Submissions on Draft
Central Electricity Regulatory Commission
(Terms and Conditions of Tariff)
Regulations, 2024
By
Power Grid Corporation of India Limited

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Comments on Draft CERC Tariff Regulations 2024-29

Contents

1. Chapter 1: Preliminary

1.1. Force Majeure

Draft CERC Tariff Regulations, 2024

3(32) 'Force Majeure' *for the purpose of these regulations means the event or circumstance or combination of event ……*

(a) Act of God including lightning, drought, fire and……..or exceptionally adverse weather conditions which are in excess of the statistical measures for the last hundred years; or

(b) Any act of war, invasion, ……

(c) Industry wide strikes and labour disturbances having a nationwide impact in India;

Our Comments/Suggestions

- The Hon'ble Commission has specified that any exceptionally adverse weather conditions which are in excess of the statistical measures for the last hundred years shall be considered as ***'Force Majeure'.*** The consideration of the statistical measures which are in excess of last hundred years will restrict the impact of several uncontrollable reasons like unprecedented heavy rainfalls in a particular region which adversely impacts the ability of the licensees to continue the ongoing construction or operation activities. Any reasonable events like this should be considered as Force majeure by Commission after prudence check. ***Therefore, it is requested that the Hon'ble Commission may either remove reference of last hundred years or specify it to a more realistic reference such as events which are in excess of 20-30 % (as deemed appropriate) of average statistical measures of last 10 years.***

- In addition to disturbances having nationwide impact, construction and operational activities are also disturbed on account of local agitation and disturbances. ***Therefore, Force Majeure clause should also cover local/ state/ region wide disturbances within its scope***. Delay shall continue to be condoned after prudence check.

- Further, during the last control period, the world faced one of the largest global pandemics i.e. COVID19, and as a consequence all the business operations were impacted in one form or other. Keeping in mind that the pandemic not only impacts the construction activities but also operation activities, we would request the ***Hon'ble Commission to add 'Pandemics' as part of force majeure, as such events are clearly beyond the control of the utility and their impact could not have been avoided.*** If such events are considered in the Regulations, then separate notification by Government Authorities may not be required and delay on account of such Pandemics may be condoned automatically.

- Further, in today's digital world the threat of Cyber Attack is increasing. ***System wide cyber-attack may be included as force majeure event*** by Hon'ble commission.

1.2. Implementation Agreement

Draft CERC Tariff Regulations, 2024

*"3(40) '**Implementation Agreement'** means any agreement or any covenant entered into (i) between the transmission licensee and the generating company or (ii) between transmission licensee and developer of the interconnected transmission system for the execution of generation and transmission projects in a coordinated manner, laying down the project implementation schedule and mechanism for monitoring the progress of the projects;"*

Our Comments/Suggestions

The term 'Implementation Agreement' is not referred to or used anywhere in the proposed draft regulations. Therefore, it is proposed that the same may please be deleted.

1.3. Operations & Maintenance Expenses

Draft CERC Tariff Regulations, 2024

***3(56) 'Operation and Maintenance Expenses' or 'O&M expenses'** means the expenditure incurred for operation and maintenance of the project, or part thereof, and includes the expenditure on manpower, maintenance, repairs and maintenance spares, other spares of capital nature valuing less than Rs. 20 lakhs, additional capital expenditure of an individual asset costing up to Rs. 20 lakhs, consumables, insurance and overheads and fuel other than used for generation of electricity:*

Our Comments/Suggestions

Definition of 'O&M expenses' proposes to include 'additional capital expenditure of an individual asset costing up to Rs. 20 lakhs' also as O&M. The same **needs to be deleted because** the replacement/refurbishment works in transmission systems are taken up under Additional capitalization in phased manner for old assets based on the criticality. Many of the equipment being replaced for system improvement are having values less than Rs. 20 Lakh.

Further, Hon'ble Commission vide letter No. L-1/268/2022/CERC dated 01.08.2023 directed the thermal generating companies to submit the additional capitalization data wherein a detailed breakup of year-wise additional capitalization claimed and approved was sought from the generating company. **However, similar details were not sought from Transmission Licensees.** After reading para 15.6.23 of the explanatory memorandum, it is understood that the provision has been introduced in the regulations w.r.t. generating companies only.

Therefore, it is requested that the additional capital expenditure of an individual asset costing up to Rs. 20 lakhs may not be considered under O&M for Transmission and the same may be continued to be allowed under Additional Capitalization as per relevant

regulations. Therefore, definition of ***'Operation and Maintenance Expenses' or 'O&M expenses'*** may suitably be amended as below;

3(56) 'Operation and Maintenance Expenses' or 'O&M expenses' *means the expenditure incurred for operation and maintenance of the project, or part thereof, and includes the expenditure on manpower, maintenance, repairs and maintenance spares, other spares of capital nature valuing less than Rs. 20 lakhs, additional capital expenditure of an individual asset costing up to Rs. 20 lakhs except for Transmission projects~~,~~ consumables, insurance and overheads and fuel other than used for generation of electricity:*

1.4. Original Project Cost

Draft CERC Tariff Regulations, 2024

3(57) 'Original Project Cost' *means the capital expenditure incurred by the generating company or the transmission licensee, as the case may be, within the original scope of the project up to the cut-off date, and as admitted by the Commission;*

Our Comments/Suggestions

Sometimes because of unavoidable circumstances, expenditure like Liability for works executed prior to the cut-off date or to meet award of arbitration, contract closing issues, court cases etc., some cost may be required to be incurred even after cutoff date. Regulation also provides for "Additional Capitalisation within the original scope and after the cut-off date" which is allowed by Hon'ble Commission after prudence check on case to case basis. In line with above, it is proposed that the word **"*up to the cut-off date*" in the proposed definition of Original Project cost may be deleted.**

1.5. Rated Voltage

Draft CERC Tariff Regulations, 2024

3(66) 'Rated Voltage' *means the voltage at which the transmission system is designed to operate and includes such lower voltage at which any transmission line is charged or for the time being charged, in consultation with long-term customers;*

Our Comments/Suggestions

Considering high number of long-term customers, it may not be practically possible to consult all while deciding the aspects of operating the systems at lower voltage levels. It is proposed that in line with revised TBCB SBDs, wherein long-term customers have been replaced with CTU, ***the same may be replaced with 'CTUIL' in the subject definition as below;***

3(66) 'Rated Voltage' *means the voltage at which the transmission system is designed to operate and includes such lower voltage at which any transmission line is charged or for the time being charged, in consultation with ~~long-term customers~~ CTUIL;*

1.6. Reference Rate of Interest for Interest on Working Capital

Draft CERC Tariff Regulations, 2024

***(67) 'Reference Rate of Interest'** means the one year marginal cost of funds based lending rate (MCLR) of the State Bank of India (SBI) issued from time to time plus 325 basis points;*

Our Comments/Suggestions

Under MoP LPS Rules, 2022, total trade receivables outstanding as on 03.06.2022 were converted into EMI's of 12 /28 /40 /48 instalments as availed by Discoms. This provided relief to Discoms as well as resulted in clearance of outstanding dues of Generating Companies and Transmission Licensees. Surcharge was also waived-off during the instalment period. In view of above working capital requirements of Licensees have increased. Therefore, existing Interest on Working Capital (IOWC) Rate of SBI MCLR+350 basis points may be continued by the Hon'ble commission., ***Therefore the subject definition may be modified as below;***

***(67) 'Reference Rate of Interest'** means the one year marginal cost of funds based lending rate (MCLR) of the State Bank of India (SBI) issued from time to time plus ~~325~~ 350 basis points;*

1.7. Useful life

Draft CERC Tariff Regulations, 2024

***3(88) 'Useful Life'** in relation to a unit of a generating station, integrated mines, transmission system and communication system from the date of commercial operation shall mean the following:*

(a) Coal/Lignite based thermal generating station 25 years

……..

*(f) Transmission line (including HVAC & HVDC) **& OPGW** 35 years*

Our Comments/Suggestions

OPGW is generally part of individual communication networks or communication media and hence it is an integral part of the Communication System and its characteristics are entirely different from Transmission line. Definition of communication system given in CERC Communication Regulation 2017 includes communication media as its part. The definition of the 'Communication System' in the Communication Regulation 2017 is given as:

"Communication system" is a collection of individual communication networks, communication media, relaying stations, tributary stations, terminal equipment usually capable of inter-connection and inter-operation to form an integrated communication backbone for power sector. It also includes existing communication system of Inter State Transmission System, Satellite and Radio Communication System and their auxiliary power supply system, etc. used for regulation of inter-State and intra-State transmission of electricity;"

The life of OPGW as part of Communication System in the Tariff Regulation 2019-24 was defined as 15 years with annual depreciation of 6.33%. Accordingly, tariff for OPGW portion was determined considering useful life as 15 years.

However, in the proposed Tariff Regulation 2024-29, the useful life of OPGW has been defined as 35 years (as part of transmission line) with annual depreciation of 5.28% for existing and 4.22% for new projects.

In this regard, it is to mention that life of OPGW usually lasts between 15 to 20 years. It was observed in the previous years that the performance of fibers of OPGW deteriorated significantly in 15 years. Large nos. of OPGW links installed during period from 2002 to 2006 under various projects implemented by POWERGRID are not serviceable as these links are rusted and also showing high signal and data losses (called as attenuation) in data transmission.

Accordingly, POWERGRID had approached respective Regional Power Committees (RPCs) for approval for replacement of 41 nos. of OPGW links for smooth functioning of Inter-State communication system presenting the supporting data regarding data losses on these links. On approval by respective RPCs, POWERGRID has implemented/ is implementing OPGW replacement in above 41 links across India. Recently in 2023, replacement of additional 03 nos. OPGW links has been approved by National Committee on Transmission (NCT) subsequent to approval in NRPC as old OPGW was rusted and losses in OPGW was very high.

In addition, a list of 32 more OPGW links (implemented in 2004 and 2005) has been forwarded to CTU for replacement as data transmission losses on these links are high. Loss details fetched from NMS (Network Management System) are also attached. List of above links are attached as **Annexure-A.**

In view of the same, it is suggested to keep the useful life of the OPGW unchanged i.e. 15 years as the fibers degrade early and cannot be matched with the life of line. This offers the flexibility for replacement on need basis.

Therefore, it is requested that the depreciation rates for OPGW, provided under Appendix -I & Appendix -II, may be retained as 6.33% similar to as being provided under Tariff Regulations,2019.

1.8. Useful life of UNMS

Draft CERC Tariff Regulations, 2024

Useful life for U-NMS projects has not been provided in the proposed draft Tariff Regulations.

Our Comments/Suggestions

Hon'ble Commission vide order dated 15.12.2022 in petition no 728/MP/2020 has already allowed depreciation rate at 15% similar to Communication system which translates to useful life of 7 years. In line with this similar useful life of 07 years may be provided for UNMS projects with annual depreciation rate as 15% of capital cost. Further, UNMS System consists primarily of Semiconductor and Electronic devices and has following components:

a. Servers and Software for UNMS Application

b. Servers and Software for Storage System

c. Hardware of Networking Equipment.

d. Other accessories such as consoles etc.

All such Semiconductor and Electronic devices have no Salvage or residual value. Rather, cost is incurred in disposing of such equipment. Therefore, 100 % depreciation may also be allowed for UNMS System.

Further, on the same line for URTDSM and SCADA/ Energy Management System (EMS), depreciation rate at 15% may be allowed similar to Communication system which translates to useful life of 7 years.

1.9. Useful life of Control & Protection:

Draft CERC Tariff Regulations, 2024

Useful life for Control & Protection has not been provided separately in the proposed draft Tariff Regulations.

Our Comments/Suggestions

Major part of the control & protection of HVAC, HVDC & FACTS stations are electronic type and software based, which gets obsolete within a period of 10 years due to fast changes /development in electronics and software technology.

Various manufacturers keep on upgrading the hardware and software platform with new technologies. In view of the fast-paced technological advancements, old models are being declared obsolete within 10-12 years of age. Some of the benefits seen in new relays are:

i. Improved selectivity of protection relays.

ii. Faster operating times.

iii. Improved cyber security measures

iv. Better fault analysis capabilities.

As per CIGRE Technical Brochure (TB) No. 649 “Guidelines for Life Extension of Existing HVDC Systems” by working group (WG)- 4.54, lifetime of HVDC Digital Control System is 12-15 years. Control & protection of FACTS are same as HVDC station and faces similar issues of obsolescence in C&P System.

The cost of Control & Protection in HVDC & FACTS system is considerably high. Further the protection relays in AC substations experience major challenges due to differences in the technical life and regulatory life.

For optimum utilization (Better reliability and availability) of HVAC, HVDC & FACTS system, it is proposed to keep the useful life of Control & Protection System separate from the useful life of Sub-stations.

Based on above discussion, international experience of utilities, guidelines of CIGRE W.G. 4.54 and POWERGRID experience of O&M of HVAC, HVDC & FACTS systems, ***useful life of Control & Protections (C&P) of these systems may be defined as 12 years*** in the interest of timely upgradation/ replacement of obsolete systems for reliable & secure Grid operation.

Further, as stated at para 1.7 above, considering that the Control & Protection equipment is majorly Semiconductor and Electronic devices and thus have no Salvage or residual value. Rather, cost is incurred in disposing of such equipment. ***Therefore, 100 % depreciation may also be allowed for Control & Protection equipment also.***

1.10. Carrying Cost

Draft CERC Tariff Regulations, 2024

No Definition provided

Our Comments/Suggestions

The term ‘Carrying Cost’ is used at multiple places in the draft Regulations. The Hon’ble Commission has already proposed the rate of Carrying Cost i.e., 1-year SBI MCLR as on 1st April of relevant year plus 100 basis points at various clauses of the draft Tariff Regulations. However, at Regulation 9 (5) the carrying cost is not provided.

Further, provisions for carrying costs are provided for specific cases i.e from COD to interim order, difference in interim tariff to final tariff, Difference in tariff determined in true up Petition from previous order etc.

However, apart from conditions envisaged in draft Regulations, there can be other cases where carrying cost may be required such as in certain cases where approved Tariff order is challenged in CERC or APTEL / Any other court, and either tariff or sharing is

revised by way of subsequent orders, explicit regulatory provision towards payment of carrying cost is required to avoid any dispute or litigation in future.

In view of the above, we request the Hon'ble Commission to also define the term 'Carrying cost' under Definitions section to make it applicable uniformly across all cases, linking it with the rate of Carrying Cost i.e., 1-year SBI MCLR as on 1st April of relevant year plus 100 basis points.

2. Chapter 3: Procedure for Tariff Determination

2.1. Application for determination of tariff

Draft CERC Tariff Regulations, 2024

"9. Application for determination of tariff:

(1) The generating company or the transmission licensee may make an application for determination of tariff for a new generating station or unit thereof or transmission system or element thereof in accordance with these Regulations within 90 days from the actual date of commercial operation:

Provided that where the transmission system comprises various elements, the transmission licensee shall file an application for determination of tariff for a group of elements on incurring of expenditure of not less than Rs. 100 Crore or 100% of the cost envisaged in the Investment Approval, whichever is lower, as on the actual date of commercial operation:

Provided further that transmission licensees shall combine all the elements of the transmission system in the Investment Approval, which are attaining commissioning during a particular month and declare a single COD for the combined Asset, which shall be the date of the COD of the last element commissioned in that month and such Asset shall be treated as single Asset for tariff purposes.

Our Comments/Suggestions

1. Regarding timeline for filing Petition: We agree with the Commission's view of regulatory overburden due to multiple revisions in the tariff filings based on anticipated COD. The provision of filing the tariff petition after actual COD will allow the utilities to solidify the financials and file the petition as per actual data. However, regarding proposed timeline following is submitted.

- As per the second proviso of draft regulation 9 (1), transmission licensees shall combine all the elements of the transmission system in the Investment Approval, which are attaining commissioning during a particular month and consider a single COD i.e COD of the element commissioned last for the combined Asset for Tariff purpose. Therefore, to comply with the said provision, in case an asset is commissioned in the beginning of the month, but it is anticipated that commissioning of some more elements during the month is possible, tariff related activities like preparation of Auditor Certificate etc. will be dependent on that other asset. Further, in case the other asset is not commissioned in the same month, delay of that month may create challenge to meet the deadline of filing tariff petition of commissioned asset within 90 days.

- To reduce the number of Petitions, the same petition is filed for multiple elements of the same project which are commissioned in a close timeframe. In the case discussed above, if 2 elements are commissioned in two different months, then either to comply with 90 day timeline, two petitions are to be filed or else 90 day timeline should be considered from COD of last element.
- Further, generally cost data is freezed on quarterly basis along with audited results.

POWERGRID always endeavors to file its tariff petition as soon as possible so as to expedite commencement of revenue. Therefore, POWERGRID will try to file tariff petitions as soon as possible after COD but considering points discussed above***, it is requested that the timeline for filing Petition may be extended to 120 days from the COD*** as below;

(1) The generating company or the transmission licensee may make an application for determination of tariff for a new generating station or unit thereof or transmission system or element thereof in accordance with these Regulations within ~~90~~ 120 days from the actual date of commercial operation:

2. Regarding Condition for filing Petition: We agree with the Commission's view of regulatory overburden due to duplicity and high number of petitions being filed for the same Projects involving less/minimal capital cost in few cases. To balance the interest of Licensees as well as to minimize number of petitions, threshold limit as proposed in Tariff Regulations,2024 is a welcome step. However, some of the genuine difficulties faced by Transmission license are submitted as under;

- As per the draft regulations, it is proposed that tariff filing before the Commission would be based on incurring not less than Rs. 100 Crore or 100% of the cost envisaged in the Investment Approval, whichever is lower. As there are certain elements of transmission system which may achieve timely commercial operation and may be put to use in early stages of the transmission project schedule while others may take longer time to achieve COD due to persistent RoW problems, forest clearance issues etc., the transmission licensee would not be able to charge tariff from beneficiaries, even though the assets are being utilized, till the time such conditions as specified in the proposed regulations are met. Examples:
    - The scheme - "POWERGRID works associated with immediate evacuation for North Karanpura (3x660 MW) generation project of NTPC in Eastern Region" consists of 02 nos 400kV line bays each at Gaya and Chandwa sub-station. Bays at Gaya sub-station were complete in all respects w.e.f. 06.10.2019. However, in line with regulations, a petition could be filed only after commissioning of bays at Chandwa on 09.09.2021 resulting in delay of COD of approx. 23 months for Gaya Bays vis-à-vis COD i.e., 06.10.2019.
    - The project - "ERSS-XVIIB in Eastern Region" consists of 11 assets, which includes Installation/Replacement of 9 nos. 400/220 kV 315 MVA ICTs at various locations, 1 no. LILO bypass arrangement at Angul S/s and Reconductoring of Maithon RB – Maithon (PG) 400 kV D/C line along with modification/addition of bay equipment at both ends of the line.

Asset were commissioned progressively from 09.06.2019 to 02.03.2022, with the exception of said reconductoring of 400 kV D/C line, which commissioned on Aug'2023. Thus, despite commissioning of almost all elements of the project, the petition for ERSS-XVIIB cannot be filed because of non fulfilment of existing provisions.

- Such a delay in filing of petition and subsequent tariff determination would lead to deferment of revenue to the licensee leading to mismatch in timing of cash flows. After commissioning of the asset, expenses are incurred on O&M and loan repayment, while the charges shall be allowed to be billed only upon getting interim or final determination of tariff by the Commission.
- In respect of Communication System, projects comprise of multiple links and commissioning of these links are not necessarily inter-dependent for providing data and voice connectivity. For example, typically a Communication project of Rs. 40 Cr cost comprising of 20 links with a commissioning schedule of 24 months, may have its first lot of links commissioned just after 6 months of award followed by rest of the links in a progressive manner. With proposed condition, Petition cannot be filed till completion of entire project.
- Further, generally 70-80% of the Investment Approval cost is incurred upto COD. The remaining 20-30% of the expenditure is incurred as AddCap after COD upto Cutoff date. Therefore, the condition of filing of petition cannot be that of 'incurring 100% of the cost envisaged in the Investment Approval'.

It is therefore recommended that to safeguard licensees from being denied the true/real benefit of timely returns, ***the Transmission Licensee may be allowed to file an application for determination of tariff under any of the following conditions:***

- on capitalization of 50% of the cost envisaged in the Investment Approval or Rs. 100 Crore, whichever is lower, as on the date of COD of an asset;
- filing of atleast one petition under a project in a financial year for assets already commissioned to be completed during the year;

Accordingly subject proviso may be amended as below;

Provided that where the transmission system comprises various elements, the transmission licensee shall file an application for determination of tariff for a group of elements on incurring of expenditure of not less than Rs. 100 Crore or ~~100%~~ 50 % of the cost envisaged in the Investment Approval, whichever is lower, as on the actual date of commercial operation:

Provided further, that in case above condition is not fulfilled, Transmission licensee may file one petition under a project in a financial year for assets already commissioned during the year.

3. Combining elements of different Investment Approvals in same Tariff Petition: Since present Draft Regulations specifies combining elements under single investment approval, ***combining elements commissioned during the month on regional level under different projects can also be explored*** as Investment approval may not be a barrier for combining elements. This will minimize the number of tariff petitions and speed up the tariff approval process while maintaining the sanctity of each Investment Approval. Separate Tariff can be determined as per cost details for multiple assets. As all the beneficiaries of region would be the respondents in that particular petition, their consent/objections can be considered while determination of tariff.

Ex: Let us assume 5 elements are commissioned in a particular region in a month then the combined asset name can be as follows: a) Name of asset-1 under project, b) Name of asset-2 under project etc.

4. Combining Truing up Petitions: Tariff Petition may be ***allowed to be clubbed into a single Petition on the basis of region wise or block wise or any other combination*** as deemed fit by Hon'ble Commission. The uniqueness of the projects as per the Investment approvals will be maintained in the clubbed petitions. This will significantly reduce number of petitions especially for the True up petitions having no AddCap or DeCap or any directions/liberty specified by CERC in its last order(s), in which cases True up process is majorly limited to arithmetic truing up exercise based on actual MAT rates, interest rates applicable etc..

Further, in such petitions simplified standard tariff forms may be notified by Hon'ble Commission for information and calculations to be submitted. One such draft format is prepared by POWERGRID for ready reference of Hon'ble Commission and the same is enclosed as **Annexure-B**. If required, Hon'ble Commission may include any other information as deemed necessary. Respondents may be allowed a pre-defined time to give any objections/comments on the tariff calculation submitted by Licensee.

2.2. Requirement of Management Certificate to be signed by Director of the Company

Draft CERC Tariff Regulations, 2024

9(1) Third Proviso – Provided further that the generating company or the transmission licensee, as the case may be, shall submit an Auditor Certificate and, in case of non-availability of an Auditor Certificate, a Management Certificate duly signed by an authorised person, not below the level of Director of the company……

Our Comments/Suggestions

Difference in tariff based on provisional certificate and the Auditor Certificate, if any, is to be returned back to the beneficiaries with interest. Therefore, the Transmission Licensee does not have any interest in inflating the cost in provisional cost certificate. Further, as per the revised timeline a Petition is to be filed only after COD of elements, Management Certificate may not be required in most cases. However, in exceptional

cases, Management Certificate may need to be provided in which cases subsequently auditor certificate is submitted. As submission of Management Certificate duly signed by Director level person involves considerable time, the requirement may please be relaxed.

If required***, it would be prudent that the initial certificate can be signed at the level of the Regional Executive Director or equivalent for Private licensees authorized by their management to do so.***.

2.3. Timeline for filing Truing up petition

Draft CERC Tariff Regulations, 2024

9(2) –In case of an existing generating station or unit thereof, or transmission system or element thereof, the application shall be made by the generating company or the transmission licensee, as the case may be, ***by 31.10.2024****, based on admitted capital cost including additional capital expenditure already admitted and incurred up to 31.3.2024 (either based on actual or projected additional capital expenditure) and estimated additional capital expenditure for the respective years of the tariff period 2024-29 along with the true up petition for the period 2019-24 in accordance with the CERC (Terms and Conditions of Tariff) Regulations, 2019.*

Our Comments/Suggestions

Regulation 13 (2) of the CERC Tariff Regulations,2019 regarding Truing up of tariff for the period 2019-24 provides the following;

(2) The generating company or the transmission licensee, as the case may be, shall make an application, as per Annexure-I to these regulations, for carrying out truing up exercise in respect of the generating station or a unit thereof or the transmission system or an element thereof by ***30.11.2024.***

However, in the proposed Regulation 9 (2) of the draft Tariff Regulations,2024, inadvertently the date is mentioned as 31.10.2024 instead of 30.11.2024. Further, as per SEBI (LODR) Regulations, 2015, Regulation 33 requires listed entities to submit their financial results to the stock exchanges within 60 days from the end of the financial year i.e. 30th May 2024. Auditor certificates pertaining to transmission projects for the purpose of truing up petitions can be prepared only after the completion of audit of financial year 2023-24 which is expected to be completed by end of May'24. Thereafter, the process of Auditor Certificate signing is taken up.

POWERGRID needs to file approx. 540 nos of truing up petitions. Considering the time required for preparation of truing up petitions incorporating actual expenditure incurred during 2023-24 as per the Audited Accounts, filing for such cases can only commence from June'24.

Keeping in view the same and huge numbers of truing up petition to be filed, it is requested to increase the time limit for filing true up petitions to 270 days from the date of effectiveness of these Regulations i.e. till Dec'24.

2.4. Carrying cost for a new transmission system or element

Draft CERC Tariff Regulations, 2024

9 (5) In case the generating company or the transmission licensee files the application as per the timeline specified in sub-clause (1) to (4) of this Regulation, carrying cost shall be allowed from the date of commercial operation of the project:

Provided that in case the generating company or the transmission licensee delays in filing of application as per the timeline specified in sub-clause (1) to (4) of this Regulation, carrying cost shall be allowed to the generating company or the transmission licensee from the date of filing of the application as per Regulation 10(7) and 10(8) of these regulations.

Our Comments/Suggestions

Proposed Regulation 9 (5) provides for carrying cost when the Tariff Petition is filed as per the timeline specified in sub-clause (1) to (4) of this Regulation. Carrying cost is referred in multiple places in the Draft Regulations and wherever it is applicable, rate for carrying cost is provided.

However, in the referred Regulation, rate of carrying cost is not provided. In our comments at para 1.7 above, it is requested to provide a definition of Carrying cost specifying as the simple interest rate of 1-year SBI MCLR plus 100 bps. However, for better clarity, following changes may be made in referred Regulation.

9 (5) In case the generating company or the transmission licensee files the application as per the timeline specified in sub-clause (1) to (4) of this Regulation, carrying cost at the simple interest rate of 1-year SBI MCLR plus 100 bps shall be allowed from the date of commercial operation of the project:

2.5. Determination of Tariff

Draft CERC Tariff Regulations, 2024

10(1) & 10(2) - Petition to be made as per Annexure –I of the Regulations.

Our Comments/Suggestions

The Annexure – I which deals with the detailed requirements of the Petition to be filed with the Commission for the Transmission assets is not provided with the draft regulations. However, it is submitted that the same needs to be modified based on the comments/suggestion made herein against the respective provisions.

2.6. Interim tariff & variation in Projected Capital Expenditure

Draft CERC Tariff Regulations, 2024

10.(3) If the information furnished in the petition is in accordance with these regulations, the Commission may consider granting interim tariff of up to ninety per cent (90%) of the tariff claimed in case of new generating station or unit thereof or transmission system or element thereof during the first hearing of the application:

Provided that in case the final tariff determined by the Commission is lower than the interim tariff by more than 10%, the generating company or transmission licensee shall return the excess amount recovered from the beneficiaries or long term customers, as the case may be with simple interest at 1.20 times of the rate worked out on the basis of 1 year SBI MCLR plus 100 basis points prevailing as on 1st April of the financial year in in which such excess recovery was made.

……..

10. (8) Where the capital cost approved by the Commission on the basis of projected additional capital expenditure exceeds the actual trued up additional capital expenditure incurred on a year to year basis by more than 10%, the generating company or the transmission licensee shall refund to the beneficiaries or the long term customers as the case may be, the tariff recovered corresponding to the additional capital expenditure not incurred, as approved by the Commission, along with simple interest at 1.20 times of the rate worked out on the basis of 1 year SBI MCLR plus 100 basis points as prevalent on 1st April of the respective year.

Our Comments/Suggestions

Regarding Interim tariff, it is submitted that subject provision for allowing up to ninety per cent (90%) of the tariff claimed in case of transmission system or element thereof during the first hearing of the application is a welcome step. Despite having such provisions in the Tariff Regulations,2019 the same was not followed affecting cash flow for Transmission licensee whereas it has to incur expenses towards debt and O&M from its internal resources and it also resulted in arrear shock to beneficiaries.

However, as per the proposed draft regulation, now petition is to be filed after COD which may take 2-4 months as discussed above at para 2.1. Further, first hearing may take another 2-4 months ultimately resulting in interim order coming after 4-8 months of COD.

***Therefore, based on above discussion, it is requested that 90% of the claimed tariff as per the filed petition may be allowed to be provisionally billed* as per the provision of Sharing regulations without interim / final order** as it would provide cash flow to RTM licensee. Further, it will remove the requirement of provisional tariff order, hence, reducing the workload of CERC. The under / over recovery of tariffs as per final order can be adjusted as per existing regulations. This would also benefit the DICs by way of reducing their interest and sudden impact of arrear billing.

Regarding difference in Interim and Final Tariff, the regulations propose levy of penal interest at the rate of 1.2 times the rate worked out on the basis of 1 year SBI MCLR plus 100 basis points in case the final tariff determined by the Commission is lower than the interim tariff by more than 10%.

Here it is submitted that as per the proposed Regulation 9 (1), Petition for new assets is to be filed only after COD. Thus, Petition will be filed on actual costs upto COD and projected AddCaps. Transmission utilities submit their petition after conducting a diligent and prudent review as part of the filing process, therefore chances for change in COD cost is very less. Variation in Interim tariff and Final tariff more than 10% can occur only when some assets are having unprecedented time overrun or cost overrun and the Hon'ble Commission may hold a divergent perspective while approving the tariff. Only in such a scenario, there is a probability of more than 10% variance.

This will result in a dual penalty for the transmission licensee in the form of deduction in IDC & IEDC along with additional penalty for refunding the surplus amount with the carrying cost calculated as 1.20 times the 1-year SBI MCLR plus 100 basis points, as of the 1st of April in the relevant financial year when the excess recovery occurred. Therefore, we request the Commission to allow the refund of the excess tariff ***with simple interest at the rate of 1.05 times 1-year SBI MCLR plus 100 basis points prevailing as on 1st April of the financial year in which such excess recovery was made. Provision may be modified as below ;***

10.(3)…….

Provided that in case the final tariff determined by the Commission is lower than the interim tariff by more than 10%, the generating company or transmission licensee shall return the excess amount recovered from the beneficiaries or long term customers, as the case may be with simple interest at ~~1.20~~ 1.05 times of the rate worked out on the basis of 1 year SBI MCLR plus 100 basis points prevailing as on 1st April of the financial year in in which such excess recovery was made.

Regarding difference in AddCap, it is submitted that the expenses incurred during AddCap or contract closing stages of the project can vary depending upon number of factors, which may be beyond the control of the licensee (viz. price variation due to inflation, claims and counter claims, arbitration awards, retention payments, defect liability etc.). Further, these differences in AddCap may be due to spill over from one year to another. Therefore, it is proposed that there should not be any difference in interest rate applicable for capital expenditure or additional capitalization being excess or shortfall than that projected. ***Both scenarios should be treated the same and adjustment of both should be allowed at the same rate of 1-year SBI MCLR plus 100 basis points prevailing as on 1st April of the financial year in which such excess or under recovery was made.*** **In case deemed essential, it should be at the rate of 1.05 times 1-year SBI MCLR plus 100 basis points prevailing as on 1st April of the financial year in which such excess recovery was made.** ***Provision may be modified as below ;***

10. (8) Where the capital cost approved by the Commission on the basis of projected additional capital expenditure exceeds the actual trued up additional capital expenditure incurred on a year to year basis by more than 10%, the generating company or the transmission licensee shall refund to the beneficiaries or the long term customers as the case may be, the tariff recovered corresponding to the additional capital expenditure not incurred, as approved by the Commission, along with simple interest at ~~1.20~~ 1.05 times of the rate worked out on the basis of 1 year SBI MCLR plus 100 basis points as prevalent on 1st April of the respective year.

2.7. Raising of Differential Bills

Draft CERC Tariff Regulations, 2024

10.(7) Subject to Sub-Clause (8) below, the difference between the tariff determined in accordance with clauses (3) and (5) above and clauses (4) and (5) above, shall be recovered from or refunded to, the beneficiaries or the long term customers, as the case may be, with simple interest at the rate at the rate equal to the 1 year SBI MCLR plus 100 basis points prevailing as on 1st April of the respective year of the tariff period, ***in six equal monthly instalments.***

Provided that the bills to recover or refund shall be raised by the generating company or ***the transmission licensees within 30 days from the issuance of the Order.***

Provided further that such interest, including that determined as per sub-clause (8) of this regulation shall be payable till the date of issuance of the Order and no interest shall be allowed or levied during the period of six-monthly instalments.

Provided further that in case where money is to be refunded and ***there is a delay in the raising of bills by the generating company or transmission licensees beyond 30 days from the issuance of the Order, it shall attract a late payment surcharge*** *as applicable in accordance with these regulations.*

Our Comments/Suggestions

Regarding raising of bills for recovery or refund of differential tariff, it is submitted that for all ISTS Transmission licensees, bills for differential tariff if any are raised by CTUIL in Second Bill in accordance with CERC Sharing Regulations and Billing, Collection and Disbursement Procedure. Second Bills are raised on a quarterly basis as per the regulatory provisions and Transmission Licensee has no control in raising of such bill.

Therefore, in proposed proviso first and three of Regulations 10 (7), the word "or transmission licensees "needs to be deleted and no additional penalty be imposed on the Transmission licensee for any delay in raising the bill for recovery or refund if any by CTUIL. Rather, suitable provisions may be provided in Sharing Regulations to address the timeline for raising differential bills.

Regarding six equal monthly instalments, it is submitted that such delay in payment under installments are not covered under tariff norms set for 'Interest on Working Capital' and therefore payment in installments increases the working capital requirement for Transmission companies. Further, unlike Generation, Sharing of Transmission charges is done under pool system where any under recovery is to be shared by all Licensees. Further, the pooled billing under the Sharing Regulations is done by the CTU which comprises the billing pertaining to TBCB licensees also. Installments availed lead to deferred recovery of all licensees without any fault of them. Not only considering the interests of Discoms, but a balance is also required to be achieved from Licensee's perspective also. ***Thus, options for instalments may not be provided in respect of dues of transmission licensees***.

Alternatively, if felt necessary, it is submitted that the modalities regarding the same is to be streamlined. It is understood that some DICs unnecessarily delay intimation regarding their decision to avail instalment whereas some beneficiaries may want to avail less than 6 installments as per their choices. Therefore, in case instalment is provided then

- Regulation should provide that beneficiaries should intimate their decision for availing instalments within 15 days of raising of Bills and such instalments alongwith carrying cost may be allowed by CTU with the payment of first installment commencing on the 30th day from the date of raising the bill.
- Simple interest at the rate of 1 year SBI MCLR plus 100 basis points prevailing as on 1st April of the respective year may also be made applicable for such installments.

Therefore, Regulations 10. (7) may be modified as below;

10.(7) Subject to Sub-Clause (8) below, the difference between the tariff determined in accordance with clauses (3) and (5) above and clauses (4) and (5) above, shall be recovered from or refunded to, ……., as the case may be, with simple interest at the rate at the rate equal to the 1 year SBI MCLR plus 100 basis points prevailing …… of the tariff period, ***in maximum of six equal monthly instalments***

Provided that the bills to recover or refund shall be raised by the generating company ~~or the transmission licensees~~ ***within 30 days from the issuance of the Order.***

Provided that the bills to recover or refund for the transmission licensees shall be raised by CTUIL in accordance with the provision of Sharing Regulations.

Provided further that such interest, including that determined as per sub-clause (8) of this regulation shall be payable ~~till the date of issuance of the Order and no interest shall be allowed or levied~~ during the period ~~of six-~~monthly instalments availed at the rate equal to the 1 year SBI MCLR shall also be applicable.

Provided further that in case where money is to be refunded and there is a delay in the raising of bills by the generating company ~~or transmission licensees~~ beyond 30 days from the issuance of the Order, it shall attract a late payment surcharge as applicable in accordance with these regulations.

2.8. Revision in Tariff as a consequence of Orders in Review Petition or Judgment by APTEL/Higher Court

Draft CERC Tariff Regulations, 2024

No Provision is provided.

Our Comments/Suggestions

Draft Regulation provides various regulations regarding recovery/refund of differential tariff on account of revision of tariff in 'Chapter-3 i.e Procedure for Tariff Determination'. Apart from the conditions envisaged in draft Regulations, there can be other cases such as when the tariff approved by Hon'ble Commission is challenged by either Petitioner or Respondent in CERC or APTEL / any other court, and either tariff or sharing is revised by way of subsequent orders.

