be suitable for all the states. He further stated that DISCOMs, SLDC and STU are required to come together, discuss and formulate a roadmap for implementation of ADMS.
- GM, NRLDC stated that SLDC may decide the quantum of load shedding and it may be done in different stages. Main requirement of ADMS is to get zero Area Control Error as mentioned in IEGC.
- Forum requested UPSLDC to take up the matter with concerned MDs of DISCOMs and to prepare proposal for UP based on ADMS scheme in other states of NR.

Delhi-

- Delhi representative desired to know the frequency of ADMS operation to have uniformity in frequency of grid. He further informed that in Delhi load shedding is not allowed as it may lead to pollution due to use of DG set, etc.
- GM, NRLDC conveyed that the frequency may be taken as 49.7Hz same as in West Bengal.
- CE (RA division), CEA emphasized that if ADMS is operated on the basis of zero area control error then frequency will automatically be maintained.

Further, scheduling of power may be done in the way that it may not require load shedding.

Haryana-

- Representative from Haryana informed that feeders have been identified and DPR has already been completed.
- MS, NRPC appreciated the efforts of Haryana with respect to ADMS implementation.

Himachal Pradesh-

- Representative from HP informed that road map was submitted and 142 feeders have been identified for ADMS. Due to recent flood, the work of control wiring is pending from HPSEBL side. That will be taken up now.

Rajasthan-

- Rajasthan representative conveyed that ADMS implementation is under the final stage of development. Logic was developed in consonance with DISCOMs. Cyber security third party assessment is pending.
- He further commented that after approval from information security sharing committee, the same is expected to be implemented by 15th December 2023.

Uttarakhand-

- Uttarakhand representative confirmed that next week meeting is scheduled with authorities regarding ADMS.

A.13.6 Forum noted the progress of ADMS implementation and decided to follow up the same regularly. Next meeting shall be held in December 2023 at NRPC Secretariat.

NRPC Deliberation

A.13.7 Chairperson, NRPC and MD, HVPN expressed that CEA and CERC may broaden the guideline on the parameters for ADMS implementation. An SOP may be prepared by CEA for uniformity among utilities. He further requested utilities to fasten up the implementation of the same.

Decision of NRPC Forum

Forum acknowledged the status of ADMS implementation and requested states to expedite it.

A.14 Implementation of islanding schemes in NR (agenda by NRPC Secretariat)

TCC Deliberation

A.14.1 EE (P) apprised that based on the decisions taken in the meeting taken by Hon'ble Minister of State (IC) for Power and New & Renewable Energy on 28.12.2020, Islanding Schemes for NR have been continuously reviewed/discussed in various forums. Latest status of Islanding Scheme of NR is attached as **Annexure-VIII.**

A.14.2 In the 187th OCC meeting held on 21.09.2021, it was decided that respective states would submit MIS report before every OCC meeting so that same may be discussed. It was also highlighted that MoP has agreed for PSDF funding for implementation of islanding schemes and states were requested to prepare and submit DPR for the same. Further, a sample DPR on implementation of Islanding scheme for PSDF funding has been already circulated vide email dated 07.10.2021 and requested to expedite the preparation of DPR.

A.14.3 In the 212th OCC meeting held on 20.10.2023 following was deliberated on islanding schemes of NR:

Islanding schemes of UP

- UPPTCL representative apprised that with regard to Lucknow-Unchahar islanding scheme, total 46 no. of UFRs were to be installed of which 35 no. of UFR have been commissioned. Installation of rest 11 no. of UFRs is expected to be completed by end of October 2023.
- With regard to Agra islanding scheme, UPPTCL representative apprised forum that a meeting was held with CPRI to deliberate the 18 Load-Generation Scenario for the islanding scheme wherein it is observed that for 2 no. of cases frequency was dropping below 47.5 Hz. Further, he mentioned that CPRI was directed to redo the CASE 11 and CASE 12 by merging UFLS Stage 2 and Stage 3 to UFLS Stage 2, but still on merging also frequency is going below 47.5 Hz for both these cases.
- NRLDC was of the view that since Under Frequency Generator Tripping happens at 3 seconds whereas frequency is dropping below 47.5 Hz for 2 seconds, there is still 1 second margin available. Therefore, NRLC suggested that we can go ahead with the study report of CPRI.
- MS, NRPC asked UPSLDC to submit the Agra islanding scheme for approval of NRPC Board.

Islanding schemes of Rajasthan

- Representative from RRVPNL intimated forum that draft DPR for Jodhpur-Barmer Rajwest and Suratgarh Islanding scheme is under finalization which is expected to be completed by December 2023 and thereafter the scheme would be shared with NRPC Sectt. and NRLDC.

Islanding schemes of Punjab

- With regard to Patiala-Nabha Power Rajpura islanding scheme representative from Punjab SLDC informed that technical specifications for procurement of UFR relays have been submitted for approval of their management. It is expected that scheme shall be operational by 31st March 2024.

Islanding schemes of Himachal Pradesh

- With regard to Kullu-Manali Islanding scheme, representative from HPSLDC apprised forum that they have received the response from HPSEB regarding availing PSDF funding for implementation of the scheme and the response of HPSEB is being scrutinized by HPSLDC.
- With regard to Shimla-Solan Islanding scheme representative from HPSLDC has intimated that in their internal meeting with HPSEB, SE Generation circle HPSEB has communicated that BHEL has confirmed that the generator of Bhaba HEP is capable of working in the Power & opening mode and the control system of governor end is of GE make. Further, HPSEB has taken up the matter with GE for switching of Bhaba HEP to automatic mode during island formation.

Islanding schemes of Delhi

- DTL representative informed forum that the revised islanding scheme of their control area is expected to be implemented by end of October 2023.

A.14.4 Subsequently, the above islanding schemes were discussed in the 48th TCC meeting as below-

Islanding schemes of UP

Lucknow- Unchahar Islanding scheme-

- CE, SLDC informed that work is pending from NTPC Unchahar end for Lucknow- Unchahar islanding scheme.
- NTPC representative noted and assured to update about it.

Agra islanding scheme

- Lalitpur plant has some observations on CPRI report. So, they demanded some time for discussion with CPRI. Further, Lalitpur representative expressed his concern on procedure of revival from islanding to normal.
- GM, NRLDC conveyed that Grid restoration procedure is available on the website of GRID-INDIA.
- MS, NRPC convey UPSLDC and Lalitpur to solve the issues and expedite the implementation of the same.

Islanding schemes of Rajasthan

- Representative from Rajasthan informed that DPR for Jodhpur-Barmer Rajwest and Suratgarh Islanding scheme has been prepared and the same will be shared with NRPC Secretariat in the next week.
- He further stated that the presentation on islanding scheme implementation will be done in upcoming OCC meeting.

Islanding schemes of Punjab

- With regard to Patiala-Nabha Power Rajpura islanding scheme, it was informed they will go for PSDF funding for its implementation and DPR of the same will be prepared in the next 2 weeks.. The implementation may be expected in March 2024.

Islanding schemes of Himachal Pradesh

Kullu-Manali Islanding scheme

- The Himachal Pradesh representative informed that the scheme has been listed for hearing in HPERC on 22nd November and after clearance from there, execution will be started.

Shimla-Solan Islanding scheme

- The Himachal Pradesh representative informed that GE has confirmed capability of the generator working in the Power & opening mode. Further, response of GE is awaited on the switching of the generator to automatic mode.

Islanding scheme of Delhi

DTL representative informed that revised Delhi islanding scheme has been implemented.

NRPC Deliberation

Forum noted the progress update discussed in the TCC meeting and requested the utilities to expedite the implementation of Islanding Scheme.

Decision of NRPC Forum

Forum requested states to expedite implementation of Islanding Scheme.

A.15 Protection philosophy of Northern region (agenda by NRPC Secretariat)

TCC Deliberation

A.15.1 EE (P), NRPC apprised that in compliance of decisions of 42nd and 45th PSC meeting, an expert group has been constituted by NRPC vide letter dtd. 08.12.2022, comprising members from NRPC Sectt, NRLDC, BBMB, POWERGRID, STUs, State GENCOs, NTPC, NHPC, and RE Generator to study various recommendations related to Protection setting as well as adopted philosophy in other regions/utilities and further, to propose updated protection philosophy in time bound manner.

A.15.2 He further stated that, the 1st meeting of the expert group was held on 20.01.2023, wherein members were requested to share protection guidelines followed in their organization or any other protection to be added in philosophy along with supporting document.

A.15.3 The 2nd meeting of the expert group was held on 04.08.2023, wherein existing protection philosophy of Northern Region was discussed and revision was finalized. Draft of revised philosophy was issued on date 09.09.2023 in order to get comments from the utilities.

A.15.4 Subsequently, Draft of revised protection philosophy was discussed in the 48th PSC meeting held on 11.10.2023 along with the suggestions of utilities.

A.15.5 Revised protection philosophy has been prepared based on discussion in 48th PSC meeting (attached as **Annexure-IX**). The same was put up for approval.

A.15.6 POWERGRID representative requested some changes in philosophy as settings are stringent and less practical to apply.

A.15.7 POWERGRID and BBMB representative expressed concern for approval of settings in exigency condition.

A.15.8 EE (P) highlighted that based on the reasonable ground, emergency condition may be handled and information for the same may be sent to NRPC Secretariat. However, it needs deliberation with other utilities also.

A.15.9 CTU representative raised concern for differential protection application in LILO

lines. He raised problems when the ownership of Optical fiber is different for both main line and LILO.

A.15.10 He highlighted that if Bandwidth protection is not provided then extra 6 fibers are needed for differential protection. In such cases, providing additional fiber availability may become a constraint for the main line owner.

A.15.11 Forum decided to have special meeting to discuss the raised concerns of POWERGRID, BBMB, and CTU.

NRPC Deliberation

Forum concurred the deliberation held in the TCC meeting.

Decision of NRPC Forum

Forum decided to discuss the raised concerns of POWERGRID, BBMB, and CTU in next Protection Sub-Committee meeting. Accordingly, the protection philosophy shall be put up for approval in upcoming NRPC meeting.

A.16 Implementation of IEGC 2023 (agenda by NRPC Secretariat)

TCC Deliberation

A.16.1 EE (P), NRPC apprised that IEGC 2023 has become effective since 01.10.2023 as per notification issued by Hon'ble CERC. A new chapter has been added in IEGC 2023 for Protection Code. The same is attached as **Annexure-X**.

A.16.2 He further added that the Protection Protocol, Protection Settings, Protection Audit Plan, System Protection Scheme & Recording Instruments are clauses under the Protection Code.

A.16.3 Utilities were requested for compliance of IEGC 2023.

A.16.4 He informed forum that the agenda was also deliberated and agreed in 48th PSC meeting held on 11.10.2023.

A.16.5 Forum noted the IEGC 2023 for compliance.

NRPC Deliberation

Forum acknowledged the importance of IEGC 2023 and noted the same for compliance.

Decision of NRPC Forum

Utilities were requested to comply IEGC 2023.

A.17 Furnishing and approval of protection setting by NRPC (agenda by NRPC Secretariat)

TCC Deliberation

A.17.1 EE (P) apprised that as per clause 14 (2) of IEGC 2023

All users connected to the grid shall:

- *furnish the protection settings implemented for each element to respective RPC in a format as prescribed by the concerned RPC;*
- *obtain approval of the concerned RPC for (i) any revision in settings, and (ii) implementation of new protection system;*
- *intimate to the concerned RPC about the changes implemented in protection system or protection settings within a fortnight of such changes;*

A.17.2 He further apprised that, as per clause 14 (3) (a) of IEGC 2023:

RPCs shall maintain a centralized database and update the same on periodic basis in respect of their respective region containing details of relay settings for grid elements connected to 220 kV and above (132 kV and above in NER).

A.17.3 In view of above following was proposed for discussion:

i. Utilities may intimate nodal officer responsible for furnishing the protection settings implemented for each element to NRPC Secretariat.
ii. Utilities may send their proposal for revision in existing setting as well as new settings 2 weeks advance to NRPC Secretariat for approval.
iii. Utilities may send intimation to NRPC Secretariat after implementation of approved settings within a fortnight.

A.17.4 He informed that the agenda was also deliberated and agreed in 48th PSC meeting held on 11.10.2023.

A.17.5 EE (P), NRPC also conveyed that these data related to settings is made available to NRPC Secretariat by email or on paper for the time till centralized database portal does not become active.

A.17.6 Forum agreed upon the decisions of 48th PSC meeting for furnishing and approval of setting by NRPC Secretariat and recommended for approval of NRPC forum.

NRPC Deliberation

Forum concurred the decisions of 48th PSC meeting for furnishing and approval of setting in line with TCC meeting.

Decision of NRPC Forum:

Utilities were requested to send the details of nodal officer by 15.12.2023. Nomination for the nodal officer will be sought by NRPC Secretariat through a letter also.

A.18 Annual protection audit plan for FY 2024-25 (agenda by NRPC Secretariat)

TCC Deliberation

A.18.1 EE (P) apprised that as per clause 15 of IEGC 2023;

- *All users shall conduct internal audit of their protection systems annually, and any shortcomings identified shall be rectified and informed to their respective RPC. The audit report along with action plan for rectification of deficiencies detected, if any, shall be shared with respective RPC for users connected at 220 kV and above (132 kV and above in NER).*
- *Annual audit plan for the next financial year shall be submitted by the users to their respective RPC by 31st October. The users shall adhere to the annual audit plan and report compliance of the same to their respective RPC.*

A.18.2 In view of above, some utilities have submitted their annual audit plans and others may submit annual audit plan for FY 2024-25 at the earliest as per IEGC 2023 the utilities were supposed to submit the same by 31.10.2023.

A.18.3 He informed that the agenda was also deliberated and agreed in 48th PSC meeting held on 11.10.2023.

A.18.4 Forum requested each utility to send the annual protection audit plan by 30th November 2023.

NRPC Deliberation

Forum agreed with the decision taken in the TCC meeting.

Decision of NRPC forum:

All utilities were requested to submit internal audit plan of FY 2024-25 by 30.11.2023.

A.19 Submission of protection performance indices to NRPC Secretariat on monthly basis (agenda by NRPC Secretariat)

TCC Deliberation

A.19.1 EE (P) apprised that as per clause 15 (6) of IEGC 2023;

- *Users shall submit the following protection performance indices of previous month to their respective RPC and RLDC on monthly basis for 220 kV and above (132 kV and above in NER) system, which shall be reviewed by the RPC:*

  *(a) The **Dependability Index** defined as* $D = Nc/Nc+Nf$

  where,
  Nc is the number of correct operations at internal power system faults and
  Nf is the number of failures to operate at internal power system faults.
  *b) The **Security Index** defined as* $S = Nc/Nc+Nu$
  Where,
  Nc is the number of correct operations at internal power system faults
  Nu is the number of unwanted operations.
  *c) The **Reliability Index** defined as* $R = Nc/Nc+Ni$
  Where,
  Nc is the number of correct operations at internal power system faults
  Ni is the number of incorrect operations and is the sum of Nf and Nu

- *Each user shall also submit the reasons for performance indices less than unity of individual element wise protection system to the respective RPC and action plan for corrective measures. The action plan will be followed up regularly in the respective RPC.*

A.19.2 He informed that the agenda was also deliberated and agreed in 48th PSC meeting held on 11.10.2023. PSC decided that performance indices of previous month may be submitted by 10th day of current month.

A.19.3 After detailed deliberation, forum agreed on the decision of 48th PSC meeting.

A.19.4 Utilities were requested to submit the protection performance indices of previous month by 10th day of current month, starting from October 2023 as per format attached in the Minutes of 48th PSC meeting.

A.19.5 It was also decided that utilities must send the indices of October 2023 latest by 30.11.2023.

NRPC Deliberation

Forum agreed with the decision taken in the TCC meeting.

Decision of NRPC forum:

All utilities were requested to submit performance indices of October 2023 for protection systems latest by 30.11.2023.

A.20 Intimation of performance of SPS (agenda by NRPC Secretariat)

TCC Deliberation

A.20.1 EE(P), NRPC apprised that as per clause 16 of IEGC 2023;

- *The users and SLDCs shall report about the operation of SPS immediately and detailed report shall be submitted within three days of operation to the concerned RPC and RLDC in the format specified by the respective RPCs.*
- *The performance of SPS shall be assessed as per the protection performance indices specified in these Regulations. In case, the SPS fails to operate, the concerned User shall take corrective actions and submit a detailed report on the corrective actions taken to the concerned RPC within a fortnight.*

A.20.2 He further informed that the agenda was also deliberated and agreed in 48th PSC meeting held on 11.10.2023. PSC decided that performance indices of previous month may be submitted by 10th day of current month.

A.20.3 EE (P), NRPC also conveyed that operation and non-operation of SPS is to be reported to NRPC Secretariat and NRLDC as well along with concerned SLDC.

A.20.4 After detailed deliberation, forum agreed on the decision of 48th PSC meeting. Utilities were requested to submit the protection performance indices of previous month by 10th day of current month, starting from October 2023 as per format attached in the Minutes of 48th PSC meeting.

A.20.5 It was also decided that utilities must send the indices of October 2023 latest by 30.11.2023.

NRPC Deliberation

Forum agreed with the decision taken in the TCC meeting.

Decision of NRPC forum:

i. All utilities were requested to submit performance indices of October 2023 for SPS latest by 30.11.2023

ii. Utilities were requested to report operation/ non-operation of SPS as per IEGC.

A.21 Furnishing of details of non-compliant Disturbance Recorder (agenda by NRPC Secretariat)

TCC Deliberation

A.21.1 EE (P) apprised that as per clause 17 of IEGC 2023;

- *The time synchronization of the disturbance recorders shall be corroborated with the PMU data or SCADA event loggers by the respective RLDC. Disturbance recorders which are non- compliant shall be listed out for discussion at RPC.*

A.21.2 He further informed that the agenda was also deliberated and agreed in 48th PSC meeting held on 11.10.2023. Utilities were requested to share list of DRs which are non-complaint.

A.21.3 MS, NRPC emphasized on compliance of the synchronization of Disturbance Recorder as it is very important for Grid stability. He conveyed that any difficulty faced may be intimated to NRLDC, NRPC Secretariat.

A.21.4 After detailed deliberation, forum agreed on the decision of 48th PSC meeting. It was decided that list of non-compliant DRs may be sent by utilities latest by 30.11.2023.

A.21.5 Status shall be regularly monitored in every PSC meeting as a standing agenda.

NRPC Deliberation

Forum agreed with the decision taken in the TCC meeting.

Decision of NRPC forum:

i. List of non-compliant DRs may be sent by utilities to NRPC Sectt. latest by 30.11.2023.

ii. Status shall be regularly monitored in every PSC meeting as a standing agenda.

A.22 Centralized database containing details of relay settings for grid elements connected to 220 kV and above (agenda by NRPC Sectt.)

TCC Deliberation

A.22.1 EE(P) apprised that as per decision taken in 43rd PSC meeting, a committee was constituted vide letter dtd. 06.04.2021 which was reconstituted vide letter dated

27.01.2022 for preparing comprehensive specifications for relay setting parameters for web-based database.

A.22.2 The 1st meeting of the committee was held on 10.02.2022 and 2nd meeting of the committee was held on 14.06.2022. In these meetings, committee has finalized scope of work which was deliberated and accepted in 45th Protection sub-committee meeting (held on 24.06.2022).

A.22.3 He informed that in 46th PSC meeting, it was deliberated that as per protection code in draft CERC (Indian Electricity Grid Code) Regulations, 2022 issued by CERC on 07.06.2022, additional responsibilities have been added for RPCs regarding protection setting approval and its database. Hence, it was decided that database work may be taken up further only after notification of final IEGC by Hon'ble CERC as scope of tender may vary as per requirement. It was also decided that implementing agency and funding mode may be discussed in upcoming NRPC meetings.

A.22.4 The issue was deliberated in 64th NRPC meeting held on 24.03.2023 wherein members agreed for expenditure from NRPC Fund and POWERGRID was decided as implementing agency.

A.22.5 IEGC 2023 has become effective since 01.10.2023 as per notification issued by Hon'ble CERC.

A.22.6 As per regulation 14 (2) of IEGC 2023, all users connected to the grid shall:

(a) furnish the protection settings implemented for each element to respective RPC in a format as prescribed by the concerned RPC;

(b) obtain approval of the concerned RPC for (i) any revision in settings, and (ii) implementation of new protection system;

(c) intimate to the concerned RPC about the changes implemented in protection system or protection settings within a fortnight of such changes;

(d) ensure correct and appropriate settings of protection as specified by the concerned RPC.

(e) ensure proper coordinated protection settings.

A.22.7 As per regulation 14 (3) of IEGC 2023, RPCs shall:

(a) maintain a centralized database and update the same on periodic basis in respect of their respective region containing details of relay settings for grid elements connected to 220 kV and above (132 kV and above in NER). RLDCs shall also maintain such database.

(b) carry out detailed system studies, once a year, for protection settings and advise modifications / changes, if any, to the CTU and to all users and STUs of their respective regions. The data required to carry out such studies shall be provided by RLDCs and CTU.

(c) provide the database access to CTU and NLDC and to all users, RLDC, SLDCs, and STUs of the respective regions. The database shall have different access rights for different users.

A.22.8 Further, IEGC 2023 has also added works such as:

(a) Annual Audit once in a year

(b) Third party audit once in 5 year or as recommend by RPCs

(c) Reporting of performance indices of protection system as well as SPS

(d) Reporting of SPS operation

A.22.9 In view of new works mentioned in IEGC 2023, a meeting of aforesaid committee was called on 19.10.2023 for deliberation. However, the meeting was cancelled due to lesser participation. Therefore, special PSC meeting was called on 31.10.2023 for wider deliberation on the issue. In the meeting, draft of scope of database portal was deliberation and finalized. The same is attached as **Annexure-XI.**

A.22.10 MS, NRPC conveyed that this proposal was already approved to be implemented through PSDF fund. But it could not be implemented. Now again it will be done through PSDF fund by POWERGRID as tendering agency.

A.22.11 EE(P), NRPC informed that apart from database, this software shall be used for reporting of various indices, audit reports also.

A.22.12 MS, NRPC highlighted that this portal is necessary to be implemented in order to handle all the works allocated as per IEGC 2023.

A.22.13 Forum approved the decision of special PSC meeting held on 31.10.2023 and recommended for approval of NRPC forum.

A.22.14 Utilities were requested to give their requisition for number of licences latest by 30.11.2023 required for calculation tool. Accordingly, estimate of work shall be prepared under discussion with POWERGRID.

A.22.15 POWERGRID stated that tendering work by them may cause delay and requested NRPC Secretariat to do tendering.

A.22.16 Forum decided that as POWERGRID has vast experience in tendering, this work shall be done by POWERGRID as a member of NRPC. Moreover, all support shall be extended by NRPC Secretariat.

NRPC Deliberation

Forum concurred the deliberation held in the TCC meeting.

Decision of NRPC forum:

Forum approved scope of database portal attached as **Annexure-XI.**

A.23 Capacity Building Programme for Northern Regional Constituents through PSDF fund (agenda by NRPC Secretariat)

TCC Deliberation

A.23.1 EE (P) apprised that in the 45th NRPC meeting held on 08.06.2019, NRPC proposed a capacity building programme for studying the power exchange of Nordic countries, role of TSO (Transmission System Operator), Renewable Energy in power trading, EV integration with grid etc. to be carried out for Northern Region Constituents.

A.23.2 POWERGRID vide letter dated 09.10.2019 was requested to furnish the complete proposal including estimated cost details for preparing the DPR for PSDF funding.

A.23.3 He further added that in 44th TCC & 47th NRPC Meetings (held on 10th and 11th December, 2019), POWERGRID presented the detailed report and commercial implication of the program. However, due to COVID pandemic, the program could not be completed. Therefore, a revised estimate has been taken from POWERGRID and draft of DPR for PSDF fund is attached as **Annexure-XII** for approval of forum.

A.23.4 MS, NRPC advised to add some new innovative courses in the proposal as per market established now.

A.23.5 CE (RA division), CEA suggested to incorporate additional modules such as Hydrogen, P2X (Power to X), IBR (Inverter Based Resources) etc.

A.23.6 Forum agreed in-principally on training proposal as new technologies are posing more challenges in grid stability and understating is required for grid operation. It was decided that DPR may be modified in discussion with POWERGRID (implementing agency) and ASCI (training agency).

NRPC Deliberation

A.23.7 Chairperson, NRPC and MD, HVPN consented on inclusion of current topics in training as per Grid requirement.

A.23.8 Chairman, BBMB advised to have topics related to RE integration and visit the places where footprint of RE is more.

Decision of NRPC forum:

NRPC Secretariat shall review the content of training and accordingly revised DPR shall be put up for approval of NRPC forum.

A.24 Progress of transmission augmentation in RVPN control area (agenda by NRLDC)

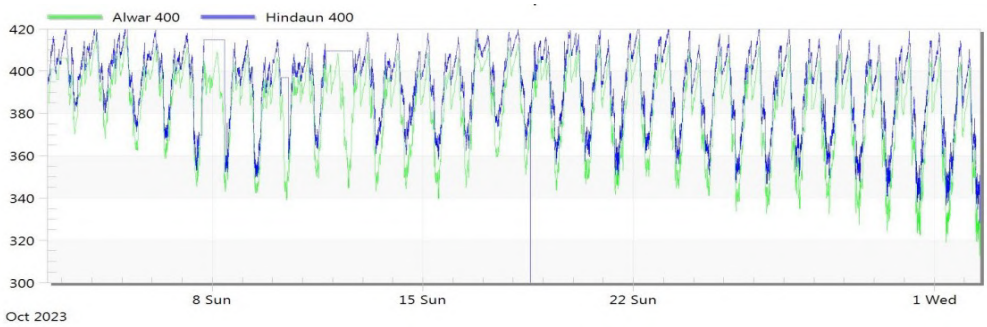
TCC Deliberation

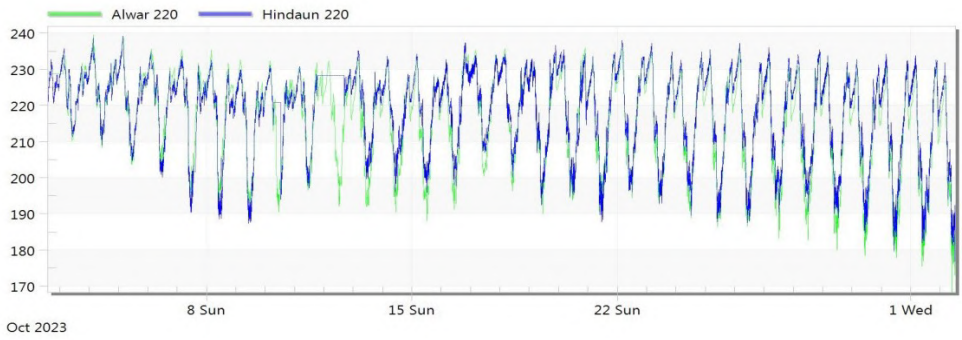
A.24.1 GM(SO), NRLDC apprised the forum about the very poor/critical condition of Rajasthan which may further deteriorate in the upcoming Rabi season when Rajasthan is to meet demand of approx. 17000 MW.

A.24.2 The following points pertaining to critical grid condition of Rajasthan Control area were discussed:

- Continuous N-1 of ICTs in Rajasthan network.
- Rajasthan implementing SPS to manage contingency situation instead of carrying out augmentation work and commissioning of new ICTs.
- Very low Voltage profile of sub-stations reaching lows of 340 & 330 KV at 400 KV Hindaun and Alwar respectively in the month of October itself.
- It is expected that voltages will further deteriorate in high-demand winter months. 220 KV bus voltages are going as low as 175-180 KV. Quality of power on supply side is thus very poor.

A.24.3 Very poor voltage profile of Alwar and Hindaun was shown to forum as below:





A.24.4 Very high active as well as reactive power drawl from ICTs in Rajasthan network (Bikaner, Bhadla, Bhinmal, Jodhpur) for a sample date of 16.11.2023 was also shown to the forum. It was highlighted that for 400/220kV Bikaner ICTs MVAR drawl through ICTs is matching with the MW drawl at various instances and leading to very poor power factor.

A.24.5 RE plants in Rajasthan Control area are also drawing MVAR instead of injecting/supporting the grid during peak generation period and thus further deteriorating the Voltage profile to critical levels. Proactive steps from SLDC Rajasthan required for operating the RE plants in Voltage Control mode.

A.24.6 Various parameters as observed in Snapshot of 16.11.2023 @ 13:30 hrs were presented to forum as below:

400/220 kV Sub-Station_ICTs	ICTs Capacity (MVA)	MW Drawl	MVAr Drawl	Power factor
Bikaner (RVPN)	2*315	245	245	0.7
Jodhpur (RVPN)	2*315	193	104	0.89
Bhadla (RVPN)	3*315	1188 (injection)	246	0.98
Bhinmal (Powergrid)	2*315	426	268	0.84

A.24.7 List of N-1 non-compliant ICTs at 400/220kV ICT level and their Huge MVAr drawl & Poor power factor is enclosed as **Annexure-XIII**.

NRLDC representative requested Rajasthan to take immediate actions for safe grid operation. It was also suggested to identify loads and shift the supply hours to night time to maintain the grid parameters within safe limits. It was also requested to run RE plants in Voltage Control mode for maintaining bus voltages at their end.

A.24.8 In the long-term installation of Capacitor banks and STATCOMs are to be done to improve the Voltages. Forum asked Rajasthan to expedite the commissioning of planned STATCOMs at RVPN substations which are already approved by CEA & discussed in 64th NRPC Meeting. List of STATCOMs to be commissioned is as below:

- ±300MVAR, 400 kV STATCOM at 765 kV GSS Jaisalmer (Proposed substation)
- ±300MVAR, 400 kV STATCOM at 400 kV GSS Bhadla (Existing substation)
- ±100MVAR, 220 kV STATCOM at 220 kV GSS Phalodi (Existing substation)
- ±100MVAR, 220 kV STATCOM at 220 kV GSS Tinwari (Existing substation)

A.24.9 RVPN representative stated that voltage improvement was observed on 17th Oct 2023, after operation of the Dhaulpur Gas Plant.

A.24.10 NRLDC representative stated that running all the 03 units of Dhaulpur gas plant in the high-demand winter season may be considered by Rajasthan. Rajasthan SLDC representative agreed for the same.

A.24.11 Rajasthan representative informed that to meet N-1 compliance, the rebidding for ICT procurement will be done as per the new estimate by 20th Nov 2023.

A.24.12 CE (GM), CEA stated that lack of reactive power management in Rajasthan has been noted by Hon'ble Minister of Power in recently held meeting of Ministers of States. He conveyed that as desired by Hon'ble Minister of Power, CEA shall conduct a workshop for Rajasthan for reactive power management.

A.24.13 Forum requested Rajasthan to expedite their actions to resolve the issues highlighted by NRLDC at the earliest.

NRPC Deliberation:

A.24.14 Forum agreed with deliberations of TCC.

A.24.15 CEA representative also opined that the system has become weak due to more RE penetration due to the non-contribution of SCR from conventional generators. In the coming 3-4 years when renewables in the Rajasthan area will reach approx. 60 GW then this phenomenon will also increase. So, it was much needed to make the system robust. Tap changing of transformers which are not working has to be addressed to control voltages.

A.24.16 The committee raised the concern of inadequate response of RVPN which can put whole grid on risk. As such, these issues need to be apprised at Govt. level of Rajasthan state.

A.24.17 Chairman NRPC also asked CEA to take the lead in the issues faced in Rajasthan and start working on it.

Decision of NRPC forum:

i. NRPC forum asked Rajasthan to expedite their actions to resolve the issues highlighted by NRLDC at the earliest.

ii. A workshop for Rajasthan shall be arranged by CEA for reactive power management. Moreover, such workshop may be extended to other states also.

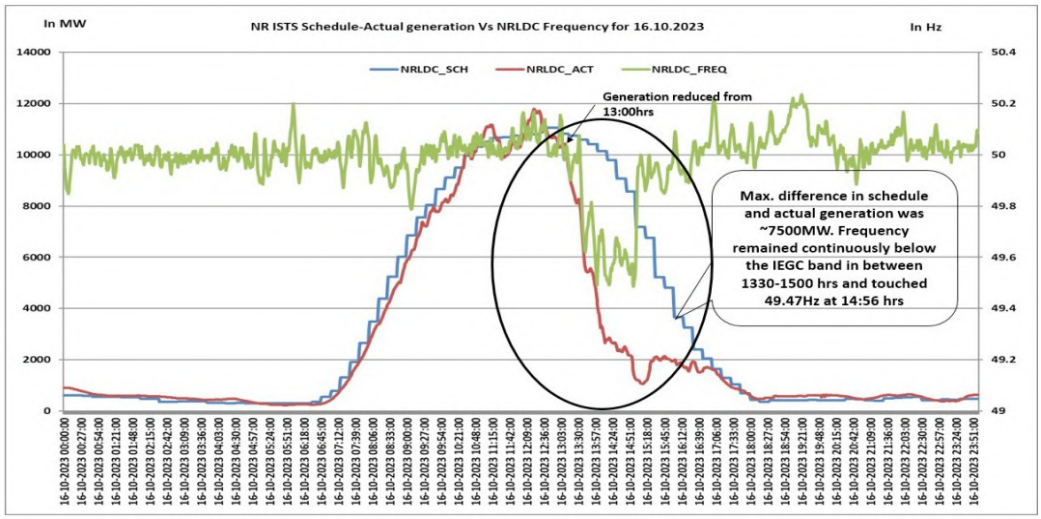
iii. CEA representatives (GM Division and RA Division) were requested to look into the matter regarding challenges cropping up due to RE addition and issues of grid inertia therein.

A.25 Solar generation forecasting related issues (agenda by NRLDC)

TCC Deliberation

A.25.1 NRLDC representative presented to the forum the importance of forecasting in RE through 02 examples. Inaccurate forecasting last year in winter and recently this year on 16.10.2023 had led to critical low frequency grid operation.

A.25.2 Reduction in ISGS solar generation of approx. 7000 MW within a span of four time-blocks on 16.10.2023 was shown as below:



A.25.3 NRLDC representative also apprised the forum about the workshop being conducted with various RE forecasters, developers, and RE generators. Non-adherence to IMD forecasts led to huge under-injection from schedule on both of the above occasions. Various RE forecasters were not taking fog into consideration in their models for

forecasting stating it as a local phenomenon. However, the IMD forecast predicts the fog and also captures the fog condition accurately through satellites, the same is being actively used to monitor the grid conditions by NRLDC. Visibility meters may also be utilized like in Airports to forecast fog conditions. Other sources of weather data may also be explored by the RE forecasters and developers.

A.25.4 NRLDC representative reiterated that the RE developers/forecasters should make a practice of using Meteograms, Cloud vector technology, and Visibility Sensors, RADARs for monitoring and improving forecasting. RADAR at Jaipur may also be utilized for visibility of the weather conditions in Western Rajasthan on a 3-hourly basis. RE plants may also take up the matter with IMD to generate Meteogram at their end. Cloud vector technology may also be explored for forecasting.

A.25.5 Forum agreed that two actions are required from solar developer end i.e.

- better forecasting of solar generation including for foggy days/ cloudy weather conditions.
- quick revision in schedule in case of any change in weather scenario so that system operators have sufficient time margin for taking necessary generation balancing action.

A.25.6 It was also agreed that

- Support from state thermal/hydro plants may be required in case of low frequency operation due to less RE generation due to change in weather conditions including cloud, fog etc.
- ADMS implementation to be expedited given the possibility of huge variations in generation

NRPC Deliberation

A.25.7 NRPC noted the deliberations of TCC.

A.25.8 It was also deliberated that use of AI and meteorologists along with IMD data may be used in forecasting the weather.

A.25.9 NRLDC representative also informed that low-level cloud monitoring and thunderstorm monitoring have been used by states for the demand side management and the same has to be used by generators for the improved forecasting. Better forecasting will lead to cost savings for all the stakeholders.

A.25.10 BBMB Chairman emphasized that PSP plants are a very good option to assist the grid during grid low frequency. It was also informed that about 13000 MW PSP plants would be available in 3-4 years. Also, it was shared with the forum that PSP

near Ajmer in Rajasthan has been planned and about 20 GW Pump Storage is expected to be ready by 2030.

A.25.11 CEA representatives reiterated that the sudden loss of 7000 MW RE generation out of 12000MW due to weather conditions is serious. CEA representative also said that when RE generation in the Rajasthan area goes up from 12 to 60 GW, loss of generation due to weather conditions would be very high.

A.25.12 Chairperson, NRPC and MD, HVPN also said that right now we are managing the situation of weather-related loss of RE generation but it cannot be done on a daily basis so a mechanism has to be devised for continuous improvement at the earliest. He also asked CEA to take lead in resolving the issues and come up for a permanent solution.

A.25.13 CE, (RA division), CEA informed that a special division dealing with the Storage aspect has already been created recognizing its importance. CEA representative also opined that taking RE as a resource purpose to some extent is challenging as we will have to deal with its variability. In the study stage itself mitigating measures may be thought of and issues like low SCR may be taken care of.

A.25.14 CTUIL informed that 500 GW CEA reports consider Battery storage during the planning stage. CTU representative also emphasized on the geographical distribution of RE so that large RE generation is not concentrated in one complex.

A.25.15 NRLDC representative opined that pump storage plants generally take longer time to commission as seen in the case of Tehri PSP which dates back more than 10 years. There is need to look towards other flexibility sources including Battery storage commensurate with the RE generation.

A.25.16 NRPC forum agreed to take up various measures like improved forecasting, Battery storage, and PSPs to mitigate the variability in the grid in view of huge quantum of RE integration planned in coming years.

Decision of NRPC forum:

i. Solar developers shall take action for:
   a. better forecasting of solar generation including for foggy days/ cloudy weather conditions.
   b. quick revision in schedule in case of any change in weather scenario so that system operators have sufficient time margin for taking necessary generation balancing action.

ii. CEA and CTU shall take consideration of such sudden generation loss in RE while planning RE addition. Storage may be planned commensurate with RE addition.

A.26 Maintenance of adequate coal reserves (agenda by NRLDC)

TCC Deliberation

A.26.1 NRLDC representative apprised that shutdown of units on coal shortage has been observed recently. Constituents have been advised to maintain adequate coal reserves and keep units on bar in view of expected rise in demand in coming winter months.

A.26.2 Along with this, he added that adequate blending with imported coal may be carried out to fully utilize the installed capacity to meet increased demand and avoid shortages.

A.26.3 Forum requested generators to have sufficient coal reserves and coal blending should be taken as tool for coal shortage issues.

NRPC Deliberation

NRPC noted the deliberations of TCC.

Decision of NRPC forum:

Forum noted the coal shortage issue and requested thermal plants to take necessary efforts.

A.27 Extension of AMC and Upgradation of Hot Line Speech Communication System implemented by M/s ORANGE (agenda by NRLDC)

TCC Deliberation

A.27.1 NRLDC representative apprised that Hot Line Speech Communication System was implemented by POWERGRID in 2016 for PAN India basis wherein NLDC, RLDCs and all SLDCs are inter-connected through Alcatel Lucent make EPABX system, VOIP/Analog phones are also installed at power plants/sub-station/IPPs, etc over dedicated OPGW network of ULDC. This scheme was executed by M/s ORANGE with provision of AMC of 7 years as part of the contract and the same is expiring in July' 2023.

A.27.2 He further added that, based on the discussions held in previous TeST meeting, offer was requested from M/s Alcatel Lucent (OEM), however, they mentioned that

EPABX system which was installed in 2016, has older version i.e. 11.0, however, at present 100.1 version is running and all new hardware which is available in market, are compatible to new version only. Therefore, to continue with comprehensive AMC, we need to first upgrade/migrate the system with the latest software version then Alcatel through their authorized channel partners, can further support for minimum 5 years of AMC.

A.27.3 The issue was deliberated in 3rd meeting of CTU-ISTS communication system planning for Northern Region held on 17.02.2023, then the issue was further discussed in CTU communication planning meeting for Pan India held on 05.04.2023. A separate meeting was also convened with Alcatel Lucent on 27.04.2023 wherein CTU and Grid-India was also present. During meeting, M/s Alcatel Lucent reiterated that without upgradation of software and CPU card, continuous support for AMC is not possible as new cards (if required) will not be supported on older version of software. In case of fault, services may get hampered.

A.27.4 Further the issue was also deliberated in the 22nd TeST sub-committee meeting of NRPC held on 24.05.2023 and following points were deliberated and agreed upon – i) Extension of AMC support by M/s. Orange for at least 2 years through POWERGRID ii) Meantime, CTU shall plan upgradation and implementation of existing Hot line speech communication or new EPABX system.

A.27.5 During the 67th NRPC Meeting held on 30th June 2023, it was approved that AMC of existing exchange shall be extended for 2 years and POWERGRID to book financial implication (i.e. approx. Rs. 60 Lac per year) in ULDC O&M charges as per the CERC norms for AMC extension through M/s ORANGE for next two years. Also it was also decided that CTU shall plan upgradation and implementation of existing Hot line speech communication or new EPABX system timely since further extension of AMC will not be possible.

A.27.6 Matter was also discussed in the 23rd TeST Meeting held on 21.09.2023 where CTU stated that they are already working for the planning of Hot Line Speech communication as advised by NRPC. However, it is understood that during the execution of the said project, RPCs approval was sought from all regions and cost of the project was booked in the ongoing Communication System packages of the respective regions. As per CERC tariff regulation, the useful life of the communication system is up to 15 years. In this regard, CTU requested POWERGRID to provide the revised depreciation order for the Hot Line Speech

communication system, so that they can go for the planning and approval for new VOIP communication system.

A.27.7 During the meeting it was finalized that CTU to take up the planning and approval process in parallel as POWERGRID shall file petition to CERC in 2024. It was deliberated that as the AMC extension has been approved by POWERGRID for 2 years, meanwhile CERC order will be pursued during this time. CTU also requested that POWERGRID shall provide a copy of petition for which POWERGRID agreed.

A.27.8 AMC for Hotline exchange is yet to be extended by POWERGRID and NRLDC is facing continuous interruption in Voice Recording with no timely support from vendor. POWERGRID is requested to please expedite AMC extension for Hotline Voice Communication Exchange.

A.27.9 Further, process of replacement / upgradation may be initiated considering timelines for procurement and implementation. As OEM has clearly stated that further AMC extension is not possible.

A.27.10 POWERGRID apprised the forum that extension of AMC and Upgradation work will be done by 30th Nov 2023.

A.27.11 CTU also apprised the forum that they are already working on the replacement of entire VOIP system after the AMC in line with the above point no.27.7.

NRPC Deliberation

NRPC noted the deliberations of TCC.

Decision of NRPC Forum:

POWERGRID was requested to expedite the extension of AMC and Upgradation work latest by 30th Nov 2023.

A.28 Delay in approval of Overhead and Underneath crossing of Power lines by Power Utilities (agenda by HVPN)

TCC Deliberation

A.28.1 Chairperson, TCC and Director HVPN apprised that creation of transmission lines is a common activity among all power utilities and these utilities come across the issue of crossing either through over or beneath of transmission lines of PGCIL frequently in their state.

A.28.2 He further highlighted that for execution of these crossings, approval is sought from the concerned Utility. It has been observed that concurrence to allow the execution

of crossing is not provided timely resulting in to delay in completion of transmission lines. He cited the example of one crossing where 4 months were taken by to get approval for crossing.

A.28.3 He emphasized that such delay may lead to the power crises and unrest in the area for which transmission system was planned besides increase in the financial liabilities on the power utilities.

A.28.4 POWERGRID representative conveyed that this issue may be raised to regional head of POWERGRID for any support and he told that POWERGRID follows up regularly to solve these problems.

A.28.5 MS, NRPC requested utilities to expedite such issues and help out each other. He guided that PSPM Division, CEA also monitors projects of transmission lines. CEA may also be approached in case of delay.

A.28.6 It was agreed that such approval shall not take more than 15 working days.

NRPC Deliberation

A.28.7 Chairperson NRPC and MD, HVPN highlighted that most of the RE evacuation lines coming from Rajasthan are going through Haryana. Further there are several line diversions cases due to NHAI works. He requested utilities to provide approval for crossing without any delay.

Decision of NRPC Forum:

Utilities were requested to facilitate approval of transmission lines crossing without delay. It should not take more than 15 working days. Any issue causing delay may be discussed mutually for prompt resolution. In case of deadlock, PSPM Division, CEA may be approached.

A.29 Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part3 :3.6GW) in Bikaner Complex (agenda by CTU)

TCC Deliberation

A.29.1 CTU apprised that transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-3; Bikaner-IV) is evolved for evacuation of 3.6 GW RE from Bikaner complex. The scheme involves establishment of 765/400/220kV Bikaner-IV PS, 765/400kV Churu & Siwani S/s along with their interconnections.

A.29.2 In this regard Several rounds of meetings were held. The scheme was discussed in the Joint study meeting held on 18.10.2023 wherein stakeholders gave observations on exploring other alternatives. Subsequently the revised scheme was again

discussed on 23.10.2023 with all stakeholders in the Joint study meeting. Minutes are attached as **Annexure-XIV**.

A.29.3 He conveyed that there were two options discussed for evacuation in the Joint study meeting. One was direct interconnection of Bikaner-IV to Siwani and second was Bikaner-IV to Siwani through Churu S/s . The proposal was further deliberated in the 25th CMETS-NR meeting held on 31.10.23 wherein second option was considered as angular separation was less than 30 degrees under N-1-1 contingency.

A.29.4 He informed that the tentative cost of the scheme is Rs 8600 Cr with 24 months implementation schedule. Detailed scheme is attached as **Annexure-XV**.

A.29.5 CE (GM division), CEA flagged issue of required measures taken in the study for sudden dip in active energy generation due to cloud cover.

A.29.6 CTU informed that 3 nos. STATCOMs have been implemented in Rajasthan to control the voltage issues that might arise due to variability of Solar/RE energy. In addition, STATCOM is also planned with the proposed scheme at Bikaner-IV PS.

A.29.7 CGM, NRLDC desired to know about battery energy storage planning as frequency is likely to fall in case of RE generation failure.

A.29.8 CTU also cited that due to concentration of RE projects (60 GW) in contiguous pockets of Bhadla, Bikaner, Fatehgarh etc in Rajasthan, integration of RE is becoming very challenging. Therefore, geographical diversity of RE resources is very important from grid point of view. CTU also informed that currently only one standalone BESS plant (500 MW/ 1000 MWh) of JSW is expected to come in 2025 in Rajasthan, however more nos. of Pump storage plants may come in future.

A.29.9 GM, NRLDC raised the issue of ICT N-1 non-compliance in Intra State network. CTU requested RVPN to address issues in Intra state networks regarding ICT N-1 non-compliance. NRLDC also requested to keep the name of Bikaner -4 complex on name of village. CTU clarified that name of substation can only be finalised once TSP win the project after bidding and finalise the substation location. However, CTU will recommend to such TSP on keeping the name of such substation based on village name at implementation stage.

A.29.10 Forum technically approved the proposal and recommended for NRPC.

NRPC Deliberation

A.29.11 Chairperson, NRPC and MD HVPN flagged the ROW concern and requested to take care of it when studies are done by CTU.

A.29.12 He requested to devise a procedure or formula for determining the compensation to farmers to clear the ROW.

A.29.13 Forum approved the proposal technically and recommended for NCT.

Decision of NRPC Forum:

Forum accorded technical approval to proposal of CTU as attached as **Annexure-XV.**

A.30 Issues faced in RE power evacuation in Rajasthan (agenda by Sekura Energy Pvt. Ltd.)

TCC Deliberation

A.30.1 Sekura Energy Pvt. Ltd representative apprised that subsidiaries of Sekura Energy Pvt. Ltd. are connected in the northern region grid as below:

Sr. No.	Solar Project	Location	MW AC capacity	Connected to RVPN GSS
1	Pokaran Solaire Energy Pvt Ltd	site-Village-Bawdi, Barsingha, Tehsil-Bap, dist-Jodhpur, Rajasthan	5	220/33kV Bap GSS
2	Northern Solaire Prakash Pvt Ltd	Village: Khetusar, Tehsil: Bap, District: Jodhpur, Rajasthan	20	132kV Khetusar GSS
3	Suryauday Solaire Prakash Pvt Ltd	Village: Khetusar, Tehsil: Bap, District: Jodhpur, Rajasthan	10	132kV GSS Khetusar GSS
4	Solaire Surya Urja Pvt Ltd-Plot-8 & Plot 10	Plot 08 NTPC Solar Park , Phase-II, Village - Bhadla, Post- Noore ki Bhurj, Tehsil- Bap, District-Jodhpur (Rajasthan)	2X 70	220/440kV Bhadla GSS

A.30.2 He further stated that Various grid operation related issued are being faced as detailed below:

(a) Requirement of Additional ICT Transformer Capacity at RRVPNL 400/220 kV Bhadla GSS - (SEPL affected entity - Solaire Surya Urja Pvt Ltd-Plot-8 & Plot 10 – 140 MW)

- At present approx. 1450 MW Plant load of various SPDs is connected at RRVPNL 400/220 kV Bhadla GSS and in operation, but for the evacuation only 03 nos. ICT Transformers of 500 MVA each (500 x 3 = 1500 MVA) are currently in operation. It is to note that in case of ICT Capacity, (N-1) grid contingency criterion has not been adhered at 400/220 kV RRVPNL Bhadla GSS.
- On 19th April 2023, one of the 500 MVA transformer at RRVPNL GSS failed and subsequently curtailment instructions were issued by RRVPNL on daily basis to all solar power developers between 19th Apr 2023 and 24th May 2023, which caused huge RE generation loss to all the connected solar power developers.
- In light of Electricity (Promotion of Generation of Electricity from Must-Run Power Plant) Rules, 2021 issued by MoP and as a preventive measure to stop occurrence of such grid curtailments and RE generation loss because of any ICT failure incidents in future, RRVPNL may inform its plan to this forum for the augmentation of transformer capacity at the 400/220 kV Bhadla GSS.
- Further, it is to highlight that similar issue of RE evacuation was discussed in 212th OCC meeting (held on 20.10.2023) at agenda no. 28, wherein following was discussed:

  Quote

  Some of the lines in RVPN control area wherein this issue was observed are listed below:

  - *400kV Bikaner(PG)-Bikaner(RJ) D/C: Issue in ISTS-RE evacuation in Dec 2022 and SPS logic had to be implemented to avoid RE curtailment.*
  - *400kV Bhadla(PG)-Bhadla(RJ) D/C: N-1 non-compliance observed. SPS proposal under discussion, difficult to provide shutdown in the RE complex.*

  Unquote

A.30.3 MS, NRPC conveyed that as per current status of Rajasthan, the Bhadla ICT procurement is in tendering stage.

A.30.4 Forum requested Rajasthan to expedite the ICT procurement and its commissioning.

(b) RE Power curtailment because of multiple & frequent tower collapse incident in RRVPNL operated transmission network

- The affected assets are:

  SEPL affected entity –

  Solaire Surya Urja Pvt. Ltd. -Plot-8 & Plot 10 (SSUPL) –

  140 MW Northern Solaire Prakash Pvt. Ltd. (NSPPL) –

  20 MW Suryauday Solaire Prakash Pvt. Ltd. (SSPPL)– 10 MW

- Sekura representative informed about the first Tower collapse incident in FY 23-24:

  The entities SSUPL, NSPPL and SSPPL faced continuous grid curtailment instructions for its operating Solar power projects, located at Bhadla Solar Park, and Distt. – Khetusar, Rajasthan after tower collapse incident happened on 26th May 2023 in 400 kV Bhadla -Jodhpur-Merta line of RRVPNL control area. From the day of the tower collapse incident, instructions were being issued to all RE Generators for the curtailment of RE Generation upto 20% of plant capacity (Ref. NRLDC Circular dt. 06th June 23). This grid curtailment was continued till complete restoration of these towers (upto 15th Jul 2023).

- He mentioned about second Tower collapse incident in FY 23-24:

  On 16th October 2023, 220 kV towers collapse occurred in the RRVPNL network at 220KV Bhadla-Bap-Badisid line at location No. 26, 27 & 28, at Bhadla-Bap Region, Jodhpur District, resulting in curtailment of RE generation. Instructions from RRVPNL were issued for curtailment of 20-22% in RE generation.

  This is an ongoing event and SEKURA is receiving curtailment instructions from RRVPNL since then and is expected until the restoration of the towers.

  The issue of RVPNL transmission tower collapse incident was also discussed in earlier 209th OCC meeting (held on 19.07.2023) under Agenda item no. 14 for the tower collapse incident of 400 kV Bhadla- Bikaner D/C, 400 kV Bhadla-Jodhpur and 400 kV Bhadla- Merta lines.

  However, the recent tower collapse incident in RVPN 220KV Bhadla-Bap-Badisid line held on 16th Oct 2023 seeks urgent attention towards transmission line inspections- maintenance and immediate tower & line strengthening works. It seems that negligence at part of transmission line

inspections & maintenance may be the root cause of frequent tower collapses in RVPNL transmission line.

A.30.5 Sekura representative informed that they are submitting patrolling report regularly to Rajasthan, but corrective actions are pending from Rajasthan.

A.30.6 RVPN representative commented that 220KV Bhadla-Bap-Badisid line has been restored on 14.11.2023. They highlighted that these are remote and theft prone areas. In most of cases, the tower members are reported missing.

A.30.7 RVPN representative stated that they will take this matter to the management.

A.30.8 MS, NRPC directed RVPN to increase the patrolling frequency and need to take the corrective measures at the earliest.

(c) Frequent trappings in RRVPNL Grid Network due to frequent voltage fluctuation (phase jump issue)

- Sekura representative informed that the affected assets are:

  SEPL affected entity - -Suryauday Solaire Prakash Pvt. Ltd. (SSPPL) – 10 MW Northern Solaire Prakash Pvt. Ltd. (NSPPL) – 20 MW

- NSPPL and SSPPL solar plants are operational since May-2015 & Apr-2015 respectively wherein load evacuation is being done at 33kV connected at 132/33kV Khetusar grid sub-station. However, there are continuous events of grid voltage fluctuation (phase jump issue) wherein SEKURA have been constrained from generating green energy at our optimum level on account of frequent grid failure events leading to lower grid availability. The details are:

  FY 21-22:

FY 22-23:

Sr. No.	Site Name	Tripping count (No.)
1	SSPPL	34
2	NSPPL	47

Sr. No.	Site Name	Tripping count (No.)
1	SSPPL	366
2	NSPPL	379

FY 23-24 (Till Oct 23):

Sr. No.	Site Name	Tripping count (No.)
1	SSPPL	194
2	NSPPL	203

- As evident above, the number of tripping at 132/33kV Khetusar grid sub-station has increased manifold in FY 23-24 vis-à-vis FY 22-23 and in turn impacting plant performance, asset life and negatively impacting project economics.
- Similar issue related to Grid Operation in RVPNL network was also discussed in earlier 211th OCC Meeting (held on 19.09.2023) under Agenda item no. 19 and has also been requested time to time and followed up with the RVPNL authorities, however the resolution is yet to be arrived.
- Since this is a prolonged issue affecting grid operations, it was requested to RRVPNL to kindly take this issue in the consideration and resolve this at the earliest so as to achieve the objective of reliable & stable grid operation.

A.30.9 RVPN representative addressed that Sekura entities generally do not inject the required reactive power as per instruction from SLDC.

A.30.10 He informed that Khetusar is radial feeder proposal for another line rejected due to Great Indian Bustard. Now, again RVPN is going to put up this case before Honorable Supreme Court to get approval.

A.30.11 Sekura representative replied about implementation of Reactive compensation mechanism in the plant is under testing and commissioning phase.

A.30.12 Forum requested Sekura and RVPN to resolve the issues mutually.

NRPC Deliberation

A.30.13 Chairperson, NRPC and MD, HVPN suggested Sekura to take help from CTU and guided RVPN to do analysis on tower design and causes of its failure as tower collapse in Rajasthan has become very frequent.

A.30.14 RVPN representative informed that RVPN shall be identifying towers with missing members using drone technology for closer and timely monitoring in theft prone remote areas of Western Rajasthan, so that the tower collapse could be avoided.

Decision of NRPC Forum:

i. Forum appreciated the initiative of RVPN for use of drone technology in tower surveillance.

ii. RVPN was requested to do analysis on tower design and causes of its failure.

A.31 Replacement of various size of ACSR conductor (i.e. wolf/panther/zebra/moose) with equivalent HTLS conductor to reduce the overloading of existing transmission line thereby improving the reliability of power system in Haryana (agenda by HVPN)

TCC Deliberation

A.31.1 EE (P) apprised that The HVPNL proposal for 31 No. existing overloaded transmission lines for augmentation with HTLS conductor through PSDF funding was discussed in 68th NRPC meeting held on 18.08.2023 for grant of PSDF wherein following was decided:

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.31.2 Subsequently, the detailed proposal was submitted by HVPN to Central Electricity Authority (CEA) vide letter dated 25.08.2023.

A.31.3 After detailed deliberations and meeting held on dated 15.09.2023, wherein CTU and Grid India were also present, CEA concurred the proposal for augmentation with HTLS conductor of 28 No transmission lines.

A.31.4 Accordingly, Detailed Project Report (**Annexure-XVI**) is placed for approval of Forum.

A.31.5 MS, NRPC appreciated HVPN and encouraged states to come with such proposals from PSDF fund.

A.31.6 In concurrence to CEA, forum approved the DPR for proposal of 28 nos, of lines to be implemented by PSDF fund and recommended to NRPC forum for approval.

NRPC Deliberation

Forum concurred the decision of the TCC forum.

Decision of NRPC Forum:

Forum approved DPR for reconductoring proposal of 28 nos. of lines to be implemented by PSDF fund.

A.32 Philosophy of Drawal Points of ICTs at Transmission Substation of PGCIL (agenda by UPSLDC)

TCC Deliberation

A.32.1 EE (P) apprised that in 23rd TeST sub-committee meeting held on 21.09.2023 issue of Drawal Points of ICTs at Transmission Substations of PGCIL was deliberated.

A.32.2 In the meeting, it was submitted that SEM installed at 220kV feeders should be taken for purpose of energy drawal and accounting of states. In case, there is some issue in SEM of 220kV feeders, meters installed at LV side of ICTs may be taken for the purpose of Energy. In the meeting, it was decided that a separate meeting may be held to discuss the issue of philosophy of Drawal points.

A.32.3 Accordingly, a separate meeting was held on 13.10.2023 at NRPC Secretariat wherein UP raised concern in calculation of energy loss and stated that drawal is being calculated from the POWERGRID substation's HV side, but the drawal point of state is on the LV side of ICT which should be taken for the purpose of energy drawal and accounting of states. MoM of the meeting is attached as **Annexure-XVII.**

A.32.4 Further, it was deliberated that according to CEA metering regulation, 2005 location of meter to be installed is on the HV side of the ICT and if, two or more states are fed, it should be placed on feeder. However, if LV side of ICT is taken for energy drawl and accounting then ICT losses will be borne by CTU, which will be distributed all over India which may not be a correct practice.

A.32.5 Furthermore, CERC (Sharing of ISTS and Losses) Regulations, 2020 states that Transformer Component for a State shall comprise of Yearly Transmission Charges for inter-connecting transformers (ICTs) planned for drawl of power by the concerned State. Hence, only socializing of losses may be unjust.

A.32.6 CE, UPSLDC stated that as the asset is of POWERGRID, then state should not bear loss of it by connecting meter on HV side.

A.32.7 MS, NRPC quoted that as per CERC and CEA regulation, metering is to be done from HV side. CTU will not bear the ICT loss. UP STU may approach to UPERC or CERC for the resolution.

A.32.8 CE (RA division), CEA commented that meter should not be at interface side, it should be on LV side. But as per practice and provisions of regulations the metering is to be done from HV side. He suggested to take the matter to CEA for any

amendment of regulations. As of now there has not been any representation received to CEA in this regard.

A.32.9 After detailed deliberation, it was decided that the matter may be represented to CEA by UP.

NRPC Deliberation

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

Decision of NRPC Forum:

UP was requested to make representation to CEA for amendment of regulations.

B.1 Renovation/ upgradation work in the NPRC office and NRPC staff quarters (agenda by NRPC Secretariat)

B.1.1 NRPC representative apprised that the staff quarters of NRPC are quite old and does not have modular kitchen and floor tiles. Also, the top floor of these quarters lack staircase for roof access.

B.1.2 Further, he mentioned that all the government quarters are now being provided with the modular kitchen and the floor tiles by the GPRA as per housing upgradation scheme-2018. **(Annexure-XVIII)**

B.1.3 In line of this, NRPC, for making its quarters on par with other govt. quarters, sought the cost estimate from the CPWD for renovation/upgradation of kitchens of NRPC staff quarters into modular kitchen and installation of the floor tiles.

B.1.4 CPWD vide its letter dated 07.10.2023 has shared the cost estimate of Rs. 45,53,400/- for above mentioned work i.e. renovation/upgradation of the kitchen, placement of floor tiles and SS staircase for roof access. **(Annexure-XVIII)**

B.1.5 Further, Cost estimate for the internal and external finishing of the NRPC office and NRPC staff quarters was also sought from the CPWD as the walls and balcony of several quarters are damaged and need finishing work including paint work.

B.1.6 He added that CPWD vide its letter dated 06-06-2023 **(Annexure-XVIII)** shared the cost estimate of Rs. 34,10,550/- for the internal and external finishing of the NPRC office and vide its letter dated 29.05.2023 **(Annexure-XVIII)** shared the cost estimate of Rs. 37,20,600/- for the internal and external finishing of the staff quarters.

B.1.7 He highlighted that NRPC Secretariat does not need any extra amount for above mentioned work from its members.

B.1.8 Forum noted the above proposals and approved the same.

Decision of NRPC Forum:

Forum approved the following work proposal of NRPC Secretariat to be done by CPWD:

i. Renovation/upgradation of the kitchen, placement of floor tiles and SS staircase for roof access at an estimate cost of Rs. 45,53,400/-.
ii. Internal and external finishing of the NRPC office at an estimated cost of Rs. 34,10,550/-.
iii. Internal and external finishing of the NRPC staff quarters at an estimated of Rs. 37,20,600/-.

B.2 Outstanding Contribution for the FY 2024-25 by the Constituent Members (Agenda by NRPC Secretariat)

B.2.1 EE (P) apprised that Demand Letter for contribution towards NRPC fund for the year 2023-24 was sent on 31.08.2023 to all the constituent members. It was also mentioned that beyond 31st October, 1 % simple interest shall be levied. However, NRPC Secretariat has not received payments from following members:

S. No.	Name of Constituent	Outstanding Amount	Penalty for November	Total
1	UJVNL	10,00,000	10,000	10,10,000
2.	Madhyanchal Vidyut Vitaran Nigam Ltd.	10,00,000	10,000	10,10,000
3.	Lanco Anpara Power Ltd	10,00,000	10,000	10,10,000
4.	RENEW POWER	10,00,000	10,000	10,10,000
5.	UT of J&K	10,00,000	10,000	10,10,000
6.	UT of Ladakh	10,00,000	10,000	10,10,000

B.2.2 Further he mentioned that the reminder was also sent via email dated 19.10.2023 for pending contribution. It was again requested to pay the contribution amount along with penalty.

B.2.3 Lanco Anpara Power Ltd representative informed that due to communication gap, mails of NRPC have not been received to them and hence contribution has not been paid. He assured that the matter will be taken up and dues shall be paid.

B.2.4 UJVN representative informed that contribution has been paid.

B.2.5 Regarding Madhyanchal Vidyut Vitaran Nigam Ltd., CE, UPSLDC stated he will take up the matter with concerned authorities of DISCOM.

B.2.6 Forum requested concerned utilities to expedite the payment process of contribution (and penalty, if any) towards NRPC fund.

B.3 Outstanding Contribution from constituent member J&K (agenda by NRPC Secretariat)

B.3.1 EE (P) apprised that NRPC Secretariat has been receiving contribution from most of the constituents in a timely manner except few members. Since FY 2021-22, there has also been provision of penalty of 1% simple interest per month on late payment as decided in NRPC meeting.

B.3.2 Further, He highlighted that JKPDCL and JKPDD have pending membership payments of 32 lakhs and 22 lakhs respectively, details of which are mentioned below:

S. No.	Name of Utility	Period (FY)	Outstanding amount (Rs.)	Penalty (Rs)	Total outstanding amount (Rs.)
1	JKPDCL	2014-15	11,00,000	-	11,00,000
2	JKPDCL	2015-16	11,00,000	-	11,00,000
3	JKPDCL	2018-19	10,00,000	-	10,00,000
4	JKPDD	2019-20	10,00,000	-	10,00,000
5	JKPDD	2021-22	10,00,000	2,10,000	12,10,000
					54,00,000

B.3.3 In this regard, pending payment status was discussed in various meetings and several reminders and D.O. letters have also been communicated by NRPC Secretariat (copy enclosed as **Annexure-XIX**), however above payment is pending till date.

B.3.4 Forum was requested that members may appreciate that the timely payment of contribution fee is required for smooth functioning of NRPC secretariat.

B.3.5 CE, J&K stated that the fund matter will be taken up with Government J&K.

B.2.7 Forum requested JKPDCL and JKPDD to pay pending contribution towards NRPC fund and the same will again be followed up by NRPC Secretariat.

B.4 Hosting of next physical TCC & NRPC meeting (agenda by NRPC Secretariat)

B.4.1 EE (P) apprised that a roster for hosting of meetings, was agreed in 40thTCC/43rdNRPC meetings held on 29th/30thOctober, 2018. The same was discussed in 69th NRPC meeting (held on 27.09.2023), wherein a meeting plan was finalized (attached as **Annexure-XX**).

B.4.2 Accordingly, next physical TCC & NRPC meeting is to be hosted by CLP Jhajjar & Lanco Anpara Power Ltd jointly in Feb 2024.

B.4.3 Representative from CLP Jhajjar, present in meeting, was requested to make necessary arrangement for next physical meeting in Feb 2024.

Decision of NRPC Forum:

Forum decided that next physical TCC & NRPC meeting shall be hosted by CLP Jhajjar & Lanco Anpara Power Ltd jointly in Feb 2024.

Meeting ended with a vote of thanks to the chair.

******

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	nroy@grid-india.in
7	NTPC	Central Generating Company	Director (Finance)	jaikumar@ntpc.co.in
8	BBMB		Chairman	cman@bbmb.nic.in
9	THDC		CGM (EM-Design)	akghildiyal@thdc.co.in
10	SJVN		CMD	sectt.cmd@sjvn.nic.in
11	NHPC		Director (Technical)	rajkumar0610.rkc@gmail.com
12	NPCIL		Director (Finance)	df@npcil.co.in
13	Delhi SLDC	State Load Despatch Centre	General Manager	gmsldc@delhisldc.org
14	Haryana SLDC		Chief Engineer (SO&C)	cesocomml@hvpn.org.in
15	Rajasthan SLDC		Chief Engineer (LD)	ce.ld@rvpn.co.in
16	Uttar Pradesh SLDC		Director	directorsldc@upsldc.org
17	Uttarakhand SLDC		Chief Engineer	anupam_singh@ptcul.org
18	Punjab SLDC		Chief Engineer	ce-sldc@punjabsldc.org
19	Himachal Pradesh SLDC		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		Director (Technical)	director.technical@uprvunl.org
31	UJVNL		Managing Director	mdujvnl@ujvnl.com
32	HPPCL		Managing Director	md@hppcl.in
33	PSPCL	State Generating Company & State owned Distribution Company	CMD	cmd-pspcl@pspcl.in
34	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)

List of addressee (via mail)

TCC Members for FY 2023-24

S. No.	TCC Member	Category	Nominated/ Notified/Delegated Member	E-mail
1	Director (Projects), HVPNL	Chairperson, TCC		directorprojects@hvpn.org.in
2	Member (GO&D), CEA	Member (Grid Operation & Distribution), Central Electricity Authority (CEA)	Chief engineer(GM Division)	cegm-cea@gov.in
3	Member (PS), CEA	Nodal Agency appointed by the Government of India for coordinating cross-border power transactions	Chief Engineer, PSPA-I Division	i.sharan@nic.in
4	CTUIL	Central Transmission Utility	Dy Chief Operating Officer	ashok@powergrid.in
5	PGCIL	Central Government owned Transmission Company	ED, NR-I	akmishra2@powergrid.in
6	NLDC	National Load Despatch Centre		nomination awaited
7	NRLDC	Northern Regional Load Despatch Centre	Executive Director	nroy@grid-india.in
8	NTPC	Central Generating Company	Regional ED, NR	rednr@ntpc.co.in
9	BBMB		Member (Power)	mp@bbmb.nic.in
10	THDC		GM (EMD)	neerajverma@thdc.co.in
11	SJVN		Director (Projects)	de.sectt@sjvn.nic.in
12	NHPC		ED (O&M)	hod-om-co@nhpc.nic.in
13	NPCIL			nomination awaited
14	Delhi SLDC	State Load Despatch Centre		nomination awaited
15	Haryana SLDC		Chief Engineer/SO & Comml.	cesocomml@hvpn.org.in
16	Rajasthan SLDC			nomination awaited
17	Uttar Pradesh SLDC		Chief Engineer	cepso@upsldc.org
18	Uttarakhand SLDC			nomination awaited
19	Punjab SLDC		Chief Engineer	ce-sldc@pstcl.org
20	Himachal Pradesh SLDC			nomination awaited
21	DTL	State Transmission Utility	Director (Operation)	dir.opr@dtl.gov.in
22	HVPNL		Chief Engineer/SO & Comml.	cesocomml@hvpn.org.in
23	RRVPNL		Chief Engineer (PP&D)	ce.ppm@rvpn.co.in
24	UPPTCL			nomination awaited
25	PTCUL		Chief Engineer	ce_oandmk@ptcul.org
26	PSTCL		Director / Technical	dir-tech@pstcl.org
27	HPPTCL		GM (C&D)	gmcd.tcl@hpmail.in
28	IPGCL	State Generating Company	Director(Tech.)	corporate.ppcl@gmail.com
29	HPGCL		Director/Technical	dirtech@hpgcl.org.in
30	RRVUNL			
31	UPRVUNL		Director (Technical)	director.technical@uprvunl.org
32	UJVNL		General Manager	kkjaiswal99@gmail.com
33	HPPCL		ector (Electrical) General Manager(Electri	dir_elect@hppcl.in gm_elect@hppcl.in
34	PSPCL	State Generating Company & State owned Distribution Company		nomination awaited
35	DHBVN	State owned Distribution Company (alphabetical rotaional basis/nominated by state govt.)	Director (Operation)	directoroperations@dhbvn.org.in
36	Jaipur Vidyut Vitran Nigam Ltd.		Director (Technical)	dirtechnical@jvvnl.org
37	Madhyanchal Vidyut Vitaran Nigam Ltd.			nomination awaited
38	UPCL		Director (P)	dpupcl29@gmail.com
39	HPSEB			nomination awaited
40	Prayagraj Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity	Head – Commercial & Regulatory	Sanjay.bhargava@tatapower.com
41	Aravali Power Company Pvt. Ltd		GM (O&M)	sanjayasati@ntpc.co.in
42	CLP Jhajjar Power Ltd.,			nomination awaited
43	Talwandi Sabo Power Ltd.		Dy. Head O&M	ravinder.thakur@vedanta.co.in
44	Nabha Power Limited			nomination awaited
45	Lanco Anpara Power Ltd			nomination awaited
46	Rosa Power Supply Company Ltd		VP-Technical Services	Niranjan.Jena@relianceada.com
47	Lalitpur Power Generation Company Ltd		President	rnbedi.ltp@lpgcl.com
48	MEJA Urja Nigam Ltd.		GM (O&M)	piyushkumar@ntpc.co.in
49	Adani Power Rajasthan Limited		AVP	Manoj.taunk@adani.com
50	JSW Energy Ltd. (KWHEP)		Head of Plant	kaushik.maulik@jsw.in
51	RENEW POWER	IPP having less than 1000 MW installed capacity (alphabetical rotaional basis)		nomination awaited
52	UT of J&K	From each of the Union Territories in the region, a representative nominated by the administration of the Union Territory concerned out of the entities engaged in generation/ transmission/ distribution of electricity in the Union Territory.		nomination awaited
53	UT of Ladakh			nomination awaited
54	UT of Chandigarh			nomination awaited
55	BYPL	Private Distribution Company in region (alphabetical rotaional basis)	VP	Jitendra.nalwaya@relianceada.com
56	Bikaner Khetri Transmission Limited	Private transmission licensee (nominated by cetral govt.)	Associate Vice President- O&M	nitesh.ranjan@adani.com
57	Adani Enterprises	Electricity Trader (nominated by central govt.)	Manager	mayursinhd.gohil@adani.com
58	Ajmer Vidyut Vitran Nigam Ltd.	Special Invitee	Director (Technical)	DT.AVVNL@RAJASTHAN.GOV.IN

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

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Annexure-P

48th TCC Meeting of NRPC Date: 17th Nov 2023				
S. No.	**Organisation**	**Name (Sh./Smt.)**	**Designation**	**E-mail**
1	HVPNL	Manmohan Matta	Director (Projects), HVPNL & Chairman	
2	NRPC	V K Singh	Member Secretary	ms-nrpc@nic.in
3		Santosh Kumar	SE	seo-nrpc@nic.in
4		Anzum Parwej	SE	anjum.parwej@nic.in
5		Pradeep Kumar	EE	pradeep.cea@gov.in
6		Reeturaj Pandey	EE	pandeyr.cea@gov.in
7		Omkishor	EE	omkishor.sahu@gov.in
8		Praveen Jangra	EE	praveen.cea@gov.in
9		Lokesh Agrawal	AEE	lokesh.cea@gov.in
10		Pushpa Rani Rao	Principal Staff Officer	pushparao@gmail.com
11	WRPC	Deepak Kumar	Member Secretary	deepak.kr76@nic.in
12	NERPC	K B Jagtap	Member Secretary	kb.jagtap@gov.in
13	APCPL	B S Rao	CEO-APCPL	SRBODANKI@ntpc.co.in
14	BBMB	Amarjit Singh Juneja	Member (Power)	mp@bbmb.nic.in
15		Ajay Kumar Sharma	Special Secretary	spsecy@bbmb.nic.in
16		Ruchi Sharma	Director/Power Regulation	dirpr@bbmb.nic.in
17	BKTL	Nitesh Ranjan	Head O&M-Substations	Nitesh.ranjan@adani.com
18		Abhishek Kukreja	Lead O&M	abhishek.kukreja@adani.com
19	BSES Yamuna Power Ltd,Delhi	Haridas Maity	AVP	haridas.maity@relianceada.com
20	CEA	Pardeep Jindal	Chief Engineer, RA division	pjindal@nic.in
21		Chandra Prakash	Chief Engineer	cegm-cea@gov.in cp_cea@nic.in
22	CTU	H S Kaushal	Sr. GM	hsk@powergrid.in
23		Kashish Bhambhani	GM	kashish@powergrid.in
24		Narendra Sathvik	MGR	rnsathvik@pwergrid.in
25	Delhi Transco Limited	Mukesh Kumar Sharma	Director (Operations)	mukeshkipj@yahoo.co.in
26		Paritosh Joshi	Sr. Manager(T)	paritosh.joshi@dtl.gov.in
27	DHBVN	Neeraj Ahuja	Director Operations DHBVN	directoroperations@dhbvn.org.in
28	HPGCL	Umesh Kumar Aggarwal	Director/Technical-1	dirtech@hpgcl.org.in
29		M. L. Singla	Chief Engineer/Admin cumfuel	ceadmin@hpgcl.org.in
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32	HPSEBL	Mandeep Singh	Chief Engineer (Sys. Op)	cesysophpsebe@gmail.com
33	HPSLDC	Rakesh Negi	SE	sehpsldc@gmail.com
34		Sunandan Kumar	Sr. XEN	pchpsldcshimla@gmail.com
35	HVPNL	Rajeev Kumar Tayal	Chief Engineer	cesocomml@hvpn.org.in
36		Neeraj Hooda	XEN	neerajhooda1981@gmail.com
37		Deepak Sarit	XEN	kdinsti47@gmail.com
38	IPGCL , DELHI	Rajneesh Kumar Srivastava	General Manager (T)	gmpps3bawana@gmail.com
39	Jhajjar Power Limited	Karn Pratap Singh	Dy Manager Electrical	karnpratap.singh@apraava.com
40		Uttam Kumar Verma	Asst. Manager Commercial	uttam.verma@apraava.com
41	JKPTCL, Jammu	Bavinder Kundal	Chief Engineer (Transmission), JKPTCL, Jammu	sojpdd@gmail.com
42	JSW Energy Ltd.	Jyotiprakash Panda	Vice President, Head of Power Sales and Regulatory	jyotiprakash.panda@jsw.in
43		Anurag Agarwal	General Manager	agarwal.anurag@jsw.in
44	LPGCL	Rudra Narayan Bedi	President	rnbedi.ltp@lpgcl.com
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46		M K Gupta	GGM (Commercial)	mkgupta@nhpc.nic.in
47		Suraj Dhiman	GM (O&M)	surajdhiman@nhpc.nic.in
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49		Dharmendra Kumar	DGM (E)	dharmendrakumar@nhpc.nic.in
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56		Somara Lakra	Chief General Manager	somara.lakra@grid-india.in
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60	POWERGRID	Jai Ram Yadav	Sr. GM, NR1	jry@powergrid.in
61		Sandeep Yadav	Chief Manager	sandeepyadav@powergrid.in
62		Rohit Jain	DGM	rohit.jain@powergrid.in
63		Nitin Verma	DGM	nverma@powergrid.in
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68		Vinod Bansal, CA	Director/F&C, PSTCL	dir-fc@pstcl.org
69		Rajbir Walia	Addl. SE	rajbir_walia74@yahoo.com
70	PTCUL	H.S. Hyanki	Chief Engineer	hitendra0107@gmail.com
71	Rajasthan-SLDC	Mukul Bhargava	Suprintending Engineer (SOLD)	SE.SOLD@RVPN.CO.IN

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73	RVPN-STU	Suresh Chand Meena	Chief Engineer (PP&D)	ce.ppm@rvpn.co.in
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76		Neeraj Kumar Verma	Asst. General Manager	neraj.verma@energy-sel.com
77	SJVN	Ashok Kumar	General Manager	gmcsosjvn@gmail.com
78		B.R. Kashyap	Deputy General Manager	gmcsosjvn@gmail.com
79		Rajeev Agarwal	DGM (E)	rajeev_sjvn@rediffmail.com
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88	UJVNL	Himanshu Awasthi	Executive Director (E&M)	himanshu.awasthi@ujvnl.com
89	UPPTCL	S.K. Das	Director (Planning & Commercial)	director_comm@upptcl.org
90	UPSLDC	Amrendu	Chief Engineer	cecs@upsldc.org
91		Mohsin Khan	Assistant Engineer	sera@upsldc.org
92		Sateesh Maurya	Assistant Engineer	sescadait@upsldc.org
93	NHPC	Jaganathan Puri	SM (E)	jaganathpuri@nhpc.nic.in

Annexure-Q

70th NRPC Meeting Date: 18th Nov 2023				
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1	HVPNL	Mohammed Shayin, IAS	MD, HVPNL & Chairman NRPC	md@hvpn.org.in
2		Manmohan Matta	Director (Projects), HVPNL & Chairman	
3	NRPC	V K Singh	Member Secretary	ms-nrpc@nic.in
4	NHPC	R K Chaudhary	Director (Tech)	rajkumar0610.rkc@gmail.com
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7		Pradeep Kumar	EE	pradeep.cea@gov.in
8		Reeturaj Pandey	EE	pandeyr.cea@gov.in
9		Omkishor	EE	omkishor.sahu@gov.in
10		Praveen Jangra	EE	praveen.cea@gov.in
11		Lokesh Agrawal	AEE	lokesh.cea@gov.in
12		Pushpa Rani Rao	Principal Staff Officer	pushparao@gmail.com
13	WRPC	Deepak Kumar	Member Secretary	deepak.kr76@nic.in
14	NERPC	K B Jagtap	Member Secretary	kb.jagtap@gov.in
15	APCPL	B S Rao	CEO-APCPL	SRBODANKI@ntpc.co.in
16	BBMB	Manoj Tripathi	Chairman	
17		Amarjit Singh Juneja	Member (Power)	mp@bbmb.nic.in
18		Ajay Kumar Sharma	Special Secretary	spsecy@bbmb.nic.in
19		Ruchi Sharma	Director/Power Regulation	dirpr@bbmb.nic.in
20	BKTL	Nitesh Ranjan	Head O&M-Substations	Nitesh.ranjan@adani.com
21		Abhishek Kukreja	Lead O&M	abhishek.kukreja@adani.com
22	BSES Yamuna Power Ltd,Delhi	Haridas Maity	AVP	haridas.maity@relianceada.com
23	CEA	B. K. Arya	Member (Go&D)	
24		Pardeep Jindal	Chief Engineer, RA division	pjindal@nic.in
25		Chandra Prakash	Chief Engineer	cegm-cea@gov.in cp_cea@nic.in
26	CTU	P.C. Garg	COO	
27		H S Kaushal	Sr. GM	hsk@powergrid.in
28		Kashish Bhambhani	GM	kashish@powergrid.in
29		Narendra Sathvik	MGR	rnsathvik@pwergrid.in
30	Delhi Transco Limited	Mukesh Kumar Sharma	Director (Operations)	mukeshkipj@yahoo.co.in
31		Paritosh Joshi	Sr. Manager(T)	paritosh.joshi@dtl.gov.in
32	DHBVN	Neeraj Ahuja	Director Operations DHBVN	directoroperations@dhbvn.org.in
33	HPGCL	Umesh Kumar Aggarwal	Director/Technical-1	dirtech@hpgcl.org.in
34		M. L. Singla	Chief Engineer/Admin cumfuel	ceadmin@hpgcl.org.in
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37	HPSEBL	Mandeep Singh	Chief Engineer (Sys. Op)	cesysophpsebe@gmail.com
38	HPSLDC	Rakesh Negi	SE	sehpsldc@gmail.com
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47	JSW Energy Ltd.	Jyotiprakash Panda	Vice President, Head of Power Sales and Regulatory	jyotiprakash.panda@jsw.in
48		Anurag Agarwal	General Manager	agarwal.anurag@jsw.in
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51		M K Gupta	GGM (Commercial)	mkgupta@nhpc.nic.in
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54		Dharmendra Kumar	DGM (E)	dharmendrakumar@nhpc.nic.in
55		Vijay Kumar	GSM (E)	vijayk@nhpc.nic.in
56		Rahul Ranjan	SM (E&C)	rahulranjan@nhpc.nic.in
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62		Alok Kumar	General Manager	alok.kumar@grid-india.in
63		Bikas Kumar Jha	DGM	bikasjha@grid-india.in
64	NTPC	Parimal Piyush	AGM (Commercial)	parimalpiyush@ntpc.co.in
65	POWERGRID	Jai Ram Yadav	Sr. GM, NR1	jry@powergrid.in
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67		Nitin Verma	DGM	nverma@powergrid.in
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70		Arandeep Singh	Chief Engineer	ce-hydel@pspcl.in
71	PSTCL	Vardeep Singh Maunder	Director/ Technical, PSTCL	di-tech@pstcl.org

72		Vinod Bansal, CA	Director/F&C, PSTCL	dir-fc@pstcl.org
73	PTCUL	H.S. Hyanki	Chief Engineer	hitendra0107@gmail.com
74	Rajasthan-SLDC	Mukul Bhargava	Suprintending Engineer (SOLD)	SE.SOLD@RVPN.CO.IN
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80	SJVN	Ashok Kumar	General Manager	gmcsosjvn@gmail.com
81		B.R. Kashyap	Deputy General Manager	gmcsosjvn@gmail.com
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84		Sanjeev Kumar	SM (T), SO	sanjeevkumar2474@gmail.com
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Annexure-I

भारत सरकार/ Government of India
विद्युत मंत्रालय/ Ministry of Power
केन्द्रीय विद्युत प्राधिकरण/ Central Electricity Authority
आर. ए. प्रभाग/ Regulatory Affairs Division

To,

As per list.

Subject: Request to ensure compliance of CEA regulations in power sector of the States.

Sir/Madam,

As you are aware, Central Electricity Authority (CEA) is mandated under the Electricity Act, 2003 to notify various regulations concerning standards and safety of the power sector. Therefore, in exercise of powers conferred provisions of the Electricity Act, 2003 (36 of 2003), Central Electricity Authority has notified various regulations. The list of regulations notified by CEA is attached at Annex.

Since, these Regulations have been issued in accordance with the provisions of the Electricity Act, 2003, they are in the nature of subordinate legislation and carry the force of law. It is essential that all State Power Utilities and their personnel are familiar with these regulations so that they can be complied in the letter and spirit. These Regulations are available at our website and can be accessed through the link, **https://cea.nic.in/regulations-category/notified-regulations**

It is therefore requested that an intensive exercise may be carried out to familiarize management and personnel working in State Power Utilities with these regulations. If required, CEA will be willing to depute officers to carry out capacity building in the form of workshop etc.

Thanking you,

भवदीय / Yours faithfully,

Jindal 03/10/2023

(प्रदीप जिंदल/ Pardeep Jindal)
मुख्य अभियंता (आर.ए.)/ Chief Engineer (RA)

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2. Member (E&C), CEA/ सदस्य (आ. व वा.), के.वि.प्रा.

3. Chief Engineer (R&R), MoP/ मुख्य अभियंता (आर & आर), विद्युत् मंत्रालय

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31. Chief Secretary, Union Territory of Delhi, Delhi Secretariat, IP Estate, New Delhi - 110002. Email: csdelhi@nic.in
32. Chief Secretary, Government of Jammu & Kashmir, R. No. 2/7, 2nd Floor, Main Building, Civil Secretariat, Jammu - 180001. Email: cs-jandk@nic.in
    R. No. 307, 3rd Floor, Civil Secretariat, Srinagar - 190001
33. Chief Secretary, Union Territory of Lakshadweep, Secretariat Building, Lakshadweep, Kavaratti - 682555. Email: lk-admin@nic.in
34. Chief Secretary, Union Territory of Puducherry, Main Building, Chief Secretariat, Puducherry – 605001. Email: cs.pon@nic.in; cs.pondicherry@nic.in

Annex

List of Regulations issued by CEA

Sl. No.	Name of the Regulation	Date of Gazette notification
1	Central Electricity Authority (Installation & Operation of Meters), Regulations 2006 u/S 55 (1), 73 (e) and 177 (2)	22.03.2006
		1st Amendment on 4th June 2010
		2nd Amendment on 3rd December 2014
		3rd Amendment on 23rd December 2019
		4th Amendment on 28th February 2022
2	Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulation, 2007 u/S 73 (b) and 177 (2)	09.03.2007
		1st Amendment on 15th October 2013
		2nd Amendment on 8th February 2019
3	Central Electricity Authority (Furnishing of Statistics, Returns & Information) Regulation, 2007 u/S 73 (i), 74 and 177 (2)	19.04.2007
		1st Amendment on 17th March 2022
4	Central Electricity Authority (Grid Standards) Regulation, 2010 u/S 34, 73 (d) and 177 (2)	26.06.2010
5	Central Electricity Authority (Safety Requirements for Construction, Operation and Maintenance of Electrical Plants and Electric Lines) Regulations, 2011 u/S 73 (c) and 177 (1)	14.02.2011
		1st Amendment on 16th November 2022
6	Central Electricity Authority (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations, 2013. U/S 177 (1)	7.10.2013
7	Central Electricity Authority (Technical Standards for Communication System in Power System Operations) Regulations, 2020 u/S 73 (b) and 177 (1)	27.02.2020

8	Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022 u/S 73 (b) and 177 (2)	27.12.2022
9	Central Electricity Authority (Flexible Operation of Coal based Thermal Power Generating Units) Regulations, 2023 u/S 73 (b) and 177 (2)	30.01.2023
10	Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulations, 2023 u/S 53 and 177 (2)	12.06.2023

Annexure-II

सत्यमेव जयते

भारत सरकार/Government of India
विद्युत मंत्रालय/Ministry of Power
केन्द्रीय विद्युत प्राधिकरण/Central Electricity Authority
एन.पी.सी. प्रभाग/National Power Committee Division
Ist Floor, Wing-5 ,West Block-II, RK Puram, New Delhi-66

No.CEA-GO-15-14/1/2022-NPC Division/ 400 Date: 02.11.2023

To

(As per distribution list)

विषय: PUShP पोर्टल के अंतर्गत पावर बैंकिंग सुविधा का प्रावधान संबंध में।

Subject: Provision of Banking of Power feature under the PUShP Portal - reg.

It is to inform that in the PUShP Portal, a facility/provision has been provided to the States through which the States may intimate/declare the surplus power quantum which they are willing to bank for a certain period of duration. Any other state who wants to acquire this surplus power in deficit scenario and willing to undergo for banking with the surplus state, may give requisition for this surplus power for a same duration in the PUShP Portal as per their mutual agreement.

2. The salient features of provision of banking of power feature under the PUShP portal are as below:-

a) The States undergoing for Banking Mechanism shall enter into bilateral agreements outlining the terms, conditions, and tariffs for power banking.
b) The States shall take consent/permission of the NLDC/RLDCs/SLDCs before undergoing any type of Bilateral Agreements.
c) NLDC/RLDCs/SLDCs shall check the Availability of Transmission Corridor for power flow between the States and these activities are out of purview of the PUShP Portal.
d) No trading charges or trading margin shall be levied on the states undergoing Banking of the power through the PUShP Portal.

3. **Role of PUShP portal in banking of power:** - PUShP Portal shall be acting as match-making platform for banking of power. Hence, matters pertaining to Banking Regulations, Bilateral Agreements, Banking Charges and Transactions charges shall be out of the scope of the PUShP portal. The States shall strictly abide the CERC and respective SERC regulations on Banking of Power or Banking of Energy. The States shall strictly take consent/permission of the NLDC/RLDCs/SLDCs on Banking of Power or Banking of Energy.

4. For provision of **Banking of Power feature under the PUShP Portal,** a separate interface/tab facility with the name **Intimate** on the page of each beneficiary wherein after clicking the tab

(Intimate), the sub-tab with the name **Depositor/Surplus state, Bank/Deficit State and View Depositor/Surplus& Bank/Deficit State** are displayed to the states to intimate/declare the surplus power quantum which they are willing to bank for a certain period of duration or to give requisition for this surplus power for a same duration in the PUShP Portal as per their mutual agreement in deficit scenario whichever is applicable to the states as per displayed sub-tab. The information submitted by the states is also made available to the respective states.

5. The steps for availing the provision of Banking of Power feature under the PUShP Portal is attached at **Annexure-I.**

Yours faithfully,

2/11/2023

(ऋषिका शरण/Rishika Sharan)
मुख्य अभियन्ता एवं सदस्य सचिव,रा.वि.स /
Chief Engineer & Member Secretary, NPC

*****

Distribution List:

1. All Nodal Officers (CGS/ISGS/States/IPPs)

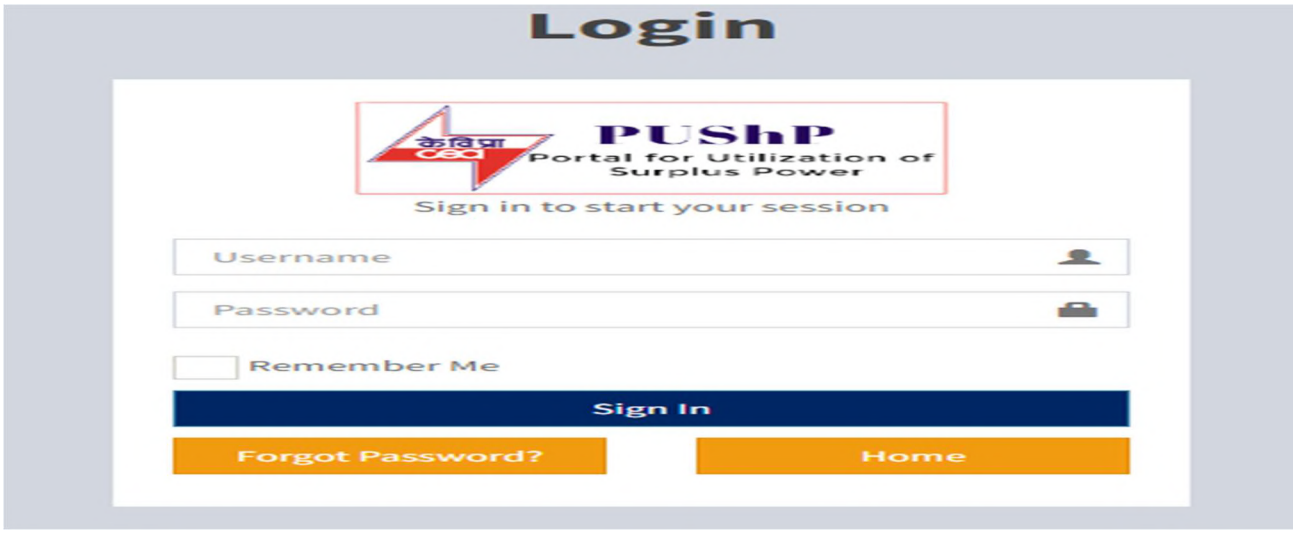
Copy for kind information to:

1. SA to Chairperson, CEA, New Delhi.
2. SA to Member (G&OD), CEA, New Delhi.

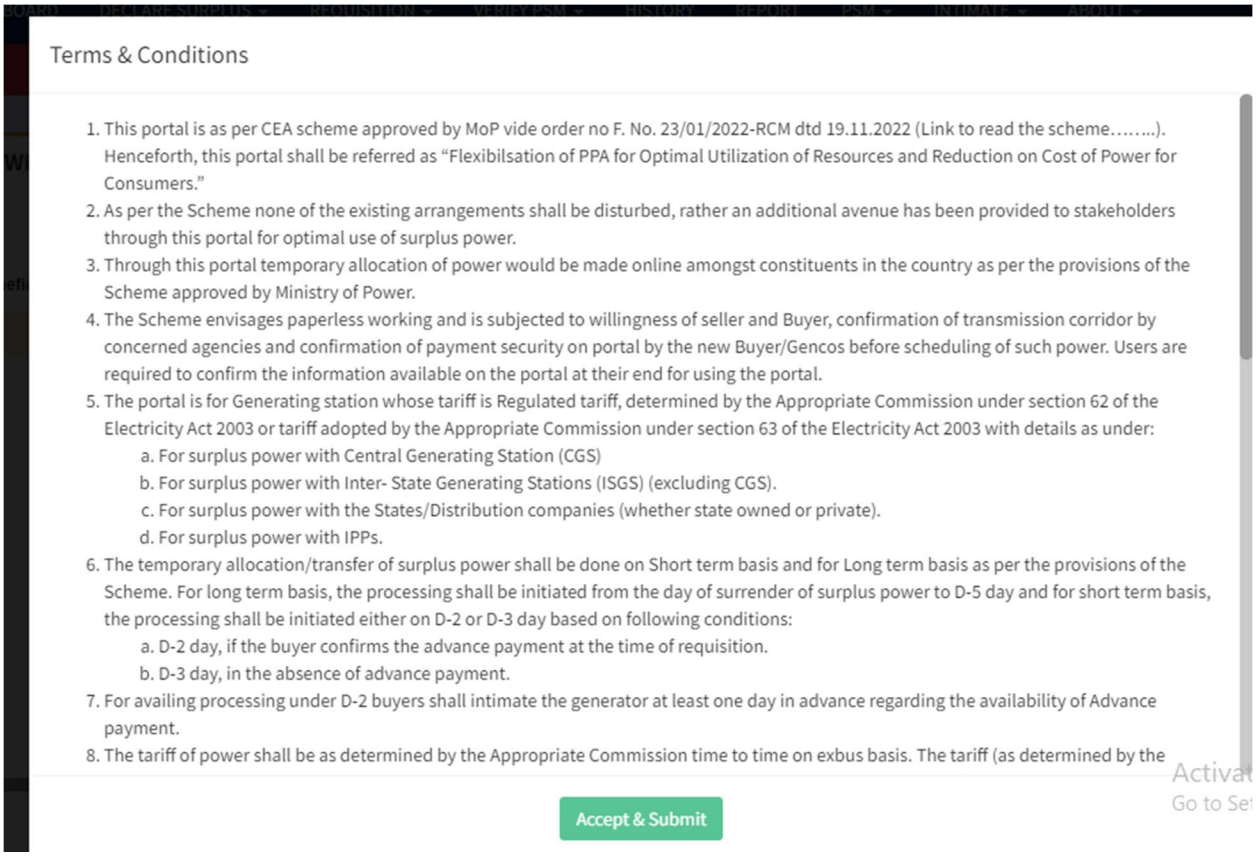
Annexure-I

Steps for availing the provision of Banking of Power feature under the PUShP Portal

Step-1: Login the PUShP portal (**URL: https://www.nationalsurpluspower.in/**) using the login credentials (Username & Password).

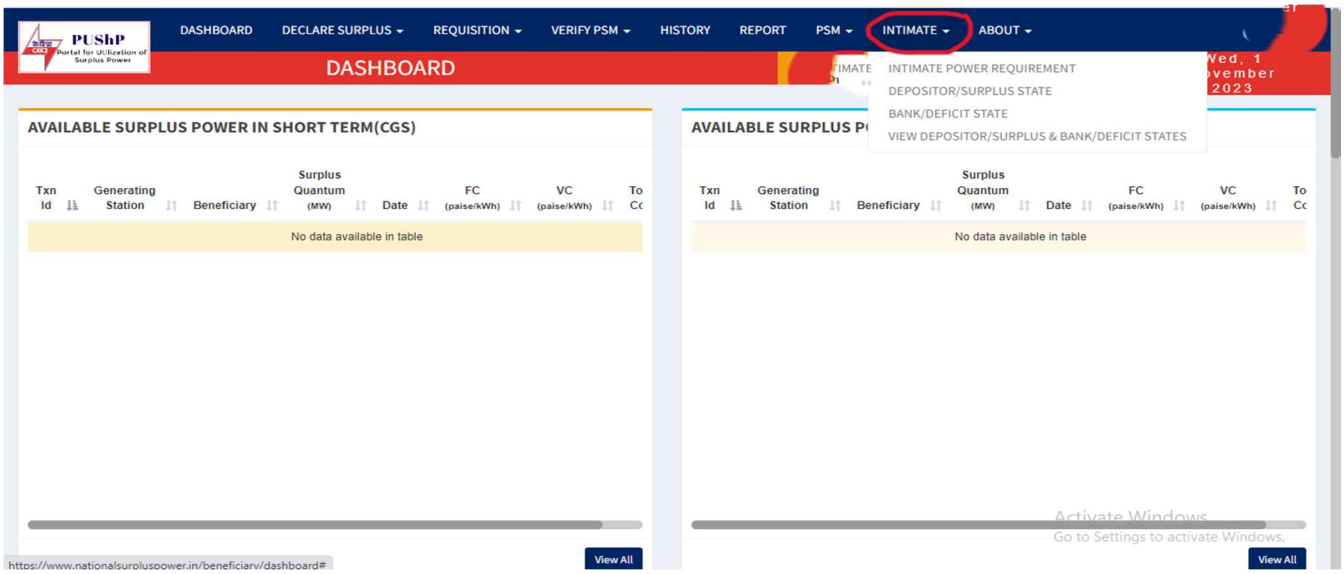


Step-2: Accept & Submit, Terms & Conditions displayed after login.

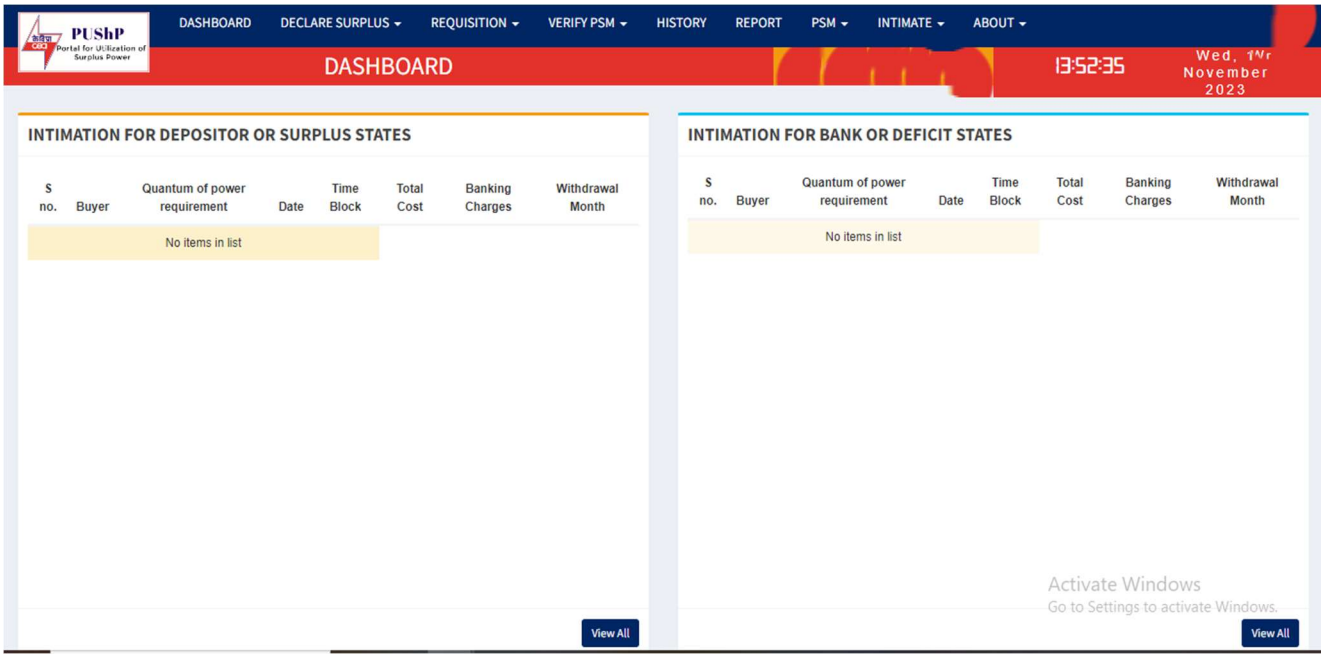


Step-3: Click on the tab **INTIMATE** (Marked with Red in the screenshot attached below). Following Sub tab will be displayed:

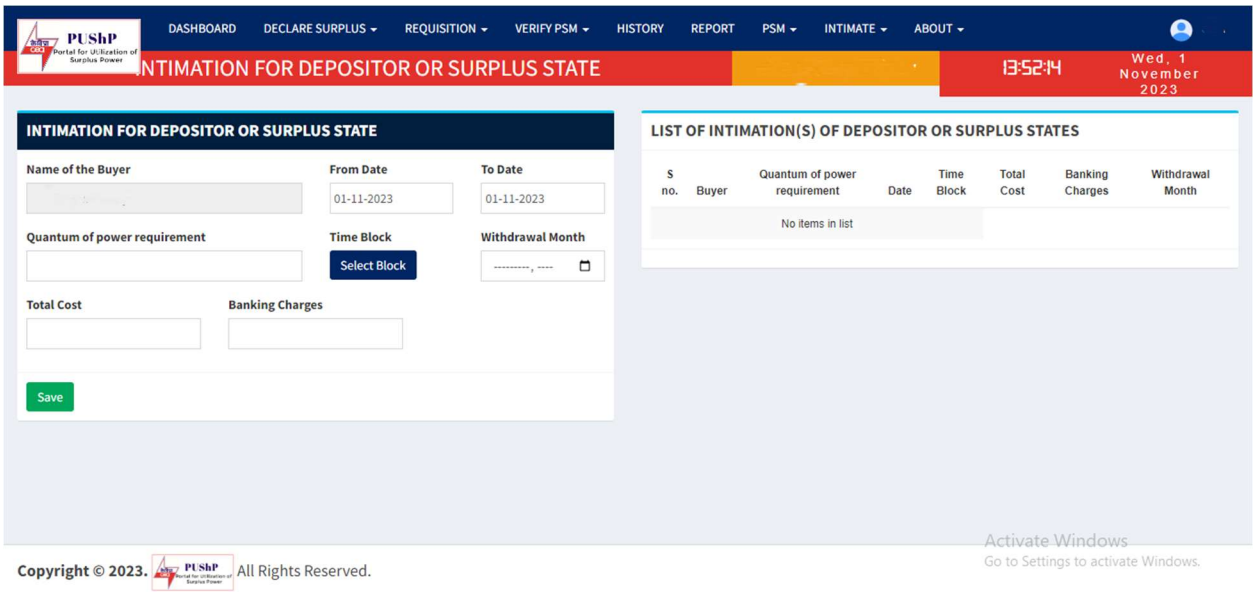
- DEPOSITOR/SURPLUS STATE
- BANK/DEFICIT STATE
- VIEW DEPOSITOR/SURPLUS STATE &BANK/DEFICIT STATE



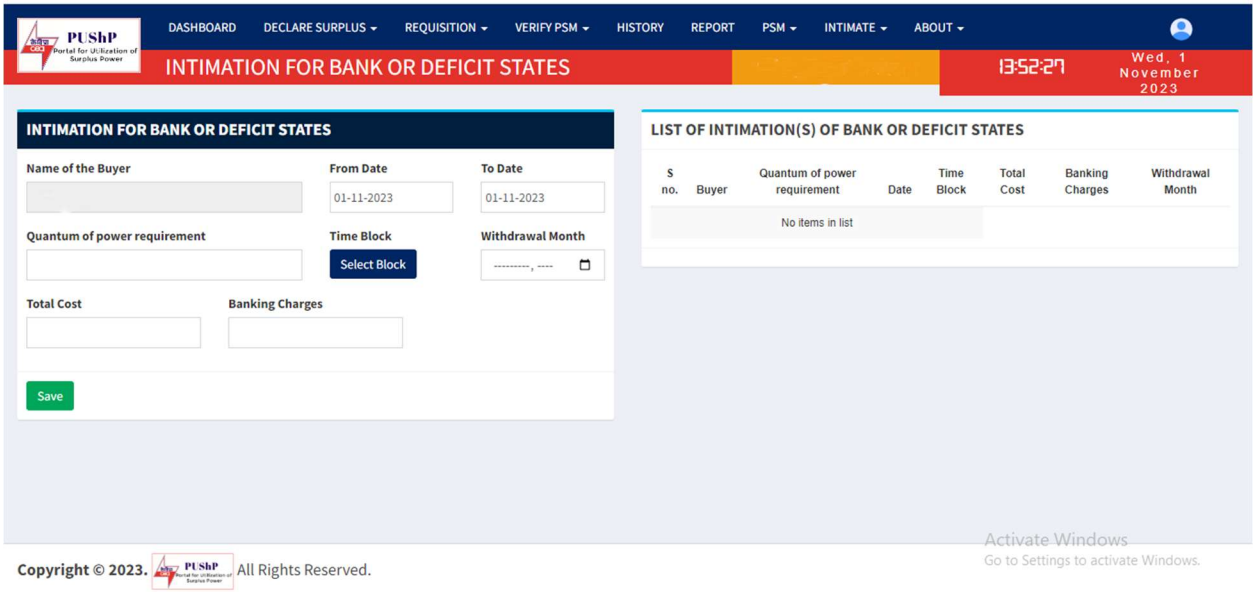
Step-4: To View Depositor/Surplus& Bank/Deficit State, click on the sub tab View Depositor/Surplus& Bank/Deficit State displayed in the Step-3. An interface will be opened clearly showing list of Depositor or Surplus states and Bank or Deficit States as shown in the below screenshot.



<u>Step-5:</u> For the states who want to intimate/declare the surplus power quantum which they are willing to bank for a certain period of duration, Click on the sub tab DEPOSITOR/SURPLUS STATE as shown in the screenshot of Step-3 above. An interface will be opened wherein the states can select date, block and quantum of power which they are willing to bank for certain period of duration. The information submitted by the states is also made available to the respective states. (In the right side portion of the screenshot attached below).



<u>Step-6:</u> For the states who want to give requisition for declared surplus power for a same duration in the PUShP Portal as per their mutual agreement in deficit scenario, Click on the sub tab BANK/DEFICIT STATE as shown in the screenshot of Step-3 above. An interface will be opened wherein the states can select date, block and quantum of power which they are willing to bank for certain period of duration. The information submitted by the states is also made available to the respective states. (In the right side portion of the screenshot attached below).



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Annexure-III

Sl. No.	Plant Name	State in which Plant is embedded	State whose entities have share in the plant	Share in %	Share in MW*	Transaction ID for Schedule in Inter-state	Category
1	Bawana	Delhi	Haryana	10	137	SH-07	Scheduled under proper Open Access (CTU) Including Tr. Charges Including RLDC Fee & Charges Schedule changes are done ex-ante as per the IEGC
	Bawana	Delhi	Punjab	10	137	SH-06	
	CLP-Jhajjar	Haryana	Delhi	10	124	LT-05	
2	Rihand hydro	UP	MP	13.75	41.25	LT-01	Considered under deemed LTA. (without formal LTA/MTOA issuance by CTU) Tr. charges considered RLDC Fee & Charges not considered. Schedule changes are done ex-ante as per the IEGC
	Matatila	UP	MP	45	13.75	LT-02	
3	Vishnu Prayag	UP	Uttarakhand	12	60	SH-01	Considered under deemed LTA. (without formal LTA/MTOA issuance by CTU) Tr. Charges not considered RLDC Fee & Charges not considered. Schedule changes are done ex-ante as per the IEGC
	Alaknanda	UP	Uttarakhand	12	40	LT-38	
	Rajghat	MP	UP	25	11.25	LT-13	
4	Khara	UP	HP	20	14.4	SH-02	Considered under deemed LTA. (without formal LTA/MTOA issuance by CTU) Tr. Charges not considered RLDC Fee & Charges not considered. Schedule of these transactions are changed post-facto based on actual generation as per legacy.
	RSD	Punjab	HP		22	SH-04	
	Chibro	Uttarakhand	HP	25	60	SH-05	
	Khodri	Uttarakhand	HP	25	30		
	Dhalipur	Uttarakhand	HP	25	12.75		
	Dhakrani	Uttarakhand	HP	25	8.43		
	Kulhal	Uttarakhand	HP	20	6		

Annexure-IV

सत्यमेव जयते

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

सं. उक्षेविस/वाणिज्यिक/210/वाउस(35)/2018/4638-4681 दिनांक: 24 April, 2018
No. NRPC/ Comml/210/CSC(35)/2018/ Dated : 24 April, 2018

सेवा में / To,

Members of Commercial Sub-Committee (As per List)
वाणिज्यिक उप समिति के सभी सदस्य (संलग्न सूचीनुसार)

विषय: वाणिज्यिक उप-समिति की 35 वीं बैठक का कार्यवृत्त ।
Subject: 35th meeting of Commercial Sub-Committee – Minutes.

महोदय ,
Sir,

उत्तर क्षेत्रीय विद्युत समिति वाणिज्यिक की उप-समिति की 35 वीं बैठक दिनांक 19 फरवरी , 2018 को उक्षेविस, नई दिल्ली में आयोजित की गई थी । इस बैठक के कार्यवृत की एक प्रति आपकी सूचना व आवश्यक कार्यवाही हेतु इस पत्र के साथ संलग्न है।

35th Commercial Sub-Committee meeting of NRPC was held on 19th February, 2018 at NRPC, New Delhi. A copy of the minutes of the meeting is enclosed herewith for favour of information and necessary action.

भवदीय
Yours faithfully,

हेमन्त पाण्डे 23/4/18

(हेमन्त कुमार पाण्डेय)
(Hemant Kumar Pandey)
अधीक्षण अभियंता
Superintending Engineer

INDEX

any fault is noticed, to NRLDC and NRPC Sectt. for effective follow up.

(Action: POWERGRID & State Transmission Utilities; Time line: At the earliest)

ITEM-41 Considering Date of Presentation/Acknowledgement Date for the bills related to Wind Power of NHPC as on date of actual receipt of bills in hard copy by JdVVNL (RUVNL)

41.1 NHPC representative informed that Wind Power Project (50MW) of NHPC Ltd. is situated in Jaisalmer Distt. of Rajasthan and Power from the project is being supplied to JdVVNL (Jodhpur Vidyut Vitran Nigam Limited), a subsidiary company of Rajasthan Urja Vikas Nigam Limited (RUVNL).

41.2 He mentioned that RUVNL vide its letter dated 19.12.2017 had intimated that the invoices/bills sent though e-mail would not be considered as acknowledgement date. Further, RUVNL had clarified that the Renewable Energy Generators in Rajsthan are governed by Rajsthan Electricity Regulatory Commission (RERC), therefore, the decision taken in the meetings of NRPC would not be applicable on Renewable Energy Bills.

41.3 He intimated that NHPC vide letter dated 03.01.2018, had replied that the power from the Jaisalmer Wind Power Project is injected in Northern Grid and supplied to RUVNL (JdVVNL) who is a constituent of NRPC. Therefore, the decisions taken at the NRPC forums shall be applicable to RUVNL (JdVVNL). As a matter of acceptance of energy bills through e-mail the same had been discussed in the 31st TCC/35th NRPC (Item No. C.5) meetings held on 8th & 9th July'2015 and 30th & 31st Commercial Sub-Committee (Item No. Meetings held on 23.09.2017 & 04.07.2016 and agreed by the representative of Rajsthan Discoms also and hence shall be applicable on JdVVNL (RUVNL) for the Wind Power Project of NHPC. He stated that the issue had not been resolved even after regular follow up with RUVNL (JdVVNL).

41.4 The sub-committee advised RUVNL to follow the decisions in the NRPC, as it would facilitate all the entities, in a long run, including Rajasthan Discoms. RUVNL representative RUVNL representative agreed to abide by the decisions of NRPC regarding representation of bills.

(Action: RVUNL; Time Line: March,2018)

ITEM - T1: Guidelines for Open Cycle Certification

AEE (C), NRPC informed that as per Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014, Energy charge rate for a gas/liquid fuel based station is to be adjusted for open cycle operation based on certification of Member Secretary of respective Regional Power Committee for the open cycle operation during the month. The certification was being by NRPC Sectt. .done based on established guidelines / procedure.

He added that the Central Electricity Regulatory Commission (Indian Electricity Grid Code) (Fourth Amendment), 2016 notified in Apr,2017, and the CERC order dated 5th May,2017 , regarding detailed procedure on reserve shutdown, stipulates the technical minimum for operation in respect of CGS and ISGS as 55% of the MCR loading or installed capacity of the unit, at the generating station. In view of this stipulation, the procedure for certification of open cycle generation needed some changes.

The revised procedure was discussed in the meeting. NTPC representative stated that when one GT & one ST is already running, the time taken for coupling the second GT from synchronisation to combined cycle mode of operation is about 1.5 to 2 hours. The representative from PPCL had also given similar views. Based on the discussions the finalised guidelines/procedure for certification of Open Cycle Generation is enclosed at **Annexure-III.**

DATE AND TIME OF THE NEXT MEETING

The date and venue of next (36th) meeting of the Commercial Sub-committee would be intimated later.

Annexure-III

Guidelines/Procedure for Certification of Open Cycle Operation of Combined Cycle Gas Based Generating Stations

1. When operating under full module, if the schedule of generation given by NRLDC is less than 55% of the MCR loading of the module, one GT may go under Reserve shutdown and the unit may operate under part-module condition. Subsequently, when the injection schedule for the station is more than the on bar declared capacity of the part-module, GT under RSD may be brought on bar. Open Cycle Generation for the 2nd GT may be certified up to a maximum of 1.0 hrs in case of hot start up, 2.0 hrs in case of warm start up and 2.5 hrs in case of cold start up.
2. When operating under half module, if the injection schedule given by NRLDC is less than 55% of the MCR loading of the part-module, the entire module may go under Reserve shutdown. Subsequently, when schedule received is more than 55% of the MCR loading, then one or more GT may be brought back in operation. Open Cycle Generation for the 1st GT may be certified up to a maximum of 1.0 hrs in case of hot start up, 2.5 hrs in case of warm start up and 4.0 hrs in case of cold start up. For 2nd GT, the time certified for Open Cycle Generation would be same as in case of (1) above.
3. When operating under full module, if the schedule of generation given by NRLDC is less than 55% of the MCR loading of the part module, all GTs may go under Reserve shutdown. The procedure for open cycle certification shall be as in case (2) above.
4. No maintenance activities on unit under RSD shall be undertaken by the Generating station, otherwise Open Cycle Generation shall not be certified.
5. When a GT is started within 3 hours of shutdown, it would be considered as a hot start-up, 3 to 24 hours warm start-up, and beyond 24 hours cold start-up.
6. Open Cycle Generation shall also be certified when:
    a. If STG is under outage and instruction for running GT(s) on Open Cycle is given by NRLDC.
    b. If the unit is re-started after tripping due to grid contingencies.

c. If the unit is re-started after scheduled OEM inspection and/or statutory boiler inspection duly approved in the OCC meetings and schedule is given for running these units.

7. The generating station shall submit the requisite data to NRPC Secretariat for the period for which it seeks certification of open cycle generation.

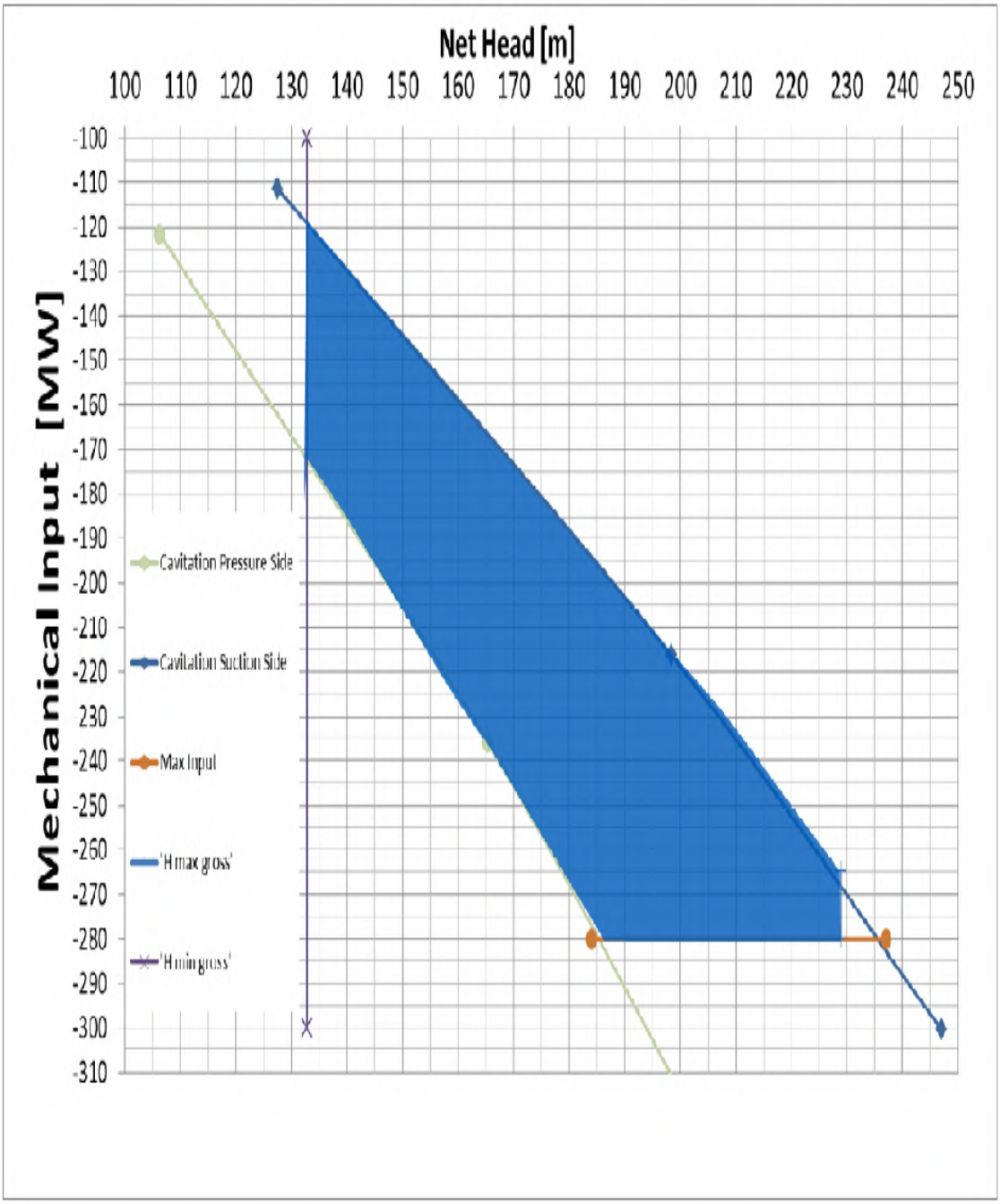

Fig. Cavitation limit curve Power at input power at Machine terminals.

Global performances simulation with minimum speed = 210 rpm

Yellow : Values taken from witnessed model test perfomances of pump turbine

Blue : calculations

Grey : Values taken from contract agreement without any change

ITEM	Unit	Min	Values									Max
Gross Head (GH)	m	127.5	140	150	160	170	180	190	200	210	220	~~227~~ 224
Duration	%	11.78%	11.40%	7.11%	7.11%	7.11%	7.11%	7.11%	7.11%	7.11%	7.46%	19.59%
Discharge per unit* (Qp)	m3/s	128.01	116.24	106.76	101.96	105.08	108.15	112.22	114.00	116.83	119.56	117.43
Duration of Pumping (Tp)	minutes	420.0	420.0	420.0	420.0	420.0	420.0	420.0	420.0	420.0	420.0	420.0
Volume of Water Pumped (Vp)	Cum	3225753	2929134	2690441	2569373	2647928	2725275	2828002	2872718	2944022	3012910	2959124
Head Losses initial coefficient K=3.58879 E-4 m/(m3/s)2 for 2 units		3.59E-04	3.59E-04	3.59E-04	3.59E-04	3.59E-04	3.59E-04	3.59E-04	3.59E-04	3.59E-04	3.59E-04	3.59E-04
Head Losses calculation	mcW	5.88	4.85	4.09	3.73	3.96	4.20	4.52	4.66	4.90	5.13	4.95
Pump Efficiency	%	0.939123	0.944806	0.946536	0.946091	0.946218	0.946339	0.946494	0.946559	0.946661	0.946756	0.94612
Continuous Pump Input	MW	178.0	174.5	170.1	172.7	189.1	206.1	225.8	241.3	259.6	278.3	278.2
Bearing losses	kW	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0
Generator Efficiency (including losses in the variable speed drive and IPB)	%	0.9771	0.9775	0.9768	0.9766	0.9773	0.9783	0.9791	0.9794	0.9795	0.9791	0.9789
Step-up Transformers on-load Losses	kW	370	362	355	344	365	404	447	510	567	663	696
Transformer Efficiency	%	0.9980	0.9980	0.9980	0.9980	0.9980	0.9979	0.9979	0.9978	0.9977	0.9976	0.9975
Auxiliaries Power Consumption	kW	364.9	364.9	364.9	364.9	364.9	364.9	364.9	364.9	364.9	364.9	364.9
Line Losses (from GIS to Interface building)	kW	4.46	4.31	4.16	3.93	4.37	5.14	6.00	7.27	8.42	10.35	11.01
Line Efficiency	%	0.99999	0.99999	0.99999	0.99999	0.99999	0.99999	0.99999	0.99999	0.99999	0.99999	0.99999
Power Consumption at Interface Building	MW	183.0	179.3	175.0	177.7	194.3	211.5	231.5	247.3	266.1	285.4	285.3
Energy Consumed in Time Tp (Ep)	MWhr	1280.8	1255.0	1224.9	1243.7	1360.3	1480.5	1620.5	1731.2	1862.6	1997.7	1997.2
Overall Efficiency in Pump Mode at Interface Building[1]	%	0.871	0.888	0.895	0.898	0.899	0.901	0.901	0.902	0.902	0.902	0.902

ANNEXURE-1

Annexure-VI

ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
भारत सरकार का उद्यम
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर क्षेत्रीय भार प्रेषण केन्द्र / Northern Regional Load Despatch Centre
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
Office : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN : U40105DL2009GOI188682, Website : www.nrldc.in, E-mail : nrldc@grid-india.in, Tel.: 011 26519406, 26523869, Fax: 011 26852747

Ref: NRLDC\TS-11\380

Date: 23 June 2023

To,

Managing Director & CEO
Adani Transmission Ltd.
Shantigram, Near Vaishnodevi Circle,
S G Highway, Ahmedabad-382421, Gujarat.

Sub: Uprating of low rating switchgear at 400kV Mahendragarh

Sir,

The issues related to low ratings of switchgear at Mahendragarh have been discussed in various NRPC (Northern Region Power Committee), NRPCTP (Northern Region Power Committee on Transmission Planning) & NRSCT (Northern Region Standing Commitee on Transmission) meetings. As per Transmission Planning Criteria, the thermal capacity of Quad Moose line is 2180 MVA at 45° ambient temperature. However, as the isolators at 400 kV Dhanonda and Mohindergarh stations are rated at only 2 kA, the thermal capacity of respective lines gets limited to only 1385 MVA (1.732*400*2).

Due to switchgear related issues, bypass of 400kV Mahendragarh-Dhanoda D/C and 400kV Dhanoda-Neemrana D/C at 400kV Dhanoda has been done; operating these lines as 400kV Mahendragarh-Neemrana D/C. The issue has been discussed in number of meetings & HVPNL has agreed for switchgear replacement work in these meetings. As per latest discussions held in 208 OCC meeting held on 20.06.2023, HVPNL has informed that they have floated tender for switchgear replacement work at 400kV Nawada & Dhanonda.

Since the bays at 400kV Mahendragarh are under ownership of ATIL, it is requested that switchgear replacement work are also carried out at Mahendragarh end so that after swithchgear replacement at 400kV Dhanonda, there is no limitation at Mahendragarh end and 400kV Mahendragarh-Dhanonda D/C line could be loaded to its thermal capacity in case of any contingency.

It is requested to advise the concerned for necessary actions in this regard so that full line capacity are available during grid operation without any restriction due to switchgear ratings.