Number of such cases have increased during ongoing 2019-24 block. Generally, it takes considerable time to get orders in such cases. Further, there is always a risk that either the Petitioner or the respondent may further challenge the subsequent order in next higher court. If any stay against original order is granted, such legal process affects the cash flow of the Transmission licensees.

Therefore, in such cases, carrying cost is required for Licensees for any upward revision of tariff or if excess tariff is already recovered the same has to be refunded/recovered along with carrying cost. Therefore, to avoid any dispute or litigation, it is requested that Tariff Regulations,2024 may provide a specific regulation in this regard as proposed below;

10. Determination of tariff

……..

(9) Where the tariff determined by the Commission is revised as a result of order in Review Petition or Judgement pronounced by APTEL or Judgement pronounced by any other higher court, the difference in tariff due to subsequent orders or judgment as the case may be, shall be recovered from or refunded to, the beneficiaries or the long term customers, as the case may be, with simple interest at the rate equal to the 1 year SBI MCLR plus 100 basis points prevailing as on 1st April of the respective year

2.9. In-principle Approval in Specific circumstances

Draft CERC Tariff Regulations, 2024

11. In-principle approval in specific circumstances: The generating company for a specific generating station or for an integrated mine or ***the transmission licensee undertaking any additional capitalization on account of change in law events or force majeure conditions may file petition for in-principle approval for incurring such expenditure after prior notice to the beneficiaries or the long term customers****, as the case may be, along with underlying assumptions, estimates and justification for such expenditure if the estimated expenditure exceeds 10% of the admitted capital cost of the project or Rs.100 Crore, whichever is lower.*

Our Comments/Suggestions

After commissioning of the project, the Transmission Licensees may require to modify/shift its assets through development of alternate solution either by using multi-circuit towers, raising height of towers or change the route of the line in order to address force majeure conditions of Right of Way (RoW) constraints due to urbanization, change in river course, execution of highway/railway line/other transmission lines in transmission tower route, etc. The execution of such works is required to be carried out by the Transmission Licensees in a time bound manner.

As per the regulations, an in-principle approval is required to be taken from the Commission for carrying out additional capitalization in such cases after prior notice to the beneficiaries. In fact, such works are planned by Planning Authorities and carried out by licensees as per the discussions and assessments of benefits in respective RPCs. Therefore, requirement of prior notice again to beneficiaries may be reviewed.

Since the petition filed by the Transmission Licensee for taking in-principal approval of the Commission shall also be sent to the beneficiaries as they shall be the Respondents of the petition, prior notice to them as such is not required. Instead, if required, such prior notice may be given to CTU. Therefore, the provision may be modified by deleting this requirement as provided below;

11. In-principle approval in specific circumstances: The generating company for a specific generating station or for an integrated mine or ***the transmission licensee undertaking any additional capitalization on account of change in law events or force majeure conditions may file petition for in-principle approval for incurring such expenditure after prior notice to*** ~~***the beneficiaries or the long term customers as the case may be***~~ ***CTUIL,*** *along with underlying assumptions, estimates and justification for such expend…….*

2.10. Refund when actual additional capital expenditure falls short of the projected additional capital expenditure

Draft CERC Tariff Regulations, 2024

13. Truing up of tariff for the period 2024-29

(4). ……...

Provided that if the actual additional capital expenditure falls short of the projected additional capital expenditure allowed under provisions of Chapter 7 of these regulations, the generating company or the transmission licensee, as the case may be, shall not be required to file any interim true up petition for this purpose and shall refund to the beneficiaries or the long term customers, as the case may be, the excess tariff recovered corresponding to the projected additional capital expenditure not incurred, in accordance with Regulation 10(7) and 10(8) of these regulations, as the case may be under intimation to the Commission:

Provided further that the generating company or the transmission licensee shall submit the complete details along with the calculations of the refunds made to the beneficiaries or the long term customers, as the case may be, at the time of true up.

Our Comments/Suggestions

The Transmission Charges are recovered from the beneficiaries based on annual fixed charges (AFC) approved by CERC as per the orders issued in the tariff petitions. The AFC approved by CERC are inter-alia based on admitted actual/projected expenditure and provisional parameters viz., funding, interest rate, MAT rate, etc. admitted in tariff petitions for the control period.

Regulation 13(4) provides for refund of excess tariff recovered on account of actual additional capital expenditure falling short of the allowed projected additional capital expenditure without requiring to file any interim true up petition.

Here it is to mention that apart from projected AddCap, excess tariff may also be due to decrease in other provisional parameters viz., funding, interest rate, MAT rate. During the 2019-24 block, interest rates have undergone high fluctuation mainly during Covid Period wherein interest rates reduced significantly. It also resulted in decrease in Actual tariff vis-à-vis approved tariff.

Considering the same, it is proposed that the regulation may provide that the Transmission licensee can refund excess tariff on accounts of other reasons also viz funding, interest rate, MAT rate, etc. without filing interim true up petition and submit the details of the same to Commission at the time of Truing up.

3. Chapter 5: Capital Structure

3.1. Treatment of grant in Capital cost

Draft CERC Tariff Regulations, 2024

18. Debt-Equity Ratio: (1) For new projects, the debt-equity ratio of 70:30 as on date of commercial operation shall be considered. If the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:

Provided that: ……

iii. any grant obtained for the execution of the project shall not be considered as a part of capital structure for the purpose of debt: equity ratio.

Our Comments/Suggestions

In certain cases, grants sanctioned to Transmission projects also specify some additional conditions to be fulfilled. In the past, in some of the projects like for STATCOM, 95% of the project cost was provided as grant but the remaining 5% of the project was totally considered as Equity instead of allowing at D:E ratio of 70:30 .

Further, in any project minimum equity is required to be allowed to balance the risks of the project with commensurate return and maintain the interests of the licensee. Otherwise in case of any major overhead over and above allowed O&M expense, project shall become unviable for Transmission licensee. ***Therefore, to balance the interest of Transmission licensee and Consumers, a minimum equity infusion is required to be allowed even after infusion of the grant.***

Considering above, it is proposed that the subject Regulation may be amended as below;

Provided that: ……

iii. any grant obtained for the execution of the project shall not be considered as a part of capital structure for the purpose of debt: equity ratio.

Provided that the conditions of sanction of grant and decisions taken during planning stage shall also be considered while admitting Capital cost and debt: equity ratio.

4. Chapter 6: Computation of Capital Cost

4.1. Exclusions from capital cost

Draft CERC Tariff Regulations, 2024

"19 (6) The following shall be excluded from the capital cost of the existing and new projects:
(a) The assets forming part of the project, but not in use, as declared … petition;
……...
(e) Proportionate cost of land of the existing project which is being used for generating power from generating station based on renewable energy; and
……..

Our Comments/Suggestions

Transmission utilities have some resources in the form of land banks and other enabling infrastructure and human resources that can be utilised to increase non-core revenues through lease, data centers, ecotourism, etc., POWERGRID in past has been in forefront to use such infrastructure to create long term business opportunities to optimise use of transmission infrastructure.

POWERGRID is also planning to explore opportunities in the renewable spaces and related green businesses to support the Government of India's vision of achieving Renewable Energy target of 500 GW by 2030. Installation of RE (especially solar power) requires the availability of large patches of land. In this regard, it may be noted that POWERGRID has availability of land in some of the projects across India which can be suited for Solar Generation. Further, considering PAN India presence of POWERGRID at more than 250 locations, it is also strategically placed for undertaking businesses like BESS, Green Hydrogen, EV Charging Station, etc.

Thus, enabling provisions in the Tariff regulations may also be provided to Transmission licensees, similar to Generation for allowing in principle approval for utilization of existing infrastructure for undertaking other businesses. In this regard, it is requested that proposed ***Regulation 19 (6)(e) may be extended for RE installations, Data Centre, Green Hydrogen, BESS, EV Charging Station etc in sub-station*** to optimize use of existing infrastructure. Accordingly following changes in proposed in subject regulation

(e) Proportionate cost of land of the existing Generation or Transmission project which is being used for generating power ~~from generating station~~ based on renewable energy or for any other associated business such as Data Centre, Green Hydrogen, BESS, EV Charging Station as approved by Commission; and ……..

This will additionally result in reduced transmission charges for beneficiaries through optimum utilization of the infrastructure as envisaged under the Electricity Act,2003.

4.2. Delay in Statutory Clearances

Draft CERC Tariff Regulations, 2024

"21 (5) If the delay in achieving the COD is attributable either in entirety or in part to the generating company or the transmission licensee or its contractor or supplier or agency, in such cases, IDC and IEDC due to such delay may be disallowed after prudence check either in entirety or on pro rata basis corresponding to the period of delay not condoned vis à vis total implementation period and the liquidated damages , if any, recovered from the contractor or supplier or agency shall be retained by the generating company or the transmission licensee, in the same proportion of delay not condoned vis à vis total implementation period.

Provided that in case of activities like obtaining forest clearance, NHAI Clearance, approval of Railways, and acquisition of government land, where delay is on account of delay in approval of concerned authority, ***in such cases maximum condonation shall be allowed up to 90% of the delay associated with obtaining such approvals or clearances.***

Our Comments/Suggestions

Transmission projects are linear infrastructure projects that span across different geographies utilizing land owned by public/private/ State/Forest. Some of the projects gets delayed due to delay in obtaining statutory clearances like forest clearance for transmission lines, acquisition of land for sub-stations, acquiring right of way for transmission lines, Law and Order issues, obtaining other clearances such as power line and railway crossings etc. which falls under the definition of Force Majeure events as per CERC Tariff Regulations and are beyond the control of the Utilities.

Despite challenges, POWERGRID implements most of the transmission projects/ elements within specified timeline by adopting best utility practices, project management, prudence and commitment. POWERGIRD officials gets actively involved with the authorities at Local, State and Central level to obtain clearances in a timely manner. Further, many steps have been taken in the past by POWERGRID in consultation with concerned Government departments, Ministries, Infrastructure developers to improve the system, timely review, escalation and resolution of the issues.

Regarding Forest proposals, it is submitted that POWERGRID as a utility takes all measures to submit complete proposals in line with the Ministry of Environment, Forests and Climate Change (MoEFCC)/ State Specific requirements. Wherever required POWERGRID takes the help of MoP and different Ministries, State Govts., various levels of Central govt. to minimize delay in forest approvals. As and when required, specific issues faced in expediting forest clearance are also brought to the notice of MoP e.g., for bringing changes in the PARIVESH portal for expediting forest proposals including notification of Standard Checklist required for submission of forest proposals by MoEFCC. MoP has taken up these issues with MoEFCC.

Senior management of POWERGRID also participates in Fortnightly Regional Coordination Meeting (FRCM) on Linear Project conducted by MoEFCC, wherein all heads of Integrated Regional Offices (IROs) of the Ministry meet with all User Agencies relating to forest and wildlife clearances in respect of linear projects. In these meetings POWERGRID Senior management takes up its issues for their timely resolution.

Further, if required matters where delay is attributed to factors outside the control of POWERGRID are also put up for resolution in PRAGATI (Pro-Active Governance and Timely Implementation) which is a three-tier platform (PMO, Union Government Secretaries, and Chief Secretaries of the States) to inter-alia monitor/review projects and to resolve issues under the chairmanship of Hon'ble Prime Minister.

Further, it is to mention the delays or inactive persuasion with the authorities for the clearances is never in favour of POWERGRID's interest as it results in deferred cash flow and reduction in envisaged return to the Company. A delay of 1 year even condoned reduces Effective RoE to 11.99% from 12.8 % when there is no delay. Therefore, POWERGRID always does its best to minimise the delay. In cases where delay is condoned but there is a mismatch with upstream/downstream network, then transmission licensees already have to pay charges for mismatch period which can be considerably high at times.

Furthermore, the Hon'ble Commission already considers delay on account of Uncontrollable factors such as acquisition of land as per the provisions of the Tariff Regulations. Thus, considering the entire delay on account of Uncontrollable factors as beyond the control of transmission licensee and then subsequently, penalising them by only allowing upto 90% of delay is contradictory.

Also there is no clarity on how the Hon'ble Commission will deal with the delay in case there is an overlap of period between delay due to statutory clearances and delay due to other reasons such as RoW issues etc.

Most importantly, efforts put in by POWERGRID has to undergo the litmus test of Prudence check by CERC and even in case of best effort by POWERGRID, sometimes delays are disallowed due to lack of proper documentation.

Based on the above discussion, it is requested that once the delay has been condoned, project should not be subjected to any further deduction / penalty. Considering that the utilities are automatically disincentivized if the project gets delayed, if any such additional penalty is imposed, it will lead to further loss to developer without any fault. Such approach may unnecessarily result in increased uncertainty and risk in the sector and will affect Investor's sentiment. Hence, it is requested that when the delay is on account of statutory clearances, maximum condonation shall be allowed up to 100% of the delay associated with obtaining such approvals or clearances and no penalty be imposed on the Utilities.

4.3. Uncontrollable factors

Draft CERC Tariff Regulations, 2024

22. Controllable and Uncontrollable factors: The following shall be considered as controllable and uncontrollable factors for deciding time overrun, cost escalation, IDC and IEDC of the new projects:

……

(2) The "uncontrollable factors" shall include but shall not be limited to the following:

a. Force Majeure events;

b. Change in Law; and

c. Land acquisition except where the delay is attributable to the generating company or the transmission licensee.

Our Comments/Suggestions

Delay in obtaining forest clearance is a major factor contributing to time and cost over-runs in implementation of projects and POWERGRID proposes to identify the same as an uncontrollable factor.

It is highlighted that getting statutory clearances from Railways is another arduous task which consumes considerable time and effort. In some cases, the consequences of delay in getting Forest / railway clearances have been so severe that the commissioning of projects have been pushed back by years. Moreover, POWERGRID wishes to stress upon the fact that obtaining shutdown in case of power line crossings in new projects is also a major area of concern during execution of projects. There are technical constraints in obtaining shutdown of lines associated with Renewable Energy (RE) Generating Stations, which are 'Must-Run' in nature, and high capacity thermal plants, which are required to operate at technical minimum. This usually leads to non-issuance of timely shutdown by RLDCs (despite the shutdowns being approved in OCC meetings in some cases) and ultimately prevents commissioning of projects within scheduled time frame. Also, it is emphasized that abnormal amount of time is required for obtaining shutdown of power lines owned by State Discoms/Distribution Utilities, which in turn delays the projects. Though it is conceded that such delays are admitted by CERC on case to case basis, a regulatory provision supporting the same would make filing petitions less cumbersome for licensees.

Therefore, POWERGRID requests that the delay in obtaining forest clearance and other statutory clearances like Railway Clearance, Highway Clearance, delay in grant of Shutdowns by RPCs/RLDCs/SLDCs including power line crossings and shut down by RE plants etc. may also be covered under uncontrollable factor as they are beyond the control of Transmission licensees.

4.4. Initial Spares

Draft CERC Tariff Regulations, 2024

***23. Initial Spares**: Initial spares shall be capitalised as a percentage of the Plant and Machinery cost upto cut-off date, subject to following ceiling norms:*

(i) Transmission line including UG Cable - 1.00%

……..

Provided that:

……

Our Comments/Suggestions

Regarding High Voltage Underground cable, it is submitted that due to severe RoW issues and increasing urbanization, some projects are being planned considering a portion or complete transmission line with HV underground cables. In Tariff Regulations,2019, there is no norm specified for Initial Spares for HV Underground Cable Systems and therefore there is requirement of separate norms. In the draft Regulations, Underground cable is merged with Transmission Lines.

Here it is to mention that High Voltage Underground cable being an imported item and supplied by a few foreign manufacturers, the lead time of procurement here is much higher than any onshore equipment. Hence it is necessary to maintain an adequate supply of spares to take care of any contingency so that the system does not remain idle due to unavailability of spares.

In CERC Tariff Regulations 2019, for first time new technology equipment i.e., SVC/STATCOM, 6% of initial spares is allowed. Thus, in the past CERC has provided higher spare norms for new technology equipment. Considering that there is no historical data for HV underground cable (except "±320kV VSC based 2000 MW Pugalur (HVDC) - North Trichur HVDC(Kerala) HVDC link" project where Spares @3% were considered), and spare requirement may be unique and location/site specific, it would be difficult to arrive at a ceiling norm based on historical data. However, for system reliability, initial spare requirement is mandatory for HV cables also and therefore ***it is proposed that initial spare for High Voltage Underground Cables may be allowed based on actuals after prudence check on case to case basis as below;***

(i) Transmission line ~~including UG Cable~~ - 1.00%

……..

Provided that:

iv. Initial spare for High Voltage Underground Cables may be allowed based on actuals after prudence check on case to case basis

5. Chapter 7: Computation of Additional Capital Expenditure

5.1. Treatment of Additional Capitalization for land lease renewal

Draft CERC Tariff Regulations, 2024

25. Additional Capitalisation within the original scope and after the cut-off date:

(1) The additional capital expenditure incurred or projected to be incurred in respect of an existing project or a new project on the following counts …. may be admitted by the Commission, subject to prudence check:

(a) Payment made against award of arbitration or for compliance …..

(f) Works within original scope executed after the cut-off date and admitted by the Commission, to the extent of actual payments made; and

Our Comments/Suggestions

POWERGRID is presently maintaining multiple old Substations which were originally got transferred from different Utilities. Regarding such S/s, in many cases lands were taken on long term lease basis from other Utilities/Government bodies e.g Vizag S/s, Durgapur S/s. In general, the land lease for transmission projects is around 25 years. However, the system continues to work perpetually with modification/upgradation as and when required.

Lease of land for such S/s are getting expired and original owners are proposing POWERGRID to renew lease or purchase lands at prevailing market price. Quoted Land/Lease costs for such S/s are exorbitantly high and even higher than original project cost. Such expenditure is capital expenditure in nature with significant cost implication. Lands being part of original project, such expenditures qualify as Additional Capitalisation within the original scope and after the cut-off date. However, presently no regulation covers such expenditure, but such cases may increase in future also.

Therefore, it is proposed that Regulations may allow such costs as AddCap and in cases where apart from onetime payment, annual lease payment is also to be made, the same shall also be allowed to be billed as per actuals. Thus, new proviso may be added.

25. Additional Capitalisation within the original scope and after the cut-off date:

(1) The additional capital expenditure incurred or projected to be incurred in respect of an existing project or a new project on the following counts …….

(f) Works within original scope executed after the cut-off date and admitted by the Commission, to the extent of actual payments made; and

(g) One time Payment on renewal of lease hold land as per actuals

5.2. Additional Capitalisation within the original scope and after the cut-off date

Draft CERC Tariff Regulations, 2024

25. Additional Capitalisation within the original scope and after the cut-off date: …….

(2) …….

Provided that any claim of additional capitalisation with respect to the replacement of assets under the original scope and on account of obsolescence of technology, less than Rs. 20 lakhs shall not be considered as part of Capital cost and shall be met by Generating company and Transmission licensee through normative O&M charges only.

26. Additional Capitalisation beyond the original scope

……..

(2) Any claim of additional capitalisation less than Rs. 20 lakhs shall not be considered under Clause (1) of this regulation.

Our Comments/Suggestions

As discussed above at Para 1.3 regarding definition of 'Operation and Maintenance Expenses' or 'O&M expenses', additional capitalisation less than Rs. 20 lakhs should not be considered as O&M expense and may be made applicable for Generation only.

The actual expenditure submitted to CERC by POWERGRID, for determination of O&M charges for 2024-29 block do not include such expenditure which have already been allowed by Commission under Additional capitalization. Therefore, reference to O&M expenses', additional capitalisation less than Rs. 20 lakhs' may be deleted as shown below;

25. Additional Capitalisation within the original scope and after the cut-off date: …….

(2) …….

Provided that any claim of additional capitalisation with respect to the replacement of assets under the original scope and on account of obsolescence of technology, less than Rs. 20 lakhs shall not be considered as part of Capital cost and shall be met by Generating company ~~and Transmission licensee~~ through normative O&M charges only.

26. Additional Capitalisation beyond the original scope

……..

~~(2) Any claim of additional capitalisation less than Rs. 20 lakhs shall not be considered under Clause (1) of this regulation.~~

6. Chapter 8: Computation of Annual Fixed Cost

6.1. Norms for New Transmission Projects

Chapter 8 (Computation of Annual Fixed Cost) inter-alia covers computation of AFC components such as Return on Equity, Depreciation, and Interest on Loan. The Hon'ble Commission has proposed different norms for Return on Equity, Depreciation, and Interest on Loan for existing and new Transmission projects i.e. those achieving COD on or after 1.4.2024. Detailed suggestions related to these components have been provided in the subsequent paras below. However, regarding cutoff date i.e. 01.04.2024 for different norms, following is submitted.

- Investment decisions, financial closures etc. for the projects conceived during the 2019-24 control period were taken on the basis of prevailing parameters/norms and returns as provided in the CERC Tariff Regulations 2019. Change in the methodology for the computation of Annual Fixed Cost for such projects will bring regulatory uncertainty and complexity .
- Further, if the new projects are defined as the ones which have achieved COD on or after 1.4.2024, then there might be a possibility that for the same projects some elements may get commissioned prior to 31st March 2024 and remaining elements to be commissioned after 1.4.2024. In such a scenario, two different norms will prevail for different elements of the same project. As long as assets are of same project and provide the same level of service, then there is no justification for a differentiated return between the two categories.
- These two sets of assets in the same project will never be combined during the true-up owing to different norms of RoE, Depreciation and Interest on Loan. Therefore, it will again increase the complexity of Tariff Determination process wherein One project shall continue throughout its life as Two projects for tariff determination process ultimately resulting in regulatory overburden on Commission itself.
- The proposed definition of new projects will further complicate the interest on loan calculations, as IoL for some assets will be calculated based on weighted average rate of interest for actual/allocated loan portfolio of the project, and IoL for the remaining assets will be calculated based on the weighted average rate of interest calculated based on the actual loan portfolio of the Company.

Therefore, it is recommended that the different tariff norms as discussed above should be made applicable for only the projects for whom the Investment Approval has been accorded on or after 1.4.2024. For projects achieving COD on or after 1.4.2024 but whose Investment Approval was given prior to 1.4.2024, norms as prevailing for existing projects may continue to be allowed.

6.2. Return on Equity

6.2.1. Maintenance of Existing Rate of Return on Equity

Draft CERC Tariff Regulations, 2024

30. Return on Equity: (1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with Regulation 18 of these regulations.

(2) ***Return on equity for existing project shall be computed at the base rate of 15.50% for*** *thermal generating station,* ***transmission system including communication system*** *and run-of- river hydro generating station and at the base rate of 16.50% for storage type hydro generating stations, pumped storage hydro generating stations and run-of- river generating station with pondage;*

(3) ***Return on equity for new project achieving COD on or after 01.04.2024 shall be computed at the base rate of 15.00% for the transmission system****, including the communication system, at the base rate of 15.50% for Thermal Generating Station and run-of-river hydro generating station and at the base rate of 17.00% for storage type hydro generating stations, pumped storage hydro generating stations and run-of-river generating station with pondage;*

Our Comments/Suggestions

For Transmission, Hon'ble Commission in the draft Tariff Regulations,2024 has proposed different rate of RoE for Existing Projects and New Projects.

- For Existing Projects, the rate of RoE has been retained at 15.5%.
- For New Projects, the rate of RoE is provided as 15%.

As Tariff is determined on multiyear principles, maintaining regulatory certainty over each control period is of utmost importance to maintain Investor confidence. Stable regulatory environment as being provided by Hon'ble Commission to all the stakeholders has been the key to the growth of Power Sector and considering the transition phase wherein on one hand huge investment is required for Renewable integration and to meet fast growing power demand, at the same time, the nature of grid including demand pattern and power flow is also undergoing massive change. At this juncture of transformation, Regulatory uncertainty is to be avoided and therefore POWERGRID appreciate that the Hon'ble Commission has rightly maintained rate of RoE at 15.5 % for existing projects.

However, the proposed RoE of 15% for new projects is neither commensurate with the investment risks in Transmission nor sufficient to meet the growing investment needs. Therefore, ***we request the Hon'ble Commission to maintain rate of RoE at 15.5% for new Projects also.*** *In this regard our detailed submissions are as below;*

A. Risk in Transmission Business

In a Regulated Tariff Mechanism, the utilities are allowed to earn reasonable return on their investments as a compensation for assuming the investment related risks. It is based on the principle of opportunity cost and risk premium for the investments made in the sector. The rate of Return on Equity is determined based on the assessment of overall risk and the prevalent cost of capital. Further, it should allow generation of reasonable surplus and attract investment for the growth of the sector. Para 5.8.4 of NEP, 2005 provides that Return on investment will need to be provided in a manner that the sector is able to attract adequate investments at par with, if not in preference to, investment opportunities in other sectors.

To ensure that it is fair to both the investors and the consumers, the return allowed should be commensurate with the returns available from alternate investment opportunities having comparable risk. Power projects or Inter-State Transmission Lines are complex, capital intensive and require a higher gestation period of about 2 to 4 years. The equity deployment starts with land purchase & other development activities and debt is deployed only after investment approval. While interest on loan during construction period is considered as part of project cost, no ROE is allowed during the construction period which brings down the effective returns to the developer. The effective return reduces with delay in construction of the project which may be due to uncontrollable factors including challenges in RoW, topography etc. Even if delays are condoned, it pulls down the overall IRR of the project as no return on equity deployed during the construction period is permitted,. For a delay of 1 year, the effective rate of return reduces from 12.88 % to 11.9%. As delay increases, effective return further decreases as shown below:

S. No.	Delay in COD	Effective ROE (%)*
1.	No Delay	12.88
2.	1 year	11.99
3.	1 year (Cost overrun disallowed in tariff)	Gets below 10%

**Calculation provided at Annexure C*

Further, Transmission assets face a variety of risk as highlighted below:

Construction Risk

Execution of transmission projects face various risks during the construction period starting from land acquisition, environment, forest and other clearances, challenges related to obtaining Right of Way in varying terrain spanning across the length and breadth of the country and involving agencies across multiple states, Supply chain disruptions due to Force majeure and geo-political events etc. Recent experiences of stringent Environmental norms, GIB issue etc. has proven that risk of construction is increasing. Over the period, RoW issues have also increased due to various factors:

1. Non-availability of Land
2. Procurement of Land
3. Statutory Clearances

Since transmission utilities operate in a vastly distributed area, the RoW issues continues to be a major issue and needs to be managed spanning across various states and various jurisdictions.

Operational Risk

Considering frequent cyclones, natural calamity and climate change effect, Operational risks in transmission is also significant. The details of major disasters that has happened in last 5 years is provided below:

1. UP & Bihar Floods (2022)
2. Cyclone Asani (2022)
3. Assam Earthquake (2021)
4. Cyclone Gulab (2021)
5. Cyclone Tauktae (2021)
6. Cyclone Yaas (2021)
7. Maharashtra Floods (2021)
8. Cyclone Nisarga (2020)
9. Cyclone Nivar (2020)
10. Kerala, Assam & Hyderabad Floods (2020)
11. Karnataka & Kerala Floods (2019)
12. Cyclone Fani (2019)
13. Bihar Floods & heatwave (2019)

Increased disputes and litigations especially regarding mismatch issues and Sharing mechanism involving Generators, Discoms, Other transmission licensees, STUs etc. has posed new uncertainty and risk on recovery of transmission charges. ***The returns for a Transmission Licensee must be in line with risk perception and market expectations and we feel that construction, operation and payment risks are more in transmission and only increasing day by day.***

B. No avenues for additional revenue from Transmission Business apart from Annual Fixed Charge (AFC)

For Transmission, the upside revenue is capped i.e. maximum at an availability of 99.75% and there are negligible avenues to earn extra revenues. In case if availability goes below 98%, AFC decreases proportionally and there is no limit to downside.

Further, unlike Transmission utilities, Generators have other avenues for additional revenue from Business. Hydro generators can earn additional revenues through the sale of secondary energy and additional revenue from overachievement of NAPAF, however, in case of underachievement, they are allowed to recover the total AFC. For thermal generation, they can earn additional revenue through

- Sale of unscheduled power in market, UI, sale of ancillary services,
- Efficiency gain in Controllable parameters i.e., Station Heat Rate; Secondary Fuel Oil Consumption; and Auxiliary Energy Consumption.
- Proceeds of carbon credit under Clean Development Mechanism
- Under SCED schemes, flexible operations based on GoI policy on flexibility.

Furthermore, the Draft Regulations, 2024 propose the following incentives to generating stations:

- Additional Incentive of upto 1% of AFC based on frequency-based response, which will take into consideration generation as per system demand rather higher generation only.
- Incentive for excess generation (above normative PLF) during peak hours has been increased from 65 paise/kWh to 75 paise/kWh for exceeding the generation during peak hours.
- Incentive on recovery of capacity charges based on frequency response performance for the month introduced (higher incentive of 4% for hydro as compared to 1% for thermal)
- Additional incentive @INR 0.50 per unit has been proposed for RoR hydro project for exceeding generation during peak hours in excess of average generation during day

It is pertinent to note that the Transmission licensees play a pivotal role in the power sector, ensuring the efficient and reliable delivery of electricity from Generation utilities to Distribution utilities and ultimately to end consumers. ***The Draft Regulations propose several incentives to generation companies, but no additional incentives have been proposed for transmission licensees and in fact, it has been proposed to reduce RoE for new projects.*** Further, other avenues of revenue for Transmission such as STOA charges have been withdrawn over time. Even the additional Return on Equity of 0.5% for timely completion of projects which was provided in Tariff Regulations, 2014 was also discontinued in the Tariff Regulations, 2019.

While it is understood that the aim of the regulation is to balance the interests of utilities and consumers, it is also important to consider the long-term implications of such a reduction. Lower returns could deter investment in the transmission sector, which could, in turn, impact the reliability and efficiency of power transmission.

C. Regulatory Certainty

Regulatory certainty is an integral part of tariff approach for attracting requisite investments into the sector. The Tariff should also reflect the changing market condition and macroeconomic parameters. ***As the tariff is determined on multiyear principles, it is important to maintain certainty in approach over each control period to maintain the confidence of investors and regulated entities. Any major departure in established regulatory approaches creates considerable risk for regulated entities.*** This is particularly so for existing assets which have been set up based on the

prevailing regulations and tariff principles applicable at the time of the assets being planned.

D. Investment Requirement in Sector

Considering the fast pace with which different sectors in the country are growing, resource allocation among different sectors is becoming very tough and competitive. Power Sector requires investment from Domestic as well as International Investors. To attract international investors the return in generation/ transmission business in India should be at par if not more than the return allowed by regulators in other countries.

The Government of India has set an ambitious target of 500 GW of renewable generation by 2030. For required energy transition to RE, we need to preserve existing assets and continued operation is to be incentivized.

Further, according to the CEA's Draft National Electricity Plan-II (transmission) published in December 2023, an estimated expenditure of Rupees 4,75,804 Crore would be required for implementation of additional transmission system of 220 kV and above voltage level in the country (Transmission lines, Substations, and reactive compensation etc.) during the period 2022-27.

Reduction in IR by Rs. 1000 Cr will cause a fall in the investment potential of the companies by Rs. 3300 Cr annually. ***The ability to raise capital from the market by POWERGRID is limited as the current GoI shareholding is already down to 51.34%.***

E. Impact of revision in RoE

- **Increase in borrowing cost**

POWERGRID is highly leveraged. RoE has impact on credit metrics such as Interest Coverage ratio, Debt service ratio, Debt: EBIDTA, FFO: Debt (Funds from operation to debt) which are critically viewed by the rating agencies as well as debt investors.

Historically, POWERGRID has been able to debt finance its capex at a much cheaper rate of 7.0%-9% p.a. with a tenure of 10-15 years whereas the two public sector funding agencies viz. Power Finance Corporation and Rural Electrification Corporation offers long term loans at a rate from 10% - 12% p.a.

The existing loan portfolio of POWERGRID stands at around Rs. 1,20,000 Cr and even slight increase in debt rate may have a high additional implication on the beneficiaries as debt servicing is pass through in tariff. The benefits of lower RoE if any (on 30% of project cost) may be partially offset by the increase in tariffs due to higher cost of debt on 70% of the project cost. Increase in cost of borrowing may significantly wipe out the benefit of lower RoE.

- **Insignificant benefit to end Consumers**

Forum of Regulator in its report dated Apr,21 "Analysis of Factors Impacting Retail Tariff And Measures To Address Them" as referred in approach paper has pointed that

"The contribution of RoE on generation, transmission and distribution, in respect of 12 States were studied. It transpired that if the RoE was reduced from 15.5% to 14%, there would be reduction of 2 paisa per unit of retail tariff ".

Thus, it is evident that reduction of Rate of RoE has negligible impact on overall cost of power to the end consumer, but it may end up in creating adverse financial situation for Generators and Transmission Companies.

F. Other points to be considered.

- Generation and Transmission projects under RTM has been acting as backbone of the entire Power System and despite being adverse market reality faced in past especially when Power sector companies are going in Insolvency, RTM projects have prevented the Power Sector from collapsing.

- RoE in CERC regulations acts as a guiding principle for SERCs. Any reduction at this stage will also impact future investment in Intra State and Distribution sectors which are in dire need of investment.

- Cashflows generated in RTM is utilised by PSUs to invest in new projects for technologies and R&D activities required in the Sector. R&D activities are essential to bring in new technologies and best practices in Sector.

- POWERGRID Substations are mostly located at remote locations away from Towns where working environment is inherently tough. Unlike Generation projects, facilities like School, Hospitals etc. cannot be provided in Substations. In some cases, such locations are hardship and very tough and snow filled location in J&K, Ladakh which remains inaccessible for most of the time. Some locations are situated in Insurgency affected areas. Employee morale has to be kept high. PRP and Profitability of Company is one of the major factors which makes the employee feel proud & keep them motivated.

- POWERGRID has close to 49% public shareholding. Changing the returns on the investments already done may not send right signals to existing and potential investors and would ultimately result in fall in shareholder wealth due to lower market capitalization.

G. Summary of Expected Return on Equity using different methods

Returns on the projects need to be commensurate to movement of G-Sec rates & Market risk perception in power sector as captured by CAPM method. The current 10-year G-Sec yield is around 7.48% which is almost the same as it was at the time of the commencement of the current tariff period, i.e., April 2019. An analysis is done wherein expected rate of return in Transmission, and other regulated sectors in India is done and the result is shown below which suggests higher return for Transmission than allowed 15.5 %.

Method	Expected RoE	Key Takeaways
CAPM – India Transmission Entities	**15.94%**	• Market return premium for Indian transmission business works to be 8.46%. • Adding risk free rate of 7.48%, the expected return works out to 15.94%
Aviation	**15.41%**	• For an entity like airport with limited geographic spread, the allowed return is ~15% with high allowable equity base compared to Transmission.
Natural Gas	**22.66%**	• For a sector requiring infrastructure spread across a larger geography, the allowed return is significantly higher than transmission business.

Detailed calculations provided at Annexure-C

It can be observed that using the CAPM method, the expected return works out to be 15.94%, much more than the proposed RoE of 15.00% for new projects.

H. RoE for new Projects:

Return on Equity is proposed to be reduced from 15.50% to 15% for new transmission projects. As mentioned in the Explanatory Memorandum, the proposed reduction in the RoE to 15% is considering a lesser gestation period for transmission licensees compared to generation companies. Further, the average of the actual gestation period for the transmission projects is approximately 3-4 years, which is higher than the Hon'ble Commission's referred gestation period of 2-3 years. (Reference: CEA report on the Completed Transmission Projects awarded through Tariff Based Competitive Bidding (TBCB) Route as on 31.12.2023). Further, according to the International Energy Agency (IEA) report, on an average lead time needed to build new electricity grid assets in Europe and the United States (2010-2021) is around 5.83 years. This shows that with time as the operational and construction risks are increasing for the Indian transmission utilities as the grid density has increased over the time, the issues pertaining to RoW and statutory clearances are also increasing over the time, gestation period for transmission will only increase.

It is understood that even in TBCB projects, discussions in CEA and other planning forums are underway to review small gestation periods as being proposed today. Even for RTM projects, it is submitted that all transmission projects irrespective of mode of implementation are interlinked eg. Bays being constructed under RTM may be for Transmission lines being constructed in TBCB and vice-versa. As all interlinked Transmission assets have to come in matching timeframe, there cannot be different gestation period for interlinked transmission assets based on mode of implementation.

Therefore, the purpose of RoE is to truly reflect the risk posed by the transmission licensees. It can be concluded that the proposed 15.00% as the rate of Return on equity for new assets is inadequate for transmission business in India. Further, as discussed, RoE being only source of return to be pooled for new investments should not be differentiated for Transmission linking it with Generation. Any additional RoE for Generation or other incentives deemed appropriate may please be given to Generation.

Proposal:

Considering above justifications, POWERGRID maintains that to maintain Regulatory Certainty, to protect investment made in past based on then prevailing norms and considering investment requirement in Sector**, *Rate of RoE for existing projects should be maintained at 15.5% if not higher***.