Thanking You,

Yours faithfully

23/06/2023

(Somara Lakra)
Chief General Manager (System Operations)

Copy for kind information:

1. Member (Grid Operation & Distribution), Central Electricity Authority, Sewa Bhawan, R.K.Puram, Sector-1,New Delhi-110 066
2. Member Secretary, NRPC, 18-A, SJSS Marg, Katwaria Sarai – 110016
3. Chairman & Managing Director, Grid-India, B-9 Qutub Institutional Area, Katwaria Sarai, New Delhi-110016
4. Executive Director, NRLDC, 18-A, SJSS Marg, Katwaria Sarai – 110016
5. Executive Director, NLDC, 18-A, B-9 Qutub Institutional Area, Katwaria Sarai, New Delhi-110016

2	400kV Mahendragarh-Dhanonda D/C	All time	Remarks: High Loading was observed during to less/outage of generation at CLP Jhajjar (35% of time, generation was under outage & 30% of time under less generation.	The line is a 5 km quad line, but the switchgears at both the ends are of 2000A, therefore, upgradation of switchgear should be taken up by HVPNL. HVPNL was requested to carry out the upgradion works at the earliest. HVPNL informed that the average load of about 700 MW (each ckt) is continuously running on the said line. However, they agreed for carrying out the equipment upgradation at both the sub-stations.
3	400kV Singrauli-Anpara	All time	Full generation at Singrauli / Rihand and with Rihand stage-3 Unit # 5 & 6 is also evacuating through the same complex, loading of Singrauli-Anpara becomes very high. Sometime due to low generation at Anpara – A, B & C and high generation at Rihand-Singrauli Complex, 400kV Singrauli-Anpara often get overloaded. Remarks: Multiple connectivity should be ensured for Singrauli-Anpara Or uprating of existing 400kV Singrauli- Anpara	CEA stated that the problem would be relieved after commissioning of connectivity line with WR. However, joint studies could be carried out for opening of 400kV Singrauli-Anpara line. Power evacuation from the complex needs review.
4	400kV Anpara-Obra	Some times	Connected to generating station. (Anpara-B & C). Remarks: Loading on the same lines has reduced after the commissioning of 660MW generating unit-1 at Bara. The loading may likely to be increased in case of N-1 contingency of 765kV Bara – Mainpuri ckt-2 or N-1 contingency of single 765/400kV ICT at Mainpuri	UPPTCL stated that after Anpara D-Unnao 765 kv line likely to be commissioned by Nov. 2017, these will be relieved. Further joint studies would involve this line also.
5	400kV Anpara-Sarnath-1 & 2	All time	Connected to generating station (Anpara-B & C). Remarks: The loading may be reduced after commissioning of Anpara D – Unnao S/c line.	
6	400 kV Bamnoli-Jhatikara D/C line	Some time	Connected to 765 kV Jhatikara S/S	DTL informed that the incidence of tower collapse occurred on this line, however the same is expected to be erected by 15.08.2017

Minutes of 40th Meeting of Standing Committee on Power System Planning of Northern Region held on 22nd June, 2018 (Friday) in New Delhi

List of participants is enclosed at Annexure-I.

Member (Power System), CEA welcomed the participants to the 40th meeting of the Standing Committee on Power System Planning of Northern Region (SCPSPNR). He informed that Ministry of Power has constituted the "Northern Region Standing Committee on Transmission" (NRSCT) along with its Terms of Reference (ToR) and the frequency of meeting (at least once in three months). Therefore, future meetings on power system planning of NR would be held as NRSCT meetings. He requested Chief Engineer, CEA to take up the agenda.

Chief Engineer (PSPA-I), CEA stated that we are meeting after a gap of one year and the agenda for the meeting interalia, includes important issues viz. evacuation of power from Singruli STPP, Khurja STPP, 4000 MW of Solar Park in Budelkhand area etc. He requested members to be specific in deliberation so that decisions could be arrived at through consensus. This is the last meeting of the SCPSPNR and the next meeting will be called the first meeting of NRSCT. The constitution of NRSCT mandates the meeting to be held every quarter. He requested constituents to send their proposals to CEA as soon as they conceive them, so as to facilitate preparation of the agenda for NRSCT in advance. He requested Director (PSPA-I), CEA to take up the agenda items for discussions.

1.0 Confirmation of the Minutes of the 39th meeting of the Standing Committee on Power System Planning of Northern Region held on 29-30th May, 2017.

1.1 CEA stated that the minutes of 39th meeting of the SCPSPNR were issued vide CEA letter no. 1/9/39/2017/PSP&PA-I/783-802 dated 28thJuly, 2017. Subsequently, PGCIL, HVPNL, PTCUL and RRVPNL had made some observations on the minutes of the meeting. Based on their observations a corrigendum to the minutes of 39th meeting of SCPSPNR was issued vide CEA's letter no. 1/9/39/PSP&A-I/2017/1462-1480 dated 28.12.2017 (copy enclosed at **Annexure-II).** No further comments have been received from the constituents.

1.2 He further stated that in the 39th meeting of SCPSPNR, upgradation of equipment at both ends of 400 kV Mahendragarh-Dhanonda D/C line was agreed (under Sl no. 2 of Item no. 20 'Operational feedback'). In the corrigendum to the minutes of 39th meeting of SCPSPNR, it was mentioned that the equipment upgradation at Dhanonda end would be carried out by HVPNL. However, regarding equipment upgradation at Mahendragarh end nothing was mentioned. Mahendragarh being an ISTS sub-station, the 400 kV equipment upgradation at the sub-staion would be carried out under ISTS.

1.3 Members were requested to confirm the minutes of the meeting along with the Corrigendum and 400 kV equipment upgradation works at Mahenderagarh substation under ISTS.

1.4 Members confirmed the same.

OCC forum agreed that the matter may be discussed separately between CTUIL, POWERGRID, NRPC, NRLDC and RE developers and then discussed again in OCC forum.

c) Uprating of low rating switchgear at 400kV Nawada, Dhanoda & Mahendragarh

The issues related to low ratings of switchgear at Nawada, Dhanoda & Mahendragarh have been discussed in various NRPC (Northern Region Power Committee), NRPCTP (Northern Region Power Committee on Transmission Planning) & NRSCT (Northern Region Standing Commitee on Transmission) meetings. As per Transmission Planning Criteria, the thermal capacity of Quad Moose line is 2180 MVA at 45˚ ambient temperature. However, as the isolators at 400 kV Nawada, Dhanonda and Mohindergarh stations are rated at only 2 kA, the thermal capacity of respective lines gets limited to only 1385 MVA (1.732*400*2).

These limitations have already caused constraints in real-time operation on many occasions and accordingly the switchgear related issues were raised by NRLDC through written communication and in various meetings (NRPC, OCC, NRSCT, NRPCTP). Due to switchgear related issues, bypass of 400kV Mahendragarh-Dhanoda D/C and 400kV Dhanoda-Neemrana D/C at 400kV Dhanoda has been done; operating these lines as 400kV Mahendragarh-Neemrana D/C.

The issue has been discussed in number of meetings & HVPNL has agreed for switchgear replacement work in these meetings. However, as per information available with NRLDC, the switchgear replacement work are yet to be completed.

In the meeting, HVPN representative informed that the price bid have been opened for switchgear replacement at Nawada & Dhanoda.

OCC forum discussed that for bays at Mahendragarh, switchgear replacement work may be carried out by ATIL (Adani Transmission) and asked HVPN to expedite switchgear upgradation work at Nawada & Dhanoda.

d) Issues in declaration of AVC by RE Plants

NRLDC representative stated that it has been observed that some RE plants such as (300MW Azure Mapple, 300 MW Acme Heergarh, RSRPL connected at Bikaner (PG), 130 MW Azure Power 34 at Bhadla (PG) and 200 MW Azure at Adani Bhadla and 300 MW Thar Surya 1 at Bikaner (PG)) are submitting full AvC (Available capacity) whereas the maximum generation is far less than the AvC/contract capacity/Installed Capacity and also Low CUF are being observed in these plants compared to other RE plants. Matter was already apprised in 204th OCC forum, CEA and Bidding agencies such as SECI, MSEDCL.

Annexure-3

UPRATING OF SWITCHGEARS AT 400kV MAHINDERGARH Station for Dhanoda Circuits					
Sr. No.	**Description**	**Unit**	**Existing Equipment designation**	**Qty**	**Spare Qty**
1.0	**420 kV, 3150A Circuit Breakers, 50kA** (3pole) along with operating mechanism, all accessories, auxiliaries and marshalling boxes/kiosks along with support structure(3 phase unit)	nos.	20C02.A-QO, 20C02.B-QO, 20C02.C-QO 20C03.A-QO, 20C03.B-QO, 20C03.C-QO	6	1
2.0	**Current Transformers** (1 Phase) SF6 Type 420kV, 3150A, 5 Core CT, 50 kA, 1 Sec.	Nos.	20C02.A-T1, 20C02.B-T11, 20C02.C-T1, 20C03.A-T1, 20C03.B-T11, 20C03.C-T1, 20C02.C-T2, 20C03.A-T2	24	2
3.0	**Isolators/Disconnecting Switches** 420kV Disconnector with 1 grounding switch (3 phase unit) 3150A, 50kA, 1 sec	Nos.	20C02A-Q1/-Q51, 20C02.A-Q6/-Q52, 20C02.B-Q61/-Q51, 20C02.B-Q62/-Q52, 20C02.C-Q9/-Q8, 20C02.C-Q2/-Q51, 20C02.C-Q6/-Q52 20C03A.Q9/-Q8, 20C03.A-Q1/-Q51, 20C03.A-Q6/-Q52 20C03.B-Q61/-Q51, 20C03.B-Q62/-Q52 20C03.C-Q2/-Q51, 20C03.C-Q6/-Q52	14	2
4.0	Conductor ACSS 31.77 mm	metre	Twin Bersimis	LOT	
5.0	Clamps and connector suiatble for HTLS to Bersimis Conductor and above equipment connectors	nos.	existing	LOT	
6.0	Al. Tube 4inch	metre	4 Inch EHIPS Tube	LOT	1
7.0	Cabling works Augmentation	metre	existing	LOT	
8.0	Earthing works Augmentation		existing	LOT	
a	Earth rod	metre	existing	LOT	
b	GI Flats	Metre	existing	LOT	
c	Gravelling	Cu.m	existing	LOT	
9.0	Civil Cost	LS			

UPRATING OF SWITCHGEARS AT 400kV MAHINDERGARH Station for Bhiwani Circuits					
Sr. No.	**Description**	**Unit**	**Existing Equipment designation**	**Qty**	**Spare**
1.0	**Current Transformers** (1 Phase) SF6 Type 420kV, 3150A, 50 kA, 1 Sec.	Nos.	20C02.A-T2, 20C03.C-T2	6	1
2.0	**Isolators/Disconnecting Switches** 420kV Disconnector with 1 grounding switch (3 phase unit) 3150A, 50kA, 1 sec	Nos.	20C02A-Q9/-Q8, 20C02.C-Q9/-Q8,	2	1
3.0	Wave trap 3150 A, 1 mH(1 Phase)	Nos.		4	
4.0	Conductor ACSS 31.77 mm	metre	Twin Bersimis	LOT	
5.0	Clamps and connector suiatble for HTLS to Bersimis Conductor and above equipment connectors	nos.	existing	LOT	
6.0	Al. Tube 4inch	metre	4 Inch EHIPS Tube	LOT	
7.0	Cabling works Augmentation	metre	existing	LOT	
8.0	Earthing works Augmentation		existing	LOT	
a	Earth rod	metre	existing	LOT	
b	GI Flats	Metre	existing	LOT	
c	Gravelling	Cu.m	existing	LOT	
9.0	Civil Cost	LS			

I/31405/2023

ANNEXURE-VII

सत्यमेव जयते

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

विषय: Minutes of the meeting to discuss the status of Automatic Demand Management Scheme (ADMS) implementation in Northern Region-reg.

Kindly find attached the minutes of the meeting held on **17.10.2023 (11:00 AM)** to discuss the status of Automatic Demand Management Scheme (ADMS) implementation in Northern Region.

Signed by Santosh Kumar
Date: 03-11-2023 15:14:11
Reason: Approved

(संतोष कुमार)
अधीक्षण अभियंता (प्रचालन)

सेवा में,

1. GM, NRLDC
2. Chief Engineer of all SLDC's of NR region

Minutes of the meeting held on 17.10.2023 (11:00 HRS) to discuss the status of Automatic Demand Management Scheme (ADMS) implementation in Northern Region

1. SE(O), NRPC welcomed all the participants and mentioned that Status of implementation of ADMS in Northern Region is regularly taken up as follow up agenda in the monthly OCC meetings of NRPC. Further, status of ADMS implementation in NR has also been reviewed by Member Secretary, NRPC in the special meetings held on 13.06.2023. To expedite the implementation of ADMS in NR, this meeting has been called.
2. EE(O), NRPC briefed the participants that as per Regulation No. 36 (2) of the Indian Electricity Grid Code, 2023 which states that every SLDC, in coordination with STU and Distribution Licensee (s), shall develop Automatic Demand Management Scheme with emergency controls at SLDC to ensure network security.
3. In this regard, SE(O) NRPC asked concerned SLDC's of NR States/UT to apprise the present status of ADMS in their control area and highlight constraints, if any faced by them in its implementation.
4. GM, NRLDC mentioned that clause 45.7 outlines the objective of ADMS, which is to maintain the **ACE (Area Control Error)** close to zero.

   "The concerned Load Despatch Centre and other drawee regional entities shall keep their Area Control Error close to zero (0) by rescheduling, deploying reserves and automatic demand management scheme."
5. Representative from Punjab SLDC mentioned that at SLDC level, 200 No. 66 kV feeders corresponding to 68 no. RTU stations are already configured in SCADA system at Punjab for carrying out Remote Load Shedding. Further, PSPCL has submitted a list of 89 No. 66 kV feeders out of the above 200 No. feeders list, which have been verified by PSPCL for performing remote operation, which will not cause outage of any important feeders down the lines i.e. Airport feeders, Industrial/Hospital feeders etc.
6. Further, Punjab SLDC mentioned that other logics for ADMS scheme will be decided during the execution of ULDC PH-III, keeping in mind scenario of Network conditions at that point of time, as there is a continuous change in Network Grid & Loading conditions owing to LILO of lines, New Substations, Upgradation of Sub-stations etc.
7. SE(O), NRPC asked Punjab SLDC to give a timeline for implementation of ADMS in their control area to which Punjab SLDC replied that ULDC Ph-III work is expected to be completed by December'24.
8. Representative from RVPN informed that RVPN has pilot tested the logic of ADMS which is to be implemented in Rajasthan. Further, he also intimated that in co-ordination with RUVNL they have come up with the criteria for operation of ADMS

system and have developed the logic for all three discoms in the state of Rajasthan.

9. However, the total drawl of Rajasthan and frequency which is available on SLDC SCADA servers could not be fetched to the command control centre's server (STNAMS project) due to the issue of cyber security of ICCP link. RVPN is working towards resolving this issue.

10. Representative from Delhi SLDC apprised that manual intervention is there in the operation of ADMS for Delhi. He mentioned that their discoms have reservation that in case where Delhi as a whole is under drawing and one DISCOM is overdrawing, a fully automatic ADMS would shed the load of that DISCOM, leading Delhi as a whole to under drawl more from the grid. As discussed in the 64th NRPC meeting, to overcome above issue it has been suggested to add a logic to the ADMS that could sense the overall drawl of Delhi before its operation to ensure certainty of action.

11. GM, NRLDC asked Delhi SLDC to decide the base line frequency of operation of ADMS in their control area in coordination with its discom as per their system requirement.

12. Representative from UPSLDC informed that to formulate the roadmap for the implementation of ADMS at DISCOM level, a meeting was scheduled on 21st August 2023, However, in the said meeting the cited agenda could not be discussed due to absence of representative from UP DISCOMs.

13. SE(O), NRPC asked UPSLDC to highlight this matter at highest level of its management as no response is received from UP DISCOMs till date.

14. Representative from Haryana SLDC intimated that to proceed on action for implementation of ADMS in Haryana, a joint meeting was conveyed by the Director Technical HVPN wherein it was decided that a team of officers from SLDC, HVPN and both the discoms of Haryana would visit a State with similar load pattern, wherein ADMS is operation. Accordingly, a team of officers visited Jaipur, RRVPNL to have an insight into the implementation status of ADMS. Based upon their learning SLDC has prepared a roadmap of the ADMS implementation plan to be executed in the state of Haryana.

15. Haryana SLDC representative intimated that internally it has been decided that to begin with the voltage level for ADMS implementation may be limited to 33kV. At present, there are 167 no. of 33kV feeders wired for remote operation from the control centre. Essential feeders would have to be filtered out by discoms among these feeders, for consideration under ADMS along with providing the priority of operation based on the quantum of load required to be shed.

16. Further, he mentioned that revised road map of implementation of ADMS at 33kV level is under approval of their management and it would be shared with NRPC Sectt. and NRLDC upon approval of the same by their management.

17. SE(O), NRPC asked Haryana SLDC to begin with they may start with the feeders where the telemetry is available.

18. Representative from HPSLDC stated that roadmap for implementation of ADMS in HP state has been submitted to NRPC. As per the proposed logic for ADMS operation whenever frequency is less than or equal to 49.85 Hz load shed will be equal to the overdrawl quantum so as to make Area Control Error zero. Further, when frequency goes above 49.85 Hz a restore signal shall be generated from ADMS system to respective stations.

19. SE(O), NRPC stated that the logic proposed by HPSLDC needs to be reviewed as they have proposed case with frequency below 49.4 Hz at which UFR operation would come into effect. Hence, he asked HPSLDC to share its proposed logic with NRLDC and NRLDC to submit its observation on the same.

20. Representative from HPSLDC further informed that HPSEBL has identified and supplied the detail of 142 Nos. feeders that may be operated through ADMS functionality and work related to interfacing control wiring with existing Interposing Relay and RTU is pending at discom end.

21. Uttarakhand Discom representative intimated that they are targeting to implement ADMS in their control area at 11kV level for which they are conducting a field study which they expect to complete by this month. Uttarakhand Discom has informed that they have floated a tender for automatic demand response at 11kV level.

22. SE(O) asked Uttarakhand SLDC to identify the feeders at which the remote operation is possible that can be considered for ADMS implementation.

23. After detailed deliberation in the meeting, following were decided:

- Delhi SLDC to add a logic to the ADMS that could sense the overall drawl of Delhi before its operation to ensure certainty of action. Further, Delhi SLDC to decide the base line frequency of operation of ADMS in their control area in coordination with its discom as per their system requirement.

- UPSLDC to highlight the issue at the highest level of its management of non-cooperation/support from its DISCOMS on implementation of ADMS.

- Haryana SLDC to submit its road map for ADMS implementation after approval of its management.

- HPSLDC to submit its logic cases for ADMS implementation to NRLDC for review as they have considered frequency of operation below 49.4 Hz.

- Uttarakhand SLDC to identify the feeders at which the remote operation is possible that can be considered for ADMS implementation.

Meeting ended with vote of thanks to the Chair.

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ANNEXURE-VIII

MIS Report for Status of Islanding Schemes

Implemented Schemes

Sl. No.	Islanding Scheme	SLDC	Status	Submission of Self Certification of Healitheness	SOP	SCADA Display Page	Remarks
1	NAPS IS	UP	Implemented	Yes (08-10-2021)	Yes	Yes	-
2	RAPS IS	Rajasthan	Implemented	16-Aug-21	Yes	Yes	List of officials in-charge, format for generation, islanding scheme sld and relays in RAPP IS submitted by RVPN on 04.12.2021.

Under Implementation/ Newly Proposed/Under Discussion

Sl. No.	Islanding Scheme	SLDC	Status	Details of progress	DPR for PSDF funding (Require	Timelines Status - Proposed/Actual									
						Study		Design		Approval		Procurement		Commissioning	
						Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual
1	Lucknow-Unchahar IS	UP	Under Implementation	Scheme has been approved in 59th NRPC meeting held on 31.10.2022. Installation of Ufrs is almost complete. Timeline to be intimated by UPPTCL.		-		-	-	-	-	-	-	-	-
2	Agra IS	UP	Under Study	UP has placed offer to CPRI for dynamic study in July, 2022. Final Study report has been submitted by CPRI to UPPTCL. Timeline to be intimated by UPPTCL		-		-	-	-	-	-	-	-	-
3	Jodhpur-Barmer-Rajwest IS	Rajasthan	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022.Preparation of DPR is under finalization. Timeline to be intimated by RVPN	-	-		-	-	-	-	-	-	-	-
4	Suratgarh IS	Rajasthan	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. Preparation of DPR is under finalization. Timeline to be intimated by RVPN	-	-		-	-	-	-	-	-	-	-
5	Patiala-Nabha Power Rajpura IS	Punjab	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. Implementation timeline: March,2024		-		-	-	-	-	-	-	-	-
6	Pathankot-RSD IS	Punjab	Implemented	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. Scheme has been implemented in April 2023 as informed by Punjab in 206th OCC. Testing Reports submitted by Punjab.		-		-	-	-	-	-	-	-	-
7	Kullu-Manali-Mandi IS	HP	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. Timeline to be intimated by HPSLDC		-		-	-	-	-	-	-	-	-
8	Shimla-Solan IS	HP	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. Timeline to be intimated by HPSLDC		-		-	-	-	-	-	-	-	-
9	Delhi IS	Delhi	Under Implementation	Scheme has been approved in 68th NRPC meeting held on 18.08.2023. Revised scheme is expected to be impletented by Nov'23.		-		-	-	-	-	-	-	-	-

ANNEXURE-IX

Draft of Revised Protection Philosophy/Protocol of Northern Region

S.N.	Protection Setting/Protocol	Mandated Setting
1	**Protection Scheme**	**220kV and above:** Independent Main-I and Main-II protection (of different make OR different type/different algorithm) of non-switched numerical type is to be provided with carrier aided scheme. **132kV and below:** One non-switched distance protection scheme and, directional over current and earth fault relays, should be provided as back up.
2	**Distance Protection Zone-1**	80% of the Protected line; Time Setting: Instantaneous.
3	**Distance Protection Zone-2**	0.35 second *(considering LBB time of 200mSec, CB open time of 60ms, resetting time of 30ms and safety margin of 60ms)* For a long line followed by a short line: 0.6 second
4	**Distance Protection Zone-3**	Zone-3 should overreach the remote terminal of the longest adjacent line by an acceptable margin (typically 20% of highest impedance seen) for all fault conditions. Time Setting: 800-1000 msec
5	**Distance Protection Zone- 4**	The Zone-4 reverse reach must adequately cover expected levels of apparent bus bar fault resistance. Time may be coordinated accordingly.

		Where Bus Bar protection is not available, time setting: 160 msec
6	**Lines with Series and other compensations in the vicinity of Substation**	• Zone-1: 80% of the protected line with 100ms-time delay. POR Communication scheme logic is modified such that relay trips instantaneously in Zone-1 on carrier receive. • Zone-2: 120 % of uncompensated line impedance for single circuit line. For Double circuit line, settings may be decided on basis of dynamic study in view of zero sequence mutual coupling. • Phase locked voltage memory is used to cope with the voltage inversion. Alternatively, an intentional time delay may be applied to overcome directionality problems related to voltage inversion. • over-voltage stage-I setting for series compensated double circuit lines may be kept higher at 113%.
7	**Power Swing Blocking**	Block tripping in all zones, all lines. Out of Step tripping to be applied on all inter regional tie lines. Deblock time delay = 2s
8	**Protection for broken conductor**	Negative Sequence current to Positive Sequence current ratio more than 0.2 (i.e. I2/I1 ≥ 0.2) Only for alarm: Time delay = 3-5 sec
9	**Switch on to fault (SOTF)**	Switch on to fault (SOTF) function to be provided in distance relay to take care of line energization on fault

10	**VT fuse fail detection function**	VT fuse fail detection function shall be correctly set to block the distance function operation on VT fuse failure.
11	**Carrier Protection**	To be applied on all 220kV and above lines with the only exception of radial feeders.
12	**Back up Protection**	On 220kV and above lines with 2 Main Protections: • Back up Earth Fault protections alone to be provided. • No Over current protection to be applied. At 132kV and below lines with only one Main protection: • Back up protection by IDMT O/C and E/F to be applied.
13	**Auto Re-closing with dead time.**	AR shall be enabled for 220 kV and above lines for single pole trip and re-closing. Dead time = 1.0s. Reclaim time = 25.0s Auto-recloser shall be blocked for following: • faults in cables. • Breaker Fail Relay • Line Reactor Protections • O/V Protection • Received Direct Transfer trip signals • Busbar Protection • Zone 2/3 of Distance Protection • Circuit Breaker Problems.
14	**Busbar protection**	To be applied on all 220kV and above sub stations with the only exception of 220kV radial fed bus bars.

15	**Local Breaker Backup (LBB)**	For 220 kV and above level substations as well as generating stations switchyards, LBB shall be provided for each circuit breaker. LBB Current sensor I > 20% In LBB time delay = 200ms
16	**Line Differential**	For cables and composite lines, line differential protection with built in distance back up shall be applied as Main-I protection and distance relay as Main-II protection. For very short line (less than 10 km), line differential protection with distance protection as backup (built-in Main relay or standalone) shall be provided mandatorily as Main-I and Main-II.
17	**Over Voltage Protection**	FOR 765kV LINES/CABLE: Low set stage (Stage-I): 106% - 109% (typically 108%) with a time delay of 5 seconds. High set stage (Stage-II): 140% - 150% with a time delay of 100 milliseconds. 400kV LINES/CABLE: Low set stage (Stage-I): 110% - 112% (typically 110%) with a time delay of 5 seconds. High set stage (Stage-II): 140% - 150% with a time delay of 100 milliseconds. FOR 220 KV LINES: No over-voltage protection shall be used. FOR 220 KV CABLE: Low set stage (Stage-I): 110% - 112% (typically 110%) with a time delay of 5 seconds.

		High set stage (Stage-II): 140% - 150% with a time delay of 100 milliseconds. Drop-off to pick-up ratio of overvoltage relay: better than 97% Grading: Voltage as well as time grading may be done for multi circuit lines/cable.
18	**Resistive reach / blinder setting to prevent load point encroachment**	Following criteria may be considered for deciding load point encroachment: • Maximum load current (Imax) may be considered as 1.5 times the thermal rating of the line or 1.5 times the associated bay equipment current rating (the minimum of the bay equipment individual rating) whichever is lower. (Caution: The rating considered is approximately 15minutes rating of the transmission facility). • Minimum voltage (Vmin) to be considered as 0.85pu (85%).
19	**Direct Inter-trip**	To be sent on operation of following: Overvoltage Protection LBB Protection Busbar Protection Reactor Protection Manual Trip
20	**Permissive Inter-trip**	To be sent on operation of Distance Protection

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CHAPTER 4

PROTECTION CODE

12. GENERAL

(1) This chapter covers the protection protocol, protection settings and protection audit plan of electrical systems.

(2) There shall be a uniform protection protocol for the users of the grid:

(a) for proper co-ordination of protection system in order to protect the equipment/system from abnormal operating conditions, isolate the faulty equipment and avoid unintended operation of protection system;

(b) to have a repository of protection system, settings and events at regional level;

(c) specifying timelines for submission of data;

(d) to ensure healthiness of recording equipment including triggering criteria and time synchronization; and

(e) to provide for periodic audit of protection system.

13. PROTECTION PROTOCOL

(1) All users connected to the integrated grid shall provide and maintain effective protection system having reliability, selectivity, speed and sensitivity to isolate faulty section and protect element(s) as per the CEA Technical Standards for Construction, the CEA Technical Standards for Connectivity, the CEA (Grid Standards) Regulations, 2010, the CEA Technical Standards for Communication and any other applicable CEA Standards specified from time to time.

(2) Back-up protection system shall be provided to protect an element in the event of failure of the primary protection system.

(3) RPC shall develop the protection protocol and revise the same, after review from time to time, in consultation with the stakeholders in the concerned region, and in doing so shall be guided by the principle that minimum electrical protection functions for equipment connected with the grid shall be provided as per the CEA Technical Standards for Construction, the CEA Technical Standards for Connectivity, the CEA Technical Standards for Communication, the CEA (Grid Standards) Regulations, 2010, the CEA (Measures relating to Safety and Electric Supply) Regulations, 2010, and any other CEA standards specified from time to time.

(4) The protection protocol in a particular system may vary depending upon operational experience. Changes in protection protocol, as and when required, shall be carried out after deliberation and approval of the concerned RPC.

(5) Violation of the protection protocol of the region shall be brought to the notice of concerned RPC by the concerned RLDC or SLDC, as the case may be.

14. PROTECTION SETTINGS

(1) RPCs shall undertake review of the protection settings, assess the requirement of revisions in protection settings and revise protection settings in consultation with the stakeholders of the respective region, from time to time and at least once in a year. The necessary studies in this regard shall be carried out by the respective RPCs. The data including base case (peak and off-peak cases) files for carrying out studies shall be provided by RLDC and CTU to the RPCs:

(2) All users connected to the grid shall:

(a) furnish the protection settings implemented for each element to respective RPC in a format as prescribed by the concerned RPC;

(b) obtain approval of the concerned RPC for (i) any revision in settings, and (ii) implementation of new protection system;

(c) intimate to the concerned RPC about the changes implemented in protection system or protection settings within a fortnight of such changes;

(d) ensure correct and appropriate settings of protection as specified by the concerned RPC.

(e) ensure proper coordinated protection settings.

(3) RPCs shall:

(a) maintain a centralized database and update the same on periodic basis in respect of their respective region containing details of relay settings for grid elements connected to 220 kV and above (132 kV and above in NER). RLDCs shall also maintain such database.

(b) carry out detailed system studies, once a year, for protection settings and advise modifications / changes, if any, to the CTU and to all users and STUs of their respective regions. The data required to carry out such studies shall be provided by RLDCs and CTU.

(c) provide the database access to CTU and NLDC and to all users, RLDC, SLDCs, and STUs of the respective regions. The database shall have different access rights for different users.

(4) The changes in the network and protection settings of grid elements connected to 220kV and above (132 kV and above in NER) shall be informed to RPCs by CTU and STUs, as the case may be.

(5) The elements of network below 66kV and radial in nature which do not impact the National Grid may be excluded as finalized by the respective RPC.

15. PROTECTION AUDIT PLAN

(1) All users shall conduct internal audit of their protection systems annually, and any shortcomings identified shall be rectified and informed to their respective RPC. The audit report along with action plan for rectification of deficiencies detected, if any, shall be shared with respective RPC for users connected at 220 kV and above (132 kV and above in NER).

(2) All users shall also conduct third party protection audit of each sub-station at 220 kV and above (132 kV and above in NER) once in five years or earlier as advised by the respective RPC.

(3) After analysis of any event, each RPC shall identify a list of substations / and generating stations where third-party protection audit is required to be carried out and accordingly advise the respective users to complete third party audit within three months.

(4) The third-party protection audit report shall contain information sought in the format enclosed as Annexure–1. The protection audit reports, along with action plan for rectification of deficiencies detected, if any, shall be submitted to the respective RPC and RLDC or SLDC, as the case may be, within a month of submission of third party audit report. The necessary compliance to such protection audit report shall be followed up regularly in the respective RPC.

(5) Annual audit plan for the next financial year shall be submitted by the users to their respective RPC by 31st October. The users shall adhere to the annual audit plan and report compliance of the same to their respective RPC.

(6) Users shall submit the following protection performance indices of previous month to their respective RPC and RLDC on monthly basis for 220 kV and above (132 kV and above in NER) system, which shall be reviewed by the RPC:

(a) The Dependability Index defined as $D = \frac{Nc}{Nc+Nf}$

where,

N_c is the number of correct operations at internal power system faults and

N_f is the number of failures to operate at internal power system faults.

(b) The Security Index defined as $S = \frac{Nc}{Nc+Nu}$

Where,

N_c is the number of correct operations at internal power system faults

N_u is the number of unwanted operations.

(c) The Reliability Index defined as $R = \frac{Nc}{Nc+Ni}$

Where,

N_c is the number of correct operations at internal power system faults

N_i is the number of incorrect operations and is the sum of N_f and N_u

(7) Each user shall also submit the reasons for performance indices less than unity of individual element wise protection system to the respective RPC and action plan for corrective measures. The action plan will be followed up regularly in the respective RPC.

(8) In case any user fails to comply with the protection protocol specified by the RPC or fails to undertake remedial action identified by the RPC within the specified timelines, the concerned RPC may approach the Commission with all relevant details for suitable directions.

16. SYSTEM PROTECTION SCHEME (SPS)

(1) SPS for identified system shall have redundancies in measurement of input signals and communication paths involved up to the last mile to ensure security and dependability.

(2) For the operational SPS, RLDC or NLDC, as the case may be, in consultation with the concerned RPC(s) shall perform regular load flow and dynamic studies and mock testing for reviewing SPS parameters & functions, at least once in a year. RLDC or NLDC shall share the report of such studies and mock testing including any short comings to respective RPC(s). The data for such studies shall be provided by CTU to the concerned RPC, RLDC and NLDC.

(3) The users and SLDCs shall report about the operation of SPS immediately and detailed report shall be submitted within three days of operation to the concerned RPC and RLDC in the format specified by the respective RPCs.

(4) The performance of SPS shall be assessed as per the protection performance indices specified in these Regulations. In case, the SPS fails to operate, the concerned User shall take corrective actions and submit a detailed report on the corrective actions taken to the concerned RPC within a fortnight.

17. RECORDING INSTRUMENTS

(1) All users shall keep the recording instruments (disturbance recorder and event logger) in proper working condition.

(2) The disturbance recorders shall have time synchronization and a standard format for recording analogue and digital signals which shall be included in the guidelines issued by the respective RPCs.

(3) The time synchronization of the disturbance recorders shall be corroborated with the PMU data or SCADA event loggers by the respective RLDC. Disturbance recorders which are non- compliant shall be listed out for discussion at RPC.

Scope of work for
Centralized Database containing details of relay settings for grid elements connected to 220 kV and above

Scope of software shall be broadly as below for all elements in Northern Region connected to 220 kV and above voltage level:

A. **Protection Settings Database Management System.**
B. **Protection Setting Calculation and Study Tool.**
C. **Repository of DR/EL and analysis.**
D. **Application of protection settings by utilities and its approval by NRPC.**
E. **Reporting of performance indices by utilities.**
F. **Repository of protection audit reports.**

A. Protection Settings Database Management System

1. To create facility to store all types of relay settings of all power system elements (connected to 220 kV and above in Northern Region such as lines, cable, ICT, Reactor/Capacitor, generator, GT, STATCOM/SVC, FSC/TCSC, HVDC) in one system irrespective of the manufacturer and relay type and controlled access to users.
2. Complete modeling of elements with relevant system parameters **based on data received from utilities** for transmission lines, generators, transformers, reactors, substation layouts, and associated protective relays in the substations. The model should include CT, PT, Isolator, Breaker and other bay equipment's ratings along with rating of the BUS and the type of conductor used for the BUS. The modeling should be done as per bus-breaker philosophy instead of node-oriented model.
3. Creation of necessary relay templates of all make and model existing in grid. **Template for electro-mechanical relay shall also be required to be created. Users shall have option to provide settings of electro-mechanical relay.**
4. Option to users to upload relay setting files (downloaded from relay) directly.
5. To capture the life cycle of protection settings and template.
6. To create an interface with Protection Setting Calculation and Study Tool.

7. To provide Role based access control.
8. Building the entire Northern region network data for load flow and fault calculation, Protection database and substation SLD preparation.
9. Hardware setup and software package capable of meeting the above objectives. Associated servers for installation and Deployment of application and database software along with standard Operating System –With Main and Back up.
10. Work flow Management.
11. Availability of historical fault data for predicting nature of fault.
12. The tool should be capable of analyzing, storing, and handling all fault records (Disturbance record, Event Logger, COMTRADE files, etc.) for a minimum period of prescribed years; and the updated database to be used for fault analysis should be permanently available.
13. Reports:
    a. Feature to generate reports as per user requirement.
    b. User can generate report in standard format like .xls, .pdf.
14. History log: All user activities such as user operations, data management, template management, configuration management and workflow shall be logged to track the user activities.
15. Import and Export: There shall be an option to import template and data from any third party application in standard formats like .xml and .xls
16. Relay characteristics curve can be drawn from the setting data.
17. Provision to attach documents to relay template and relay data can be made available. Option to accept setting data as per the audit and verify/compare the field setting with protection database setting and generate error report.
18. Provision to store and retrieve audit reports.
    c. Provision to store and retrieve relay tripping incidence report.
    d. Facility to store and retrieve setting guidelines as per various committees.
    e. Automatic Reconciliation Tool should be available which will generate automatic reconciliation requests for relay settings in the database.
    f. Up-to-date application guides and user manuals of all relays is a part of the relay library.
19. A user-friendly interface with features such as
    a) Web based System.

b) Role based access control
c) Flexible customization of user roles, grants, actions from Master control panel
d) User Access Monitor
e) Relay Template Management
f) Create\Edit\Delete relay templates
g) Viewing relay template
h) Locking and Unlocking templates
i) Copy & Edit templates from the existing template
j) Import and Export templates
k) Relay Data management
l) Create\Edit\Delete relay data
m) Viewing relay data
n) Locking and Unlocking relay data
o) Copy & Edit relay data from the existing data
p) Import and Export relay data

20. Built with standard relays library data for different manufacturers, including but not restricted to the following protection features:

i. Transmission Line & cable (including compensated):

Distance, over current, earth fault, over voltage, Line Differential protection.

ii. Power Transformer:

Differential Protection, Under Impedance protection, Over fluxing Protection, Thermal Overload Protection, Low Impedance Restricted Earth Fault Protection, High Impedance Restricted Earth Fault Protection, back-up over current (Directional/ Non-Directional) and earth fault protection (Directional/ Non-Directional).

iii. Shunt Reactors:

Differential protection, Restricted Earth Fault, Back Up Protection (Impedance / overcurrent)

iv. Generator:

Differential Protection, Stator Earth Fault Protection (Both 95% and 100% protection), Inter – Turn Differential Protection, Backup impedance, Voltage Controlled O/C, Negative Sequence, Field Failure,

Reverse Power/Low forward Power, Pole Slipping, Overload, Over voltage, Under Frequency, Dead Machine, Rotor Earth Fault, Over Fluxing.

v. **Generator Transformer/ Unit Auxiliary Transformer:**

Differential Protection, Back up Earth Fault Protection, Back up over current, Restricted Earth Fault.

vi. **HVDC:**

- Converter Protection: Valve Short Circuit Protection, DC Differential Protection, DC Harmonic Protection, DC Under voltage Protection, DC Overvoltage Protection, AC Over voltage Protection, AC Under voltage Protection, AC Voltage Stress Protection of Converter, Group Differential Protection, Bridge Differential Protection, Overcurrent Protection, Sub-Synchronous Resonance Protection, AC Valve Winding Ground Fault Supervision,
- DC Filter Protection: Capacitor Differential Over current Protection, Capacitor Unbalance Supervision, Inverse Overcurrent Time Protection, DC Filter Differential Protection,
- DC Line Protection: Travelling Wave Front Protection, Under voltage Sensing Protection, Under voltage Operation Protection, DC Line Differential Protection, AC-DC Conductor Contact Protection.
- Electrode Line Protection: Electrode Bus Differential Protection, Electrode Current Balance Protection, Electrode Over Current Protection, Electrode line open circuit Over voltage Protection, Station Ground Overcurrent Protection, Open Conductor Electrode Line Protection
- DC Busbar Protection: HV Side DC Bus bar Differential Protection, Neutral Side DC Busbar Differential Protection, DC Differential Backup Protection, Valve Protection
- Converter Transformer Protection: differential protection, high impedance, restricted earth fault protection, ground earth fault overcurrent protection, thermal overload protection, over-fluxing protection, directional definite time / inverse-time overcurrent protection and directional earth fault overcurrent protection.

- AC Filter Sub-bank Protection (Shunt/Capacitor/Resistor): Differential, overcurrent, overload, unbalance supervision, Zero Sequence Overcurrent.

vii. STATCOM:

- Transformer Protection: Differential protection, REF protection, Directional Overcurrent protection, Ground Overcurrent, over flux protection, Transformer mechanical trips.
- STATCOM (MV) Bus protection: Bus Differential protection, Ground over current protection, used with neutral Grounding Transformer, Under/ Over Voltage protection, Over voltage (Open Delta) protection.
- STATCOM Branch Protection: Differential protection and/or O/C protection, Ground over current protection , Valve Overcurrent protection (in Controls), DC overvoltage protection (in Controls)
- MSR/TCR Branch Protection: Differential protection, Ground over current protection, Reactor branch unbalance protection, Thermal Overload protection.
- MSC/TSC Branch Protection: Differential protection, Ground over current protection, Capacitor Overvoltage (Using current signal) protection, Capacitor unbalance protection, over current protection.
- Harmonic Filter Protection: Ground over current protection, Capacitor Overload (Using current signal) protection, over current protection, Neutral Voltage shift.
- Auxiliary Transformer Protection: Over current, open delta voltage protection.

viii. SVC:

- Coupling Transformer (HV & MV) Protection: Differential protection, REF protection, Directional Overcurrent protection, Ground Overcurrent, over flux protection, Transformer mechanical trips.
- SVC Bus Bar protection: Bus Differential protection, Ground over current protection, used with neutral Grounding Transformer, Under/ Over Voltage protection, Over voltage (Open Delta) protection.

- TCR Protection: Differential protection, Ground over current protection, Reactor branch unbalance protection, Thermal Overload protection.
- TSC Protection: Differential protection, Ground over current protection, Capacitor Overvoltage (Using current signal) protection, Capacitor unbalance protection, over current protection.
- Harmonic Filter Protection: Differential protection, Ground over current protection, Capacitor Overvoltage (Using current signal) protection, Capacitor unbalance protection, over current protection, Neutral Voltage shift.
- Auxiliary Transformer Protection: Over current, open delta voltage protection.

ix. **FSC & TCSC:** Capacitor unbalance, Capacitor overload, Line current supervision, MOV overload, MOV short term energy protection, MOV high current protection, MOV high temperature protection, MOV failure protection, Flashover to platform protection, Spark Gap protection, Trigger circuit supervision, Sub-harmonic protection, Pole disagreement protection, Bypass switch failure protection,

x. **BUSBAR & LBB**: Differential protection, Beaker Failure Protection

21. Protection Settings Database Management System shall be suitable for integration with other portals, software of protection. It shall be able to integrate any third party application to share data between protection database management software and calculation engine/tool and vice versa.
22. Training of utilities.
23. AMC.

B. Protection Setting Calculation and Study Tool.

This module shall be capable of giving recommendation of Protection Setting for protections of elements as mentioned under point no. 20 of para A. Calculation Tool should be capable of performing the following:

1. Relay co-ordination for power system elements. Co-ordination check shall be conducted for relays of all make.
2. Primary/back-up relay pairs generation.
3. Fault calculation will be a part of relay co-ordination program.

4. Transparent Fault calculation results.
5. Simulation engines for protection co-ordination, power flow analysis, fault calculation, transient stability studies, electromagnetic transient analysis, and protection relay operation post-mortem analysis. There should be features to study low frequency oscillations, 3rd zone tripping, PSS tuning support and Voltage collapse prediction feature.
6. The protection calculation tool should be capable of interacting with the relay data in the database.
7. Tool for simulating the performance/ behavior of the protection system under all possible normal and abnormal operating conditions of the power system, including effect of changing one or more parameter setting of the relays.
8. Diagnostics Tool for verifying proper coordination among various protective relays.
9. Computation of critical clearing time.
10. Plotting Log-Log grid and graphs.
11. Option to check existing relay settings with respect to field or vice versa.
12. Computation of Out of Step Tripping Protection Settings.
13. Display of sequence operation of relays with respect to tripping time.
14. Switching status for all relays elements from the screen.
15. Association of relays to power system elements.
16. Disturbance analysis can be done on mapping of disturbances files with corresponding relay.
17. It shall have standard power system components and relay symbols.
18. Automatic computation of zone setting for distance protection.
19. Feature for viewing existing and newly computed relay settings.
20. Pre-loaded standard relay curves.
21. Directional and non-directional feature for relays.
22. Overload factor, unbalance factor and discrimination time (user defined/selectable) for each relay.
23. Inbuilt discrimination time calculator for grading of relays.
24. Facility to model the back-up protection settings of generating units / GTs.

C. Repository of DR/EL and analysis.

a) Platform for upload of DR/EL by utilities and access to all.

b) Tracking of non-compliance in uploading.

c) Tool for analysis of DR/EL.

d) Tool shall be integrated with outage portal of NRLDC so that it can capture details of outages of elements automatically from NRLDC portal so that users can upload DR, EL, FIR, tripping report, analysis report.

D. Application of protection settings by utilities and its approval by NRPC.

a) Platform for application of protection setting by utilities.

b) Hierarchical role for scrutiny and approval of setting by NRPC.

c) Intimation of approval of settings by NRPC.

d) Intimation of implementation of settings by utilities.

E. Reporting of performance indices by utilities.

a) Platform for reporting of performance indices by utilities.

b) Feature for scrutiny and intimation of errors to utilities by NRPC.

c) Recording of justification note for non-compliance.

F. Repository of protection audit reports.

a) Platform for reporting of internal and external audit report of all utilities.

b) Tracking non-compliance and next due date.

c) Web-based Checklist for protection audit should be made available for Constituents to self-auditing.

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ANNEXURE-XII

Capacity Building programme on "International Best Practices in Energy Transition" for Constituents of Northern Regional Power Committee (NRPC)

Proposal Submitted by Member Secretary on behalf of Northern Regional Power Committee

Table of Content

1. About Northern Regional Power Committee

- With an objective to facilitate integrated operation of power system in Northern Region, Government of India, under the provision of Section 2, Subsection 55 of the Electricity Act 2003 vide resolution F.No. 23/21/2021-R&R dated 3rd December 2021 (repealed resolution dated. 25.05.2005) published in the Gazette of India has established the Northern Regional Power Committee comprising of states of Delhi, Haryana, Himachal Pradesh, Punjab, Rajasthan, Uttaranchal and Uttar Pradesh and the Union Territories of Chandigarh, Jammu & Kashmir and Ladakh.
- Manpower is posted by Central Electricity Authority (CEA).
- RPCs have been envisioned as self-financed. The expenditure of RPCs is met from contribution collected from constituent members of region.
- Member Secretary is HoD of NRPC Secretariat and is convenor of RPC.

2. Members of NRPC:

a.) Member (Grid Operation), Central Electricity Authority (CEA).

b.) One representative each of Central Generating Companies, Central Transmission Utility (CTU), Central Government owned Transmission Company, National Load Despatch Centre (NLDC) and the Northern Regional Load Despatch Centre (NRLDC).

c.) From each of the States in the region, the State Generating Company, State Transmission Utility (STU), State Load Despatch Centre (SLDC), one of the State owned distribution companies as nominated by the State Government and one distribution company by alphabetical rotation out of the private distribution companies functioning in the region.

d.) 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.

e.) A representative each of every generating company (other than central generating companies or State Government owned generating companies) having more than 1000 MW installed capacity in the region.

f.) A representative of the generating companies having power plants in the region (not covered in (b) to (e) above) by alphabetical rotation.

g.) A representative of one private transmission licensee, nominated by Central Government, operating the Inter State Transmission System, by alphabetical rotation out of such Transmission Licensee operating in the region.

h.) One member representing the electricity traders in the region by alphabetical rotation, which have trading volume of more than 500 million units during the previous financial year.

i.) A representative each of every Nodal Agency appointed by the Government of India for coordinating cross-border power transactions with the countries having electrical inter-connection with the region

j.) Member Secretary, NRPC – Convenor

3. SUB-COMMITTEES OF NRPC

- Technical Co-Ordination Sub-Committee (TCC)
- Operation Co-Ordination Sub-Committee (OCC)
- Protection Sub-Committee (PSC)

- Commercial Sub Committee (CCM)
- Telemetry, SCADA and Telemetry Sub-Committee (TeST)
- Other Sub Committees as decided as per requirement

4. FUNCTION OF NRPC

Function of NRPC is to facilitate the stability and smooth operation of the integrated grid and economy & efficiency in the operation of power system in the region. NRPC is carrying out following functions: -

1. To undertake Regional Level operation analysis for improving grid performance.
2. To facilitate inter-state/inter-regional transfer of power.
3. To facilitate all functions of planning relating to inter-state/ intra-state transmission system with CTU/STU.
4. To provide views on the inter-state transmission system planned by CTU within 45 days of receipt of the proposal by NRPC. The views of NRPC will be considered by National Committee on Transmission for sending their recommendation to Ministry of Power for approval of new inter-state transmission system.
5. To coordinate planning & maintenance of generating machines of various generating companies of the region including those of inter-state generating companies supplying electricity to the Region on an annual basis and also to undertake review of maintenance programme on a monthly basis.
6. To undertake planning of outage of transmission system on a monthly basis.
7. To undertake operational planning studies including protection studies for stable operation of the grid.
8. To undertake planning for maintaining proper voltages through review of reactive compensation requirement through system study committee and monitoring of installed capacitors.
9. To evolve consensus on all issues relating to economy and efficiency in the operation of power system in the region.

10. Issuance of various Energy accounts mandated by various CERC regulations
    i. Monthly Energy Accounts:
        a. Regional Energy Account (REA) including Ramping Capability of CGSs, Thermal Generators, Heat Rate Compensation for part load operation and Secondary Oil Compensation.
        b. Regional Transmission Account (RTA)
        c. Regional Transmission Deviation Account (RTDA)
        d. SCED Account

    ii. Weekly Statement of Deviation Settlement Charges, Reactive Energy Charges and Ancillary Services Charges.
    iii. Quarterly statement of Interest Charges on Late Payment of above weekly accounts.

11. Allocation of Power from Central Generating Station of NR.

SUMMARY OF PROPOSAL

For Official Use - To be filled by the Nodal Agency
Project Proposal Number : _____ Date of Receipt : _____

To be filled by the Requesting Organization / Project Entity	
1. Name of the requesting Organization / Utility :	Northern Regional Power Committee (NRPC)
2. Short Summary of Project / Scheme / Activity	
a. Name and location of the Project / Scheme / Activity :	Capacity Building programme on "International Best Practices in Energy Transition" for Constituents of Northern Regional Power Committee (NRPC)
b. Objective of the Project / Scheme / Activity :	1. To understand the factors that contributed to the success of the power market liberalization in the Nordic region. 2. To learn from international best practices in Hydro Power Development, Power Markets, energy transition – Hydrogen, decarbonization and offshore wind. 3. Overview of Power Markets/Nord Pool at a Glance/ Intra day Trading demonstration. 4. To understand Norwegian Hydrogen Economy and Low Carbon Society. 5. Capacity building programme to handle trading of short term surplus power on the Power exchange. 6. Interaction with EV Association, Norway on The Norwegian EV Experience. 7. Price discovery in Nord pool. 8. Determination of transmission tariff and sharing of transmission charges and losses. 9. Financial settlement of power trades, imbalances.

	10. Organization of forwards, futures and options market in power, their operation procedures, hedging etc. 11. Retail supply market. 12. Market clearing and settlement. 13. Market surveillance. 14. Imbalance settlement procedure. 15. Roles and responsibilities of various stakeholders. 16. Reporting and information sharing. 17. Optimum power reserve estimation. 18. Real time system operation and management. 19. Efficient maintenance practices of transmission grids. 20. Better Understanding of the regulatory and policy framework of the power market in European countries. 21. EV integration in the grid along with hydrogen powered vehicle. 22. Learning the best industry practices in Nordic power market. 23. Enhancement of productivity and performance.
c. Authorized Person For this Project / Scheme / Activity	Name : Vijay Kumar Singh, Member Secretary, NRPC E-mail ID : ms-nrpc@nic.in Land line No : 011-26511211 Mobile No. : 9810177609 Fax No : 011-26868528
d. Nature of the Project / Scheme / Activity: Inter – State / Intra – State (Please Specify)	Training and Capacity Building of constituents of Northern Region
e. Identified Beneficiaries	Personnel from the Central Transmission Utility (CTU), State Transmission Utilities (STUs), Distribution Companies (DISCOMs), State Load Despatch Centres (SLDCs), Generators (including ISGS), ISTS Transmission Licensees in Northern Region), Grid Controller of India Limited and Northern Regional Power

	Committee (NRPC) Secretariat. Participation from Central Electricity Authority (CEA), Ministry of Power, GoI has also been envisaged.
f. Merits of the scheme	Nord Pool runs the largest market for electrical energy and electric vehicle in Europe, measured in volume traded (TWh) and in market share. The capacity building programme will contribute towards capacity building and assist the development of a commercially viable and vibrant power market in India. It will also give a unique opportunity to the Indian participants to learn from the best industry practices and most enriching experiences of Nordic countries in running one of the most successful power exchanges in the world. The programme will enable to understand: 1. Business Environment – Power Sector and Strategy framework 2. Energy Transition 3. Power Market Development 4. Energy transformation and decarbonisation Further detailed in **Annexure-A**.
g. Limitations, if any	No limitations
h. Time frame for Implementation	FY 2024-25 3 batches (each of 20 officials)
i. Estimated Cost of Project / Scheme / Activity	Rs. 7,61,73,720/--
j. Category under which the project is classified (Please refer Para 5.1 of the Guidelines/Procedure)	Para 5.1(e)

Signature: _____

Date: _____

Name: _____

(Authorized Representative)

DETAILED PROPOSAL (DP)

1. Details of the Requesting Organization / Project Entity

1.1 Details of Organization / Entity

Name of Organization / Entity	Northern Regional Power Committee
Acronym or Abbreviation (if applicable)	NRPC

1.2 Details of Head of the Organization

Name (Mr / Ms / Mrs)	Mr. Vijay Kumar Singh
Designation	Member Secretary
E-mail Address	ms-nrpc@nic.in
Landline No.	011-26511211
Fax No.	011-26868528
Address	18-A, Shaheed Jeet Singh Marg, Katwaria Sarai,
City	New Delhi
Postal Code	110016

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. Vijay Kumar Singh
Designation	Member Secretary
E-mail Address	ms-nrpc@nic.in
Landline No.	011-26511211
Mobile No.	9810177609
Fax No.	011-26868528
Address	18-A, Shaheed Jeet Singh Marg, Katwaria Sarai,
City	New Delhi
Postal Code	110016

2. Justification of the Proposal

2.1 Analysis of the Objective

- The Electricity Act 2003 opened the power sector by laying down provisions for promoting competition in the power market. By identifying electricity trade

as a distinct activity, Electricity Act 2003, along with pursuant regulations from the CERC, paved the way for a paradigm shift in the power sector.

- The Act envisages development of a competitive power market for promoting efficiency, economy and for mobilisation of new investments in the power sector. These transformations in power sector were supported by creation of institutions to enhance efficiency in markets via bilateral trading and later in 2008 through trading on power exchanges.
- In addition, the fundamentals of power trading – such as licensing electricity traders and ensuring open, non-discriminatory access to transmission services – have been put into place to allow for expansion of opportunities in all markets. As a result, there has been a paradigm shift in generation, transmission and distribution activities, which have facilitated power trading.
- Nord Pool Spot runs the largest market for electrical energy in Europe, measured in volume traded (TWh) and in market share.
- It operates in Norway, Denmark, Sweden, Finland, Estonia, Latvia, Lithuania, Germany and the UK. More than 80% of the total consumption of electrical energy in the Nordic market is traded through Nord Pool Spot.
- The capacity building programme will help personnel involved in Grid operation and transmission planning & implementation in understanding the policy and regulatory framework of Nordic power trading market.
- It will be immensely helpful as the participants will get to know about the successful working of Europe's leading power exchange, the integrated power markets and the financial derivative market.
- The program will include exposure to all the key issues related to a competitive power market, price determination, congestion management, imbalance management, reference price, risk management and market surveillance.
- European countries have high share of renewable energy in their power system. The effect of this RE power in power trading can be studied thoroughly by this capacity building program. As India is planning to add 175 GW of renewable energy by 2022 under its commitment towards global

climate change, the program will surely help in this direction. Also refer **Annexure-A**

2.2 Identified Beneficiaries of the Project

Personnel from the Central Transmission Utility (CTU), State Transmission Utilities (STUs), Distribution Companies (DISCOMs), State Load Despatch Centres (SLDCs), Generators (including ISGS), ISTS Licensees in Northern Region, Grid Controller of India Limited and Northern Regional Power Committee (NRPC) Secretariat will benefit from the scheme. Participation from CEA/MoP has also been envisaged.

2.3 Identified Source of Funding

The programme is to be funded fully from PSDF. As mentioned in the Para 6.3(III) of the guidelines/procedure for disbursement of PSDF approved by Government of India that up to 100 % grant to be given in case the project (Capacity Building) mentioned under Para 5.1(e) of the same.

2.4 Details of Activities for Project / Scheme / Activity

- The programme will be implemented in three batches.
- Eight days (6 days training and 2 days travel) Training Program is proposed to be conducted for each batch.
- The programme will be held between 01.04.2024 and 31.03.2025.
- The training programmes will be held in Norway and Finland.
- 3 batches each of 20 participants will participate for each 8-day program from various utilities of Northern Region including CTU, SLDCs, STUs, Generators, ISTS Licensees, DISCOM, Grid-India, NRPC Sectt, CEA and Ministry of Power.
- Training Modules to cover various aspects of Power market operations, impact of renewables through imbalance handling in energy trading as well as cross border trading with neighbouring countries. The programme is

designed to meet the needs of top officials of electricity utilities of India to understand:

a. Business Environment – Power Sector and Strategy framework
b. Energy Transition
c. Power Market Development
d. Energy transformation and decarbonisation

- Training Modules for such programs have been designed after consultation with POWERGRID.
- Field visits will be arranged during the programs to impart practical training to the participants.

2.5 Executing Agency

POWERGRID will be the executing agency through Administrative Staff College of India (ASCI).

2.6 Time line for Implementation of Project / Scheme / Activity

The programme is to be completed in FY 2024-25.

Timeline of the Project / Scheme / Activity	
Duration of Project (in Months)	Between 01.04.2024 and 31.03.2025 (12 months). 3 batches each of 20 participants.
Likely Start Date	01.04.2024
Likely Completion Date	31.03.2025

Date: _____

Signature: _____

Name: _____

(Authorized Representative)

Sl. No	Description	Dec'23	April'24	May'24	June'24	July'24
1	Programme Approval					
2	1st Program (proposed)					
3	2nd Program (proposed)					
4	3rd Program (proposed)					
6	Programme Report					

Date: _____

Signature: _____

Name: _____

(Authorized Representative)

Summary of Detailed Project Report (DPR)

Objective: Capacity building of the personnel involved in Grid Operation, transmission planning & implementation and overall policy & decision making towards creation of efficient power markets and participation in power trading.

Executing Agency: The programme is to be executed by POWERGRID and all arrangements like designing modules in consultation with ASCI, and power system experts of NR utilities and coordination with Nordic countries, signing of contract with Norwegian agencies, selecting travel partner, visa etc. shall be undertaken by Powergrid Corporation of India Limited.

No of Programs and participants: Total 3 nos. of programs are proposed to be conducted over one year. Each batch having 20 nos. of participants from NRPC constituents. Personnel from the Central Transmission Utility (CTU), State Transmission Utilities (STUs), Distribution Companies (DISCOMs), State Load Despatch Centres (SLDCs), Generators (including ISGS), ISTS Licensees in Northern Region, Grid Controller of India Limited and Northern Regional Power Committee (NRPC) Secretariat will benefit from the scheme. Participation from CEA/MoP has also been envisaged.

Venue of Programme: The capacity building programme will be held at Norway and Finland starting from POWERGRID, Manesar.

Duration of Programme:

Participants per batch	Duration of each Program (in days) each year	Total years for which program will run
20	8 days (6 + 2 days for travel)	1 year

Course Content/ Training Modules: The tentative topics to be covered are placed below.

1. To understand the factors that contributed to the success of the power market liberalization in the Nordic region.
2. Capacity building programme to handle trading of short term surplus power on the Power exchange
3. Price discovery in Nord pool.
4. Determination of transmission tariff and sharing of transmission charges and losses.
5. Financial settlement of power trades, imbalances.
6. Organization of forwards, futures and options market in power, their operation procedures, hedging etc.
7. Retail supply market
8. Market clearing and settlement
9. Market surveillance
10. Imbalance settlement procedure
11. Roles and responsibilities of various stakeholders
12. Reporting and information sharing
13. Optimum power reserve estimation
14. Real time system operation and management
15. Efficient maintenance practices of transmission grids
16. Better Understanding of the regulatory and policy framework of the power market in European countries.
17. EV integration in the grid along with hydrogen powered vehicle.
18. Learning the best industry practices in Nordic power market.
19. Enhancement of productivity and performance.

Total Cost of Training (refer Format A4):

No of Programs of 8 days duration	Total (In Rs.)
3	7,61,73,720/- (including GST)

- Cost is inclusive of all taxes. However, tax rates are subject to revision by Government.
- Final payment will be made on the basis of actuals

Terms of payment:

(1) 80% of payment for first batch on signing of contract

(2) 20% payment for first batch ten days before departure of group from India

(3) For subsequent batches, 80% payment on finalization of dates and balance 20% ten days before departure of group from India

Summary of DPR given - Yes. **Copy of the Proposal attached. – Yes**

Date: _____

Signature: _____

Name: _____

(Authorized Representative)

Financial Implication of the Scheme

*(**Guidelines:** The financial implications of the proposal may be worked out as accurately as possible and should be detailed in this section. Further, the manner in which the expenditure is proposed to be borne may also be clearly indicated. Please provide the project cost estimate for its scheduled duration along with a break-up of year-wise, component-wise expenses segregated into non-recurring and recurring expenses.)*

1. Summary

S.No.	Item	Amount in Rs.
1.	Total Cost Estimate	7,61,73,720/-
2.	Funding Proposed from PSDF	7,61,73,720/-
3.	Contribution from Internal Sources	Nil
4.	External Borrowings	Nil

2. Details (Proposal POWERGRID is at **Annexure-C**)

2.1 Cost Estimate

1.Estimated cost for three batches (consisting 20 persons each):Rs. 7,61,73,720/-

(Includes tuition fees for domestic & Overseas, training kit including trolley bags & Blazer, Boarding & Lodging and other land arrangements including airport transfers at overseas, Visa charges, Tickets (if any) to official engagements (entry tickets to sight-seeing, conferences etc. and membership to ASCI alumni network. Air fare economy class (Delhi to Oslo, Helsinki to Delhi), Medical cum travel insurance, Airport transfer in India, Boarding & Lodging at PAL, Conferencing charges at PAL, POWERGRID Manpower engagement cost, and Overheads, Miscellaneous and Contingency etc. Incidental charge ($50 per person for 6days) @1USD~INR83.24)

2. Estimated cost per batch (consisting 20 persons each): Rs. 2,53,91,240/-

3. Funding

3.1 Funding Proposed from PSDF as grant

The programme is to be funded completely from PSDF. As mentioned in the Para 6.3(III) of the guidelines/procedure for disbursement of PSDF approved by Government of India

that up to 100 % grant to be given in case the project (Capacity Building) mentioned under Para 5.1(e) of the same.

3.2 Contribution from Internal Sources: Nil

3.3 External Borrowings: Nil

Date: _____

Signature: _____

Name: _____

(Authorized Representative)

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

The applicant utility shall submit project appraisal by CTU / STU / RPC in the given format and a copy of the Appraisal Report should be attached at Annexure.

Item	Details to be filled by Applicant Utility	
Appraisal By:	**CTU** ☐ **ST** ☐ √	
Date of Submission to CTU / STU / RPC for approval	------	
Name of the Scheme	Capacity Building programme on "International Best Practices in Energy Transition" for Constituents of Northern Regional Power Committee (NRPC).	
Details of the Appraisal Report by CTU/STU / RPC (Attached at Annexure)	Attached at Annexure-B	
	Summary of Proposal Appraised	
	Technical Observations	
	Financial Observations	
	Compliance of Grid Standards / Codes by the Applicant	
	Limitations / Shortcomings pointed out by CTU/STU/RPC if any	
	Recommendations of CTU/STU/RPC	

Date: _____

Signature: _____

Name: _____

(Authorized Representative)

I, Shri VIJAY KUMAR SINGH son of ---------- and presently working as Member Secretary, Northern Regional Power Committee hereby undertake to comply with the following terms and conditions with regard to funding of the "Capacity Building programme on "International Best Practices in Energy Transition" for Constituents of Northern Regional Power Committee (NRPC)" 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 grant shall be refunded back to PSDF in case of non-utilisation of the grant within one year of release of instalment.**

Date: .11.2023

Signature: _____

Name: Vijay Kumar Singh
(Authorized Representative)

Supplementary Information

1. In 45th NRPC meeting held on 08.06.2019, NRPC proposed a capacity building programme for studying the power exchange of Nordic countries, role of TSO (Transmission System Operator), Renewable Energy in power trading, EV integration with grid etc. to be carried out for Northern Region Constituents.
2. POWERGRID vide letter dated 09.10.2019 was requested to furnish the complete proposal including estimated cost details for preparing the DPR for PSDF funding.
3. In 44th TCC & 47th NRPC Meetings (held on 10th and 11th December, 2019), POWERGRID presented the detailed report and commercial implication of the program.
4. Due to COVID pandemic, the program could not be completed.
5. Therefore, a revised estimate has been taken from POWERGRID and proposal of Capacity Building programme on “International Best Practices in Energy Transition” for Constituents of Northern Regional Power Committee (NRPC) has been approved in …… .
6. The justification for selection of Nord Pool is given in DPR. Further, a detailed analysis is given in **Annexure-A.**
7. POWERGRID has been selected as implementaing agency by NRPC Forum.
8. Total 3 nos. of programs are proposed to be conducted over one year. Each batch having 20 nos. of participants from NRPC constituents. Personnel from the Central Transmission Utility (CTU), State Transmission Utilities (STUs), Distribution Companies (DISCOMs), State Load Despatch Centres (SLDCs), Generators (including ISGS), ISTS Licensees in Northern Region, Grid Controller of India Limited and Northern Regional Power Committee (NRPC) Secretariat will benefit from the scheme. Participation from CEA/MoP has also been envisaged.
9. Criteria for Selection: The officers nominated must have at least 3 years of service left.
10. A copy of the minutes approved by Chairperson is enclosed for reference (refer **Annexure-B)**

Annexure-A

Justification for NORD Pool

Introduction: Power is a vital element that supports our modern lives at home and at work. As power production and transmission capacity has been extended over the years, transmission of power between countries has become more common. As a result, a dynamic market has evolved where power can be bought or sold across areas and countries more easily.

The power price is determined by the balance between supply and demand. Factors such as the weather or power plants not producing to their full capacity can impact power prices.

While the price of power is determined according to supply and demand, it also becomes clear where there are issues in the grid when the price of power goes up. This makes it easier to identify where production or capacity is lacking, as there is too high demand compared to production supply.

The Indian Context: The Indian power market consists of OTC Bilateral trades and non-mandatory power exchange structure. With increasing participation from the private players the trading on the exchange is bound to increase in the future. Further, to meet the requirements of customers, power exchanges have to bring out newer products such as derivatives. Also, more and more players are becoming eager to purchase power in short term on the exchanges. The integration of renewables will also give a push towards innovative products for handling of this power. The market, regulatory environment and the operator have to jointly discuss and prepare the ground for a vibrant power market in India. A competitive power market will reduce prices and increase welfare.

Although, India has deregulated generation, the power market does not have sufficient depth as most of the power sales are dictated according to long term contracts. Day by day the commercial settlements and system operation are getting complex as decisions of the operator in a regulated environment affect the financial obligations of the players. The road ahead lies in reducing regulatory rule making and letting the market take over some of the pricing signals.

It is seen from recent experience that beneficiaries of many of the generators who have long term contracts under two-part tariff are reluctant to purchase power under the long term PPA and try to economize their portfolio through buying and selling power on the OTC markets and also on the exchange. Therefore, constituents feel a need to participate in power markets.

The national tariff policy 2005 stated thus:

5.2 The *real benefits of competition would be available only with the emergence of appropriate market conditions*.

9.0 The Act provides that the Appropriate Commission ..... necessary. Though *there is a need to promote trading in electricity* for making the markets competitive, the Appropriate Commission should monitor the trading transactions continuously and ensure that the electricity traders do not indulge in profiteering in situation .....

However, the directions of the tariff policy could not have been implemented fully. The CERC report on Short Term Power Market in India: 2015-16 has the following to offer:

1. Of the total electricity procured in India in 2015-16, the short-term power market comprised 10%. The balance 90% of generation was procured mainly by distribution companies through long-term contracts and short-term intra-state transactions.

   Therefore, the participation in short term power market is still in nascent stages

2. In terms of volume, the size of the short-term market in India was 115.23BU (Billion Units) in the year 2015-16. As compared to the volume of electricity transacted through short-term market in the year 2014-15 (98.99BU), this was about 16% higher.

   There is a desire for increased participation in the short term power markets.

7. During 2015-16, about 93% of the volume of electricity transacted through traders was at a price less than Rs. 6/kWh. About 61% of the volume was transacted at a price less than Rs. 4/kWh.

8. During 2015-16, IEX transacted 99% of the volume of electricity at a price less than Rs. 6/kWh while about 92% of the volume was transacted at a price less than Rs 4/kWh. During the year, PXIL transacted 99% of the volume of electricity at a price less than Rs. 6/kWh while about 76% of the volume was transacted at less than Rs. 4/kWh.

   Purchase of power in short term power markets is cost effective.

11. Competition among the trading licensees was shown for the period from 2004-05 to 2015-16. During the period, number of traders who were undertaking trading increased from 4 to 27 and concentration of market power (HHI based on volume of trade undertaken by the licensees) declined from high concentration (HHI of 0.5512) to non-concentration (HHI of 0.1432).

    The Indian Power market is competitive with non-concentration of market power.

Government of India have also proceeded with the SAARC Framework Agreement for Energy Cooperation (Electricity) which will facilitate trading of electricity among member nations of SAARC. This will create challenges as well as opportunities for electricity trade as different regulatory regimes will come into picture. *The development of a cross border market for electricity is also not far.*

Recently, as per Tariff Policy, 2016, Central generating stations unable to get their power scheduled are bringing their power to market for sale.

Although all the ingredients of a successful power market are present participants have to build confidence to come out of their comfort zone of long term PPA and buy and sell power on the market. In turn the market has to give that confidence to the participants.

It is natural that a commodity likes electricity, non availability of which has huge negative welfare implications would make the buyers shaky in case the market fails to operate optimally. Therefore, a visit to Nord Pool which operates one of the oldest and one of the biggest power markets in Europe would help in building confidence.

International Context: The last decade has seen the deregulation of several power markets around the world, and especially the US and EU electricity supply industries are undergoing a process of fundamental change. A central feature of most liberalised markets is a Power Exchange, PX, with an optional or mandatory spot market, and, as a complement, a market for financial instruments (futures, forwards and options)

The spot market accommodates suppliers and consumers in an auction determining market clearing prices and quantities, while the financial market performs price hedging. In Europe today, there are PXs with spot markets in England and Wales, The Netherlands, Scandinavia (Denmark, Finland, Norway and Sweden), Spain and Switzerland. The Scandinavian deregulation led to the establishment in 1993 of the joint Nordic Electricity Exchange, otherwise known as Nord Pool.

Scandinavia, where countries have traded power for decades, has the world's most developed international market for electric power. Recently the trading system has changed dramatically, moving from the old model of cooperation among the leading vertically integrated utilities in each country, under the Nordel agreement, to competitive market rules. The Nordic countries deregulated their power markets in the early 1990s and brought their individual markets together into a common Nordic market. Estonia, Latvia and Lithuania deregulated their power markets, and joined the Nord Pool market in 2010-2013. To attract customers, a non-mandatory PX needs a spot market that creates confidence among its actual and potential participants. Effective competition in the spot market is important from several perspectives, directly for cost efficiency, transaction costs and the potentially large distributional effects of market power, indirectly for its impact on related financial markets.

The Nord Pool has over the years established itself as a very efficient and transparent wholesale power market having the confidence of the market participants.

Nord Pool has played an important role in setting up of various other National/International Power Exchanges such as the Leipzig power exchange (LPX) in Germany, developing the power market in South African Power Pool (involving 12 countries), etc. Nord Pool is one of the regional power pool having mature regional electricity market and facilitate more than 80% of the total Nordic electricity consumption through Nord Pool spot market.

In addition to the spot market, Nord Pool offers futures contracts, which are traded as weekly contracts four to seven weeks ahead, as blocks of four weeks up to fifty-two weeks ahead, or as seasons up to three years ahead. The futures are purely financial contracts used for price hedging. About fifteen brokering companies offer services to the electricity market. The bulk of the volume traded is in standardized financial contracts, often referred to as over-the-counter (OTC) contracts. The liquidity of the OTC market is quite high, particularly for the nearest season. Contracts can be resold, or a position netted out by making an opposite contract.
Just as for bilateral trade, the PX-based financial market is heavily dependent on a well functioning spot market to provide a relevant reference price. Any unnecessary uncertainty in the spot price, due to possible strategic pricing, lends an extra uncertainty to the financial contract prices. This leads to a diminished trade on the financial market which in turn decreases the possibility for all participants in the electricity market to hedge their contracts, thus reducing liquidity in the whole market. Research also indicates that the presence of a well functioning financial (futures) market might actually reduce market power on the spot market.
Nord Pool has well established and transparent futures products in electricity. By providing tools for risk management, the financial market contributes to the efficient functioning of both wholesale and end-user markets. The listed derivatives at Nord Pool are traded with a reference price based on the system price in the Nordic day-ahead spot market. The financial market is as such a purely financial market where all contracts are traded and settled irrespective of transmission capacity.

The Nordic financial electricity market Report 8/2010 of NordREG (NordREG is a cooperation of the Nordic energy regulators) states:

NordREG has found that the general view is that the Nordic financial electricity market functions well and has a good liquidity in the basic products. There is also a general consensus that there is trust in the market. The Nordic power market is often ranked highest in Europe regarding transparency and efficiency. The Nordic power market also has the highest turnover in exchange trading in relation to consumption in the area.

A Chronology of the development of Nord Pool over the years.

2016: Nord Pool Spot is rebranded to Nord Pool.

Nord Pool is appointed NEMO in Belgium, Germany, Luxembourg and Poland. Nord Pool is together with IBEX opening the Bulgarian power market and together with Cropex opening the Croatioan power market.

2015: Nord Pool Spot introduce a new Day Ahead Web and Intraday Web. Nord Pool Spot is appointed Nominated Electricity Market Operator (NEMO) across 10 European power markets; Austria, Denmark, Estonia, Finland, France, GB, Latvia, Lithuania, the Netherlands and Sweden.

2014: Nord Pool Spot takes sole ownership of the UK market. North-Western European power markets are coupled through the Price Coupling of Regions (PCR) project. Nord Pool Consulting is launched.

2013: Elspot bidding area opened in Latvia. Intraday market, Elbas, introduced in both Latvia and Lithuania.

2012: Nord Pool Spot opens bidding area in Lithuania.

2011: Elbas licensed to APX and Belpex as the intraday market in the Netherlands and Belgium respectively.

2010: Nord Pool Spot and NASDAQ OMX Commodities launch the UK market N2EX. Nord Pool Spot opens a bidding area in Estonia and delivers the technical solution for a new Lithuanian market place.

2009: Norway joins the Elbas intraday market. The European Market Coupling Company relaunches the Danish-German market coupling on 9 November. Nord Pool Spot implements a negative price floor in Elspot.

2008: Highest turnover and market share recorded in the company's history until then. Elspot market share 70%.

2007: Western Denmark joins the Elbas market. SESAM, the new Elspot trading system is set into production.

2006: Nord Pool Spot launches Elbas in Germany.

2005: Nord Pool Spot opens the Kontek bidding area in Germany, which geographically gives access to the Vattenfall Europe Transmission control area.

2004: Eastern Denmark joins the Elbas market.

2002: Nord Pool's spot market activities are organized in a separate company, Nord Pool Spot AS.

2000: The Nordic market becomes fully integrated as Denmark joins the exchange.

1999: Elbas is launched as a separate market for balance adjustment in Finland and Sweden. Elspot area trade begins 1 July.

1998: Finland joins Nord Pool ASA. Nord Pool opens an office in Odense, Denmark.

1996
A joint Norwegian-Swedish power exchange is established. The exchange is renamed Nord Pool ASA.

1995: The framework for an integrated Nordic power market contracts was made to the Norwegian Parliament. Together with Nord Pool's license for cross-border trading (given by the Norwegian Water Resources and Energy Administration), this report made the foundation for spot trading at Nord Pool.

1993: Statnett Marked AS is established as an independent company. Total volume in the first operating year is 18.4 TWh, at a value of NOK 1.55 billion.

1991: Norwegian parliament's decision to deregulate the market for trading of electrical energy goes into effect.

Annexure-B

Will be attached after approval.

Annexure-C

Details of Cost Estimate Calculations

S/N	Scope of Work		Amt (INR)
1	Activities under the scope of ASCI	Includes tuition fees for domestic & Overseas, training kit including trolley bags & Blazer, Boarding & Lodging and other land arrangements including airport transfers at overseas, Visa charges, Tickets (if any) to official engagements (entry tickets to sight-seeing, conferences etc. and membership to ASCI alumni network.	18891800
	Activities under the scope of POWERGRID	Air fare economy class (Delhi to Oslo, Helsinki to Delhi), Medical cum travel insurance, Airport transfer in India, Boarding & Lodging at PAL, Conferencing charges at PAL, POWERGRID Manpower engagement cost, and Overheads, Miscellaneous and Contingency etc.	6000000
		**Incidental charge ($50 per person for 6days)@1USD~INR83.24	499440
	Total including GST for one batch	**25391240**	
	Total including GST for three batches	**76173720**	

****

N-1 non-compliance issues at 400/220kV ICT level

Name of Substation	MVA Capacity	Total Loading (MW) (variations throughout day)	SPS Status*	ICT Capacity Augmentation status*
Chittorgarh	2*315 =630	450-550	Implemented	Augmentation expected by Nov'23
Hindaun	2*315 =630	250-450	Not implemented	New 500MVA ICT approved at each station.
Ajmer	2*315 =630	400-600	Implemented	
Merta	2*315 =630	300-550	Implemented	
Bikaner	2*315 =630	200-550	Approved but implementation pending	
Jodhpur	2*315 =630	180-280#	Implemented	
Bhilwara	1*500+1*315 =815	350-550	Not implemented	Status not available
Babai	2*315 =630	250-500	Not implemented	
Bhinmal (PG)	2*315 =630	270-500	Not implemented	

*** as per status available with NRLDC**

Huge MVAr drawl & Poor power factor

ICTs MW drawl, MVAr drawl, Power factor and S/s voltage for Solar hours (10:00-14:00hrs) for Rajasthan Control area (Dec 2022)					
400/220 Sub-Station_ICTs	ICTs Capacity (MVA)	MW Drawl	MVAr Drawl	Power factor	Voltage(kV)
Bikaner(RVPN)	2*315	300-370	200-500	0.71-0.75	370-385
Jodhpur	315	170-290	$	$	380-410
Kankani	(315+500)	390-570	180-270	0.91-0.95	370-380
Merta	2*315	450-500	260-300	0.85-0.89	380-390
Bhinmal(Powergrid)	2*315	400-430	160-250	0.88-0.92	375-385

Annexure-XIV

सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड
(पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड के स्वामित्व में)
(भारत सरकार का उद्यम)
CENTRAL TRANSMISSION UTILITY OF INDIA LTD.
(A wholly owned subsidiary of Power Grid Corporation of India Limited)
(A Government of India Enterprise)

Ref: C/CTU/N/ REZ Ph-IV (Part-3) **Date:** 10.11.23

As per distribution list

Sub: Minutes of Joint study meeting (s) held on 18.10.23 and 23.10.23 to finalize the Transmission system for evacuation of power from Bikaner Complex as part of Rajasthan REZ Ph-IV (Part-3)

Dear Sir,

Please find enclosed the minutes of Joint study meeting (s) held on 18.10.23 and 23.10.23 to finalize the Transmission system for evacuation of power from Bikaner Complex as part of Rajasthan REZ Ph-IV (Part-3) through virtual mode.

Thanking you,

Yours Faithfully,

10/11/23

(Kashish Bhambhani)
GM (CTU)

Encl : Minutes of Meeting

Distribution List:

Chief Engineer (PSP&A – I) Central Electricity Authority Sewa Bhawan, R.K.Puram, New Delhi-110 066	**Member Secretary** Northern Regional Power Committee 18A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi – 110 016
Director (Power System) Solar Energy Corporation of India Ltd. D-3, 1st Floor, A wing, Religare Building, District Centre, Saket, New Delhi-110017	**Director** Ministry of New and Renewable Energy, Block 14, CGO Complex, Lodhi Road, New Delhi-110003
Director (SO) Grid Controller of India Limited (erstwhile Power System Operation Corporation Ltd.) 9th Floor, IFCI Towers, 61, Nehru Place, New Delhi-110 016	**Executive Director** Northern Regional Load Despatch Centre 18-A, Qutab Institutional Area, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi– 110 016
Director (P&C), HPPTCL, Headoffice, Himfed Bhawan,Panjari, Shimla-171005, Himachal Pradesh	**Director(W&P)** UP Power Transmission Company Ltd. Shakti Bhawan Extn, 3rd floor, 14, Ashok Marg, Lucknow-226 001
Director (Technical) Punjab State Transmission Corporation Ltd. Head Office, The Mall, Patiala 147001, Punjab	**Director (Projects)** Power Transmission Corporation of Uttrakhand Ltd. Vidyut Bhawan, Near ISBT Crossing, Saharanpur Road, Majra, Dehradun.
Development Commissioner (Power) Power Development Department Grid Substation Complex, Janipur, Jammu	**Director (Technical)** Rajasthan Rajya Vidyut Prasaran Nigam Ltd. Vidyut Bhawan, Jaipur, Rajasthan-302005.
Member (Power) Bhakra Beas Management Board Sector-19 B, Madhya Marg, Chandigarh - 160019	**Superintending Engineer (Operation)** Electricity Circle, 5th Floor, UT Secretariat, Sector-9 D, Chandigarh - 161009
Director (Operations) Delhi Transco Ltd. Shakti Sadan, Kotla Road, New Delhi-110 002	**Director (Technical)** Haryana Vidyut Prasaran Nigam Ltd. Shakti Bhawan, Sector-6, Panchkula-134109, Haryana

Minutes of meeting of Joint study meeting (s) held on 18.10.23 and 23.10.23 to finalize the Transmission system for evacuation of power from Bikaner Complex as part of Rajasthan REZ Ph-IV (Part-3)

Joint Study Meeting(s) were held in virtual mode on 18.10.23 and 23.10.23 with SECI, CEA, GRID-INDIA, RVPN, HVPN, PSTCL and other STUs of Northern region to discuss the Transmission system for evacuation of power from Bikaner Complex as part of Rajasthan REZ Ph-IV (Part-3) scheme. In the meeting, SECI/MNRE were also asked to confirm on RE potential of Bikaner complex.

Gist of discussion held in First Joint study meeting on 18.10.23

In the meeting, It was informed that Renewable Energy Zones (REZs) were identified by MNRE/SECI with a total capacity of 181.5 GW for likely benefits by the year 2030 in eight states, which includes 75 GW REZ potential in Rajasthan comprising of 15 GW Wind and 60 GW Solar. In this regard a Committee on Transmission Planning for RE was constituted by MOP for planning of the requisite Inter State Transmission System required for the targeted RE capacity by 2030. In this regard, a Comprehensive transmission plan for evacuation of 75GW RE potential from Rajasthan is evolved. Details of schemes approved scheme as part of above is as under:

S.No	Transmission Scheme	RE Potential	Status
1	Rajasthan REZ Ph-IV (Part-1 :7.7GW) (Bikaner Complex)	14 GW (Solar 14GW, BESS:6GW)	Under Advance stage of Bidding
2	Rajasthan REZ Ph-IV (Part-2 :5.5GW) (Jaisalmer/Barmer Complex)	14GW (Wind : 7GW, Solar:7GW, BESS: 3 GW)	Under Bidding

CTU stated that Transmission scheme is evolved for about 7.7GW (Solar) in Bikaner complex (14 GW potential along with 6 GW BESS) in Rajasthan for RE potential identified at Bikaner complex as part of committee report. However, no application of BESS (linked with RE) against envisaged 6GW was received. Accordingly, RE potential of about 7.7GW (in place of 14GW) can be evacuated from planned system (Ph-IV scheme) from Bikaner complex (Bikaner-II(3.7 GW) & Bikaner-III(4 GW)).

At Bikaner-II PS & Bikaner-III PS connectivity of about 7.7GW utilizing above Ph-IV (Part-1) system for transfer of power is already granted and no further margin is available for additional connectivity due to technical limitation. Further, additional Connectivity of about 1.7 GW RE (Solar) is also received at Bikaner complex and more applications are expected due to land availability and being outside of GIB area for which new pooling station i.e. Bikaner-IV and onwards 765kV high capacity corridors will be required. In the meeting, SECI/MNRE were also asked to confirm on RE potential of Bikaner complex.

In the above meeting, SECI stated that as part of committee report, RE potential of 30GW (out of 75GW) was planned in non GIB areas of Rajasthan viz. Bikaner, Jalore, Sanchore, Sirohi, Ajmer etc. in phase-II & III scheme (except in Bikaner which was in Ph-I also), however Bikaner complex has much more RE potential and waste land availability out of above Non GIB zones.

SECI stated that at present 75GW is not yet fully harnessed and therefore adjustment of RE potential may be considered at present within Non-GIB area and if required the potential of 75

GW will be reviewed and increased in consultation and approval with MNRE later on. Further 6GW BESS at Bikaner-II/III PS could not be developed.

CEA stated that as informed by CTU that no margin available for connectivity in Bikaner complex, potential for new substation at Bikaner-IV needs to be frozen for next phase of planning. CEA enquired SECI on progress of new bids for RE with BESS. SECI stated that at present there is no clear visibility for such projects (RE with BESS) before 2027 as award process will take time (1-2 years). CEA mentioned that 6 GW RE potential (solar) remains untapped due to non-materialisation of BESS capacity. CTU also informed that at present no RE application are received from any of complexes in non GIB areas viz. Sanchore, Jalore Pali etc.

SECI also stated that 6GW potential at Bikaner complex can be considered for now as part of 75GW potential in Rajasthan with some portion from adjustment of potential from other Non-GIB complexes i.e. Sanchore, Jalore, Pali etc. and balance from 6GW unharnessed RE potential (with BESS) at Bikaner complex. Accordingly, it was decided that cumulatively 6 GW RE potential may be considered for planning of transmission scheme from Bikaner-IV PS.

CTU stated that considering requirement of 6 GW evacuation capacity from Bikaner-IV PS, 3GW RE capacity to be evacuated through EHVAC system as part of present proposal and balance 3GW along with Bhadla-IV potential (4GW) through HVDC system, which is under planning. In view of that system studies were carried and proposed Transmission scheme is as under

Proposed Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-3)

Bikaner-IV : 3GW (Solar)

- Establishment of 3x1500 MVA, 765/400 kV & 3x500 MVA 400/220 kV Bikaner-IV Pooling Station along with 2x240 MVAr (765kV) Bus Reactor & 2x125 MVAr (420kV) Bus Reactor at a suitable location near Bikaner *
- 220kV line bays (4 nos.) for RE connectivity at Bikaner-IV PS
- STATCOM (2x$\pm$300MVAr) along with MSC (4x125 MVAr) & MSR (2x125 MVAr) along with 2 nos. 400kV line bays at Bikaner-IV PS
- Establishment of 765/400 kV, 3x1500 MVA Hissar-II S/s along with 2x240 MVAr (765kV) Bus Reactor & 2x125 MVAr (420kV) Bus Reactor at a suitable location near Hissar*
- Bikaner-IV – Hissar-II 765 kV D/c line (~320 km) along with 330 MVAr switchable line reactor for each circuit at each end
- Bikaner-IV – Sikar-II 400 kV D/c line (Quad) (~270 km) along with 63 MVAr switchable line reactor for each circuit at each end
- Hissar-II- Jind(PG) 400 kV D/c line (Quad) (~50 km)
- Hissar-II- Patran 400 kV D/c line (Quad) (~110 km)

Study files for solar maximized scenario was shared on 13.10.23 with all NR constituents. Grid-India vide mail 18.10.23 sent their observations on proposal and studies. Same was also deliberated in meeting. Reply of major observation is under

1. **Demands of Punjab, Haryana & Rajasthan seem to be on the lower side looking at demand observed in the current time-period.**

CTU stated that in winter scenario, demand of Punjab and Haryana is lesser, and they will review the demand and change it in revised files for 2026 time frame, however Rajasthan demand in winter and summer scenario is as per 20th EPS demand (load+losses).

2. **N-1 non compliance of ICTs in Rajasthan**

   CTU stated that most of the 400/220kV ICTs which are N-1 non compliant are in intra state (STUs), some of which are already highlighted in OCC/NRPC meetings. Regarding ICTs at Kota (PG), high loading is observed due to no KTPS generation considered in study files. RVPN confirmed that KTPS units will be operational by 2027-28 and decision on KTPS units to take out of the system will be taken by management. In view of that in revised files KTPS unit will kept on. Loading of 400/220kV Bassi ICT is marginally higher in N-1 (320MW). Same will be reviewed and taken up separately in consultation with Grid-India & CEA based on real time loading.

3. **High fault current at 220kV buses**

   Regarding high fault level of some of RE injection stations (at 220kV level), CTUIL stated that fault level of 220 kV level at old RE pooling stations i.e. Bhadla(PG), Bhadla-II, Fatehgarh-II is marginally higher (designed for 40kA). It was informed that during fault level calculation fault level contribution from RE generation of designated 220kV bus is not considered. Same philosophy is also considered for SCR calculation. Grid-India stated that in case of distant fault, there is a possibility that RE generation will also contribute in fault. CTU stated that matter will be separately discussed with Grid-India as new proposed scheme does not influence the fault levels on these RE pooling stations.

4. **Angular difference between 765kV Bikaner-IV & Hissar**

   Grid-India stated that under N-2 contigency of 765kV Bikaner-IV – Hissar line (both ckts out), there are severe file convergence issues. CTUIL stated that in the event of N-2 contingency, there will be no path available for evacuation of 3GW power from Bikaner-IV PS. CTUIL stated that they have carried out various cases to provide anchoring to Bikaner-IV from nearby ISTS stations i.e. Bikaner(PG), Bikaner-II, Bikaner-III. In all scenarios, power will flow towards Bikaner-IV and evacuation system requirement will increase substantially in base case.

Based on deliberations, various other options were also carried out i.e. LILO of Bikaner-III – Neemrana-II D/c at Bikaner-IV, Bikaner-IV-Sikar-II 765kV D/c etc. CTU stated that with LILO of Bikaner-III – Neemrana-II D/c at Bikaner-IV case is converged in ‘N-2’ contingency but angular separation will be more than 30 degree.

In the meeting, CTUIL stated that critical loading is observed in 220kV Patran – Patran (PSTCL) D/c line in studies. PSTCL stated that the loading was higher in past and for that they have carried out the LILO of 220 kV Mansa-Sunam line at Patran (Indi Grid). PSTCL stated that in future Peddy scenarios, line loading will be higher and N-1 non compliant. CTU stated that even without injection at Patran from above scheme, 220kV Patran – Patran (PSTCL) D/c line remains N-1 non compliant and PSTCL may take suitable measures to relieve the loading. PSTCL stated that whether reconductoring of line will be done by PSTCL or it will be in interstate. CTU stated that ownership of this intra state line is with STU (PSTCL), accordingly, suitable strengthening needs to be planned and implemented by PSTCL as part of intra state scheme. PSTCL stated that they will revert on the same.

Based on Grid-India comments (S no.4), CTU stated that N-1-1 or N-2 is a rare contingency and deliberations are required on N-1-1/N-2 compliance in planning studies in reference to manual on transmission planning criteria 2023. In view of above in the first meeting it was concluded that that other options may be explored by CTU in consultation with CEA and Grid-India and will be discussed in next Joint study meeting.

Gist of discussion held in Second Joint study meeting on 23.10.23

In the 2nd joint study meeting held on 23.10.23, CTU stated that they have explored various other alternatives and in new proposal, an intermediate substation in 765/400kV Churu is created with its connectivity to LILO of one ckt of 765 kV Sikar-II (PG) -Khetri (PG) D/c line at Churu S/s and Fatehabad (PG) through 400 kV D/c line. To provide anchoring at Bikaner-IV, LILO of one ckt of 765 kV Bikaner-III -Neemrana-II D/c line (2nd) at Bikaner-IV PS is also considered. With above revised proposal, power flow is in order and angular separation incl. in N-2 contingency and voltages are within limit. Revised Study files for solar maximized scenario was shared with all constituents on 20.10.23. **Result of system studies enclosed in Exhibit-I**

Grid-India stated that the proposed system is optimal & balanced and loading is equally distributed among various feeders. The proposed system is stable and comply the N-1 & N-1-1 requirements. CEA stated that as per transmission planning criteria 2023, under N-1-1, some of the equipment may be loaded up to their emergency limits. To bring the system parameters back within their normal limits, load shedding/re-scheduling of generation may have to be done, either manually or through automatic system protection schemes (SPS).

In view of that in planning stage, N-1-1 or N-2 criteria may not be considered except in critical lines (Inter regional corridors) as it will increase the transmission system requirement. Therefore, in revised proposal a direct interconnection between Bikaner-IV and Siwani may be considered and 400kV interconnection towards Fatehabad may be planned from Siwani in place of via Churu.

CTU stated that in above alternative with direct interconnection to Siwani, file is converged, and power flow is in order, however angular separation between Siwani and Bikaner-IV is more than 50 degree in N-2 contingency in case of direct interconnection of Bikaner-IV and Siwani. The angular separation would be more than 30 degree even with significant less RE capacity (<1GW) at Bikaner-IV PS.

Grid-India stated that it is not recommended that SPS implementation is considered at planning stage . SPS requirement will generally come when study assumption considered in studies during planning may deviate at later stage i.e. load change or delay in interlinked transmission system which influence the load flow.

Further, in case of direct interconnection of Bikaner-IV to Siwani i.e. not considering 765/400kV Churu in between and onward transmission system, the Transmission system is kind of radial system connected with RE generation pocket and poses stability issues in various operational scenarios in future. Grid-India also emphasised that some margin should be kept in planning studies for operational scenarios. Further, the angular difference (>30 degrees) in N-1-1 /N-2 may cause problems in synchronization of lines after corridor outage. The proposed system is stable and well interconnected with Grid provides reliable power evacuation under various operational scenarios

CEA stated that N-1-1 or N-2 is a rare contingency and deliberations are required on N-1-1/N-2 compliance in planning studies as it may incur additional investment for strengthening of transmission system.

CTU stated that in above case the transmission scheme i.e. establishment of Churu substation along with LILO of one ckt of 765 kV Sikar-II (PG) -Khetri (PG) D/c line at Churu S/s and Churu – Fatehabad (PG) 400 kV D/c line will improve the system resiliency and address the Grid India concern for synchronization of lines after corridor outage in N-1-1 /N-2) contingency

Considering 3.6GW generation at Bikaner-IV PS, loading and angular separation in contingency is as under:

Transmission Line	**N-1 (Loading)**	**N-1-1 (N-2) (Degree)**
765 kV Bikaner-IV-Churu D/c line	14.1 (3098 MW)	29.2
765 kV Churu- Siwani D/c line	7.7 (2743 MW)	28.6

CTU further stated that in next phase, EHVAC/HVDC system (5-6GW) for evaluation of RE power from Bhadla-IV potential & balance potential of Bikaner-IV (~2.4GW) towards UP/outside NR region is under planning and will be taken up in subsequent meetings. CTU requested CEA to convene a joint meeting for compliance of N-1-1/N-2 in planning studies in reference of planning criteria 2023 by next week. CEA agreed for same. PSTCL stated that they will take suitable measures to relieve loading of 220kV Patran – Patran (PSTCL) D/c line in matching timeframe of above agreed ISTS scheme.

In view of above deliberations, it was decided that CEA will convene a joint meeting with CTU and Grid-India for deliberation on compliance of N-1-1/N-2 compliance in planning studies. Based on outcome of above CEA meeting, proposed system requirement will be reviewed and if system requirement is reduced (with scheme like Bikaner-IV – Siwani direct interconnection), same shall be suitably incorporated as part of minutes of CMETS-NR meeting.

Considering grant of connectivity to new RE generators in Bikaner complex as well as for evacuation of power beyond Bikaner complex, following transmission scheme was agreed in Joint study meeting for evacuation of power from Rajasthan REZ Ph-IV (Part-3:3.6GW) [Bikaner complex] and to be taken up in CMETS-NR meeting for finalization.

Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-3 :3.6GW)

Bikaner-IV: 3.6GW (Solar)

- Establishment of 4x1500 MVA, 765/400 kV & 4x500 MVA, 400/220 kV Bikaner-IV Pooling Station along with 2x240 MVAr (765kV) & 2x125 MVAr (420kV) Bus Reactors at a suitable location near Bikaner *

  Future provisions at Bikaner-IV PS:
  Space for
  - *765/400kV ICT along with bays- 2 no.*
  - *765 kV line bays along with switchable line reactors – 10 nos.*
  - *765kV Bus Reactor along with bay: 1 no.*
  - *400 kV line bays along with switchable line reactor –4 nos.*

- *400 kV line bays–4 nos.*
- *400/220kV ICT along with bays -6 nos.*
- *400 kV Bus Reactor along with bay: 1 no.*
- *400kV Sectionalization bay: 2 sets*
- *220 kV line bays for connectivity of RE Applications -11 nos.*
- *220kV Sectionalization bay: 3 sets*
- *220 kV BC (2 nos.) and 220 kV TBC (2 nos.)*

  along with provision of 80MVAr and 110MVAr spare reactor (Single phase)

- 220kV line bays (5 nos.) for RE connectivity at Bikaner-IV PS
- 400kv line bay (1 no.) for RE connectivity at Bikaner-IV PS
- 220kV Sectionalization bay (1 set) along with BC (2 nos.) and 220 kV TBC (2 nos.) at Bikaner-IV PS
- 400kV Sectionalization bay (1 set) at Bikaner-IV PS
- STATCOM (2x$\pm$300MVAr) along with MSC (4x125 MVAr) & MSR (2x125 MVAr) along with 2 nos. 400kV line bays at Bikaner-IV PS
- LILO of one ckt of 765 kV Bikaner-III -Neemrana-II D/c line (2nd) at Bikaner-IV PS (~20 km) along with 330 MVAR switchable line reactor at Bikaner-IV PS end of 765 kV Bikaner-IV - Neemrana-II line (formed after LILO)
- Establishment of 765/400 kV, 2x1500 MVA S/s at suitable location near Churu along with 2x240 MVAr (765kV) Bus Reactor & 2x125 MVAr (420kV) Bus Reactor

  Future provisions at Churu S/s:

  Space for

  - *765/400kV ICTs along with bays- 4*
  - *765 kV line bays along with switchable line reactors – 12*
  - *765kV Bus Reactor along with bay: 1 nos.*
  - *400 kV line bays along with switchable line reactor –8*
  - *400 kV Bus Reactor along with bays: 1 no.*
  - *400kV Sectionalization bay: 2 sets*
  - *400/220kV ICT along with bays -4 nos.***
  - *220 kV line bays for drawl -4 nos. ***
  - *220kV Sectionalization bay: 2 sets ***

    along with provision of 80MVAr spare reactor (Single phase)

    *****Drawl requirement at Churu to be confirmed by RVPN***

- Bikaner-IV PS – Churu 765 kV D/c line along with 240 MVAr switchable line reactor for each circuit at Bikaner-IV PS end (~175 km)
- LILO of one ckt of 765 kV Sikar-II (PG) -Khetri (PG) D/c line at Churu S/s (~80 km)
- Churu – Fatehabad (PG) 400 kV D/c line (Quad) along with 80 MVAr switchable line reactor for each circuit at Churu S/s end (~165 km)
- Establishment of 765/400 kV, 3x1500 MVA S/s at suitable location near Siwani (Distt. Bhiwani) along with 2x240 MVAr (765kV) Bus Reactor & 2x125 MVAr (420kV) Bus Reactor*

  Future provisions at Siwani S/s:

  Space for

  - *765/400kV ICT along with bays- 3*
  - *765 kV line bays along with switchable line reactors – 6*
  - *765kV Bus Reactor along with bay: 1 nos.*
  - *400 kV line bays along with switchable line reactor –10*

- *400 kV Bus Reactor along with bays: 1 no.*
- *400kV Sectionalization bay: 2 sets*
- *400/220kV ICT along with bays -4 nos.***
- *220 kV line bays for drawl -4 nos. ***
- *220kV Sectionalization bay: 2 sets ***

****along with provision of 80MVAr spare reactor (Single phase)***

*****Drawl requirement at Siwani to be confirmed by HVPN***

- Siwani – Churu 765 kV D/c line (~110 km)
- Siwani – Jind (PG) 400 kV D/c line (Quad Moose) (~100 km)
- Siwani – Patran (Indi Grid) 400 kV D/c line (Quad) (~150 km) along with 63 MVAr switchable line reactor for each circuit at Siwani S/s end

Tentative commissioning schedule : 24 months from allocation

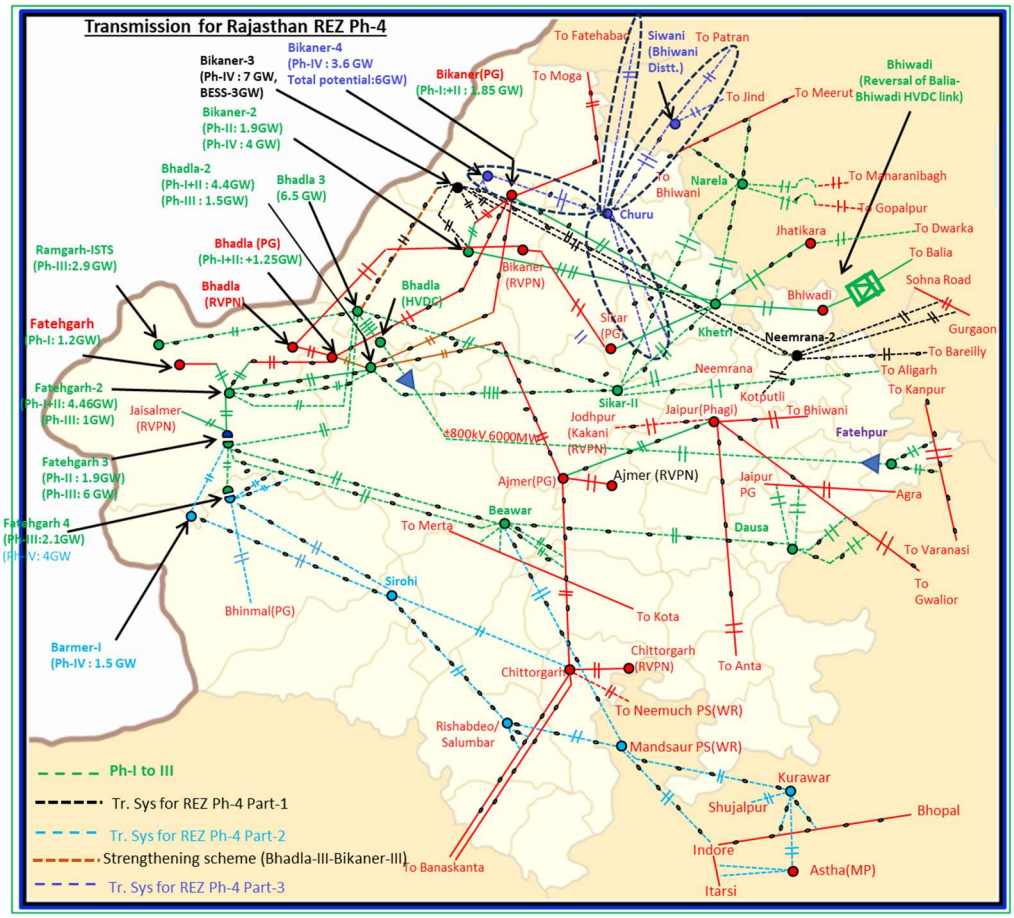
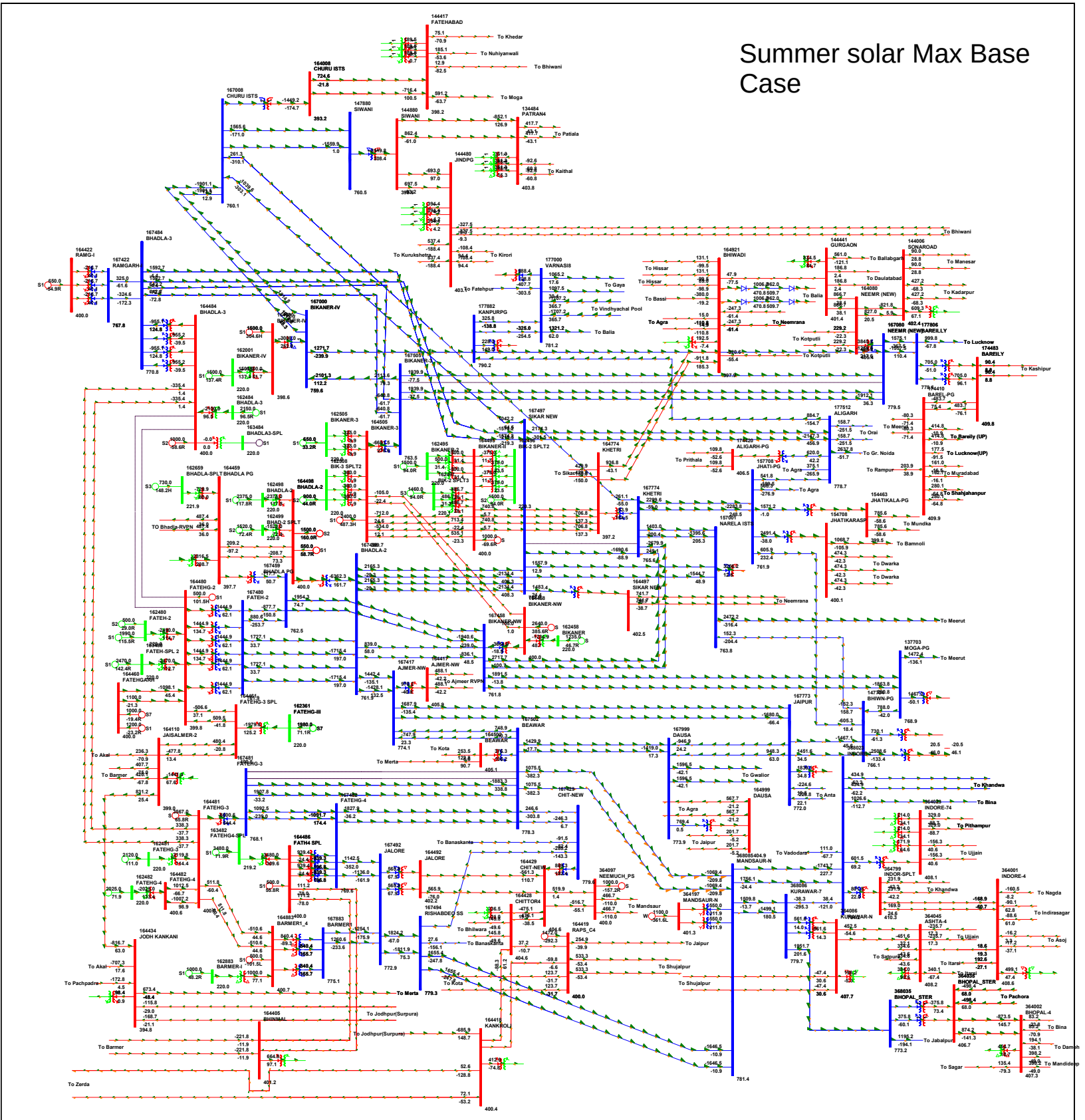
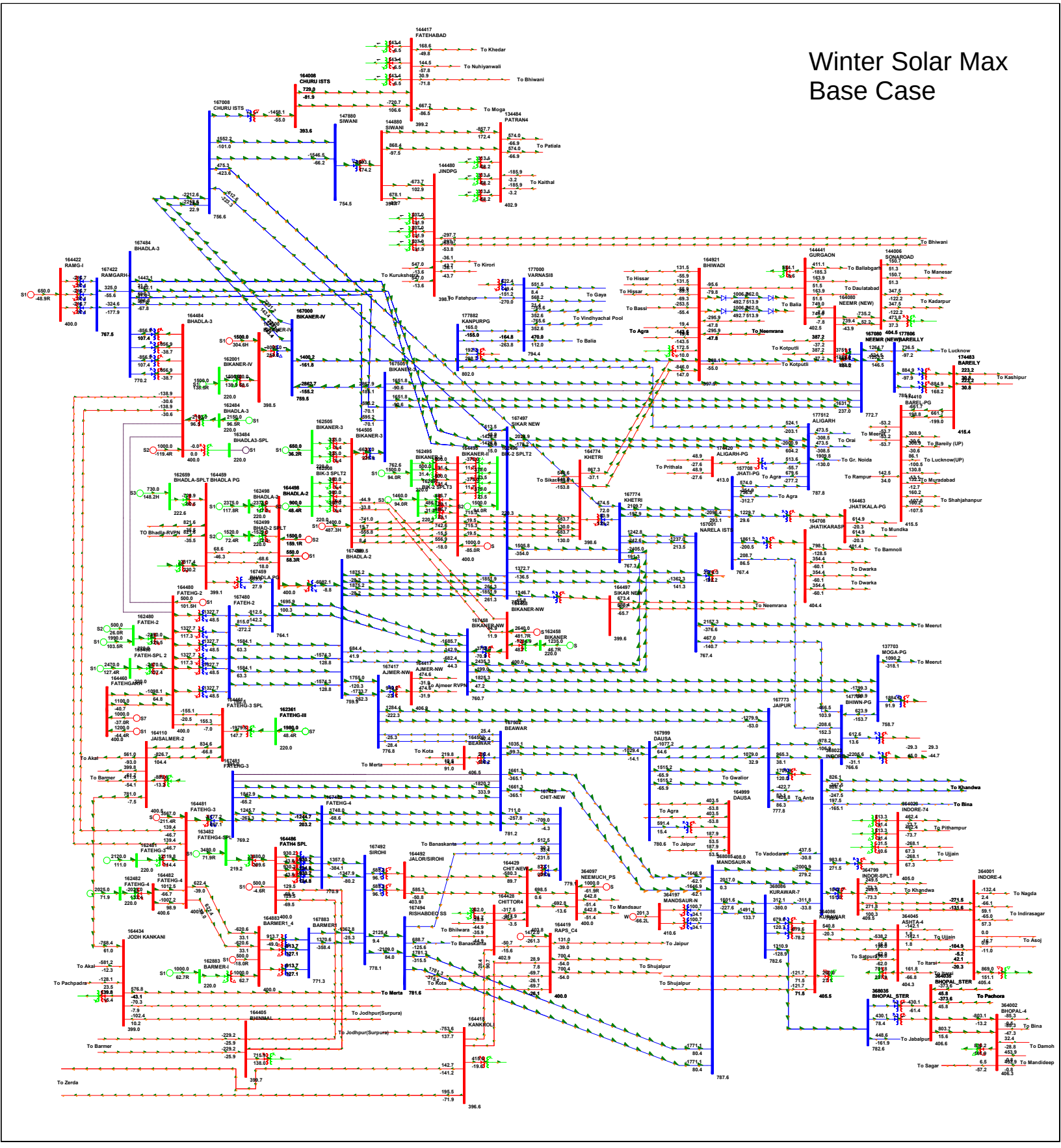


Fig 1: Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-3 :3.6GW) (Bikaner Complex)

Exhibit-I

Summer solar Max Base Case




Winter Solar Max
Base Case

Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-3 :3.6GW) [Bikaner complex]

S. No.	Items	Details
1.	Name of Scheme	**Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-3 :3.6GW) [Bikaner complex]**
2.	Scope of the scheme	**Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-3 :3.6GW)** **Bikaner-IV: 3.6GW (Solar)** ➢ Establishment of 4x1500 MVA, 765/400 kV & 4x500 MVA, 400/220 kV Bikaner-IV Pooling Station along with 2x240 MVAr (765kV) & 2x125 MVAr (420kV) Bus Reactors at a suitable location near Bikaner * **Future provisions at Bikaner-IV PS: Space for** ▪ *765/400kV ICT along with bays- 2 no.* ▪ *765 kV line bays along with switchable line reactors – 10 nos.* ▪ *765kV Bus Reactor along with bay: 1 no.* ▪ *400 kV line bays along with switchable line reactor –4 nos.* ▪ *400 kV line bays–4 nos.* ▪ *400/220kV ICT along with bays -6 nos.* ▪ *400 kV Bus Reactor along with bay: 1 no.* ▪ *400kV Sectionalization bay: 2 sets* ▪ *220 kV line bays for connectivity of RE Applications -11 nos.* ▪ *220kV Sectionalization bay: 3 sets* ▪ *220 kV BC (2 nos.) and 220 kV TBC (2 nos.)* ***along with provision of 80MVAr and 110MVAr spare reactor (Single phase)*** ➢ 220kV line bays (5 nos.) for RE connectivity at Bikaner-IV PS ➢ 400kV line bays (1 no.) for RE connectivity at Bikaner-IV PS ➢ 220kV Sectionalization bay (1 set) along with BC (2 nos.) and 220 kV TBC (2 nos.) at Bikaner-IV PS ➢ 400kV Sectionalization bay (1 set) at Bikaner-IV PS ➢ STATCOM (2x±300MVAr) along with MSC (4x125 MVAr) & MSR (2x125 MVAr) along with 2 nos. 400kV line bays at Bikaner-IV PS ➢ LILO of one ckt of 765 kV Bikaner-III -Neemrana-II D/c line (2nd) at Bikaner-IV PS (~20 km) along with 330 MVAR switchable line reactor at Bikaner-IV PS end of 765 kV Bikaner-IV -Neemrana-II line (formed after LILO) ➢ Establishment of 765/400 kV, 2x1500 MVA S/s at suitable location near Churu along with 2x240 MVAr (765kV) Bus Reactor & 2x125 MVAr (420kV) Bus Reactor **Future provisions at Churu S/s: Space for** ▪ *765/400kV ICTs along with bays- 4*

S. No.	Items	Details
		▪ *765 kV line bays along with switchable line reactors – 12* ▪ *765kV Bus Reactor along with bay: 1 nos.* ▪ *400 kV line bays along with switchable line reactor –8* ▪ *400 kV Bus Reactor along with bays: 1 no.* ▪ *400kV Sectionalization bay: 2 sets* ▪ *400/220kV ICT along with bays -4 nos.*** ▪ *220 kV line bays for drawl -4 nos. *** ▪ *220kV Sectionalization bay: 2 sets *** ****along with provision of 80MVAr spare reactor (Single phase)*** *****Drawl requirement at Churu to be confirmed by RVPN*** ➢ Bikaner-IV PS – Churu 765 kV D/c line along with 240 MVAr switchable line reactor for each circuit at Bikaner-IV PS end (~180 km) ➢ LILO of one ckt of 765 kV Sikar-II (PG) -Khetri (PG) D/c line at Churu S/s (~90 km) ➢ Churu – Fatehabad (PG) 400 kV D/c line (Quad) along with 63 MVAr switchable line reactor for each circuit at Churu S/s end (~150 km) ➢ Establishment of 765/400 kV, 3x1500 MVA S/s at suitable location near Siwani (Distt. Bhiwani) along with 2x240 MVAr (765kV) Bus Reactor & 2x125 MVAr (420kV) Bus Reactor* **Future provisions at Siwani S/s: Space for** ▪ *765/400kV ICT along with bays- 3* ▪ *765 kV line bays along with switchable line reactors – 6* ▪ *765kV Bus Reactor along with bay: 1 nos.* ▪ *400 kV line bays along with switchable line reactor –10* ▪ *400 kV Bus Reactor along with bays: 1 no.* ▪ *400kV Sectionalization bay: 2 sets* ▪ *400/220kV ICT along with bays -4 nos.*** ▪ *220 kV line bays for drawl -4 nos. *** ▪ *220kV Sectionalization bay: 2 sets *** ****along with provision of 80MVAr spare reactor (Single phase)*** *****Drawl requirement at Siwani to be confirmed by HVPN*** ➢ Siwani – Churu 765 kV D/c line (~95 km) ➢ Siwani – Jind (PG) 400 kV D/c line (Quad Moose) (~110 km) ➢ Siwani – Patran (Indi Grid) 400 kV D/c line (Quad) (~160 km) (400kV GIS duct :700m) along with 80 MVAr switchable line reactor for each circuit at Siwani S/s end
3.	**Depiction of the scheme on Transmission Grid Map**	Attached at **Exhibit-I**
4.	**Upstream/downstream system associated with the scheme**	400/220kV Jind (PG), Patran (Indi Grid) and Fatehabad (PG) are existing ISTS substation. 400kV Fatehabad S/s is

S. No.	Items	Details
		interconnected with Khedar, Bhiwani and Nuhiyanwali S/s whereas Patran S/s is connected with Patiala and Kaithal S/s. 400kV Jind S/s is interconnected with Kirori, Kurukshetra and Bhiwani S/s. 765/400/220kV Bikaner-III PS is under advance stage of bidding and proposed to be interconnected with Neemrana-II S/s through 765kV 2xD/c lines and Bikaner (PG) and Bikaner-II S/s through 400kV D/c lines
5.	**Objective / Justification**	1. The present scheme comprises Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-3) from Bikaner complex (Bikaner-IV: 3.6GW) 2. Joint Study Meeting(s) were held in virtual mode on 18.10.23 and 23.10.23 with SECI, CEA, GRID-INDIA, RVPN, HVPN, PSTCL and other STUs of Northern region to discuss the Transmission system for evacuation of power from Bikaner Complex as part of Rajasthan REZ Ph-IV (Part-3) scheme. In the meeting, SECI/MNRE were also asked to confirm on RE potential of Bikaner complex. **3. Gist of discussion held in First Joint study meeting on 18.10.23** • CTU stated that Transmission scheme is evolved for about 7.7GW (Solar) in Bikaner complex (14 GW potential along with 6 GW BESS) in Rajasthan for RE potential identified at Bikaner complex. However, no application of BESS (linked with RE) against envisaged 6GW was received. Accordingly, RE potential of about 7.7GW (in place of 14GW) can be evacuated from planned system (Ph-IV scheme) from Bikaner complex (Bikaner-II(3.7 GW) & Bikaner-III(4 GW)). • At Bikaner-II PS & Bikaner-III PS connectivity of about 7.7GW utilizing above Ph-IV (Part-1) system for transfer of power is already granted and no further margin is available for additional connectivity due to technical limitation. Further, additional Connectivity of about 1.7 GW RE (Solar) is also received at Bikaner complex and more applications are expected due to land availability and being outside of GIB area for which new pooling station i.e. Bikaner-IV and onwards 765kV high capacity corridors will be required. • SECI stated that 6GW potential at Bikaner complex can be considered for now as part of 75GW potential in Rajasthan with some portion from adjustment of potential from other Non-GIB complexes i.e. Sanchore, Jalore, Pali etc. and balance from 6GW unharnessed RE potential (with BESS) at Bikaner complex. Accordingly, it was decided that cumulatively 6 GW RE potential may be considered for planning of transmission scheme from Bikaner-IV PS. • CTU stated that considering requirement of 6 GW evacuation capacity from Bikaner-IV PS, 3GW RE capacity to be evacuated through EHVAC system as part

S. No.	Items	Details
		of present proposal and balance 3GW along with Bhadla-IV potential (4GW) through HVDC system, which is under planning. In view of that system studies were carried and proposed Transmission scheme is as under ➢ Establishment of 3x1500 MVA, 765/400 kV & 3x500 MVA 400/220 kV Bikaner-IV Pooling Station along with 2x240 MVAr (765kV) Bus Reactor & 2x125 MVAr (420kV) Bus Reactor at a suitable location near Bikaner ➢ 220kV line bays (4 nos.) for RE connectivity at Bikaner-IV PS ➢ STATCOM (2x+300MVAr) along with MSC (4x125 MVAr) & MSR (2x125 MVAr) along with 2 nos. 400kV line bays at Bikaner-IV PS ➢ Establishment of 765/400 kV, 3x1500 MVA Hissar-II S/s along with 2x240 MVAr (765kV) Bus Reactor & 2x125 MVAr (420kV) Bus Reactor at a suitable location near Hissar ➢ Bikaner-IV – Hissar-II 765 kV D/c line (~320 km) along with 330 MVAr switchable line reactor for each circuit at each end ➢ Bikaner-IV – Sikar-II 400 kV D/c line (Quad) (~270 km) along with 63 MVAr switchable line reactor for each circuit at each end ➢ Hissar-II- Jind(PG) 400 kV D/c line (Quad) (~50 km) ➢ Hissar-II- Patran 400 kV D/c line (Quad) (~110 km) • Study files for solar maximized scenario was shared on 13.10.23 with all NR constituents. Grid-India vide mail 18.10.23 sent their observations on proposal and studies which was deliberated in meeting. • Grid-India stated that under N-2 contingency of 765kV Bikaner-IV – Hissar line (both ckts out), there are severe file convergence issues. CTUIL stated that in the event of N-2 contingency, there will be no path available for evacuation of 3GW power from Bikaner-IV PS. • Based on deliberations, various other options were also explored i.e. LILO of Bikaner-III – Neemrana-II D/c at Bikaner-IV, Bikaner-IV-Sikar-II 765kV D/c etc. CTU stated that with LILO of Bikaner-III – Neemrana-II D/c at Bikaner-IV case is converged in 'N-2' contingency but angular separation will be more than 30 degree. • In the meeting, CTUIL stated that critical loading is observed in 220kV Patran – Patran (PSTCL) D/c line in studies. PSTCL stated that in future Peddy scenarios, line loading will be higher and N-1 non compliant. CTU stated that even without injection at Patran from above scheme, 220kV Patran – Patran (PSTCL) D/c line remains N-1 non compliant and PSTCL may take suitable measures to relieve the loading. CTU stated that ownership of this intra state line is with STU (PSTCL), accordingly, suitable strengthening needs to be planned and implemented by PSTCL as part of intra state scheme. PSTCL stated that they will revert on the same. • Based on Grid-India comments, CTU stated that N-1-1 or N-2 is a rare contingency and deliberations are required on N-1-1/N-2 compliance in planning studies in reference to manual on transmission planning criteria 2023. In view

S. No.	Items	Details
		of above in the first meeting it was concluded that that other options may be explored by CTU in consultation with CEA and Grid-India and will be discussed in next Joint study meeting. **4. Gist of discussion held in 2nd Joint study meeting on 23.10.23** • CTU stated that studies have carried out various other alternatives and in new proposal, an intermediate substation in 765/400kV Churu is created with its connectivity to LILO of one ckt of 765 kV Sikar-II (PG) - Khetri (PG) D/c line at Churu S/s and Fatehabad (PG) through 400 kV D/c line. To provide anchoring at Bikaner-IV, LILO of one ckt of 765 kV Bikaner-III -Neemrana-II D/c line (2nd) at Bikaner-IV PS is also considered. With above revised proposal, power flow is in order and angular separation incl. in N-2 contingency and voltages are within limit. Revised Study files for solar maximized scenario was shared with all constituents on 20.10.23. • Grid-India stated that the proposed system is optimal & balanced and loading is equally distributed among various feeders. The proposed system is stable and comply the N-1 & N-1-1 requirements. CEA stated that as per transmission planning criteria 2023, under N-1-1, some of the equipment may be loaded up to their emergency limits. To bring the system parameters back within their normal limits, load shedding/re-scheduling of generation may have to be done, either manually or through automatic system protection schemes (SPS). • In view of that in planning stage, N-1-1 or N-2 criteria may not be considered except in critical lines (Inter regional corridors) as it will increase the transmission system requirement. Therefore, in revised proposal a direct interconnection between Bikaner-IV and Siwani may be considered and 400kV interconnection towards Fatehabad may be planned from Siwani in place of via Churu. • CTU stated that in above alternative with direct interconnection to Siwani, file is converged, and power flow is in order, however angular separation between Siwani and Bikaner-IV is more than 50 degree in N-2 contingency in case of direct interconnection of Bikaner-IV and Siwani. The angular separation would be more than 30 degree even with significant less RE capacity (<1GW) at Bikaner-IV PS. • Grid-India stated that it is not recommended that SPS implementation is considered at planning stage. SPS requirement will generally come when study assumption considered in studies during planning may deviate at later stage i.e. load change or delay in interlinked transmission system which influence the load flow. Further, in case of direct interconnection of Bikaner-IV to Siwani i.e. not considering 765/400kV Churu in between and onward transmission system, the Transmission system is kind of

S. No.	Items	Details
		radial system connected with RE generation pocket and poses stability issues in various operational scenarios in future. Grid-India also emphasised that some margin should be kept in planning studies for operational scenarios. Further, the angular difference (>30 degrees) in N-1-1 /N-2 may cause problems in synchronization of lines after corridor outage. • CEA stated that N-1-1 or N-2 is a rare contingency and deliberations are required on N-1-1/N-2 compliance in planning studies as it may incur additional investment for strengthening of transmission system. • CTU stated that in above case the transmission scheme i.e. establishment of Churu substation along with LILO of one ckt of 765 kV Sikar-II (PG) -Khetri (PG) D/c line at Churu S/s and Churu – Fatehabad (PG) 400 kV D/c line will improve the system resiliency and address the Grid India concern for synchronization of lines after corridor outage in N-1-1/N-2 contingency • CTU further stated that in next phase, EHVAC/HVDC system (5-6GW) for evacuation of RE power from Bhadla-IV potential & balance potential of Bikaner-IV (~2.4GW) towards UP/outside NR region is under planning and will be taken up in subsequent meetings. CTU requested CEA to convene a joint meeting for compliance of N-1-1/N-2 in planning studies in reference of planning criteria 2023 by next week. CEA agreed for same. PSTCL stated that they will take suitable measures to relieve loading of 220kV Patran – Patran (PSTCL) D/c line in matching timeframe of above agreed ISTS scheme. 5. Subsequently the issue was deliberated in the CEA meeting with CTU and Grid-India held on 30.10.23 in which philosophy and applicability for consideration of N-1-1/N-2 in planning studies in reference to Manual on transmission planning criterion 2023 was discussed. In the meeting it was concluded that issue will be further deliberated with Member (PS) and accordingly scheme will be finalized in CMETS-NR meeting. 6. Subsequently, in CMETS-NR meeting held on 31.10.23, CEA opined that Bikaner-IV S/s is planned for 6GW evacuation and at present direct interconnection between Bikaner-IV and Siwani is to be planned in first phase (3GW) and 765/400kV Churu S/s along with associated transmission scheme will be taken up in later stage while planning of balance 3 GW transmission scheme. Grid-India further emphasised that in case Churu S/s to be taken up at later stage of planning, 765kV Bikaner-IV-Siwani D/c line may not able to synchronize after corridor outage (765kV Bikaner-IV-Siwani D/c line) due to higher angular difference (>30 degrees) in N-1-1 (N-2) in peak solar hours. Grid-India stated that due to potential delays in the restoration of the 765 kV Bikaner-IV to Siwani D/c line, synchronization of lines might not be feasible during peak solar hours. Instead, this process might need to be

S. No.	Items	Details
		deferred to non-solar hours, which would entail running the system in a depleted condition for several hours. 7. CTU stated that Bikaner-IV S/s is planned for evacuation of 6GW generation, out of which 3.6GW power will be evacuated through proposed system and in subsequent phase transmission system will be planned for evacuation of 2.4GW.CTU stated that one no. of high capacity corridor is provided under present scheme towards Punjab/Haryana to meet the demand requirement. In next phase of planning (for balance 2.4GW potential at Bikaner-IV PS) transmission scheme to be planned towards UP/other regions. CTU stated that they have already received about 1.7GW of connectivity applications in last 2 months at Bikaner-IV and with more applications, it is expected that new system to be planned within 2-3 months. Considering above, it is expected that 765/400kV Churu S/s along with associated transmission scheme may also be utilized in next phase to facilitate evacuation of power along with new corridors towards UP/WR. However it will be only at the time of planning of next phase of transmission scheme. 8. As time difference in between implementation of these two schemes will be lesser (2-3 months), it is recommended that 765/400kV Churu S/s along with associated transmission scheme shall be taken up in Ph-I as part of present proposed scheme as it will improve resiliency and angular stability under N-1-1/N-2 contingency. CEA agreed for the same. 9. Further , line length were reviewed in reference to Gati Shakti portal and modified slightly and accordingly reactive compensation was also modified. Considering grant of connectivity to new RE generators in Bikaner complex as well as for evacuation of power beyond Bikaner complex, transmission scheme was agreed (as per S.No.2) in CMETS-NR meeting for evacuation of power from Rajasthan REZ Ph-IV (Part-3) [Bikaner IV :3.6GW]
6.	**Estimated Cost**	**Rs. 8600 Cr.**
7.	**Need of phasing, if any**	Not Applicable
8.	**Implementation timeframe**	24 months from allocation of project
9.	**System Study for evolution of the proposal**	Studies discussed and agreed in following meeting • Joint study meeting (s) held on 18.10.23 and 23.10.23 (Minutes of meeting attached in **Annexure-I**) • 25th CMETS-NR meeting held on 31.10.23 (Minutes of meeting to be issued shortly) Load flow results is attached at **Exhibit-II**

Exhibit-I

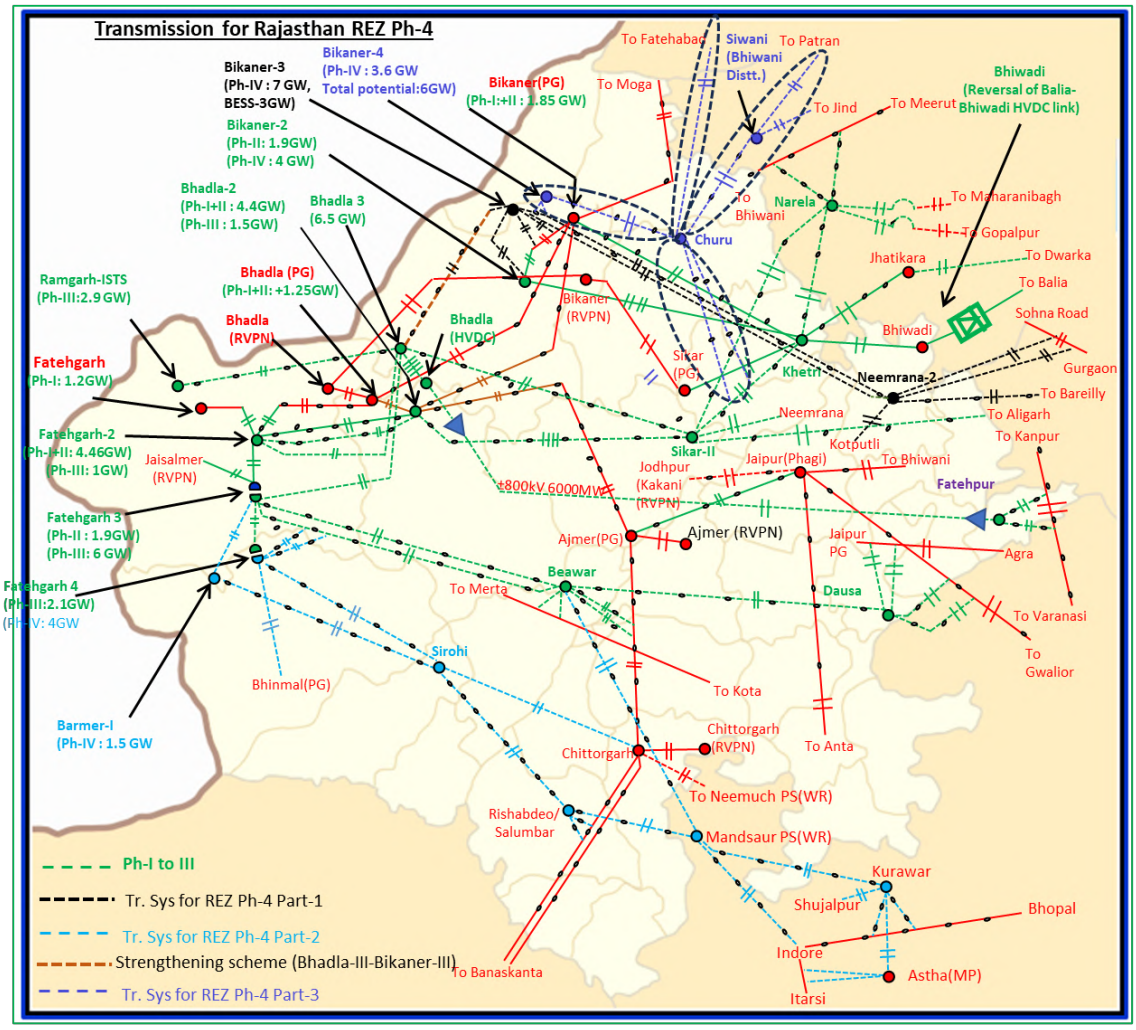


Fig : Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-3 :3.6GW) (Bikaner Complex)

AGENDA

Sub: Agenda to be placed before the 70th NRPC meeting - 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 thereby improving the reliability of power system in Haryana.