Regarding new assets, it is to mention that as mentioned above considering increased risks in Transmission, RoW issues etc. and considering that as long as assets of different vintage provide the same level and quality of service, there is no justification for a differentiated return between the two categories. Therefore, there shall be no differentiation between old and new projects in determining the rate of return. If in case ***Hon'ble Commission decides to keep the RoE for new projects as 15%, it should be done only for the projects whose Investment Approval is done post 31.03.2024 as discussed at para 6.1 above.***

6.2.2. Reduced Return on Equity on additional capitalization after cut-off date and beyond the original scope

Draft CERC Tariff Regulations, 2024

30(3) Return on equity for new project achieving COD on or after 01.04.2024 shall be computed at the base rate of 15.00% ….;

Provided that return on equity in respect of additional capitalization beyond the original scope, including additional capitalization on account of the emission control system, Change in Law, and Force Majeure shall be computed at the base rate of one-year marginal cost of lending rate (MCLR) of the State Bank of India plus 350 basis points as on 1st April of the year, subject to a ceiling of 14%;

Our Comments/Suggestions

All laws of the land are dynamic in nature and with time it undergoes modifications and amendments. It is not possible to ascertain these future "change in law" events and subsequent financial impacts. At times these may lead to large investment requirements. Transmission licensees at that stage will have no option but to do the investment in accordance with the law.

In case if adequate return on this investment is not provided, it will adversely impact the return of overall project. Further, in cases where investments required are very high, it may make the project financially unviable without adequate return.

Therefore, the equity investment on account of additional capitalization due to Change in Law cannot be treated any differently from equity investment during construction of asset and should be allowed the same fair rate of return. Further, the return allowed on equity investment cannot be compared with that of debt, which is a fixed income instrument. Differential RoE will discourage the utilities in taking up such works.

Further, the lenders do not fund the entire cost and insist for deployment of equity for a portion. Since the risk borne by the equity holders and lenders is different, it is not appropriate to compensate equity component at the cost of debt. ***Thus, it is suggested that the return on the entire equity invested at any stage of the project should be allowed at the same proposed rate i.e., 15.5%.***

6.3. Interest on loan capital for new assets

Draft CERC Tariff Regulations, 2024

(6) In the case of New Project(s), the rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio of the generating company or the transmission licensee, as the case may be;

Our Comments/Suggestions

Computation of Interest on Loan is differentiated for Existing Projects and New Projects in the Draft CERC Regulations 2024.

- For Existing Projects, the rate of interest considered as the weighted average of the actual/allocated loan portfolio of the project/asset which results in Interest on Loan being approved on the basis of actuals.
- For New Projects, the rate of interest considered is the weighted average of the actual loan portfolio of the Company. The Draft 2024 Tariff Regulations does not clarify how the WAROI would be computed in the case of New Projects.

For the last 1 year, interest rates have increased significantly and presently we are in a high interest rate regime which is expected to remain similar in near future. Therefore, loans proposed to be deployed in new projects will have significantly higher rates compared to weightage average of past loans. As old loans shall continue to be used to calculate IoL for existing assets, beneficiaries shall continue to avail benefits of the cheaper loans availed in past. However, on the other hand the same old loans will result in lower IoL for new projects ultimately resulting in lower recovery to transmission utility compared to actuals.

Therefore, to simplify the IoL determination as intended through proposed regulation and to ensure actual IoL for transmission licensees, ***it is suggested that the loan availed from 1.4.2024 onwards may only be considered for computing the year wise Weighted average rate of debt for allowing the Interest on Loan for the transmission licensee.***

Further, separate weightage rate of interest for Domestic loans and foreign loans may be calculated as there can be major difference in their rates. FERV on foreign loans shall continue to be allowed as per actuals as proposed in draft regulations.

6.4. Depreciation

6.4.1. Classification & Depreciation Rate for IT equipment and Software

Draft CERC Tariff Regulations, 2024

33.(6) Depreciation for New Projects shall be calculated annually based on the Straight Line Method and at rates specified in Appendix-II to these regulations for the assets of the generating station and transmission system:

Provided that the remaining depreciable value as on 31st March of the year closing after a period of 15 years from the effective date of commercial operation of the station shall be spread over the balance useful life of the assets.

Our Comments/Suggestions

Depreciation is a major component of the annual fixed cost and is designed so as to meet the debt service obligation of Utilities. As debt obligations has to be met in initial years, therefore higher depreciation has been allowed in initial 12 years.

POWERGRID supports all the steps which could bring in relief to consumers including the instant proposed Regulation wherein depreciation rate for TL & Substation in new projects is specified considering a loan tenure of 15 years instead of the current practice of 12 years. This will provide relief to DICs in the form of reduced tariff in initial years.

However, it is requested that the transmission licensee should be allowd to recover 70% of the total value in the initial 15 years to ensure that the debt of the transmission licensee can get serviced. Therefore, rate of depreciation may be provided as **70/15 i.e 4.67% not 4.22%.**

Further, minor editorial changes is proposed in the regulation for better clarity;

(5) Depreciation for Existing Projects shall be calculated annually based on the Straight Line Method and at rates specified in Appendix-I to these regulations for the assets of the generating station and transmission system:

Provided that the remaining depreciable value as on 31st March of the year closing after a period of 12 years from the effective date of commercial operation of the generating station or transmission elements as applicable shall be spread over the balance useful life of the assets.

33.(6) Depreciation for New Projects shall be calculated annually based on the Straight Line Method and at rates specified in Appendix-II to these regulations for the assets of the generating station and transmission system:

Provided that the remaining depreciable value as on 31st March of the year closing after a period of 15 years from the effective date of commercial operation of the generating station or transmission elements as applicable shall be spread over the balance useful life of the assets.

6.4.2. Classification & Depreciation Rate for IT equipment and Software

Draft CERC Tariff Regulations, 2024

1.2.1. Appendix – I Appendix – II (Sl. No. o & p) – Depreciation rate @15% for IT equipment and Software.

Our Comments/Suggestions

PMUs (URTDSM) are installed at the substations and are used to collect the data of voltage, current, frequency, power flows, phase angle etc. and transmit the values along with the digital status of equipment to upstream control center for further analysis and visualizations. This equipment by and large is electronic equipment with processors and embedded software which also have nearly the same life cycle as IT equipment, therefore, generally falls in the category of IT equipment. Therefore, clarification may be provided to include this equipment under IT equipment and software.

Further, Hon'ble Commission vide order dated 15.12.2022 in petition no 728/MP/2020 has already allowed depreciation rate of 15% for UNMS project, similar to communication projects, with useful life translating to 7 years.. Further, URTDSM is also similar to Communication System. It has already been prayed to consider the useful life of OPGW as 15 years.

Since the useful life of software is very short – approx. 3 years, therefore, the software should be allowed to be depreciated at much faster rate. CERC (Fees and Charges of Regional Load Despatch Centre and other related matters) Regulations, 2015 (RLDC Regulation) have provisioned that the software assets are to be depreciated at 30%.

Keeping in view the above, the depreciation rate for software may be provisioned as 30% in line with the RLDC Regulations and accordingly, the depreciation table may be modified as under:

S. No.	Asset Particulars	Depreciation Rate
o	**Communication equipment System**	
(i)	Radio and high frequency carrier system	15%
(ii)	Telephone lines, telephones & Telephone Exchange	15%
(iii)	Fibre Optic Cable	6.33%
(iv)	FOTE (Fibre Optic Terminal Equipment)	15%
(v)	UNMS	15%
(vi)	Software	30%
p.	IT Equipment including Software, SCADA, Cyber Security System, REMC, WAMS etc.	15%

Further, as mentioned at para 1.6 and 1.7 above, as all such Semiconductor and Electronic devices have no Salvage or residual value, rather, cost is incurred in disposing

of such equipment. With reference to the definition of communication system, Fiber Optic Cable includes OPGW, ADSS, Wrap Type, Approach cable etc. OPGW has earth wire component which can have salvage value after disposal but the ADSS, WRAP Type, Approach cable etc would not have any salvage value.

It is, therefore, submitted to consider the salvage values of these equipment as zero (except OPGW Fiber cable) as all of them are IT equipment and have zero realizable value upon turning obsolete.

6.4.3. Salvage value of "Building & Civil works" may be considered as NIL

As per the Draft Regulations, salvage value of "Buildings & Civil works" shall be considered as 10%. However, Building & Civil works have no use after completion of their useful life. Unlike Transmission Lines or Substations, there will not be any leftover material in "Building & Civil works" which can be sold as scrap. Infact one has to incur expenses for demolition of Building & Civil works and to make the space usable.

Hence, salvage value of "Building & Civil works" may be considered as NIL and 100% depreciation may be allowed.

6.4.4. Salvage value of "State Sector ULDC/ Communication Assets" may be considered as NIL

In case of state sector ULDC/Communication Assets salvage value may be considered as NIL, as the ownership of assets needs to be transferred to the concerned DIC after completion of useful life. Therefore, 100% Depreciable may be allowed for such assets.

Hence, salvage value of "State Sector ULDC/ Communication Assets" may be considered as NIL and 100% depreciation may be allowed.

6.5. Operation & Maintenance Expenses

Transmission is a critical infrastructure and the most vital link in the entire Power Sector value chain. In an interconnected National Grid, Operation and Maintenance of every link/element is equally important and the same cannot be compromised for any consideration. The operation and maintenance of Inter State Transmission System (ISTS) in the Indian power sector is of paramount importance for several reasons viz: Grid Stability and Reliability, Enhanced Grid Resilience, Optimized Energy Flow, Integration of Renewable Energy, Cost Efficiency etc. Thus, effective management of ISTS infrastructure is essential for meeting the evolving energy needs of a rapidly developing nation like India.

Regarding O&M practices of POWERGRID, here it is to highlight that despite significantly high growth in Transmission Infrastructure over last decade, POWERGRID has been able to maintain the increasing asset base through same level of Manpower and comparatively significant lower overall operation and maintenance cost. To facilitate remote operation of our transmission system and monitoring of various parameters on real time basis at Regional and National levels, NTAMC was set up at Manesar and RTAMCs were set up at various locations across the country. These state-of-the-art centers are manned round-the-clock by experts for effective monitoring and management of transmission assets. Central Government has declared Supervisory Control and Data Acquisition (SCADA) System installed at NTAMC & RTAMCs as Critical Information Infrastructure (CII) vide Gazette notification dated 13th December 2022.

Company's efforts towards continuous operational improvement have fructified in the form of exceptional performance in the International Transmission System Operation and Maintenance Study (ITOMS), a global Operations & Maintenance (O&M) benchmarking platform that includes 32 major power transmission utilities globally.

Here it is respectfully submitted that the proposed O&M norms in draft Tariff Regulations,2024 are grossly inadequate and do not cover all the costs that are required to be incurred. Inadequate provision of O&M expenses in the long run severely affects the maintenance and life of the equipment necessitating higher replacement cost.

It is humbly submitted that O&M should not be viewed as a means to reduce tariff, rather best and cost-effective O&M practices must be incentivized. There is a need to promote digital tools which may be cost intensive initially but give long term results in terms of reduced costs and better performance. Further, considering RE integration, Cyber security concerns and the fact that POWERGRID over each block has optimized its O&M expenses, genuine O&M expenses should be allowed in the interest of Indian grid and all stakeholders.

In this regard, detailed suggestion on O&M norms for Transmission are given below;

Methodology to be considered for O&M norms

6.5.1. Consideration of consolidated POWERGRID O&M expenditure for deriving the O&M norms

It is submitted that Hon'ble Commission has done the normalization exercise on the region wise O&M expenditure submitted instead of total POWERGRID expense on all India basis i.e. first normalise the head wise O&M expenditure for respective regions and then arrive at all India figures adding normalized O&M expense of each regions. This all India normalized O&M expense forms the basis for O&M norms which is applicable for all the assets of POWERGRID.

It is to mention that O&M norms are uniform for all POWERGRID regions and does not vary on the basis of particular region's O&M expense unlike generators where O&M norms for particular generating station is arrived on the basis of O&M expense of that generating station only.

It is to mention that implementation of transmission system depends upon various factors such as generation potential, demand projections, system constraints etc. leading to higher augmentation of transmission assets in certain regions as compared to others. Further, transmission systems associated with renewable generation is largely implemented in NR (Rajasthan), WR and SR.

O&M expenses are proportionate to Assets, type of Substations etc. and due to the abovementioned reasons, head wise year on year variations in particular reason may be higher leading to higher normalization.

In addition, O&M also increases manifold with the ageing of Transmission assets and some regions have more old equipment as compared to others resulting into higher O&M i.e. more R&M, consumable spares etc in these particular regions.

Further, POWERGRID follows a centralized system where all O&M process and procedures are Standardised. Resources of any particular region as and when required are used by other regions also. Specialized manpower or plant and machinery irrespective of their posting or location are available and utilized throughout the country especially during special Maintenance and Operation activities like Restoration work, ESS deployment, in case of natural calamities etc. across country. Different Regions are maintained mainly for administrative reasons and for ease of operations.

In view of the above, it is submitted that O&M expenditure depends on the population and age of the transmission assets which are not uniformly distributed across regions and hence region wise normalization results into higher deductions. Further, O&M activities in a particular region for a particular year may increase abnormally due to various factors such as geographies (frequency of O&M in hilly terrain is higher), cyclone, change in law events, major faults etc. leading to higher normalization in that region while variation if considered on all India level may be within permissible limits.

Accordingly, it is requested that since all India O&M expense is being considered for O&M norms hence head wise normalization may also be done on all India O&M expense only.

6.5.2. Normalization of more than 20% in POWERGRID O&M expenses

It is submitted that certain heads in the submitted O&M expenses are having variation of more than 20% for which detailed reasons were submitted along with the O&M expenditure data. In the Explanatory Memorandum, it is mentioned that ‘*’Where steep year-on-year increases in expenses under various heads were observed, the Commission normalised the same, depending upon the nature of expenses, in the preceding year’s corresponding expense figure. Appears”.* However, after analyzing the normalized O&M data for POWERGRID, it is apparent that even after providing valid reasons to such variations, still most of such expenses have been normalized while deriving O&M norms. Further, this normalization is done on regional level data which may not be the right approach as discussed above at para 6.5.1.

It is to submit that these are actual expenses incurred by POWERGRID for O&M. Not all expenses are routine in nature. Some expenses may have different periodicity. Inflation and increase in asset base inherently result in increased O&M expenses over the years. Mutiple new HVDC links and Poles got commissioned in 2019-24 block which also results in steep increase in O&M expenses in next year of COD. Further depending upon age and technology, O&M expenses may differ. All such reasons under various sub-heads were already submitted to Hon’ble Commission along with operational and financial data. The region-wise detailed reasons/justification for the above variation is once again submitted herewith as **Annexure - D.**

Exclusion on genuine expenditure based on arithmetic numbers only may result in legitimate expenses being disallowed. Such expenses cannot be recovered through any other means. ***It is requested that variations excluded in normalisation process may please be reviewed based on the reasons provided, while deriving the O&M norms for Transmission licensees.***

6.5.3. COVID Impact

COVID pandemic has resulted in significant reduction in O&M expenses for Transmission licensees in the concerned periods. The same was rightly noted by Hon’ble Commission in Explanatory Memorandum at para 15.5.4. Therefore, O&M expenses for F.Y. 2020-21 and F.Y. 2021-22 do not represent the actual O&M requirement. Considering the same Hon’ble Commission considered normalized O&M expense of F.Y. 2019-20 as base to escalate it to derive notional normalized O&M expense for F.Y. 2020-21 and F.Y. 2021-22.

For POWERGRID, because of excessive normalization, it has been noted that O&M expense considered for formation of norms for F.Y. 2019-20 is significantly lower. As the same data is used to derive F.Y. 2020-21 and F.Y. 2021-22 data, derived notional

normalized O&M expense for these years are also very low. Here it is to point that because of this, ***normalized data for F.Y. 2019-20, F.Y. 2020-21 and F.Y. 2021-22 is even lower than normalised O&M expenses for F.Y. 2018-19***. This itself shows that such data are not fit to be used for further use to derive O&M data. Normalised O&M expenses as used by Hon'ble Commission for NTPC and NHPC shows year on year upward trend in F.Y.s 2018-23 as it should be, as under normal circumstances O&M expenses should increase on year on year basis. However, it is only for POWERGRID that the same is showing abnormality as stated above in spite of increase in asset base.

Therefore, it is requested that normalization done for F.Y. 2019-20 requires to be re-evaluated to derive at a realistic number and the same may be used for F.Y. 2020-21 and F.Y. 2021-22. Otherwise as per Statistical practices, aberrations noticed in FY. 2019-20 being an outlier has to be excluded for calculation purpose and Normalized O&M expense for F.Y. 2018-19 may be escalated using same escalation factor to derive notional O&M expense for F.Y. 2019-20, F.Y. 2020-21 and F.Y. 2021-22, which should be used to derive O&M norms for Transmission. Here it is also to highlight that the O&M norms derived for POWERGRID is applicable for all other RTM Transmission licensees and therefore underrecovery of lower O&M rates compared to actual required shall impact all RTM Transmission licensee.

Further, the escalation rate of 5.89% (Average of WPI and CPI Index) per annum is applied to the norms for FY 2023-24. ***It is requested to consider an escalation rate of 6.67% arrived on the basis of indices excluding the Covid period i.e. FY 2020-21.***

6.5.4. Self-Insurance Reserves (SIS)

As per the Explanatory Memorandum to the draft Regulations, the Self Insurance Reserves is only considered 0.09% of Gross Block against the actual of 0.12 % i.e Hon'ble Commission has considered only 75% of Self Insurance Scheme (SIS) Reserve to be part of O&M expenses.

In this regard, it is submitted that at present POWERGRID is undertaking Self Insurance in respect of Transmission lines and AC Substations assets except for HVDC systems. The company is setting aside annually 0.12% of the original cost of the assets towards Self Insurance Scheme (SIS) Reserve. Under SIS, the entire risk to Transmission lines and AC Substations assets against any eventuality is taken care by the Transmission Licensee and accordingly all such risks are being borne by the Transmission Licensee.

It may please be appreciated that the rate of 0.12% was decided based on cost of insurance, past experience etc. and actual requirements could vary from year to year. In case the assets are insured with external insurers, the actual premium is permitted for recovery through tariff such as in case of HVDC assets. The risks in such cases are borne by the insurance company and not by POWERGRID.

Third party Insurance in general is costing around 0.3% to 0.4% of Gross Block and the annual premium increases every year as the reinstatement cost of the asset increases,

however, in case of Self Insurance Scheme (SIS), POWERGRID is maintaining SIS fund @ 0.12% of Gross block which remain same over the years. Thus, SIS is cost effective and costs only approx. 1/3rd of Third party Insurance, ultimately resulting in lower loading to beneficiaries. Further, in third party Insurance, Premium paid is on yearly basis and irrespective of actual claims. Whereas, in SIS, expenses not incurred become part of Reserves and can be used in case of any major exigencies falling within the scope of SIS provisions, for which huge cost may be required.

Alternatively, in case 25% SIS Reserves are excluded from the O&M norms and the actual losses is greater than the amount transferred to SIS, the same needs to be permitted to be recovered through tariff which will ultimately defeat the purpose of Insurance.

Therefore, considering the cost effectiveness and need for reserves, it is essential that the allocation of entire amount of Self-Insurance Reserve i.e @ 0.12% of original cost of assets is included in the normalized O&M expenses to arrive at the norms for 2024-29.

6.5.5. Inclusion of Performance Related Pay

While studying the calculation of normative operation and maintenance expenses from the Explanatory Memorandum, it is observed that Performance Related Pay (PRP) has been excluded from the actual O&M expenses during the respective financial years while arriving at the normarlized O&M expenses. Explanation for doing so is provided for Generation at para 15.5.2 of the Explanatory Memorandum, it has been indicated that - "the Commission has been consistently following the principle that such incentives and performance related pay should be paid by the generating company from the increase in revenue due to reduced down time and efficient operations of the generating stations. Therefore, for computing O&M expenses norms, these types of expenses are excluded from the actual O&M expenses." Although no reason for doing the same is provided for Transmission following is submitted w.r.t PRP to consider it as part of employee cost:

i. Presently PRP is payable to employees of POWERGRID as per DPE guidelines for pay revision of Board level and below Board level executives of CPSEs, as a part of pay structure since pay revision in 2007and subsequent revision in 2017. Further, PRP is also part of the wage agreement for the non-executives.

ii. The PRP scheme was formulated as a variable pay component linking the payment to the organization, team as well as individual performance.

iii. In the report of 2nd Pay Revision Committee (2nd PRC), PRP was envisaged as a variable pay and PRP was made an integral part of overall compensation package.

iv. The 3rd PRC report, published in Gazette of 09th June, 2016 has envisaged the following objectives behind allowing payment of PRP to the employees of CPSEs:-

- Allowing the PRP for better team performance which will also build a competitive environment within the Company and a motivation to excel as a team.
- To equip the CPSEs to compete in the emerging domestic and global economic scenario.
- Inculcating performance oriented culture across the organization.
- The PRP gives emphasis to the team's performance to inculcate a team culture and achieve desired productivity levels of CPSEs.
- The PRC viewed that PRP for team performance is a win-win situation, both for individual executives and the CPSEs.

It may be seen that the objectives behind allowing PRP is essentially to improve competitiveness, team culture and to raise the CPSEs to global standards. It also opined that the present PRP mechanism is beneficial for the firm as well as the employees.

v. The exact amount of PRP payable to an individual employee is calculated as per the methodology given in DPE circular No. W-02/0028/2017-DPE (WC)-GL-XIII/17, Annexure-IV dated 03rd August, 2017, which envisaged the following points :-

- Rating of Memorandum of Understanding (MoU) entered between POWERGRID and Ministry of Power for the corresponding year. MoU is a performance measuring tool containing no. of performance parameters along with weightages assigned to each parameter.
- Profitability of the Company during the corresponding year.
- Incremental profit of the Corporation i,e. increases in profit in comparison to previous year.
- Performance of the Regions in achievements of the company Targets.
- Performance of the Individuals in achievements of the company Targets.

It is relevant to mention that the availability based incentive is not included in any of the above points. The contention that PRP is payable only in case the transmission system achieves normative operational levels or overachieves them, does not hold good in the present scenario as explained above.

Moreover, PRP payable may increase at the rate of 3% annually on account of annual increment as per DPE guidelines irrespective of the incentive received.

It is also pertinent to note that as per DPE Office Memorandum Dt. 25th Nov 2008 in respect of Revision of Pay w.e.f 01.01.2007, PRP has been envisaged as a component directly linked to the profits of the CPSE [Annex III, (i) of the OM]. It is also mentioned that it has to come out of the profits of the CPSE [Annex III, (i)(a) of the OM]. Whereas in DPE memorandum dt 03.08.2017 in respect of Revision of Pay w.e.f 01.01.2017, it is clearly stated that the revised compensation structure is inclusive of PRP [Annex II(b) & (c) of the OM]. Moreover, due importance is given to PRP in the revised structure to ensure better team performance and to build a competitive environment within the

company. This clearly shows a shift in philosophy and calculation of PRP from the earlier guidelines.

From the above, PRP is actually an integral and variable part of compensation package of the employees. The PRP scheme was formulated as a variable pay component linking the payment to the organization, team as well as individual performance. PRP is based on the overall performance of the organization as measured by its MoU rating as well as appraisal ratings of individual employee. Therefore, the ambit of PRP is much larger and is not akin to a productivity-linked incentive scheme which provides for payment linked to physical parameters such as generation, availability, etc. The PRP as a variable pay component is intended to link the overall employee remuneration to performance as opposed to fixed pay entitlements which are independent of performance. It may also be noted, from the calculation method of PRP, that there may be situations where the company has earned less/no incentive, but PRP has to be paid to the employees under the present norms of DPE.

If the PRP is not added to the O&M expenses, it will result in loss of revenue of the company by sizable margin and is not in tandem with the philosophy in which PRP is envisaged and impacts the desired return on equity as provided in the regulations.

Therefore, considering the above, ***it is submitted that the normalized O&M expenditure for FY 2018-19 to FY 2022-23 may be arrived at by including Performance Related Pay (PRP) as part of employee cost to arrive at the normative O&M norms for 2024-29.***

6.5.6. Addition of expenditure on account of capital spares having cost between Rs 5 Lakhs to Rs 20 Lakhs

Regulations 36(d) provides for reimbursement of Capital Spares separately for the transmission system and associated communication system. Further, Capital spares has been defined as spares individually costing above Rs. 20 lakh under regulation 3(12) and below this limit, same have to be borne by the Licensee as part of the O&M expenses.

O&M expenditure data submitted by POWERGRID for FY 2017-18 to FY 2022-23 does not include capital spares having cost above Rs 5 Lakhs and below Rs 20 Lakhs as the same have to be claimed separately as per the Tariff Regulations,2019. ***Thus, as the limit is proposed to be increased to 20 Lakhs, O&M expenditure relating to capital spares having cost between Rs 5 Lakhs to Rs 20 Lakhs needs to be factored in while deriving the O&M norms for the Transmission licensees*** and Capital spares having cost above Rs 20 lakhs shall only be reimbursed separately.

Yearwise details of Capital spares having cost between Rs 5 Lakhs to Rs 20 Lakhs has already been submitted to Hon’ble Commission vide letter dated 30/11/2023 as part of

Additional information. The same is again enclosed herewith as **Annexure -E** and summary of the same is as follows;

Rs in Crs

Parameter	2018-19	2019-20	2020-21	2021-22	2022-23
Capital Spares from 5 to 20 Lakhs	NA	19.55	24.71	23.39	23.97

6.5.7. Separate norms for CTU expenses

Ministry of Power, vide Gazette Notification dated 09.03.2021 has notified 'Central Transmission Utility of India Limited' (CTUIL), a Government Company and wholly owned Subsidiary of POWERGRID as the 'Central Transmission Utility' (CTU) to undertake and discharge all functions of CTU under the Electricity Act, 2003. In terms of the above order, CTUIL started functioning as wholly owned subsidiary of POWERGRID with effect from 01.04.2021.

Hon'ble Commission vide suo-moto order 02/SM/2022 dated 25.02.2022 has directed that expenses of CTUIL shall continue to be taken care of by POWERGRID for the period till 31.3.2024.

The scope and responsibilities assigned to CTUIL is increasing significantly and therefore, its expenses are also increasing. Independent Engineers for TBCB projects are being appointed by CTUIL. Additional manpower is also being recruited. Further, CTUIL in the near future may be establishing separate establishment/ infrastructure for its use which was earlier shared with POWERGRID. Thus, past CTUIL expenses may not represent its future expenses also.

In this above backdrop, it is assumed that O&M norms in draft Regulations does not cover CTUIL expenses and a separate regulation for Fees and Charges of CTUIL shall be notified by Hon'ble Commission. However, in case the same is not done, it is requested that ***CTUIL expenses which was part of O&M expenditure submitted by POWERGRID may be excluded while determining O&M norms***. POWERGRID has already submitted the same to Hon'ble Commission vide letter dated 30/11/2023 as part of Additional information enclosed herewith as **Annexure -E.**

Here it is to mention that to maintain continuity and revenue stream for CTUIL, if Hon'ble Commission directs POWERGRID to continue with the existing arrangement beyond 01.04.2024 i.e POWERGRID to support CTUIL expenses, POWERGRID may continue to do the same till the time suitable revenue stream of CTUIL is formulated. A separate account for the same shall be maintained and once the revenue stream for CTUIL is finalized, expenses incurred by POWERGRID for CTUIL expenses may be reimbursed with carrying cost. Requisite direction in this regard may be given by Hon'ble Commission.

6.5.8. Allocation of normalized O&M expenses between substations and AC transmission lines at a ratio of 70:30

It is observed from the Explanatory Memorandum that normalized O&M has been apportioned between substations and AC transmission lines at a ratio of 65:35.

High voltage Substations consist of critical equipment such as Transformers, Reactors, Circuit Breakers, Current Transformers, Voltage Transformers etc. which requires intensive O&M. Regular inspections, testing, and preventive maintenance activities are required to be carried out to ensure the reliability and performance of these components resulting into high manpower cost vis-à-vis transmission lines. Further, Power charges is a substantial component for a substation. While O&M expenditure on Transmission line majorly consists of patrolling expenses, tower parts replacement, insulator replacement whose frequency is quite low and less expensive as compared to substation equipment O&M expense. We agree with the Explanatory memorandum that many transmission lines are getting old and considering stringent environmental norms and pollution control measures require additional measures like replacement of Insulators, installation of bird diverters, Transmission Line Arrestors (TLA), etc. However, over the period the addition of new substation equipment is higher as compared to addition of new transmission lines. Further, with increasing Renewable integration, switching operations in existing substations have increased substantially requiring higher maintenance. Further, manpower requirement shall also increase.

In order to capture such trend in the composition of proposed O&M expenses norms, ***normalized O&M may be apportioned between substations and AC transmission lines at a ratio of 70:30 for arriving at O&M norms for 2024-29 block.***

6.5.9. Consideration of Average nos of bays, Ckt Kms for derivation of O&M norms

It is observed from the Explanatory Memorandum that actual year wise nos of bays and Ckt KMs has been considered while deriving the O&M norms for Transmission licensees instead of average values for the same. In this regard, average nos of bays and Ckt KMs based on the data submitted by POWERGRID for FY 2017-18 to FY 2022-23 is annexed herewith as **Annexure -F**. It is requested to consider the same while working out per bay and per MVA O&M norms as it will smoothen out the O&M expenses in proportion to addition of elements during each period.

Further, while going through calculations as provided in Explanatory memorandum, it has been observed that there is calculation error while calculating per Ckm, per MVA, per bay rates corresponding to FY 2022-23 and arrived figures are slightly lower than the actuals.

6.5.10. O&M norms for HVDC Back to Back (HVDC BTB) Stations

It is observed that normative O&M expenses of Gazuwaka HVDC station as provided in draft Regulation is less than the norms for other BTB Stations even when actual expense for Gazuwaka HVDC station is higher than the other BTB Stations. Gazuwaka HVDC BTB are consistently higher as compared to other BTB Station due to the following:

i. **Technical Uniqueness**: The Gazuwaka HVDC BTB Station is unique among all POWERGRID's Back to Back Stations in the sense that the two back to back Stations (2x500MW) are from two different manufacturers viz. Pole 1 from Alstom/GE and Pole 2 from ABB and these Poles were commissioned in two different years 1999 and 2005. This requires two different set of spares to be maintained for both the Poles separately increasing the overall maintenance cost. This is applicable for all equipment viz. HVDC control & Protection, Valve Cooling system, Valve Hall and associated equipment, etc. and the maintenance cost increases due to the requirement of two separate set of spares due to difference in the technology/ manufacturers of Pole 1 and Pole 2. This results in almost 2 times the cost of spares and maintenance as compared to any other HVDC BTB Stations of similar type.

ii. **Geographic Conditions:** The Gazuwaka HVDC BTB Station is only BTB Station very near to sea coast (around 500 meter). This results in saline contamination due to coastal environment resulting in severe corrosion. The severe corrosion requires stringent maintenance practices including regular and frequent painting of equipment, frequent maintenance and requirement of consumables increasing the overall maintenance cost. Further NTPC has an installed capacity of 2000 MW and Hinduja has an installed capacity of 1000 MW in the near vicinity which has resulted in severe pollution in the Station Switchyard area. The power plant pollutants together with the saline environment have an extremely detrimental effect on all the HVDC outside equipment leading to reduced life of equipment. It requires continuous system maintenance and resultant expense on account of spares and services which are very specific to Gazuwaka Station as compared to other HVDC Station. Further this increased pollution has resulted in severe electrical tracking in Gazuwaka Station Switchyard equipment over the years which necessitates the following activities as preventive measure:

   - Hot Line/Live Line Washing of equipment on regular basis to avoid any tracking and resulting electrical flashovers.
   - RTV Silicon Rubber High Voltage Insulator Coating (HVIC) for all HVDC Switchyard equipment to avoid any tracking and resulting electrical flashovers.
   - Cold Line Washing of equipment with additional manpower.

iii. **Natural Calamities:** The location of Gazuwaka HVDC BTB Station is susceptible to regular natural calamities/severe cyclonic storms including the major ones like HUD HUD, Titli etc resulting in higher than normal requirement of R&M for replacement/ renovation of Plant and Machinery, administrative expenses.

iv. **Power System issues exclusive to Gazuwaka HVDC BTB Station:** The Gazuwaka Station has historically been connected to weak AC link with Eastern Grid which has resulted in severe voltage instability conditions affecting the Gazuwaka Station equipment detrimentally over the years. The voltage was quite unstable (with both low and high voltage conditions) in addition to the severe pollution and electrical tracking issue resulted in severe stresses on the equipment (both outside and Valve Hall equipment) which has resulted in requirement of replacement of electrical equipment and increased propensity to failures including very costly thyristors also.

Even considering the same reasons, in previous Tariff Regulations, higher O&M norms were provided for Gazuwaka Station. ***Therefore, it is submitted that the calculation for arriving at rates for Back to back HVDC Stations may be revisited to arrive at norms commensurate with actual expenses.***

6.5.11. O&M expenditure for new HVDC Bi-Pole Stations

Hon'ble Commission has directed POWERGRID to submit the station wise expenditure for each HVDC substation and norms have been derived after dividing the total expenditure with the total HVDC capacity in MW.

In this regard, it is to mention that certain HVDC projects such as Raigarh-Pugalur-Thrissur (RPT) and Champa – Kurushetra HVDC have been commissioned in the previous block. First year O&M expenditure for these is significantly lower due to reasons such as commissioning in between the financial year (not capturing 12 months expenditure), only power charges and Mega insurance charges are incurred etc and some expenses are covered under warranty. However, from the second year onwards expenditure on account of Administration charges, employee expenses increase and there is significant increase in O&M expenses compared to commissioning years. Further in the initial year, because of defect liability period as per contractual provisions, O&M expenses are lower, but they increase significantly once it is over. Below is the details of the Raigarh- Pugalur and Pugalur - Thrissur project expenditure;

Rs in Lakhs

HVDC station	2020-21	2021-22	2022-23
Thrissur	28.87	1,765.59	1957.14
Pugalur	723.37	4,424.07	4,941.11
Raigarh	1,176.64	2,200.95	2,880.71

It is clear from the above table that O&M expense corresponding to first year i.e. FY 2020-21 is significantly lesser as compared to expenditure during subsequent years. Further, the same shall increase in coming years.

In case first year expenditure is considered for these HVDC projects, it will result into lower Rs/MW for the first year resulting into lower norms. ***Accordingly, it is requested that full year expenditure from second year onwards with some escalation may be considered for all HVDC stations which has commissioning in the previous block.***

Revisions required in sub clauses of Regulation 36 (3)

6.5.12. O&M in hilly Regions

Draft CERC Tariff Regulations, 2024

"36(3)(a). Provided further that the O&M expenses for Transmission Licensees whose transmission assets are located solely in NE Region, States of Uttarakhand and Himachal Pradesh, the Union Territories of Jammu and Kashmir and Ladakh shall be worked out by multiplying 1.50 to the normative O&M expenses prescribed above.

Our Comments/Suggestions

The draft Regulations have proposed to grant increased O&M Expenses to transmission licensees whose transmission assets are solely in NE Region, States of Uttarakhand and Himachal Pradesh, the Union Territories of Jammu and Kashmir and Ladakh by a factor of 1.5.

Our comments regarding consideration of consolidated POWERGRID O&M expenditure for deriving the O&M norms have been provided above at para 6.5.2. As stated above, Hon'ble Commission is analysing data on regional basis for deriving all India norms and it is requested to analyse data on consolidated basis. In case Hon'ble Commission decides to continue with the approach of analysing data on regional basis, then it is submitted that POWERGRID has transmission assets in hilly regions like NE Region, States of Uttarakhand and Himachal Pradesh, the Union Territories of Jammu and Kashmir and Ladakh and also faces the issues similar to transmission licensees solely present in these hilly regions. Therefore, it is requested to extend this provision to POWERGRID as well.

Considering Government focus on development of Northeast region and UTs of J&K and Ladakh, POWERGRID has implemented/ implementing/discussing number of projects in NER region and UTs of J&K and Ladakh including Leh-Kaithal projects. Some of these projects also has to go through snow laden areas, areas prone to avalanches etc. Special Tools and plants, expertise and higher number of manpower is required for maintaining such projects. Further, O&M rates notified in Tariff Regulations also act as reference for consultancy works, Assets of TBCB licensees being maintained by RTM Licensees in their Substation premises. ***To ensure all Transmission licensees including POWERGRID get sufficient O&M charges for assets being maintained in hilly areas, factor of 1.5 times as notified be made applicable for all Transmission licensees including POWERGRID.***

6.5.13. O&M Norms for SVC & STATCOM

Draft CERC Tariff Regulations, 2024

36(3)(b) The total allowable operation and maintenance expenses for the transmission system shall be calculated by multiplying the number of substation bays, transformer

capacity of the transformer/reactor (in MVA/MVAr) and km of line length with the applicable norms for the operation and maintenance expenses per bay, per MVA/MVAr and per km respectively.

Our Comments/Suggestions

SVC/STATCOM being a critical element of Grid and majorly based on electronic equipment requiring very precise Operation & Maintenance. Running of dedicated valve with cooling system consumes significant amount of electricity as auxiliary consumption in addition to other maintenance activities.