The HVPNL proposal for 31 No. existing overloaded transmission lines for augmentation with HTLS conductor through PSDF funding was submitted to NPRC to recommend for grant of PSDF.

The agenda was deliberated in 68th NRPC meeting held on 18.8.2023 (relevant minutes placed as **(Annexure-1)** and decided as under-

"Decision of the NRPC Forum is reproduced as bleow:-

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".

2. The detailed proposal of 31 No transmission lines for augmentation with HTLS conductor through PSDF funding was submitted to Central Electricity Authority (CEA) vide letter dated 25.08.2023 and additional 66KV D/C Daultabad-Sec 10 Gurugram transmission line vide letter dated 13.09.2023. After detailed deliberations and meeting held on dated 15.09.2023, wherein CTU and Grid India were also present, CEA concurred the proposal for augmentation with HTLS conductor of 28 No transmission lines vide ref No. File no. CEA-PS-11-22(13)/1/2019-PSPA-I Division /445 **(Annexure-2)**.

3. Accordingly Detailed Project Report is placed at **Annexure-3**.

4. The 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 thereby providing reliable power to the consumers of these regions of Haryana.

In view of above facts, it is observed that augmentation of transmission lines is for Power System strengthening & improvement. Therefore, the work is eligible for 100% funding from PSDF and NRPC forum may kindly consider and recommend the proposal for PSDF grant please.

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)

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.

भारत सरकार

Government of India

विद्युत मंत्रालय

Ministry of Power

केन्द्रीय विद्युत प्राधिकरण

Central Electricity Authority

विद्युत प्रणाली योजना एवं मूल्यांकन-I प्रभाग

Power System Planning & Appraisal-I Division

सेवा में / **To,**

Chief Engineer (PD&C),
Haryana Vidyut Prasaran Nigam Limited,
Shakti Bhawan,
Sector-6, Panchkula- 134109

विषय /Subject: HVPNL's proposal for replacement of various existing conductors (i.e. wolf/ panther/ zebra/ moose) with equivalent HTLS conductor to reduce the overloading of existing transmission lines

संदर्भ/ Reference:

(i) HVPNL letter no. Ch-18/HSS-391/III dated 25.08.2023
(ii) HVPNL letter no. Ch-32/HSS-391/Vol-III dated 13.09.2023
(iii) HVPNL letter no. Ch-43/HSS-391/Vol-III dated 27.09.2023
(iv) HVPNL email dated 29.09.2023
(v) CEA email dated 13.10.2023
(vi) HVPNL email dated 16.10.2023

महोदय/ Sir,

HVPNL has submitted that due to the exponential growth in electricity demand, the existing lines are unable to cater the power demand in various areas of Haryana. Therefore, HVPNL vide its letters under reference (i) and (ii) has proposed replacement of existing conductors with equivalent HTLS conductors in the areas where erection of new transmission lines is not possible due to non-availability of RoW.

HVPNL's proposal was deliberated in a meeting held on 15.09.2023 amongst CEA, CTUIL, Grid-India and HVPNL wherein CEA requested HVPNL to submit the proper justification for requirement of reconductoring of various lines along with requisite data such as peak loading observed till date, expected loading in future etc. along with load flow studies. The same has been submitted by HVPNL vide letter u/r (iii) and emails u/r (iv) and (vi).

Comments were sought from CTUIL and Grid-India on the above proposal. Based on the comments of CTUIL and Grid-India, our observations are as follows:

(i) Based on the peak loading data, future load projections and the load flow studies submitted by HVPNL, proposals for reconductoring of following existing lines have been found to be generally in order:

Sl. No.	HVPNL's proposal
1.	Reconductoring of Palwal - Mandkola 66 kV D/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-11.186 km)
2.	Reconductoring of Palwal - Hathin 66 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-14.2 km)
3.	Reconductoring of Badshahpur-Sector 35-Harsaru 66 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp along with raising of height at some locations. (Route length-9.96 km)
4.	Reconductoring of Khokrakot-Sector 3 Rohtak 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-7 km)
5.	Reconductoring of Harsaru - Farukhnagar 66 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-12.162 km)
6.	Reconductoring of portion* of HSIIDC- Barwala 66 kV S/c line (created after LILO of one circuit of Madanpur- Barwala 66 kV D/c line at HSIIDC) from Barwala S/s upto the LILO point with HTLS conductor having current carrying capacity of 600 Amp (Route length-4.8 km)
7.	Reconductoring of Daultabad-Sector10 Gurugram 66 kV D/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-10.5 km)
8.	Reconductoring of Chormar- Dabwali 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-24 km)
9.	Reconductoring of Shahpur Begu - Sirsa 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-9.5 km)
10.	Reconductoring of Jiwan Nagar - Rania 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-14 km)
11.	Reconductoring of A4-Ford 66 kV D/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-0.72 km)
12.	Reconductoring of Palla- Faridabad Sector 31 66 kV D/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-3 km)
13.	Reconductoring of Rohtak - Khorkrakot Rohtak 132 kV D/c line ckt-1 with HTLS conductor having current carrying capacity of 600 Amp. (Route length-2.7 km)
14.	Reconductoring of Rohtak - Khorkrakot Rohtak 132 kV D/c line ckt-2 with HTLS conductor having current carrying capacity of 600 Amp. (Route length-2.7 km)
15.	Reconductoring of portion* of Nissing-Jalmana 132 kV S/c line (which is to be LILOed at Dacher) with HTLS conductor having current carrying capacity of 600 Amp from Nissing S/s up to LILO Point. (Route length-6.5 km)
16.	Reconductoring of Isherwal - Behal 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-19.5 km)
17.	Reconductoring of Chhajpur-Chandoli 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length -8 km)
18.	Reconductoring of Bastara- Madhuban 132 kV S/c with HTLS conductor having current carrying capacity of 600 Amp (Route length-5.821 km)
19.	Reconductoring of Karnal- Madhuban 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp (Route length-12.065 km)
20.	Reconductoring of Nunamajra –MIE Bahadurgarh 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp (Route length-11.3 km)
21.	Reconductoring of portion* of Bapora-Tosham 132 kV S/c line from Tower Location (TL) No. 69-92 with HTLS conductor having current carrying capacity of 600 Amp. (Route length-5.6 km)
22.	Reconductoring of LILO portion* of LILO of Narwana- Jind 132 kV S/c line at Uchana with HTLS conductor having current carrying capacity of 600 Amp.

I/31631/2023

Sl. No.	HVPNL's proposal
	(Route length-1.094 km)
23.	Reconductoring of Nuhiyawali- Khairekan 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp (Route length-25 km)
24.	Reconductoring of Daultabad-IMT Manesar 220 kV D/c line along with LILO of one circuit at 220 kV Substation Sector-85, Gurugram with HTLS conductor having current carrying capacity of 1200 Amp.(Route length-17.56 km)
25.	Reconductoring of LILO portion* of LILO of 2nd circuit of Daultabad-IMT Manesar 220 kV D/c line at 220 kV Substation Sector-99, Gurugram with HTLS conductor having current carrying capacity of 1200 Amp.(Route length-2.39 km)
26.	Reconductoring of Sector 72 Gurgaon (PGCIL) – Sector 72 Gurgaon (HVPNL) 220 kV 3xS/c line with HTLS conductor having current carrying capacity equivalent to Twin Moose conductor (Route length – 0.12 km)
27.	Reconductoring of Sector 46-Palli 220 kV D/c line with HTLS conductor having current carrying capacity of 1200 Amp. (Route length-8.01 km)
28.	Reconductoring of PGCIL (Khanpur)-Kaithal 220 kV D/c line with HTLS conductor having current carrying capacity of 1200 Amp along with the replacement of existing insulators (Route length – 15.9 km)

**Rest of the line already implemented/ under implementation with high capacity conductor*

(ii) Regarding the remaining proposals submitted by HVPNL, as per the load flow studies, it has been observed that reconductoring of the lines with HTLS conductor may not be required. Therefore, HVPNL is requested to review the proposals or submit proper justification for requirement of the reconductoring of the lines. Details of the proposals along with observations of CEA are enclosed as Annexure A.

(iii) Along with reconductoring of the proposed lines, HVPNL may also ensure matching of bay upgradation works associated with lines whose reconductoring has been proposed.

(iv) It has been observed that various Intra State lines and ICTs of HVPNL are 'N-1' non-compliant. HVPNL may plan necessary transmission system strengthening works for the same.

भवदीय / Yours faithfully,

15/11/2023

for (मंजरी चतुर्वेदी/Manjari Chaturvedi)
(निदेशक/ Director)

Copy to:

1. COO (CTUIL), Saudamini, Plot no. 2, Sector -29, Gurgaon-122 001
2. Director (System Operation), Grid Controller of India Limited (Grid-India), B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi – 110010.

HVPN

HARYANA VIDYUT PRASARAN NIGAM

DETAILED PROJECT REPORT

Replacement of existing 0.15/0.2/AL-59/0.4/0.5sq" ACSR conductors with equivalent HTLS conductor of higher current carrying capacity in State of Haryana

DETAILED PROJECT REPORT

Replacement of various size of low current carrying capacity conductor with equivalent HTLS conductor of higher current capacity in state of Haryana

Table of Contents

1. BACKGROUND

a. Due to exponential growth in power demand, the existing transmission lines are unable to cater power demand in the various region of Haryana. The erection of new lines in these regions is 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.

b. 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.

c. During the meetings, proposals for creation of new substation/augmentation of existing substation and also erection of new transmission lines/ augmentation of existing transmission line were discussed. It was decided in-principle that HVPNL may replace the ACSR conductors of existing transmission lines with equivalent higher current capacity HTLS conductors wherein erection of new transmission lines is not feasible due to non-availability of RoW (Right of Way).

d. 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 while considering the various proposals for strengthening of power infrastructure of the area. The detailed proposal were prepared area-wise and same was got approved from the WTDs of concerned DISCOMs & HVPNL.

e. 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 etc.

f. In view of the above, the following 3 no. packages have been prepared with overall estimated cost of Rs. 290 crore (approx.):-

   I. Package-A (Tentative estimate cost: Rs. 45.04 Crore) Augmentation works of 07 no. Transmission lines with existing Wolf conductor to HTLS conductor.

   II. Package-B (Tentative Estimate cost: Rs. 102.44 Crore). Augmentation works of 17 no. Transmission lines with existing Panther and AL-59 conductor to HTLS conductor.

   III. Package-C (Tentative estimate cost: Rs 114.73 crore). Augmentation works of 07 no. Transmission lines with existing Zebra and Moose conductor to HTLS conductor.

g. The proposal of HVPNL for power system strengthening & improvement in Haryana by replacement of existing ACSR conductors with equivalent HTLS conductor of higher current carrying capacity was placed before the NRPC forum in its 68th meeting held on 18.08.2023 with request to recommend the proposal for 100% PSDF grant.

h. The proposal of HVPNL was deliberated at the NRPC forum and the decision of the forum is reproduced as under:-

> *"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."*

i. Accordingly, detailed proposal for Replacement of existing 0.15/0.2/AL-59/0.4/0.5sq" ACSR conductors with equivalent HTLS conductor of higher current carrying capacity in State of Haryana was submitted to Central Electricity Authority (CEA) for their consideration & recommendations.

j. Director/CEA vide their letter dated 15.11.2023 has conveyed that based on the peak loading data, future load projections and the load flow studies submitted by HVPNL, proposal for re-

conductoring of existing Transmission lines as per **Annexure-I** have been found to be generally in order.

k. The estimated cost of the re-conductoring work of existing Transmission lines recommended by CEA as per **letter dated 15.11.2023** is come to the tune of Rs. 225,99,08,427.00. The detailed estimate of the same is placed at **Annexure-V**

2. JUSTIFICATION

The replacement of ACSR (Aluminum Conductor Steel Reinforced) conductor with HTLS (High-Temperature Low-Sag) conductor can be justified for catering to the growing power demand in Haryana due to following reasons:-

a. **Increased Capacity:** HTLS conductors have a higher ampacity compared to ACSR conductors. They can carry more current without overheating, allowing for increased power transmission capacity. This is especially important in areas experiencing growing power demand, as it enables the transmission of larger amounts of electricity without the need for additional transmission lines**.**

b. Reduced Line Losses: HTLS conductors have lower electrical resistance compared to ACSR conductors. This reduces the I^2R losses, resulting in improved efficiency in power transmission. By minimizing line losses, HTLS conductors help optimize the power infrastructure and reduce energy wastage, leading to better utilization of available resources.

c. Enhanced Reliability: HTLS conductors offer improved mechanical strength and reduced sag compared to ACSR conductors. This enables them to withstand adverse weather conditions such as high winds, ice, and heavy snowfall. By maintaining proper clearance between conductors and minimizing the risk of line faults, HTLS conductors contribute to a more reliable power supply, reducing downtime and enhancing the overall grid reliability.

d. Environmental Benefits: HTLS conductors enable power utilities to optimize the existing transmission infrastructure, reducing the need for new transmission lines. This result in lower land requirements and minimized environmental impact associated with the construction of new power corridors.

3. PROJECT OBJECTIVES

a. The Replacement of Various Sizes of ACSR/AL-59 Conductor with Equivalent High-Temperature Low Sag (HTLS) Conductor project in Haryana State is a critical infrastructure initiative aimed at enhancing the efficiency and reliability of the state's power transmission network. This project is driven by the need to modernize the existing electrical grid, reduce transmission losses, improve the capacity to handle increasing power demand, and promote sustainability through the deployment of advanced technologies.

b. The scope of this project encompasses the replacement of traditional Aluminum Conductor Steel Reinforced (ACSR) and Aluminum Conductor Alloy Reinforced (AL-59) conductors with HTLS conductors across various transmission lines within Haryana State due to exponential

growth in power demand in the various regions of Haryana.

c. The erection of new lines in these regions is 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 to reduce the overloading of existing lines and also to improve the reliability with capability to cater the increased load demand in Haryana.

d. The growing power demand in Haryana suggests that the demand will continue to increase in the future. By replacing ACSR conductors with HTLS conductors, the power infrastructure can be upgraded to handle the anticipated load growth. This proactive approach ensures that the transmission lines can accommodate future demands without requiring frequent replacements or significant modifications.

e. The Replacement of Various Sizes of ACSR/AL-59 Conductor with Equivalent HTLS Conductor project in Haryana State is a strategic initiative aimed at improving the state's power transmission infrastructure. By achieving the project objectives of increased efficiency, capacity enhancement, and reduced maintenance, Haryana State is poised to meet the growing energy demands of its citizens, support the integration of renewable energy sources, and contribute to environmental sustainability. This project stands as a testament to the state's commitment to delivering reliable and efficient power supply while embracing advanced technologies in the energy sector.

3.1 PROJECT HIGHLIGHTS

Sr. No.	Description of Projects	Tentative estimated cost (in INR)	Completion schedule
1.	**Package-A** Replacement of existing 0.15 sq" conductor with equivalent HTLS conductor of higher current capacity.	45,04,40,311	12 Months
2.	**Package-B** Replacement of existing 0.2 sq" and AL-59 conductor with equivalent HTLS conductor of higher current capacity.	102,44,32,328	12 Months
3.	**Package-C** Replacement of existing 0.4 sq" and 0.5 sq" conductor with equivalent HTLS conductor of higher current capacity.	114,73,32,183	15 Months
Total		2,62,22,04,822	

Note:-
However, the estimated cost of the re-conductoring work of existing Transmission lines recommended by CEA is come to the tune of Rs. 225,99,08,427.00. **(Annexure-V)**

3.2 SCOPE OF WORK

Since, 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, scope of works under the project to be implemented by

HVPNL have been categorized in 3 number packages as per existing size (type) of the conductor i.e. wolf, Panther, AL-59, Zebra & Moose which is as under:-.

I. **Package-A** (Tentative estimate cost: Rs. 45.04 Crore) Augmentation works of 07 no. Transmission lines with existing Wolf conductor to HTLS conductor. **(Detailed as Annexure "II")**

II. **Package-B** (Tentative Estimate cost: Rs. 102.44 Crore). Augmentation works of 17 no. Transmission lines with existing Panther and AL-59 conductor to HTLS conductor. **(Detailed as Annexure "III")**

III. **Package-C** (Tentative estimate cost: Rs 114.73 crore). Augmentation works of 07 no. Transmission lines with existing Zebra and Moose conductor to HTLS conductor. **(Detailed as Annexure "IV").**

IV. **Final recommended transmission lines by CEA** (Tentative estimate cost: Rs. 223.36 crore).**:- R**e-conductoring work of existing Transmission lines as found in order by CEA is placed at **Annexure-V**

4. TARGET BENEFECIARIES

The Replacement project works of existing Wolf, Panther, AL-59, Zebra & Moose conductor with equivalent HTLS conductor of higher current capacity is to be implemented to meet the growing power demand in view of the expansion of power system network and other infrastructure. HTLS conductors enable power utilities to optimize the existing transmission infrastructure, reducing the need for new transmission lines. This result in lower land requirements and minimized environmental impact associated with the construction of new power corridors.

Thus beneficiaries of the project would be all the citizen of Haryana state by supporting the industrialization without impacting agriculture sector by reducing land requirement for new power corridors.

5. PROJECT STRATEGY

HTLS conductors have a higher current carrying capacity compared to ACSR conductors. They can carry more current without overheating, allowing for increased power transmission capacity. This is especially important in areas experiencing growing power demand, as it enables the transmission of larger amounts of electricity without the need for additional transmission lines. Replacement project work would be executed on transmission lines of Haryana State Transmission Utilities, wherein, existing conductor shall have to be replaced with equivalent weight of HTLS conductor, which require shutdown of the transmission line and sometimes addition of the tower in existing transmission lines may also be required for interconnecting the existing transmission Lines/ substations for improving reliability.

It is necessary to strengthen the existing transmission line network between substations in the State so as to handle the challenges posed by growing power demand in the absence of Right of Way (ROW).

6. LEGAL FRAME WORK

It is proposed to execute the Replacement project works of existing Wolf, Panther, AL-59, Zebra & Moose conductor with equivalent HTLS conductor of higher current capacity as per provisions contained in the Indian Electricity Act, 2003 and the rules made there-under and the Electricity (Supply)Act 1948, and subsequent amendments made thereof, so far as these are applicable.

7. ENVIRONMENTAL AND SOCIAL ASPECTS

7.1 Forest involvement/ Clearance

The project for Implementation of Replacement project works of existing low current carrying conductor with equivalent HTLS conductor of higher current capacity is to be carried out on the existing transmission lines of HVPNL, therefore, separate clearance for involvement of forest for any work related to the proposed work is not foreseen.

7.2 Social Issues/ R&R measures

Not foreseen, as the proposed scheme shall be established on the existing transmission lines and the requirements of Social Issues/ R&R measures shall be taken care in specific transmission line work if required.

8. TECHNICAL FEATURES

a. The physical and operating performance requirements of the transmission line with HTLS conductor is complying with the specified requirements. Particulars of the proposed conductor along with calculations to establish compliance with the specified requirements is provided in the detailed specification.

b. The bidder shall indicate the technical particulars and details of the construction of the HTLS conductor in the relevant schedule of GTP during bidding. The bidder shall also guarantee the DC resistance of conductor at 20 deg C and AC resistance at the calculated temperatures corresponding to 50Hz specified alternating current flow per sub conductor at specified ambient conditions. The HTLS conductor (except GAP Conductor) shall meet the following minimum requirements:-

Overall diameter of complete HTLS conductor	Not exceeding existing ACSR conductor overall diameter
Approx. mass of complete HTLS conductor (kg/km)	Less than or equal to weight of existing ACSR conductor(kg/km)
UTS/Weight ratio of HTLS Conductor	Better than UTS/Weight ratio of existing ACSR Conductors.
Direction of lay of outer layer	Right Hand
DCResistance@20^{o}C and AC Resistance@75^{o}C	Should be at least 15% less than that of Existing ACSR Conductor

c. The bidder shall submit the supporting calculations for the AC resistance indicating details & justifications of values of temperature coefficient of resistance & DC to AC

resistance conversion factor(s) with due reference to construction/ geometry of the conductor.

d. The offered conductor/ equipment of relevant technology should be type tested for each size, rating & assembly line. Test reports should not be more than seven years old reckoned from the date of bid opening in respect of all the tests carried out in accredited laboratories (based on ISO/IEC vide 25/17025 or EN 45001 by the National accreditation body of the country where laboratory is located) or witnessed by HVPNL or another electric power utility and shall be submitted by the Bidders.

e. The main materials required for the work of replacement are Hardware fittings, conductor and earth wire. The accessories required are Split pin, suspension assembly, suspension clamp, Preformed Armour Rods Set, armour grip suspension clamp, dead end assembly, bolts, nuts and washers, Mid Span Compression Joint, Repair Sleeve, Vibration dampers, Armour grip bundle spacers, spacer dampers.

All the materials to be used shall conform to the Indian/International Standards which shall mean latest revisions, with amendments/ changes adopted and published, unless specifically stated otherwise in the Specification.

The bidder shall also supply mandatory spares (approximately 5% of main items) as specified in the BOQ of the project. The cost of mandatory spares would be included in the bid evaluation.

9. MODE OF FINANCE AND PROJECT BUDGET

9.1 Project Cost Estimate: -

Scope of works under the project to be implemented by HVPNL have been categorized in 3 number packages as per existing size (type) of the conductor i.e. wolf, Panther, AL-59, Zebra & Moose which is as under:-.

Sr. No.	Description of Projects	Tentative estimated cost (in INR)
1.	**Package-A** Augmentation works of 07 no. Transmission lines with existing Wolf conductor to HTLS conductor. **(Detailed estimate as Annexure "II")**	45,04,40,311
2.	**Package-B** Augmentation works of 17 no. Transmission lines with existing Panther and AL-59 conductor to HTLS conductor. **(Detailed estimate as Annexure "III")**	102,44,32,328
3.	**Package-C** Augmentation works of 07 no. Transmission lines with existing Zebra and Moose conductor to HTLS	114,73,32,183

	conductor. **(Detailed estimate as Annexure "IV")**	
Total		2,62,22,04,822

Note:-
The estimated cost of the re-conductoring work of existing Transmission lines recommended by CEA is come to the tune of Rs. 225,99,08,427.00 (**Annexure-V).**

9.2 Basis of Cost Estimate: -

The basis taken into consideration for the preparation of the estimate is as under:-

i. Rates of Civil Works are prepared by Civil design wing of HVPNL on the basis of HSR.
ii. The annual price list is being prepared and circulated by HVPNL for the major equipments; therefore rates for the items which are available in the latest rate list of HVPNL have been taken.
iii. The rates which are not available in rate list are taken from latest Purchase Orders of the HVPNL.
iv. The rates of HTLS conductor has been taken as per the lowest rates received from the budgetary offers of its original manufacturers.
v. Transportation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items
vi. LabourCess @ 1% of Supply & Erection
vii. Administrative Charges @ 1% LabourCess
viii. Contractor premium @ 10% of Supply (only HVPNL rate list items)
ix. Contingencies & Incidental charges @ 5% total estimated cost of estimate.

The above cost estimate is inclusive of GST as funding for supply of equipment is assumed to be done through domestic sources. F&I have also been considered in the said estimate.

9.3 PHYSICAL MILESTONES OF THE PROJECT WORK:-

PERT CHART for 12 months (Package-A & B) and 15 months (Package-C) to execute the project (including supply and erection) has been prepared as Annexure "VIII". However, the time line of the salient milestones is as under:-

12 months PERT Chart		
Sr. No.	Description of activity	Timeline
i.	Detailed Survey including route alignment & profiling	1st to 3rd month
ii.	Supply of Stubs, Earthing, Towers & Gantaries	2nd to 7th month
iii.	Casting of tower foundation	5th to 9th month
iv.	Supply of HTLS conductor	5th to 9th month
v.	Dismantlement & erection of towers	5th to 9th month
vi.	Stringing & replacement of conductor	7th to 11th month
vii.	Inspection by CEI	12th month
15 months PERT Chart		
Sr. No.	Description of activity	Timeline
i.	Detailed Survey including route alignment & profiling	2nd to 10th month
ii.	Supply of Stubs, Earthing, Towers & Gantaries	2nd to 12th month
iii.	Casting of tower foundation	3rd to 13th month
iv.	Supply of HTLS conductor	4th to 13th month
v.	Dismantlement & erection of towers	5th to 12th month
vi.	Stringing & replacement of conductor	5th to 14th month

vii.	Inspection by CEI	15th month

9.4 FINANCIAL MILESTONES OF THE PROJECT WORK:-

NIT for the Package “A” & Package “B” have already been floated on 15.09.2023 and 21.09.2023 respectively and NIT for Package “C” is also likely to be floated by 05.10.2023. All the 3 no of packaged are likely to be awarded by February 2024 with completion schedule of 12 months (Package-A & B) and 15 months (Package-C) i.e. completed by May 2025.

Tentative projection for the expenditure to be incurred on the project is as under:-
For package-A & B

Sr. No.	Description	Projection of the expenditure (in % of project cost)	Timeline considering April 2024 as 1st month
1	10 % Advance to the EPC contractor	10%	1st month
2	Supply of Stubs, Earthing, Towers & Gantries	1%	2nd to 7th month
3	Casting of tower foundation	2%	5th to 9th month
4	Supply of HTLS conductor	60%	5th to 9th month
5	Dismantlement & erection of towers	5%	5th to 9th month
6	Stringing & replacement of conductor	20%	7th to 11th month
7	Inspection by CEI	2%	12th month

For package-C

Sr. No.	Description	Projection of the expenditure (in % of project cost)	Timeline considering April 2024 as 1st month
1	10 % Advance to the EPC contractor	10%	1st month
2	Supply of Stubs, Earthing, Towers & Gantries	1%	2nd to 12th month
3	Casting of tower foundation	2%	3rd to 13th month
4	Supply of HTLS conductor	60%	4th to 13th month
5	Dismantlement & erection of towers	5%	5th to 12th month
6	Stringing & replacement of conductor	20%	5th to 14th month
7	Inspection by CEI	2%	15th month

10. SUSTAINABILITY

The sustainability of High-Temperature Low-Sag (HTLS) conductors can be evaluated from various perspectives, including environmental, economic, and social aspects. Here are some considerations regarding the sustainability of HTLS conductors:

10.1 Environmental Sustainability:

i. **Reduced Line Losses**: HTLS conductors are designed to operate at higher temperatures and carry more current, which can reduce line losses during electricity transmission. This increased efficiency can lead to lower energy consumption and reduced greenhouse gas emissions, contributing to environmental sustainability.

ii. **Extended Service Life**: HTLS conductors are built for durability and often have a longer service life compared to traditional conductors. This can reduce the need for frequent replacements and the associated environmental impact of manufacturing and disposing of conductor materials.

iii. **Compatibility with Renewable Energy**: HTLS conductors can support the integration of renewable energy sources like wind and solar by enhancing the grid's capacity and reliability, which is critical for transitioning to cleaner energy generation.

iv. **Reduced Land Requirements**: The low sag of HTLS conductors can lead to reduced

right-of-way requirements, minimizing the environmental impact of clearing land for transmission line corridor.

10.2 Economic Sustainability:

i. **Efficiency Improvements**: HTLS conductors' ability to reduce line losses and increase power transmission capacity can lead to cost savings for utilities and consumers. This economic sustainability can help justify the investment in upgrading transmission infrastructure.

ii. **Reduced Maintenance Costs**: The longer service life and durability of HTLS conductors can result in lower maintenance and replacement costs over time, contributing to the economic sustainability of power transmission systems.

iii. **Compatibility with Existing Infrastructure**: HTLS conductors are designed to be compatible with existing transmission infrastructure, which can reduce the overall cost of upgrades and modernization.

10.3 Social Sustainability:

i. **Reliability:** HTLS conductors' ability to maintain proper tension and low sag, even in extreme conditions, can enhance the reliability of the electrical grid. This reliability is essential for meeting the energy needs of communities and businesses.

ii. **Reduced Outages**: By reducing the risk of overheating and power outages, HTLS conductors can contribute to social sustainability by ensuring a stable supply of electricity for critical infrastructure, emergency services, and everyday life.

iii. **Safety:** HTLS conductors are designed with safety in mind, reducing the risk of accidents such as conductor clashing with vegetation or other objects. This helps protect both the environment and people living near transmission lines.

11. SPARE PARTS MANAGEMENT SYSTEM

a. The primary objective of spare part management system is to ensure timely availability of proper spare parts for efficient maintenance of the transmission line without excessive build-upon non-moving and slow moving inventory.

b. The main materials required for the work of replacement are Hardware fittings, conductor and earth wire. The accessories required are Split pin, suspension assembly, suspension clamp, Preformed Armour Rods Set, armour grip suspension clamp, dead end assembly, bolts, nuts and washers, Mid Span Compression Joint, Repair Sleeve, Vibration dampers, Armour grip bundle spacers, spacer dampers.

c. The main materials required for the work of replacement are Hardware fittings, conductor and earth wire. The accessories required are Split pin, suspension assembly, suspension clamp, Preformed Armour Rods Set, armour grip suspension clamp, dead end assembly, bolts, nuts and washers, Mid Span Compression Joint, Repair Sleeve, Vibration dampers, Armour grip bundle spacers, spacer dampers.

d. To ensure the supply of the quality materials in the project there would be provisions in the contract that the offered materials of relevant technology should be type tested for each size, rating & assembly line. Also all the materials to be used in the project shall conform to the Indian/International Standards which shall mean latest revisions, with amendments/ changes adopted and published, unless specifically stated otherwise in the Specification.

e. To ensure availability of proper spare parts for efficient maintenance of the transmission line there would be provision in the contract that the bidder shall also supply mandatory spares (approximately 5% of main items) as specified in the BOQ of the project. The cost of mandatory spares would be included in the bid evaluation

12. TRAINING OF PERSONNEL

The expertise available within the organization is required to be augmented to cater maintenance of transmission line to be installed under the proposed project. Accordingly, the training shall be imparted to the team of 3 Engineers (per line) nominated by the Nigam have to be arranged at suppliers place and site which is considered essential under the project.

List of transmission lines for the re-conductoring work of HTLS recommended by CEA

1. Reconductoring of Palwal - Mandkola 66 kV D/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-11.186 km)
2. Reconductoring of Palwal – Hathin 66 kV S/c line with HTLS conductorhaving current carrying capacity of 600 Amp. (Route length-14.2 km)
3. Reconductoring of Badshahpur-Sector-35-Harsaru 66 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp along with raising of height at some locations. (Route length-9.96 km)
4. Reconductoring of Khokrakot-Sector 3 Rohtak 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-7 km)
5. Reconductoring of Harsaru – Farukhnagar 66 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-12.162 km)
6. Reconductoring of HSIIDC- Barwala 66 kV S/c line (created after LILO of one circuit of Madanpur- Barwala 66 kV D/c line at HSIIDC) from LILO point to Barwana S/s with HTLS conductor having current carrying capacity of 600 Amp (Route length-4.8 km)
7. Reconductoring of Daultabad-Sec10 Gurugram 66 kV D/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-10.5 km)
8. Reconductoring of Chormar- Dabwali 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-24 km)
9. Reconductoring of Shahpur Begu – Sirsa 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-9.5 km)
10. Reconductoring of Jiwan Nagar –Rania 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-14 km)
11. Reconductoring of A4-Ford 66 kV D/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-1.45 km)
12. Reconductoring of Palla- Faridabad Sec31 66 kV D/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-3 km)
13. Reconductoring of Rohtak – Khorkrakot Rohtak 132 kV D/c line ckt-1 with HTLS conductor having current carrying capacity of 600 Amp. (Route length-2.7 km)
14. Reconductoring of Rohtak – Khorkrakot Rohtak 132 kV D/c line ckt-2 with HTLS conductor having current carrying capacity of 600 Amp. (Route length-2.7 km)
15. Reconductoring of Nissing-Jalmana 132 kV S/c line (which is to be LILOed at Dacher) with HTLS conductor having current carrying capacity of 600 Amp from Nissing S/s up to LILO Point. (Route length-6.5 km)
16. Reconductoring of Isherwal-Behal 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-19.5 km)
17. Reconductoring of Chhajpur-Chandoli 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length -8 km)
18. Reconductoring of Bastara- Madhuban 132 kV S/c with HTLS conductor having current carrying capacity of 600 Amp (Route length-5.821 km)

19. Reconductoring of Karnal- Madhuban 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp (Route length-12.065 km)
20. Reconductoring of Nunamajra –MIE Bahadurgarh 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp (Route length-11.3 km)
21. Reconductoring of Bapora-Tosham 132 kV S/c line from TL no. 69-92 with HTLS conductor having current carrying capacity of 600 Amp. (Route length-5.6 km)
22. Reconductoring of LILO portion of LILO of Narwana- Jind 132 kV S/c line at Uchana with HTLS conductor having current carrying capacity of 600 Amp. (Route length-1.094 km)
23. Reconductoring of Nuhiyawali Khairekan 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp (Route length-25 km)
24. Reconductoring of 1st circuit of Daultabad-IMT Manesar 220 kV D/c line with allied equipment along with LILO at 220 kV Substation Sector-85, Gurugram with HTLS conductor having current carrying capacity of 1200 Amp. (Route length-17.56 km)
25. Reconductoring of 2nd circuit of Daultabad-IMT Manesar 220 kV D/c line with allied equipment along with LILO at 220 kV Substation Sector-99, Gurugram with HTLS conductor having current carrying capacity of 1200 Amp. (Route length-2.39 km)
26. Reconductoring of Sector72 Gurgaon (PGCIL) - Sector72 Gurgaon (HVPNL) 220 kV 3xS/c line with HTLS conductor having current carrying capacity equivalent to twin Moose conductor (Route length – 0.12 km)
27. Reconductoring of Sector 46-Palli 220 kV D/c line with HTLS conductor having current carrying capacity of 1200 Amp. (Route length-8.01 km)
28. Reconductoring of PGCIL (Khanpur)-Kaithal 220 kV D/c line with HTLS conductor having current carrying capacity of 1200 Amp along with the replacement of existing insulators (Route length – 15.9 km)

भारत सरकार

Government of India

विद्युत मंत्रालय

Ministry of Power

केन्द्रीय विद्युत प्राधिकरण

Central Electricity Authority

विद्युत प्रणाली योजना एवं मूल्यांकन-I प्रभाग

Power System Planning & Appraisal-I Division

सेवा में / **To,**

Chief Engineer (PD&C),
Haryana Vidyut Prasaran Nigam Limited,
Shakti Bhawan,
Sector-6, Panchkula- 134109

विषय /Subject: HVPNL's proposal for replacement of various existing conductors (i.e. wolf/ panther/ zebra/ moose) with equivalent HTLS conductor to reduce the overloading of existing transmission lines

संदर्भ/ Reference:

(i) HVPNL letter no. Ch-18/HSS-391/III dated 25.08.2023
(ii) HVPNL letter no. Ch-32/HSS-391/Vol-III dated 13.09.2023
(iii) HVPNL letter no. Ch-43/HSS-391/Vol-III dated 27.09.2023
(iv) HVPNL email dated 29.09.2023
(v) CEA email dated 13.10.2023
(vi) HVPNL email dated 16.10.2023

महोदय/ Sir,

HVPNL has submitted that due to the exponential growth in electricity demand, the existing lines are unable to cater the power demand in various areas of Haryana. Therefore, HVPNL vide its letters under reference (i) and (ii) has proposed replacement of existing conductors with equivalent HTLS conductors in the areas where erection of new transmission lines is not possible due to non-availability of RoW.

HVPNL's proposal was deliberated in a meeting held on 15.09.2023 amongst CEA, CTUIL, Grid-India and HVPNL wherein CEA requested HVPNL to submit the proper justification for requirement of reconductoring of various lines along with requisite data such as peak loading observed till date, expected loading in future etc. along with load flow studies. The same has been submitted by HVPNL vide letter u/r (iii) and emails u/r (iv) and (vi).

Comments were sought from CTUIL and Grid-India on the above proposal. Based on the comments of CTUIL and Grid-India, our observations are as follows:

(i) Based on the peak loading data, future load projections and the load flow studies submitted by HVPNL, proposals for reconductoring of following existing lines have been found to be generally in order:

Sl. No.	HVPNL's proposal
1.	Reconductoring of Palwal - Mandkola 66 kV D/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-11.186 km)
2.	Reconductoring of Palwal - Hathin 66 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-14.2 km)
3.	Reconductoring of Badshahpur-Sector 35-Harsaru 66 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp along with raising of height at some locations. (Route length-9.96 km)
4.	Reconductoring of Khokrakot-Sector 3 Rohtak 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-7 km)
5.	Reconductoring of Harsaru - Farukhnagar 66 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-12.162 km)
6.	Reconductoring of portion* of HSIIDC- Barwala 66 kV S/c line (created after LILO of one circuit of Madanpur- Barwala 66 kV D/c line at HSIIDC) from Barwala S/s upto the LILO point with HTLS conductor having current carrying capacity of 600 Amp (Route length-4.8 km)
7.	Reconductoring of Daultabad-Sector10 Gurugram 66 kV D/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-10.5 km)
8.	Reconductoring of Chormar- Dabwali 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-24 km)
9.	Reconductoring of Shahpur Begu - Sirsa 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-9.5 km)
10.	Reconductoring of Jiwan Nagar - Rania 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-14 km)
11.	Reconductoring of A4-Ford 66 kV D/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-0.72 km)
12.	Reconductoring of Palla- Faridabad Sector 31 66 kV D/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-3 km)
13.	Reconductoring of Rohtak - Khorkrakot Rohtak 132 kV D/c line ckt-1 with HTLS conductor having current carrying capacity of 600 Amp. (Route length-2.7 km)
14.	Reconductoring of Rohtak - Khorkrakot Rohtak 132 kV D/c line ckt-2 with HTLS conductor having current carrying capacity of 600 Amp. (Route length-2.7 km)
15.	Reconductoring of portion* of Nissing-Jalmana 132 kV S/c line (which is to be LILOed at Dacher) with HTLS conductor having current carrying capacity of 600 Amp from Nissing S/s up to LILO Point. (Route length-6.5 km)
16.	Reconductoring of Isherwal - Behal 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-19.5 km)
17.	Reconductoring of Chhajpur-Chandoli 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length -8 km)
18.	Reconductoring of Bastara- Madhuban 132 kV S/c with HTLS conductor having current carrying capacity of 600 Amp (Route length-5.821 km)
19.	Reconductoring of Karnal- Madhuban 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp (Route length-12.065 km)
20.	Reconductoring of Nunamajra –MIE Bahadurgarh 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp (Route length-11.3 km)
21.	Reconductoring of portion* of Bapora-Tosham 132 kV S/c line from Tower Location (TL) No. 69-92 with HTLS conductor having current carrying capacity of 600 Amp. (Route length-5.6 km)
22.	Reconductoring of LILO portion* of LILO of Narwana- Jind 132 kV S/c line at Uchana with HTLS conductor having current carrying capacity of 600 Amp.

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Sl. No.	HVPNL's proposal
	(Route length-1.094 km)
23.	Reconductoring of Nuhiyawali- Khairekan 132 kV S/c line with HTLS conductor having current carrying capacity of 600 Amp (Route length-25 km)
24.	Reconductoring of Daultabad-IMT Manesar 220 kV D/c line along with LILO of one circuit at 220 kV Substation Sector-85, Gurugram with HTLS conductor having current carrying capacity of 1200 Amp.(Route length-17.56 km)
25.	Reconductoring of LILO portion* of LILO of 2nd circuit of Daultabad-IMT Manesar 220 kV D/c line at 220 kV Substation Sector-99, Gurugram with HTLS conductor having current carrying capacity of 1200 Amp.(Route length-2.39 km)
26.	Reconductoring of Sector 72 Gurgaon (PGCIL) – Sector 72 Gurgaon (HVPNL) 220 kV 3xS/c line with HTLS conductor having current carrying capacity equivalent to Twin Moose conductor (Route length – 0.12 km)
27.	Reconductoring of Sector 46-Palli 220 kV D/c line with HTLS conductor having current carrying capacity of 1200 Amp. (Route length-8.01 km)
28.	Reconductoring of PGCIL (Khanpur)-Kaithal 220 kV D/c line with HTLS conductor having current carrying capacity of 1200 Amp along with the replacement of existing insulators (Route length – 15.9 km)

**Rest of the line already implemented/ under implementation with high capacity conductor*

(ii) Regarding the remaining proposals submitted by HVPNL, as per the load flow studies, it has been observed that reconductoring of the lines with HTLS conductor may not be required. Therefore, HVPNL is requested to review the proposals or submit proper justification for requirement of the reconductoring of the lines. Details of the proposals along with observations of CEA are enclosed as Annexure A.

(iii) Along with reconductoring of the proposed lines, HVPNL may also ensure matching of bay upgradation works associated with lines whose reconductoring has been proposed.

(iv) It has been observed that various Intra State lines and ICTs of HVPNL are 'N-1' non-compliant. HVPNL may plan necessary transmission system strengthening works for the same.

भवदीय / Yours faithfully,

15/11/2023

for (मंजरी चतुर्वेदी/Manjari Chaturvedi)
(निदेशक/ Director)

Copy to:

1. COO (CTUIL), Saudamini, Plot no. 2, Sector -29, Gurgaon-122 001
2. Director (System Operation), Grid Controller of India Limited (Grid-India), B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi – 110010.

Line wise Estimated Cost for Package-A

Annexure-II

Sr. No.	Name of Line	Ckt. Km	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 (Tentative D/C Route Length-11.186 KM)	22.372	94889505
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. (Tentative D/C Route Length-14.594 KM)	29.188	126955496
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 (Tentative S/C Route Length-14.2 KM)	14.2	61487680
4	Augmentation of 66kV S/C Badshahpur-Sector-35-Harsaru line-provision of HTLS conductor of size 0.15 sq. inch (having ampacity of 600Amp thereoff) alongwith raising of height at some locations (Tentative S/C Route Length-9.96 KM)	10	63837730
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. (Tentative S/C Route Length-5.75 KM)	5.75	26066799
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 (Tentative S/C Route Length-12.162 KM)	12.162	54600488
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 (Tentative S/C Route Length-4.8 KM)	4.8	22602613
	Total	**98.472**	**450440311**

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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								
S. N.	**DESCRIPTION**	**UNIT**	**Qty.**	**Spares**	**Total Qty.**	**Unit price (Including GST)**	**Total**	**Rate taken from**
1	HTLS Conductor having current carrying capacity of about 600 Amp	Km	68	2	70	998280.00	69879600.00	Budgetary offer from M/s Apar, M/s Sterlite & M/s Jsk (CP- 17)
2	Silicon Rubber Polymer Insulator strings							
	I) 70 kN	No.	195	0	195	1500.00	292500.00	Rate list dated 27.04.2023 (CP-20)
	ii) 90 kN	No.	168	0	168	1700.00	285600.00	
3	Hardware Fittings of HTLS Conductor having current carrying capacity of about 600 Amp							
	(a) Single 'I' Suspension String	set	192	6	198	9558.00	1892484.00	PO REC-207 (CP-18)
	(b) Single suspension pilot string	Set	3	0	3	3186.00	9558.00	
	(c) Single Tension string	Set	144	5	149	31860.00	4747140.00	
	d) Double tension string	Set	12	1	13	61596.00	800748.00	
4	HTLS conductor accessories							
	i) Mid Span Compression Joint	No.	45	1	46	27612.00	1270152.00	PO REC-207
	ii) Repair sleeves	No.	13	1	14	3610.80	50551.20	
	iii) Vibration damper for conductor	No.	720	22	742	2548.80	1891209.60	
	Total of Supply						**81119542.80**	
	Erection @10% of Supply						**8111954.28**	
6	***DISMANTLEMENT WORK to be included in Erection Part of BOQ***							
	Dismantlement of existing of 0.15sq" ACSR conductor complete with H/W fittings, Insulators for above portion of line and their transportation proper stacking at Dedicated Store of HVPNL.	CKm.			22.372	6704.46	149992.26	Rate @5 % of Supply rate after updating with CACMAI July 2023 (CP- 21)
	Dismantlement						149992.26	
	Total (Erection+Dismantlement charges)						8261946.54	
	Total Rate list items						578100.00	
	Total Supply + Erection+ Dismantlement						89381489.34	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						28905.00	
	Labour Cess @ 1% of Supply,erection & Dismantlement						893814.89	
	Administrative Charges @ 1% Labour Cess						8938.15	
	Contractor premium @ 10% of Supply (rate list items)						57810.00	
	Total (Total estimated cost)						**90370957.39**	
	Contingencies & Incidental charges @ 5% total estimated cost						4518547.87	
	Gross Total Estimate						**94889505**	

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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.
(Tentative length of D/C line = 14.594KM)

S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price	Total	Rate taken from
1	HTLS Conductor having current carrying capacity of about 600 Amp size equivalent to ACSR Wolf conductor	Km	88.5	4	92.5	998280.00	92340900.00	Budgetary offer from M/s Apar, M/s Sterlite & M/s Jsk (CP- 17)
2	A/F type Disc Insulator or Silicon Rubber Polymer Insulator strings							
	i) 70 kN	No.	270	0	270	1500.00	405000.00	Rate list dated 27.04.2023 (CP-20)
	ii) 90 kN	No.	252	0	252	1700.00	428400.00	
3	Hardware Fittings of HTLS Conductor having current carrying							
	(a) Single 'I' Suspension String	set	264	10	274	9558.00	2618892.00	PO REC-207 **(CP- 18)**
	(b) Single suspension pilot string	Set	6	1	7	3186.00	22302.00	
	(c) Single Tension string	Set	228	10	238	31860.00	7582680.00	
	(d) Double Tension string	Set	12	2	14	61596.00	862344.00	PO REC-207 **(CP- 18)**
4	HTLS conductor accessories						0.00	
	i) Mid Span Compression Joint	No.	59	3	62	27612.00	1711944.00	PO REC-207 **(CP- 18)**
	ii) Repair sleeves	No.	18	1	19	3610.80	68605.20	
	iii) Vibration damper for conductor	No.	936	40	976	2548.80	2487628.80	
	Total of Supply						**108528696.00**	
	Erection @10% of Supply						**10852869.60**	
6	***DISMANTLEMENT WORK to be included in Erection Part of BOQ***							
	Dismantlement of existing of 0.15sq" ACSR conductor complete with H/W fittings, Insulators for above portion of line and their transportation proper stacking at Dedicated Store of HVPNL.	Ckm.			29.188	6704.46	195689.89	Rate @5 % of Supply rate after updating with CACMAI July 2023 (CP- 21)
	Dismantlement						195689.89	
	Total (Erection+Dismantlement charges)						11048559.49	
	Total Rate list items						833400.00	
	Total Supply + Erection+ Dismantlement						119577255.49	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						41670.00	
	Labour Cess @ 1% of Supply,erection & Dismantlement						1195772.55	
	Administrative Charges @ 1% Labour Cess						11957.73	
	Contractor premium @ 10% of Supply (rate list items)						83340.00	
	Total (Total estimated cost)						**120909995.77**	
	Contingencies & Incidental charges @ 5% total estimated cost						6045499.79	
	Gross Total Estimate						**126955496**	

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Sonnu

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.(Tentative length of D/C line = 14.2KM)

S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price	Total	Rate taken from
1	HTLS Conductor having current carrying capacity of about 600 Amp size equivalent to ACSR Wolf conductor	Km	43	2	45	998280.00	44922600.00	Budgetary offer from M/s Apar, M/s Sterlite & M/s Jsk (CP- 17)
2	A/F type Disc Insulator or Silicon Rubber Polymer Insulator strings							
	i) 70 kN	No.	126	-	126	1500.00	189000.00	Rate list dated 27.04.2023 (CP-20)
	ii) 90 kN	No.	120	-	120	1700.00	204000.00	
3	Hardware Fittings of HTLS Conductor having current carrying capacity of about 600 Amp size equivalent to ACSR Wolf conductor							
	(a) Single 'I' Suspension String	set	114	6	120	9558.00	1146960.00	PO REC-207 (CP- 18)
	(b) Single suspension pilot string	Set	12	1	13	3186.00	41418.00	
	(c) Single Tension string	Set	120	5	125	31860.00	3982500.00	
4	HTLS conductor accessories							
	i) Mid Span Compression Joint	No.	29	1	30	27612.00	828360.00	PO REC-207 (CP- 18)
	ii) Repair sleeves	No.	9	1	10	3610.80	36108.00	
	iii) Vibration damper for conductor	No.	456	20	476	2548.80	1213228.80	
	Total of Supply						**52564174.80**	
	Erection @10% of Supply						**5256417.48**	
6	***DISMANTLEMENT WORK to be included in Erection Part of BOQ***							
	Dismantlement of existing of 0.15sq" ACSR conductor complete with H/W fittings, Insulators for above portion of line and their transportation proper stacking at Dedicated Store of HVPNL.	Ckm.			14.2	6704.5	95203.39	Rate @5 % of Supply rate after updating with CACMAI July 2023 (CP- 21)
	Dismantlement						95203.39	
	Total (Erection+Dismantlement charges)						5351620.87	
	Total Rate list items						393000.00	
	Total Supply + Erection+ Dismantlement						57915795.67	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						19650.00	
	Labour Cess @ 1% of Supply,erection & Dismantlement						579157.96	
	Administrative Charges @ 1% Labour Cess						5791.58	
	Contractor premium @ 10% of Supply (rate list items)						39300.00	
	Total (Total estimated cost)						**58559695.20**	
	Contingencies & Incidental charges @ 5% total estimated cost						2927984.76	
	Gross Total Estimate						**61487680**	

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Augmentation of 66kV S/C Badshahpur-Sector-35-Harsaru line-provision of HTLS conductor of size 0.15 sq. inch (having ampacity of 600Amp thereoff) alongwith raising of height at some locations to maintain adequate clearance as per IE rule.