As provision of separate norms for SVC/STATCOM like in Tariff Regulations,2019 is discontinued in draft Regulations and Bays but the number of Capacitive/Inductive capacity as applicable for SVC/STATCOM need to be considered for computation of allowable O&M charges. Therefore, for better clarity and to avoid any dispute is future following changes is proposed in subject Regulations;

The total allowable operation and maintenance expenses for the transmission system shall be calculated by multiplying the number of substation bays, transformer capacity of the transformer/reactor/SVC/STATCOM (in MVA/MVAr) and km of line length with the applicable norms for the operation and maintenance expenses per bay, per MVA/MVAr and per km respectively

6.5.14. Communication System

Draft CERC Tariff Regulations, 2024

"36(3)(c). Communication system: The operation and maintenance expenses for the ULDC scheme shall be worked out at 2.0% of the original project cost related to such communication system. The transmission licensee shall submit the actual operation and maintenance expenses for truing up.

Our Comments/Suggestions

The proposed provision provides O&M expenses for ULDC schemes only and no separate rates for UNMS, IT Equipment, URTDSM, SCADA/EMS (including Cyber Security System, REMC, WAMS etc.) has been provided. For maintenance of UNMS, SCADA/EMS, support of OEM is required due to specialized nature of the work. Hence, O&M of above projects are normally done through OEM as part of AMC. The O&M expenses of U-NMS, URTDSM, upcoming SCADA upgradation projects are approx. 5% of capital cost based on the AMC charges bid by OEMs.

Hon'ble Commission vide order dated 15.12.2022 in petition no 728/MP/2020 has already allowed O&M expenses upto 5% of capital cost for U-NMS projects and similar provisions may be extended for URTDSM, SCADA/EMS projects considering the similar nature. ***Therefore, separate O&M norms for U-NMS, URTDSM, SCADA/EMS may be allowed on actual limited to 5% of the Capital Cost subject to prudence check as per practice being followed by Hon'ble Commission.***

6.5.15. Security Expenses and Capital Spares

Draft CERC Tariff Regulations, 2024

"*36(3)(d). The Security Expenses and Capital Spares for the transmission system and associated communication system shall be allowed separately after prudence check:*

Provided that the transmission licensee shall submit the assessment of the security requirement and estimated security expenses, the details of year-wise actual capital spares consumed at the time of truing up with appropriate justification for incurring the same and substantiating that the same is not claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization.

Our Comments/Suggestions

Regarding Interest on Working Capital (IoWC): The Transmission Licensee files a separate petition to claim security expenses and capital spares as per the provisions of Tariff Regulations,2019. Till Tariff Regulations,2014 these expenses were considered as part of the O&M charges under approved Annual Fixed Costs. Therefore, Interest on Working Capital was also allowed on it. However, the draft regulations do not specifically mention about IoWC on such expenses. However, IoWC is being allowed by Hon'ble Commission in Orders pertaining to such expenses.

Regarding Carrying cost: The expenditure on account of Security and Capital Spares is considerable and to the tune of more than Rs. 1,355 Cr for 5 years block. Security expense to the extent can be estimated at the beginning of the tariff block, however, actual expenses can only be ascertained after closing of the block. Further, Capital Spares cannot be predicted in advance at the beginning of the block and the same can be ascertained only after end of tariff block. Therefore, a large part of these expenses is to be paid only after the Truing up of the same. It is to mention that these expenses are part of Transmission tariff and therefore carrying cost as applicable for transmission tariff should also be made applicable for these expenses .

Regarding Annuity, Lease and other Statutory Payments: It is submitted that Transmission Licensees are required to incur expenditure towards forest lease maintenance charges, annuity payments to landowners / other authorities as per terms and condition of land acquisition/under provisions of law. Presently based on orders of Hon'ble Commissions on case to case basis such expenses are reimbursed as per the actuals. Since these expenses are recurring in nature and are to be paid on annual basis based on relevant government notifications, it is suggested that the words 'annuity, lease and other statutory payments' may be included in the aforesaid provision - 36(3)(c) to account for the above expenses and allowed on actuals. The modality for recovery may be kept in line with that of Security and Capital Spares as brought out above.

Regrading Cyber Security and NTAMC upgradation: Further, Onetime expenses for Cyber Security related expenses, NTAMC upgradation are also required to be incurred. Such expenses may be difficult to predict and are expected to increase in future considering increased remote operations, digitalization and thus the need for enhanced Cyber Security. Thus, such expenses may not be built in notified O&M norms. However, Transmission being a critical infrastructure, Cyber Security related issues and specially NTAMC requires continuous upgradation to meet new challenges and therefore expenses on such heads are essential and unavoidable. Therefore, it is proposed that such expenses may also be allowed separately on case to case basis after prudence check. Detailed comments on the same issue are provided at para 6.5.19 below. The same may also be considered.

Based on discussion above, for better clarity and to avoid any dispute in future, it is suggested that Interest on Working Capital, carrying cost and other expenses as discussed above may be specially mentioned in provisions provided for Security Expenses and Capital Spares as proposed below;

"*36(3)(c). The Security Expenses, Capital Spares, NTAMC upgradation expenses, Cyber Security related expenses and payments regarding Annuity, Lease and other Statutory Payments which are neither allowed as part of Capital cost or as normative O&M norms for the transmission system and associated communication system shall be allowed separately along with Interest on Working Capital and Carrying cost after prudence check:*

Provided that the transmission licensee shall submit the assessment of the security requirement and estimated security expenses, the details of year-wise actual capital spares consumed, NTAMC upgradation expenses, Cyber Security related expenses and payments regarding Annuity, Lease and other Statutory Payments at the time of truing up with appropriate justification for incurring the same and substantiating that the same is not claimed as a part of additional capitalisation or consumption of stores and spares ~~and renovation and modernization~~.

6.5.16. Change in Law Event

Draft CERC Tariff Regulations, 2024

36.(e) On the occurrence of any change in law event affecting O&M expenses, the impact shall be allowed to the transmission licensee at the time of truing up of tariff.

Provided that such an impact shall be allowed only in case the overall impact of such change in law event in a year is more than 5% of normative O&M expenses for the year.

Our Comments/Suggestions

The Draft Regulations mention that if a "Change in Law" event occurs that affects the Operation and Maintenance (O&M) expenses of a transmission licensee, the impact of this change will be considered at the time of truing up of tariff.

However, as per the proposed regulation, this impact will only be considered if the overall impact of such "Change in Law" event in a year is more than 5% of the normative O&M expenses for that year. It is not clear whether impact is to be considerd on Company level or project level. On Company level, 5% impact would be very high and limits the recovery of the same. Further, it may happen that "Change in Law" is not on all India basis but applicable only on selected Transmission assets. Therefore, it is understood that the 5% impact is to be considered on asset level only. Further it is proposed that if it is to be done on Company level, it should be kept at Rs 50 Crs. Accordingly, Regulation may be amended as following.

36.(e) On the occurrence of any change in law event affecting O&M expenses…...

……

Provided that such an impact shall be allowed only in case the overall impact of such change in law event in a year is more than 5% of normative O&M expenses of the asset for the year or impact is greater than Rs 50 Crs. If impact of Change in law is on Company level.

6.5.17. Implementation of Wage or Pay Revision

Draft CERC Tariff Regulations, 2024

36. (f) In case of a transmission licensee owned by the Central or State Government, the impact on account of implementation of wage or pay revision shall be allowed at the time of truing up of tariff.

Our Comments/Suggestions

The Draft Tariff Regulations 2024 propose that such the impact of any wage revision shall be allowed to the transmission licensee at the time of truing up of tariff.

For Generation, Unit/Plant wise Tariff petitions are filed and wage revision impact, if any can be claimed Unit/Plant wise in their True up Petitions. However, in Transmission, as O&M norms are fixed on overall company level expenses, It is not possible to claim wage revision impact on project level basis in True up Petitions. POWERGRID has been claiming wage revision impact on consolidated basis through a separate Petition. Therefore, it is requested that the same practice may be allowed for Transmission, therefore the proposed Regulation 36. (f) may be revised as below;

36. (f) In case of a transmission licensee owned by the Central or State Government, the impact on account of implementation of wage or pay revision shall be allowed separately at the end of the tariff block i.e 2029 through a separate Petition ~~time of truing up of tariff.~~

6.5.18. O&M norms for HVDC bi-pole Transmission Lines

Draft CERC Tariff Regulations, 2024

No Provision provided

Our Comments/Suggestions

Regulation 35 (3) a (ii) of Tariff Regulations,2019 provided following provision regarding O&M norms for HVDC bi-pole Transmission Lines

(ii) the O&M expenses norms for HVDC bi-pole line shall be considered as Double Circuit quad AC line;

It appears that inadvertently, the same provision is missed out in Draft Tariff Regulations,2024. Therefore, it is requested that the same provision may be retained in Tariff Regulations, 2024.

Additional factors required to be considered for O&M norms

6.5.19. Capital Expenditure of Rs. 450 Crore for adoption of various digital tools in Asset Management:

In the realm of power transmission, the efficient management of assets is paramount for ensuring reliability, sustainability, and cost-effectiveness. Recognizing this, POWERGRID has embarked on a transformative journey by adopting various cutting-edge solutions and technologies in the domain of asset management. This comprehensive approach encompasses the implementation of Asset Performance Management Systems, Drone Patrolling of Transmission Lines, Wi-Fi connectivity in substations, deployment of IoT devices, utilization of AI/ML-based diagnostics, 3D printing for additive manufacturing of mechanical inventory stock, introduction of Digital Worker concept, development of Inspection Robots etc. While these technologies entail significant upfront investments to the tune of Rs. 450 Crores during the Tariff block 2024-29, they promise substantial long-term benefits.

The adoption of the above advanced technologies in asset management represents an investment in the future resilience and sustainability of power transmission operations. By improving asset reliability, enhancing operational efficiency, and reducing downtime, these technologies lay the foundation for a more robust and resilient Power Grid. Moreover, prioritizing investments in innovation now ensures that POWERGRID will be capable of meeting the growing demands for reliable and sustainable power transmission in the future. It will also pave the way for bringing new practices for reliable and efficient Grid Management from which the learnings and experiences can be shared for the larger benefit of the Nation. It is expected that after implementation of these Digital tools the manpower deployment at each Sub-station can be reduced by minimum of one or two at each Sub-stations as compared to prevailing manpower norms of POWERGRID, thereby achieving significant saving on account of manpower expenses under O&M, besides enhanced Operational performance.

Considering the future benefits in terms of more reliable Grid Operation and significant saving in operational expenses, it is requested that the upfront investment of approx. Rs 450 Cr towards the same may kindly be considered by Hon'ble Commission while deriving O&M norms for 2024-29 Block.

6.5.20. Expenditure of Rs. 285 Cr for NTAMC Upgradation

During the years 2014, POWERGRID has established National Transmission Asset Management Centre (NTAMC) for remote Operation of its Sub-station spread all across the Nation from centralized control center. Operationalization of NTAMC resulted in huge saving of Operation expenditure, mainly on account of manpower expenses due to discontinuation of operation from local control room in a phased manner.

Requirement for Upgradation:

Major component of NTAMC system are IT assets. After continuous service of 7-8 years, limitations in form of End-of-support, End-of-life license expiry etc have been observed for various component which are as mentioned below:

System	Device impacted	End of Support/ End-of-Life date
Windows 7 OS	Consoles at Control Centres	14th Jan 2020
Windows 7 OS	Client machines at Substation End	14th Jan 2020
Windows Server 2008R2	Servers at Control centre	14th Jan 2020
Windows Server 2008R2	Servers at Substation End	14th Jan 2020
Widows server 2012R2	Servers	10th Oct 2023
Checkpoint: 12400 Firmware R77.30	External Firewall (MPLS)	Oct'2023
Checkpoint:4800 Firmware R80.10	External Firewalls (MPLS) & Internet LAN	June 2022
Checkpoint Model: 6200 , Firmware R80.40	External Firewalls (MPLS) WR2	Nov 2022
Fortinet 600C	Fortigate Firewalls (Internal)	June 2022
Fortinet 200D	Fortigate Firewalls (Internal)	May 2023

The impact of these limitations has resulted in non-update of patches, non-update of signatures & security updates and thus making NTAMC system vulnerable to security threats. Various guidelines mandating the requirement for NTAMC upgradation are as below:

- As per Cyber security audit requirements, latest patches need to be deployed for Operating System of each servers and Workstations.
- NTAMC/RTAMCs system has been identified by MoP as Critical Information Infrastructure (CII) on 13.05.2021.
- NCIIPC undertook detailed Risk Assessment exercise for NTAMC, as part of their standard process for NTAMC-CII from 21.12.2021 to 24.12.2021.
- NCIIPC team submitted the Risk Assessment Report on 24th March'22.

In their recommendation, NCIIPC has advised for upgradation of NTAMC system on priority. Accordingly, the process of upgradation of NTAMC had been taken up and contract have been placed at a total contract price of Rs. 285 Cr. The upgradation work is under process and expected to be completed by 2024-25. Payments are expected to be processed by 2025-26.

Proposal:

POWERGRID is already operating its Sub-stations remotely and Operational expenditure has already been optimized since then, mainly on account of removal of 8 to 12 manpower at each Substation which were deployed earlier for operation from local control room. To continue with the existing process of remote operation and to avail the benefit of reduced Operational expenditure in future years also, the work for upgradation of NTAMC system has been taken up.

As the Operational expenditure submitted to CERC for determination of normative O&M charges for 2024-29 Tariff block do not include the expenses towards NTAMC upgradation, ***suitable provision may be made in tariff regulation for NTAMC upgradation expenses of Rs. 285 Cr., in order to continue with the benefit of reduced Operation expenditure in coming years besides compliances to Cyber security.*** Above expenditure is meant for saving of Operational expenditure only, hence the same is allowed to be recovered.

Therefore, as requested at para 6.5.15, the above expenses may be allowed to be claimed separately based on actuals through a separate Petition.

6.5.21. Introduction of factor for Additional Manpower in O&M Norms

POWERGRID is committed towards development and maintaining the economic transmission system for its stakeholders. In the same endeavor, POWERGRID keeps on continuously reviewing its procedures including manpower requirements.

It is submitted that because of Covid pandemic, manpower recruitment were not carried out as usual during 2020-21 and 2022-23 period and only essential services were caried out. After the end of Covid pandemic, POWERGRID has again started the manpower recruitment process. In this regard following is submitted;

- Manpower expenses for F.Y. 2022-23 in spite of not being affected by COVID is lower compared to actual requirement because of no recruitment in preceding years.
- POWERGRID has started filling up the backlog through incremental manpower recruitment in coming years
- Therefore, going forward O&M charges for Manpower shall continue to increase on this account.
- While studying the calculation of normative operation and maintenance expenses from the Explanatory Memorandum in respect of Tariff Regulation, 2024, it is observed that expenses on account of such additional manpower being recruited by POWERGRID is not considered.

Since the expenditure on manpower is a considerable portion of the O&M expenses, it is humbly submitted that a markup in lieu of above employee recruitment should be kept on this account while deriving the O&M norms.

7. chapter 12 : Norms of Operations

7.1. Removal of upper cap of transmission system availability of 99.75% for claiming incentive in tariff.

Draft CERC Tariff Regulations, 2024

67 – Provided further that no incentive shall be payable for availability beyond 99.75%.

Our Comments/Suggestions

1. It may be noted that annual maintenance is carried out as per annual maintenance plan (AMP) prepared by POWERGRID for different transmission elements staggered over different months in a year. Maintenance of non-shutdown nature is also being carried out regularly as per AMP. Maintenance involving shutdown is carried out generally once in a year. Besides, shutdowns are sometime requisitioned for undertaking maintenance of emergency nature or to undertake breakdown maintenance. Unless there is any problem in the system, it is not required to take additional shut-down for maintenance purpose of an element. Major maintenance like overhauling etc. is also carried out by POWERGRID for which longer shutdown is required. All these maintenance activities on transmission elements involving shutdown are mostly carried out in a particular month or spread in two months causing dip in monthly availability of the respective element. However, in the rest of the months of the year, the availability of these elements remains at 100% in case no contingency arises requiring forced shutdown of the element. In that case, the availability of the transmission element will be higher than the upper limit of availability i.e. 99.75% as stipulated in the Regulation for the rest of the months of the year. Thus, there will be impact on availability only in a particular month in which shutdown or forced outage is availed but not in rest of the months of the year. The loss in incentive due to a drop in availability in a month may be allowed to be recovered with higher availability of elements in rest of the months of the year. Restricting incentive with upper cap in availability is thus totally unjustified and needs to be omitted.
2. Needless to mention that maintaining higher standard of performance involves lot of cost and effort. This needs to be considered by all stakeholders. Moreover, consistent higher level of performance requires regular upkeep of system without compromising the maintenance practice. As such putting cap of any nature on the performance level merely for the purpose of limiting incentive to the Transmission Licensee is against the principle of natural justice.
3. Capping of performance level can be counterproductive and is against the overall interest of the grid. 0.25% of 8760 available hours in a year is equal to 22 Hrs. Vide para 40.26 of Statement of Reasons in Tariff Regulation, 2014, CERC observed that “outage required for carrying out annual maintenance for different transmission

element is in the range of 8 to 12 hours". Thus, Regulation is not incentivizing the Transmission Licensee to keep the element in service for the balance 10 to 14 hours. In fact, Transmission Licensee may keep the element out of service in the name of maintenance without any reason resulting reduction in Total Transmission Capacity of different transmission corridors and the beneficiaries will be deprived of the additional power causing overall inefficiency in the economy of the country.

4. Regulation does not provide any incentive to utilize opportunity outages. By availing opportunity outages for maintenance activities, overall outage of an element reduces and thereby improves the stability and reliability of the grid. Hotline maintenance is very difficult and risky for individuals carrying out the maintenance activities. However, Regulation does not provide any incentive to carry out the possible maintenance activities through hotline technique for reducing the overall down time of the transmission element in the grid.
5. CERC itself has appreciated maximization of availability of transmission system vide clause 17 of order dated 15.07.2004, CERC has mentioned that:

   "we have reviewed the matter, particularly on consideration of the fact that uninterrupted availability of the transmission system is vital for ensuring continuous supply of power to the consumers. Therefore, every effort needs to be made towards maximization of availability of the transmission system and this explains the necessity to incentivize the efforts required to be made by the transmission licensee."

6. In fact, CERC has introduced capping of availability for incentive purpose in Regulation 2004 as under:

   "Provided that no incentive shall be payable above the availability of 99.75% for AC system and 98.5% for HVDC system."

7. The said provision was subsequently amended by CERC vide clause 18 of order dated 15.07.2004 which reads as under

   "Further, to enable the transmission licensee to maximize availability of the transmission system by using modern maintenance techniques, such as hotline washing, we propose to dispense with the upper limit of target availability for payment of incentive"

8. Vide para 40.21 of Statement of Reasons in respect of tariff Regulation, 2014, CERC has indicated as below:

   "Commission shall be guided by factors which encourage good performance and the principles rewarding efficiency in performance."

In view of all the above explanations, it is prayed that the upper cap of transmission system availability of 99.75% for incentive purpose may be omitted.

8. Appendix - IV: Procedure for Calculation of Transmission System Availability Factor for a Month

8.1. Treatment of Outages

Draft CERC Tariff Regulations, 2024

"1) Transmission system availability factor for nth calendar month ("TAFPn") shall be calculated by the respective transmission licensee, verified by the concerned Regional Load Dispatch Centre (RLDC) and certified by the Member-Secretary, Regional Power Committee of the region concerned, separately for each AC and HVDC transmission system and grouped according to sharing of transmission charges. In the case of the AC system, transmission System Availability shall be calculated separately for each Regional Transmission System and inter-regional transmission system. In the case of the HVDC system, transmission System Availability shall be calculated on a consolidated basis for all inter-state HVDC systems."

Our Comments/Suggestions

As per the Tariff Regulations, the Transmission system availability factor is verified by the RLDC and certified by the Member-Secretary of the concerned RPC. In the case of the AC system, transmission system availability are calculated separately for each Regional Transmission System and Inter-Regional Transmission system. It is pertinent to note that Inter-Regional Transmission links have increased substantially over the years and as per existing methodology, Transmission system availability factor for these systems is verified by one of the concerned regions of that transmission system. Details of Regional & Inter-Regional Transmission system and RPC responsible for availability certification are as below:

Sl. No.	AC Transmission System	Availability Certification by RPC
1	NR	NRPC
2	WR	WRPC
3	SR	SRPC
4	WR	WRPC
5	NER	NERPC
6	ER-NR	ERPC
7	ER-NER	
8	WR-ER	WRPC
9	WR-NR	
10	SR-ER	SRPC
11	SR-WR	

Elements under Inter-Regional Transmission systems are mainly Transmission lines with line Reactors at both ends, if applicable. Separate calculations are required to be done on monthly basis for certification of availability by RPCs.

To make the process simple, the elements of Inter-Regional systems may be merged with the respective Regional systems for which the same RPC is certifying availability for inter-Regional system, so that all the transmission assets shall be covered under five Regional system.

8.2. Availability of the AC System- Formula

Draft CERC Tariff Regulations, 2024

" 3) The Availability of the AC and HVDC portion of the Transmission system shall be calculated by considering each category of transmission elements as under:

TAFMn (in %) for AC system:

$$= \frac{o \text{ X AVo})+(p \text{ X AVp}) + (q \text{ X AVq}) + (r \text{ X AVr})+(u \text{ X AVu})}{(o + p + q + r+u)} \text{x100}$$

Where, o = Total number of AC lines. AVo = Availability of o number of AC lines

p = Total number of bus reactors/switchable line reactors

AVq = Total actual operated capacity of y th HVDC back-to-back station block

R = Total rated capacity of y th HVDC back-to-back station block

AVr = Availability of y th HVDC back-to-back station block

U = Total no of HVDC poles

AVu = Total no of HVDC Back to Back blocks

Our Comments/Suggestions

It appears that inadvertently in Formula for AC System, HVDC blocks and Poles have been mentioned in place of AC System elements. The same may kindly be rectified as below;

The Availability of AC and HVDC portion of Transmission system shall be calculated by considering each category of transmission elements as under:

$$= \frac{o \times AVo)+(p \times AVp) + (q \times AVq) + (r \times AVr)+(u \times AVu)}{(o + p + q + r+u)} \times 100$$

Where, o = Total number of AC lines.

AVo = Availability of o number of AC lines.

p = Total number of bus reactors/switchable line reactors

AVp = Availability of p number of bus reactors/switchable line reactors

q = Total number of ICTs.

AVq = Availability of q number of ICTs.

r = Total number of SVCs.

AVr = Availability of r number of SVCs

u = Total number of STATCOM.

AVu = Availability of u number of STATCOMs

8.3. Availability of the AC System- Weightage factor

Draft CERC Tariff Regulations, 2024

" 3) The availability for each category of transmission elements shall be calculated based on the weightage factor, total hours under consideration and non-available hours for each element of that category. The formulae for calculation of the Availability of each category of the transmission elements are as per Appendix-V. The weightage factor for each category of transmission elements shall be considered asunder:

(a) For each circuit of the AC line – The number of sub-conductors in the line multiplied by ckt-km;

(b) For each HVDC pole- The rated MW capacity x ***ckt-km;***

Our Comments/Suggestions

The availability calculation for HVDC system depends only on the rated/actual operated capacity of system. It appears that inadvertently at 3 (b) for weightage factor of HVDC pole, ckt-km is mentioned. The same may kindly be rectified as below;

" 4) ……..The weightage factor for each category of transmission elements shall be considered as under:

……..

b) ***For each HVDC pole****- The rated MW capacity.*

Further, the paragraph number i.e no. "3" is inadvertently repeated. Subject provision is para no 4. Para no. may be modified accordingly.

8.4. Availability of the AC System- Deemed Availability

Draft CERC Tariff Regulations, 2024

" 4) The transmission elements under outage due to the following reasons shall be deemed to be available:

i. Shut down availed for maintenance of another transmission scheme.

…….

iii. Shut down of a transmission line due to the Project(s) of NHAI, Railways and Border Road Organization, including for shifting or modification of such transmission line. Member Secretary, RPC may restrict the deemed availability period to that considered reasonable by him for the work involved;

Provided that such deemed availability shall be considered only for the period for which DICs are not affected by the shutdown of such transmission line.

Our Comments/Suggestions

As per MoP letter 03.08.2022, it was mentioned that RPC Secretariat shall provide deemed availability certificate for the shutdown period availed by transmission licensees (both RTM and TBCB) for shifting of their Inter State Transmission System (ISTS) lines for all national importance infrastructure projects of NHAI, Railways, BRO etc.

Further CEA vide letter dated: 19.09.2023 has also issued a guideline for issuance of deemed availability certificates for the outage of transmission lines for the purpose of construction of infrastructural projects. Said letter covered the various aspects of requirement of infrastructural projects and its larger public interest/ benefits and stated that, considering the wider requirement to promote the construction of infrastructural projects, following outage shall be considered under deemed category:

Outage availed for infrastructural projects of

a) NHAI, Railways & BRO
b) UPEIDA
c) NCRTC
d) Any other project(s) executed by Central Govt./ State Govt. and their PSUs meant for broader public utilization.

Copy of letter from CEA dated:19.09.2023 & letter from MoP, GoI dated: 03.08.2022 are annexed to this document as **Annexure- G .**

Therefore, it is proposed that instead of restricting proposed provision regarding deemed availability to specific organization, the same may be provided for all such important infrastructure projects as proposed below;

(iii) Shut down of a transmission line due to the Project(s) of NHAI, Railways, Border Road Organization, any other project(s) executed by Central Govt./ State Govt. and their

PSUs meant for broader public utilization including for shifting or modification of such transmission line. Member Secretary, RPC may restrict the deemed availability period to that considered reasonable by him for the work involved;

8.5. Availability of the AC System- Outages to be excluded

Draft CERC Tariff Regulations, 2024

" 5) For the following contingencies, the outage period of transmission elements, as certified by the Member Secretary, RPC, shall be excluded from the total time of the element under the period of consideration for the following contingencies:

i) Outage of elements due to acts of God and force majeure events…….

…….

(iii) The outage period which can be excluded for the purpose of sub-clause (i) and (ii) of this clause shall be declared as under:

a. Maximum up to one month by the Member Secretary, RPC;

b. Beyond one month and up to three months after the decision at RPC;

Beyond three months by the Commission for which the transmission license shall approach the Commission along with reasons and steps taken to mitigate the outage and restoration timeline.

Our Comments/Suggestions

As per the provision of Original Principal Tariff Regulation 2019-24 (Issued on 07.03.2019), in case of any disagreement regarding cause of failure the case is referred to CEA. Based on the technical/design parameters the final report on failure is issued by CEA in consultation with all stakeholders/Technical experts. The waiver of outage period for availability calculation is considered only if it is technically established that there is no design deficiency and element must have been designed meeting the CEA technical standards.

Further, the restoration period of transmission line mainly depends on extent of damage, accessibility, type of site like Plain, hilly, Riverbed etc. including its accessibility and climatic condition. Due to these conditions, the restoration of transmission lines, sometimes takes more than three months despite best efforts by transmission licensee specially in case of hilly terrain or Riverbed. Certification of transmission availability for such cases is being done by Member Secretary, RPC as a routine process. **Therefore, the following changes is proposed.**

~~*(iii) The outage period which can be excluded for …..*~~

~~*a. Maximum up to one month by the Member Secretary, RPC;*~~

~~*b. Beyond one month and up to three months after the decision at RPC;*~~

~~*Beyond three months by the Commission for which the transmission license shall approach the Commission along with reasons and steps taken to mitigate the outage and restoration timeline.*~~

"Provided that in case of any disagreement with the transmission licensee regarding reason for outage, same may be referred to Chairperson, CEA within 30 days. The above need to be resolved within two months: Provided further that where there is a difficulty or delay beyond sixty days, from the incidence in finalizing the recommendation, the Member Secretary of concerned RPC shall allow the outage hours on provisional basis till the final resolution."

Annexure-A

S.No	Link FROM	LINK TO	te Level	Region	Year of Commissioning	Route km	Design Loss*	Maximum Loss(Tx)	Maximum Loss(Rx)	Maximum deviation with Desigh(Tx)	Maximum deviation with Desigh(Rx)	Maximum of Tx & Rx	Loss/Km	Remarks
1	Kanpur	Allahabad	400	NR-1	2005	218.91	54.73	58.51	55.71	-3.78	-0.98	-3.78	0.27	to be replaced
2	Kanpur	Agra	400	NR-1	2005	234.59	58.65	66.62	63.10	-7.97	-4.45	-7.97	0.28	to be replaced
3	Ballabhgarh	Agra	400	NR-1	2005	181.00	45.25	58.92	59.40	-13.67	-14.15	-14.15	0.33	to be replaced
4	Hamirpur II	Jalandhar	400	NR-2	2004	122.91	30.73	34.72	33.26	-3.99	-2.53	-3.99	0.28	to be replaced
5	Moga	Hissar	400	NR-2	2004	209.39	52.35	58.51	58.04	-6.16	-5.69	-6.16	0.28	to be replaced
6	Kishenpur	Wagoora (PG SS)	400	NR-2	2005	183.63	45.91						0.00	
7	Itarsi	Dhule	400	WR-2	2004	458.00	114.50						0.00	
8	Khammam	Vijayawada	400	SR-1	2004	114.57	28.64	36.39	36.06	-7.75	-7.42	-7.75	0.32	to be replaced
9	Nellore	Chennai	400	SR-1	2004	189.00	47.25	61.76	65.12	-14.51	-17.87	-17.87	0.34	to be replaced
10	N'Sagar	Gooty	400	SR-1	2004	307.53	76.88	101.75	103.76	-24.87	-26.88	-26.88	0.34	to be replaced
11	Vijayawada	Gajuwaka	400	SR-1	2005	317.38	79.34	95.33	93.45	-15.99	-14.11	-15.99	0.30	to be replaced
12	Salem	Udumalpet	400	SR-2	2004	147.38	36.85	36.58	34.04	0.27	2.81	0.27	0.25	to be replaced
13	Udumalpet	Madurai	400	SR-2	2005	129.04	32.26	34.41	36.73	-2.15	-4.47	-4.47	0.28	to be replaced
14	Madurai	Trichi	400	SR-2	2005	129.58	32.40	31.17	32.51	1.23	-0.11	-0.11	0.25	to be replaced
15	Trichy	Neyveli	400	SR-2	2005	163.70	40.93	106.47	110.78	-20.28	-24.59	-24.59	0.68	to be replaced
16	Neyveli	Chennai	400	SR-2	2005	181.07	45.27						0.00	
17	Madurai	Trivendrum	400	SR-2	2006	215.93	53.98	59.76	53.91	-5.78	0.07	-5.78	0.28	to be replaced
18	Bangalore	Kolar (HVDC)	400	SR-2	2004	97.49	24.37	29.88	28.00	-5.51	-3.63	-5.51	0.31	to be replaced
19	Kolar-Chennai line (from Kolar to LILO point of Tiruvalem)		400	SR-2	2004	54.52	13.63	71.68	78.56	-17.50	-24.38	-24.38	1.44	to be replaced
20	Kolar-Chennai line (from LILO point of Tiruvalem to Chennai)		400	SR-2	2004	162.20	40.55						0.00	
21	Allahabad	Sasaram	400	ER-1	2004	214.42	53.61	69.13	71.82	-15.52	-18.21	-18.21	0.33	to be replaced
22	Farakka	Jeerat	400	ER-2	2004	236.85	59.21	73.43	67.25	-14.22	-8.04	-14.22	0.31	to be replaced
23	Jeypore	Indravati	400	ER-2	2005	74.99	18.75	23.93	24.01	-5.18	-5.26	-5.26	0.32	to be replaced
24	Indravati	Rengali	400	ER-2	2005	352.69	88.17	122.22	119.21	-27.89	-24.88	-27.89	0.35	to be replaced
25	Rengali	Talchar	400	ER-2	2005	24.63	6.16							
26	Durgapur	Farakka	400	ER-2	2004	149.48	37.37	56.16	55.33	-18.79	-17.96	-18.79	0.38	to be replaced
27	Farakka	Malda	400	ER-2	2004	42.14	10.54	20.40	18.24	-9.86	-7.70	-9.86	0.48	to be replaced
28	Malda	Binaguri (Excl UG-6.75 km)	400	ER-2	2004	210.94	52.73	75.10	71.74	-22.37	-19.01	-22.37	0.36	to be replaced
29	Binaguri	Bongaigaon (ER part)	400	ER-2	2004	103.75	25.94	78.94	78.77	-53.00	-52.83	-53.00	0.76	to be replaced
30	Farakka	Kahalgaon	400	ER-I	2004	94.41	23.60	29.82	30.85	-6.22	-7.25	-7.25	0.33	to be replaced
31	B'shariff220	B'shariff400	220	ER-I	2004	0.58	0.15						0.00	
32	Siliguri	India Border (TALA)	220	ER-2	2004	90.00	22.50						0.00	
	Total					**5511.68**								

S No	Line name	Region	Length	Previous Commissioning Year	Replacement Approval RPC	Approval date	New Commissioning date
1	400 kV Agra – Ballabhgarh	NR1	181	2004	11th NCT	Jan-23	Under Implementation
2	400 kV Kishenpur – Wagoora line	NR1	183	2005	11th NCT	Dec-23	Under Implementation
3	400kV Itarsi - Dhule	WR - II	403	2003	11th NCT	Dec-23	Under Implementation
4	400kV S/C Ballabgarh - Alwar	NR1	114	2002	39th NRPC	May-17	Mar-22
5	400kV D/C Ballabgarh - Dadri HVDC	NR1	57	2002	39th NRPC	May-17	Mar-22
6	400kV S/C Bassi - Heerapura	NR1	52	2002	39th NRPC	May-17	Mar-21
7	400kV S/C Bhiwani - Hissar	NR1	36	2002	39th NRPC	May-17	Mar-22
8	400kV S/C Dadri HVDC - Panipat	NR1	91	2002	39th NRPC	May-17	Mar-22
9	400kV S/C Dadri HVDC - Muradnagar I	NR1	35	2002	39th NRPC	May-17	Mar-22
10	400kV D/C Dadri HVDC - Mandaula	NR1	50	2002	39th NRPC	May-17	Mar-22
11	400kV S/C Moradabad I - C.B.Ganj II	NR1	91	2002	39th NRPC	May-17	Mar-21
12	400kV S/C Muradnagar I - Muradabad I	NR1	139	2002	39th NRPC	May-17	Mar-21
13	400kV S/C Kanpur - Panki	NR3	6	2002	39th NRPC	May-17	Aug-21
14	400kV S/C Unnao - Panki	NR3	51	2002	39th NRPC	May-17	Nov-21
15	400kV S/C Varanasi - Azamgarh I	NR3	107	2002	39th NRPC	May-17	Jan-21
16	400kV Bhilai 400 - Raipur	WR-I	14	2006	39th WRPC	Dec-19	Dec-23
17	400kV Raipur - Korba	WR-I	211	2006	39th WRPC	Dec-19	Dec-23
18	400kV Korba STPP - Vindhyachal	WR-I	226	2006	39th WRPC	Dec-19	Oct-23
19	400kV Vindhyachal - Jabalpur	WR-II	413	2006	39th WRPC	Dec-19	Under Implementation
20	400kV Itarsi- Jabalpur	WR-II	250	2006	39th WRPC	Dec-19	Apr-23
21	400kV Itarsi- Indore	WR-II	215	2006	39th WRPC	Dec-19	Jan-23
22	400kV Asoj- Indore	WR-II	298	2006	39th WRPC	Dec-19	Feb-23
23	400 kV Ramagundam - Chandrapur	SR-I	185	2002	37th SRPC	Feb-20	Feb-23
24	400 kV Jaypore - Gajuwaka	SR-I	221	2002	37th SRPC	Feb-20	Sep-22
25	400 kVSomanhally-Gooty	SR-I	303	2002	31st SRPC	Feb-17	Mar-23
26	400kV Biharsharif-Sasaram	ER-I	200	2003	39th ERPC	Nov-18	Nov-23
27	400kV Biharsharif-LK-Kahalgaon	ER-I	233	2003	39th ERPC	Nov-18	Nov-23
28	400kV Durgapur-Jamshedpur	ER-II	176	2003	39th ERPC	Nov-18	Under Implementation
29	400kV Durgapur-Farakka	ER-II	150	2003	39th ERPC	Nov-18	Under Implementation
30	400kV Farakka-Purnea	ER-II	172	2003	39th ERPC	Nov-18	Under Implementation
31	400kV Farakka- Sagardighi - Subhashgram	ER-II	317	2003	39th ERPC	Nov-18	Under Implementation
32	Nehu –Shillong	NER	6.23	2003	18th NERPC	Oct'17	Under Implementation
33	Khelriate (MeSEB) – Khelriate (PG)	NER	7.791	2003	18th NERPC	Oct'17	Under Implementation
34	Khelriate(MeSEB) – Khandong (PG)	NER	40.99	2003	18th NERPC	Oct'17	Under Implementation
35	Khandong (PG) – Kopili (PG)	NER	11.191	2003	18th NERPC	Oct'17	Under Implementation
36	Misa (PG) – Kopili (PG)	NER	73.186	2003	18th NERPC	Oct'17	Nov-23
37	Misa (PG) – Balipara (PG)	NER	94.046	2003	18th NERPC	Oct'17	Under Implementation
38	Misa (PG) – Dimapur (PG)	NER	119.192	2003	18th NERPC	Oct'17	Under Implementation
39	Badarpur (PG) – Khelriate (PG)	NER	73.183	2003	18th NERPC	Oct'17	Under Implementation
40	Badarpur (PG) – Kumarghat (PG)	NER	117.519	2003	18th NERPC	Oct'17	Under Implementation
41	Agartala Gas (PG)- Kumarghat (PG)	NER	99.817	2003	18th NERPC	Oct'17	Under Implementation
42	Agartala (PGCIL) – Agartala Gas (PG)	NER	7.416	2003	18th NERPC	Oct'17	Under Implementation
43	Dimapur (PG) – Kohima (PG)	NER	59.8	2003	18th NERPC	Oct'17	Under Implementation
44	Kohima (PG) – Imphal (PG)	NER	105.64	2003	18th NERPC	Oct'17	Under Implementation

Annexure-B

Date: ...../.../2023

POWERGRID CORPORATION OF INDIA LTD.