S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	**Fabrication and supply of following tower parts with stubs, bolts & nuts step bolts, U Bolts hangers, D-shakle etc. of following designs**							As per latest rate list dt. 27.04.2023 and updating the same IEEMA upto July 2023
	i) 66kV 'P' type D/C tower (PSEB design)	No.	1	0	1	320532.53	320532.53	
	ii) 66kV 'Q' type D/C tower (PSEB design)	No.	10	0	10	392914.46	3929144.64	
	+3 mtr Extn. Only	No	10	0	10	75216.928	752169.28	
	iii) 66kV 'R' type D/C tower (PSEB design)	No	3	0	3	839922.36	2519767.09	
	+6 mtr Extn. Only	No	3	0	3	157321.64	471964.92	
2	**Supply of earthing of towers /Gantry** i.) pipe type	sets	14	0	14	5656.92	79196.88	
	ii) Counterpoise type	sets	0	0	0	0.00	0	
3	**Supply of following Tower Accessories** i.) Danger plate	No	14	0	14	403.56	5649.84	EPC-D-79 dt 09.08.2022 **(CP)**
	ii.) Number plate	No	14	0	14	403.56	5649.84	
	iii) Phase plate (set of 3)	sets	13	0	13	403.56	5246.28	
	iv) circuit plate (set of 2)	sets	14	0	14	403.56	5649.84	
	v) Bird Guard (set of 3)	sets	1	0	1	2020.16	2020.16	
	vi) Anti climbing device	sets	14	0	14	12391.18	173476.52	
4	HTLS Conductor having current carrying capacity of about 600 Amp	Km	30.2	0.8	31	998280.00	30946680	Budgetary offer from M/s Apar, M/s Sterlite & M/s Jsk (CP- 17)
5	66kv A/F type disc insulator or 66kV Silicon Rubber Polymer Insulator strings							
	i) 70 kN	No.	80	0	80	1500	120000	Rate list dated 27.04.2023 **(CP- 20)**
	ii) 90 kN	No.	198	0	198	1700	336600	
6	Hardware Fittings of HTLS Conductor having current carrying capacity of about 600 Amp							
	(a) Single 'I' Suspension String	set	72	2	74	9558	707292	PO REC-207 **(CP18)**
	(b) Single suspension pilot string	Set	6	1	7	3186	22302	
	(c) Single Tension string	Set	198	10	208	31860	6626880	
7	HTLS conductor accessories							
	i) Mid Span Compression Joint for conductor	No.	20	1	21	27612	579852	PO REC-207 **(CP-18)**
	ii) Repair sleeves for conductor	No.	6	1	7	3611	25276	
	iii) Vibration damper for conductor	No.	540	27	567	2549	1445170	
	Total of Supply						**49080519**	
	Erection @10% of Supply						**4908052**	
	DISMANTLEMENT WORK to be included in Erection Part of BOQ							
8	***Dismantlement of tower and their transportation & proper stacking at designated dedicated store of HVPNL. The dismantlement of tower shall also include dismantlement of stub concrete up to a depth of 1M (one meter) from Natural Ground level, back filling, compaction and clearing the site of debri.***							
	i.) 66kV 'A' type S/C towers (HSEB design)				10	9853	98532	Rate @5 % of Supply rate after updating with leema July. 2023 **(CP-21)**
	i.) 66kV 'B' type S/C towers (HSEB design)				1	10354	10354	
9	Dismantlement of existing of 0.15sq" ACSR conductor complete with H/W fittings, Insulators for above portion of line and their transportation proper stacking at Dedicated Store of HVPNL.	Ckm.			10	6704.5	67045	Rate @5 % of Supply rate after updating with CACMAI July. 2023 **(CP-21)**
	Dismantlement						175930	
	Civil Items							
10	Detailed Survey	Km.	10	0	10	19999.82	199998	

11	Furnishing bore log data	No.	10	0	10	6999.76	69998	
12	Construction of tower foundations as per HVPNL Drgs & Specifications **for 0 to 6Mtr. extn.** including excavation, concreting, supply and placement of steel reinforcement and backfilling complete in all respect.			0	0		0	
13	i) 66kV D/C 'P' type Tower (PSEB Design) classified as			0	0		0	
14	**- Dry**	No.	1	0	1	128361.6	128362	
15	ii) 66kV D/C 'Q' type Tower (PSEB Design) classified as			0	0		0	
16	**- Dry**	No.	10	0	10	209038.2	2090382	
17	iii) 66kV D/C 'R' type Tower (PSEB Design) classified as			0	0		0	
18	**- Dry**	No.	3	0	3	735898.7	2207696	
19	Preventive Measure			0	0		0	
20	Earthwork in excavation in all kinds of soil upto 6 m depth including dressing, backfilling, compaction and disposal of surplus soil. (HSR Ref.No. 15.1.2)	Cum	3	0	3	232.46	697	
21	Earthwork in excavation in hard rock (blasting prohibited)upto 3m depth including dressing, backfilling, compaction and disposal of surplus material. (HSR Ref.No. 15.4.1)	Cum	3	0	3	604.16	1812	As per Rates Obtained from Civil Design
22	Brick masonry in 1:4 (cement: sand) mortar (HSR Ref.No. 7.21.1)	Cum	5	0	5	4357.74	21789	
23	Earth filling including compaction, leveling & dressing etc. (HSR Ref.No. RM079 + 3.1.2 + 4.32)	Cum	5	0	5	173.46	867	
24	RCC (1:1½ :3) complete in all respect excluding centering, shuttering, finishing and reinforcement. (HSR Ref.No. 6.14.1)	Cum	5	0	5	5161.32	25807	
25	Lean concrete (1:3:6) complete in all respect excluding centering and shuttering. (HSR Ref.No. 6.1.4)	Cum	2	0	2	3434.98	6870	
26	Lean concrete (1:4:8) complete in all respect excluding centering and shuttering. (HSR Ref.No. 6.1.6)	Cum	2	0	2	2882	5763	
27	Centering, shuttering including strutting propping etc. and removal of formwork. (HSR Ref.No. 6.30.2)	Sqm	10	0	10	332.76	3328	
28	Steel reinforcement for RCC Work including cutting, bending, placing, binding etc. complete in all respect. (HSR Ref.No. 6.33.6)	kg	100	0	100	71.98	7198	
	Total Civil Rates						4770567	
	Total (Erection+Dismantlement+Civil charges)						9854548	
	Total Rate list Items						8450178	
	Total Supply + Erection+ Dismantlement+Civil						58935067	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						422509	
	Labour Cess @ 1% of Supply,erection & Dismantlement						589351	
	Administrative Charges @ 1% Labour Cess						5894	
	Contractor premium @ 10% of Supply (rate list items)						845018	
	Total (Total estimated cost)						**60797838**	
	Contingencies & Incidental charges @ 5% total estimated cost						3039892	
	Gross Total Estimate						**63837730**	

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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.
(Tentative length of D/C line = 17.4KM)

S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	HTLS Conductor having current carrying capacity of about 600 Amp size equivalent to ACSR Wolf conductor	Km	17.4	0.9	18.3	998280.00	18268524.00	Budgetary offer from M/s Apar, M/s Sterlite & M/s Jsk (CP- 17)
2	Hardware Fittings of HTLS Conductor having current carrying							
	(a) Single 'I' Suspension String	set	39	2	41	9558.00	391878.00	PO REC-207 (CP-18)
	(b) Single suspension pilot string	Set	3	1	4	3186.00	12744.00	
	(c) Single Tension string	Set	66	4	70	31860.00	2230200.00	
	(d) Double Tension string	Set	6	1	7	61596.00	431172.00	PO REC-207 (CP-18)
3	HTLS conductor accessories						0.00	
	i) Mid Span Compression Joint	No.	12	1	13	27612.00	358956.00	PO REC-207 (CP-18)
	ii) Repair sleeves	No.	4	1	5	3610.80	18054.00	
	iii) Vibration damper for conductor	No.	222	12	234	2548.80	596419.20	
	Total of Supply						**22307947.20**	
	Erection @10% of Supply						**2230794.72**	
4	***DISMANTLEMENT WORK to be included in Erection Part of BOQ***							
	Dismantlement of existing of 0.15sq" ACSR conductor complete with H/W fittings, Insulators for above portion of line and their transportation proper stacking at Dedicated Store of HVPNL.	Ckm.			5.75	6704.46	38550.67	Rate @5 % of Supply rate after updating with CACMAI July 2023 (CP- 21)
	Dismantlement							
	Total (Erection+Dismantlement charges)						38550.67	
	Total Rate list items						2269345.39	
	Total Supply + Erection+ Dismantlement						0.00	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						24577292.59	
	Labour Cess @ 1% of Supply,erection & Dismantlement						0.00	
	Administrative Charges @ 1% Labour Cess						245772.93	
	Contractor premium @ 10% of Supply (rate list items)						2457.73	
	Total (Total estimated cost)						0.00	
	Contingencies & Incidental charges @ 5% total estimated cost						**24825523.24**	
	Gross Total Estimate						1241276.16	
							26066799	

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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

S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	**Fabrication and supply of following tower parts with stubs, bolts & nuts step bolts, U Bolts hangers, D-shakle etc. of following designs**							As per latest rate list dt. 27.04.2023 and updating the same IEEMA upto July 2023 **(CP-22)**
	66kV D/C DB type towers (KRR design)	No.	8	0	8	320532.53	2564260.25	
2	**Supply of earthing of towers /Gantry** i.) pipe type	sets	8	0	8	5656.92	45255.36	EPC-D-79 dt 09.08.2022 **(CP-19)**
	ii) Counterpoise type	sets	0	0	0		0	
3	**Supply of following Tower Accessories** i.) Danger plate	No	8	0	8	403.56	3228.48	
	ii.) Number plate	No	8	0	8	403.56	3228.48	
	iii) Phase plate (set of 3)	sets	8	0	8	403.56	3228.48	
	iv) circuit plate (set of 2)	sets	8	0	8	403.56	3228.48	
	v) Anti climbing device	sets	8	0	8	12391.18	99129.44	
4	HTLS Conductor having current carrying capacity of about 600 Amp	Km	36.85	1.15	38	998280.00	37934640	Budgetary offer from M/s Apar, M/s Sterlite & M/s Jsk (CP- 17)
5	66kv A/F type disc insulator or 66kV Silicon Rubber Polymer Insulator strings							Rate list dated 27.04.2023 **(CP-20)**
	i) 70 kN	No.	92	0	92	1500	138000	
	ii) 90 kN	No.	204	0	204	1700	346800	
6	Hardware Fittings of HTLS Conductor having current carrying capacity of about 600 Amp							PO REC-207 **(CP-18)**
	(a) Single 'I' Suspension String	set	90	2	92	9558	879336	
	(b)Single Tension string	Set	186	4	190	3186	605340	
	(c) Double Tension string	Set	6	1	7	31860	223020	
7	HTLS conductor accessories							PO REC-207 **(CP-18)**
	i) Mid Span Compression Joint for conductor	No.	25	1	26	27612	717912	
	ii) Repair sleeves for conductor	No.	8	1	9	3611	32497	
	iii) Vibration damper for conductor	No.	564	16	580	2549	1478304	
8	Accessories for existing Earth wire size 7/2.50 mm							PO EPC-D-15 **(CP-23)**
	i) Earth wire Tension clamp	No.	16	0	16	508	8121	
	ii) Vibration Damper	No.	32	0	32	508	16242	
	iii) Flexible copper bond	No.	8	0	8	614	4910	
	Total of Supply						**45106682**	
	Erection @10% of Supply						**4510668**	
	DISMANTLEMENT WORK to be included in Erection Part of BOQ							
8	***Dismantlement of tower and their transportation & proper stacking at designated dedicated store of HVPNL. The dismantlement of tower shall also include dismantlement of stub concrete up to a depth of 1M (one meter) from Natural Ground level, back filling, compaction and clearing the site of debris.***							
	i.) 66kV 'A' type S/C towers (HSEB design)				4	9853	39413	Rate @5 % of Supply rate after updating with CACMAI and leema July 2023 **(CP-21)**
9	Dismantlement of existing of 0.15sq" ACSR conductor complete with H/W fittings, Insulators for above portion of line and their transportation proper stacking at Dedicated Store of HVPNL.	Ckm			12.162	6704.46	81540	
	Dismantlement						**120952**	

	Civil Items							
10	Detailed Survey	Km.	13	0	13	19999.82	259998	
11	Furnishing bore log data	No.	13	0	13	6999.76	90997	
12	Construction of tower foundations as per HVPNL Drgs & Specifications for 0 to 6Mtr. extn. including excavation, concreting, supply and placement of steel reinforcement and backfilling complete in all respect.			0	0		0	
13	i) 66kV D/C 'DB' type Tower (KRR Design) classified as			0	0		0	
14	- Dry	No.	8	0	8	108037.26	864298	
19	Preventive Measure			0	0		0	
20	Earthwork in excavation in all kinds of soil upto 6 m depth including dressing, backfilling, compaction and disposal of surplus soil. (HSR Ref.No. 15.1.2)	Cum	3	0	3	232.46	697	
21	Earthwork in excavation in hard rock (blasting prohibited)upto 3m depth including dressing, backfilling, compaction and disposal of surplus material. (HSR Ref.No. 15.4.1)	Cum	3	0	3	604.16	1812	
22	Brick masonry in 1:4 (cement: sand) mortar (HSR Ref.No. 7.21.1)	Cum	5	0	5	4357.74	21789	As per Rates Obtained from Civil Design
23	Earth filling including compaction, leveling & dressing etc. (HSR Ref.No. RM079 + 3.1.2 + 4.32)	Cum	5	0	5	173.46	867	
24	RCC (1:1½ :3) complete in all respect excluding centering, shuttering, finishing and reinforcement. (HSR Ref.No. 6.14.1)	Cum	5	0	5	5161.32	25807	
25	Lean concrete (1:3:6) complete in all respect excluding centering and shuttering. (HSR Ref.No. 6.1.4)	Cum	2	0	2	3434.98	6870	
26	Lean concrete (1:4:8) complete in all respect excluding centering and shuttering. (HSR Ref.No. 6.1.6)	Cum	2	0	2	2882	5763	
27	Centering, shuttering including strutting propping etc. and removal of formwork. (HSR Ref.No. 6.30.2)	Sqm	10	0	10	332.76	3328	
28	Steel reinforcement for RCC Work including cutting, bending, placing, binding etc. complete in all respect. (HSR Ref.No. 6.33.6)	kg	100	0	100	71.98	7198	
	Total Civil Charges						1289424	
	Total (Erection+Dismantlement +Civil charges)						5921044	
	Total Rate list items						3049060	
	Total Supply + Erection+ Dismantlement+Civil						51027726	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						152453	
	Labour Cess @ 1% of Supply,erection & Dismantlement						510277	
	Administrative Charges @ 1% Labour Cess						5103	
	Contractor premium @ 10% of Supply (rate list items)						304906	
	Total (Total estimated cost)						**52000465**	
	Contingencies & Incidental charges @ 5% total estimated cost						2600023	
	Gross Total Estimate						**54600488**	

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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

S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price	Total	Rate taken from
1	HTLS Conductor having current carrying capacity of about 600 Amp	Km	14.4	0.72	15.12	998280.00	15093993.60	Budgetary offer from M/s Apar, M/s Sterlite & M/s Jsk (CP- 17)
2	Silicon Rubber Polymer Insulator strings							
	i) 70 kN	No.	42	0	42	1500.00	63000.00	Rate list dated 27.04.2023 (CP- 19)
	ii) 90 kN	No.	81	0	81	1700.00	137700.00	
3	Hardware Fittings of HTLS Conductor having current carrying capacity of about 600 Amp							
	(a) Single 'I' Suspension String	set	36	2	38	9558.00	363204.00	PO REC-207 (CP-18)
	(b) Single suspension pilot string	Set	6	1	7	3186.00	22302.00	
	(c) Single Tension string	Set	57	3	60	31860.00	1911600.00	
	d) Double tension string	Set	12	1	13	61596.00	800748.00	
4	HTLS conductor accessories							
	i) Mid Span Compression Joint	No.	10	2	12	27612.00	331344.00	PO REC-207 (CP-18)
	ii) Repair sleeves	No.	3	2	5	10620.00	53100.00	
	iii) Vibration damper for conductor	No.	210	2	212	2548.80	540345.60	
	Total of Supply						**19317337.20**	
	Erection @10% of Supply						**1931733.72**	
6	***DISMANTLEMENT WORK to be included in Erection Part of BOQ***							
	Dismantlement of existing of 0.15sq" AAAC conductor complete with H/W fittings, Insulators for above portion of line and their transportation proper stacking at Dedicated Store of HVPNL.	CKm.			4.8	6704.46	32181.43	Rate @5 % of Supply rate after updating with CACMAI July 2023 (CP-20)
	Dismantlement						32181.43	
	Total (Erection+Dismantlement charges)						1963915.15	
	Total Rate list items						200700.00	
	Total Supply + Erection+ Dismantlement						21281252.35	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						10035.00	
	Labour Cess @ 1% of Supply,erection & Dismantlement						212812.52	
	Administrative Charges @ 1% Labour Cess						2128.13	
	Contractor premium @ 10% of Supply (rate list items)						20070.00	
	Total (Total estimated cost)						**21526297.99**	
	Contingencies & Incidental charges @ 5% total estimated cost						1076314.90	
	Gross Total Estimate						**22602613**	

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Sr. No.	Name of Line (Package- B)	Ckt. Km	Amount (in Rs.)
1	Replacement of existing conductor 0.2 SQ" inch ACSR Conductor of 132KV Chormar-Dabwali S/Ckt line with HTLS Conductor. (Tentative S/C Route Length-24 KM)	24	136463600
2	Replacement of existing conductor 0.2 SQ" inch ACSR Conductor of 132 KV Shahpur Begu-Sirsa S/Ckt line with HTLS conductor (Tentative S/C Route Length-9.5 KM)	9.5	55445296
3	Replacement of existing conductor 0.2 SQ" ACSR Conductor of 132 KV Jiwan Nagar - Rania S/Ckt line with HTLS conducotr (Tentative S/C Route Length-14 KM)	14	78964593
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. (Tentative D/C Route Length-1.45 KM)	1.45	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 (Tentative D/C Route Length-3 KM)	6.1	48074968
6	Augmentation of existing 0.2 sq" AL-59 conductor on HSEB Design towers of 132 kV Rohtak (220 kV) - Khorkrakot Rohtak CKt-1 (Tentative S/C Route Length-1.4 KM)	1.4	10160688
7	Augmentation of existing 0.2 sq" AL-59 conductor on HSEB Design towers of 132 kV Rohtak (220 kV) - Khorkrakot Rohtak CKt-2 (Tentative S/C Route Length-1.12 KM)	1.12	8443851
8	Augmentation of 132 kV Kaithal-Khanpur Line having 0.2 Sq" ACSR conductor with HTLS conductor equivalent to 0.2 sq" ACSR conductor (Tentative S/C Route Length-16.52 KM)	16.5	120857583
9	Augmentation of existing 132 kV Nissing-Jalmana S/C 0.2 Sq" Inch ACSR line Conductor with equivalent HTLS Conductor having ampacity 600A from 220 kV Nissing up to LILO Point. (Tentative S/C Route Length-6.5 KM)	6.5	39264324
10	To replace the existing 0.2 sq" ACSR conductor of 132 kV S/C Isherwal-Behal Line with 0.2 sq" HTLS conductor (Tentative S/C Route Length-19.5 KM)	19.51	109394286
11	Augmentation of existing 0.2 sq" ACSR conductor of 132 kV S/C Chhajpur-Chandoli line with HTLS conductor. (Tentative S/C Route Length-8 KM)	8	48331746
12	Replacement of 0.2 sq" ACSR conductor of 132 kV S/C Bastara- Madhuban/ (Tentative S/C Route Length-5.821 KM)	5.82	35162467
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 (Tentative S/C Route Length-12.065 KM)	12.06	69009004
14	Augmentation of 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 (Tentative S/C Route Length-11.15 KM)	11.15	69997703
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). (Tentative S/C Route Length-5.6 KM)	5.6	32278324
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 (Tentative S/C Route Length-1.094 KM)	1.92	15807053
17	Replacement of existing conductor 0.2SQ" inch ACSR Conductor of 132 KV D/C Nuhiyawali Khairekan line with HTLS conductor (Tentative S/C Route Length-25 KM)	25	142383340
	Total	**169.63**	**1024432328**

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Replacement of existing conductor 0.2 SQ" Inch ACSR Conductor of 132KV Chormar-Dabwali S/Ckt line with HTLS Conductor.
(Tentative S/C Route Length-24 KM)

S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	HTLS Conductor of equivalent size of ACSR Panther conductor with ampacity (600 Amp)	Km	72.8	4	76.8	1401840.00	107661312	Budgetary from M/s Apar, /s JSK && M/s Sterlite
2	A/F type Disc Insulator or 132KV Silicon Rubber Polymer insulator strings							
	i) 70 kN	No.	201	0	201	2500.00	502500	Rate list dated 27.04.2023 (CP-21)
	ii) 90 kN	No.	96	0	96	2300.00	220800	
3	Hardware Fittings of HTLS Conductor having current carrying capacity of about 600 Amp size equivalent to ACSR Panther conductor							
	(a) Single 'I' Suspension String	set	201	10	211	9558.00	2016738	PO REC-207 (CP-19)
	(b) Single Tension string	Set	72	3	75	31860.00	2389500	PO REC-207 (CP-19)
	(c) Double Tension string	Set	12	1	13	61596.00	800748	
4	HTLS conductor accessories							
	i) Mid Span Compression Joint	No.	48	3	51	27612.00	1408212	PO REC-207 (CP-19)
	ii) Repair sleeves	No.	14	1	15	10620.00	159300	
	iii) Vibration damper for conductor	No.	570	28	598	2548.80	1524182	
	Total of Supply						**116683292**	
	Erection @10% of Supply						**11668329**	
6	***DISMANTLEMENT WORK to be Included in Erection Part of BOQ***							
	Dismantlement of existing of ACSR Panther conductor of 132kV line complete with H/W fittings, Insulators & accessories and their transportation and proper stacking at any Dedicated Store of HVPNL.	Ckm.			24	8615.70	206777	Rate @5 % of Supply rate after updating with CACMAI July, 2023 (CP-22)
	Dismantlement						206777	
	Total (Erection+Dismantlement charges)						11875106	
	Total Rate list items						723300	
	Total Supply + Erection+ Dismantlement						128558398	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						36165	
	Labour Cess @ 1% of Supply,erection & Dismantlement						1285584	
	Administrative Charges @ 1% Labour Cess						12856	
	Contractor premium @ 10% of Supply (rate list items)						72330	
	Total (Total estimated cost)						**129965333**	
	Contingencies & Incidental charges @ 5% total estimated cost						6498267	
	Gross Total Estimate						**136463600**	

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Replacement of existing conductor 0.2 SQ" inch ACSR Conductor of 132 KV Shahpur Begu-Sirsa S/Ckt line with HTLS conductor
(Tentative S/C Route Length-9.5 KM)

S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	HTLS Conductor of equivalent size of ACSR Panther conductor with ampacity (600 Amp)	Km	28.8	1	29.8	1401840.00	41774832	Budgetary from M/s Apar, /s JSK && M/s Sterlite
2	A/F type Disc Insulator or Silicon Rubber Polymer Insulator strings							
	i) 70 kN	No.	75	0	75	2500.00	187500	Rate list dated 27.04.2023 (CP-21)
	ii) 90 kN	No.	90	0	90	2300.00	207000	
3	Hardware Fittings of HTLS Conductor having current carrying capacity of about 600 Amp size equivalent to ACSR Wolf conductor							
	(a) Single 'I' Suspension String	set	75	4	79	9558.00	755082	PO REC-207 (CP-19)
	(b) Single Tension string	Set	78	4	82	31860.00	2612520	PO REC-207 (CP-19)
	(c) Double Tension string	Set	6	1	7	61596.00	431172	
4	HTLS conductor accessories				0			
	i) Mid Span Compression Joint	No.	19	1	20	27612.00	552240	PO REC-207 (CP-19)
	ii) Repair sleeves	No.	6	1	7	3610.80	25276	
	iii) Vibration damper for conductor	No.	318	16	334	2548.80	851299	
	Total of Supply						**47396921**	
	Erection @10% of Supply						**4739692**	
6	***DISMANTLEMENT WORK to be included in Erection Part of BOQ***							
	Dismantlement of existing of ACSR Panther conductor of 132kV line complete with H/W fittings, Insulators & accessories and their transportation and proper stacking at any Dedicated Store of HVPNL.	Ckm.			9.5	8615.70	81849.1025	Rate @5 % of Supply rate after updating with CACMAI July, 2023 (CP-22)
	Dismantlement						81849.1025	
	Total (Erection+Dismantlement charges)						4821541	
	Total Rate list items						394500	
	Total Supply + Erection+ Dismantlement						52218462	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						19725	
	Labour Cess @ 1% of Supply,erection & Dismantlement						522185	
	Administrative Charges @ 1% Labour Cess						5222	
	Contractor premium @ 10% of Supply (rate list items)						39450	
	Total (Total estimated cost)						**52805043**	
	Contingencies & Incidental charges @ 5% total estimated cost						2640252	
	Gross Total Estimate						**55445296**	

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Replacement of existing conductor 0.2 SQ" ACSR Conductor of 132 KV Jiwan Nagar -Rania S/Ckt line with HTLS conducotr (Tentative S/C Route Length-14 KM)								
S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	HTLS Conductor of equivalent size of ACSR Panther conductor with ampacity (600 Amp)	Km	42.42	2	44.42	1491840.00	62269733	Budgetary from M/s Apar, /s JSK && M/s Sterlite
2	A/F type Disc Insulator or Silicon Rubber Polymer Insulator strings							
	i) 70 kN	No.	96	0	96	2500.00	240000	Rate list dated 27.10.2022 (CP- 19)
	ii) 90 kN	No.	66	0	66	2300.00	151800	
3	Hardware Fittings of HTLS Conductor having current carrying capacity of about 600 Amp size equivalent to ACSR Wolf conductor							
	(a) Single 'I' Suspension String	set	96	5	101	9558.00	965358	PO REC-207 (CP-19)
	(b) Single Tension string	Set	66	3	69	31860.00	2198340	PO REC-207 (CP-19)
4	HTLS conductor accessories							
	i) Mid Span Compression Joint	No.	28	1	29	27612.00	800748	PO REC-207 (CP-19)
	ii) Repair sleeves	No.	8	0	8	3610.80	28886	
	iii) Vibration damper for conductor	No.	324	16	340	2548.80	866592	
	Total of Supply						**67521457**	
	Erection @10% of Supply						**6752146**	
6	***DISMANTLEMENT WORK to be included in Erection Part of BOQ***							
	Dismantlement of existing of ACSR Panther conductor of 132kV line complete with H/W fittings, Insulators & accessories and their transportation and proper stacking at any Dedicated Store of HVPNL.	Ckm.			14	8615.70	120620	Rate @5 % of Supply rate after updating with CACMAI July, 2023 (CP-22)
	Dismantlement						120620	
	Total (Erection+Dismantlement charges)						6872765	
	Total Rate list items						391800	
	Total Supply + Erection+ Dismantlement						74394223	
	Transporation of material from site store to site work, Insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						19590	
	Labour Cess @ 1% of Supply,erection & Dismantlement						743942	
	Administrative Charges @ 1% Labour Cess						7439	
	Contractor premium @ 10% of Supply (rate list items)						39180	
	Total (Total estimated cost)						**75204374**	
	Contingencies & Incidental charges @ 5% total estimated cost						3760219	
	Gross Total Estimate						**78964593**	

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Replacement of existing conductor 0.2SQ" inch ACSR Conductor of 132 KV D/C Nuhiyawali Khairekan line with HTLS conductor (Tentative S/C Route Length-25 KM)								
S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	HTLS Conductor of equivalent size of ACSR Panther conductor with ampacity (600 Amp)	Km	75.75	3	78.75	1401840.00	110394900	Budgetary from M/s Apar, /s JSK && M/s Sterlite
2	A/F type Disc Insulator or Silicon Rubber Polymer Insulator strings							
	i) 70 kN	No.	216	0	216	2500.00	540000	Rate List 27.04.2023 (CP-21)
	ii) 90 kN	No.	144	0	144	2300.00	331200	
3	Hardware Fittings of HTLS Conductor of size equivalent to ACSR Panther conductor						0	
	(a) Single 'I' Suspension String	set	216	11	227	9558.00	2169666	PO REC-207 (CP-19)
	(b) Single suspension pilot string	Set	15	1	16	3186.00	50976	
	(c) Single Tension string	Set	132	6	138	31860.00	4396680	PO REC-207 (CP-19)
	(d) Double Tension string	Set	6	1	7	61596.00	431172	
4	HTLS conductor accessories							
	i) Mid Span Compression Joint	No.	50	3	53	27612.00	1463436	PO REC-207 (CP-19)
	ii) Repair sleeves	No.	15	1	16	3610.80	57773	
	iii) Vibration damper for conductor	No.	708	35	743	2548.80	1893758	
	Total of Supply						**121729561**	
	Erection @10% of Supply						**12172956**	
6	***DISMANTLEMENT WORK to be included in Erection Part of BOQ***							
	Dismantlement of existing of ACSR Panther conductor of 132kV line complete with H/W fittings, Insulators & accessories and their transportation and proper stacking at any Dedicated Store of HVPNL.	Ckm.			25	8615.7	215392	Rate @5 % of Supply rate after updating with CACMAI July, 2023 (CP-22)
	Dismantlement						215392	
	Total (Erection+Dismantlement charges)						12388348	
	Total Rate list items						871200	
	Total Supply + Erection+ Dismantlement						134117910	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						43560	
	Labour Cess @ 1% of Supply,erection & Dismantlement						1341179	
	Administrative Charges @ 1% Labour Cess						13412	
	Contractor premium @ 10% of Supply (rate list items)						87120	
	Total (Total estimated cost)						**135603181**	
	Contingencies & Incidental charges @ 5% total estimated cost						6780159	
	Gross Total Estimate						**142383340**	

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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.
(Tentative D/C Route Length-1.45 KM)

S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	HTLS Conductor having current carrying capacity of about 600 Amp	Km	1.45	0	1.45	1401840.0	2032668	Budgetary from M/s Apar, /s JSK && M/s Sterlite
2	Silicon Rubber Polymer Insulator strings							
	i) 70 kN	No.	3	0	3	1500.0	4500	Rate list dated 27.4.2023 (CP-21)
	ii) 90 kN	No.	42	0	42	1700.0	71400	
3	Hardware Fittings of HTLS Conductor having current carrying capacity of about 600 Amp							
	(a) Single Suspension Pilot String	set	3	0	3	3186.0	9558	PO REC-207 (CP-19)
	(b) Single tension string	Set	42	2	44	31860.0	1401840	
4	HTLS conductor accessories							
	iii) Vibration damper for conductor	No.	84	4	88	2548.8	224294	
	Total of Supply						**3744260**	
	Erection @10% of Supply						**374426**	
6	***DISMANTLEMENT WORK to be Included in Erection Part of BOQ***							
	Dismantlement of existing of 0.15sq" ACSR conductor complete with H/W fittings, Insulators for above portion of line and their transportation proper stacking at Dedicated Store of HVPNL.	Ckm.			1.45	8615.7	12493	Rate @5 % of Supply rate after updating with CACMAI Dec. 2022 (CP-22)
	Dismantlement						12493	
	Total (Erection+Dismantlement charges)						386919	
	Total Rate list items						75900	
	Total Supply + Erection+ Dismantlement						4131179	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						3795	
	Labour Cess @ 1% of Supply,erection & Dismantlement						41312	
	Administrative Charges @ 1% Labour Cess						413	
	Contractor premium @ 10% of Supply (rate list items)						7590	
	Total (Total estimated cost)						**4184289**	
	Contingencies & Incidental charges @ 5% total estimated cost						209214	
	Gross Total Estimate						**4393504**	

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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 (Tentative D/C Route Length-3 KM)

S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	HTLS Conductor having current carrying capacity of about 600 Amp	Km	19.3	2	21.3	1401840.0	29859192	Budgetary from M/s Apar, /s JSK && M/s Sterlite
2	Silicon Rubber Polymer Insulator strings							
	i) 70 kN	No.	69	0	69	1500.0	103500	Rate list dated 27.04.2023 (CP-21)
	ii) 90 kN	No.	252	0	252	1700.0	428400	
3	Hardware Fittings of HTLS Conductor having current carrying capacity of about 600 Amp							
	(a) Single 'I' Suspension String	set	36	2	38	9558.0	363204	PO REC-207 (CP-19)
	(b) Single suspension pilot string	Set	33	3	36	3186.0	114696	
	(c) Single Tension string	Set	228	10	238	31860.0	7582680	PO REC-207 (CP-19)
	d) Double tension string	Set	12	1	13	61596.0	800748	
4	HTLS conductor accessories							
	i) Mid Span Compression Joint	No.	12	1	13	27612.0	358956	PO REC-207 (CP-19)
	ii) Repair sleeves	No.	4	0	4	3610.8	14443	
	iii) Vibration damper for conductor	No.	552	20	572	2548.8	1457914	
	Total of Supply						**41083733**	
	Erection @10% of Supply						**4108373**	
6	***DISMANTLEMENT WORK to be included in Erection Part of BOQ***							
	Dismantlement of existing of 0.2sq" ACSR conductor complete with H/W fittings, Insulators for above portion of line and their transportation proper stacking at Dedicated Store of HVPNL.	Ckm.			6.1	9308.0	56779	Rate @5 % of Supply rate after updating with CACMAI July, 2023 (CP-22)
	Dismantlement						56779	
	Total (Erection+Dismantlement charges)						4165152	
	Total Rate list items						531900	
	Total Supply + Erection+ Dismantlement						45248885	
	Transporation of material from site store to site work, Insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						26595	
	Labour Cess @ 1% of Supply,erection & Dismantlement						452489	
	Administrative Charges @ 1% Labour Cess						4525	
	Contractor premium @ 10% of Supply (rate list items)						53190	
	Total (Total estimated cost)						**45785684**	
	Contingencies & Incidental charges @ 5% total estimated cost						2289284	
	Gross Total Estimate						**48074968**	

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Augmentation of existing 0.2 sq" AL-59 conductor on HSEB Design towers of 132 kV Rohtak (220 kV) - Khorkrakot Rohtak CKt-1
(Tentative S/C Route Length-1.4 KM)

S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	HTLS Conductor of equivalent size of ACSR Panther conductor with ampacity (600 Amp)	Km	4.25	0.21	4.46	1401840.00	6252206	Budgetary from M/s Apar, /s JSK && M/s
3	Hardware Fittings of HTLS Conductor of size equivalent to ACSR Panther conductor						0	
	(a) Single 'I' Suspension String	set	0	0	0	9558.00	0	PO REC-207 (CP-19)
	(b) Single suspension pilot string	Set	0	0	0	3186.00	0	
	(c) Single Tension string	Set	60	3	63	31860.00	2007180	PO REC-207 (CP- 19)
	(d) Double Tension string	Set	0	0	0	61596.00	0	
4	HTLS conductor accessories							
	i) Mid Span Compression Joint	No.	3	1	4	27612.00	110448	PO REC-207 (CP- 19)
	ii) Repair sleeves	No.	1	1	2	3610.80	7222	
	iii) Vibration damper for conductor	No.	120	6	126	2548.80	321149	
	Total of Supply						**8698205**	
	Erection @10% of Supply						**869820**	
6	***DISMANTLEMENT WORK to be included in Erection Part of BOQ***							
	Dismantlement of existing of ACSR Panther conductor of 132kV line complete with H/W fittings, Insulators & accessories and their transportation and proper stacking at any Dedicated Store of HVPNL.	Ckm.			1.4	8615.7	12062	Rate @5 % of Supply rate after updating with CACMAI July, 2023 (CP-22)
	Dismantlement						12062	
	Total (Erection+Dismantlement charges)						881882	
	Total Rate list items						0	
	Total Supply + Erection+ Dismantlement						9580087	
	Transporation of material from site store to site work, Insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						0	
	Labour Cess @ 1% of Supply,erection & Dismantlement						95801	
	Administrative Charges @ 1% Labour Cess						958	
	Contractor premium @ 10% of Supply (rate list items)						0	
	Total (Total estimated cost)						**9676846**	
	Contingencies & Incidental charges @ 5% total estimated cost						483842	
	Gross Total Estimate						**10160688**	

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Augmentation of existing 0.2 sq" AL-59 conductor on HSEB Design towers of 132 kV Rohtak (220 kV) - Khorkrakot Rohtak CKt-2 (Tentative S/C Route Length-1.12 KM)								
S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	HTLS Conductor of equivalent size of ACSR Panther conductor with ampacity (600 Amp)	Km	3.4	0.17	3.57	1401840.00	5004569	Budgetary from M/s Apar, /s JSK && M/s Sterlite
3	Hardware Fittings of HTLS Conductor of size equivalent to ACSR Panther conductor						0	
	(a) Single 'I' Suspension String	set	0	0	0	9558.00	0	PO REC-207 (CP-19)
	(b) Single suspension pilot string	Set	0	0	0	3186.00	0	
	(c) Single Tension string	Set	54	3	57	31860.00	1816020	PO REC-207
	(d) Double Tension string	Set	0	0	0	61596.00	0	(CP- 19)
4	HTLS conductor accessories							
	i) Mid Span Compression Joint	No.	3	1	4	27612.00	110448	PO REC-207 (CP-19)
	ii) Repair sleeves	No.	1	1	2	3610.80	7222	
	iii) Vibration damper for conductor	No.	108	6	114	2548.80	290563	
	Total of Supply						**7228822**	
	Erection @10% of Supply						**722882**	
6	***DISMANTLEMENT WORK to be included in Erection Part of BOQ***							
	Dismantlement of existing of ACSR Panther conductor of 132kV line complete with H/W fittings, Insulators & accessories and their transportation and proper stacking at any Dedicated Store of HVPNL.	Ckm.			1.12	8615.7	9650	Rate @5 % of Supply rate after updating with CACMAI July, 2023 (CP-22)
	Dismantlement						9650	
	Total (Erection+Dismantlement charges)						732532	
	Total Rate list items						0	
	Total Supply + Erection+ Dismantlement						7961353	
	Transporation of material from site store to site work, Insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						0	
	Labour Cess @ 1% of Supply,erection & Dismantlement						79614	
	Administrative Charges @ 1% Labour Cess						796	
	Contractor premium @ 10% of Supply (rate list items)						0	
	Total (Total estimated cost)						**8041763**	
	Contingencies & Incidental charges @ 5% total estimated cost						402088	
	Gross Total Estimate						**8443851**	

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Augmentation of 132 kV Kaithal-Khanpur Line having 0.2 Sq" ACSR conductor with HTLS conductor equivalent to 0.2 sq" ACSR conductor
(Tentative S/C Route Length-16.52 KM)

S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	**Fabrication and supply of following tower parts with stubs, bolts & nuts step bolts, U Bolts hangers, D-shakle etc. of following designs**							As per latest rate list dt. 27.04.2023 and updating the same IEEMA upto July 2023 **(CP-23)**
	132kV D/C DB type towers (KRR design)	No.	18	0	18	524442.18	9439959.19	
2	**Supply of earthing of towers /Gantry** i.) pipe type	sets	18	0	18	5656.92	101824.56	
	ii) Counterpoise type	sets	0	0	0		0	
3	**Supply of following Tower Accessories** i.) Danger plate	No	18	0	18	403.56	7264.08	EPC-D-79 dt 09.08.2022 **(CP -17)**
	ii.) Number plate	No	18	0	18	403.56	7264.08	
	iii) Phase plate (set of 3)	sets	18	0	18	403.56	7264.08	
	iv) circuit plate (set of 2)	sets	18	0	18	403.56	7264.08	
	v) Anti climbing device	sets	18	0	18	12391.18	223041.24	
4	HTLS Conductor having current carrying capacity of about 600 Amp	Km	50.05	2.5	52.55	1401840.00	73666692	Budgetary offer from M/s Apar, M/s Sterlite & M/s Jsk (CP- 17)
5	132 kv A/F type disc insulator or 132kV Silicon Rubber Polymer Insulator strings							
	ii) 90 kN	No.	108	0	108	2300	248400	Rate List dated 27.04.2023 **(CP-21)**
6	Hardware Fittings of HTLS Conductor having current carrying capacity of about 600 Amp							
	(a) Single 'I' Suspension String	set	123	7	130	9558	1242540	
	Single Suspension	set	12	1	13	3186	41418	PO REC-207 **(CP- 19)**
	(b)Single Tension string	Set	252	13	265	31860	8442900	
	(c) Double Tension string	Set	30	2	32	61596	1971072	
7	HTLS conductor accessories							
	i) Mid Span Compression Joint for conductor	No.	34	2	36	27612	994032	PO REC-207 **(CP- 19)**
	ii) Repair sleeves for conductor	No.	10	1	11	3611	39719	
	iii) Vibration damper for conductor	No.	810	41	851	2549	2169029	
8	Accessories for existing Earth wire size 7/2.50 mm							
	i) Earth wire Tension clamp	No.	36	0	36	508	18273	PO EPC-D-15 **(CP- 18)**
	ii) Vibration Damper	No.	72	0	72	508	36546	
	iii) Flexible copper bond	No.	18	0	18	520	9362	
	Total of Supply						**98673863**	
	Erection @10% of Supply						**9867386**	
	DISMANTLEMENT WORK to be included in Erection Part of BOQ							
9	Dismantlement of existing of 0.15sq" ACSR conductor complete with H/W fittings, Insulators for above portion of line and their transportation proper stacking at Dedicated Store of HVPNL.	Ckm.			16.5	8615.70	142159	Rate @5 % of Supply rate after updating with CACMAI July, 2023 **(CP-22)**
	Dismantlement						**142159**	
	Civil Items							
10	Detailed Survey	Km.	17	0	17	18967.32	322444	
11	Furnishing bore log data	No.	17	0	17	6322.44	107481	
12	Construction of tower foundations as per HVPNL Drgs & Specifications for 0 to 6Mtr. extn. including excavation, concreting, supply and placement of steel reinforcement and backfilling complete in all respect.			0	0		0	
13	i) 132kV D/C DB type towers (KRR design) classified as			0	0		0	
14	Wet	No.	18	0	18	187332.08	3371977	
19	Preventive Measure			0	0		0	
22	Brick masonry in 1:4 (cement: sand) mortar (HSR Ref.No. 7.21.1)	Cum	1	0	1	4357.74	4358	As per Rates

23	Earth filling including compaction, leveling & dressing etc. (HSR Ref.No. RM079 + 3.1.2 + 4.32)	Cum	1	0	1	88.5	89	Obtained from Civil Design
24	M-20 (1:1.5:8) concrete for top seal cover, for revetment etc.	Cum	1	0	1	5161.32	5161	
25	Lean concrete (1:3:6) complete in all respect excluding centering and shuttering. (HSR Ref.No. 6.1.4)	Cum	1	0	1	3434.98	3435	
26	Lean concrete (1:4:8) complete in all respect excluding centering and shuttering. (HSR Ref.No. 6.1.6)	Cum	1	0	1	2882	2882	
28	RCC (1:1.5:8) including all material, labour, excavation, cutting and placing of steel, centering & shuttering, concreting etc. complete in all respect.	Cum	1	0	1	11591.14	11591	
	Total Civil Charges						3829419	
	Total (Erection+Dismantlement +Civil charges)						13838964	
	Total Rate list items						9830518	9688359
	Total Supply + Erection+ Dismantlement+Civil						112512827	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						491526	484418
	Labour Cess @ 1% of Supply,erection & Dismantlement						1125128	
	Administrative Charges @ 1% Labour Cess						11251	
	Contractor premium @ 10% of Supply (rate list items)						983052	968836
	Total (Total estimated cost)						115123784	115102460
	Contingencies & Incidental charges @ 5% total estimated cost						5756189	5755123
	Gross Total Estimate						120879973	120857583

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Augmentation of existing 132 kV Nissing-Jalmana S/C 0.2 Sq" Inch ACSR line Conductor with equivalent HTLS Conductor having ampacity 600A from 220 kV Nissing up to LILO Point.
(Tentative S/C Route Length-6.5 KM)

S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	HTLS Conductor of equivalent size of ACSR Panther conductor with ampacity (600 Amp)	Km	19.7	1	20.7	1401840.00	29018088	Budgetary from M/s Apar, /s JSK && M/s Sterlite
2	A/F type Disc Insulator or Silicon Rubber Polymer Insulator strings							
	i) 70 kN	No.	57	0	57	2500.00	142500	Rate List dated 27.04.2023
	ii) 90 kN	No.	78	0	78	2300.00	179400	
3	Hardware Fittings of HTLS Conductor of size equivalent to ACSR Panther conductor						0	
	(a) Single 'I' Suspension String	set	45	3	48	9558.00	458784	PO REC-207 (CP-19)
	(b) Single suspension pilot string	Set	12	1	13	3186.00	41418	
	(c) Single Tension string	Set	66	4	70	31860.00	2230200	PO REC-207 (CP-19)
	(d) Double Tension string	Set	6	1	7	61596.00	431172	
4	HTLS conductor accessories							
	i) Mid Span Compression Joint	No.	14	1	15	27612.00	414180	PO REC-207 (CP-19)
	ii) Repair sleeves	No.	4	1	5	3610.80	18054	
	iii) Vibration damper for conductor	No.	234	12	246	2548.80	627005	
	Total of Supply						**33560801**	
	Erection @10% of Supply						**3356080**	
6	***DISMANTLEMENT WORK to be included in Erection Part of BOQ***							
	Dismantlement of existing of ACSR Panther conductor of 132kV line complete with H/W fittings, Insulators & accessories and their transportation and proper stacking at any Dedicated. Store of HVPNL.	Ckm.			6.5	8615.7	56002	Rate @5 % of Supply rate after updating with CACMAI July, 2023 (CP-22)
	Dismantlement						**56002**	
	Total (Erection+Dismantlement charges)						**3412082**	
	Total Rate list Items						**321900**	
	Total Supply + Erection+ Dismantlement						**36972883**	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						**16095**	
	Labour Cess @ 1% of Supply,erection & Dismantlement						**369729**	
	Administrative Charges @ 1% Labour Cess						**3697**	
	Contractor premium @ 10% of Supply (rate list items)						**32190**	
	Total (Total estimated cost)						**37394594**	
	Contingencies & Incidental charges @ 5% total estimated cost						**1869730**	
	Gross Total Estimate						**39264324**	

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To replace the existing 0.2 sq" ACSR conductor of 132 kV S/C Isherwal-Behal Line with 0.2 sq" HTLS conductor (Tentative S/C Route Length-19.5 KM)								
S. N.	**DESCRIPTION**	**UNIT**	**Qty.**	**Spares**	**Total Qty.**	**Unit price (Including GST)**	**Total**	**Rate taken from**
1	HTLS Conductor of equivalent size of ACSR Panther conductor with ampacity (600 Amp)	Km	59.12	2.88	62	1401840.00	86914080	Budgetary from M/s Apar, /s JSK && M/s Sterlite
3	Hardware Fittings of HTLS Conductor of size equivalent to ACSR Panther conductor						0	
	(a) Single 'I' Suspension String	set	177	9	186	9558.00	1777788	PO REC-207 (CP-19)
	(b) Single suspension pilot string	Set	3	1	4	3186.00	12744	
	(c) Single Tension string	Set	84	5	89	31860.00	2835540	PO REC-207 (CP-19)
	(d) Double Tension string	Set	6	1	7	61596.00	431172	
4	HTLS conductor accessories							
	i) Mid Span Compression Joint	No.	4	2	6	27612.00	165672	PO REC-207 (CP-19)
	ii) Repair sleeves	No.	12	1	13	3610.80	46940	
	iii) Vibration damper for conductor	No.	534	27	561	2548.80	1429877	
	Total of Supply						**93613813**	
	Erection @10% of Supply						**9361381**	
6	***DISMANTLEMENT WORK to be included in Erection Part of BOQ***							
	Dismantlement of existing of ACSR Panther conductor of 132kV line complete with H/W fittings, Insulators & accessories and their transportation and proper stacking at any Dedicated Store of HVPNL.	Ckm.			19.51	8615.7	168092	Rate @5 % of Supply rate after updating with CACMAI July, 2023 (CP-22)
	Dismantlement						168092	
	Total (Erection+Dismantlement charges)						9529474	
	Total Rate list items						0	
	Total Supply + Erection+ Dismantlement						103143287	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						0	
	Labour Cess @ 1% of Supply,erection & Dismantlement						1031433	
	Administrative Charges @ 1% Labour Cess						10314	
	Contractor premium @ 10% of Supply (rate list items)						0	
	Total (Total estimated cost)						**104185034**	
	Contingencies & Incidental charges @ 5% total estimated cost						5209252	
	Gross Total Estimate						**109394286**	

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Augmentation of existing 0.2 sq" ACSR conductor of 132 kV S/C Chhajpur-Chandoli line with HTLS conductor.
(Tentative S/C Route Length-8 KM)

S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	HTLS Conductor of equivalent size of ACSR Panther conductor with ampacity (600 Amp)	km.	24.3	1.2	25.5	1401840.00	35746920	Budgetary from M/s Apar, /s JSK && M/s Sterlite
2	A/F type Disc Insulator or Silicon Rubber Polymer Insulator strings							
	i) 70 kN	No.	66	5	71	2500.00	177500	Rate List dated 27.04.2023
	ii) 90 kN	No.	96	4	100	2300.00	230000	
3	Hardware Fittings of HTLS Conductor of size equivalent to ACSR Panther conductor						0	
	(a) Single 'I' Suspension String	set	63	4	67	9558.00	640386	PO REC-207 (CP-19)
	(b) Single suspension pilot string	Set	3	1	4	3186.00	12744	
	(c) Single Tension string	Set	96	4	100	31860.00	3186000	PO REC-207 (CP-19)
	(d) Double Tension string	Set	0	0	0	61596.00	0	
4	HTLS conductor accessories							
	i) Mid Span Compression Joint	No.	17	1	18	27612.00	497016	PO REC-207 (CP-19)
	ii) Repair sleeves	No.	7	1	8	3610.80	28886	
	iii) Vibration damper for conductor	No.	306	4	310	2548.80	790128	
	Total of Supply						**41309580**	
	Erection @10% of Supply						**4130958**	
6	***DISMANTLEMENT WORK to be included in Erection Part of BOQ***							
	Dismantlement of existing of ACSR Panther conductor of 132kV line complete with H/W fittings, Insulators & accessories and their transportation and proper stacking at any Dedicated Store of HVPNL.	Ckm.			8	8615.7	68926	Rate @5 % of Supply rate after updating with CACMAI July, 2023 (CP-22)
	Dismantlement						68926	
	Total (Erection+Dismantlement charges)						4199884	
	Total Rate list items						407500	
	Total Supply + Erection+ Dismantlement						45509464	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						20375	
	Labour Cess @ 1% of Supply,erection & Dismantlement						455095	
	Administrative Charges @ 1% Labour Cess						4551	
	Contractor premium @ 10% of Supply (rate list items)						40750	
	Total (Total estimated cost)						**46030235**	
	Contingencies & Incidental charges @ 5% total estimated cost						2301512	
	Gross Total Estimate						**48331746**	

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Replacement of 0.2 sq" ACSR conductor of 132 kV S/C Bastara- Madhuban/ (Tentative S/C Route Length-5.821 KM)								
S. N.	**DESCRIPTION**	**UNIT**	**Qty.**	**Spares**	**Total Qty.**	**Unit price (Including GST)**	**Total**	**Rate taken from**
1	HTLS Conductor of equivalent size of ACSR Panther conductor with ampacity (600 Amp)	Km	17.46	0.873	18.336	1401840.00	25704138	Budgetary from M/s Apar, /s JSK && M/s Sterlite
2	A/F type Disc Insulator or Silicon Rubber Polymer Insulator strings							
	i) 70 kN	No.	75	0	75	2500.00	187500	Rate List dated 27.04.2023 (CP-21)
	ii) 90 kN	No.	57	0	57	2300.00	131100	
3	Hardware Fittings of HTLS Conductor of size equivalent to ACSR Panther conductor						0	
	(a) Single 'I' Suspension String	set	66	4	70	9558.00	669060	PO REC-207 (CP-19)
	(b) Single suspension pilot string	Set	4	1	5	3186.00	15930	
	(c) Single Tension string	Set	54	3	57	31860.00	1816020	PO REC-207 (CP-19)
	(d) Double Tension string	Set	0	0	0	61596.00	0	
4	HTLS conductor accessories							
	i) Mid Span Compression Joint	No.	28	2	30	27612.00	828360	PO REC-207 (CP-19)
	ii) Repair sleeves	No.	4	1	5	3610.80	18054	
	iii) Vibration damper for conductor	No.	254	13	267	2548.80	680530	
	Total of Supply						**30050692**	
	Erection @10% of Supply						**3005069**	
6	***DISMANTLEMENT WORK to be included in Erection Part of BOQ***							
	Dismantlement of existing of ACSR Panther conductor of 132kV line complete with H/W fittings, Insulators & accessories and their transportation and proper stacking at any Dedicated Store of HVPNL.	Ckm.			5.82	8615.7	50143	Rate @5 % of Supply rate after updating with CACMAI July, 2023 (CP-22)
	Dismantlement						50143	
	Total (Erection+Dismantlement charges)						3055213	
	Total Rate list items						318600	
	Total Supply + Erection+ Dismantlement						33105904	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						15930	
	Labour Cess @ 1% of Supply,erection & Dismantlement						331059	
	Administrative Charges @ 1% Labour Cess						3311	
	Contractor premium @ 10% of Supply (rate list items)						31860	
	Total (Total estimated cost)						**33488064**	
	Contingencies & Incidental charges @ 5% total estimated cost						1674403	
	Gross Total Estimate						**35162467**	

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Sanny

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
(Tentative S/C Route Length-12.065 KM)

S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	HTLS Conductor of equivalent size of ACSR Panther conductor with ampacity (600 Amp)	Km	36.2	1.809	38.004	1401840.00	53275527	Budgetary from M/s Apar, /s JSK && M/s Sterlite
2	A/F type Disc Insulator or Silicon Rubber Polymer Insulator strings							
	i) 70 kN	No.	113	0	113	2500.00	282500	dated 27.04.2023 (CP-21)
	ii) 90 kN	No.	76	0	76	2300.00	174800	
3	Hardware Fittings of HTLS Conductor of size equivalent to ACSR Panther conductor						0	
	(a) Single 'I' Suspension String	set	102	6	108	9558.00	1032264	PO REC-207 (CP-19)
	(b) Single suspension pilot string	Set	4	1	5	3186.00	15930	
	(c) Single Tension string	Set	72	4	76	31860.00	2421360	PO REC-207 (CP-19)
	(d) Double Tension string	Set	0	0	0	61596.00	0	
4	HTLS conductor accessories							
	i) Mid Span Compression Joint	No.	26	2	28	27612.00	773136	PO REC-207 (CP-19)
	ii) Repair sleeves	No.	8	1	9	3610.80	32497	
	iii) Vibration damper for conductor	No.	368	19	387	2548.80	986386	
	Total of Supply						**58994400**	
	Erection @10% of Supply						**5899440**	
6	***DISMANTLEMENT WORK to be included in Erection Part of BOQ***							
	Dismantlement of existing of ACSR Panther conductor of 132kV line complete with H/W fittings, Insulators & accessories and their transportation and proper stacking at any Dedicated Store of HVPNL.	Ckm.			12.065	8615.7	103948	Rate @5 % of Supply rate after updating with CACMAI July, 2023 (CP-22)
	Dismantlement						103948	
	Total (Erection+Dismantlement charges)						6003388	
	Total Rate list items						457300	
	Total Supply + Erection+ Dismantlement						64997789	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						22865	
	Labour Cess @ 1% of Supply,erection & Dismantlement						649978	
	Administrative Charges @ 1% Labour Cess						6500	
	Contractor premium @ 10% of Supply (rate list items)						45730	
	Total (Total estimated cost)						**65722861**	
	Contingencies & Incidental charges @ 5% total estimated cost						3286143	
	Gross Total Estimate						**69009004**	

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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).
(Tentative S/C Route Length-5.6 KM)

S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	HTLS Conductor of equivalent size of ACSR Panther conductor with ampacity (600 Amp)	Km	16.9	0.84	17.74	1401840.00	24868642	Budgetary from M/s Apar, /s JSK && M/s
2	A/F type Disc Insulator or Silicon Rubber Polymer Insulator strings							
	i) 70 kN	No.	15	0	15	2500.00	37500	Rate List dated 27.04.2023
	ii) 90 kN	No.	51	0	51	2300.00	117300	
3	Hardware Fittings of HTLS Conductor of size equivalent to ACSR Panther conductor						0	
	(a) Single 'I' Suspension String	set	15	1	16	9558.00	152928	PO REC-207 (CP-19)
	(b) Single suspension pilot string	Set	1	0	1	3186.00	3186	
	(c) Single Tension string	Set	54	2	56	31860.00	1784160	
4	HTLS conductor accessories							
	i) Mid Span Compression Joint	No.	9	1	10	27612.00	276120	PO REC-207 (CP-19)
	ii) Repair sleeves	No.	2	1	3	3610.80	10832	
	iii) Vibration damper for conductor	No.	132	6	138	2548.80	351734	
	Total of Supply						**27602402**	
	Erection @10% of Supply						**2760240**	
6	***DISMANTLEMENT WORK to be included in Erection Part of BOQ***							
	Dismantlement of existing of ACSR Panther conductor of 132kV line complete with H/W fittings, Insulators & accessories and their transportation and proper stacking at any Dedicated Store of HVPNL.	Ckm.			5.6	8615.7	48248	Rate @5 % of Supply rate after updating with CACMAI July, 2023 (CP-22)
	Dismantlement						48248	
	Total (Erection+Dismantlement charges)						2808488	
	Total Rate list items						154800	
	Total Supply + Erection+ Dismantlement						30410891	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						7740	
	Labour Cess @ 1% of Supply,erection & Dismantlement						304109	
	Administrative Charges @ 1% Labour Cess						3041	
	Contractor premium @ 10% of Supply (rate list items)						15480	
	Total (Total estimated cost)						**30741261**	
	Contingencies & Incidental charges @ 5% total estimated cost						1537063	
	Gross Total Estimate						**32278324**	

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Sannu

Augmentation of 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
(Tentative S/C Route Length-11.15 KM)

S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	HTLS Conductor of equivalent size of ACSR Panther conductor with ampacity (600 Amp)	Km	34	2	36	1401840.00	50466240	Budgetary from M/s Apar, /s JSK && M/s
2	A/F type Disc Insulator or Silicon Rubber Polymer Insulator strings							
	i) 70 kN	No.	84	0	84	2500.00	210000	Rate List dated
	ii) 90 kN	No.	174	0	174	2300.00	400200	
3	Hardware Fittings of HTLS Conductor of size equivalent to ACSR Panther conductor						0	
	(a) Single 'I' Suspension String	set	78	6	84	9558.00	802872	PO REC-207 (CP-19)
	(b) Single suspension pilot string	Set	6	1	7	3186.00	22302	
	(c) Single Tension string	Set	150	10	160	31860.00	5097600	PO REC-207 (CP-19)
	(d) Double Tension string	Set	12	1	13	61596.00	800748	
4	HTLS conductor accessories							
	i) Mid Span Compression Joint	No.	23	3	26	27612.00	717912	PO REC-207 (CP-19)
	ii) Repair sleeves	No.	7	3	10	3610.80	36108	
	iii) Vibration damper for conductor	No.	480	20	500	2548.80	1274400	
	Total of Supply						**59828382**	
	Erection @10% of Supply						**5982838**	
6	***DISMANTLEMENT WORK to be included in Erection Part of BOQ***							
	Dismantlement of existing of ACSR Panther conductor of 132kV line complete with H/W fittings, Insulators & accessories and their transportation and proper stacking at any Dedicated Store of HVPNL.	Ckm.			11.15	8615.7	96065	Rate @5 % of Supply rate after updating with CACMAI July., 2023 (CP-22)
	Dismantlement						96065	
	Total (Erection+Dismantlement charges)						6078903	
	Total Rate list items						610200	
	Total Supply + Erection+ Dismantlement						65907285	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						30510	
	Labour Cess @ 1% of Supply,erection & Dismantlement						659073	
	Administrative Charges @ 1% Labour Cess						6591	
	Contractor premium @ 10% of Supply (rate list items)						61020	
	Total (Total estimated cost)						**66664479**	
	Contingencies & Incidental charges @ 5% total estimated cost						3333224	
	Gross Total Estimate						**69997703**	

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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
(Tentative S/C Route Length-1.094 KM)

S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (including GST)	Total	Rate taken from
1	HTLS Conductor of equivalent size of ACSR Panther conductor with ampacity (600 Amp)	Km	6.63	0.33	6.96	1401840.00	9756806	Budgetary from M/s Apar, /s JSK && M/s Sterlite
2	A/F type Disc Insulator or Silicon Rubber Polymer Insulator strings							
	ii) 90 kN	No.	78	4	82	2300.00	188600	Rate List Dated 27.04.2023 (CP-21)
3	Hardware Fittings of HTLS Conductor of size equivalent to ACSR Panther conductor						0	
	(c) Single Tension string	Set	66	4	70	31860.00	2230200	
	(c) Double Tension string	Set	12	1	13	61596.00	800748	PO REC-207 (CP-19)
4	HTLS conductor accessories							
	i) Mid Span Compression Joint	No.	4	0	4	27612.00	110448	PO REC-207 (CP-19)
	ii) Repair sleeves	No.	1	0	1	3610.80	3611	
	iii) Vibration damper for conductor	No.	156	8	164	2548.80	418003	
	Total of Supply						**13508416**	
	Erection @10% of Supply						**1350842**	
6	***DISMANTLEMENT WORK to be included in Erection Part of BOQ***							
	Dismantlement of existing of ACSR Panther conductor of 132kV line complete with H/W fittings, Insulators & accessories and their transportation and proper stacking at any Dedicated Store of HVPNL.	Ckm.			1.92	8615.7	16542	Rate @5 % of Supply rate after updating with CACMAI July., 2023 (CP-22)
	Dismantlement						16542	
	Total (Erection+Dismantlement charges)						1367384	
	Total Rate list items						188600	
	Total Supply + Erection+ Dismantlement						14875800	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						9430	
	Labour Cess @ 1% of Supply,erection & Dismantlement						148758	
	Administrative Charges @ 1% Labour Cess						1488	
	Contractor premium @ 10% of Supply (rate list items)						18860	
	Total (Total estimated cost)						**15054336**	
	Contingencies & Incidental charges @ 5% total estimated cost						752717	
	Gross Total Estimate						**15807053**	

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Annexure-IV

Line wise Estimated Cost for Package-C

Sr. No.	Name of Line	Ckt.Km	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. (Tentative D/C Route Length-17.56 KM)	35.12	316196979
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. (Tentative D/C Route Length-2.39 KM)	4.78	141717880
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 (Tentative D/C Route Length-0.12 KM)	0.24	5790410
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. (Tentative D/C Route Length-7.92KM)	15.84	142788141
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 (Tentative D/C Route Length-9.075 KM)	18	160083692
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. (Tentative D/C Route Length-15.901 KM)	31.802	280987456
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 Nuna Majra to the LILO point (2L2830*) (Tentative Route Length of line for LILO portion=2.906KM) (Tentative Route Length of line for Nuna Majra-Daboda D/C line -0.596KM) (Tentative Route Length of line for Nuna Majra-Daultabad D/C line -0.302KM)	6.0	99767626
	Total	**111.782**	**1147332183**

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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.
(Tentative D/C Route Length-17.56 KM)

S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	HTLS Conductor of equivalent size of ACSR Zebra conductor with ampacity (1200 Amp)	Km	106.5	2	108.5	2164120.00	234807020	Budgetary from M/s Apar, M/s Sterlite & M/s JSK (CP-10)
2	A/F type Disc Insulator or Silicon Rubber Polymer Insulator strings							Rate List dated 27.04.2023 (CP-15)
	i) 70 kN	No.	150	0	150	2500.00	375000	
	ii) 120 kN	No.	114	0	114	3800.00	433200	
3	Hardware Fittings of HTLS Conductor of size equivalent to ACSR Panther conductor						0	
	(a) Single 'I' Suspension String	set	234	4	238	16499.94	3926986	EPC-D-283 (CP-14)
	(b) Single suspension pilot string	Set	39	1	40	16499.94	659998	
	(c) Single Tension string	Set	570	11	581	40191.98	23351540	
	(d) Double Tension string	Set	24	1	25	50703.82	1267596	EPC-D-227 (CP-11)
4	HTLS conductor accessories							
	i) Mid Span Compression Joint	No.	71	2	73	15336.61	1119573	
	ii) Repair sleeves	No.	21	1	22	4230.78	93077	PO REC-283
	iii) Vibration damper for conductor	No.	1188	24	1212	3596.17	4358556	
	Total of Supply						**270392545**	
	Erection @10% of Supply						**27039254**	
	DISMANTLEMENT WORK to be included in Erection Part of BOQ							
5	Dismantlement of existing of ACSR Zebra conductor of 220 kV line complete with H/W fittings, Insulators & accessories and their transportation and proper stacking at any Dedicated Store of HVPNL.	Ckm.			35.12	16431.1	577061	Rate @5 % of Supply rate after updating with CACMAI Sep., 2023 (CP-17)
	Dismantlement						577061	
	Total (Erection+Dismantlement charges)						27616315	
	Total Rate list items						808200	
	Total Supply + Erection+ Dismantlement						298008860	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						40410	
	Labour Cess @ 1% of Supply,erection & Dismantlement						2980089	
	Administrative Charges @ 1% Labour Cess						29801	
	Contractor premium @ 10% of Supply (rate list items)						80820	
	Total (Total estimated cost)						**301139980**	
	Contingencies & Incidental charges @ 5% total estimated cost						15056999	
	Gross Total Estimate						**316196979**	

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Sonnu

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.
(Tentative D/C Route Length-2.39 KM)

S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	Fabrication and supply of following tower parts with stubs, bolts & nuts, step bolts, U-bolts, hangers, D-shackle etc. of following Designs: i) 220kV MB type towers (KRR Design) i) 220kV MB type towers (KRR Design)	No	5	0	5	1742241.04	8711205	IEEMA & Rate list (CP-18 & 15)
2	i) +3 mtr. Extn. only	No	4	0	4	177768.10	711072	
3	+6 mtr. Extn. only	No	1	0	1	364704.79	364705	
4	i) 220kV MB+9 mtr. type Special extension M/C tower (KRR Design)	No	1	0	1	2217262.64	2217263	
5	i) 220kV MC type towers (KRR Design)	No	1	0	1	2082865.51	2082866	
6	ii) +3 mtr. Extn. only	No	1	0	1	210283.83	210284	
7	i) 220kV MD type towers (KRR Design)	No	5	0	5	3037560.05	15187800	
8	ii) +3 mtr. Extn. only	No	1	0	1	302013.38	302013	
9	iii) +6 mtr. Extn. only	No	1	0	1	576727.42	576727	
10	iv) Aux-cross-arm only (set of 6)	Set	4	0	4	258584.94	1034340	
11	i) 220kV MD+9m type Special extension M/C tower (KRR	No	1	0	1	4081754.76	4081755	
12	i) 220kV MD+12m type Special extension M/C tower (KRR	No	2	0	2	4334660.41	8669321	
13	ii) Aux-cross-arm only (set of 6)	Set	1	0	1	258584.94	258585	
14	220kV D/C DD type (TATA Design)	No	1	0	1	1060239.76	1060240	
15	i) +6 mtr. Extn. only	No	1	0	1	301702.65	301703	
16	220kV D/C gantry HSEB design (AT-9, AT-10 & AB-1X)	No	2	0	2	473297.49	946595	
17	Supply of earthing of Towers/ Gantry							
18	i) Pipe type	Sets	22	0	22	5656.92	124452	EPC-D-79 (CP-)
19	ii) Counterpoise type	Sets	0	0	0	0.00	0	
20	Supply of following Tower accessories						0	
21	i) Danger Plate	No	18	0	18	403.56	7264	
22	ii) Number Plate	No	18	0	18	403.56	7264	
23	iii) Phase Plate (set of 3)	Sets	36	0	36	403.56	14528	
24	iv) Circuit Plate (set of 2)	Sets	18	0	18	403.56	7264	
25	i) Anti climbing device	No	18	0	18	12391.18	223041	
26	ii) Glow Plate	No	8	0	8	2423.72	19390	
27	i) Conductor: HTLS with size equivalent to ACSR Zebra (1200 Amps)	Km	14.4	0.3	14.7	2164120.00	31812564	Budgetary from M/s Apar, M/s Sterlite & M/s JSK
28	ii) Conductor: ACSR Zebra	Km	1	0	1	328622.38	328622	(CP-10)
29	220kV Silicon Rubber Polymer Insulator strings						0	Rate List dated 27.04.2023
30	i) 70 KN	No	15	0	15	2500.00	37500	(CP-15)
31	ii) 120 KN	No	252	0	252	3800.00	957600	
32	Hardware Fittings of HTLS Conductor having current carrying capacity of about 1200 Amp				0		0	EPC-D-283 (CP-14)
33	i) Single suspension pilot string	No	15	1	16	16499.94	263999	
34	ii)Single Tension string	No	198	4	202	40191.98	8118780	
35	iii) Double tension string	No	24	1	25	50703.82	1267596	PO REC-227 (CP-11)
36	HTLS Conductor Accessories				0		0	
37	i) Mid Span Compression Joint for HTLS conductor	No	10	1	11	15336.61	168703	EPC-D-283
38	ii) Repair sleeves for HTLS conductor	No	3	0	3	4230.78	12692	(CP-14)
39	iii) Vibration damper for HTLS conductor	No	396	8	404	3596.17	1452852	
40	iv) T-Connector	No	6	1	7	600.00	4200	Rate List dated 27.04.2023
41	v) Parallel-Groove Clamp	No	6	1	7	700.00	4900	(CP-15)
42	ACSR Zebra conductor & earthwire hardware fittings							
43	i) Single Tension string	No	30	0	30	3048.18	91445	EPC-D-64
44	ii) Single suspension pilot string	No	3	0	3	1385.56	4157	(CP-19)
45	iii)Tension Clamp for earthwire 7/3.15	No	4	0	4	1056.81	4227	
46	iv) Flexible Copper bond	No	4	0	4	845.47	3382	
47	Earthwire: 7/3.15mm	km	0.3	0	0.3	49000.00	14700	Rate List dated 27.04.2023 (CP-15)
48	BoQ for OPGW/UGFO and wideband communication equipments							
49	i) OPGW (48 fiber) (DWSM, G.652D) (equivalent to Earth wire 7/3.15mm in all respect) which includes following portions:- Tower No. 38 (Prop.) of 220kV Daulatabd- IMT Manesar line to Gantry of 220kV S/Stn., Sec-99, Gurugram	km	2.389	0	2.389	223095.52	532975	EPC-D-64
50	Hardware set for above 48 Fibre OPGW Fibre Optic(equivalent to Earth wire 7/3.15mm in all respect) cabling including all cable fittings and accessories except Joint Box.	set	3	0	3	63406.12	190218	
51	FODP 48F: Indoor type, rack mounted with FCPC coupling and pig tails (5mtrs. Each) as applicable for 220kV S/Stn., Sec-99, Gurugram	No.	1	0	1	87548.92	87549	EPC-D-79
52	OPGW (24 fiber) (DWSM, G.652D) (equivalent to Earth wire 7/3.15mm in all respect) which includes following portions:-Tower No. 37to Tower No. 38 (Prop.) of 220kV Daulatabd- IMT Manesar line.	km	0.414	0	0.414	189913.92	78624	EPC-D-79

53	Hardware set for above 24 Fibre OPGW Fibre Optic(equivalent to Earth wire 7/3.15mm in all respect) cabling including all cable fittings and accessories except Joint Box.	Set	1	0	1	40406.74	40407	
54	Joint Box 24F fiber OPGW to OPGW (2 way Joint Boxes) (as applicable) (Quantity may vary as per drum schedule of OPGW)	No	1	0	1	7408.04	7408	EPC-D-79
55	Joint Box 48F fiber OPGW to OPGW (2way Joint Boxes) (as applicable) (Quantity may vary as per drum schedule of OPGW)	No	0	0	0	63406.12	0	EPC-D-64 (CP-19)
56	Joint Box 48F (3 way Joint Boxes) fiber OPGW to OPGW (as applicable)	No	1	0	1	21135.33	21135	
57	Joint Box (48 fiber) OPGW to FOAC (as applicable) for 220kV Sec-99, Gurugram.	No	1	0	1	31703.06	31703	
58	Fiber optic Approach cable, 48 fiber (DWSM) along with PLB HDPE Ducts of suitable size & strength and all accessories 220kV Sec-99, Gurugram.	Km	1	0	1	211353.69	211354	
59	PLB HDPE Ducts of suitable size & strength and all accessories 220kV Sec-99, Gurugram.	Km. (Approx)	1	0	1	742220.00	742220	EPC-D-56 (CP-20)
60	**Wideband Communication Equipment and spares**							
61	Telecom equipment as required for 220kV S/Stn., Sec-99, Gurugram.							
62	**SDH Equipment (STM - 16 MADM upto 5 MSP protected directions)**							EPC-D-64
63	Base Equipment (Common cards, Cross connect/control cards, optical base cards, power supply cards, power cabling, other hardware and accessories including sub racks, patch cord, DDF etc. fully equipped excluding (ii) & (iii) below to be installed at 220kV Sec-99, Gurugram.	nos	1	0	1	1540721.16	1540721	
64	**Optical Interface Cards/SFP**							
65	S16.1 SFP (the quantities will be decided at the time of detail engineering)	nos	0	0	0	0.00	0	
66	L16.2 SFP (the quantities will be decided at the time of	nos	0	0	0	0.00	0	
67	S4.1 SFP (the quantities will be decided at the time of detail	nos	4	0	4	141.60	566	
68	**Tributary cards**			0	0		0	
69	E1 Interface card (Min. 32 interfaces per card)	set	2	0	2	64652.20	129304	
70	Ethernet Interface 10/100 BaseT with Layer-2 switching (min8 interfaces per card)	nos	2	0	2	91590.42	183181	EPC-D-79
71	Gigabit Ethernet (Layer 2) Interface (min 2 nos.)	set	1	0	1	118528.64	118529	
72	**Equipment Cabinet with DDF and all installation accessories** **Network Manager System - Craft Terminal**	No.	1	0	1	65324.80	65325	
73	Hardware	set	0	0	0	0	0	
74	Software	set	0	0	0	0.00	0	EPC-D-79
75	VOIP telephone instrument with one common switch (min. 8 port) compatible with SLDC	Nos	1	0	1	43100.68	43101	
76	Integration of the Equipment with existing network	lot	1	0	1	471418.26	471418	
77	**Mandatory spares** **Telecom equipment as required for 220kV S/Stn., Sec-99, Gurugram.** **SDH Equipment (STM - 16 MADM upto 5 MSP protected directions)**							
78	Common cards, Cross connect/control cards, optical base cards, power supply cards, power cabling, other hardware and accessories	set	0	0	0	0.00	0	
79	**Optical Interface Cards/SFP**			0	0	0.00	0	
80	S16.1 SFP (the quantities will be decided at the time of detail engineering)	nos	0	0	0	0.00	0	
81	L16.2 SFP (the quantities will be decided at the time of detail engineering)	nos	0	0	0	0.00	0	
82	S4.1 SFP (the quantities will be decided at the time of detail engineering)	nos	1	0	1	141.60	142	
83	E1 Interface card (Min.32 interfaces per card)	set	1	0	1	64652.20	64652	EPC-D-79
84	Ethernet Interface 10/100 Base T with Layer-2 switching (min 8 interfaces per card)	nos	1	0	1	91590.42	91590	EPC-D-79
85	Gigabit Ethernet (Layer 2) Interface (min 2 nos.)	set	1	0	1	118528.64	118529	
86	**VOIP telephone instrument with one common switch(min. 8 port) compatible with SLDC**	nos	0	0	0	0.00	0	EPC-D-79
87	Pre Connectorized-Optical Fibre Patch Cords (10 Mtrs.)-Pack of six Patch cords	Set	1	0	1	38386.58	38387	
88	**Total of Supply**						**96476634**	
89	**Erection @10% of Supply**						**9647663**	
90	***DISMANTLEMENT WORK to be included in Erection Part of BOQ***							
91	Dismantlement of following design of tower from 220kV D/C Daultabad-IMT Manesar.The dismantlement of tower shall also include following: 1. Dismantlement of Stub concrete upto a depth of 1M (one meter) from Natural Ground level, back filling, compaction and clearing the site of debris. 2. Transporting and proper stacking of unused tower/ extensions, OPGW/Earthwire, Conductor to site store of HVPNL.							Rate @5 % of Supply rate after updating with CACMAI Sep., 2022 (CP-17)

92	a) 220kV D/C DB type TATA Design	No.	1	0	1	36798.9	36799	
93	b) ACSR Conductor	Running ckt	0.134	0	0.134	16431.1	2202	
94	**Dismantlement**						**39001**	
95	**Civil**							
96	Detailed Survey	Km.	3	0	3	19999.82	59999.46	Rate Obtained from Civil Design Wing
97	Furnishing bore log data	No.	3	0	3	6999.76	20999.28	
98	Construction of tower foundations as per HVPNL Drgs & Specifications **for 0 to 6Mtr. extn.** including excavation, concreting, supply and placement of steel reinforcement and backfilling complete in all respect.							
99	i) 220kV **'MB'** type M/C Tower (KRR Design) classified as							
100	**- Dry**	No.	4	0	4	705604.6	2822418.4	
101	**- Wet**	No.	1	0	1	874624.26	874624.26	
102	ii) 220kV **'MC'** type M/C Tower (KRR Design) classified as							
103	**- Wet**	No.	1	0	1	1211416.32	1211416.32	
104	iii) 220kV **'MD'** type M/C Tower (KRR Design) classified as							
105	**- Dry**	No.	4	0	4	1529146.66	6116586.64	
106	**- Wet**	No.	1	0	1	1751826.82	1751826.82	
107	iv) 220kV **'DD'** type D/C Tower (TATA Design) classified as							
108	**- Dry**	No.	1	0	1	222498.44	222498.44	
109	Construction of tower foundations as per HVPNL Drgs & Specifications **for above 6Mtr. extn.** including excavation, concreting, supply and placement of steel reinforcement and backfilling complete in all respect.							
110	i) 220kV **'MB+9'** type special extension M/C Tower (KRR Design) classified as							
111	**- Dry**	No.	1	0	1	703949.06	703949.06	
112	ii) 220kV **'MD +9, +15'** type special extension M/C Tower (KRR Design) classified as							
113	**- Dry**	No.	1	0	1	1617280.86	1617280.86	
114	**- Wet**	No.	2	0	2	2056796.64	4113593.28	
115	220kV **D/C Gantry** (One set consist of 2No. AT-9B & 01No. AT-10 type foundation)	No.	2	0	2	263823.22	527646.44	
116	Dewatering of subsoil water for lowering of water table to enable excavation of earth, concreting for foundations/stub and backfilling, by boring of tube wells or deploying well point system so that continuous lowering of water table is made till completion of work, without disturbing the soil characteristics. The rate shall include all type of expenditure for required dewatering arrangements and irrespective of type of tower including extensions if any i.e. KRR design or TATA design.	No.	5	0	5	65000.3	325001.5	
	CIVIL TOTAL						20367841	
	Total (Erection+Dismantlement+Civil charges)						30054505	
	Total Rate list items						47735373	
	Total Supply + Erection+ Dismantlement + Civil						126531139	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						2386769	
	Labour Cess @ 1% of Supply,erection,civil & Dismantlement						1265311	
	Administrative Charges @ 1% Labour Cess						12653	
	Contractor premium @ 10% of Supply (rate list items)						4773537	
	Total (Total estimated cost)						**134969409**	
	Contingencies & Incidental charges @ 5% total estimated cost						6748470	
	Gross Total Estimate						**141717880**	

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Sonu

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 (Tentative D/C Route Length-0.12 KM)								
S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	HTLS Conductor of equivalent size of twin moose conductor with ampacityof twin moose conductor	Km	1.1	0.045	1.145	2506320.00	2869736	Budgetary from M/s Apar, M/s Sterlite & M/s JSK (CP-10)
2	Supply of Hardware Fittings of HTLS Conductor of size equivalent size of Single ACSR Moose with twin moose Ampacity (c) Single Tension string	Set	54	3	57	31860.00	1816020	EPC-D-283 (CP-14)
3	HTLS conductor accessories iii) Vibration damper for conductor	No.	72	4	76	3596.17	273308.8	
	Total of Supply						4959065	
	Erection @10% of Supply						495907	
4	***DISMANTLEMENT WORK to be included in Erection Part of BOQ*** Dismantlement of existing of ACSR Panther conductor of 220kV line complete with H/W fittings, Insulators & accessories and their transportation and proper stacking at any Dedicated., Store of HVPNL.	Ckm.			0.36	12675.2	4563	Rate @5 % of Supply rate after updating with CACMAI Sep., 2023 (CP-17)
	Dismantlement						4563	
	Total (Erection+Dismantlement charges)						500470	
	Total Rate list items						0	
	Total Supply + Erection+ Dismantlement						5459535	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						0	
	Labour Cess @ 1% of Supply,erection & Dismantlement						54595	
	Administrative Charges @ 1% Labour Cess						546	
	Contractor premium @ 10% of Supply (rate list items)						0	
	Total (Total estimated cost)						5514676	
	Contingencies & incidental charges @ 5% total estimated cost						275734	
	Gross Total Estimate						5790410	

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Augmentation of 220 kV D/C Sector-46-Palli line with 0.4 sq" ACSR conductor to 0.4 sq" HTLS conductor (1200 Amp) (Tentative D/C Route Length-7.92 KM)								
S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (including GST)	Total	Rate taken from
1	HTLS Conductor of equivalent size of ACSR Panther conductor with ampacity (1200 Amp)	Km	48	2	50	2164120.00	108206000	Budgetary from M/s Apar, M/s Sterlite & M/s JSK (CP-10)
2	A/F type Disc Insulator or Silicon Rubber Polymer Insulator strings							
	i) 70 kN	No.	123	0	123	2500.00	307500	Rate List dated 27.04.2023 (CP-15)
	ii) 90 kN	No.	204	0	204	3600.00	734400	
3	Hardware Fittings of HTLS Conductor of size equivalent to ACSR Panther conductor							
	(a) Single 'I' Suspension String	set	114	3	117	16499.94	1930493	
	(b) Single suspension pilot string	Set	9	1	10	16499.94	164999	EPC-D-283 (CP-14)
	(c) Single Tension string	Set	156	6	162	40191.98	6511101	
	(d) Double Tension string	Set	24	4	28	50703.82	1419707	REC-227 (CP-11)
4	HTLS conductor accessories							
	i) Mid Span Compression Joint	No.	32	2	34	15336.61	521445	EPC-D-283 (CP- 14)
	ii) Repair sleeves	No.	11	2	13	4230.78	55000	
	iii) Vibration damper for conductor	No.	588	12	600	3596.17	2157701	
	iv) Glow Plate for 220kV Towers	No.	12	0	12	362.26	4347	EPC-D-45 (CP-13)
	Total of Supply						**122012693**	
	Erection @10% of Supply						**12201269**	
6	***DISMANTLEMENT WORK to be included in Erection Part of BOQ***							
	Dismantlement of existing of ACSR Zebra conductor complete with H/W fittings, Insulators for above portion of line and their transportation and proper stacking at any Dedicated Store of HVPNL.	Running Ckm.			15.84	16431.1	260269	Rate @5 % of Supply rate after updating with CACMAI Sep., 2023 (CP- 17)
	Dismantlement						260269	
	Total (Erection+Dismantlement charges)						12461538	
	Total Rate list items						1041900	
	Total Supply + Erection+ Dismantlement						134474231	
	Transporation of material from site store to site work, Insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						52095	
	Labour Cess @ 1% of Supply,erection & Dismantlement						1344742	
	Administrative Charges @ 1% Labour Cess						13447	
	Contractor premium @ 10% of Supply (rate list items)						104190	
	Total (Total estimated cost)						**135988706**	
	Contingencies & Incidental charges @ 5% total estimated cost						6799435	
	Gross Total Estimate						**142788141**	

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Sanju

Augmentation of 220 kV Samaypur-Palli line with 0.4 sq" ACSR conductor to 0.4 sq" HTLS conductor (1200 Amp) (Tentative D/C Route Length-9.075KM)								
S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	HTLS Conductor of equivalent size of ACSR Panther conductor with ampacity (1200 Amp)	Km	55	1	56	2164120.00	121190720	Budgetary from M/s Apar, M/s Sterlite & M/s JSK (CP-10)
2	A/F type Disc Insulator or Silicon Rubber Polymer Insulator strings							
	i) 70 kN	No.	135	0	135	2500.00	337500	Rate List dated 27.04.2023 (CP-15)
	ii) 90 kN	No.	216	0	216	3600.00	777600	
3	Hardware Fittings of HTLS Conductor of size equivalent to ACSR Panther conductor						0	
	(a) Single 'I' Suspension String	set	132	3	135	16499.94	2227492	EPC-D-283 (CP-14)
	(b) Single suspension pilot string	Set	3	1	4	16499.94	66000	
	(c) Single Tension string	Set	192	6	198	40191.98	7958012	
	(d) Double Tension string	Set	12	2	14	50703.82	709853	REC-227 (CP-11)
4	HTLS conductor accessories							
	i) Mid Span Compression Joint	No.	36	2	38	15336.61	582791	EPC-D-283 (CP-14)
	ii) Repair sleeves	No.	10	1	11	4230.78	46539	
	iii) Vibration damper for conductor	No.	672	13	685	4230.78	2898087	
	iv) Glow Platee for 220kV Towers	No.	2	0	2	362.26	725	EPC-D-45 (CP-13)
	Total of Supply						**136795319**	
	Erection @10% of Supply						**13679532**	
6	***DISMANTLEMENT WORK to be included in Erection Part of BOQ***							
	Dismantlement of existing of ACSR Zebra conductor complete with H/W fittings, Insulators for above portion of line and their transportation and proper stacking at any Dedicated Store of HVPNL.	Ckm.		✓	18	16431.1	295760	Rate @5 % of Supply rate after updating with CACMAI Sep., 2023 (CP-17)
	Dismantlement						295760	
	Total (Erection+Dismantlement charges)						13975292	
	Total Rate list items						1115100	
	Total Supply + Erection+ Dismantlement						150770611	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						55755	
	Labour Cess @ 1% of Supply,erection & Dismantlement						1507706	
	Administrative Charges @ 1% Labour Cess						15077	
	Contractor premium @ 10% of Supply (rate list items)						111510	
	Total (Total estimated cost)						**152460659**	
	Contingencies & Incidental charges @ 5% total estimated cost						7623033	
	Gross Total Estimate						**160083692**	

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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.
(Tentative D/C Route Length-15.901 KM)

S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	HTLS Conductor of equivalent size of ACSR Panther conductor with ampacity (600 Amp)	Km	97	5	102	2164120.00	220740240	Budgetary from M/s Apar, M/s Sterlite & M/s JSK (CP-10)
2	A/F type Disc Insulator or Silicon Rubber Polymer Insulator strings							
	i) 70 kN	No.	237	0	237	2500.00	592500	Rate List dated 23.04.2023 (CP-15)
	ii) 90 kN	No.	240	0	240	3600.00	864000	
3	Hardware Fittings of HTLS Conductor of size equivalent to ACSR Panther conductor						0	
	(a) Single 'I' Suspension String	set	228	12	240	16499.94	3959986	EPC-D-283 (CP-14)
	(b) Single suspension pilot string	Set	9	0	9	16499.94	148499	
	(c) Single Tension string	Set	192	10	202	40191.98	8118780	
	(d) Double Tension string	Set	24	1	25	50703.82	1267596	REC-227 (CP-11)
4	HTLS conductor accessories							
	i) Mid Span Compression Joint	No.	65	3	68	15336.61	1042890	EPC-D-283 (CP-14)
	ii) Repair sleeves	No.	20	1	21	4230.78	88846	
	iii) Vibration damper for conductor	No.	888	44	932	3596.17	3351629	
	Total of Supply						**240174965**	
	Erection @10% of Supply						**24017497**	
	DISMANTLEMENT WORK to be included in Erection Part of BOQ							
6	Dismantlement of existing 0.4 ACSR conductor of 220kV line complete with H/W fittings, Insulators & accessories and their transportation and proper stacking at any Dedicated Store of HVPNL.	Ckm.		✓	31.802	16431.1	522542	Rate @5 % of Supply rate after updating with CACMAI Sep., 2023 (CP-17)
	Dismantlement						522542	
	Total (Erection+Dismantlement charges)						24540039	
	Total Rate list items						1456500	
	Total Supply + Erection+ Dismantlement						264715004	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						72825	
	Labour Cess @ 1% of Supply,erection & Dismantlement						2647150	
	Administrative Charges @ 1% Labour Cess						26472	
	Contractor premium @ 10% of Supply (rate list items)						145650	
	Total (Total estimated cost)						267607101	
	Contingencies & Incidental charges @ 5% total estimated cost						13380355	
	Gross Total Estimate						280987456	

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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 Nuna Majra to the LILO point (2L2830*)

(Tentative Route Length of line for LILO portion=2.906KM)

(Tentative Route Length of line for Nuna Majra-Daboda D/C line -0.596KM)

(Tentative Route Length of line for Nuna Majra-Daultabad D/C line -0.302KM)

S. N.	DESCRIPTION	UNIT	Qty.	Spares	Total Qty.	Unit price (Including GST)	Total	Rate taken from
1	**Fabrication and supply of following tower parts with stubs, bolts & nuts step bolts, U Bolts hangers, D-shakle etc. of following designs**							As per latest rate list dt. 27.04.2023 and updating the same IEEMA upto Aug 2023 **(CP-18)**
1.1	220kV **DA TATA Design** type tower	No.	3	0	3	495011.39	1485034.16	
	i) +3 mtr Extn only	No.	1	0	1	79294.06	79294.06	
1.2	220kV **DB TATA Design** type tower	No	4	0	4	735978.50	2943913.99	
	i) +3 mtr Extn only	No	1	0	1	106948.82	106948.82	
1.3	220kV **DC TATA Design** type tower	No	2	0	2	794908.20	1589816.39	
1.4	220kV **DD TATA Design** type tower	No	6	0	6	1060239.76	6361438.53	
	i) +3 mtr Extn only	No	1	0	1	201354.67	201354.67	
	ii) +6 mtr Extn only	No	1	0	1	157321.64	157321.64	
	iii)Extra Cross arm (set of 3)	No	1	0	1	99669.06	99669.06	
1.5	220kV **MD KRR Design** type tower	No	1	0	1	3037560.05	3037560.05	
2	**Supply of earthing of towers /Gantry** i.) pipe type	sets	16	0	16	5656.92	90510.72	EPC-D-79 dt 09.08.2022 **(CP -12)**
	ii) Counterpoise type	sets	0	0	0	0.00	0.00	
3	**Supply of following Tower Accessories** i.) Danger plate	No	16	0	16	403.56	6456.96	
	ii.) Number plate	No	16	0	16	403.56	6456.96	
	iii) Phase plate (set of 3)	sets	26	0	26	403.56	10492.56	
	iv) circuit plate (set of 2)	sets	16	0	16	403.56	6456.96	
	v) Bird Guard (set of 3)	sets	6	0	6	2020.16	12120.96	
	vi) Anti climbing device	sets	16	0	16	12391.18	198258.88	
4	HTLS Conductor of equivalent size of ACSR twin Moose conductor with ampacity (1262 Amp)	Km	18.06	1	19.06	2506320.00	47770459.20	Budgetary from M/s Apar, M/s Sterlite & M/s JSK (CP-10)
5	Conductor (0.4 Sq inch ACSR Zebra)	Km	4.96	0	4.96	328622.38	1629967.02	Rate List 24.04.2023 **(CP- 15)**
2	220kV Silicon Rubber Polymer Insulator strings							
	i) 90 kN	No.	26	0	26	3600.00	93600.00	Rate List 24.04.2023 **(CP- 15)**
	ii) 120 kN	No.	66	0	66	3800.00	250800.00	
	ii) 160 kN	No.	264	0	264	6000.00	1584000.00	
3	Hardware Fittings of HTLS Conductor of size equivalent to ACSR Zebra conductor having ampacity of twin Moose ACSR conductor (1262 Amp)						0.00	
	(a) Single 'I' Suspension String	set	18	1	19	16500.08	313501.55	EPC-D-283 **(CP-14)**
	(b) Single suspension pilot string	Set	6	1	7	16500.00	115500.00	
	(c) Single Tension string	Set	126	7	133	40192.50	5345602.39	
	(d) Double Tension string	Set	0	0	0	50703.82	0.00	REC-227 **(CP-11)**
3	Hardware Fittings of ACSR Zebra Conductor							
	(a) Single 'I' Suspension String	set	0	0	0	4467.48	0.00	EPC-D-283 **(CP-14)**
	(b) Single suspension pilot string	Set	0	0	0	1541.08	0.00	
	(c) Single Tension string	Set	66	0	66	3433.80	226630.80	
	(d) Double Tension string	Set	0	0	0	7069.38	0.00	REC-227 **(CP-11)**
4	Accessories for HTLS Conductor equivalent to Zebra conductor having ampacity of twin Moose ACSR conductor (1262 Amp)							
	i) Mid Span Compression Joint	No.	28	2	30	15336.61	460098.40	EPC-D- 283
	ii) Repair sleeves	No.	8	2	10	4230.30	42303.00	
	iii) Vibration damper for conductor	No.	564	16	580	3596.17	2085777.44	
4	Accessories for ACSR Zebra Conductor							
	i) Mid Span Compression Joint	No.	4	0	4	1366.44	5465.76	EPC-D-45
	ii) Repair sleeves	No.	1	0	1	450.76	450.76	
	iii) Vibration damper for conductor	No.	132	0	132	1011.26	133486.32	
11	T-Connector suitable for joining HTLS conductor equivalent to Zebra Conductor having ampacity of twin Moose ACSR conductor (1262 Amp) and HTLS conductor equivalent to Zebra Conductor having ampacity of twin Moose ACSR conductor (1262 Amp)	No.	3	1	4	500.00	2000.00	Rate List 24.04.2023
12	T-Connector suitable for joining HTLS conductor equivalent to Zebra Conductor having ampacity of twin Moose ACSR conductor (1262 Amp) and ACSR Zebra Conductor	No.	3	1	4	500.00	2000.00	Rate List 24.04.2023
13	C-wedge Connector	No.	12	0	12	600.00	7200.00	
14	OPGW (48 Fiber) DWSM, G.652D (equivqlent to Earth Wire 7/3.155mm in all respect) which includes following portions:- 400kV S/Stn Bahadurgarh (PG) - LILO point of 220kV Daultabad- Nunamajra	KM	3.5	0.0	3.5	49000.00	171500.00	Rate List 24.04.2023
15	Hardware Set for above 48 OPGW Fiber Optic cabling including all cable fitting & accessories except joint box	Set	3	0.0	3	40406.74	121220.22	
16	FODP 48F: In door type, rack mounted with FCPC Coupling and pig tails (5mtrs, each)	No.	1	0.0	1	87548.92	87548.92	EPC-D-79
17	Joint Box 48 Fiber (3 way)	No.	2	0.0	2	8832.30	17664.60	
18	Joint Box 48 Fiber OPGW to OPGW	No.	2	0.0	2	8832.30	17664.60	

19	Joint Box 48 Fiber OPGW to OFAC	No.	1	0.0	1	8832.30	8832.30	
20	Fiber Optic Approach Cable, 48 fiber (DWSM) along with PLB HPE Ducts of suitable size & strength and all accessories	Km	0.5	0.0	0.5	190224.26	95112.13	EPC-D-45
	Wideband Communication equipment and spares						0.00	
	Telecom Equipment as required for 400KV S/Stn. Bahadurgarh (PG) - LILO						0.00	
	Point of 220KV Daultabad - Nunamajra						0.00	
	SDH Equipment (STM - 16 MADM upto 5 MSP protected directions)						0.00	
21	Base Equipment (Common cards, Cross connect/control cards, optical base cards, power supply cards, power cabling, other hardware and accessories including sub racks, patch cord, DDF etc. fully equipped excluding (ii) and (iii) below to be installed at 400KV S/Stn. Bahadurgarh (PG) – LILO Point f 220KV Daultabad-Nunamajra	Nos.	0	0.0	0.00	0.00	0.00	
	Optical Interface Cards/SFP					0.00	0.00	
22	S16.1 SFP (The quantities will be decided at the time of detailed engineering)	Nos.	0	0.0	0.00	0.00	0.00	
23	L16.2 SFP (The quantities will be decided at the time of detailed engineering)	Nos.	0	0.0	0.00	0.00	0.00	
24	S4.1 SFP (The quantities will be decided at the time of detailed engineering)	Nos.	0	0.0	0.00	0.00	0.00	
25	L4.2 SFP (The quantities will be decided at the time of detailed engineering)	Nos.	0	0.0	0.00	0.00	0.00	
	Tributary cards					0.00	0.00	
26	E1 Interface card (Min. 32 interfaces per card)	Set	0	0.0	0.00	0.00	0.00	
27	Ethernet Interface 10/100 Base T with Layer-2 switching (Min. 8 interfaces per card)	Nos.	0	0.0	0.00	0.00	0.00	
28	Gigabit Ethernet (Layer 2) Interface (min. 2 nos.)	Set	0	0.0	0.00	0.00	0.00	
	Equipment Cabinet with DDF and all installation accessories					0.00	0.00	
29	Network Manager System - Craft Terminal	No.	0	0.0	0.00	0.00	0.00	
30	Hardware	Set	0	0.0	0.00	0.00	0.00	
31	Software	Set	0	0.0	0.00	0.00	0.00	
32	VOIP telephone instrument with one common switch(min. 8 port) compatible with SLDC	Nos.	0	0.0	0.00	0.00	0.00	
33	Integration of the Equipment with existing network	Lot	0	0.0	0.00	0.00	0.00	
	Note:- Above Quantities covers the requirement of remote station as well.					0.00	0.00	
	Mandatory Spares					0.00	0.00	
	Telecom Equipment as required for 400KV S/Stn. Bahadurgarh (PG) – LILO Point of 220KV Daultabad – Nunamajra					0.00	0.00	
	SDH Equipment (STM - 16 MADM up to 5 MSP protected directions)					0.00	0.00	
34	Common cards, Cross connect/control cards, optical base cards, power supply cards, power cabling, other hardware and accessories.	Set	0	0.0	0.00	0.00	0.00	
	Optical Interface Cards/SFP					0.00	0.00	
35	S16.1 SFP (The quantities will be decided at the time of detailed engineering)	Nos.	0	0.0	0.00	0.00	0.00	
36	L16.2 SFP (The quantities will be decided at the time of detailed engineering)	Nos.	0	0.0	0.00	0.00	0.00	
37	S4.1 SFP (The quantities will be decided at the time of detailed engineering)	Nos.	0	0.0	0.00	0.00	0.00	
38	L4.2 SFP (The quantities will be decided at the time of detailed engineering)	Nos.	0	0.0	0.00	0.00	0.00	
	Tributary cards					0.00	0.00	
39	E1 Interface card (Min. 32 interfaces per card)	Set	0	0.0	0.00	0.00	0.00	
40	Ethernet Interface 10/100 Base T with Layer-2 switching (Min. 8 interfaces per card)	Nos.	0	0.0	0.00	0.00	0.00	
41	Gigabit Ethernet (Layer 2) Interface (min. 2 nos.)	Set	0	0.0	0.00	0.00	0.00	
42	VOIP telephone instrument with one common switch (min. 8 port) compatible with SLDC	Nos.	0	0.0	0.00	0.00	0.00	
43	Pre Connectorized Optical Patch Cards (10Mtrs.) – Pack of six Patch Cards	Set	1	0.0	1.00	37675.04	37675.04	
	Total of Supply						77019166	
	Erection @10% of Supply						7701917	
	DISMANTLEMENT WORK to be included in Erection Part of BOQ							
44	i) Dismantlement of towers and their transportation & proper stacking at any dedicated store of HVPNL. The dismantlement of tower shall also include dismantlement of Stub concrete upto a depth of 1M (one meter) from Natural Ground level, back filling , compaction and clearing the site of debris	As per Site						
45	220KV D/C TATA Design "DA+0" type Tower	No.	1	0.0	1.00	24750.57	24750.57	
46	220KV D/C TATA Design "DD+0" type Tower	No.	3	0.0	3.00	53011.99	159035.96	

47	ii) Dismantlement of existing ACSR Zebra Conductor & Earthwire/OPGW complete with H/W fittings for above portion of line and their transportation proper stacking at any dedicated store of HVPNL.	Running D/C Km. (approx.)	1.38	0.0	1.38	16431.12	22674.94	
	Dismantlement						206461	
	Civil Item							
48	Detailed Survey	Km.	4	0.0	4.00	19999.82	79999.28	Rate Obtained from Civil Design Wing
49	Furnishing bore log data	No.	4	0.0	4.00	6999.76	27999.04	
50	Construction of tower foundations as per HVPNL Drgs& Specifications for 0 to 6Mtr. extn. including excavation, concreting, supply and placement of steel reinforcement and backfilling complete in all respect.							
51	i) 220kV D/C 'DA' type Tower (TATA Design) classified as							
52	- Dry	No.	1	0.0	1.00	78645.82	78645.82	
53	- Wet	No	2	0.0	2.00	128726.2	257452.4	
54	ii) 220kV D/C 'DB' type Tower (TATA Design) classified as							
55	- Dry	No.	1	0.0	1.00	170468.7	170468.7	
56	- Wet	No.	3	0.0	3.00	240730.62	722191.86	
57	iii) 220kV D/C 'DC' type Tower (TATA Design) classified as							
58	- Dry	No.	1	0.0	1.00	174912.58	174912.58	
59	- Wet	No.	1	0.0	1.00	252110.54	252110.54	
60	iv) 220kV D/C 'DD' type Tower (TATA Design) classified as							
61	- Dry	No.	1	0.0	1.00	222498.44	222498.44	
62	- Wet	No.	5	0.0	5.00	336049.84	1680249.2	
63	v) 220kV M/C 'MD' type Tower (KRR Design) classified as							
64	- Wet	No.	1	0.0	1.00	1751827	1751827	
65	Dewatering of subsoil water for lowering of water table to enable excavation of earth, concreting for foundations/stub and backfilling, by boring of tube wells or deploying well point system so that continuous lowering of water table is made till completion of work, without disturbing the soil characteristics. The rate shall include all type of expenditure for required dewatering arrangements and irrespective of type of tower including extensions if any i.e. KRR design or TATA design.	No.	12	0.0	12.00	65000.3	780003.6	
	CIVIL TOTAL						**6198358**	
	Total (Erection+Dismantlement+Civil charges)						**14106737**	
	Total Rate list items						**19803418**	
	Total Supply + Erection+ Dismantlement+civil						**91125902**	
	Transporation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items						**990171**	
	Labour Cess @ 1% of Supply,erection,Civil & Dismantlement						**911259**	
	Administrative Charges @ 1% Labour Cess						**9113**	
	Contractor premium @ 10% of Supply (rate list items)						**1980342**	
	Total (Total estimated cost)						**95016787**	
	Contingencies & Incidental charges @ 5% total estimated cost						**4750839**	
	Gross Total Estimate						**99767626**	

Prepared By
AE/WB

Preaudited By
AO/Pre-audit

Checked By
Xen/Contract

Annexure-V

Sr. No.	Name of Line	Amount (in Rs.)
1	Replacement of existing conductor 0.2 SQ'' inch ACSR Conductor of 132KV Chormar-Dabwali S/Ckt line with HTLS Conductor. (Tentative S/C Route Length-24 KM)	136463600
2	Replacement of existing conductor 0.2 SQ'' inch ACSR Conductor of 132 KV Shahpur Begu-Sirsa S/Ckt line with HTLS conductor (Tentative S/C Route Length-9.5 KM)	55445296
3	Replacement of existing conductor 0.2 SQ'' ACSR Conductor of 132 KV Jiwan Nagar -Rania S/Ckt line with HTLS conducotr (Tentative S/C Route Length-14 KM)	78964593
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. (Tentative D/C Route Length- 0.72 KM)	2181601
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 (Tentative D/C Route Length-3 KM)	48074968
6	Augmentation of existing 0.2 sq'' AL-59 conductor on HSEB Design towers of 132 kV Rohtak (220 kV) - Khorkrakot Rohtak CKt-1 (Tentative S/C Route Length-2.7 KM)	19610129
7	Augmentation of existing 0.2 sq'' AL-59 conductor on HSEB Design towers of 132 kV Rohtak (220 kV) - Khorkrakot Rohtak CKt-2 (Tentative S/C Route Length-2.7 KM)	20349681
8	Reconductoring of Daultabad-Sec10 Gurugram 66 kV D/c line with HTLS conductor having current carrying capacity of 600 Amp. (Route length-10.5 km)	119062054
9	Augmentation of existing 132 kV Nissing-Jalmana S/C 0.2 Sq" Inch ACSR line Conductor with equivalent HTLS Conductor having ampacity 600A from 220 kV Nissing up to LILO Point. (Tentative S/C Route Length-6.5 KM)	39264324
10	To replace the existing 0.2 sq'' ACSR conductor of 132 kV S/C Isherwal-Behal Line with 0.2 sq'' HTLS conductor (Tentative S/C Route Length-19.5 KM)	109394286
11	Augmentation of existing 0.2 sq" ACSR conductor of 132 kV S/C Chhajpur-Chandoli line with HTLS conductor. (Tentative S/C Route Length-8 KM)	48331746
12	Replacement of 0.2 sq'' ACSR conductor of 132 kV S/C Bastara- Madhuban/ (Tentative S/C Route Length-5.821 KM)	35162467
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 (Tentative S/C Route Length-12.065 KM)	69009004
14	Augmentation of 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 (Tentative S/C Route Length-11.3 KM)	69997703
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). (Tentative S/C Route Length-5.6 KM)	32278324
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 (Tentative S/C Route Length-1.094 KM)	15807053
17	Replacement of existing conductor 0.2SQ'' inch ACSR Conductor of 132 KV D/C Nuhiyawali Khairekan line with HTLS conductor (Tentative S/C Route Length-25 KM)	142383340
18	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 (Tentative D/C Route Length-11.186 KM)	94889505
19	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 (Tentative S/C Route Length-14.2 KM)	61487680
20	Augmentation of 66kV S/C Badshahpur-Sector-35-Harsaru line-provision of HTLS conductor of size 0.15 sq. inch (having ampacity of 600Amp thereoff) alongwith raising of height at some locations (Tentative S/C Route Length-9.96 KM)	63837730
21	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. (Tentative S/C Route Length-7.00KM)	31801495
22	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 (Tentative S/C Route Length-12.162 KM)	54600488

23	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 (Tentative S/C Route Length-4.8 KM)	22602613
24	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. (Tentative D/C Route Length-17.56 KM)	316196979
25	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. (Tentative D/C Route Length-2.39 KM)	141717880
26	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 (Tentative D/C Route Length-0.12 KM)	5790410
27	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. (Tentative D/C Route Length-8.01KM)	144216023
28	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. (Tentative D/C Route Length-15.9 KM)	280987456
	Total	**2259908427**

SUMMARY OF PROPOSAL

For Official Use - To be filled by the Nodal Agency	
Project Proposal Number : _____	Date of Receipt : _____

To be filled by the Requesting Organization / Project Entity	
1. Name of the requesting Organization / Utility :	Haryana Vidyut Prasaran Nigam Limited (HVPNL)
2. Short Summary of Project / Scheme / Activity	
a. Name and location of the Project / Scheme / Activity :	Replacement of existing ACSR conductors with equivalent HTLS conductor of higher current carrying capacity in Haryana State
b. Objective of the Project / Scheme / Activity :	Replacement of existing ACSR conductor i.e. Wolf, Panther, AL-59, Zebra and Moose with equivalent HTLS conductor of higher current carrying capacity in Haryana State.
c. Authorized Person For this Project / Scheme / Activity	Name : Er. Sanjay Arora E-mail ID : cepdc@hvpn.org.in Land line No : 0172-2583724, 0172-2583727 Mobile No. : 9356273746 Fax No : _____
d. Nature of the Project / Scheme / Activity: Inter – State / Intra – State (Please Specify)	Intra-state
e. Identified Beneficiaries	State of Haryana
f. Merits of the scheme	Replacement of existing ACSR conductors with equivalent HTLS conductor of higher current carrying capacity shall reduce the overloading of existing lines and also to improve the reliability with capability to cater the increased load demand in Haryana. Beneficial in region where erection of new lines is not feasible due to non-availability of RoW (Right of Way).
g. Limitations, if any	
h. Time frame for Implementation	12 months (Package-A & B) and 15 months (Package-C) to from the date of issue of Purchase order (Target completion- May-2025)
i. Estimated Cost of Project / Scheme / Activity	266.34 crores
j. Category under which the project is classified (Please refer Para 5.1 of the Guidelines/Procedure)	

Date: _____

Signature: _____ Sanjay Arora
Chief Engineer/PD&C
HVPNL, Panchkula

Name: _____

(Authorized Representative)

DETAILED PROPOSAL (DP)

1. Details of the Requesting Organization / Project Entity

1.1 Details of Organization / Entity

Name of Organization / Entity	Haryana Vidyut Prasaran Nigam Limited
Acronym or Abbreviation (if applicable)	HVPNL

1.2 Details of Head of the Organization

Name (Mr / Ms / Mrs)	Sh. Mohammed. Shayin
Designation	Managing Director
E-mail Address	md@hvpn.org.in
Landline No.	0172-2560579
Fax No.	
Address	Shakti Bhawan, Sector-6
City	Panchkula
Postal Code	134109

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

Name (Mr / Ms / Mrs)	Er. Sanjay Arora
Designation	Chief Engineer/PD&C
E-mail Address	cepdc@hvpn.org.in
Landline No.	0172-2583724, 0172-2583727
Mobile No.	9356273746
Fax No.	-
Address	Shakti Bhawan, Sector-6
City	Panchkula
Postal Code	134109

Any Change in above mentioned details may be notified to the Nodal Agency of PSDF immediately.

2. Justification of the Proposal

Due to exponential growth in power demand, the existing transmission lines are unable to cater power demand in the various region of Haryana. The erection of new lines in these regions is 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.

2.1 Analysis of the Objective

The project will reduce the overloading of existing lines and also to improve the reliability with capability to cater the increased load demand in Haryana.

- **Objective of the project / scheme / activity**

The project will replace of existing ACSR conductor i.e. Wolf, Panther, AL-59, Zebra and Moose with equivalent HTLS conductor of higher current carrying capacity in Haryana State which shall result in reducing the overloading condition of the existing transmission lines and shall also improve the reliability with capability to cater the increased load demand in Haryana.

- **How the problem / constraint would be addressed through the project / scheme / activity**
  By replacing ACSR conductors with HTLS conductors, the power infrastructure can be upgraded to handle the anticipated load growth. This proactive approach ensures that the transmission lines can accommodate future demands without requiring frequent replacements or significant modifications
- **Required physical additions / equipment in the power system**
  The existing ACSR conductor i.e. Wolf, Panther, AL-59, Zebra & Moose and AL-59 conductor shall be replaced with the equivalent HTLS conductors on the existing transmission lines with the compatible hardware fittings.
- **Financing and other commercial details**
  Ministry of Power has considered increasing PSDF support to 50% from existing 30%. HVPNL is requesting a grant of 100% from PSDF.
- **Merits and limitations (if any) in the implementation of the project/ scheme/ activity.**
  No limitations foreseen as such.

2.2 *Identified Beneficiaries of the Project*

This system shall ensure economical & efficient upgradation of the power infrastructure to handle the anticipated load growth in state of Haryana. As a result, power consumers of the state will be the beneficiaries.

2.3 *Identified Source of Funding*

Ministry of Power has considered increasing PSDF support to 50% from existing 30%. HVPNL is requesting a grant of 100% from PSDF..

2.4 Details of Activities for Project / Scheme / Activity

The no. of transmission lines under the said project which are getting replaced with the HTLS conductor of various rating –

2.5 Executing Agency

Haryana Vidyut Prasaran Nigam Limited (HVPNL) shall be the executing agency. HVPNL is maintaining 07 no. 400kV S/Stn., 87 no. 220kV S/Stn., 187 no. 132kV S/Stn. and 146 no. 66kV S/Stn. and approx. 16510 ckt km. of transmission lines in the state. It has enough technical expertise & manpower for implementation of the scheme.

2.6 Time line for Implementation of Project / Scheme / Activity

Describe the time line for implementing this project/ scheme/ activity including the target list of activities that need to be undertaken for the defined durations between timeline

Timeline of the Project / Scheme / Activity	
Duration of Project (in Months)	12 months (Package-A & B) and 15 months (Package-C) from the date of issue of Purchase order
Likely Start Date	As soon as administrative & financial approval is obtained.
Likely Completion Date	May-2025

Date: _____

Signature: _____ Sanjay Arora
Chief Engineer/PD&C
HVPNL, Panchkula

Name:

_____

(Authorized Representative)

Summary of Detailed Project Report (DPR)

Project Highlights:-

Project	Replacement of existing ACSR conductors with equivalent HTLS conductor of higher current carrying capacity in Haryana State
Project cost	Rs. 266.34 crores
Commissioning schedule	12 months (Package-A & B) and 15 months (Package-C)

Scope of Work:-

Since, 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, scope of works under the project to be implemented by HVPNL have been categorized in 3 number packages as per existing size (type) of the conductor i.e. wolf, Panther, AL-59, Zebra & Moose which is as under:-.

I. **Package-A** -Augmentation works of 07 no. Transmission lines with existing Wolf conductor to HTLS conductor.

II. **Package-B** - Augmentation works of 17 no. Transmission lines with existing Panther and AL-59 conductor to HTLS conductor.

III. **Package-C** - Augmentation works of 07 no. Transmission lines with existing Zebra and Moose conductor to HTLS conductor.

The Scope of works under the project to be implemented by HVPNL have been categorized in 3 number packages as per existing size (type) of the conductor i.e. wolf, Panther, AL-59, Zebra & Moose which is as under:-.

Sr. No.	Description of Projects	Tentative estimated cost (in INR)
1.	**Package-A** Augmentation works of 07 no. Transmission lines with existing Wolf conductor to HTLS conductor.	45,04,40,311
2.	**Package-B** Augmentation works of 17 no. Transmission lines with existing Panther and AL-59 conductor to HTLS conductor.	102,44,32,328
3.	**Package-C** Augmentation works of 07 no. Transmission lines with existing Zebra and Moose conductor to HTLS conductor.	118,85,50,737
	Total	**266,34,23,376**

Note:-
The estimated cost of the re-conductoring work of existing Transmission lines recommended by CEA is come to the tune of Rs. 223,36,02,479.00

Details of existing equipment

Name of the Substation :

Sl. No.	Name of Feeder	Equipment Name	year of Manufacturing and make	date of Commissioning	voltage	no. of cores available (in case of CT/PT)	type of insulation /operation	tagged for replace ment (yes/no)	reaso n for replce ment
400 kV				NA					
220 kV				NA					

Note : One table for each substation

	Abstract Quantity estimate Sub-station						
Sr. No.	Description of equipment	Sub-station Name-1	Sub-station Name-2	Sub-station Name-3	.	.	Total
400 kV							
220 kV							

Implementation schedule / milestones

target for physical milestones

Particular	Total	Quarter-1	Quarter-2	Quarter-3	Quarter-4	-	-	-	Last Quarter
No. of CB									
No of isolators									
no. CVT									
no of relays									
no. of CTs									
-									

target for financial milestones

	description of amount required	Total	Quarter-1	Quarter-2	Quarter-3	Quarter-4	-	-	-	Last Quarter

Date: _____

Signature: _____ Sanjay Arora
Chief Engineer/PD&C
HVPNL, Panchkula

Name: _____

(Authorized Representative)

Financial Implication of the Scheme

*(**Guidelines:** The financial implications of the proposal may be worked out as accurately as possible and should be detailed in this section. Further, the manner in which the expenditure is proposed to be borne may also be clearly indicated. Please provide the project cost estimate for its scheduled duration along with a break-up of year-wise, component-wise expenses segregated into non-recurring and recurring expenses.)*

1. Summary

S.No.	Item	Amount in Rs.
1.	Total Cost Estimate	266,34,23,376
2.	Funding Proposed from PSDF	Ministry of Power has considered increasing PSDF support to 50% from existing 30%. HVPNL is requesting a grant of 100% from PSDF.
4.	External Borrowings	Nil

2. Details

2.1. Cost Estimate

a. Scope of works under the project to be implemented by HVPNL have been categorized in 3 number packages as per existing size (type) of the conductor i.e. wolf, Panther, AL-59, Zebra & Moose which is as under:-.

Sr. No.	Description of Projects	Tentative estimated cost (in INR)
4.	**Package-A :**Augmentation works of 07 no. Transmission lines with existing Wolf conductor to HTLS conductor. **(Detailed estimate as Annexure "V")**	45,04,40,311
5.	**Package-B :**Augmentation works of 17 no. Transmission lines with existing Panther and AL-59 conductor to HTLS conductor. **(Detailed estimate as Annexure "VI")**	102,44,32,328
6.	**Package-C :**Augmentation works of 07 no. Transmission lines with existing Zebra and Moose conductor to HTLS conductor. **(Detailed estimate as Annexure "VII")**	118,85,50,737
Total		**266,34,23,376**

Note:-
The estimated cost of the re-conductoring work of existing Transmission lines recommended by CEA is come to the tune of Rs. 223,36,02,479.00

b. **Basis of Cost Estimate**: - The basis taken into consideration for the preparation of the estimate is as under:-

i. Rates of Civil Works are prepared by Civil design wing of HVPNL on the basis of HSR.

ii. The annual price list is being prepared and circulated by HVPNL for the major equipments; therefore rates for the items which are available in the latest rate list of HVPNL have been taken.

iii. The rates which are not available in rate list are taken from latest Purchase Orders of the HVPNL.

iv. The rates of HTLS conductor has been taken as per the lowest rates received from the budgetary offers of its

v. Transportation of material from site store to site work, insurance, storage charges/ watch and ward, survey & stacking etc @ 5% of supply rate list items

vi. Labour Cess @ 1% of Supply & Erection

vii. Administrative Charges @ 1% Labour Cess

viii. Contractor premium @ 10% of Supply (only HVPNL rate list items)

ix. Contingencies & Incidental charges @ 5% total estimated cost of estimate.

The above cost estimate is inclusive of GST as funding for supply of equipment is assumed to be done through domestic sources. F&I have also been considered in the said estimate.

3. Funding

3.1 Funding Proposed from PSDF as grant

Ministry of Power has considered increasing PSDF support to 50% from existing 30%. HVPNL is requesting a grant of 100% from PSDF.

3.2 External Borrowings

No external borrowings is planned.

Date: _____

Signature: _____

Name: Sanjay Arora
Chief Engineer/PD&C
HV[illegible]achkula

(Authorized Representative)

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

The applicant utility shall submit project appraisal by CTU / STU / RPC in the given format and a copy of the Appraisal Report should be attached at Annexure

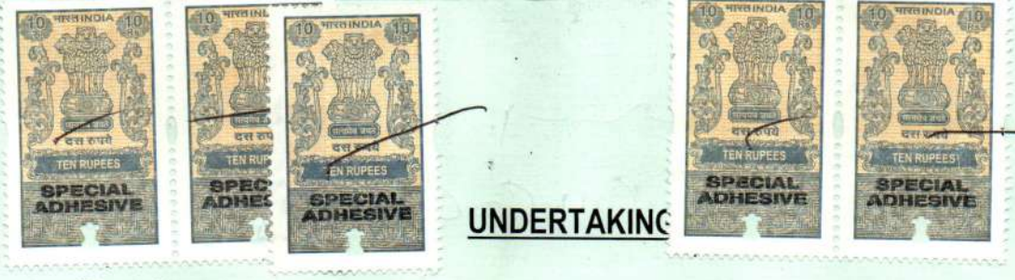
Item	Details to be filled by Applicant Utility	
Appraisal By:	CTU ☐ STU ■ RPC ☐	
Date of Submission to CTU / STU / RPC for approval		
Name of the Scheme	Replacement of existing ACSR conductors with equivalent HTLS conductor of higher current carrying capacity in Haryana State	
Details of the Appraisal Report by CTU / STU / RPC (Attached at Annexure)	**Reference. No :** CEA-PS-11-22(13)/1/2019- PSPA-I Division /445 **Date:**15.11.2023	
Summary of observations from CTU/ STU/RPC Appraisal Report	Summary of Proposal Appraised	
	Technical Observations	
	Financial Observations	
	Compliance of Grid Standards / Codes by the Applicant	
	Limitations / Shortcomings pointed out by CTU/STU/RPC if any	
	Recommendations of CTU/STU/RPC	

Date: _____

Signature: _____ Sanjay Arora Chief Engineer/PD&C HVPNL, Panchkula

Name: _____

(Authorized Representative)



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Page 1

UNDERTAKING

(On a Non-judicial Stamp paper of Rs. 50 only duly notarized and attested)

I, Mr. Sanjay Arora son of Sh. N.D Arora resident of house no. 632, Sector-69, Mohali, Punjab. and presently working as Chief Engineer in Haryana Vidyut Prasaran Nigam Limited hereby undertake to comply with the following terms and conditions with regard to funding of the Replacement of existing ACSR conductors with equivalent HTLS conductor of higher current carrying capacity in Haryana State 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 grant shall be refunded back to PSDF in case of non-utilisation of the grant within one year of release of installment.**

16/11/23

Date: _____

Signature: _____

Name: _____

(Authorized Representative)

NOTARY
COL APS CHAHAL (Retd.)
PANCHKULA No. 11451
Expiration
22.05.2026
GOVT OF INDIA

ATTESTED
APS CHAHAL NO. 11451
NOTARY, PANCHKULA

16 NOV 2023

16 NOV 2023

Annexure-XVII

सत्यमेव जयते

भारत सरकार

Government of India

विद्युत मंत्रालय

Ministry of Power

उत्तर क्षेत्रीय विद्युत समिति

Northern Regional Power Committee

दिनांक: 01.11.2023

To,

1. CE (DP&M), Central Electricity Authority, New Delhi
2. ED, NRLDC, Grid-India, New Delhi
3. CE, UPSLDC, Lucknow, Uttar Pradesh
4. Sr. GM, CTUIL, Gurugram, Haryana
5. Sr. GM, Powergrid

विषय: **Meeting on philosophy of Drawal Points of ICTs at Transmission Substation of PGCIL – reg.**

महोदय/ Sir,

Kindly find attached minutes of the meeting held on 13.10.2023 at 11:00 hrs at NRPC, New Delhi to deliberate on philosophy of Drawal Points of ICTs at Transmission Substation of PGCIL.

भवदीय,

(अंजुम परवेज)

अधीक्षण अभियंता (वाणिज्य)

Minutes of meeting on philosophy of Drawal Points of ICTs at Transmission Substation of PGCIL

Member Secretary, NRPC welcomed the participants from CEA, NRLDC, CTU and UPSLDC and Powergrid. A list of participants is enclosed at **Annexure.**

1. CE, UPSLDC apprised of their concern over calculation of transformer losses, which are being calculated from HV side of ICT. He stated that this is issue between two licensees – STU and CTU. Drawal point should be defined at drawal point of state i.e. on LV side of ICT.
2. Director, CEA enquired whether the said ICT from where the power is being drawn is only catering to feeders of UP or others as well.
3. POWERGRID informed that in PG substations wherever all the feeders in LV side are connected to UP, metering point has been taken from HV side of ICT and in other cases, from feeder.
4. UPSLDC opined that ICT loss should be borne by CTU since UP is drawing power from LV side.
5. Director, CEA stated that schedule of ICT is being adjusted after accounting in state's drawal and ICT loss. It is a matter of arranging something for somebody.
6. NRLDC stated that since ICT is being used by UP only, other states should not bear the loss as this is the concept of metering (in case where all feeders are for UP).
7. CE, UPSLDC explained how they account for losses in UP. It calculates losses of DISCOMs as applicable according to drawal point and the HV side is counted in STU losses. He requested to adopt similar philosophy pan India.
8. Director, CEA stated that as per CERC regulation, ICT losses should be pooled in. As per it and the philosophy that losses of distribution are borne by consumer, metering provision has been done. Further, since only one of the several stakeholders is coming up with this issue, it shall be difficult to take up this issue.
9. SE, NRPC stated that if HV losses were to be borne by CTU, then it will be distributed all over India which shall also be unjust.
10. CTU stated that it is mandated by CEA and CERC regulation that point of injection whether it is at LV side of feeder or LV side of ICT, it is defined during approval of project.
11. Director, CEA stated that for CTU, point of injection is HV side and point of drawal is LV side for states. The issue here is calculation of loss in between. She

stated that State Regulatory Commission gives authority to state that it can adjust tariffs of discoms as per drawal, but CERC does not have right to pass on losses to STU as per drawal. Further, if this philosophy to be adopted pan India, point of view of other states to be sought for.

12. NRLDC stated that main meter is defined as meter used for accounting. For ICT, main meter shall be HV side of ICT. This is the principle that is being used for accounting and NRLDC shall continue to use this philosophy.

Decision taken:

MS, NRPC stated that as no consensus has been reached on this forum as this pertains to all states, this issue can be taken up in forthcoming TCC/NRPC meeting to be held on 17th and 18th November 2023 at Amritsar, as representative from other states shall also be present.

Meeting ended with vote of thanks to the Chair.

*****

List of participants:

NRPC sectt.

1. Sh. V.K. Singh, Member Secretary- Chair
2. Sh. Santosh Kumar, SE
3. Sh. Anjum Parwej, SE
4. Sh. Omprakash Rajput, AE
5. Sh. Kaushik Panditrao, AEE
6. Smt. Priyanka Patel, Manager, Powergrid

CEA

7. Smt. Vandana Singhal, CE
8. Smt. Shivani Sharma, Director
9. Smt. Bhaavya Pandey, DD

NRLDC

10. Sh. Sheikh Shadruddin, GM
11. Smt. Suruchi Jain, DGM
12. Sh. Ajit kumar Yadav, DM

UP-SLDC

13. Sh. Amarendu, CE
14. Sh. Sateesh Maurya, AE

Powergrid

15. Sh. Narendra Kumar Meena, Chief Manager

CTU

16. Smt. Sangita Sarkar, Chief Manager

Annexure-XVIII

F. No. 18/25/2015-W-I/DG
Government of India
Ministry of Housing and Urban Affairs
Works Division
****

Nirman Bhawan, New Delhi-110011
Dated 08th March 2018

Office Memorandum

Subject:- Additions/alterations in Housing Upgradation Scheme, 2018 (HUS–2018) for General Pool Residential Accommodation.

The undersigned is directed to state that under this Ministry's Office Memorandum No.28012/1/2003-WI dated 14th March, 2008, it has been provided that works of addition/alteration of non-structural nature can be carried out in General Pool Residential Quarters at the request of the occupants and to provide these facilities on vacation of residential quarters and also on payment of a part of cost by the allottees in respect of occupied quarters.

2. It has now been decided to provide the prescribed facilities under Housing Upgradation Scheme, 2018 (HUS-2018) subject to availability of funds in all GPRA quarters as well as quarters in other pools which are being maintained by CPWD whether occupied or vacant (except for Type-I Quarters) in each colony with the consent of the concerned allottees.

3. A list of permissible civil and electrical items/works under (HUS-2018) of additions/alterations is enclosed as per **Annexure-I.**

4. The list of civil and electrical items of addition/alterations other than HUS-2018 which may be carried out at the request of the allottees, the specified percentage of the cost of the works that will be paid by the allottee, has been revised as per **Annexure-II**.

5. No other work of addition/alteration which involves structural changes in the allotted quarters would be carried out. The decision of the CPWD as to whether any work of addition/alteration requested by an allottee is of a structural nature shall be final.

6. The works of addition/alteration in a house as per prescribed specification shall be completed within a maximum period of two months from the date of handing over the possession of house to CPWD.

7. The proposed new Up-gradation Scheme 2018 shall be applicable for existing GPRA units of age 10 to 60 years. Flats of age more than 60 years are not included in the new scheme. Only minimum maintenance shall be allowed to keep them functional.

8. The newly constructed GPRA Flats (below 10 years of age) shall not be included in HUS-2018 till they attain the age of 10 years.

9. The GPRA Colonies included in the Redevelopment Scheme irrespective of their age and those likely to be included in the next 10 years shall not be covered under HUS-2018.

10. The existing Upgradation Scheme 2008 shall be stopped upon coming into effect of the Housing Upgradation Scheme-2018.

11. The GPRA Flats already upgraded as per 2008 norms may be upgraded as per HUS-2018 to the extent that there is no undoing of upgradation work already done as per Upgradation Scheme 2008 norms and only such items would be upgraded so as to bridge the gap of upgradation norms laid down in upgradation scheme 2018.In this regard, strict monitoring is to be done at CE/ Division level for which a monitoring mechanism will be put in place.

12. This Memorandum issues in supersession of all previous instructions, including the OM mentioned in paragraph 1 above and with the concurrence of Integrated Finance Division vide Computer No.3141085, dated 29.01.2018. The instructions will be effective from the date of issue.

Hindi version will follow.

(I. M. Khan)
Under Secretary to the Government of India
Telephone No. 23061151

To

1. All Ministries/Departments of the Government of India.

2. CAG of India, Bahadur Shah Zafar Marg, New Delhi.
3. Secretary General, Rajya Sabha/Lok Sabha Secretariat, New Delhi.
4. Chief Secretaries of the states/Union Territories.
5. Director General (Works), CPWD, New Delhi.
6. Director of Estate, Ministry of Housing and Urban Affairs, New Delhi.

Copy to:

1. PS to Minister of State (I/C) for Housing and Urban Affairs.
2. PPS to Secretary (HUA)
3. All Addl. Secys./ Joint Secretaries/Directors/DS/US in M/o Housing & UA
4. All Desks/Sections in M/o Housing and Urban Affairs.
5. Hindi Section for Hindi version.
6. IT Cell, MoHUA – for uploading on e-office and Ministry's website.

Specification prescribed for Up-gradation on vacation as well as in occupied quarters (Free of cost)

ANNEXURE-I

S No.	Items	Proposed Up-gradation Scheme 2018Norms for Type-II and III	Proposed Up-gradation Scheme 2018 Norms for Type-IV and above	
1	2	4	5	
A	**Civil works**			
1	**Kitchen**			
1.1	General			
1.1.1		Removal of chimney wherever existing.	Removal of chimney wherever existing.	
1.1.2		Built in cupboard with drawers with 18 mm thick pre-laminated board shutters.	Factory made Modular Kitchen with cooking platform and provision of Electric Chimney of approved make (Chimney not to be provided by the Deptt.) and Built in cupboard with drawers and suitable SS modules. (ii)Built in cupboard with drawers with 18 mm thick pre-laminated board shutters in servant quarters.	
1.1.3		Plumbing for water purifier and geyser in kitchen for hot and normal water supply through unified faucet at sink.	Plumbing for water purifier and geyser in kitchen for hot and normal water supply through unified faucet at sink.	
1.1.4		Separate additional storage tank of 100L/150L capacity for kitchen as per NBC 2015. Provision of Separate tank for WC & Drinking water if feasible.	Separate additional storage tank of 100L/150L capacity for kitchen as per NBC 2015. Provision of Separate tank for WC & Drinking water if feasible.	
1.2	**Kitchen Sink**			
1.2.1		Stainless steel kitchen sink with deep single bowl & drain board.	Stainless still kitchen sink with deep single bowl & drain board suitable for modular kitchen.	
1.3	**Dado**	Full height Ceramic tiles (size not less than 300 mm x450 mm) as per approved design and pattern.	Full height Ceramic tiles (size not less than 300 mm x450 mm) as per approved design and pattern.	

1.4	**Work-top/ kitchen counter**			
1.4.1		18mm thick gang-saw cut pre-polished granite stone in pleasing shade with pre-molded nosing.	18mm thick gang-saw cut pre-polished granite stone in pleasing shade with pre-molded nosing.	
1.5	**Flooring**			
1.5.1		Anti-Skid vitrified tiles of size not less than 400 mm x 300mm with water absorption less than 0.08% laid with joint finish with matching grout.	Anti-Skid vitrified tiles of size not less than 600 mm x 600 mm with water absorption less than 0.08% laid with joint finish with matching grout.	
2	**Toilets & bathrooms**			
2.1	**Wash Basin & Mirror**			
2.1.1		Counter wash basin with single lever CP brass mixer for hot & cold water with quarter turn ceramic cartridges. One in each toilet/ washroom and one for dining area as per design.	Counter wash basin with single lever CP brass mixer for hot & cold water with quarter turn ceramic cartridges. One in each toilet/ washroom and one for dining area as per design.	
2.1.2		Looking mirror of size 450 mm x 600 mm with beading and CP brass glass shelf.	Looking mirror of size 600 mm x900 mm with wooden beading and CP brass glass shelf.	
2.1.3		Anodized aluminum or Stainless steel pegs in bathroom/ towel rings (1 no.) as per feasibility.	CP Brass towel rack & pegs in bathroom, CP brass towel ring at wash basin.	
2.1.4		CP Brass towel rod & pegs in bathroom, CP brass towel ring at wash basin.		
2.1.5		Water Jet/health faucet with European WC preferably wall mounted WC.	Water Jet/health faucet with European WC preferably wall mounted WC.	
2.1.6		C.P. Brass bib cock provided with quarter turns ceramic cartridges (toilet, bath & WC)	C.P. Brass bib cock provided with quarter turns ceramic cartridges (toilet, bath & WC)	

2.1.7		Shower with single lever CP Brass mixer for hot & cold water with quarter turn ceramic cartridges in Bathroom.	Shower with single lever CP Brass mixer for hot & cold water with quarter turn ceramic cartridges one in each Bathroom.	
2.1.8		CP Brass toilet paper holder with European WC.	CP Brass toilet paper holder with European WC (one in each Toilet).	
2.1.9		Soap rack/niche as per Architectural design and specifications.	Soap rack/niche as per Architectural design and specifications.	
2.1.10		Plumbing for geysers for hot and cold water supply through unified faucet/ single lever CP brass mixer with quarter turn ceramic cartridges at all necessary points.	Plumbing for geysers for hot and cold water supply through unified faucet/ single lever CP brass mixer with quarter turn ceramic cartridges at all necessary points.	
2.2	**Flooring & Dado**			
2.2.1	**Flooring – Living /drawing room, dining and family lounge**	Vitrified/ceramic tile flooring (not less than 400 mm X 400 mm) of approved design and pattern.	18mm gang-saw cut pre-polished granite/anti-skid double charge vitrified tiles of size note less than 600 mm x 600 mm with water absorption less than 0.08 % finish with matching grout / scratch resistance engineered wood/ laminated wooden flooring in living/drawing room.	
2.2.2		Scratch resistant ceramic tiles/ vitrified tiles of approved design and pattern.	Vitrified tiles of size note less than 600mmx600mm with water absorption less than 0.08 % finish with matching grout/ scratch resistance engineered wood rf laminated wooden flooring in living/drawing room.	
2.2.3	**Bathrooms**		Pre-finished/Pre-polished granite threshold 100 mm high and 100mm wide in shower area in combined toilet.	
2.3	**Dado**	Full height rectified ceramic tiles of approved design and pattern.	Full height rectified ceramic tiles of approved design and pattern.	
3	**Living/Bed rooms**			

3.1	**Flooring of rooms and internal area**	**Vitrified/ceramic tile flooring of approved design and pattern.**	**18m thick Gang-saw cut pre-polished granite/double charged vitrified tiles of size not less than 600mm x 600m/ scratch resistance engineering wood or laminated wooden flooring in living/ drawing room**	
4	**In Common Circulation area and Staircases**			
4.1		Gang saw cut pre-polished granite stone flooring.	Gang saw cut pre-polished granite stone flooring.	
4.2		Dado of gang saw cut pre-polished granite stone upto 120 cm height including pre polished pre- molded granite stone nosing.	Dado of gang saw cut pre-polished granite stone upto 120 cm height including pre polished pre- molded granite stone nosing.	
5	**Others Fixtures and amenities**			
5.1		Magic eye in front entry door.	Magic eye in front entry door.	
5.2		Curtain rods with brackets.	Drapery rods with brackets on all windows and doors in all rooms except kitchen, toilet/bath/WC.	
5.3		Built in cupboards with pre-laminated board in bedrooms as per standard drawings where no cupboard provided earlier, where openings are available the same will be covered with built in cupboard as per approved drawings. In case of such openings with existing concrete/stone shelves, only cupboard shutters with wooden frames shall be provided.	Factory-made steel wardrobe carcases, shelves, drawers etc. with Wardrobe shutter in 12 mm thick plywood finished with exterior grade post formed laminated/ natural veneer with melamine polish as per the approved sample.	