Petition Format (True up)

<table>
<tr><th>Sl No</th><th>Particulars</th><th>Description</th></tr>
<tr><td>1.</td><td>Subject/Project</td><td>Approval under regulation-86 of CERC (Conduct of Business) Regulations'1999 and CERC (Terms and Conditions of Tariff) Regulations, 2019 and CERC (Terms and Conditions of Tariff) Regulations' 2024 for

(i) Truing up of Transmission tariff for 2019-14 tariff block and
(ii) Determination of Transmission tariff for 2024-29 tariff block

For Assets under Substation works associated with additional inter-regional AC link for import of power into Southern Region i.e., Warora- Warangal and Chilakaluripeta- Hyderabad - Kurnool 765kV Link</td></tr>
<tr><td>2.</td><td>Asset(s) covered under subject project</td><td>
<table>
<tr><th>Asset name</th><th>DOCO date</th><th>Remarks</th></tr>
<tr><td>2 nos of 240 MVAR, 765kV Switchable Line Reactors (6x80MVAR, 765kV, 1-Ph Shunt Reactor), along with Reactor Bays & 2 Nos 765kV Line Bays excluding PLCC, Telecom equipment and Line Terminal equipment such as LA, CVT & Wave Trap" at 765/400kV Kurnool S/s</td><td>11.03.2019</td><td>Covered under ----</td></tr>
</table>
</td></tr>
<tr><td>3.</td><td>Investment Approval/ Revised Cost Estimate (if any)</td><td>Rs. 283.72 Cr including IDC of Rs. 17.68 Cr, dated 11.04.2017 Copy of Memorandum attached at Encl-1</td></tr>
<tr><td>4.</td><td>Latest Hon'ble commission Order</td><td>Order dated 23.09.2022 in petition no. 23/TT/2022, copy enclosed at Encl-2</td></tr>
<tr><td>5.</td><td>Cost detail (approved vs Actual)</td><td>Cost detail is explained below:</td></tr>
</table>

Cost claimed in previous petition:									Rs Lakhs
Name of the asset	Apportioned Cost		Capital Cost as on DOCO/ 31.03.2019	Add-Cap 2019-24					Total estimated Completion cost as 0n 31.03.2024
	As per FR	As per RCE		19-20	20-21	21-22	22-23	23-24	
Asset-I	11488.19	NA	7931.20	415.40					8346.60
Cost allowed as per order									
Asset-I	11488.19	NA	7900.42	445.87					8346.29
Cost claimed in the instant petition									
Asset-1	11488.19	NA	7931.20	445.87					8377.07

Deductions:

Accrual IDC of Rs 30.47 Lakhs adjusted from DOCO and added in respective year of discharge.

IDC of Rs 0.31 Lakhs was deducted on account of Computation Difference subject to true-up. The same is being reclaimed in the instant petition.

Reasons for cost variation in claimed cost and approved cost.

Capital cost claimed for 2024-29 tariff block:

Rs in Lakhs

Asset Details	Apportioned appd, cost as per FR	Expenditure as on 31.03.2024	Actual/Projected Add Cap 2024-29 as per auditor's certificate			Claimed Cost as on 31.03.2029
			2024-25	**2025-26**	**2026-27**	
Asset-1	11488.19	8346.29	1121.40	510.10	149.11	10126.90

Copy of auditor certificate w.r.t. claimed cost in the instant petition is enclosed at **Encl-3.**

<table>
<tr>
<td>6.</td>
<td>Direction of Hon’ble Commission in latest available order and its compliance</td>
<td>
Direction-1

As per para 28

“The Petitioner has submitted IDC computation statement which consists of the name of the loan, drawl date, loan amount, interest rate and interest claimed. IDC is worked out based on the details given in the IDC statement. Further, the loan amount as on COD has been mentioned in Form 6 and Form 9C. While going through these documents, certain discrepancies have been observed such as mismatch in loan amount between IDC statement and in Form 6 and Form 9C. The allowable IDC has been worked out based on the available information and relying on loan amount as per Form 9C. However, the Petitioner is directed to submit the detailed IDC statement by rectifying the above-mentioned deviation, at the time of true up of capital cost for 2014-19 period.”

Compliance:

Cash IDC statement is submitted as Encl -4. It is also submitted that the repayment of all the loans (bonds and other loans) is duly accounted for in the calculation of IDC in the Cash IDC statement, i.e., the impact of loans repaid upto DOCO is duly considered while computing the IDC of the respective loan.

Direction 2

Compliance
</td>
</tr>
<tr>
<td>7.</td>
<td>Commissioning schedule</td>
<td>
<table>
<tr><th>Asset</th><th>SCOD</th><th>DOCO</th><th>Delay</th><th>Treatment of delay by Hon’ble Commission</th></tr>
<tr><td>Asset-I</td><td>11.12.2019
(i.e. 32 months from I.A. date: 11.04.2017)</td><td>11.03.2019 (actual)</td><td>Nil</td><td>No time overrun</td></tr>
</table>
Delay reason justification if any asked by Hon’ble commission
</td>
</tr>
</table>

<table>
<tr>
<td>8.</td>
<td>Initial spares</td>
<td>Project wise detailed calculation of Initial Spares as per Regulation -- of Tariff Regulation 2019 is tabulated below: -

Rs. In lakhs
<table>
<tr><th>Asset type</th><th>Plant and Machinery cost for calculation of initial spares (A)</th><th>Initial spares claimed (B)</th><th>Ceiling limit as per Regulations (%) (C)</th><th>Initial spares as per Ceiling limit D= (A-B)*C/100-C)</th><th>Difference (B-D)</th></tr>
<tr><td>Sub-station (brown field/ Green field/GIS)</td><td>9455.21</td><td>270.18</td><td>586.27</td><td>6.00</td><td></td></tr>
<tr><td>TL</td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
Further, Year wise initial spares discharge detail is enclosed at Encl-5.</td>
</tr>
<tr>
<td>9</td>
<td>Additional capitalization claim</td>
<td>
<table>
<tr><td>Sl No.</td><td>Asset</td><td>DOCO date</td><td>Cutoff date</td></tr>
<tr><td>1.</td><td>Asset-1</td><td>11.03.2019</td><td>10.03.2022</td></tr>
</table>
<u>Add cap for 2019-24 block:</u>
Add cap claimed for 2019-24 block is within the cutoff date and covered under regulation 24(1)(a) (For undischarged liability) and 24(1)(b) (unexecuted work)

<u>Add cap for 2024-29 block:</u>
Add cap claimed for 2024-29 block is within the cutoff date and covered under regulation --) (For undischarged liability) and -- (unexecuted work)

<u>Liability flow statement having Package/ Contractor wise detail along with applicable relevant regulation is enclosed at Encl-6</u></td>
</tr>
</table>

10.	**Capital cost claimed for tariff calculation for 2014-19 and 2019-24 block**	**(Rs in Lakhs)**

Sl.No	Expenditure	Freehold Land	S/S	Total
1	As per Auditor Certificate (Upto DOCO) as on 10.03.2019	365.97	7565.23	7931.2
2	Less : Accrual IDC upto DOCO	0	30.78	30.78
3	Expenditure upto DOCO Excluding Accrual IDC	365.97	7534.45	7900.42
4	Expenditure 2018-19 (Including Accrual IDC)	0	445.87	445.87
5	Add Cap during 2019-20 (As per auditor certificate)	0	1090.62	1090.62
6	Add: Accrual IDC (Discharge during 2019-20)	0	30.78	30.78
7	Expenditure 2019-20 (Including Accrual IDC)	0	1121.4	1121.40
8	Expenditure 2020-21 (Including Accrual IDC)	0	510.1	510.10
9	Estimated Expenditure 2021-22 (Including Accrual IDC)	0	149.11	149.11
10	Total Estimated Completion Cost	365.97	9760.93	10126.90

11.	**MAT rate**	As per regulation 25(3) of CERC (Terms and Conditions of Tariff) Regulations, 2014 dated 21.02.2014, the Petitioner is required to adjust grossed up rate of return on equity at the end of every financial year (for the tariff period 2014-19) based on actual tax paid. The petitioner is liable to pay income tax at MAT rates. Petitioner has been granted trued-up tariff of 2014-19 by the Hon'ble Commission vide order dated 08.07.2022 in petition no. 486/TT/2019 for transmission assets under the respective petitions, whereas following effective tax rate based (for tariff block 2014-19) on notified MAT rates are considered for the purpose of grossing-up of rate of return on equity (ROE).

YEAR	Notified MAT rates (inclusive of surcharge & cess)	Effective tax (in %)	Grossed up ROE (Base Rate/1-t) (in %)
2014-15	20.961	20.961	19.610
2015-16	21.342	21.342	19.705
2016-17	21.342	21.342	19.705
2017-18	21.342	21.342	19.705
2018-19	21.549	21.549	19.758

12. Details of O&M charges calculation

Sl No	Line/Bay/ICT MVA capacity detail	Voltage level	Line configuration detail	No of bays/ICTs with MVA /Line length
1	Line bays at Kurnool S/s	765	-	2
2	Switchable line Reactor bays at Kurnool S/S	765	-	2

13. True up annual transmission tariff claimed for 2019-24 tariff block (Rs in Lakhs)

Project		2019-20	2020-21	2021-22	2022-23	2023-24
Asset-1	AFC approved	0.00	0.00	0.00	0.00	102.58
	Revised AFC based on truing up	0.00	0.00	0.00	0.00	103.04

The tariff for block 2019-24 has been worked out as per Annexure-I, Part III of the tariff regulations for period 2019-14 and the Tariff Filing Formats along with the other relevant information and supporting documentation are attached hereto as **Encl-7** and interest rate proof compendium has submitted alongwith petition no. ------.

14. Tariff claimed for 2024-29 tariff block (Rs. in lakhs)

Asset name	2024-25	2025-26	2026-27	2027-28	2028-29
Asset-1	1654.39	1755.97	1774.70	1752.08	1716.55

The Tariff Filing Formats along with the other relevant information and supporting documentation are attached hereto as **Encl-8.**

15 Sharing of Transmission Charges

As per Regulation 57 of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019 and shall be shared as per Central Electricity Regulatory Commission (Sharing of Inter State Transmission Charges and Losses) Regulations, 2020 dated 01.07.2020 and amendment to these Regulations as amended from to time.

16. Respondent detail

Respondent list is enclosed at **Encl-9.**

17	**Prayers**	a) Approve the true up Transmission Tariff for 2019-24 block and transmission tariff for 2024-29 block for the assets covered under this petition. b) Approve the Completion cost and additional capitalization incurred during 2019-24 and allow the projected additional capitalization during 2024-29. c) Allow the petitioner to recover the shortfall or refund the excess Annual Fixed Charges, on account of Return on Equity due to change in applicable Minimum Alternate/Corporate Income Tax rate as per the Income Tax Act, 1961 (as amended from time to time) of the respective financial year directly without making any application before the Commission as provided in Tariff Regulation 2019 and Tariff regulations 2024. d) Approve the reimbursement of expenditure by the beneficiaries towards petition filing fee, and expenditure on publishing of notices in newspapers in terms of Regulation 70 (1) Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024, and other expenditure (if any) in relation to the filing of petition. e) Allow the petitioner to bill and recover Licensee fee and RLDC fees and charges, separately from the respondents in terms of Regulation 70 (3) and (4) Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019. f) Allow the petitioner to bill and adjust impact on Interest on Loan due to change in Interest rate on account of floating rate of interest applicable during 2024-29 period, if any, from the respondents. g) Allow the petitioner to file a separate petition before Hon'ble Commission for claiming the overall security expenses and consequential IOWC on that security expenses as mentioned at para 11.6 above.

		h) Allow the Initial spares claimed as project as a whole. i) Allow the petitioner to claim the capital spares at the end of tariff block as per actual. j) Allow the Petitioner to bill and recover GST on Transmission Charges separately from the respondents, if GST on transmission is levied at any rate in future. Further, any taxes including GST and duties including cess etc. imposed by any statutory/Govt./municipal authorities shall be allowed to be recovered from the beneficiaries.

Filed by

Power Grid Corporation of India Ltd

Gurgaon

Dated:

Represented by

General Manager (Commercial)

Annexure-C

Calculation of effective rate of return on equity, considering construction period

The return on equity is allowed at the specified rate from the date of commissioning of project perpetually until project is operational. However, no return is allowed during the construction period, which reduces the overall return to the project owner. In light of this, the effective rate of return can be defined as the actual rate of return for the company over the project life i.e. from the start of construction to till the end of useful life of asset.

Scenario 1: Assumptions:

o Project Construction period - 3 years, Useful Life: 35 years

o Equity of 100 lakhs is phased in ratio of 40%:40%:20% during construction.

o No equity addition during the project life

o For Initial 12 years, return on equity is adjusted for residual debt repayment over and above the regulated repayment

Year	1	2	3	4	5….15	16….36	37	38
Inflow/Outflow	-40.00%	-40.00%	-20.00%	14.95%	14.95%	15.50%	15.50%	15.50%
IRR	**12.80%**							

Considering no return in the construction period, the effective return for a transmission project comes at 12.80%.

Scenario 2: Delay of 1 year

Year	1	2	3	4	5…..12	17….36	37-38	39
Inflow/Outflow	-43.26%	-21.63%	-21.63%	-21.63%	14.77%	20.94%	20.94%	20.94%
IRR	**11.94%**							

Effective return for a transmission project reduces to 11.94%, considering a delay of 1 year, since return on equity only after start of commercial operation of the project.

H. Expected Rate of RoE based on CAPM for Indian Transmission Entities

Considering the impact of COVID 19 pandemic in recent times and the market volatility, it is important to allow the period of uncertainty to be averaged out, while calculating the beta and market risk premium. Further, the literature suggests that we must consider consistent time for all three parameters for the calculation of Expected rate of return (Ra). Furthermore, the use of extended periods of market data in CAPM is described in various literature as well. [Aswath Damodaran, 2014, Applied Corporate Finance (4th Edition)].

Therefore, it would be prudent to consider market risk premium based on 20 years of data instead of 30 years.

Capital asset pricing model (CAPM) is the most widely used method to estimate the required rate of return. According to this method, the expected rate of return on equity can be calculated as:

Ra = Rf + [β x (Rm – Rf)]

Where:

Ra = Expected rate of return

Rf = Risk-free rate

β = Beta of the security

Rm = Expected return on market

For estimating the rate of return on equity using CAPM, following steps were followed:

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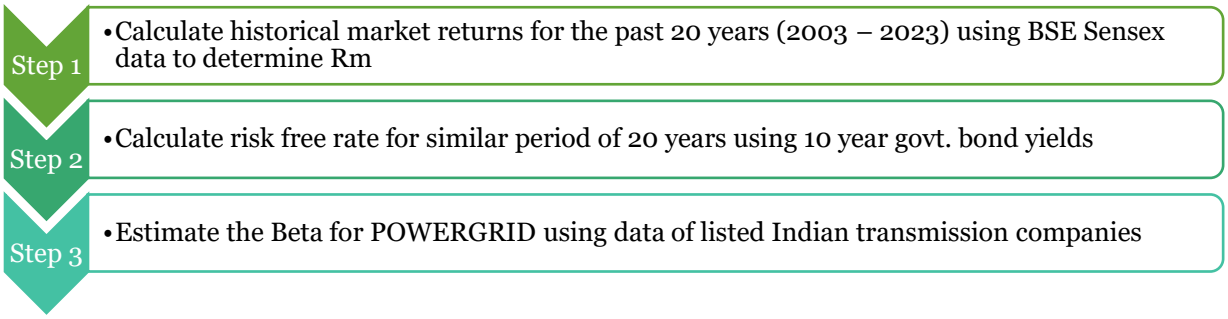
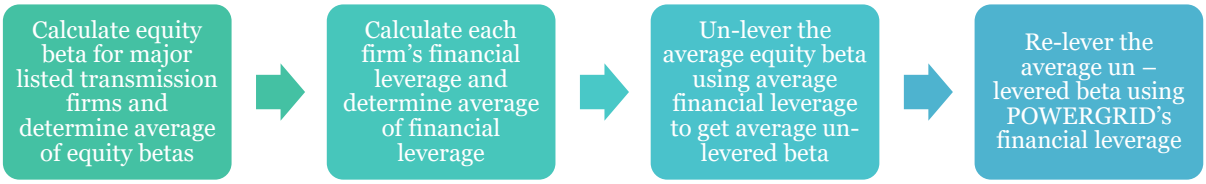


The beta for POWERGRID has been estimated as depicted below:



The unlevered beta is then calculated using the following formula:

Unlevered Beta = $(Levered\ beta\ ot\ equity\ beta)/((1 + ((1 - tax\ rate)x(debt/equity)))$

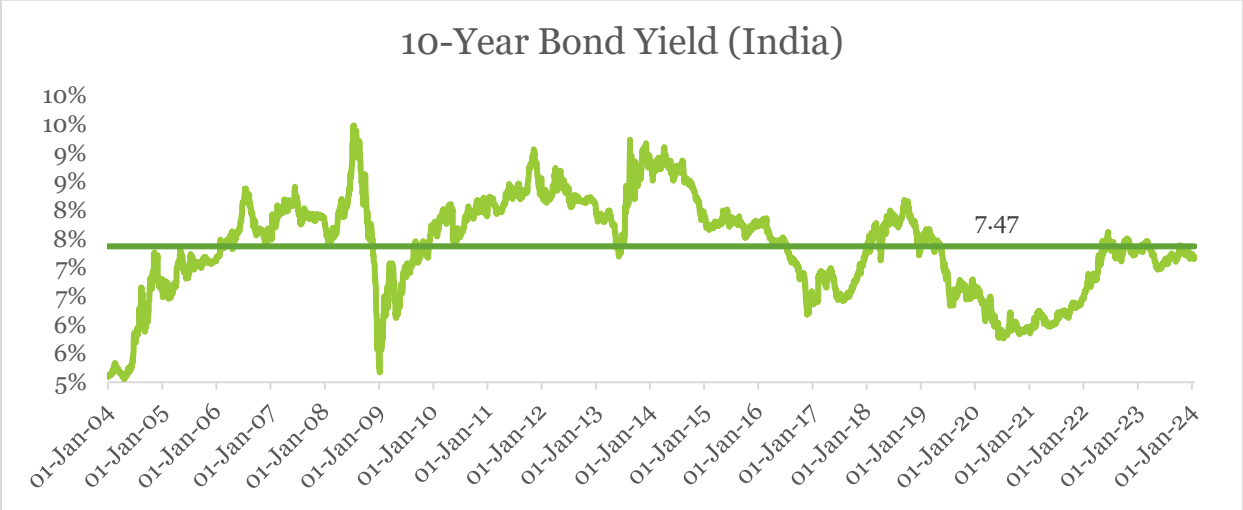
i.Calculation of market return

The market return has been estimated based on historical data of returns of BSE Sensex. The market return for a period from 2004-24 was 17.032%.

ii.Calculation of risk free rate based on 10-year government bond yields

Risk free rate is estimated using yield of 10-year government bond. The Risk-free rate (Rf) based on **10-year Indian government bond yield for 2004-24 works out to be 7.37%.**

The risk free rate for India has been estimated based on yield on average yield of 10-year government bond over past 20 years.



iii.Estimation of expected Beta for POWERGRID

Calculation of unlevered Beta

Firm	Equity / Levered Beta	D/E	Tax Rate	Un-levered Beta
Adani Transmission Ltd.	0.957	2.185	25%	0.363
POWERGRID	0.697	1.973	25%	0.281
Overall Average	0.827	2.079	25%	0.322

- For Adani, data used from July 2015 – till date, since it got listed in July 2015
- For POWERGRID, data used from 2007 – till date

The unlevered beta works out to be 0.322.

Re-levering the Beta

The average Un-levered Beta for all Indian transmission players is levered using financial leverage for POWERGRID to give expected Equity Beta.

Re-levered Beta = Un-levered Beta x (1 + ((1 – Tax Rate) x (Debt/Equity)))
= 0.322 x (1 + (1-0.25) x (70/30))
= 0.885

Thus, the Beta for calculation for expected return for POWERGRID is estimated at 0.885.

iv.Calculating the expected rate of return

Expected rate of return = Rf + [b x (Rm – Rf)]
= 7.477% + [0.885 x (17.032% - 7.477%)] = 15.937%

Thus, it can be observed that using the CAPM method, the expected return works out to be 15.937%, which is much higher than the existing number of 15.50%.

I. Expected Rate of RoE based Return on Equity Allowed in Other Infrastructure Sectors in India

i.Aviation Sector

Airport Economic Regulatory Authority of India (AERA) sets Fair Rate of Return (FRoR) for a control period is based on weighted average cost of capital.

- Cost of equity, for a control period is estimated by using the Capital Asset Pricing Model (CAPM) for each airport operator.
- Cost of debt is based on forecast cost of existing debt and forecast cost of future debt to be raised during the control period.

$$FRoR = (g \times R_d) + ((1-g) \times R_e)$$

The return allowed to private airports in the country is listed in the table below:

S.No.	Airport	Allowed RoE	Source
1	Indira Gandhi International Airport., Delhi	15.41% (Debt-Equity – 48%:52%)	AERA's order on determination of Aeronautical Tariff for IGI Airport, Delhi for second control period (2019-24);
2	Chhatrapati Shivaji International Airport, Mumbai	15.13% (Debt-Equity – 48%:52%)	AERA's order on determination of Aeronautical Tariffs in respect of Chhatrapati Shivaji International Airport, Mumbai for the first Regulatory Period (2019-24);
3	Rajiv Gandhi International Airport, Shamshabad, Hyderabad	15.17% (Debt-Equity – 48%:52%)	AERA's order on determination of Aeronautical Tariffs in respect of Rajiv Gandhi International Airport, Shamshabad, Hyderabad for the first control period (2021-26) ;
4	Kempegowda International Airport, Bengaluru	15.05% (Debt-Equity – 48%:52%)	AERA's order on determination of Aeronautical Tariffs in respect of Kempegowda International Airport, Bengaluru, for the third Control Period (2021-26);

S.No.	Airport	Allowed RoE	Source
5	Chennai International Airport (Airports Authority of India)	14%	AERA's order on determination of Aeronautical Tariffs in respect of Chennai International Airport, for the third Control Period (2021-26);

It can be observed that for an entity like airport with limited geographic spread, the allowed return of ~15% with very high equity base compared to Transmission. Thus, overall regulated return in aviation is higher to electricity transmissions sector.

ii.Natural Gas Transmission

The regulator for natural gas transmission, the Petroleum and Natural Gas Regulatory Board, has set a fixed RoCE of 12% for the sector.

Assuming 'Weighted Average Cost of Capital (WACC)' based approach to return on capital employed, the WACC can be calculated as:

WACC = g * Rd * (1 – Tc) + (1-g) * Re

Where:

g: gearing

Rd = Cost of debt

Tc = Tax rate

Re: Cost of equity

Based on the below assumption, the return on equity (Re) can be calculated as:

S.No.	Parameter	Assumed value	Basis
1.	Gearing (g)	70%	Based on normative gearing in power sector of country
2.	Cost of debt (R_d)	10.62%	SBI base rate + 1%
3.	Tax rate (T_c)	30%	Tax rate for corporate business in India

WACC = g * Rd * (1 – T_c) + (1-g) * Re

⇨ 12% = 0.7 * 10.62% * (1-30%) + (1-0.7) * R_e

⇨ Re = 22.66%

For a sector requiring infrastructure spread across a larger geography, the allowed return is significantly higher than the electricity transmission business.

Annexure-D

Detailed reasoning for normalization

1.Northern region

Particulars	Reasons for variations				
	2018-19	2019-20	2020-21	2021-22	2022-23
Repairs and Maintenance Expenses :					
Repairs of Plant & Machinery	Repair of Plant & Machinery and Consumption of stores both forms part of Repair maint. As per P&L , hence, it is requested to kindly see the variation combining both Heads.	Repair of Plant & Machinery and Consumption of stores both forms part of Repair maint. As per P&L , hence, it is requested to kindly see the variation combining both Heads.	Repair of Plant & Machinery and Consumption of stores both forms part of Repair maint. As per P&L , hence, it is requested to kindly see the variation combining both Heads.	Repair of Plant & Machinery and Consumption of stores both forms part of Repair maint. As per P&L , hence, it is requested to kindly see the variation combining both Heads.	Repair of Plant & Machinery and Consumption of stores both forms part of Repair maint. As per P&L , hence, it is requested to kindly see the variation combining both Heads.
Consumption of Stores (not capitalized)	Repair of Plant & Machinery and Consumption of stores both forms part of Repair maint. As per P&L , hence, it is requested to kindly see the variation combining both Heads.	Repair of Plant & Machinery and Consumption of stores both forms part of Repair maint. As per P&L , hence, it is requested to kindly see the variation combining both Heads.	Repair of Plant & Machinery and Consumption of stores both forms part of Repair maint. As per P&L , hence, it is requested to kindly see the variation combining both Heads.	Repair of Plant & Machinery and Consumption of stores both forms part of Repair maint. As per P&L , hence, it is requested to kindly see the variation combining both Heads.	Repair of Plant & Machinery and Consumption of stores both forms part of Repair maint. As per P&L , hence, it is requested to kindly see the variation combining both Heads.
Consumption of Spares (not capitalized)					
Patrolling expenses					

Power Charges (electricity consumed for repairing activity)	Due to increase in transmission assets under O&M stage- 04 new 765 kV Substation commissioned during FY 2017-18. POLE -II of Champa-Kurukhetra HVDC commissioned.				
Expenses of Diesel Generating sets	Due to increase in transmission assets under O&M stage-04 new 765 kV Substation commissioned during FY 2017-18.				
Provisions					
Prior Period Adjustment, if any					
Other expenses, if any (please provide details)					
Sub-total (R&M Expenses)	-	-	-	-	-
Administrative & General Expenses:					
Insurance	Commissioning of Champa -Kurushetra HVDC Poles				
Security (General other than special)	Increase in assets				

Rent	Increase in assets	Creation of Short term lease as per IND AS 116 for hiring of Vehicle	67%		
Electricity Charges					
Traveling and conveyance	Increase in assets		Decrease mainly due to Covid-19 impact		Increase in travel due to relaxation of covid norms
Communication expenses	Increase due to increase in new asset commissioning	Increase due to revision in employee entitlements.		Nominal Increase	
Advertisement and publicity			Dip is due to Covid	Increase is due to normalisation of Covid, since previous year was dip hence the increase is due to normalisation	Higher advertisement expenditure due to new projects
Foundation laying and inauguration					
Books Periodicals and Journals	Increase due to increase in new asset commissioning	Nominal amount	Nominal amount	Nominal amount	Nominal amount
Research expenses		Increase in research work			Increase in research work
Cost Audit Fees					Due to change of fees paid in other capacity for certification work

Horticulture Expenses		Increase in asset and increase in contract wage rates		Increase in asset and increase in contract wage rates	
Bandwidth charges dark fibre lease charges (Telecom) etc	Increase in assets				
Donations expenses					
Entertainment expenses		Increase in assets	Increase in assets	Increase in assets	
Filing Fees	Increase in assets			Increase in assets	
Legal Expenses	Major increase of Legal cost of arbitration for Land Aquistion of Meerut Land & JHATIKARA	44%	increase Legal cost of arbitration and cases		Legal cost due to arbitration cases
Consultancy Expenses	Negative due to Reversal of excess provision	Negative	Negative		Nominal Amount
Professional charges (not covered under employee expenses)	Certification fee Increase due to increase in new asset commissioning			Increase in brokerage for scrap disposal	
Printing and Stationary	Increase due to increase in new asset commissioning		Decrease due to Covid 19	Increase due to Covid 19 normalisation	

Hiring of Vehicle (excluding construction & Corporate exp)		Creation of Short term lease as per IND AS 116 for hiring of Vehicle	Increase in transmission assets	Increase in transmission assets	
Training and Recruitment expenses	Increase due to increase in new asset commissioning	Increase due to increase in new recruitment			Increase in offline trainings due to relaxation of Covid Norms
Rates and taxes	Increase due to GST on RHQ Allocation	Increase in transmission assets			
Rebate to Customers		Reduction in rebate due to change of rate from 2% to 1.5% in new tariff block	Increase in rebate due to special covid rebate	Decrease in rebate due to special covid rebate given in FY 2020-21.	Rebate allowed on timely basis by DICs as per actuals.
Self Insurance Reserve					
Provisions (Provide details)					
Prior Period Adjustment , if any					
Any other A&G expenses (Provide details)	Due to change of fees paid in other capacity for certification work, Gartner Research & Advisory Product,	Due to change of fees paid in other capacity for certification work, ,		Loss on Sale of Scrap of Material	Loss on Sale of Scrap of Material
Sub-total(A&G Expenses)					

Employee Expenses					
Salaries, wages and allowances		Increase in Employees in O&M and Increase in DA			
Staff welfare expenses					
a) Contribution to Provident and other funds	Increase is due to actuarial valuation for pension fund, increase in contribution of Provident fund as per statutory requirement		Increase is due to actuarial valuation for pension fund, increase in contribution of Provident fund as per statutory requirement		Increase is due to actuarial valuation for pension fund, increase in contribution of Provident fund as per statutory requirement
b) Gratuity					
c) Pension					
d) Employee Medical Expenses				Increased due to COVID pandemic	
e) Liveries and Uniforms		Revision in policy for Reimbursement of cost of uniform			Reimburesment of uniform is on calendar year basis and booking of expenditure on financial year basis
f) Safety & Appliances expenses			Increase due to Covid safety measures		Increase due to Covid safety measures
g) Others				Leave encashment on retirement of employees	

2.Eastern region

Particulars	Reasons for variations				
	2018-19	2019-20	2020-21	2021-22	2022-23
Repairs and Maintenance Expenses :					
Repairs of Plant & Machinery					
Consumption of Stores (not capitalized)	Repair of Plant & Machinery and Consumption of stores both forms part of Repair maint. As per P&L , hence, it is requested to kindly see the variation combining both Heads.	Repair of Plant & Machinery and Consumption of stores both forms part of Repair maint. As per P&L , hence, it is requested to kindly see the variation combining both Heads.	Repair of Plant & Machinery and Consumption of stores both forms part of Repair maint. As per P&L , hence, it is requested to kindly see the variation combining both Heads.	Repair of Plant & Machinery and Consumption of stores both forms part of Repair maint. As per P&L , hence, it is requested to kindly see the variation combining both Heads.	Repair of Plant & Machinery and Consumption of stores both forms part of Repair maint. As per P&L , hence, it is requested to kindly see the variation combining both Heads.
Consumption of Spares (not capitalized)	Repair of Plant & Machinery and Consumption of stores both forms part of Repair maint. As per P&L , hence, it is requested to kindly see the variation combining both Heads.	Repair of Plant & Machinery and Consumption of stores both forms part of Repair maint. As per P&L , hence, it is requested to kindly see the variation combining both Heads.	Repair of Plant & Machinery and Consumption of stores both forms part of Repair maint. As per P&L , hence, it is requested to kindly see the variation combining both Heads.	Repair of Plant & Machinery and Consumption of stores both forms part of Repair maint. As per P&L , hence, it is requested to kindly see the variation combining both Heads.	Repair of Plant & Machinery and Consumption of stores both forms part of Repair maint. As per P&L , hence, it is requested to kindly see the variation combining both Heads.

Patrolling expenses					
Power Charges (electricity consumed for repairing activity)		Addition of 04 nos STATCOM in ER during 2019-20	Decrease in Power Charge HVDC Stations	Arrear payment for Tertiary Power charges for substations under Odisha	
Expenses of Diesel Generating sets				Expense increased due to more running of DG due to low reliability/frequent outage of state supply line at few stations	
Provisions					
Prior Period Adjustment , if any					
Other expenses, if any (please provide details)					
Sub-total (R&M Expenses)					
Administrative & General Expenses:					
Insurance	Increase in Mega Insurance for addition of Alipurduar HVDC				
Security (General other than special)		Increase due to addition in substations			

Rent	Increase in transit hostel expenses	Creation of Short term lease as per IND AS 116 for hiring of Vehicle	Creation of Short term lease as per IND AS 116		
Electricity Charges			Decrease in Power Charge HVDC Stations	Arrear payment for Tertiary Power charges for substations under Odisha	
Traveling and conveyance	Increase due to new recruitments		Decrease in employee movement due to COVID 19	Increase in Employee movement due to relaxation of Covid Norms	Increase in Employee movement due to relaxation of Covid Norms
Communication expenses		Increase due to revision in employee entitlements.	Decrease in mobile charges due to covid 19	Increase due to employee entitlements.	
Advertisement and publicity		Higher advertisement expenditure due to new projects	Due to reduction in advertisement cost for tender notices due to shift to online mode		Higher advertisement expenditure due to new projects
Foundation laying and inauguration					
Books Periodicals and Journals		Increase due to revision in employee entitlements.			Increase due to revision in employee entitlements.
Research expenses					Increase in research work
Cost Audit Fees		Due to change of fees paid in other capacity for certification work	Due to change of fees paid in other	Due to change of fees paid in other	

			capacity for certification work	capacity for certification work	
Horticulture Expenses					
Bandwidth charges dark fibre lease charges (Telecom) etc					
Donations expenses					
Entertainment expenses		Increase in transmission assets under O&M Stage Increase due to revision in employee entitlements.	Increase in transmission assets under O&M Stage		
Filing Fees					
Legal Expenses	Legal cost due to arbitration cases	Legal cost due to arbitration cases			Legal cost due to arbitration cases
Consultancy Expenses		Increase due to increased nos of contract			
Professional charges (not covered under employee expenses)	Increase due to addition of new assets	Professional from ABB & CGL for repairing work at Different SS under ER in current year		Cost of conducting Pile integrity & their analysis	
Printing and Stationary			General reduction in stationery procurement	General reduction in stationery procurement	

Hiring of Vehicle (excluding construction & Corporate exp)	Due to GST on vehicle hiring	Increase in new transmission assets and due to amendment of vehicle contract and increase in CLW rates higher vehicle cost in current year. Creation of Short term lease as per IND AS 116 for hiring of Vehicle		Due to increase in CLW Rates for driver wages and general increase in contract rates	Increase due to Fuel Cost & labour rate revisions time to time, etc.
Training and Recruitment expenses	Increase due to new recruitments		Due to COVID, less no. of offline trainings done in current year	Due to COVID in FY 2020-21, less no. of offline trainings were done.	Increase in offline trainings due to relaxation of Covid Norms
Rates and taxes	Increase due to GST on RHQ Allocation		Increase in FY 2019-20 on account of Land Rent and Land levy charges for 2017-18 and 2018-19.	Arrear lease rent from Dec'2011 to Mar'2019 amounting to Rs.2.27 crores on renewal of Leasehold Land at Birpara S/S	
Rebate to Customers		Reduction in rebate due to change of rate from 2% to 1.5% in new tariff block	Increase in rebate due to special covid rebate	Decrease in rebate due to special covid rebate given in FY 2020-21.	Rebate allowed on timely basis by DICs as per actuals.
Self Insurance Reserve					

Provisions (Provide details)					
Prior Period Adjustment , if any					
Any other A&G expenses (Provide details)	Due to change of fees paid in other capacity for certification work, Increase due to Expense of SAP ERP provision,	Due to change of fees paid in other capacity for certification work	Increase due to Cultural/safety/vigil ance week expense	Increase due to Cultural/safety/vi gilance week expense	Due to change of fees paid in other capacity for certification work, Nominal Increase,
Sub-total(A&G Expenses)					
Employee Expenses					
Salaries, wages and allowances		Increase in Employees in O&M and Increase in DA			
Staff welfare expenses					
a) Contribution to Provident and other funds	Increase is due to actuarial valuation for pension fund, increase in contribution of Provident fund as per statutory requirement		Increase is due to actuarial valuation for pension fund, increase in contribution of Provident fund as per statutory requirement		Increase is due to actuarial valuation for pension fund, increase in contribution of Provident fund as per statutory requirement
b) Gratuity					
c) Pension					

d) Employee Medical Expenses				Increased due to COVID pandemic	
e) Liveries and Uniforms		Revision in policy for Reimbursement of cost of uniform			Reimburesment of uniform is on calendar year basis and booking of expenditure on financial year basis
f) Safety & Appliances expenses			Increase due to Covid safety measures		Increase due to Covid safety measures
g) Others				Leave encashment on retirement of employees	

3.Western Region

Particulars	**Reasons for variations**				
	2018-19	**2019-20**	**2020-21**	**2021-22**	**2022-23**
Repairs and Maintenance Expenses :					
Repairs of Plant & Machinery	Repair of Plant & Machinery and Consumption of stores both forms part of Repair maint. As per P&L , hence, it is requested to kindly see the variation combining both Heads				

Particulars	Reasons for variations				
	2018-19	2019-20	2020-21	2021-22	2022-23
Consumption of Stores (not capitalized)					
Consumption of Spares (not capitalized)					
Patrolling expenses					
Power Charges (electricity consumed for repairing activity)				Increase due to addition of HVDC Assets Which HVDC?	
Expenses of Diesel Generating sets					
Provisions					
Prior Period Adjustment , if any					
Other expenses, if any (please provide details)					
Sub-total (R&M Expenses)					
Administrative & General Expenses:					
Insurance	Increase in insurance cost of HVDC substations			Increase in insurance cost of HVDC substations and addition of new asset	

Particulars	Reasons for variations				
	2018-19	2019-20	2020-21	2021-22	2022-23
Security (General other than special)	Changes due to increase in transmission assets				
Rent		Creation of Short term lease as per IND AS 116 for hiring of Vehicle	reduction in Short term lease as per IND AS 116 for hiring of Vehicle		
Electricity Charges				Increase due to addition of HVDC Assets	
Traveling and conveyance			Decrease mainly due to Covid-19 impact	Increase in travel due to relaxation of covid norms	Increase in travel due to relaxation of covid norms
Communication expenses					
Advertisement and publicity	Higher Advertisement expenditure due to new projects		Due to reduction in advertisement cost for tender notices due to shift to online mode	Higher Advertisement expenditure due to new projects	Increased due to Tariff Advertisement for Block 2019-2024
Foundation laying and inauguration					
Books Periodicals and Journals					Nominal amount
Research expenses					Increase in research work
Cost Audit Fees					
Horticulture Expenses	Increase due to addition of assets			Increase due to addition of assets	

Particulars	Reasons for variations				
	2018-19	2019-20	2020-21	2021-22	2022-23
Bandwidth charges dark fibre lease charges (Telecom) etc					
Donations expenses					
Entertainment expenses		Increase in expenses due to asset increase	Increase in expenses due to asset increase		
Filing Fees	Increase due to asset addition				Increase due to increase in tariff
Legal Expenses	Increase in arbitration/ cases		Reduction due to Covid 19		Legal cost due to arbitration cases
Consultancy Expenses			Reduction due to Covid 19	Reduction due to Covid 19	Increase in consultant charges
Professional charges (not covered under employee expenses)	Certification fee Increase due to increase in new asset commissioning	Increase due to asset addition		Increase due to asset addition	Hiring of a consultant for implementation of Information SecurityManagement System (ISMS) - ISO 27001:2013
Printing and Stationary	Increase due to asset addition	Increase due to asset addition			
Hiring of Vehicle (excluding construction & Corporate exp)	Increase due to asset addition				Increase due to covid 19 relaxation

Particulars	Reasons for variations				
	2018-19	2019-20	2020-21	2021-22	2022-23
Training and Recruitment expenses			Reduction in training cost due to covid 19		Increase in training cost due to covid 19 relaxation for physical training
Rates and taxes		Increase due to asset addition			
Rebate to Customers					
Self Insurance Reserve					
Provisions (Provide details)					
Prior Period Adjustment , if any					
Any other A&G expenses (Provide details)	Due to change of fees paid in other capacity for certification work	Due to change of fees paid in other capacity for certification work			
Sub-total(A&G Expenses)					
Employee Expenses					
Salaries, wages and allowances		Increase in Employees in O&M and Increase in DA			
Staff welfare expenses					

Particulars	Reasons for variations				
	2018-19	2019-20	2020-21	2021-22	2022-23
a) Contribution to Provident and other funds	Increase is due to actuarial valuation for pension fund, increase in contribution of Provident fund as per statutory requirement		Increase is due to actuarial valuation for pension fund, increase in contribution of Provident fund as per statutory requirement		Increase is due to actuarial valuation for pension fund, increase in contribution of Provident fund as per statutory requirement
b) Gratuity					
c) Pension					
d) Employee Medical Expenses				Increased due to COVID pandemic	
e) Liveries and Uniforms		Revision in policy for Reimbursement of cost of uniform			Reimburesment of uniform is on calendar year basis and booking of expenditure on financial year basis
f) Safety & Appliances expenses			Increase due to Covid safety measures	Increase due to Covid safety measures	Increase due to Covid safety measures
g) Others				Leave encashment on retirement of employees	127%

4.Southern Region

Particulars	Reasons for variations				
	2018-19	2019-20	2020-21	2021-22	2022-23
Repairs and Maintenance Expenses :					
Repairs of Plant & Machinery	a) Addition of 04nos Substation in 2017-18 and 01 no in 2018-19 b)Overhauling of imported CBs at Vizag c) Strengthening of earthing of various Old Transmission lines has been done. d) Replacement of Insulators in problematic stretches e) Repair/ renovations of drain, buildings, residential/non-residential buliding at old substations			"a) Retrofitting & overhauling of old CBs/ Isolators and Isolators done at Tirunelvelli, Hassan, Karaikudi, POWERGRID bays at Neelamangal & Hoody, etc b) Retrofitting of analog PLCC protection couplers with DTPC at various substation c) Replacement of porcelain insulators at major crossing near Ramgundam and Hyderabad. d) Repair and Renovation of drains & roads in old substations e) Replacement of	

Particulars	Reasons for variations				
	2018-19	2019-20	2020-21	2021-22	2022-23
				old batteries at various substation"	
Consumption of Stores (not capitalized)					
Consumption of Spares (not capitalized)					
Patrolling expenses					
Power Charges (electricity consumed for repairing activity)		Increase as per actual usage and increase in unit prices and commissioning of new elements.			Increase as per actual usage and increase in unit prices and commissioning of new elements.
Expenses of Diesel Generating sets				"Overhauling of old DG set at Kolar Increase of transmission asset majorly HVDC Pugalur & Trishur"	Increase due to servicing of OLTC diverter switches of HVDC (Pole-1, R-Ph & Pole-2 R-Ph) Converter Transformer at Kolar HVDC Station
Provisions					
Prior Period Adjustment , if any					
Other expenses, if any (please					

Particulars	Reasons for variations				
	2018-19	2019-20	2020-21	2021-22	2022-23
provide details)					
Sub-total (R&M Expenses)					
Administrative & General Expenses:					
Insurance	Increase in insurance cost of HVDC substations		Increase on Commissioning of Raigargh Pugalur HVDC asset increase for part Year	Increase on Commissioning of Raigargh Pugalur HVDC asset	Increase in insurance cost of HVDC substations
Security (General other than special)	Increase in transmission assets				
Rent	Increase in transmission assets	Creation of Short term lease as per IND AS 116 for hiring of Vehicle		Increase in transmission assets	Increase in transmission assets
Electricity Charges					
Traveling and conveyance	Increase in conveyance reimbursement and asset increase		Decrease mainly due to Covid-19 impact	Increase in travel due to relaxation of covid norms	Increase due to relaxation of covid norm for physical training
Communication expenses		Increase due to revision in employee entitlements.		Increase due to employee entitlements.	

Particulars	Reasons for variations				
	2018-19	2019-20	2020-21	2021-22	2022-23
Advertisement and publicity	Higher Advertisement expenditure due to new projects		Due to reduction in advertisement cost for tender notices due to shift to online mode	Higher Advertisement expenditure due to new projects	Higher advertisement expenditure due to new projects ; BIMSTEC programme
Foundation laying and inauguration					
Books Periodicals and Journals	Increase in transmission assets under O&M Stage				
Research expenses					Increase in research work
Cost Audit Fees	Due to change of fees paid in other capacity for certification work	Due to change of fees paid in other capacity for certification work			
Horticulture Expenses				Increase due to transmission assets	Expenditure as per labour rate revisions time to time, on the basis of terms and conditions of contract & requirement of no. of labours and horticulture activites
Bandwidth charges dark fibre lease charges (Telecom) etc					
Donations expenses					

Particulars	Reasons for variations				
	2018-19	2019-20	2020-21	2021-22	2022-23
Entertainment expenses	Increase in transmission assets under O&M Stage	Increase in transmission assets under O&M Stage	Increase in transmission assets under O&M Stage		
Filing Fees					
Legal Expenses	Legal cost due to arbitration cases and court cases	Legal cost due to arbitration cases and court cases		Legal cost due to arbitration cases and court cases	Legal cost due to arbitration cases; and lawyer fees
Consultancy Expenses		Increase due to raining consultant expenses	Increase due to consultant expenses		
Professional charges (not covered under employee expenses)	Increase in transmission assets under O&M Stage			Increase in transmission assets under O&M Stage	
Printing and Stationary	Increase in transmission assets under O&M Stage	Increase in transmission assets under O&M Stage			
Hiring of Vehicle (excluding construction & Corporate exp)					
Training and Recruitment expenses					Increase in offline trainings due to relaxation of Covid Norms

Particulars	Reasons for variations				
	2018-19	2019-20	2020-21	2021-22	2022-23
Rates and taxes	Increase due to GST on RHQ Allocation				Increase in GST against common expenses allocated
Rebate to Customers		Reduction in rebate due to change of rate from 2% to 1.5% in new tariff block	Increase in rebate due to special covid rebate	Decrease in rebate due to special covid rebate given in FY 2020-21.	Rebate allowed on timely basis by DICs as per actuals.
Self Insurance Reserve					
Provisions (Provide details)					
Prior Period Adjustment , if any					
Any other A&G expenses (Provide details)	Due to change of fees paid in other capacity for certification work, Gartner Research & Advisory Product,	Due to change of fees paid in other capacity for certification work, ,			Increase due to increase in misc expenses and charging thereof
Sub-total(A&G Expenses)					
Employee Expenses					
Salaries, wages and allowances		Increase in Employees in O&M and Increase in DA			
Staff welfare expenses					

Particulars	Reasons for variations				
	2018-19	2019-20	2020-21	2021-22	2022-23
a) Contribution to Provident and other funds	Increase is due to actuarial valuation for pension fund, increase in contribution of Provident fund as per statutory requirement		Increase is due to actuarial valuation for pension fund, increase in contribution of Provident fund as per statutory requirement		Increase is due to actuarialvaluation for pension fund, increase in contribution of Provident fund as per statutory requirement
b) Gratuity					
c) Pension					
d) Employee Medical Expenses				Increased due to COVID pandemic	
e) Liveries and Uniforms		Revision in policy for Reimbursement of cost of uniform			Reimbursement of uniform is on calendar year basis and booking of expenditure on financial year basis
f) Safety & Appliances expenses			Increase due to Covid safety measures	Increase due to Covid safety measures	Increase due to Covid safety measures
g) Others				Leave encashment on retirement of employees	

5. North Eastern Region

Particulars	Reasons for variations				
	2018-19	2019-20	2020-21	2021-22	2022-23
Repairs and Maintenance Expenses:					
Repairs of Plant & Machinery		Renovation/repair of residential and non residential building, road repair, gravel spreading,etc at 25 years old substations at Aizwal, Misa, Jiribam, Bongaigaon, Dimapur, PK Bari, Nirjuli, Imphal, Bailipara, Kumarghat, Ziro			
Consumption of Stores (not capitalized)		Renovation/repair of residential and non residential building, road repair, gravel spreading,etc at 25 years old substations at Aizwal, Misa, Jiribam, Bongaigaon, Dimapur, PK Bari, Nirjuli, Imphal, Bailipara, Kumarghat, Ziro		i)Increase in O&M consumption for installation of TLAs (Surge Arrestors & towers) in transmission line under at Bongaigaon, Kumarghat, Nirjuli & Dimapur S/s ii)Consumption of material for rectification of	

Particulars	Reasons for variations				
	2018-19	2019-20	2020-21	2021-22	2022-23
				tower in 132kV Roing Pasighat TL	
Consumption of Spares (not capitalized)					
Patrolling expenses					
Power Charges (electricity consumed for repairing activity)					Increase in monthly electricity bills at various S/s
Expenses of Diesel Generating sets				Expense increased due to more running of DG due to low reliability/frequent outage of state supply line at few stations	Expense increased due to more running of DG due to low reliability/frequent outage of state supply line at few stations
Provisions					
Prior Period Adjustment , if any					
Other expenses, if any (please provide details)					

Particulars	Reasons for variations				
	2018-19	2019-20	2020-21	2021-22	2022-23
Sub-total (R&M Expenses)					
Administrative & General Expenses:					
Insurance	Change in Mega Insurance policy premium based on sum insured increase in asset		Change in cost of insurance	Change in cost of insurance	
Security (General other than special)					
Rent	Increase in transit hostel expenses	a) Increase in short term vehicle and buildings lease b) Decrease in short term lease			
Electricity Charges					
Traveling and conveyance	Due to increase in conveyance expenses		Decrease mainly due to Covid-19 impact	Increase in travel due to relaxation of covid norms	Increase in Employee movement due to relaxation of Covid Norms
Communication expenses	Increarse due to increse in employee	Increase due to revision in employee entitlements.	Decrease in mobile charges due to COVID-19	Increase due to employee entitlements.	
Advertisement and publicity			Due to reduction in advertisment cost for tender notices due to shift to online mode	Due to reduction in advertisment cost for tender notices due to shift to online mode	Increase on account of Bijli Mahotsav

Particulars	Reasons for variations				
	2018-19	2019-20	2020-21	2021-22	2022-23
Foundation laying and inauguration					
Books Periodicals and Journals					
Research expenses					4742% Increase in research work
Cost Audit Fees					
Horticulture Expenses	Increase in cost against various substations		Increase in cost against Biswanth Chariali SS		Expenditure as per labour rate revisions time to time, on the basis of terms and conditions of contract & requirement of no. of labours and horticulture activites
Bandwidth charges dark fibre lease charges (Telecom) etc					
Donations expenses					
Entertainment expenses			Increase in expenses due to asset increase	Increase in expenses due to asset increase	Nominal amount
Filing Fees		Increase due to addition of new assets			Increase due to increase in tariff

Particulars	Reasons for variations				
	2018-19	2019-20	2020-21	2021-22	2022-23
Legal Expenses	Decrease in arbitration cases			Increase in arbitration cases	Legal cost due to arbitration cases
Consultancy Expenses				Negative	Negative
Professional charges (not covered under employee expenses)	Increase in certification cost			Increase in Consultant charges	
Printing and Stationary					
Hiring of Vehicle (excluding construction & Corporate exp)		Decrease due to presentation of short term vehicle and Buildings lease in Rent		Increase due to asset additions	Increase due to Fuel Cost & labour rate revisions time to time, etc
Training and Recruitment expenses	Increase in training cost due to addition of new employees		Reduction in training cost due to COVID-19	Increase in training cost post COVID-19	Increase in offline trainings due to relaxation of Covid Norms
Rates and taxes	Increase in taxes under GST				Increase in GST against common expenses allocated
Rebate to Customers					
Self Insurance Reserve	Increase due to increase in assets				

Particulars	Reasons for variations				
	2018-19	2019-20	2020-21	2021-22	2022-23
Provisions (Provide details)					
Prior Period Adjustment , if any					
Any other A&G expenses (Provide details)	Gartner Research & Advisory Product				Due to change of fees paid in other capacity for certification work
Sub-total(A&G Expenses)					
Employee Expenses					
Salaries, wages and allowances		Increase in Employees in O&M and Increase in DA			
Staff welfare expenses					
a) Contribution to Provident and other funds	Increase is due to actuarial valuation for pension fund, increase in contribution of Provident fund as per statutory requirement		Increase is due to actuarial valuation for pension fund, increase in contribution of Provident fund as per statutory requirement		Increase is due to actuarial valuation for pension fund, increase in contribution of Provident fund as per statutory requirement
b) Gratuity					
c) Pension					

Particulars	Reasons for variations				
	2018-19	2019-20	2020-21	2021-22	2022-23
d) Employee Medical Expenses			Increased due to COVID pandemic	Increased due to COVID pandemic	
e) Liveries and Uniforms		Revision in policy for Reimbursement of cost of uniform			Reimburesment of uniform is on calendar year basis and booking of expenditure on financial year basis
f) Safety & Appliances expenses			Increase due to Covid safety measures		Increase due to Covid safety measures
g) Others					Leave encashment on retirement of employees

पावरग्रिड
POWERGRID

पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)

ANNEXURE -E

Ref. No. CC/RC/T.R.24-29 **Date:** 30/11/2023

The Secretary,
Central Electricity Regulatory Commission,
3rd & 4th Floor, Chandralok Building,
36 Janpath, New Delhi-110001

Sub: CERC (Terms and Conditions of Tariff) Regulations, 2024 for the tariff period from 1/4/2024 to 31/3/2029

- **Additional operational data and O&M expenditure as sought**

Dear Sir,

POWERGRID has submitted details of its actual performance/ operational data and O&M expenditure in the prescribed format for the financial years 2017-18 to 2021-23 vide its submission dated 30.05.2023 and 30.06.2023 respectively. Further, POWERGRID vide its letter dated 31.07.2023 has submitted its detailed comments/suggestion as reply to Approach paper on Tariff Regulations 2024-29.

In this regard POWERGRID made a detailed presentation to the staff of CERC on 14.11.2023 on various issues, key tariff norms, financial and operational parameters of Tariff. During the course of discussion, certain clarification/additional information were sought from POWERGRID.

In this regard, please find enclosed additional information as sought from POWERGRID.

Thanking you,

Yours faithfully,

30/11/23

(V C Sekhar)
General Manager (Regulatory Cell)

Encl: As per Annexure -A enclosed

Annexure-A

Clarification/additional information being submitted

i. Details of CTUIL expenses included in the O&M expenditure data submitted by POWERGRID

ii. Details of Capital Spares consumed of value between Rs 5 Lakhs to 20 Lakhs for F.Ys. 2019-23 and not included earlier in O&M expenses

iii. Justification for normative rate of Interest on Loan proposed as response to Approach paper

iv. Reasons for high variation in O&M expenses of HVDC station on Year on year basis

v. Voltage wise and Year wise Total number of GIS bays

Details of CTUIL expenses included in the O&M expenditure data submitted by POWERGRID

(Rs in Lakh)

Name of Transmission Company:		CTUIL Expenses*	
Name of Transmission Region:		2021-22	2022-23
Sr.No.	ITEM		
1	2		
1.0	**Repairs and Maintenance Expenses :**		
1)	Repairs of Plant & Machinery	-	-
2)	Consumption of Stores (not capitalized)	-	-
3)	Consumption of Spares (not capitalized)	-	-
4)	Patrolling expenses	-	-
5)	Power Charges (electricity consumed for repairing activity)	-	-
6)	Expenses of Diesel Generating sets	-	-
7)	Provisions	-	-
8)	Prior Period Adjustment , if any	-	-
9)	Other expenses, if any (please provide details)	-	-
	Sub-total (R&M Expenses)	-	-
2.0	**Administrative & General Expenses:**		
1)	Insurance	-	-
2)	Security (General other than special)	-	-
3)	Rent	-	-
4)	Electricity Charges	0.54	0.92
5)	Traveling and conveyance	95.78	162.38
6)	Communication expenses	25.95	26.78
7)	Advertisement and publicity	3.00	-
8)	Foundation laying and inauguration	-	-
9)	Books Periodicals and Journals	-	-
10)	Research expenses	-	-
11)	Cost Audit Fees	-	-
12)	Horticulture Expenses	-	-
13)	Bandwidth charges dark fibre lease charges (Telecom) etc	-	-
14)	Donations expenses	-	-
15)	Entertainment expenses	10.11	13.52
16)	Filing Fees	-	-
17)	Legal Expenses	159.64	0.86
18)	Consultancy Expenses	-	-
19)	Professional charges (not covered under employee expenses)	289.97	133.30
20)	Printing and Stationary	2.82	0.02
21)	Hiring of Vehicle (excluding construction & Corporate exp)	-	0.70
22)	Training and Recruitment expenses	0.46	4.55
23)	Rates and taxes	-	-
24)	Rebate to Customers	-	-
25)	Self Insurance Reserve	-	-
26)	Provisions (Provide details)	-	-
27)	Prior Period Adjustment , if any	-	-
28)	Any other A&G expenses (Provide details)	24.59	19.82
	Sub-total(A&G Expenses)	**612.88**	**362.85**
3.0	**Employee Expenses**		
1)	Salaries, wages and allowances	1,894.18	2,368.34

Details of CTUIL expenses included in the O&M expenditure data submitted by POWERGRID

(Rs in Lakh)

Name of Transmission Company: / Name of Transmission Region:		CTUIL Expenses*	
		2021-22	2022-23
Sr.No.	ITEM		
2)	Staff welfare expenses	50.02	70.29
	a) Contribution to Provident and other funds	318.86	344.51
	b) Gratuity	0.35	0.25
	c) Pension	9.53	11.83
	d) Employee Medical Expenses	49.74	23.00
	e) Liveries and Uniforms	0.76	38.77
	f) Safety & Appliances expenses	-	0.06
	g) Others	-	-
3)	Productivity linked incentive	-	-
4)	Expenditure on VRS	-	-
5)	Ex-gratia	-	-
6)	Performance related pay (PRP)	609.02	702.32
7)	Any other expenses	-	-
8)	Provisions (furnish details separately)	-	-
9)	Prior Period Adjustment , if any (furnish details separately)	-	-
10)	VII Pay Arrears Paid Pertaining to period prior to 2017-18	-	-
	Sub-total(Employee Expenses)	**2,932.45**	**3,559.36**
4.0	Additional /Specific Security it any on the advise of Govt. Agency/ Statutory Authority/ any other reasons	-	-
5.0	Loss of store/Disposal/Write off	-	-
6.0	Provisions (other than above)	-	-
7.0	Prior Period Adjustment , if any (not covered above)	-	-
8.0	Corporate office expenses allocation	-	-
	(i) Transmission O&M Service	-	-
	(ii) Projects under construction	-	-
	(iii) ULDC –Communication	-	-
	(iv) Consultancy services, if any	-	-
	(v) Other business (Telecom)	-	-
	(vi) Other business (if any)	-	-
9.0	Corporate Social Responsibility expenses	-	-
10.0	- Others (Specify items not included above)	-	-
	Sub Total (1 to 10)	**3,545.33**	**3,922.21**
11	Other Income, Revenue and Recoveries, if any	-	-
a)	Short term open access (other than transmission service	-	-
b)	System & Market operation charges	-	-
c)	Interest on differential tariff recovered	-	-
d)	Consultancy Services	-	-
e)	Interest against Loans and advances	-	-
f)	Interest from advanced to contractors/suppliers	-	-
g)	Income from lease of assets	-	-
h)	Disposal of scrap/stores (not covered under capitalized assets)	-	-
i)	Interest on Government securities	-	-
j)	Miscellaneous income from operations	-	-
k)	Revenue/ Recoveries, if any	-	-
12	Net Expenses	**3,545.33**	**3,922.21**

Details of CTUIL expenses included in the O&M expenditure data submitted by POWERGRID

(Rs in Lakh)

Name of Transmission Company:		CTUIL Expenses*	
Name of Transmission Region:		2021-22	2022-23
Sr.No.	**ITEM**		
13	Capital spares consumed **not included in (A) (1) above and not claimed /allowed by Commission** for capitalization	-	-
13A	Expenses against Capital expenditure incurred for Operation and Maintenance of Transmission System (not included in Capital Cost/Repair & Maintenance expenditure indicated 1.0(1) above)	-	-
14	Total Expenses (12) + (13A)	**3,545.33**	**3,922.21**

Notes:

I. The details of Corporate Expenses and the methodology of allocation of corporate expenses to various functional activities and allocation of Corporate expenses pertaining to power generation/ transmission system to each operating stations/ transmission region/system and stations/ transmission region/system under construction should be clearly specified in ANNEXURE-VIII as provided here separately.

II. An annual increase in O&M expenses under a given head in excess of 10% percent should be

III. The data should be based on audited balance sheets, duly reconciled and certified.

IV. Employee cost should be excluding arrears paid for pay hike/prior period adjustment /payment

IV. Details of arrears, if any, pertaining to period prior to the year 2017-18 should be mentioned

V. No. of employees opting for VRS during each year should be indicated.

VI. Details of abnormal expenses, if any, shall be furnished separately.

VII Break-up of staff welfare expenses should be furnished

VIII Details of Consumptive Water requirement , contracted quantum and actual water consumed with source , rate etc. Should be furnished year-wise

IX. Details of capital spares consumed each year which were not claimed/allowed in the tariff should be furnished giving item wise unit price and quantity consumed.

Break Up of other A & G Expenses (Indicated at 2 (28) above)

Sr. No.	**Item**		
1	Tax and Statutory Audit Fees	-	-
2	EDP Expenses	0.29	0.12
3	Miscellaneous Expenses	24.30	19.69
4	Bad Debts Expenses	-	-
5	FERV Expense	-	-
	Total	**24.59**	**19.82**

Note

****CTUIL came into existance w.e.f. 01.04.2021, the expenditure has been submitted from FY 2021-22 and FY 2023-23.***
Expenditure directly incurred by CTUIL has not been considered.

Details of Capital Spares Consumed-5 Lakhs to 20 Lakhs

					Consumption Detail							Year wise Consumption in Rs Lakhs			
Sr. No	Region	Material Name	Plant Name	Base Unit of Measure	2019-2020 Qty	2020-2021 Qty	2021-2022 Qty	2022-2023 Qty	Total Consumption Qty	Unit Cost (Rs Lakhs)	Consumption Value (Rs	Value 2019-2020	Value 2020-2021	Value 2021-2022	Value 2022-2023
1	ER2	420KV, 1250A BUSHING-T/F ALSTOM	NEW SILIGURI	NO	0	1	0	0	1	5.34	5.34	0.00	5.34	0.00	0.00
2	WR2	420KV, 1250A BUSHING-AREVA	JABALPUR POOLING	NO	7	0	0	0	7	6.26	43.84	43.84	0.00	0.00	0.00
3	WR2	CONTROLLED SWITCHING DEVICE 420KV 3PH CB	JABALPUR	NO	0	0	0	4	4	13.66	54.64	0.00	0.00	0.00	54.64
4	NR1	420KV, 1250A BUSHING (STD)	MANDOLA	EA	0	0	0	1	1	6.67	6.67	0.00	0.00	0.00	6.67
5	NR1	420KV, 2000A, 40KA 3PH DB ISOLATOR+1E/S	MANDOLA	EA	0	0	0	1	1	11.09	11.09	0.00	0.00	0.00	11.09
6	NR1	420KV,40KA INTERRUPTER W/O CR-CB-BHEL	BHIWADI	EA	0	0	1	0	1	14.18	14.18	0.00	0.00	14.18	0.00
7	NR2	420KV, 1250A BUSHING-T/F BHEL	FATEHABAD	NO	0	1	0	0	1	6.67	6.67	0.00	6.67	0.00	0.00
8	SR2	420KV, 1250A BUSHING (STD)	TRICHY	NO	0	0	0	1	1	6.17	6.17	0.00	0.00	0.00	6.17
9	NR3	POLE COLUMN-420KV SF6 CB HPL420(SO)-ABB	AGRA	EA	0	0	1	0	1	5.51	5.51	0.00	0.00	5.51	0.00
10	NR3	CONTROLLED SW DEVICE RPH3 420KV CB	BALLIA	SET	0	0	3	0	3	7.33	22.00	0.00	0.00	22.00	0.00
11	NR1	420KV, 2000A, 40KA,1-PH,CT-120% RATING	BHIWADI	EA	0	0	0	1	1	6.00	6.00	0.00	0.00	0.00	6.00
12	NR1	420KV, 2000A, 40KA,1-PH,CT-120% RATING	GIS GURGAON	EA	0	0	0	2	2	6.11	12.23	0.00	0.00	0.00	12.23
13	NR1	420KV, 2000A, 40KA,1-PH,CT-120% RATING	NEEMRANA	EA	0	0	1	0	1	6.11	6.11	0.00	0.00	6.11	0.00
14	NR3	420KV,40KA INTERRUPTER-ELFSP6 21-CB-ABB	AGRA	EA	1	0	2	0	3	15.18	45.55	15.18	0.00	30.37	0.00
15	NR3	CONTROL PULSE COMPUTER,YPP 108 A-SVC-ABB	KANPUR	EA	3	0	0	0	3	5.78	17.35	17.35	0.00	0.00	0.00
16	NR3	SINGLE BOARD COMPUTER,NPP 101 A-SVC-ABB	KANPUR	EA	2	0	0	0	2	8.18	16.36	16.36	0.00	0.00	0.00
17	NR3	1 POLE-420KV, 2000A, 40KA HCB ISOL+1E/S	AGRA	EA	0	0	1	0	1	8.58	8.58	0.00	0.00	8.58	0.00
18	NR3	420KV, 2000A, 63KA,1-PH,CT-120% RATING	AGRA	EA	1	0	0	0	1	13.40	13.40	13.40	0.00	0.00	0.00
19	NR3	NUMERICAL DISTANCE RELAY REL670-ABB	AGRA	EA	0	0	1	0	1	5.42	5.42	0.00	0.00	5.42	0.00
20	NR3	TRANSFORMER DIFFERENTIAL PROT-RET670	AGRA	EA	0	1	1	1	3	5.05	15.15	0.00	5.05	5.05	5.05
21	NR3	CONTROLLED SWITCHING DEV-420/765KV CB-BH	AGRA	EA	0	1	0	0	1	12.24	12.24	0.00	12.24	0.00	0.00
22	NR1	CONTROLLED SWITCHING DEV-420/765KV CB-CG	BALLABGARH	NO	0	0	0	1	1	12.24	12.24	0.00	0.00	0.00	12.24
23	NER	245KV, 40KA SF6 CB POLE (SO)-SIEM	DIMAPUR	SET	0	0	2	0	2	13.51	27.02	0.00	0.00	27.02	0.00
24	NER	245KV BUSHING (ST90319)-T/F BHEL	BONGAIGAON	EA	1	0	0	0	1	6.00	6.00	6.00	0.00	0.00	0.00
25	ER2	IBS DIGITAL I/O CARD 69221DIGAA-BHEL	JEYPORE	EA	1	0	0	0	1	8.51	8.51	8.51	0.00	0.00	0.00
26	WR2	420KV, 1250A BUSHING (STD)	BOISAR	NO	0	0	2	0	2	6.06	12.12	0.00	0.00	12.12	0.00
27	WR2	420KV, 800A BUSHING-CGL	BHACHAU	NO	0	1	0	0	1	13.82	13.82	0.00	13.82	0.00	0.00
28	WR2	420KV,40KA SF6 CB POLE (SO) W/O CR-SIEM	RAJGARH	NO	0	1	0	0	1	15.21	15.21	0.00	15.21	0.00	0.00
29	WR2	245KV, 40KA SF6 CB POLE (PO)-ABB	VAPI	NO	1	0	0	0	1	5.66	5.66	5.66	0.00	0.00	0.00
30	WR2	420KV, 1250A BUSHING (STD)	KHANDWA	NO	0	0	0	1	1	5.93	5.93	0.00	0.00	0.00	5.93
31	WR2	CONTROLLED SWITCHING DEVICE 420KV 3PH CB	KHANDWA	NO	0	3	0	0	3	13.36	40.07	0.00	40.07	0.00	0.00
32	WR2	420KV, 1250A BUSHING (STD)	JABALPUR	NO	0	1	0	0	1	6.07	6.07	0.00	6.07	0.00	0.00
33	ER1	420KV, 1250A BUSHING-AREVA	JAMSHEDPUR	NO	0	0	1	0	1	6.26	6.26	0.00	0.00	6.26	0.00
34	WR1	48V-48V DC CONVERTER CSR1440-AXILEC	BHADRAWATI	NO	1	0	0	0	1	8.34	8.34	8.34	0.00	0.00	0.00
35	WR1	ANALOG S301 CARD-PLC SYSTEM-ALSTOM	BHADRAWATI	NO	0	0	2	0	2	7.91	15.81	0.00	0.00	15.81	0.00
36	NR2	415V MAIN SWITCHBOARD	MALERKOTLA	SET	0	1	0	0	1	15.21	15.21	0.00	15.21	0.00	0.00
37	NR2	420KV, 2000A, 40KA SF6 CT-120% RATING	KISHENPUR	NO	2	0	0	0	2	7.98	15.96	15.96	0.00	0.00	0.00
38	NR2	420KV, 1200A, 50KA,1PH CT-120% RATING	ABDULLAPUR	NO	0	2	0	0	2	6.92	13.84	0.00	13.84	0.00	0.00
39	SR1	420KV, 1250A BUSHING (STD)	MUNIRABAD	EA	1	0	0	0	1	6.98	6.98	6.98	0.00	0.00	0.00
40	SR1	420KV, 2000A, 40KA,1-PH,CT-120% RATING	HYDERABAD	EA	0	1	0	2	3	5.92	17.75	0.00	5.92	0.00	11.84
41	SR2	420KV, 1250A BUSHING-AREVA	HOSUR	NO	0	0	0	1	1	7.41	7.41	0.00	0.00	0.00	7.41
42	SR2	420KV, 2000A, 40KA,1-PH,CT-120% RATING	THIRUVANANTHAPURAM	NO	0	0	1	0	1	5.47	5.47	0.00	0.00	5.47	0.00
43	SR2	MAIN PUMP CENTRIFUGAL-VALVECOOLING-HILGE	KOLAR	NO	0	0	1	0	1	17.00	17.00	0.00	0.00	17.00	0.00