5.4		Glazing of verandah/balcony with powder coated aluminum section of approved design and shade or UPVC with glazing	Glazing of verandah/balcony with color anodized aluminum section of matching shade or UPVC with glazing.	
5.5		Wire gauze shutters for window with powder coated aluminum section of matching shade or UPVC wire gauge shutter.	Wire gauze shutters of window with color anodized aluminum UPVC wire gauze shutters.	
6	**Internal finishing**			
6.1		All walls & Ceiling to be treated with cement based wall putty (one time only) and painted with low VOC acrylic washable distemper. Polishing on natural veneers of wood work and synthetic enamel paint on steel works	All walls & Ceiling to be treated with cement based wall putty (one time only) and painted with low VOC plastic Emulsion paints. Polishing on natural veneers of wood work and synthetic enamel paint on steel works.	
B	**Electrical works**			
1				
1.1		Power points (15 Amp. 6 - pins) two nos. for each room and two no. for kitchen and one no. in utility area	Power points (15 Amp. 6- pins) a. Type IV and type IV (Spl.) Two No. in each room, two no. in kitchen and one in utility area. b. Type V & Type VI - three nos. in drawing room, three nos. in dining room, two nos. in each bed room, two nos. in kitchen, one no. in utility area c. Type VII & type VIII – two Nos. in office, four nos. In drawing room, three nos. in dining room, two nos. In family lounge, two nos. In each bed room, two nos. in kitchen and one no. in utility area. d. One No. in each Servant Room.	

1.2.1	**AC point with MCB connected socket outlet with wiring**	One No. in each room except kitchen and toilet.	One No. in each room except kitchen and toilet.	
1.2.2	**Geyser point with MCB connected socket outlet with wiring**	One No. in each Bathroom/ Toilet	One No. in each Bathroom/ Toilet	
1.3		Electrical points and 5 Amp. Plug points. Two No. in each room, one no. in balcony, 1 no. call bell point,	Electrical points and 5 Amp. Plug points. a. Type IV and Type IV Spl. – 2 Nos. In each room, 1 no. in balcony, and 2 nos. Call bell. b. Type V and Type VI – 2 nos. In each room, one in store, one in balcony, and 3 nos. Call bell. c. Type VII and type VIII – 2 nos. In office, 2 nos. In each room, one no. in each balcony, one in utility area and 3 Nos. for call bell.	
1.4	**Bracket lights With Normal fitting excluding lamp/bulb**	1 No. in each room, 1 no. in kitchen, 1 no. in each toilet, 1 no. in utility area and 1 no. balcony.	1 No. in each room, 1 no. in kitchen, 1 no. in each toilet, 1 no. in utility area and 1 no. balcony.	
1.5	**Decorative lighting fittings without lamp/bulb on wall/ceiling**	--------	a. Type IV & Type IV (Spl.) – 2 nos. In each room, 1 no. in kitchen, 1 no. in each toilet, 1 no. in utility area and 1 no. in each balcony. b. Type V & Type VI-3nos. In drawing room, 3no.s in dining room, 2 nos. In each bedroom, 1no. in kitchen, 1	

			no. in each balcony. c. Type VII& Type VIII-3nos. In drawing room, 3no.s in dining room, 2 nos. In each bedroom, 1no. in kitchen, 1 no. in each balcony.	
2				
2.1	**Ceiling fan**	a. Type II & type III – 1 no. in drawing, 1 no. in living room, 1 no. in each bedroom, 1 no. in balcony/Verandah.	i. Type IV & Type IV (Spl.) – 2 no. in living room, 1 no. in dining room, 1 no. in each bed room, 1 no. in each balcony. ii. Type V& type VI – 2 no. in drawing room, 2 no. in dining/family lounge, 1 no. in each bed room, 1 no. in each balcony. iii. Type VII and type VIII – 1 no. in office, 2 no. in drawing room, 2 no. in dining/family lounge, 1 no. in each bed room, 1 no. in each balcony	
3	**Tube Light Fittings**	LED tube light fitting with tube complete in each room, living area and kitchen.	LED tube light fitting with tube in each room, living area and kitchen. (including servant quarter)	
4				
4.1		Modular switches	Modular switches	
5	**Others**			
5.1		One No. Door call bell	Door call bell a. Type IV& type IV (spl.) – 2 no. b. Type V & type VI – 2 nos. (1 with image display system) c. Type VII & type VIII – 2 nos. (1 with image display system	

5.2		--	Call bell from main house to servant quarter.	
5.3		Recessed conduit wiring	Recessed conduit wiring	
5.4		Call bell point from ground floor at stair entrance to first floor quarters where grill door has been provided on stair entry)	Call bell point from ground floor at stair entrance to first floor quarters where grill door has been provided on stair entry)	
5.5		One no Fresh air fan/exhaust fan in kitchen and Toilet/bath/ WC.	One no Fresh air fan/exhaust fan in kitchen and Toilet/bath/ WC. One Fresh air fan/exhaust fan in Servant Quarters in living room and Toilets.	
5.6		LED tube light fitting complete in common circulation area/staircase.	LED tube light fitting complete in common circulation area/staircase.	
5.7		Cable TV point (1 no in living room and 1 no in each bedroom)	a. Type IV, Type IV (Spl.), Type V and Type VI - Cable TV point (1 no in drawing room , 1 no in dining/living area, and 1 no in each bedroom) b. Type VII and type VIII- - Cable TV point (1 no in drawing room , 2 no in dining/living area, and 1 no in each bedroom	
5.8		Telephone point (1 in living room and 1 in bed room)	Telephone point (1 no in drawing room, 1 no in dining/living area, and 1 no in each bedroom)	
5.9		This Wire gauze shutters for main entrance door will be made of MS tube/angle iron with grills and wire gauge as per approved design. In case of balcony, wire gauge shutters for door to be provided only in those quarters where balconies have not been covered.	Wire gauze shutters for main entrance door. This will be made of MS tube/angle iron with grill and wire gauge as per approved design. In case of balcony, wire gauge shutters for door to be provided only in those quarters where balconies have not been covered.	
5.10		Pre-coated chain link fencing with iron gate, if feasible. The height of pre-coated chain link fencing with 90cm over 30cm high toe wall with permanent finish to be provided. (Area	Pre-coated chain link fencing with iron gate, if feasible. The height of pre-coated chain link fencing with 90cm over 30cm high toe wall with permanent finish to be provided. (Area around the quarter to be	

		around the quarter to be defined/restricted for proper aesthetics and to facilitate parking of vehicles of upper floor houses as per site condition and in an approved uniform manner.	defined/ restricted for proper aesthetics and to facilitate parking of vehicles of upper floor houses as per site condition and in an approved uniform manner.	

Annexure II

Items of works under payment basis of the estimated cost.

(Balance items excluding the items already covered in up-gradation works)

A. **Civil Works**

i. Items for which 10% of the estimated cost is to be charged from allottees.

- Pavement of areas around the premises with suitable material in an approved manner.

Note: Pavement of areas to be done with chequered tile or plain cement concrete or interlocking blocks including C.C. edging

ii. Items for which 100% of the estimated cost is to be charged from allottees:

- Changing of Indian WC to European WC & vice versa. (It will be free of cost once for an allottee.

Note: All connected costs of dismantling, relaying tiles, finishing etc to be including for changing of Indian WC to European WC & vice versa.

B. **ELECTRICAL WORKS**

i. **Items for which 10% of the estimated cost is to be charged from allottees:**

- Additional power plug points/light plug points/light points.

Note: Additional Points to be provided only when feasible as per electrical load.

ii. **Items for which 100% of the estimated cost is to be charged from allottees:**

- Fancy light fittings.
- Change of cable from feeder pillar to house, if required due to increased load in house.

Tel. : 20861332,20861331
E-Mail: deleecv.cpwd@nic.in

कार्यपालक अभियंता
वी–मण्डल, के0 लो0 नि0 वि0
ईस्ट ब्लॉक–3, तल–5,
आर.के.पुरम्, नई दिल्ली–110066

Executive Engineer
V-Division, CPWD
East Block-3, Level -5
R.K.Puram, ND - 110066

भारत सरकार GOVERNMENT OF INDIA
केन्द्रीय लोक निर्माण विभाग Central Public Works Department

सं0 डीबी / अनुमान / वी मं/2023–2024 3062 दिनांक 07-10-23

सेवा में

Superintending Engineer
Northern Regional Power Committee,
18-A, Shaheed Jeet Singh Marg,
Katwaria Sarai, New Delhi-110016 .

उ.क्षे.वि.स. डायरी सं./No. 1136 Date/Date 12/10/2023

विषयः निक्षेप कार्यो का निष्पादनः– **Renovation/ Upgradation of kitchens of NRPC staff quarters into modular kitchen and P/L of floor tiles, SS staircase for roof access, New Delhi. dg 2023-24 (SH: Civil works.)**

अनुमानित लागत रू. **45,53,400/-**

उपर्युक्त कार्य केन्द्रीय लोक निर्माण विभाग द्वारा के0लो0नि0वि0 संहिता के पैरा 118–119 के अधीन निम्नलिखित के अनुसार निक्षेप कार्य के रूप में किया जा सकता हैः

1 कार्य को निष्पादन हेतु लिए जाने से पहले कार्यार्थी विभाग को के0लो0नि0वि0 द्वारा परिकलित कार्य की पूरी अनुमानित लागत जमा करानी होंगी। इस जमा राशि के लिये के0लो0नि0वि0 द्वारा कार्यार्थी विभाग को कोई ब्याज नही दिया जाएगा।

2 कार्यार्थी विभाग के0लो0नि0वि0 को भूमि स्थल का खाली कब्जा देगा। के0लो0नि0वि0 अपेक्षित होने पर मौजूदा भवनों/ढॉचों के ढहाने/निपटान करने की जिम्मेदारी ले सकता है।

3 के0लो0नि0वि0 कार्य को अनुमानित लागत के भीतर पूरा करने के लिये बाध्य नही है। यदि अतिरिक्त निधि कि आवश्यकता होगी तो वह कार्यार्थी विभाग को उपलब्ध करानी होंगी। अपेक्षित होने पर आवश्यक संशोधित अनुमान प्रस्तुत कर दिया जाएगा।

4 उक्त कार्य की संविदा के प्रचालन के संबंध में कोई विवाद होने पर वह संविदा करार में दिए गये उपबंध के अनुसार मध्यस्थम् के अधीन होगा। के0लो0नि0वि0 यथासंभव मध्यस्थम कार्यवाही का प्रतिवाद करेगा और मध्यस्थ के पंचाट की यथोचित प्राधिकारी द्वारा जांच करवायेगा। के0लो0नि0वि0 में उस पंचाट को स्वीकार करने या उससे न्यायालय में चुनौती देने के लिये सक्षम प्राधिकारी का निर्णय कार्यार्थी विभाग पर बाध्यकारी होगा।

SE (Comm) 14/10/23

5 निक्षेप कार्य के संबंध में न्यायालय, अधिकरण द्वारा घोषित की जा सकने वाली या मध्यस्थम् के पंचाट द्वारा घोषित सभी राशियों का भुगतान करने के लिये निधि कार्यार्थी विभाग द्वारा तत्काल उपलब्ध करायी जाएगी, भले ही वह न्यायालय, अधिकरण या मध्यस्थ् के समस्त पार्टी हो या ना हो। इस प्रकार के भुगतान कार्य के निष्पादन हेतु ठेकेदारों के किए गए भुगतान के अलावा होंगें।

Contd.. 2

6 कार्यार्थी विभाग से प्रशासनिक अनुमोदन/व्यय स्वीकृति (ए/ए और ई/एस) मिलने के बाद के0लो0नि0वि0 विभिन्न विस्तृत वास्तुकीय आरेख और सेवा योजना /नक्शे आदि/ तैयार करेगा और उन्हें सभी स्थानीय निकायों को प्रस्तुत करेगा जिनका निर्माण कार्य शुरू करने से पहले अनुमोदन लेना आवश्यक होगा। स्थानीय निकाय स्वतंत्र संगठन होते हैं और उन पर के0लो0नि0वि0 का कोई नियंत्रण नही होता। ये स्थानीय निकाय योजनाओं को अनुमोदित करने में समय लगाते हैं। इस प्रकार के अनुमोदन लेने के लिये अपेक्षित समय को अनुमान में उल्लिखित निर्माण के समय में शामिल नही किया गया है। हॉलांकि के0लो0नि0वि0 इस प्रकार के अनुमोदन में यथाशीध्र प्राप्त करने का पूरा प्रयास करेगा तथापि कार्यार्थी विभाग के लिये भी यह आवश्यक होगा कि वह स्थानीय निकायों से शीध्र अनुमोदन प्राप्त करने के लिये प्रयास करें।

7 के0लो0नि0वि के पास इस कार्य में निवेश करने के लिये अपनी कोई धन–राशि नही है। अतः कार्यार्थी को यह सुनिश्चित करना चाहिये कि इस कार्य के निष्पादन के लिये कि0लो0नि0वि0 के पास प्रर्याप्त धन राशि उपलब्ध रहे। यदि कार्यार्थी विभाग तथा अपेक्षित धन राशि उपलब्ध कराने में असफल रहता है तो के0लो0नि0वि के लिये कार्य को निलंबित करना/छोडना आवश्यक हो सकता है। ऐसी स्थिति में कार्यार्थी विभाग कार्य को बंद करने/छोडने के कारण होने वाले सभी परिणामों तथा मुआवजे/नुकसान के लिये किये जाने वाले ठेकेदारों के दावों के लिये पूरी तरह जिम्मेदार होगा।

8 कार्यार्थी विभाग के0लो0नि0वि0 के (क) ठेकेदारों को मजदूरों के लिए झोपडियॉ बनाने के लिए निःशुल्क स्थान उपलब्ध कराने, (ख) ठेकेदारें के सामान और मजदूरों के कार्य स्थल पर आवागमन के लिये निर्बाध रास्ता उपलब्ध कराते, (ग) कार्य के निष्पादन के लिए सामान्य प्रकारों के भुगतान पर बिजली का कनैक्शन उपलब्ध कराने, (ध) संबंधित विद्युत बोर्ड/प्राधिकरण से विद्युत लोड की मंजूरी दिलवाने और लोड दिलवाने में सहायता करेगा।

9 यदि धन राशि किस्तों में जमा कराई जाएगी तो ऐसे मामलों में समय पर धन राशि न मिलने के कारण कार्य में होने वाले किसी विलंब, नुकसान काम बंद करने, मुआवजे/नुकसान आदि के लिए ठेकेदारों द्वाराकिए जाने वाले दावों के लिए के0लो0नि0वि0 जिम्मेदार नही होगा।

10 इस कार्य के लिए चैक "Executive Engineer, "V" Division, CPWD, New Delhi" के नाम पर भेजने का कष्ट करें।

11 उक्त प्रारम्भिक अनुमान केवल एक वर्ष तक की अवधि हेतु वैध है, यदि एक वर्ष की अवधि के दौरान उक्त प्रारम्भिक अनुमान हेतु प्रषासनिक अनुमोदन एंव व्यय स्वीकृति जारी नही की जाती है तो ग्राहक विभाग को नया मांग पत्र देना होगा।

अनुरोध है कि उपर्युक्त स्वीकृति से अद्योहस्ताक्षरी को सूचित करने का प्रबन्ध करें जिससे आगे की कार्यवाही कर सके।

संलग्नः उपरोक्तानुसार

भवदीय

कार्यपालक अभियंता

प्रतिलिपि :

1 सहायक अभियंता V/वी मंडल, के0 लो0 नि0 वि0, नई दिल्ली ।

कार्यपालक अभियंता

HISTORY

Name of work: - **Renovation/ Upgradation of kitchens of NRPC staff quarters into modular kitchen and P/L of floor tiles, SS staircase for roof access, New Delhi. dg 2023-24 (SH: Civil works.)**

Funds:-

Major Head	Minor Head	Detailed Head

Preliminary cum detailed Estimate framed by Er. Krishan Chand, Assistant Engineer - 2/V and checked by Er. V.K. Meena, Executive Engineer, "V" Division, CPWD for the probable cost of Rs. **45,53,400/-** including 7% Cost index, 1.06335 GST, 4.25% for ESI & EPF and 5% contingencies.

REPORT

HISTORY:- This preliminary cum detailed estimate amounting to **Rs. 45,53,400/-** i/c 5% contingencies has been framed to cover the probable cost of the above cited work for accord of A/A & E/S of the competent authority.

A requisition has been received vide letter no. CEA-GO-17-12(23)/1/2023-NRPC dairy no. 2189 dated 26/06/2023 from NRPC authorities New Delhi for the submission of estimate. Hence this estimate has been prepared after discussion with client at site.

Design & Scope:- The following provision have been made in the estimate:-

1. Providing and fixing 18 mm thick gang saw cut, mirror polished, pre moulded and pre polished, machine cut for kitchen platforms, vanity counters, window sills, facias and similar locations.
2. Providing and fixing Ist quality ceramic glazed wall tiles.
3. Providing and fixing stainless steel fancy handle.
4. Providing and fixing stainless steel soft closing spring hinges.
5. Providing and fixing stainless steel soft closing heavy type telescopic drawer channels.
6. Providing and fixing ready made 304 grade stainless steel Modular kitchen basket and accessories.
7. Providing and fixing 2mm thick 16 to 19mm wide PVC edge binding tape.
8. Providing and fixing stainless steel (Grade 304) railing made of Hollow tubes, channels, plates etc.
9. Providing and laying Vitrified tiles in floor in different sizes.
10. Providing and fixing factory made single extruded WPC (Wood Polymer Composite) solid board one side white color.
11. Providing and fixing factory made single extruded WPC (Wood Polymer Composite) solid plain white color board for backing of cup boards and bathroom/kitchen.

Specifications: -		The work shall be executed as per CPWD specification 2019 with upto date correction slips.
Rate	:-	Market Rates/ DSR 2021.
W.C. Staff	:-	Shall be met out from contingencies
Cost	:-	**Rs. 45,53,400/-**
Method	:-	Through contract after Call of tender.
T & P	:-	Shall be arranged by the Contractor.
Land	:-	Available
Time	:-	02 Months after award of work.

Assistant Engineer(P)

Executive Engineer
"V" Division, CPWD

ABSTRACT OF COST

Name of Work:- Renovation/Upgradation of kitchens of NRPC staff quarters into modular kitchen and P/L of floor tiles, SS staircase for roof access, New Delhi. dg 2023-24 (SH: Civil works.)

Item No	DSR 2021	Description	Qty	Unit	Rate	Amount
1	6.13	Half brick masonry with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level.				
	6.13.2	Cement mortar 1:4 (1 cement :4 coarse sand)	5.00	sqm	1018.05	5090
2	8.2	Providing and fixing 18 mm thick gang saw cut, mirror polished, premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills, facias and similar locations of required size,approved shade, colour and texture laid over 20 mm thick base cement mortar 1:4 (1 cement : 4 coarse sand), joints treated with white cement,mixed with matching pigment, epoxy touch ups, including rubbing, curing,moulding and polishing of edges to give high gloss finish etc. complete at all levels.				
2.1	8.2.2.1	Area of slab upto 0.50 sqm	4.48	Sqm	4679.35	20963
2.2	8.2.2.2	Area of slab over 0.50 sqm	46.56	Sqm	4425.35	206044
3	8.31	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS. 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-Charge, in skirting, risers of steps and dados, over 12 mm thick bed of cement mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm, including pointing in white cement mixed with pigment of matching shade complete.	86.00	Sqm	1063.45	91457
4	9.170	Providing and fixing stainless steel fancy handle of approved make fixed with SS screws etc. complete as per direction of Engineer-in-charge.				
	9.170 1	200 mm	800.00	Each	153.15	122520
5	9.171	Providing and fixing stainless steel soft closing spring hinges at 0degree hinges (hydraulic type) of approved make/brand to cupboard shutters with full threaded steel screws including making necessary recess in board and finished etc. complete as per direction of Engineer-in-charge.	880.00	Each	226.75	199540
6	9.172	Providing and fixing stainless steel soft closing heavy type telescopic drawer channels of approved make 500 mm long with screws etc. complete as per directions of Engineer- in-charge.	240.00	One set	749.70	179928

7	9.173	Providing and fixing ready made 304 grade stainless steel Modular kitchen basket and accessories such as right angle basket (Plain Cup & Saucer, plant, Partition, Bottle rack, Thali, Cutlery) kitchen utensil basket, Dinner set basket, kitchen grain basket, Multi purpose basket as per site equirement including finishing (wherever required) and fittings. The same shall be fixed with necessary stainless steel nuts & bolts, Stainless Steel screws & telescopic channel etc. as per direction of Engineer-in-charge. (For payment purpose only weight of Stainless steel basket shall be considered excluding weight of all fixing accessories such as nuts, bolts, fasteners telescopic basket channels etc. Payment of providing and fixing telescopic channel shall be paid separately)	480.00	Kg	423.70	203376
8	9.174	Providing and fixing 2mm thick 16 to 19mm wide PVC edge binding tape of approved quality for cupboard/wardrobe shutters including necessary synthetic resin hot pressed to edges on binding machine etc. complete as per directions of Engineer- in-charge.	608.00	Mtr	38.45	23378
9	10.28	Providing and fixing stainless steel (Grade 304) railing made of Hollow tubes, channels, plates etc., including welding, grinding, buffing, polishing and making curvature (wherever required) and fitting the same withnecessary stainless steel nuts and bolts complete, i/c fixing the railingwith necessary accessories & stainless steel dash fasteners , stainless steel bolts etc., of required size, on the top of the floor or the side of waist slab with suitable arrangement as per approval of Engineer-incharge,(for payment purpose only weight of stainless steel members shall be considered excluding fixing accessories such as nuts, bolts,fasteners etc.).	88.06	kg	612.25	53914
10	11.41A	Providing and laying Vitrified tiles in floor in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS:15622, ofapproved brand & manufacturer, in all colours and shade, laid on 20 mm thick cement mortar 1:4 (1 cement: 4 coarse sand) jointing with grey cement slurry @3.3 kg/sqm including grouting the joints with white cement and matching pigments etc.Thetiles must be cut with the zero chipping diamond cutter only . Laying of tiles will be done with the notch trowel, plier, wedge, clips of required thickness, leveling system and rubber mallet for placing the tiles gently and easily.				
	11.41A.2	Glazed vitrified floor tiles polished finish of size				
	11.41A.2.1	Size of Tile 600 x 600 mm	1048.00	Sqm	1338.50	1402748
11	11.42	Deduct for not using 20 mm thick cement mortar 1:4 (1 cement : 4 coarse sand) bedding in laying of floor tiles and jointing with grey cement slurry @ 3.3 kg/ sqm.	-1048.00	Sqm	735.30	-770594
12	11.43	Fixing glazed/ Ceramic/ Vitrified floor tiles with cement based high polymer modified quick-set tile adhesive (Water based) conforming to IS: 15477, in average 3mm thickness.	1048.00	Sqm	633.60	664013

13	15.2	Demolishing cement concrete manually/ by mechanical means including disposal of material within 50 metres lead as per direction of Engineer - in - charge.				
		Nominal concrete 1:3:6 or richer mix (i/c equivalent design mix)	3.36	cum	2007.10	6744
14	15.7	Demolishing brick work manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 metres lead as per direction of Engineer-in-charge.				
	15.7.4	In cement mortar	2.00	Cum	1698.45	3397
15	15.23	Dismantling tile work in floors and roofs laid in cement mortar including stacking material within 50 metres lead.				
	15.23.1	For thickness of tiles 10 mm to 25 mm	54.00	Sqm	60.50	3267
16	15.60	Disposal of building rubbish / malba / similar unserviceable, dismantled or waste materials by mechanical means, including loading, transporting, unloading to approved municipal dumping ground or as approved by Engineer-in-charge, beyond 50 m initial lead, for all leads including all lifts involved.	50.00	Cum	219.30	10965
17	17.10	Providing and fixing Stainless Steel A ISI 304 (18/8) kitchen sink as per IS:13983 with C.I. brackets and stainless steel plug 40 mm, including painting of fittings and brackets, cutting and making good the walls wherever required :				
	17.10.2	Kitchen sink without drain board				
	17.10.2.1	610x510 mm bowl depth 200 mm	5.00	Each	4274.40	21372
18	26.89	Providing and fixing factory made single extruded WPC (Wood Polymer Composite) solid board one side white color and other side of board laminted with PVC foil of minimum 14 micron thickness of approved design pasted with hot melt adhesive for cup boards, work stations and athroom/ kitchen cabinet etc. of required sizes comprising of virgin polymer of K value 58-60 (Suspension Grade), calcium carbonate and natural fibers (wood powder/ rice husk/wheat husk) and non toxic additives maximum toxicity index of 12 for 100 gms) having minimum density of 650 kg/cum and screw withdrawal strength of 1800 (Face) & 900 N (Edge), minimum compressive strength 50 N/ mm2, modulus of elasticity 850 N/mm2 and resistance to spread of flame of Class A category with property of being termite/borer proof, water/moisture proof and fire retardant and fixing with stainless steel piano hinges/soft close clip on concealed hinges of required size with necessary full body threaded star headed counter sunk S.S screws, all as per direction of Engineer-In- Charge. (Note: stainless steel piano hinges/soft close clip on concealed hinges and necessary S.S screws shall be paid separately)				
	26.89.1	18 mm thick	397.00	Sqm	2714.15	1077518

19	26.90	Providing and fixing factory made single extruded WPC (Wood Polymer Composite) solid plain white color board for backing of cup boards and bathroom/kitchen cabinets etc. of required size comprising of virgin polymer of K value 58-60 (Suspension Grade), calcium carbonate and natural fibers (wood powder/ rice husk/wheat husk) and non toxic additives (maximum toxicity index of 12 for 100 gms) having minimum density of 650 kg/cum and screw withdrawal strength of 1800 N (Face) & 900 N (Edge), minimum compressive strength 50 N/mm2, modulus of elasticity 850 N/mm2 and resistance to spread of flame of Class A category with property of being termite/borer proof, water/moisture proof and fire retardant and fixing with stainless steel screws etc. all as per direction of Engineer-In- Charge. (Note: stainless steel screws shall be paid separately)				
	26.90.1	6 mm thick	133.00	Sqm	982.00	130606
					Total	3656246
					Add Cost Index @ 7% upto from item no. 1 to 19	255937
					Total	3912183
					Add 18% GST applicable on work contract by reversible multiple factor 1.0633 asperoffice memorandum no.	4159824
					Add 4.25 % EPF ESI	176793
					Total	4336617
					Add contigencies @ 5%	216831
					Total	4553448
					Say Rs.	45,53,400/-

Asstt. Engineer(P)
"V" Division, CPWD

Executive Engineer
"V" Division, CPWD

Tel. : 20861332,20861331
E-Mail: deleecv.cpwd@nic.in

कार्यपालक अभियंता
वी–मण्डल, के0 लो0 नि0 वि0
ईस्ट ब्लॉक–3, तल–5,
आर.के.पुरम्, नई दिल्ली–110066

Executive Engineer
V-Division, CPWD
East Block-3, Level -5
R.K.Puram, ND - 110066

भारत सरकार GOVERNMENT OF INDIA
केन्द्रीय लोक निर्माण विभाग Central Public Works Department

सं0 डीबी / अनुमान / वी मं / 2023–2024 / 1781 दिनांक 06.06.2023

सेवा में

Superintending Engineer
Northern Regional Power Committee,
18-A, Shaheed Jeet Singh Marg,
Katwaria Sarai, New Delhi-110016 .

No. 644 9/6/2023

विषयः निक्षेप कार्यो का निष Internal and External White Washing including paint of doors and windows of NRPC Office, New Delhi.

अनुमानित लागत रू. **34,10,500/-**

उपर्युक्त कार्य केन्द्रीय लोक निर्माण विभाग द्वारा के0लो0नि0वि0 संहिता के पैरा 118–119 के अधीन निम्नलिखित के अनुसार निक्षेप कार्य के रूप में किया जा सकता है:

1 कार्य को निष्पादन हेतु लिए जाने से पहले कार्यार्थी विभाग को के0लो0नि0वि0 द्वारा परिकलित कार्य की पूरी अनुमानित लागत जमा करानी होंगी। इस जमा राशि के लिये के0लो0नि0वि0 द्वारा कार्यार्थी विभाग को कोई ब्याज नही दिया जाएगा।

2 कार्यार्थी विभाग के0लो0नि0वि0 को भूमि स्थल का खाली कब्जा देगा। के0लो0नि0वि0 अपेक्षित होने पर मौजूदा भवनों / ढॉचों के ढहाने / निपटान करने की जिम्मेदारी ले सकता है।

3 के0लो0नि0वि0 कार्य को अनुमानित लागत के भीतर पूरा करने के लिये बाध्य नही है। यदि अतिरिक्त निधि कि आवश्यकता होगी तो वह कार्यार्थी विभाग को उपलब्ध करानी होगी। अपेक्षित होने पर आवश्यक संशोधित अनुमान प्रस्तुत कर दिया जाएगा।

4 उक्त कार्य की संविदा के प्रचालन के संबंध में कोई विवाद होने पर वह संविदा करार में दिए गये उपबंध के अनुसार मध्यस्थम् के अधीन होगा। के0लो0नि0वि0 यथासंभव मध्यस्थम कार्यवाही का प्रतिवाद करेगा और मध्यस्थ के पंचाट की यथोचित प्राधिकारी द्वारा जांच करवायेगा। के0लो0नि0वि0 में उस पंचाट को स्वीकार करने या उससे न्यायालय में चुनौती देने के लिये सक्षम प्राधिकारी का निर्णय कार्यार्थी विभाग पर बाध्यकारी होगा।

5 निक्षेप कार्य के संबंध में न्यायालय, अधिकरण द्वारा घोषित की जा सकने वाली या मध्यस्थम् के पंचाट द्वारा घोषित सभी राशियों का भुगतान करने के लिये निधि कार्यार्थी विभाग द्वारा तत्काल उपलब्ध करायी जाएगी, भले ही वह न्यायालय, अधिकरण या मध्यस्थ् के समस्त पार्टी हो या ना हो। इस प्रकार के भुगतान कार्य के निष्पादन हेतु ठेकेदारों के किए गए भुगतान के अलावा होगें।

EE(S)
In earlier letter estimated cost was Rs. 37,20,600/- → both are different. Pls. discuss
SE 12/6

SE (NRPC) 07/06/23

Contd.. 2

sanction latter

6 कार्यार्थी विभाग से प्रशासनिक अनुमोदन/व्यय स्वीकृति (ए/ए और ई/एस) मिलने के बाद के0लो0नि0वि0 विभिन्न विस्तृत वास्तुकीय आरेख और सेवा योजना /नक्शे आदि/ तैयार करेगा और उन्हें सभी स्थानीय निकायों को प्रस्तुत करेगा जिनका निर्माण कार्य शुरू करने से पहले अनुमोदन लेना आवश्यक होगा। स्थानीय निकाय स्वतंत्र संगठन होते हैं और उन पर के0लो0नि0वि0 का कोई नियंत्रण नही होता। ये स्थानीय निकाय योजनाओं को अनुमोदित करने में समय लगाते हैं। इस प्रकार के अनुमोदन लेने के लिये अपेक्षित समय को अनुमान में उल्लिखित निर्माण के समय में शामिल नही किया गया है। हॉलांकि के0लो0नि0वि0 इस प्रकार के अनुमोदन में यथाशीध्र प्राप्त करने का पूरा प्रयास करेगा तथापि कार्यार्थी विभाग के लिये भी यह आवश्यक होगा कि वह स्थानीय निकायों से शीध्र अनुमोदन प्राप्त करने के लिये प्रयास करें।

7 के0लो0नि0वि के पास इस कार्य में निवेश करने के लिये अपनी कोई धन–राशि नही है। अतः कार्यार्थी को यह सुनिश्चित करना चाहिये कि इस कार्य के निष्पादन के लिये कि0लो0नि0वि0 के पास प्रर्याप्त धन राशि उपलब्ध रहे। यदि कार्यार्थी विभाग तथा अपेक्षित धन राशि उपलब्ध कराने में असफल रहता है तो के0लो0नि0वि के लिये कार्य को निलंबित करना/छोडना आवश्यक हो सकता है। ऐसी स्थिति में कार्यार्थी विभाग कार्य को बंद करने/छोडने के कारण होने वाले सभी परिणामों तथा मुआवजे/नुकसान के लिये किये जाने वाले ठेकेदारों के दावों के लिये पूरी तरह जिम्मेदार होगा।

8 कार्यार्थी विभाग के0लो0नि0वि0 के (क) ठेकेदारों को मजदूरों के लिए झोपडियॉ बनाने के लिए निःशुल्क स्थान उपलब्ध कराने, (ख) ठेकेदारें के सामान और मजदूरों के कार्य स्थल पर आवागमन के लिये निर्बाध रास्ता उपलब्ध कराते, (ग) कार्य के निष्पादन के लिए सामान्य प्रकारों के भुगतान पर बिजली का कनैक्शन उपलब्ध कराने, (ध) संबंधित विद्युत बोर्ड/प्राधिकरण से विद्युत लोड की मंजूरी दिलवाने और लोड दिलवाने में सहायता करेगा।

9 यदि धन राशि किस्तों में जमा कराई जाएगी तो ऐसे मामलों में समय पर धन राशि न मिलने के कारण कार्य में होने वाले किसी विलंब, नुकसान काम बंद करने, मुआवजे/नुकसान आदि के लिए ठेकेदारों द्वाराकिए जाने वाले दावों के लिए के0लो0नि0वि0 जिम्मेदार नही होगा।

10 इस कार्य के लिए चैक "Executive Engineer, "V" Division, CPWD, New Delhi" के नाम पर भेजने का कष्ट करें।

11 उक्त प्रारम्भिक अनुमान केवल एक वर्ष तक की अवधि हेतु वैध है, यदि एक वर्ष की अवधि के दौरान उक्त प्रारम्भिक अनुमान हेतु प्रषासनिक अनुमोदन एंव व्यय स्वीकृति जारी नही की जाती है तो ग्राहक विभाग को नया मांग पत्र देना होगा।

अनुरोध है कि उपर्युक्त स्वीकृति से अद्योहस्ताक्षरी को सूचित करने का प्रबन्ध करें जिससे आगे की कार्यवाही कर सके।

संलग्नः उपरोक्तानुसार

भवदीय

कार्यपालक अभियंता

प्रतिलिपि :

1 सहायक अभियंता V वी मंडल, के0 लो0 नि0 वि0, नई दिल्ली ।

कार्यपालक अभियंता

HISTORY SHEET

Name of work: - **Internal and External White Washing including paint of doors and windows of NRPC Office, New Delhi.**

Funds:-

Major Head	Minor Head	Detailed Head

Preliminary cum detailed Estimate framed by Er. Sanjay Kumar Rao, Assistant Engineer - 2/V and checked by Er. V.K. Meena, Executive Engineer, "V" Division, CPWD for the probable cost of Rs. **34,10,500/-** including 7% cost index, 4.25% for ESI & EPF and 5% contingencies.

REPORT

HISTORY:- This preliminary cum detailed estimate amounting to **Rs. 34,10,500/-** i/c 5% contingencies has been framed to cover the probable cost of the above cited work for accord of A/A & E/S of the competent authority.

Requisition has been received vide letter no. NRPC/SER/172023/1743 dated - 17/02/2023 from NRPC Authority, for the submission of estimate. This estimate has been finally prepared after discussion with client at site.

Design & Scope:- The following provision have been made in the estimate:-

1. Finishing walls with Acrylic Smooth exterior paint
2. Wall painting with acrylic emulsion paint
3. Painting with synthetic enamel paint
4. Providing and applying white cement based putty
5. Removing white or colour wash.
6. Repairs to plaster.

Specifications: -		The work shall be executed as per CPWD specification 2019 with upto date correction slips.
Rate	:-	DSR 2021.
W.C. Staff	:-	Shall be met out from contingencies
Cost	:-	**Rs. 34,10,500/-**
Method	:-	Through contract after Call of tender.
T & P	:-	Shall be arranged by the Contractor.
Land	:-	Available
Time	:-	01 Months after award of work.

Assistant Engineer(P)

Executive Engineer
"V" Division, CPWD
New Delhi.

ABSTRACT OF COST

Name of Work : Internal and External White Washing including paint of doors and windows of NRPC Office, New Delhi.

SI NO.	DSR 21 NO	DESCRIPTION OF ITEM	QUANTITY	UNIT	RATE	AMOUNT
1	13.46	Finishing walls with Acrylic Smooth exterior paint of required shade :				
	13.46.1	New work (Two or more coat applied @ 1.67 ltr/10 sqm over and including priming coat of exterior primer applied @ 2.20 kg/10 sqm)	4800.00	Sqm	166.85	800880
2	13.60	Wall painting with acrylic emulsion paint of approved brand and manufacture to give an even shade :				
	13.60.1	Two or more coats on new work	7484.00	Sqm	137.85	1031669
3	13.61	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :				
	13.61.1	Two or more coats on new work	294.00	Sqm	131.45	38646
4	13.80	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	5040.00	Sqm	123.85	624204
5	13.88	Removing white or colour wash by scrapping and sand papering and preparing the surface smooth including necessary repairs to scratches etc. complete	12043.00	Sqm	16.35	196903
6	14.1	Repairs to plaster of thickness 12 mm to 20 mm in patches of area 2.5 sq.meters and under, including cutting the patch in proper shape, raking out joints and preparing and plastering the surface of the walls complete, including disposal of rubbish to the dumping ground, all complete as per direction of Engineer-in-Charge.				
	14.1.1	With cement mortar 1:4 (1 cement : 4 fine sand)	100.00	Sqm	462.3	46230
					Total	2738532
		Add Cost Index @ 7%				191697
		Total				2930229
		Add 18% GST applicable on work contract by reverible multiple factor 1.0633 asperoffice memorandum no. 158/SE(TAS)/GST/2022/331-(H), dated 10/08/2022				3115712
		Add 4.25 % EPF ESI				132418
		Total				3248130
		Add contigencies @ 5%				162407
		Total				3410537
					Say Rs.	34,10,500/-

Asstt. Engineer(P)
"V" Division, CPWD

Executive Engineer
"V" Division, CPWD

Tel. : 20861332,20861331
E-Mail: deleecv.cpwd@nic.in

कार्यपालक अभियंता
वी–मण्डल, के0 लो0 नि0 वि0
ईस्ट ब्लॉक–3, तल–5,
आर.के.पुरम्, नई दिल्ली–110066

Executive Engineer
V-Division, CPWD
East Block-3, Level -5
R.K.Puram, ND - 110066

भारत सरकार GOVERNMENT OF INDIA
केन्द्रीय लोक निर्माण विभाग Central Public Works Department

सं0 डीबी / अनुभाग / वी मं/2023–2024 /1704 दिनांक 29/5/23

सेवा में

Superintending Engineer
Northern Regional Power Committee,
18-A, Shaheed Jeet Singh Marg,
Katwaria Sarai, New Delhi-110016 .

Dy. No. 643 9/6/2023

विषयः निक्षेप कार्यों का निष्पादन Internal & External finishing including paint of doors & Windows of NRPC Staff Qtrs, New Delhi during 2023-24

अनुमानित लागत रू. 37,20,600/-

उपर्युक्त कार्य केन्द्रीय लोक निर्माण विभाग द्वारा के0लो0नि0वि0 संहिता के पैरा 118–119 के अधीन निम्नलिखित के अनुसार निक्षेप कार्य के रूप में किया जा सकता है:

1 कार्य को निष्पादन हेतु लिए जाने से पहले कार्यार्थी विभाग को के0लो0नि0वि0 द्वारा परिकलित कार्य की पूरी अनुमानित लागत जमा करानी होंगी। इस जमा राशि के लिये के0लो0नि0वि0 द्वारा कार्यार्थी विभाग को कोई ब्याज नही दिया जाएगा।

2 कार्यार्थी विभाग के0लो0नि0वि0 को भूमि स्थल का खाली कब्जा देगा। के0लो0नि0वि0 अपेक्षित होने पर मौजूदा भवनों / ढाँचो के ढहाने / निपटान करने की जिम्मेदारी ले सकता है।

3 के0लो0नि0वि0 कार्य को अनुमानित लागत के भीतर पूरा करने के लिये बाध्य नही है। यदि अतिरिक्त निधि कि आवश्यकता होगी तो वह कार्यार्थी विभाग को उपलब्ध करानी होगी। अपेक्षित होने पर आवश्यक संशोधित अनुमान प्रस्तुत कर दिया जाएगा।

4 उक्त कार्य का संविदा के प्रचालन के संबंध में कोई विवाद होने पर वह संविदा करार में दिए गय उपबंध के अनुसार मध्यस्थम के अधीन होगा। के0लो0नि0वि0 यथासंभव मध्यस्थम कार्यवाही का प्रतिवाद करेगा और मध्यस्थ के पंचाट की यथोचित प्राधिकारी द्वारा जांच करवायेगा। के0लो0नि0वि0 में उस पंचाट को स्वीकार करने या उससे न्यायालय में चुनौती देने के लिये सक्षम प्राधिकारी का निर्णय कार्यार्थी विभाग पर बाध्यकारी होगा।

5 निक्षेप कार्य के संबंध मे न्यायालय, अधिकरण द्वारा घोषित की जा सकने वाली या मध्यस्थम् के पंचाट द्वारा घोषित सभी राशियों का भुगतान करने के लिये निधि कार्यार्थी विभाग द्वारा तत्काल उपलब्ध कराई जाएगी, भले ही वह न्यायालय, अधिकरण या मध्यस्थ् के समस्त पार्टी हो या ना हो। इस प्रकार के भुगतान कार्य के निष्पादन हेतु ठेकेदारों के किए गए भुगतान के अलावा होंगें।

SE(NRPC) 9/6/23
EE(S) Pls. discuss SK 12/6

Contd.. 2

6 कार्यार्थी विभाग से प्रशासनिक अनुमोदन/व्यय स्वीकृति (ए/ए और ई/एस) मिलने के बाद के0लो0नि0वि0 विभिन्न विस्तृत वास्तुकीय आरेख और सेवा योजना /नक्शे आदि/ तैयार करेगा और उन्हें सभी स्थानीय निकायों को प्रस्तुत करेगा जिनका निर्माण कार्य शुरू करने से पहले अनुमोदन लेना आवश्यक होगा। स्थानीय निकाय स्वतत्र संगठन हाते हैं और उन पर के0लो0नि0वि0 का कोई नियंत्रण नही होता। ये स्थानीय निकाय योजनाओं को अनुमोदित करने में समय लगाते हैं। इस प्रकार के अनुमोदन लेने के लिये अपेक्षित समय को अनुमान में उल्लिखित निर्माण के समय में शामिल नही किया गया है। हॉलांकि के0लो0नि0वि0 इस प्रकार के अनुमोदन में यथाशीध्र प्राप्त करने का पूरा प्रयास करेगा तथापि कार्यार्थी विभाग के लिये भी यह आवश्यक होगा कि वह स्थानीय निकायों से शीध्र अनुमोदन प्राप्त करने के लिये प्रयास करें।

7 के0लो0नि0वि के पास इस कार्य में निवेश करने के लिये अपनी कोई धन–राशि नही है। अतः कार्यार्थी को यह सुनिश्चित करना चाहिये कि इस कार्य के निष्पादन के लिये कि0लो0नि0वि0 के पास प्रर्याप्त धन राशि उपलब्ध रहे। यदि कार्यार्थी विभाग तथा अपेक्षित धन राशि उपलब्ध कराने में असफल रहता है तो के0लो0नि0वि के लिये कार्य को निलंबित करना/छोडना आवश्यक हो सकता है। ऐसी स्थिति में कार्यार्थी विभाग कार्य को बंद करने/छोडने के कारण होने वाले सभी परिणामों तथा मुआवजे/नुकसान के लिये किये जाने वाले ठेकेदारों के दावों के लिये पूरी तरह जिम्मेदार होगा।

8 कार्यार्थी विभाग के0लो0नि0वि0 के (क) ठेकेदारों को मजदूरों के लिए झोपडियॉ बनाने के लिए निःशुल्क स्थान उपलब्ध कराने, (ख) ठेकेदारें के सामान और मजदूरों के कार्य स्थल पर आवागमन के लिये निर्बाध रास्ता उपलब्ध कराते, (ग) कार्य के निष्पादन के लिए सामान्य प्रकारों के भुगतान पर बिजली का कनैक्शन उपलब्ध कराने, (ध) संबंधित विद्युत बोर्ड/प्राधिकरण से विद्युत लोड की मंजूरी दिलवाने और लोड दिलवाने में सहायता करेगा।

9 यदि धन राशि किस्तों में जमा कराई जाएगी तो ऐसे मामलों में समय पर धन राशि न मिलने के कारण कार्य में होने वाले किसी विलंब, नुकसान काम बंद करने, मुआवजे/नुकसान आदि के लिए ठेकेदारों द्वाराकिए जाने वाले दावों के लिए के0लो0नि0वि0 जिम्मेदार नही होगा।

10 इस कार्य के लिए चैक "Executive Engineer, "V" Division, CPWD, New Delhi" के नाम पर भेजने का कष्ट करें।

11 उक्त प्रारम्भिक अनुमान केवल एक वर्ष तक की अवधि हेतु वैध है, यदि एक वर्ष की अवधि के दौरान उक्त प्रारम्भिक अनुमान हेतु प्रषासनिक अनुमोदन एंव व्यय स्वीकृति जारी नही की जाती है तो ग्राहक विभाग को नया मांग पत्र देना होगा।

अनुरोध है कि उपर्युक्त स्वीकृति से अद्योहस्ताक्षरी को सूचित करने का प्रबन्ध करें जिससे आगे की कार्यवाही कर सके।

संलग्नः उपरोक्तानुसार

भवदीय

कार्यपालक अभियंता

प्रतिलिपि :

1 सहायक अभियंता J/वी मंडल, के0 लो0 नि0 वि0, नई दिल्ली ।

कार्यपालक अभियंता

HISTORY SHEET

Name of work: - Internal & External finishing including paint of doors & Windows of NRPC Staff Qtrs, New Delhi during 2023-24.

Funds:-

Major Head	Minor Head	Detailed Head

Preliminary cum detailed Estimate framed by Er. Sanjay Kumar Rao, Assistant Engineer - 2/V and checked by Er. V.K. Meena, Executive Engineer, "V" Division, CPWD for the probable cost of Rs **37,20,600/-** including 7% cost index, 4.25% for ESI & EPF and 5% contingencies.

REPORT

HISTORY:- This preliminary cum detailed estimate amounting to **Rs. 37,20,600/-** i/c 5% contingencies has been framed to cover the probable cost of the above cited work for accord of A/A & E/S of the competent authority.

Requisition has been received vide letter no. NRPC/SER/172023/1743 dated - 17/02/2023 from NRPC Authority, for the submission of estimate. This estimate has been finally prepared after discussion with client at site.

Design & Scope:- The following provision have been made in the estimate:-

1. Distempering with 1st quality acrylic distemper(New work)
2. Painting with synthetic enamel paint
3. Providing and applying white cement based putty
4. Distempering with 1st quality acrylic distemper(Old work)
5. Removing dry or oil bound distemper Repairs to plaster.
6. Repairs to plaster
7. Finishing walls with Acrylic Smooth exterior paint
8. Removing white or colour wash.

Specifications: -		The work shall be executed as per CPWD specification 2019 with upto date correction slips.
Rate	:-	DSR 2021.
W.C. Staff	:-	Shall be met out from contingencies
Cost	:-	**Rs. 37,20,600/-**
Method	:-	Through contract after Call of tender.
T & P	:-	Shall be arranged by the Contractor.
Land	:-	Available
Time	:-	02 Months after award of work.

Assistant Engineer(P)

Executive Engineer
"V" Division, CPWD
New Delhi.

ABSTRACT OF COST

Name of Work : Internal & external finshing including paint of doors & Windows of NRPC Staff Qtrs New Delhi during 2023-24.

SI NO.	DSR 21 NO	DESCRIPTION OF ITEM	QUANTITY	UNIT	RATE	AMOUNT
1	13.42	Distempering with 1st quality acrylic distemper (ready mixed) having VOC content less than 50 gms/litre, of approved manufacturer, of required shade and colour complete, as per manufacturer's specification.				
	13.42.1	Two or more coats on new work	5810.00	Sqm	92.75	538878
2	13.46	Finishing walls with Acrylic Smooth exterior paint of required shade :				
2.1	13.46.1	New work (Two or more coat applied @ 1.67 ltr/10 sqm over and including priming coat of exterior primer applied @ 2.20 kg/10 sqm)	4568.00	Sqm	166.85	762171
3	13.61	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :				
	13.61.1	Two or more coats on new work	1582.00	Sqm	131.45	207954
4	13.80	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	9033.00	Sqm	123.85	1118737
5	13.88	Removing white or colour wash by scrapping and sand papering and preparing the surface smooth including necessary repairs to scratches etc. complete	4568.00	Sqm	16.35	74687
6	13.90	Distempering with 1st quality acrylic distemper (Ready mix) having VOC content less than 50 grams/ litre of approved brand and manufacture to give an even shade :				
	13.90.1	Old work (one or more coats)	1345.00	Sqm	56.8	76396
7	13.91	Removing dry or oil bound distemper,waterproofing cement paint and the like by scrapping, sand papering and preparing the surface smooth including necessary repairs to scratches etc. complete.	4465.00	Sqm	20.85	93095
8	14.1	Repairs to plaster of thickness 12 mm to 20 mm in patches of area 2.5 sq.meters and under, including cutting the patch in proper shape, raking out joints and preparing and plastering the surface of the walls complete, including disposal of rubbish to the dumping ground, all complete as per direction of Engineer-in-Charge.				
	14.1.1	With cement mortar 1:4 (1 cement : 4 fine sand)	250.00	Sqm	462.3	115575
					Total	2987493
					Add Cost Index @ 7%	209125
					Total	3196618
		Add 18% GST applicable on work contract by reverible multiple factor 1.0633 asperoffice memorandum no. 158/SE(TAS)/GST/2022/331-(H), dated 10/08/2022				3398964
		Add 4.25% for ESI & EPF				144456
						3543420
					Add contigencies @ 5%	177171
					Total	3720591
					Say Rs.	37,20,600/-

सहायक अभियन्ता (यो.)
'बी' मंडल, के.लो.नि.वि.
ईस्ट ब्लॉक-3, लेवल-5
आर.के. पुरम, नई दिल्ली-66

कार्यपालक अभियन्ता
'बी' मंडल, के.लो.नि.वि.
ईस्ट ब्लॉक-3, लेवल-5
आर.के. पुरम, नई दिल्ली-66

Annexure-XIX

सत्यमेव जयते

विजय कुमार सिंह
सदस्य सचिव

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

अर्ध शासकीय पत्र सं. NRPC/SER/310/2022-23/6744
D.O. No.

दिनांक 19 सितम्बर, 2023
Date :.....

Dear Shri Prasad Ji,

As you are aware that Northern Regional Power Committee (NRPC) was constituted vide Government of India's Resolution dated 25.05.2005 and subsequent Amendments dated 29.11.2005 and 9.05.2008. Further, as per Government of India, Ministry of Power's letter dated 23.02.2006; the activities of RPCs are to be fully financed by the constituent members (copy enclosed). For this purpose, NRPC constituent members are to pay annual contribution as decided in NRPC meetings from time to time.

In this regard, I want to invite your attention to my D.O. letter No.NRPC/SER/310/2022-23/6124 dated 21st July 2023 (Copy enclosed), wherein I conveyed the delay in payments of contribution amount by J&K (JKPDD and JKPDCL). Once again, details of pending payments are mentioned below:

S. No.	Name of Constituent	Period (FY)	Outstanding amount (Rs.)	Penalty (Rs.)	Total outstanding amount (Rs.)
1	J&K State Power Development Corp. Ltd.	2014-15	11,00,000	-	11,00,000
2		2015-16	11,00,000	-	11,00,000
3		2018-19	10,00,000	-	10,00,000
4	J&K State Power Development Department	2019-20	10,00,000	-	10,00,000
5		2021-22	10,00,000	1,80,000	11,80,000
				Grand Total	**53,80,000**

This matter was further raised in 68th NRPC Meeting held on 18.08.2023, in which J&K representative stated that as per their records, all the pending amount has already been paid except for contribution fee for year 2021-22. The J&K was requested to send all the receipts of transactions to NRPC Secretariat so that payments received from J&K can be checked again for reconciliation of the matter. However, no communication has been received in this matter till date.

NRPC Secretariat has re-checked in its records and has found no details of payments as mentioned by representative of J&K in 68th NRPC Meeting. Therefore, total amount of Rs.32,00,000/- and Rs.21,80,000/- is still pending with JKPDD and JKPDCL respectively. If payment has already been done, J&K is again requested to send the details of payment.

I would like to mention that NRPC Secretariat has communicated with your offices many times (copy enclosed) and my predecessor Member Secretary, NRPC also written number of D.O. letters to your office in this regard (copy enclosed).

I request you to please intervene in the matter and give directions to both the departments for making payment of aforementioned contribution amount on priority for smooth functioning of NRPC Secretariat. The payment could be made through Demand Draft drawn in favour of "NRPC Fund" or through RTGS in the Bank account named "NRPC Fund" (A/c No.3083000105096078 RTGS / NEFT Code: PUNB0308300).

Yours sincerely,

19/09/2023

(Vijay Kumar Singh)

Shri H. Rajesh Prasad, IAS
Principal Secretary,
Power Development Department, J&K,
Civil Secretariat, Jammu –180001

Copy to:

1. Chief Engineer (OM), Ministry of Power, New Delhi
2. Managing Director, JKPDCL, SLDC Building, 1st Floor, Gladni Grid Station, Narvel Bala, Jammu-180004

विजय कुमार सिंह
सदस्य सचिव

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

अर्ध शासकीय पत्र सं.
D.O.No.NRPC/SER/310/2022-23/6124

दिनांक:
Dated, the 21st July, 2023

Dear Shri Prasad Ji,

As you are aware that Northern Regional Power Committee (NRPC) was constituted vide Government of India's Resolution dated 25.05.2005 and subsequent Amendments dated 29.11.2005 and 9.5.2008. Further, as per Government of India, Ministry of Power's letter dated 23.02.2006; the activities of RPCs are required to be fully financed by the constituent members (copy enclosed). For this purpose, NRPC constituent members are to pay annual contribution as decided in NRPC meetings from time to time.

In this regard, I convey my sincere gratitude to J&K on behalf of NRPC, for its cooperation and support to regional grid and help in functioning of NRPC activities so far. However, there are some pending payments of NRPC membership fee to be paid by J&K (JKSPDCL and JKPDD), details of which are mentioned below:

S. No.	Name of Constituent	Period (FY)	Outstanding amount (Rs.)	Penalty amount (Rs.)	Total Outstanding amount (Rs.)
1.	J&K State Power Development Corporation Ltd. (JKPDCL)	2014-15	11,00,000	-	11,00,000
2.		2015-16	11,00,000	-	11,00,000
3.		2018-19	10,00,000	-	10,00,000
4.	J&K State Power Development Department (JKPDD)	2019-20	10,00,000	-	10,00,000
5.		2021-22	10,00,000	1,70,000	11,70,000
				Grand Total	**53,70,000**

The payment could be made through Demand Draft drawn in favour of "NRPC Fund" or through RTGS in the Bank account named "NRPC Fund" (A/c No. 3083000105096078 RTGS / NEFT Code: PUNB0308300).

18-ए, शहीद जीत सिंह मार्ग, कटवारिया सराय, नई दिल्ली- 110016 फोन:011-26511211 ई-मेल: ms-nrpc@nic.in वेबसाईट: www.nrpc.gov.in
18-A, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110016 Phone: 011-26511211 e- mail: as-nrpc@nic.in Website: www.nrpc.gov.in

I would like to bring it to your knowledge that NRPC Secretariat has communicated with your offices several times (copy enclosed) and my predecessor Member Secretary, NRPC also written number of D.O. letters to your office in this regard (copy enclosed), but pending payment has not been done till date.

I request you to please look into the matter and give direction to both the departments for making the payment of aforementioned contribution amount at the earliest for smooth functioning of NRPC Secretariat.

Yours sincerely,

21/07/2023

(Vijay Kumar Singh)

Shri H. Rajesh Prasad, IAS
Principal Secretary,
Power Development Department, J&K,
Civil Secretariat, Jammu – 180001

Copy to:

1. Chief Engineer (OM), Ministry of Power, New Delhi
2. Managing Director, JKPDCL, SLDC Building, 1st Floor, Gladni Grid Station, Narvel Bala, Jammu- 180004

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

संख्या: NRPC/SER/ 301 /2022/ 2032-2034 Dated: 23.02.2022

To,

Joint Secretary (OM),
Ministry of Power,
Room No-408,
4th Floor, Shram Shakti Bhawan,
Rafi Marg, New Delhi

विषय: Regarding long outstanding overdues of J&K State Power Development Corporation Ltd (JK PDCL) and Power Development Department (JKPDD)

References: NRPC letters to Secretary (Power) PDD, dated 07.02.2022, 29.12.2021, 26.07.2021, 11.09.2020, 28.01.2020, 31.10.2019 & 16.09.2019. NRPC letters addressed to MD, J&K State Power Development Corporation Ltd., dated 28.01.2020, 31.10.2019, 08.03.2019, 25.10.2018, 16.10.2018, 30.08.2017, 20.10.2015, 28.04.2015, 10.03.2015 & 30.12.2014.

Sir,

In accordance to the MoP communication to CEA vide letter no. A-60016/59/2005 Adm-I dated 23rd February 2006 (copy enclosed) which stipulates that

"The activities of the Regional Power Committees (RPCs) will be fully financed by the constituent Members with effect from 01.04.2006 and Central Electricity Authority will take immediate steps in this regard."

NRPC constituent members are to pay annual contribution as decided in NRPC meetings from time to-time, for reimbursing NRPC expenditure to GoI and meeting the expenditure for meetings at Secretariat and other expenditure as approved by Chairperson.

However, contribution from some members i.e J&K State Power Development Corporation Ltd (JK PDCL) and Power Development Department (JKPDD) is pending from a long time. NRPC is constantly following up with the officials of JKPDD & JKPDC through above referred letters. Details of pending outstanding contribution fees is shown below:

Sl. No.	Name of the constituent	Period (FY)	Outstanding amount (RS)	Late payment penalty amount (Rs)	Total outstanding amount (Rs)
1	JKPCL / JKPDD	2021-22	10,00,000/-	10,000/-	10,10,000/-
		2019-20	10,00,000/-	-	10,00,000/-
Total outstanding amount					20,10,000/-
2.	JKPCL / JKPDC	2018-19	10,00,000/-	-	10,00,000/-
		2015-16	11,00,000/-	-	11,00,000/-
		2014-15	11,00,000/-	-	11,00,000/-
Total outstanding amount					32,00,000/-
Grand total					**52,10,000/-**

This is for you kind information and kind assistance in the subject matter.

नरेश भंडारी 23/02/22

(नरेश भंडारी)

सदस्य सचिव

Encl: As above

Copy to:

1. Managing Director, JKPCL, SLDC Building, 1st Floor Gladni Grid Station, Narval Bala, Jammu-180004

2. Chief Engineer, JKPCL, SLDC Building, 1st Floor Gladni Grid Station, Narval Bala, Jammu-180004

Meeting Plan for FY 2023-24

S.N.	Month	Meeting	Host	Mode
1	Apr-2023	65th NRPC	SJVN	Physical
2	May-2023	66th NRPC	NRPC Secretariat	VC
3	June-2023	67th NRPC	NRPC Secretariat	VC
4	Jul-2023	-	-	-
5	Aug-2023	68th NRPC	NTPC	Physical
6	Sep-2023	69th NRPC	NRPC Secretariat	VC
7	Oct-2023	70th NRPC	NRPC Secretariat	VC
8	Nov-2023	71st NRPC & 48th TCC	NHPC	Physical
9	Dec-2023	72nd NRPC	NRPC Secretariat	VC
10	Jan-2024	73rd NRPC	NRPC Secretariat	VC
11	Feb-2024	74th NRPC & 49th TCC	Combined by CLP Jhajjar & Lanco Anpara Power Ltd	Physical
12	Mar-2024	75th NRPC	NRPC Secretariat	VC

Meeting Plan for FY 2024-25

S.N.	Month	Meeting	Host	Mode
1	Apr-2024	76th NRPC	NRPC Secretariat	VC
2	May-2024	77th NRPC & 50th TCC	UPPTCL	Physical
3	June-2024	78th NRPC	NRPC Secretariat	VC
4	Jul-2024	79th NRPC	NRPC Secretariat	VC
5	Aug-2024	80th NRPC & 51st TCC	Member Trader	Physical
6	Sep-2024	81st NRPC	NRPC Secretariat	VC
7	Oct-2024	82nd NRPC	NRPC Secretariat	VC
8	Nov-2024	83rd NRPC & 52nd TCC	DTL	Physical
9	Dec-2024	84th NRPC	NRPC Secretariat	VC
10	Jan-2025	85th NRPC	NRPC Secretariat	VC
11	Feb-2025	86th NRPC & 53rd TCC	Adani Power Ltd	Physical
12	Mar-2025	87th NRPC	NRPC Secretariat	VC