Details of Capital Spares Consumed-5 Lakhs to 20 Lakhs

					Consumption Detail							Year wise Consumption in Rs Lakhs			
Sr. No	Region	Material Name	Plant Name	Base Unit of Measure	2019-2020 Qty	2020-2021 Qty	2021-2022 Qty	2022-2023 Qty	Total Consumption Qty	Unit Cost (Rs Lakhs)	Consumption Value (Rs	Value 2019-2020	Value 2020-2021	Value 2021-2022	Value 2022-2023
44	WR1	420KV, 1250A BUSHING (STD)	BHATAPARA	NO	0	0	0	1	1	5.85	5.85	0.00	0.00	0.00	5.85
45	NR1	SUPPORT STRUCTURE-245KV CB PLOE-CGL	ROORKEE	SET	0	1	0	0	1	5.25	5.25	0.00	5.25	0.00	0.00
46	NR3	420KV, 2000A, 40KA,1-PH,CT-120% RATING	BALLIA	EA	0	1	0	0	1	5.76	5.76	0.00	5.76	0.00	0.00
47	NR1	420KV, 2000A, 40KA SF6 CB POLE	KANKROLI	SET	1	0	0	0	1	9.54	9.54	9.54	0.00	0.00	0.00
48	NR1	420KV, 2000A, 40KA CT-150% RATING	KOTA	EA	0	0	1	0	1	6.02	6.02	0.00	0.00	6.02	0.00
49	NR1	420KV, 1250A RIP BUSHING (STD)	MANDOLA	NO	0	0	0	1	1	16.64	16.64	0.00	0.00	0.00	16.64
50	NR1	420KV, 1250A RIP BUSHING (STD)	BALLABGARH	NO	0	0	0	1	1	16.64	16.64	0.00	0.00	0.00	16.64
51	ER1	420KV, 1250A BUSHING (STD)	JAMSHEDPUR	NO	0	0	0	1	1	6.17	6.17	0.00	0.00	0.00	6.17
52	WR2	CONSERVATOR TANK-315MVA T/F	JABALPUR	NO	0	1	0	0	1	9.87	9.87	0.00	9.87	0.00	0.00
53	WR1	420KV, 2000A, 40KA,1-PH,CT-120% RATING	RAIPUR	EA	1	0	0	0	1	5.97	5.97	5.97	0.00	0.00	0.00
54	WR1	420KV, 2000A, 40KA,1-PH,CT-120% RATING	BHADRAWATI	NO	3	3	0	0	6	5.97	35.85	17.92	17.92	0.00	0.00
55	NR1	420KV, 2000A, 40KA CT-150% RATING	KOTA	EA	0	0	1	0	1	6.15	6.15	0.00	0.00	6.15	0.00
56	WR1	SURGE ARRESTER 3EP31384VZ8-DC FILTER-SIE	BHADRAWATI	NO	2	0	0	0	2	12.12	24.25	24.25	0.00	0.00	0.00
57	WR1	SURGE ARRESTER 3EP31204VZ8-DC FILTER-SIE	BHADRAWATI	NO	2	0	0	0	2	9.41	18.82	18.82	0.00	0.00	0.00
58	ER1	420KV, 2000A, 40KA CT-150% RATING	PURNEA	EA	3	0	0	0	3	6.49	19.47	19.47	0.00	0.00	0.00
59	NR2	420KV, 1200A, 50KA,1PH CT-120% RATING	ABDULLAPUR	NO	0	2	0	2	4	5.96	23.85	0.00	11.92	0.00	11.92
60	NR3	765KV, 3150A, 1MH,40KA LINE TRAP	AGRA	NO	1	0	0	0	1	10.09	10.09	10.09	0.00	0.00	0.00
61	NR3	420KV, 2000A, 40KA CT-150% RATING	GORAKHPUR	NO	0	0	1	0	1	5.98	5.98	0.00	0.00	5.98	0.00
62	NR3	DAMPING RESISTOR ELEMENT-FSC-BHEL	MAINPURI	NO	1	0	0	0	1	9.42	9.42	9.42	0.00	0.00	0.00
63	NR3	VRLA BATTERY BANK 220V 750AH	MAINPURI	NO	0	0	2	0	2	5.71	11.43	0.00	0.00	11.43	0.00
64	NR1	72.5KV, 2500A, 25KA, 3PH CB	BALLABGARH	EA	0	0	1	0	1	7.59	7.59	0.00	0.00	7.59	0.00
65	NR1	CONTROLLED SWITCHING DEV-420/765KV CB-CG	BALLABGARH	EA	0	0	0	1	1	13.77	13.77	0.00	0.00	0.00	13.77
66	NR1	420KV, 2000A, 40KA,1-PH,CT-120% RATING	JAIPUR SOUTH	EA	0	0	2	0	2	6.11	12.23	0.00	0.00	12.23	0.00
67	WR1	420KV, 2000A, 40KA,1-PH,CT-120% RATING	RAIPUR	NO	1	0	0	0	1	5.97	5.97	5.97	0.00	0.00	0.00
68	NR1	420KV, 1250A BUSHING (STD)	MEERUT	NO	1	0	0	0	1	6.17	6.17	6.17	0.00	0.00	0.00
69	NR1	420KV, 1250A BUSHING (STD)	JAIPUR SOUTH	NO	0	0	1	0	1	6.17	6.17	0.00	0.00	6.17	0.00
70	WR1	420KV, 1250A BUSHING-T/F CGL	MAPUSA	EA	0	0	1	0	1	6.49	6.49	0.00	0.00	6.49	0.00
71	WR1	420KV, 3000A, 50KA,1-PH CT-120% RATING	SEONI	EA	1	0	0	0	1	5.89	5.89	5.89	0.00	0.00	0.00
72	WR1	420KV, 800A BUSHING (STD)	BHADRAWATI	EA	0	0	0	1	1	6.67	6.67	0.00	0.00	0.00	6.67
73	WR1	POWER SUPPLY UNIT PS893A-220/5V, 40W-ABB	RAIPUR	EA	0	2	0	0	2	8.71	17.43	0.00	17.43	0.00	0.00
74	WR1	CONTROLLED SWITCHING DEV-420/765KV CB-CG	BHADRAWATI	EA	1	0	0	0	1	12.60	12.60	12.60	0.00	0.00	0.00
75	WR1	420KV, 3000A, 50KA,1-PH CT-120% RATING	SEONI	EA	1	0	0	0	1	5.89	5.89	5.89	0.00	0.00	0.00
76	NR3	245KV,3150A, 50KA 3PH CIRCUIT BREAKER	SITARGANJ	EA	0	1	0	0	1	8.02	8.02	0.00	8.02	0.00	0.00
77	NR3	245KV,3150A, 40KA 3PH CB	SOHAWAL	EA	1	0	0	0	1	8.02	8.02	8.02	0.00	0.00	0.00
78	NR3	420KV, 1250A BUSHING (STD)	GORAKHPUR	EA	0	0	1	0	1	6.17	6.17	0.00	0.00	6.17	0.00
79	NR3	420KV, 1250A BUSHING (STD)	MAINPURI	EA	0	1	0	0	1	6.17	6.17	0.00	6.17	0.00	0.00
80	NR1	245KV,3150A, 50KA 3PH CIRCUIT BREAKER	HISSAR	EA	0	1	0	0	1	8.02	8.02	0.00	8.02	0.00	0.00
81	SR2	LA THRC/LEAKAGE CURRENT ANALYZER	SOMANAHALLI	NO	0	1	0	0	1	8.89	8.89	0.00	8.89	0.00	0.00
82	SR2	245KV, 1600A, 50KA 3PH CIRCUIT BREAKER	MADURAI	EA	0	4	0	0	4	8.13	32.53	0.00	32.53	0.00	0.00
83	WR2	420KV, 3000A, 50KA,1-PH CT-120% RATING	BOISAR	NO	0	2	0	0	2	5.88	11.77	0.00	11.77	0.00	0.00
84	NER	145KV, 1600A, 31.5KA SF6 CB POLE	DIMAPUR	EA	0	1	0	0	1	9.66	9.66	0.00	9.66	0.00	0.00
85	NER	245KV, 1250A, 50KA SF6 CB POLE	DIMAPUR	EA	0	1	0	0	1	12.93	12.93	0.00	12.93	0.00	0.00
86	WR1	420KV, 2000A, 50KA ,1-PH CT-120% RATING	RAIPUR	EA	1	1	0	0	2	5.98	11.96	5.98	5.98	0.00	0.00

Details of Capital Spares Consumed-5 Lakhs to 20 Lakhs

					Consumption Detail							Year wise Consumption in Rs Lakhs			
Sr. No	Region	Material Name	Plant Name	Base Unit of Measure	2019-2020 Qty	2020-2021 Qty	2021-2022 Qty	2022-2023 Qty	Total Consumption Qty	Unit Cost (Rs Lakhs)	Consumption Value (Rs	Value 2019-2020	Value 2020-2021	Value 2021-2022	Value 2022-2023
87	WR2	420KV, 1250A BUSHING (STD)	KHANDWA	NO	0	0	0	1	1	6.03	6.03	0.00	0.00	0.00	6.03
88	SR2	THYRISTOR ELECTRONICS PCB-TE CARD-SIEM	KOLAR	EA	1	0	0	0	1	7.93	7.93	7.93	0.00	0.00	0.00
89	ER1	420KV, 2000A, 40KA,1-PH,CT-120% RATING	JAMSHEDPUR	EA	2	0	0	1	3	5.94	17.83	11.88	0.00	0.00	5.94
90	WR2	EVENT LOGGER 512 INPUT	BOISAR	NO	0	2	0	0	2	7.40	14.80	0.00	14.80	0.00	0.00
91	WR2	EVENT LOGGER 512 INPUT	VAPI	NO	0	2	0	0	2	7.61	15.22	0.00	15.22	0.00	0.00
92	NR1	420KV, 2000A, 50KA ,1-PH CT-120% RATING	BASSI	NO	0	1	0	0	1	5.92	5.92	0.00	5.92	0.00	0.00
93	NR1	420KV, 2000A, 50KA ,1-PH CT-120% RATING	HISSAR	NO	0	0	0	1	1	7.13	7.13	0.00	0.00	0.00	7.13
94	NER	CONTROLLED SWITCHING DEVICE-420KV CB	BONGAIGAON	NO	0	0	0	4	4	7.82	31.27	0.00	0.00	0.00	31.27
95	NR1	420KV, 2000A, 50KA ,1-PH CT-120% RATING	BASSI	NO	0	1	0	0	1	5.92	5.92	0.00	5.92	0.00	0.00
96	NR1	245KV, 1600A, 40KA,1-PH, CT-120% RATING	KOTA	NO	0	0	1	1	2	5.48	10.95	0.00	0.00	5.48	5.48
97	NR1	420KV, 2000A, 40KA,1-PH,CT-120% RATING	ROORKEE	NO	0	0	0	1	1	6.03	6.03	0.00	0.00	0.00	6.03
98	NR1	420KV, 2000A, 40KA,1-PH,CT-120% RATING	KOTA	NO	0	0	0	1	1	5.48	5.48	0.00	0.00	0.00	5.48
99	NR3	ANALOG OUTPUT UNIT, YPM 104 B-SVC-ABB	KANPUR	EA	1	0	0	0	1	5.77	5.77	5.77	0.00	0.00	0.00
100	NR3	BUS PACK PLANE, DSSB 104-SVC-ABB	KANPUR	EA	1	0	0	0	1	5.07	5.07	5.07	0.00	0.00	0.00
101	NR3	CIRCUIT BOARD YXZ 207 A-SVC-ABB	KANPUR	EA	1	0	0	0	1	7.16	7.16	7.16	0.00	0.00	0.00
102	NR3	CIRCUIT BOARD YXZ 219 A-SVC-ABB	KANPUR	EA	1	0	0	0	1	8.96	8.96	8.96	0.00	0.00	0.00
103	NR3	CIRCUIT BOARD,CAT:4897 001-BAP-SVC-ABB	KANPUR	EA	1	0	0	0	1	5.26	5.26	5.26	0.00	0.00	0.00
104	NR3	COMMUNICATION MASTER,YPK 102 K-SVC-ABB	KANPUR	EA	1	0	0	0	1	5.48	5.48	5.48	0.00	0.00	0.00
105	NR3	COMPONENT CARD,CAT:4897 001-BAM-SVC-ABB	KANPUR	EA	1	0	0	0	1	5.26	5.26	5.26	0.00	0.00	0.00
106	NR3	DATA ACQUISITION COMP, YPP 107 C-SVC-ABB	KANPUR	EA	1	0	0	0	1	7.83	7.83	7.83	0.00	0.00	0.00
107	NR3	GAP TRIGGER MODULE GTE5-TDC-SIEMENS	LUCKNOW 400KV	EA	2	0	0	0	2	7.14	14.27	14.27	0.00	0.00	0.00
108	NR3	INTERFACE BOARD, YPB 105 A-SVC-ABB	KANPUR	EA	1	0	0	0	1	5.43	5.43	5.43	0.00	0.00	0.00
109	NR3	POWER SUPPLY BOARD, DSSA 110-SVC-ABB	KANPUR	EA	1	0	0	0	1	6.88	6.88	6.88	0.00	0.00	0.00
110	NR3	OPTO 68 CONTROL CARD	LUCKNOW 400KV	EA	1	0	0	0	1	7.77	7.77	7.77	0.00	0.00	0.00
111	ER2	72.5KV, 1600A, 25KA, 3PH CB	RENGALI	NO	0	0	3	0	3	6.16	18.49	0.00	0.00	18.49	0.00
112	ER2	SIMADYN D IO4 MODULE-SIEMENS	TALCHER HVDC	EA	0	0	1	0	1	18.04	18.04	0.00	0.00	18.04	0.00
113	SR2	SF6 GAS ANALYZER	HOSUR	EA	1	0	0	0	1	9.72	9.72	9.72	0.00	0.00	0.00
114	NR1	420KV, 2000A, 50KA ,1-PH CT-120% RATING	BASSI	EA	0	1	0	0	1	5.92	5.92	0.00	5.92	0.00	0.00
115	NR1	420KV, 2000A, 50KA ,1-PH CT-120% RATING	BASSI	EA	0	1	0	0	1	5.92	5.92	0.00	5.92	0.00	0.00
116	NR1	420KV, 2000A, 50KA ,1-PH CT-120% RATING	BASSI	EA	0	1	0	0	1	5.92	5.92	0.00	5.92	0.00	0.00
117	NR1	THYRISTOR T2563N80T 8KV, 25KA-SIEMENS	BHIWADI	NO	0	1	0	1	2	13.03	26.05	0.00	13.03	0.00	13.03
118	WR2	420KV, 1250A BUSHING (STD)	VAPI	NO	1	0	0	0	1	6.03	6.03	6.03	0.00	0.00	0.00
119	WR2	420KV, 1250A BUSHING (STD)	MAGARWADA GIS	NO	1	0	0	0	1	6.03	6.03	6.03	0.00	0.00	0.00
120	WR2	420KV, 3000A, 50KA,1-PH CT-120% RATING	JABALPUR	NO	0	1	2	0	3	5.93	17.80	0.00	5.93	11.87	0.00
121	SR2	DIAL TYPE THERMOMETER WTI	KOLAR	EA	1	0	0	0	1	11.22	11.22	11.22	0.00	0.00	0.00
122	NR1	HYDRAULIC COMPRESSOR M/C-MOTORIZED-120T	DEHRADUN	NO	0	1	0	0	1	5.45	5.45	0.00	5.45	0.00	0.00
123	NR1	420KV, 2000A, 50KA ,1-PH CT-120% RATING	BASSI	NO	0	1	0	0	1	17.77	17.77	0.00	17.77	0.00	0.00
124	NR1	420KV, 2000A, 50KA ,1-PH CT-120% RATING	BASSI	NO	0	1	0	0	1	17.77	17.77	0.00	17.77	0.00	0.00
125	SR1	420KV, 3000A, 50KA,1-PH CT-120% RATING	NAGARJUNSAGAR	EA	0	0	0	5	5	5.87	29.33	0.00	0.00	0.00	29.33
126	SR1	420KV, 3000A, 50KA,1-PH CT-120% RATING	GOOTY	EA	0	0	0	9	9	5.87	52.80	0.00	0.00	0.00	52.80
127	NR1	420KV, 1250A RIP BUSHING (STD)	BALLABGARH	EA	0	0	1	0	1	8.84	8.84	0.00	0.00	8.84	0.00
128	NR1	420KV, 2000A, 50KA ,1-PH CT-120% RATING	BASSI	NO	0	1	0	0	1	5.92	5.92	0.00	5.92	0.00	0.00
129	ER1	245KV, 1600A, 40KA, 3PH DB ISOLATOR+1E/S	PURNEA	EA	1	0	0	0	1	6.01	6.01	6.01	0.00	0.00	0.00

Details of Capital Spares Consumed-5 Lakhs to 20 Lakhs

					Consumption Detail							Year wise Consumption in Rs Lakhs			
Sr. No	Region	Material Name	Plant Name	Base Unit of Measure	2019-2020 Qty	2020-2021 Qty	2021-2022 Qty	2022-2023 Qty	Total Consumption Qty	Unit Cost (Rs Lakhs)	Consumption Value (Rs	Value 2019-2020	Value 2020-2021	Value 2021-2022	Value 2022-2023
130	NR1	BUSBAR CENTRAL UNIT 7SS522-SIEMENS	MEERUT	EA	0	1	0	0	1	14.65	14.65	0.00	14.65	0.00	0.00
131	NR2	245KV, 1600A, 40KA 3PH HCB ISOLATOR+1E/S	PATIALA	NO	0	0	1	0	1	5.24	5.24	0.00	0.00	5.24	0.00
132	NR2	245KV, 1600A, 40KA, 3PH DB ISOLATOR+1E/S	PATIALA	NO	1	0	0	0	1	5.98	5.98	5.98	0.00	0.00	0.00
133	NR2	420KV, 2000A, 40KA 3PH DB ISOLATOR+1E/S	PATIALA	NO	1	0	0	0	1	11.10	11.10	11.10	0.00	0.00	0.00
134	SR1	PCB 1958/10 BOD CARD-ALSTOM	VISHAKAPATNAM	EA	7	5	5	0	17	6.12	104.03	42.84	30.60	30.60	0.00
135	SR2	PIR OVERHAULING SPARES-420KV CB-BHEL	KOLAR	EA	0	0	1	0	1	5.56	5.56	0.00	0.00	5.56	0.00
136	NR3	GAP TRIGGER MODULE GTE5-TDC-SIEMENS	SOHAWAL	EA	1	0	0	0	1	7.14	7.14	7.14	0.00	0.00	0.00
137	NR3	MARSHALLING CABINET-CONVXMER	RIHAND	SET	1	0	0	0	1	6.66	6.66	6.66	0.00	0.00	0.00
138	WR2	420KV, 1250A BUSHING-CGL	BOISAR	NO	1	0	1	0	2	9.11	18.22	9.11	0.00	9.11	0.00
139	WR1	VRLA BATTERY BANK 220V 500AH	SOLAPUR	SET	0	2	0	0	2	9.21	18.42	0.00	18.42	0.00	0.00
140	NR1	420KV, 2000A, 50KA ,1-PH CT-120% RATING	BASSI	NO	0	1	0	0	1	5.92	5.92	0.00	5.92	0.00	0.00
141	SR2	72.5KV, 1250A, 25KA, 3PH CB	THIRUVALAM	EA	0	0	0	1	1	6.13	6.13	0.00	0.00	0.00	6.13
142	NR1	420KV, 2000A, 50KA 3PH DB ISOLATOR+1E/S	KANKROLI	EA	0	0	0	2	2	5.57	11.15	0.00	0.00	0.00	11.15
143	ER1	245KV, 1600A, 40KA, 3PH DB ISOLATOR+1E/S	RANCHI-400KV	EA	1	0	0	0	1	5.95	5.95	5.95	0.00	0.00	0.00
144	NR3	PHOTOACOUSTIC GAS ANALYZER-PGA 14	BALLIA	EA	2	0	0	0	2	5.80	11.60	11.60	0.00	0.00	0.00
145	NR1	420KV, 1250A RIP BUSHING (STD)	BAHADURGARH	NO	0	1	0	0	1	18.39	18.39	0.00	18.39	0.00	0.00
146	NR1	BAY CONTROLLER UNIT-SIEMENS	BALLABGARH	NO	0	0	0	1	1	8.16	8.16	0.00	0.00	0.00	8.16
147	NR1	245KV, 1600A, 40KA, 3PH DB ISOLATOR+1E/S	BAHADURGARH	NO	0	0	0	1	1	5.96	5.96	0.00	0.00	0.00	5.96
148	NR1	420KV, 2000A, 40KA 3PH DB ISOLATOR+1E/S	BAHADURGARH	NO	0	0	0	1	1	11.09	11.09	0.00	0.00	0.00	11.09
149	NR1	BAY CONTROL UNIT (IED) OF EACH TYPE	JAIPUR SOUTH	NO	0	0	0	1	1	5.66	5.66	0.00	0.00	0.00	5.66
150	NR3	420KV, 2000A, 50KA 3PH DB ISOLATOR+1E/S	AGRA	EA	1	0	0	0	1	5.53	5.53	5.53	0.00	0.00	0.00
151	NR3	THYRISTOR T2563N80T 8KV, 25KA-SIEMENS	BALLIA	EA	0	14	0	0	14	6.64	92.98	0.00	92.98	0.00	0.00
152	NR1	420KV, 2000A, 50KA ,1-PH CT-120% RATING	BASSI	NO	0	1	0	0	1	5.92	5.92	0.00	5.92	0.00	0.00
153	SR2	420KV, 3000A, 50KA,1-PH CT-120% RATING	KOZHIKODE	EA	0	0	1	0	1	6.37	6.37	0.00	0.00	6.37	0.00
154	SR2	72.5KV, 1250A, 25KA, 3PH CB	THIRUVALAM	EA	0	0	0	1	1	6.13	6.13	0.00	0.00	0.00	6.13
155	SR2	72.5KV, 1250A, 25KA, 3PH CB	YELAHANKA	EA	0	1	0	0	1	12.22	12.22	0.00	12.22	0.00	0.00
156	WR2	420KV, 1250A BUSHING (STD)	JABALPUR	NO	0	1	0	0	1	6.12	6.12	0.00	6.12	0.00	0.00
157	WR2	420KV, 1250A BUSHING (STD)	PIRANA	NO	0	1	0	0	1	6.08	6.08	0.00	6.08	0.00	0.00
158	WR2	420KV, 2000A, 40KA, 3PH PG ISOLATOR+1E/S	BINA	NO	0	0	0	1	1	10.25	10.25	0.00	0.00	0.00	10.25
159	WR2	245KV, 1600A, 40KA, 3PH DB ISOLATOR+1E/S	ITARSI	NO	0	1	0	0	1	5.76	5.76	0.00	5.76	0.00	0.00
160	NR2	OIL STORAGE TANK-30KL	PATIALA	NO	2	0	0	0	2	7.21	14.42	14.42	0.00	0.00	0.00
161	NR2	OIL STORAGE TANK-30KL	AMRITSAR	NO	3	0	0	0	3	7.21	21.63	21.63	0.00	0.00	0.00
162	NR2	OIL STORAGE TANK-30KL	PANCHKULLA	NO	0	1	0	0	1	7.21	7.21	0.00	7.21	0.00	0.00
163	NR3	INTERFACING/UPGRADATION OF EXISTING SAS	BAREILLY	SET	1	0	0	0	1	17.17	17.17	17.17	0.00	0.00	0.00
164	NR3	VALVE REACTOR 550UH, 2KA, 283KV-SIEM	BALLIA	EA	2	1	0	1	4	5.11	20.45	10.22	5.11	0.00	5.11
165	NR3	RAS SDC HARWARE-12 PORT	ALIGARH	EA	2	0	0	0	2	5.56	11.11	11.11	0.00	0.00	0.00
166	ER1	420KV, 2000A, 40KA CT-150% RATING	PURNEA	EA	3	0	0	0	3	6.32	18.97	18.97	0.00	0.00	0.00
167	WR1	MOBILE DRY AIR PLANT (HEATLESS TYPE)	PARLI	EA	0	0	0	1	1	12.15	12.15	0.00	0.00	0.00	12.15
168	WR1	MOBILE DRY AIR PLANT (HEATLESS TYPE)	MAPUSA	EA	1	0	0	0	1	10.97	10.97	10.97	0.00	0.00	0.00
169	WR1	MOBILE DRY AIR PLANT (HEATLESS TYPE)	RAIPUR	EA	0	1	0	0	1	10.19	10.19	0.00	10.19	0.00	0.00
170	WR1	MOBILE DRY AIR PLANT (HEATLESS TYPE)	BILASPUR	EA	0	1	0	0	1	10.19	10.19	0.00	10.19	0.00	0.00
171	WR1	MOBILE DRY AIR PLANT (HEATLESS TYPE)	RAIGARH	EA	0	1	0	0	1	10.19	10.19	0.00	10.19	0.00	0.00
172	WR1	MOBILE DRY AIR PLANT (HEATLESS TYPE)	BHATAPARA	EA	0	1	0	0	1	10.19	10.19	0.00	10.19	0.00	0.00

Details of Capital Spares Consumed-5 Lakhs to 20 Lakhs

Sr. No	Region	Material Name	Plant Name	Base Unit of Measure	Consumption Detail							Year wise Consumption in Rs Lakhs			
					2019-2020 Qty	2020-2021 Qty	2021-2022 Qty	2022-2023 Qty	Total Consumption Qty	Unit Cost (Rs Lakhs)	Consumption Value (Rs	Value 2019-2020	Value 2020-2021	Value 2021-2022	Value 2022-2023
173	WR1	VRLA BATTERY BANK 220V 500AH	BHATAPARA	SET	0	0	2	0	2	9.23	18.47	0.00	0.00	18.47	0.00
174	WR2	420KV, 3000A, 50KA,1-PH CT-120% RATING	PIRANA	NO	0	0	2	0	2	5.78	11.56	0.00	0.00	11.56	0.00
175	SR2	FIBER OPTIC TEMPERATUER MONITOR-16PORTS	THIRUVALAM	EA	5	0	0	0	5	5.26	26.28	26.28	0.00	0.00	0.00
176	ER2	420KV, 2000A, 40KA 3PH HCB ISOLATOR+1E/S	RENGALI	EA	0	0	0	1	1	11.20	11.20	0.00	0.00	0.00	11.20
177	NR1	BAY CONTROLLER UNIT-SIEMENS	MEERUT	NO	1	0	0	0	1	8.16	8.16	8.16	0.00	0.00	0.00
178	SR2	220V, 500 AH BATTERY	KOCHI	SET	1	0	0	0	1	9.43	9.43	9.43	0.00	0.00	0.00
179	WR2	420KV, 3000A, 50KA,1-PH CT-120% RATING	PIRANA	NO	0	0	2	0	2	5.74	11.47	0.00	0.00	11.47	0.00
180	NER	BUS BAR PROTECTION RELAY MICOM P741-ALST	NEW MARIANI	SET	1	0	0	0	1	5.09	5.09	5.09	0.00	0.00	0.00
181	WR2	420KV, 3000A, 50KA,1-PH CT-120% RATING	VADODARA GIS	NO	2	0	0	0	2	5.74	11.47	11.47	0.00	0.00	0.00
182	WR1	WIND SPEED, HUMIDITY & TEMP DATA LOGGER	RAIPUR POOLING	EA	1	0	0	0	1	7.61	7.61	7.61	0.00	0.00	0.00
183	WR1	WIND SPEED, HUMIDITY & TEMP DATA LOGGER	KOTRA POOLING	EA	1	0	0	0	1	7.61	7.61	7.61	0.00	0.00	0.00
184	NR1	220KV BUS BAR PROTECTION PANEL-SAS	BHIWADI	NO	2	0	0	0	2	12.98	25.96	25.96	0.00	0.00	0.00
185	NR1	220KV BUS BAR PROTECTION PANEL-SAS	BHIWADI	NO	2	0	0	0	2	6.49	12.98	12.98	0.00	0.00	0.00
186	NR1	MOBILE LIVE PART COMPLETE	JAIPUR SOUTH	NO	0	1	0	1	2	8.34	16.68	0.00	8.34	0.00	8.34
187	ER1	ACQUISITION UNIT-TRAVELLING FAULTLOCATOR	RANCHI-400KV	SET	1	0	0	0	1	10.27	10.27	10.27	0.00	0.00	0.00
188	SR2	220V, 500 AH BATTERY	KARAIKUDI	SET	0	1	0	0	1	9.43	9.43	0.00	9.43	0.00	0.00
189	SR2	THYRISTOR ELECTRONICS PCB-TE CARD-SIEM	KOLAR	EA	1	0	0	0	1	8.85	8.85	8.85	0.00	0.00	0.00
190	SR2	1.1KV 1CX630SQMM XLPE POWER CABLE(KM)	THIRUVALAM	KM	2	0	0	0	2	8.21	12.32	12.32	0.00	0.00	0.00
191	WR2	245KV, 1600A, 40KA, 3PH DB ISOLATOR+1E/S	NAVSARI	NO	12	10	0	0	22	5.43	119.55	65.21	54.34	0.00	0.00
192	WR2	245KV, 1600A, 40KA, 3PH DB ISOLATOR+2E/S	NAVSARI	NO	5	3	0	0	8	6.15	49.23	30.77	18.46	0.00	0.00
193	WR2	420KV, 3000A, 50KA,1-PH CT-120% RATING	DEHGAM	NO	0	1	0	0	1	5.74	5.74	0.00	5.74	0.00	0.00
194	WR1	WIND SPEED, HUMIDITY & TEMP DATA LOGGER	BILASPUR	EA	0	1	0	0	1	7.61	7.61	0.00	7.61	0.00	0.00
195	WR1	RTD / THERMOCOUPLE CALIBRATOR	KORBA POOLING	EA	1	0	0	0	1	7.61	7.61	7.61	0.00	0.00	0.00
196	SR2	420KV, 3150A, 50KA, 3PH CB W/O CR	SOMANAHALLI	EA	4	0	0	0	4	6.79	27.14	27.14	0.00	0.00	0.00
197	SR2	420KV, 2000A, 40KA 3PH HCB ISOLATOR+1E/S	UDUMALPET	EA	1	0	0	0	1	9.82	9.82	9.82	0.00	0.00	0.00
198	SR2	420KV, 3150A, 50KA, 3PH CB W/O CR	UDUMALPET	EA	4	0	0	0	4	6.79	27.14	27.14	0.00	0.00	0.00
199	SR2	800KVA, 33/0.433KV,3PH LT TRANSFORMER	UDUMALPET	EA	4	0	0	0	4	6.03	24.10	24.10	0.00	0.00	0.00
200	SR2	420KV, 3150A, 50KA, 3PH CB W/O CR	SRIPERUMBUDUR	EA	4	0	0	0	4	6.79	27.14	27.14	0.00	0.00	0.00
201	SR2	420KV, 3150A, 50KA, 3PH CB W/O CR	MADURAI	EA	4	0	0	0	4	6.79	27.14	27.14	0.00	0.00	0.00
202	SR2	ONLINE DGA(MULTI-GAS) MOISTURE ANALYSER	KOLAR	EA	6	0	0	0	6	17.70	106.20	106.20	0.00	0.00	0.00
203	NR1	400KV BUS BAR PROTECTION PANEL	MEERUT	NO	1	0	0	0	1	8.46	8.46	8.46	0.00	0.00	0.00
204	SR1	145KV, 1250A, 31.5KA,1PH CIRCUIT BREAKER	NELLORE	EA	0	4	0	0	4	17.80	71.22	0.00	71.22	0.00	0.00
205	NR1	245KV, 2500A, 50KA 3PH CIRCUIT BREAKER	BHIWADI	NO	6	0	0	0	6	12.74	76.46	76.46	0.00	0.00	0.00
206	SR2	72.5KV, 1250A, 31.5KA, 3PH CB	PALAKKAD	EA	0	0	0	1	1	5.22	5.22	0.00	0.00	0.00	5.22
207	WR2	ON LINE INSUL OIL DRYING SYSTEM-REACTOR	ITARSI	NO	0	1	0	0	1	10.58	10.58	0.00	10.58	0.00	0.00
208	WR2	PHOTOACOUSTIC GAS ANALYZER-PGA 14	BINA	NO	0	1	0	0	1	6.30	6.30	0.00	6.30	0.00	0.00
209	NR3	HARDWARE FOR SCADA UPGRADATION	BALLIA	LS	1	0	0	0	1	10.81	10.81	10.81	0.00	0.00	0.00
210	NR3	220V, 1000 AH BATTERY	FATEHPUR	SET	1	0	0	0	1	16.59	16.59	16.59	0.00	0.00	0.00
211	NR3	220V, 600AH VRLA BATTERY	SHAHJAHANPUR	SET	1	0	0	0	1	9.97	9.97	9.97	0.00	0.00	0.00
212	NR3	420KV, 3150A, 50KA 3PH DB ISOLATOR+1E/S	LUCKNOW 400KV	EA	1	0	0	0	1	10.43	10.43	10.43	0.00	0.00	0.00
213	NR3	48V, 1250 AH BATTERY	FATEHPUR	SET	1	0	0	0	1	5.03	5.03	5.03	0.00	0.00	0.00
214	NR3	NITROGEN INJECTION FIRE PROTECTION-220KV	SITARGANJ	SET	2	0	0	0	2	18.12	36.24	36.24	0.00	0.00	0.00
215	NR3	1KL OIL FILTRATION PLANT	AGRA	EA	1	0	0	0	1	5.31	5.31	5.31	0.00	0.00	0.00

Details of Capital Spares Consumed-5 Lakhs to 20 Lakhs

					Consumption Detail							Year wise Consumption in Rs Lakhs			
Sr. No	Region	Material Name	Plant Name	Base Unit of Measure	2019-2020 Qty	2020-2021 Qty	2021-2022 Qty	2022-2023 Qty	Total Consumption Qty	Unit Cost (Rs Lakhs)	Consumption Value (Rs	Value 2019-2020	Value 2020-2021	Value 2021-2022	Value 2022-2023
216	NR3	BCU-264L11Q6910003606,SCHNEIDER	BAREILLY 765	EA	1	0	0	0	1	5.76	5.76	5.76	0.00	0.00	0.00
217	WR1	WIND SPEED, HUMIDITY & TEMP DATA LOGGER	WARDHA	EA	1	0	0	0	1	7.89	7.89	7.89	0.00	0.00	0.00
218	WR1	WIND SPEED, HUMIDITY & TEMP DATA LOGGER	RAIPUR	EA	0	1	0	0	1	7.61	7.61	0.00	7.61	0.00	0.00
219	WR1	WIND SPEED, HUMIDITY & TEMP DATA LOGGER	KOLHAPUR	EA	1	0	0	0	1	7.89	7.89	7.89	0.00	0.00	0.00
220	ER2	MOTOR 3PH,415V AC,45KW,2900RPM	TALCHER HVDC	EA	0	0	1	0	1	15.40	15.40	0.00	0.00	15.40	0.00
221	ER2	THYRISTOR ELECTRONICS PCB-TE CARD-SIEM	TALCHER HVDC	EA	0	6	3	11	20	8.33	166.66	0.00	50.00	25.00	91.67
222	ER2	420KV, 3000A, 50KA,1-PH CT-120% RATING	TALCHER HVDC	EA	13	0	0	0	13	5.70	74.12	74.12	0.00	0.00	0.00
223	ER2	420KV, 3150A, 40KA, 3PH CB W/O CR	TALCHER HVDC	EA	0	1	0	0	1	14.43	14.43	0.00	14.43	0.00	0.00
224	SR2	SPRING OPERATING MECH-420KV SF6 CB-AREVA	PAVAGADA	SET	1	0	0	0	1	7.67	7.67	7.67	0.00	0.00	0.00
225	NR3	THYRISTOR DISMOUNTING TOOL	VINDHYANAGAR	SET	1	0	0	0	1	13.97	13.97	13.97	0.00	0.00	0.00
226	NR3	THYRISTOR STRETCHING TOOL	VINDHYANAGAR	SET	1	0	0	0	1	6.94	6.94	6.94	0.00	0.00	0.00
227	WR2	ONLINE DGA(MULTI-GAS) MOISTURE ANALYSER	BOISAR	NO	1	0	0	0	1	17.11	17.11	17.11	0.00	0.00	0.00
228	WR2	INSULATION TESTER-DIGITAL 2KV - 10KV	BHUJ	NO	1	0	0	0	1	7.31	7.31	7.31	0.00	0.00	0.00
229	SR1	ACQUISITION UNIT-TRAVELLING FAULTLOCATOR	KURNOOL	SET	1	0	0	0	1	18.51	18.51	18.51	0.00	0.00	0.00
230	SR1	CARD PS853 DIGITAL O/P BOARD-ABB	VISHAKAPATNAM	EA	1	0	0	0	1	7.79	7.79	7.79	0.00	0.00	0.00
231	NR2	OIL STORAGE TANK-30KL	MALERKOTLA	NO	3	0	0	0	3	7.12	21.36	21.36	0.00	0.00	0.00
232	NR1	245KV, 1600A, 50KA, 3PH DB ISOLATOR	HISSAR	NO	0	0	0	1	1	5.37	5.37	0.00	0.00	0.00	5.37
233	WR2	420KV, 2000A, 40KA 3PH HCB ISOLATOR+1E/S	INDORE	NO	0	0	0	1	1	10.47	10.47	0.00	0.00	0.00	10.47
234	SR2	UPS-80 KVA (64KW AT 0.8 PF)	KOLAR	EA	2	0	0	0	2	5.19	10.38	10.38	0.00	0.00	0.00
235	SR2	ONLINE DGA(MULTI-GAS) MOISTURE ANALYSER	THIRUVALAM	EA	0	0	2	0	2	17.70	35.40	0.00	0.00	35.40	0.00
236	WR2	420KV, 2000A, 40KA 3PH HCB ISOLATOR+1E/S	KHANDWA	NO	0	1	0	0	1	9.77	9.77	0.00	9.77	0.00	0.00
237	WR2	INSULATION TESTER-DIGITAL 2KV - 10KV	BANASKANTHA	NO	0	1	0	0	1	7.31	7.31	0.00	7.31	0.00	0.00
238	NR1	SURGE ARRESTER ZNO GAPLESS-624KV,20KA,1P	JAIPUR SOUTH	NO	0	0	0	2	2	7.33	14.66	0.00	0.00	0.00	14.66
239	NR1	SURGE ARRESTER ZNO GAPLESS-624KV,20KA,1P	JAIPUR SOUTH	NO	0	0	0	2	2	7.33	14.66	0.00	0.00	0.00	14.66
240	NR3	SURGE ARRESTER ZNO GAPLESS-624KV,20KA,1P	AGRA	EA	0	1	1	0	2	9.15	18.29	0.00	9.15	9.15	0.00
241	ER2	1 POLE-420KV, 2000A, 40KA DB ISOLATOR+1E	BARIPADA	EA	0	1	0	0	1	5.96	5.96	0.00	5.96	0.00	0.00
242	ER2	RUBBER GASKETS AND O RINGS-420KV GIS-ABB	BARIPADA	SET	0	1	0	0	1	5.04	5.04	0.00	5.04	0.00	0.00
243	NR3	CB OPERATION ANALYSER WITH DCRM	AGRA	EA	2	0	0	0	2	12.28	24.55	24.55	0.00	0.00	0.00
244	WR1	PHOTOACOUSTIC GAS ANALYZER-PGA 14	BILASPUR	EA	1	0	0	0	1	7.23	7.23	7.23	0.00	0.00	0.00
245	WR1	WIND SPEED, HUMIDITY & TEMP DATA LOGGER	AURANGABAD	EA	1	0	0	0	1	7.89	7.89	7.89	0.00	0.00	0.00
246	WR1	MOBILE DRY AIR PLANT (HEATLESS TYPE)	PUNE 765	EA	0	1	0	0	1	11.36	11.36	0.00	11.36	0.00	0.00
247	NR1	INLET VALVE-DIESEL ENGINE	HVDC DADRI	NO	1	0	0	0	1	7.17	7.17	7.17	0.00	0.00	0.00
248	NR1	B/B PROTECTION RELAY REB500-ABB	GIS MAHARANIBAGH	NO	1	0	0	0	1	9.06	9.06	9.06	0.00	0.00	0.00
249	NER	LINE CURRENT DIFF. RELAY P543-MICOM	BONGAIGAON	EA	0	0	0	1	1	5.25	5.25	0.00	0.00	0.00	5.25
250	NR1	B/B PROTECTION RELAY REB500-ABB	GIS MAHARANIBAGH	NO	1	0	0	0	1	9.06	9.06	9.06	0.00	0.00	0.00
251	NR1	BAY CONTROLLER UNIT-ABB	GIS MAHARANIBAGH	NO	0	0	0	2	2	7.94	15.89	0.00	0.00	0.00	15.89
252	NR1	BAY CONTROLLER UNIT-ABB	GIS MAHARANIBAGH	NO	0	0	4	0	4	7.94	31.78	0.00	0.00	31.78	0.00
253	ER1	245KV, 2000A RIP BUSHING (STD)	GAYA	EA	0	1	0	0	1	7.11	7.11	0.00	7.11	0.00	0.00
254	ER1	ACQUISITION UNIT-TRAVELLING FAULTLOCATOR	RANCHI-765KV	SET	0	1	0	0	1	14.96	14.96	0.00	14.96	0.00	0.00
255	SR1	LINE CURRENT DIFFERENTIAL RELAY	VISHAKAPATNAM	SET	0	2	2	0	4	5.10	20.39	0.00	10.20	10.20	0.00
256	SR1	LINE CURRENT DIFFERENTIAL RELAY	NELLORE POOLING	SET	0	12	1	0	13	5.32	69.12	0.00	63.80	5.32	0.00
257	NR3	BAY CONTROLLER UNIT-ABB	BAREILLY	EA	1	0	0	0	1	6.29	6.29	6.29	0.00	0.00	0.00
258	NR3	WIND MEASURING EQUIPMENT	VARANASI	SET	1	0	0	0	1	6.02	6.02	6.02	0.00	0.00	0.00

Details of Capital Spares Consumed-5 Lakhs to 20 Lakhs

					Consumption Detail							Year wise Consumption in Rs Lakhs			
Sr. No	Region	Material Name	Plant Name	Base Unit of Measure	2019-2020 Qty	2020-2021 Qty	2021-2022 Qty	2022-2023 Qty	Total Consumption Qty	Unit Cost (Rs Lakhs)	Consumption Value (Rs	Value 2019-2020	Value 2020-2021	Value 2021-2022	Value 2022-2023
259	NR3	CB OPERATION ANALYSER WITH DCRM	AGRA	EA	2	0	0	0	2	12.26	24.52	24.52	0.00	0.00	0.00
260	NR3	765KV,3150A,50KA 3PH CB WITH CR	AGRA	EA	1	0	0	0	1	9.47	9.47	9.47	0.00	0.00	0.00
261	NR3	CPU CARD MODULE-CPU 852T-ABB	SHAHJAHANPUR	EA	1	0	0	0	1	8.90	8.90	8.90	0.00	0.00	0.00
262	NR3	ACQUISITION UNIT-TRAVELLING FAULTLOCATOR	KANPUR 765	SET	1	0	0	0	1	12.09	12.09	12.09	0.00	0.00	0.00
263	NR3	BCU FOR AUXILIARY 245KV SYSTEM	SHAHJAHANPUR	SET	1	0	0	0	1	10.34	10.34	10.34	0.00	0.00	0.00
264	NR3	THYRISTOR DISMOUNTING TOOL	VINDHYANAGAR	SET	1	0	0	0	1	13.97	13.97	13.97	0.00	0.00	0.00
265	NR3	THYRISTOR STRETCHING TOOL	VINDHYANAGAR	SET	1	0	0	0	1	6.94	6.94	6.94	0.00	0.00	0.00
266	NR1	245KV, 1250A RIP BUSHING (STD)	KOTA	NO	0	0	1	0	1	6.23	6.23	0.00	0.00	6.23	0.00
267	WR2	POLE COLUMN-245KV SF6 CB (SO)-AREVA	VAPI	NO	0	0	1	0	1	5.18	5.18	0.00	0.00	5.18	0.00
268	WR2	245KV, 1600A, 40KA,1-PH, CT-120% RATING	ITARSI	NO	0	0	1	0	1	5.58	5.58	0.00	0.00	5.58	0.00
269	WR2	BRANCH PIPE WITH NOZZLE & GUIDE COUPLING	INDORE	NO	0	0	1	0	1	5.83	5.83	0.00	0.00	5.83	0.00
270	SR1	ACQUISITION UNIT-TRAVELLING FAULTLOCATOR	HYDERABAD	SET	0	0	1	0	1	12.09	12.09	0.00	0.00	12.09	0.00
271	SR1	D20MX CHASSIS WITH CPU & POWER SUPPLY	NAGARJUNSAGAR	EA	0	0	0	1	1	5.13	5.13	0.00	0.00	0.00	5.13
272	SR1	420KV, 1250A RIP BUSHING (STD)	KADAPA	EA	0	0	0	1	1	16.36	16.36	0.00	0.00	0.00	16.36
273	SR1	D20MX CHASSIS WITH CPU & POWER SUPPLY	KADAPA	EA	0	0	1	0	1	5.13	5.13	0.00	0.00	5.13	0.00
274	SR1	D20MX CHASSIS WITH CPU & POWER SUPPLY	MUNIRABAD	EA	0	1	0	0	1	5.13	5.13	0.00	5.13	0.00	0.00
275	SR1	D20MX CHASSIS WITH CPU & POWER SUPPLY	GOOTY	EA	0	1	0	0	1	5.13	5.13	0.00	5.13	0.00	0.00
276	SR1	D20MX CHASSIS WITH CPU & POWER SUPPLY	VIJAYAWADA	EA	0	1	0	0	1	5.13	5.13	0.00	5.13	0.00	0.00
277	SR1	D20MX CHASSIS WITH CPU & POWER SUPPLY	NELLORE	EA	0	0	0	2	2	5.13	10.27	0.00	0.00	0.00	10.27
278	SR1	ACQUISITION UNIT-TRAVELLING FAULTLOCATOR	VISHAKAPATNAM	SET	0	0	0	1	1	12.09	12.09	0.00	0.00	0.00	12.09
279	ER2	BREATHER ASS-CONSERVAT & OLTC	TALCHER HVDC	SET	0	1	0	0	1	7.66	7.66	0.00	7.66	0.00	0.00
280	SR2	OUTPUT ACDB (200 KVA)	SOMANAHALLI	EA	1	0	0	0	1	5.99	5.99	5.99	0.00	0.00	0.00
281	NR2	245KV, 1250A RIP BUSHING (STD)	AMRITSAR	NO	0	1	0	0	1	5.58	5.58	0.00	5.58	0.00	0.00
282	NR2	245KV, 1250A RIP BUSHING (STD)	PATIALA	NO	0	2	0	0	2	5.58	11.16	0.00	11.16	0.00	0.00
283	SR2	VRLA BATTERY BANK 220V 500AH	KOLAR	EA	0	2	0	0	2	9.11	18.22	0.00	18.22	0.00	0.00
284	SR2	220V, 1100 AH BATTERY	MADHUGIRI	EA	0	2	0	0	2	18.68	37.36	0.00	37.36	0.00	0.00
285	NR2	245KV, 1250A RIP BUSHING (STD)	FATEHABAD	NO	0	2	0	0	2	5.41	10.81	0.00	10.81	0.00	0.00
286	WR2	POLE COLUMN-245KV SF6 CB (SO)-AREVA	VAPI	NO	0	0	1	0	1	6.03	6.03	0.00	0.00	6.03	0.00
287	NR3	BUSBAR PERIPHERAL UNIT 7SS522-SIEMENS	BALLIA	EA	0	1	0	0	1	7.89	7.89	0.00	7.89	0.00	0.00
288	NR3	ACQUISITION UNIT-TRAVELLING FAULTLOCATOR	LUCKNOW	SET	0	1	0	0	1	11.90	11.90	0.00	11.90	0.00	0.00
289	NR3	ACQUISITION UNIT-TRAVELLING FAULTLOCATOR	FATEHPUR	SET	0	1	0	0	1	18.51	18.51	0.00	18.51	0.00	0.00
290	NR2	245KV, 1250A RIP BUSHING (STD)	JALLANDHAR	NO	0	1	0	0	1	5.33	5.33	0.00	5.33	0.00	0.00
291	WR2	LA THRC/LEAKAGE CURRENT ANALYZER	BOISAR	NO	0	1	0	0	1	6.15	6.15	0.00	6.15	0.00	0.00
292	WR2	BRANCH PIPE WITH NOZZLE & GUIDE COUPLING	ITARSI	NO	0	2	0	0	2	5.83	11.65	0.00	11.65	0.00	0.00
293	NR1	DATA ACQUISITION MODULE 1 AI 10V-TFR-IBA	BHIWADI	NO	0	5	0	0	5	5.56	27.78	0.00	27.78	0.00	0.00
294	SR1	EVENT LOGGER 512 INPUT	VISHAKAPATNAM	EA	0	1	0	0	1	9.18	9.18	0.00	9.18	0.00	0.00
295	NER	NUMERICAL DISTANCE RELAY REL670-ABB	BONGAIGAON	SET	0	0	0	2	2	5.84	11.68	0.00	0.00	0.00	11.68
296	NR1	PROTECTION COUPLER FOR PLCC	BHIWADI	NO	0	0	2	0	2	5.95	11.90	0.00	0.00	11.90	0.00
297	NR2	245KV, 1600A BUSHING (STD)	WAGOORA	NO	0	1	0	0	1	18.31	18.31	0.00	18.31	0.00	0.00
298	NER	NUMERICAL DISTANCE RELAY REL670-ABB	NEW MARIANI	SET	0	1	0	0	1	5.81	5.81	0.00	5.81	0.00	0.00
299	NR1	420KV, 1250A RIP BUSHING (STD)	ROORKEE	NO	0	1	0	0	1	16.74	16.74	0.00	16.74	0.00	0.00
300	SR1	THYRISTOR DCR1675 1096A, 5.2KV 4KA-DYNEX	VISHAKAPATNAM	EA	0	3	8	2	13	5.75	74.77	0.00	17.25	46.01	11.50
301	NR1	FEEDING WATER PIPE DN32-VALVE COOLING	BHIWADI	NO	0	1	0	0	1	5.04	5.04	0.00	5.04	0.00	0.00

Details of Capital Spares Consumed-5 Lakhs to 20 Lakhs

					Consumption Detail							Year wise Consumption in Rs Lakhs			
Sr. No	Region	Material Name	Plant Name	Base Unit of Measure	2019-2020 Qty	2020-2021 Qty	2021-2022 Qty	2022-2023 Qty	Total Consumption Qty	Unit Cost (Rs Lakhs)	Consumption Value (Rs	Value 2019-2020	Value 2020-2021	Value 2021-2022	Value 2022-2023
302	NR1	NSD50-PROTECTION COUPLER-ABB	BALLABGARH	NO	0	0	0	2	2	5.90	11.80	0.00	0.00	0.00	11.80
303	NR3	REACTOR 12.9MH,106A-3/27-AC FILT-TRENCH	VINDHYANAGAR	EA	0	1	0	0	1	5.72	5.72	0.00	5.72	0.00	0.00
304	NR3	PID TEST KIT	ALLAHABAD	EA	0	1	0	0	1	11.25	11.25	0.00	11.25	0.00	0.00
305	NR3	MARSHALLING CABINET-CONVXMER	RIHAND	SET	1	0	0	0	1	14.19	14.19	14.19	0.00	0.00	0.00
306	NR3	420KV, 1250A RIP BUSHING (STD)	LUCKNOW 400KV	EA	4	0	0	0	4	9.79	39.17	39.17	0.00	0.00	0.00
307	NR3	VRLA BATTERY BANK 220V 850AH	AGRA	SET	0	2	0	0	2	14.82	29.65	0.00	29.65	0.00	0.00
308	NR3	PROCESSING UNIT RPV311-TFR/DR- GE REASON	RIHAND	EA	0	2	0	0	2	6.15	12.29	0.00	12.29	0.00	0.00
309	WR2	SPARE PART KIT-DILO VACUUM COMPRESSOR	JABALPUR	NO	0	1	0	0	1	5.66	5.66	0.00	5.66	0.00	0.00
310	ER2	PSD02 CONTROL DEVICE-400KV SIEMENS CB	TALCHER HVDC	EA	0	0	1	0	1	10.03	10.03	0.00	0.00	10.03	0.00
311	NR2	NITROGEN INJECTION FIRE PROT-400KV XMER	ABDULLAPUR	NO	0	1	0	0	1	15.21	15.21	0.00	15.21	0.00	0.00
312	SR1	VRLA BATTERY BANK 220V 800AH	NP KUNTA	SET	0	1	0	0	1	13.44	13.44	0.00	13.44	0.00	0.00
313	NER	T5- PRM3 RECTIFIER	BISWANATH CHARIALI	EA	0	0	0	1	1	14.46	14.46	0.00	0.00	0.00	14.46
314	NER	EARTH SWITCH	DIMAPUR	EA	0	0	1	0	1	6.77	6.77	0.00	0.00	6.77	0.00
315	SR1	PCB 1958/10 BOD CARD-ALSTOM	VISHAKAPATNAM	EA	7	5	5	0	17	6.16	104.71	43.11	30.80	30.80	0.00
316	NR1	420KV, 1250A RIP BUSHING (STD)	MEERUT	NO	0	1	0	0	1	18.12	18.12	0.00	18.12	0.00	0.00
317	NR1	420KV, 1250A RIP BUSHING (STD)	ROORKEE	NO	0	0	0	1	1	18.12	18.12	0.00	0.00	0.00	18.12
318	ER1	1 POLE-145KV, 1250A ISOLATOR+1E/S	ARA	EA	0	0	0	1	1	5.14	5.14	0.00	0.00	0.00	5.14
319	ER2	EVENT LOGGER 512 INPUT	BIRPARA	NO	0	1	0	0	1	8.63	8.63	0.00	8.63	0.00	0.00
320	ER2	WAVE TRAP AS PER TS	INDRAVATI	SET	0	0	1	0	1	7.99	7.99	0.00	0.00	7.99	0.00
321	ER2	PRESSURE SWITCH C1B41205534001-DC CB	TALCHER HVDC	EA	0	1	0	0	1	7.05	7.05	0.00	7.05	0.00	0.00
322	ER2	THYRISTOR 8KV 2000A 100MM-SIEMENS	TALCHER HVDC	EA	0	7	0	0	7	14.26	99.80	0.00	99.80	0.00	0.00
323	ER2	420KV, 3000A, 50KA SF6 CT-120% RATING	BOLANGIR	EA	0	0	0	1	1	5.31	5.31	0.00	0.00	0.00	5.31
324	NR2	CB OPERATION ANALYSER WITH DCRM	BANALA POOLING	EA	0	0	1	0	1	11.94	11.94	0.00	0.00	11.94	0.00
325	ER2	THYRISTOR 8KV 2000A 100MM-SIEMENS	TALCHER HVDC	EA	0	7	0	0	7	19.96	139.72	0.00	139.72	0.00	0.00
326	NR3	420KV, 3000A, 50KA,1-PH CT-120% RATING	LUCKNOW 400KV	EA	0	6	0	0	6	5.74	34.42	0.00	34.42	0.00	0.00
327	NR3	PSD02 CONTROL DEVICE-400KV SIEMENS CB	BALLIA	EA	0	1	0	0	1	5.02	5.02	0.00	5.02	0.00	0.00
328	WR1	THYRISTOR DCR1675 1096A, 5.2KV 4KA-DYNEX	BHADRAWATI	EA	0	1	9	5	15	8.60	128.96	0.00	8.60	77.38	42.99
329	WR1	THYRISTOR DCR1675 1096B, 5.2KV 4KA-DYNEX	BHADRAWATI	EA	0	4	10	4	18	5.05	90.92	0.00	20.20	50.51	20.20
330	WR1	VRLA BATTERY BANK 220V 510AH	MAPUSA	SET	0	1	0	0	1	9.26	9.26	0.00	9.26	0.00	0.00
331	NR3	WIND MEASURING EQUIPMENT	KANPUR	SET	0	1	0	0	1	5.10	5.10	0.00	5.10	0.00	0.00
332	NR3	VRLA BATTERY BANK 220V 680AH	LUCKNOW 400KV	SET	0	1	0	0	1	7.92	7.92	0.00	7.92	0.00	0.00
333	NER	MOTOR DRIVEN C-JOCKEY PUMP 11M3/HR 80MWC	BISWANATH CHARIALI	EA	0	0	0	1	1	5.56	5.56	0.00	0.00	0.00	5.56
334	NR1	MAIN & AUX CONTROLLER CARD-SER QNET4100.	MANDOLA	NO	0	1	0	0	1	5.16	5.16	0.00	5.16	0.00	0.00
335	NR1	PLC PANEL - AC VENTILATION	HVDC DADRI	NO	0	4	0	0	4	5.16	20.65	0.00	20.65	0.00	0.00
336	NR1	BMS CONTROL CUBICLE	HVDC DADRI	NO	0	1	0	0	1	6.88	6.88	0.00	6.88	0.00	0.00
337	SR1	FILTER REACTOR BCL1 1591.55MH 150HZ-TREN	VISHAKAPATNAM	EA	0	0	0	1	1	17.41	17.41	0.00	0.00	0.00	17.41
338	NR2	THIRD HARMONIC RESISTANCE KIT FOR SA	WAGOORA	NO	0	1	0	0	1	10.03	10.03	0.00	10.03	0.00	0.00
339	NR1	CONTROLLED SWITCHING DEVICE-420KV CB	BHIWADI	NO	0	12	0	0	12	9.25	111.01	0.00	111.01	0.00	0.00
340	ER2	AUTOMATIC BATTERY DISCHARGE KIT-100A	JEYPORE	EA	0	0	1	0	1	5.26	5.26	0.00	0.00	5.26	0.00
341	ER2	765KV,2000A, 50KA 1PH VKDB ISOLATOR+1E/S	SUNDERGARH	EA	0	0	2	0	2	7.02	14.03	0.00	0.00	14.03	0.00
342	WR2	PHOTOACOUSTIC GAS ANALYZER-PGA 14	BINA	NO	0	1	0	0	1	8.95	8.95	0.00	8.95	0.00	0.00
343	NER	NUMERICAL DISTANCE RELAY 7SA522-SIEMENS	BONGAIGAON	SET	0	0	0	1	1	10.40	10.40	0.00	0.00	0.00	10.40
344	ER2	420KV, 2000A, 40KA,1-PH,CT-120% RATING	JEYPORE	EA	0	1	0	0	1	6.50	6.50	0.00	6.50	0.00	0.00

Details of Capital Spares Consumed-5 Lakhs to 20 Lakhs

					Consumption Detail							Year wise Consumption in Rs Lakhs			
Sr. No	Region	Material Name	Plant Name	Base Unit of Measure	2019-2020 Qty	2020-2021 Qty	2021-2022 Qty	2022-2023 Qty	Total Consumption Qty	Unit Cost (Rs Lakhs)	Consumption Value (Rs	Value 2019-2020	Value 2020-2021	Value 2021-2022	Value 2022-2023
345	ER2	420KV, 2000A, 50KA ,1-PH CT-120% RATING	JEYPORE	EA	0	1	0	0	1	5.94	5.94	0.00	5.94	0.00	0.00
346	ER2	220KV SIMPLEX BUS BAR PROTECTION PANEL	SUBHASHGRAM	NO	0	0	1	0	1	16.40	16.40	0.00	0.00	16.40	0.00
347	ER2	VESDA MONITORING SOFTWARE VSM4-XTRALIS	ALIPURDUAR HVDC	NO	0	0	1	0	1	5.03	5.03	0.00	0.00	5.03	0.00
348	NR1	NSD50-PROTECTION COUPLER-ABB	BASSI	NO	0	0	0	4	4	6.05	24.20	0.00	0.00	0.00	24.20
349	NR1	765KV, 8800PF, 1PH CVT	AJMER	NO	0	0	0	1	1	7.63	7.63	0.00	0.00	0.00	7.63
350	NR3	PID TEST KIT	LUCKNOW 400KV	EA	0	1	0	0	1	11.25	11.25	0.00	11.25	0.00	0.00
351	NR3	12 PORT VACCUM EXTRACTION MANIFOLD ASSY	AGRA	EA	0	2	0	0	2	7.38	14.75	0.00	14.75	0.00	0.00
352	NR3	PHOTOACOUSTIC GAS ANALYZER-PGA 14	AGRA	EA	0	1	0	0	1	10.33	10.33	0.00	10.33	0.00	0.00
353	NR2	MOVING CONTACT-420KV DISCONNECTOR-ABB	JALLANDHAR	NO	0	0	0	1	1	5.77	5.77	0.00	0.00	0.00	5.77
354	NR2	245KV, 1250A RIP BUSHING (STD)	LUDHIANA	NO	0	1	0	0	1	5.09	5.09	0.00	5.09	0.00	0.00
355	NR2	245KV, 1250A RIP BUSHING (STD)	MOGA	NO	0	1	0	0	1	5.32	5.32	0.00	5.32	0.00	0.00
356	ER2	420KV, 3000A, 50KA SF6 CT-120% RATING	ROURKELA	EA	0	0	2	1	3	5.31	15.93	0.00	0.00	10.62	5.31
357	ER2	420KV, 3000A, 50KA SF6 CT-120% RATING	RENGALI	EA	0	0	1	0	1	5.31	5.31	0.00	0.00	5.31	0.00
358	ER2	CSD 420KV 3PH CB-VIZIMAX	BOLANGIR	SET	0	0	0	1	1	16.52	16.52	0.00	0.00	0.00	16.52
359	WR2	SWEEP FREQUENCY RESPONSE SFRA KIT	BHUJ	NO	0	0	1	0	1	10.62	10.62	0.00	0.00	10.62	0.00
360	WR2	SF6 GAS ANALYZER	SATNA	NO	0	0	1	0	1	9.39	9.39	0.00	0.00	9.39	0.00
361	WR2	SF6 GAS ANALYZER	VAPI	NO	0	0	1	0	1	9.39	9.39	0.00	0.00	9.39	0.00
362	WR2	SF6 GAS ANALYZER	PIRANA	NO	0	0	0	1	1	9.39	9.39	0.00	0.00	0.00	9.39
363	WR2	SF6 GAS ANALYZER	NAVSARI	NO	0	0	1	0	1	9.39	9.39	0.00	0.00	9.39	0.00
364	WR2	SF6 GAS ANALYZER	VADODARA GIS	NO	0	0	1	0	1	9.39	9.39	0.00	0.00	9.39	0.00
365	WR2	SF6 GAS ANALYZER	BETUL GIS	NO	0	0	0	1	1	9.39	9.39	0.00	0.00	0.00	9.39
366	SR2	220V, 600AH VRLA BATTERY	HOSUR	EA	0	0	2	0	2	9.77	19.54	0.00	0.00	19.54	0.00
367	WR1	48V, 1840 AH LEAD ACID BATTERY	BHADRAWATI	SET	0	0	1	0	1	9.83	9.83	0.00	0.00	9.83	0.00
368	ER2	1/2"(VLV+ HX NIPL + T)+ PMPUNION	TALCHER HVDC	EA	0	2	0	0	2	5.29	10.58	0.00	10.58	0.00	0.00
369	ER2	OUTLET PIPE1/2" BSP AND VLV(V2)(LOCKBLE)	TALCHER HVDC	SET	0	2	0	0	2	6.35	12.70	0.00	12.70	0.00	0.00
370	ER2	COILED PIPE+ELECTRODE TERMINAL LEFT-SIEM	TALCHER HVDC	EA	0	4	0	0	4	10.11	40.43	0.00	40.43	0.00	0.00
371	ER2	COILED PIPE+ELECTRODE TERMINAL-VH-SIEMEN	TALCHER HVDC	SET	0	3	0	0	3	9.80	29.41	0.00	29.41	0.00	0.00
372	ER2	TOWER INLET COIL PIPE+2GRADING ELECTRODE	TALCHER HVDC	EA	0	2	0	0	2	10.25	20.50	0.00	20.50	0.00	0.00
373	NR2	245KV, 1600A BUSHING (STD)	WAGOORA	NO	0	1	0	0	1	18.31	18.31	0.00	18.31	0.00	0.00
374	NR2	ACQUISITION UNIT-TRAVELLING FAULTLOCATOR	KISHENPUR	NO	0	0	1	0	1	12.09	12.09	0.00	0.00	12.09	0.00
375	WR2	SF6 GAS ANALYZER	BINA	NO	0	0	1	0	1	9.39	9.39	0.00	0.00	9.39	0.00
376	WR2	SF6 GAS ANALYZER	REWA	NO	0	0	1	0	1	9.39	9.39	0.00	0.00	9.39	0.00
377	SR2	220V, 600AH VRLA BATTERY	TUTICORIN PS	EA	0	0	1	0	1	9.77	9.77	0.00	0.00	9.77	0.00
378	SR2	VRLA BATTERY BANK 220V 500AH	KOCHI	EA	0	0	1	0	1	9.11	9.11	0.00	0.00	9.11	0.00
379	ER1	ACQUISITION UNIT-TRAVELLING FAULTLOCATOR	HVDC- PUSAULI	SET	0	0	1	0	1	6.42	6.42	0.00	0.00	6.42	0.00
380	WR1	THYRISTOR DCR1675 1096D, 5.2KV 4KA-DYNEX	BHADRAWATI	EA	0	0	0	1	1	5.10	5.10	0.00	0.00	0.00	5.10
381	WR1	PCB 1958/10 BOD CARD-ALSTOM	BHADRAWATI	EA	0	0	1	0	1	11.14	11.14	0.00	0.00	11.14	0.00
382	NR2	SF6 GAS ANALYZER	KISHENPUR	EA	0	0	1	0	1	13.62	13.62	0.00	0.00	13.62	0.00
383	NR1	BCU WITH CONFIGURATION SOFTWARE	BHIWADI	SET	0	0	2	0	2	9.68	19.35	0.00	0.00	19.35	0.00
384	NR1	765KV, 3000A, 50KA CT-120% RATING	JAIPUR SOUTH	NO	0	0	0	1	1	14.87	14.87	0.00	0.00	0.00	14.87
385	NR1	DRY BLOCK CALIBRATOR	CHITTORGARH	NO	0	0	1	0	1	7.61	7.61	0.00	0.00	7.61	0.00
386	NER	CONTROLLED SWITCHING DEVICE-420KV CB	BONGAIGAON	EA	0	0	0	4	4	11.40	45.60	0.00	0.00	0.00	45.60
387	NR1	420KV, 3000A, 50KA,1-PH CT-120% RATING	JAIPUR SOUTH	NO	0	0	0	1	1	5.90	5.90	0.00	0.00	0.00	5.90

Details of Capital Spares Consumed-5 Lakhs to 20 Lakhs

Sr. No	Region	Material Name	Plant Name	Base Unit of Measure	Consumption Detail							Year wise Consumption in Rs Lakhs			
					2019-2020 Qty	2020-2021 Qty	2021-2022 Qty	2022-2023 Qty	Total Consumption Qty	Unit Cost (Rs Lakhs)	Consumption Value (Rs	Value 2019-2020	Value 2020-2021	Value 2021-2022	Value 2022-2023
388	NR1	765KV, 3000A, 50KA CT-120% RATING	AJMER	NO	0	0	0	1	1	14.87	14.87	0.00	0.00	0.00	14.87
389	NR1	420KV, 3000A, 50KA,1-PH CT-120% RATING	BASSI	NO	0	0	1	0	1	6.11	6.11	0.00	0.00	6.11	0.00
390	NR1	CONTROLLED SWITCHING DEVICE-420KV CB	JIND	NO	0	0	0	1	1	9.25	9.25	0.00	0.00	0.00	9.25
391	NR1	CONTROLLED SWITCHING DEVICE-420KV CB	JIND	NO	0	0	0	1	1	9.25	9.25	0.00	0.00	0.00	9.25
392	WR2	VRLA BATTERY BANK 220V 700AH	ITARSI	NO	0	0	1	0	1	9.96	9.96	0.00	0.00	9.96	0.00
393	NR1	245KV, 2500A, 50KA 3PH CIRCUIT BREAKER	MEERUT	NO	0	0	1	0	1	12.19	12.19	0.00	0.00	12.19	0.00
394	NR1	DRY BLOCK CALIBRATOR	MEERUT	NO	0	0	1	0	1	7.61	7.61	0.00	0.00	7.61	0.00
395	NR1	DIGITAL LEVEL METER CUM LEVEL GENERATOR	BHINMAL	NO	0	0	1	0	1	10.55	10.55	0.00	0.00	10.55	0.00
396	WR2	SF6 GAS ANALYZER	VINDHYACHAL POOLING	NO	0	0	0	1	1	9.39	9.39	0.00	0.00	0.00	9.39
397	WR2	OIL BATH FOR CALIBRATION-OTI WTI INSTRU	BINA	NO	0	0	1	0	1	7.61	7.61	0.00	0.00	7.61	0.00
398	WR2	PHOTOACOUSTIC GAS ANALYZER-PGA 14	GWALIOR	NO	0	0	1	0	1	6.96	6.96	0.00	0.00	6.96	0.00
399	ER2	765KV,3000A, 50KA,1-PH CT-120% RATING	ANGUL	EA	0	0	0	1	1	15.50	15.50	0.00	0.00	0.00	15.50
400	WR1	CONTROLLED SWITCHING DEVICE-765KV CB	CHAMPA	EA	0	0	0	1	1	10.50	10.50	0.00	0.00	0.00	10.50
401	ER2	DISTRIBUTION PIPE OUTLET-SIEMENS	TALCHER HVDC	EA	0	0	1	0	1	5.46	5.46	0.00	0.00	5.46	0.00
402	ER2	420KV, 3000A, 50KA,1-PH CT-120% RATING	RENGALI	EA	0	0	4	0	4	6.66	26.63	0.00	0.00	26.63	0.00
403	ER2	BAY CONTROLLER UNIT-SIEMENS	SUNDERGARH	EA	0	0	2	0	2	6.88	13.77	0.00	0.00	13.77	0.00
404	SR2	630KVA, 11/0.433KV,3-PH LT TRANSFORMER	KALIVANTHAPATTU	EA	0	0	0	1	1	19.54	19.54	0.00	0.00	0.00	19.54
405	NR2	SF6 GAS ANALYZER	JALLANDHAR	EA	0	0	1	0	1	6.81	6.81	0.00	0.00	6.81	0.00
406	NR2	SF6 GAS ANALYZER	PATIALA	EA	0	0	1	0	1	6.81	6.81	0.00	0.00	6.81	0.00
407	NR2	SF6 GAS ANALYZER	AMRITSAR	EA	0	0	1	0	1	6.81	6.81	0.00	0.00	6.81	0.00
408	NR2	SF6 GAS ANALYZER	FATEHABAD	EA	0	0	1	0	1	6.81	6.81	0.00	0.00	6.81	0.00
409	NR2	SF6 GAS ANALYZER	LUDHIANA	EA	0	0	1	0	1	6.81	6.81	0.00	0.00	6.81	0.00
410	NR2	SF6 GAS ANALYZER	BANALA POOLING	EA	0	0	1	0	1	6.81	6.81	0.00	0.00	6.81	0.00
411	WR2	INSULATION TESTER-DIGITAL 2KV - 10KV	BOISAR	NO	0	0	1	0	1	7.20	7.20	0.00	0.00	7.20	0.00
412	WR2	NITROGEN INJECTION FIRE PROT-400KV REACT	INDORE	NO	0	0	1	0	1	19.57	19.57	0.00	0.00	19.57	0.00
413	WR2	NITROGEN INJECTION FIRE PROT-400KV REACT	INDORE	NO	0	0	1	0	1	19.57	19.57	0.00	0.00	19.57	0.00
414	WR2	NITROGEN INJECTION FIRE PROT-400KV REACT	INDORE	NO	0	0	1	0	1	19.57	19.57	0.00	0.00	19.57	0.00
415	WR2	NITROGEN INJECTION FIRE PROT-400KV REACT	INDORE	NO	0	0	1	0	1	13.69	13.69	0.00	0.00	13.69	0.00
416	WR2	NITROGEN INJECTION FIRE PROT-400KV REACT	INDORE	NO	0	0	1	0	1	13.69	13.69	0.00	0.00	13.69	0.00
417	WR2	NITROGEN INJECTION FIRE PROT-400KV REACT	INDORE	NO	0	0	1	0	1	13.69	13.69	0.00	0.00	13.69	0.00
418	WR2	NITROGEN INJECTION FIRE PROT-400KV REACT	INDORE	NO	0	0	1	0	1	13.69	13.69	0.00	0.00	13.69	0.00
419	WR2	NITROGEN INJECTION FIRE PROT-400KV REACT	INDORE	NO	0	0	1	0	1	19.57	19.57	0.00	0.00	19.57	0.00
420	NER	420KV,4000A ISOLATOR POLE	BISWANATH CHARIALI	EA	0	0	0	2	2	10.12	20.23	0.00	0.00	0.00	20.23
421	ER1	BUS BAR DIFFERENTIAL RELAY MICOM P746	BIHARSHARIF	EA	0	0	3	0	3	5.84	17.52	0.00	0.00	17.52	0.00
422	NR2	VRLA BATTERY BANK 220V 650AH	SAMBA	SET	0	0	1	0	1	9.42	9.42	0.00	0.00	9.42	0.00
423	NER	420KV, 4000A, 63KA,1PH,CT-120% RATING	BISWANATH CHARIALI	EA	0	0	1	0	1	7.53	7.53	0.00	0.00	7.53	0.00
424	NER	420KV, 2500A, CT-120% RATING	BISWANATH CHARIALI	EA	0	0	1	0	1	6.35	6.35	0.00	0.00	6.35	0.00
425	WR2	SF6 GAS ANALYZER	DAMOH	NO	0	0	1	0	1	9.39	9.39	0.00	0.00	9.39	0.00
426	WR2	WIND MEASURING EQUIPMENT	GWALIOR	NO	0	0	1	0	1	6.02	6.02	0.00	0.00	6.02	0.00
427	ER1	WAVE TRAP AS PER TS	PATNA	SET	0	0	0	1	1	6.59	6.59	0.00	0.00	0.00	6.59
428	WR2	220V, 600AH VRLA BATTERY	DAMOH	NO	0	0	1	0	1	10.03	10.03	0.00	0.00	10.03	0.00
429	WR2	SF6 GAS FILLING & STORAGE PLANT	RAJGARH	NO	0	0	1	0	1	11.94	11.94	0.00	0.00	11.94	0.00
430	SR1	STATION DATA CONCENTRATOR FOR RAS SYSTEM	KADAPA	EA	0	0	2	0	2	6.71	13.42	0.00	0.00	13.42	0.00

Details of Capital Spares Consumed-5 Lakhs to 20 Lakhs

					Consumption Detail							Year wise Consumption in Rs Lakhs			
Sr. No	Region	Material Name	Plant Name	Base Unit of Measure	2019-2020 Qty	2020-2021 Qty	2021-2022 Qty	2022-2023 Qty	Total Consumption Qty	Unit Cost (Rs Lakhs)	Consumption Value (Rs	Value 2019-2020	Value 2020-2021	Value 2021-2022	Value 2022-2023
431	SR1	STATION DATA CONCENTRATOR FOR RAS SYSTEM	NP KUNTA	EA	0	0	0	2	2	6.71	13.42	0.00	0.00	0.00	13.42
432	NR1	765KV, 3000A, 50KA CT-120% RATING	JHATIKARA	EA	0	0	0	1	1	7.43	7.43	0.00	0.00	0.00	7.43
433	NR3	145KV, 1250A, 31.5KA,1PH CIRCUIT BREAKER	AGRA	EA	0	0	2	0	2	7.39	14.78	0.00	0.00	14.78	0.00
434	NR3	220V, 400 AH BATTERY	BAREILLY 765	SET	0	0	2	0	2	6.29	12.57	0.00	0.00	12.57	0.00
435	NR3	POWER SUPPLY-24V DC/DC CHOPPER-SIEMENS	BAREILLY	EA	0	0	1	0	1	5.36	5.36	0.00	0.00	5.36	0.00
436	SR1	STATION DATA CONCENTRATOR FOR RAS SYSTEM	MAHESWARAM	EA	0	0	2	0	2	6.71	13.42	0.00	0.00	13.42	0.00
437	WR1	420KV, 3000A, 50KA,1-PH CT-120% RATING	BILASPUR	EA	0	0	0	2	2	5.71	11.43	0.00	0.00	0.00	11.43
438	WR2	POLE COLUMN-420KV CB (SO) 3AP2FI-SIEM	BOISAR	NO	0	0	0	1	1	6.44	6.44	0.00	0.00	0.00	6.44
439	WR2	ON LINE INSUL OIL DRYING SYSTEM-REACTOR	VADODARA GIS	NO	0	0	1	0	1	5.13	5.13	0.00	0.00	5.13	0.00
440	NER	BCU C264 WITH LHMI DISPLAY-GE	SILCHAR	EA	0	0	1	0	1	5.82	5.82	0.00	0.00	5.82	0.00
441	WR1	PCB 1958/10 BOD CARD-ALSTOM	BHADRAWATI	EA	0	0	5	0	5	10.92	54.62	0.00	0.00	54.62	0.00
442	WR1	24 PORT LAN SWITCH	SOLAPUR	EA	0	0	3	0	3	8.88	26.64	0.00	0.00	26.64	0.00
443	NR1	CONTROLLED SWITCHING DEVICE-420KV CB	SIKAR	EA	0	0	1	0	1	17.58	17.58	0.00	0.00	17.58	0.00
444	SR1	STATION DATA CONCENTRATOR FOR RAS SYSTEM	NIZAMABAD	EA	0	0	1	0	1	6.71	6.71	0.00	0.00	6.71	0.00
445	NR1	DRY BLOCK CALIBRATOR	JHATIKARA	EA	0	0	1	0	1	7.61	7.61	0.00	0.00	7.61	0.00
446	WR1	THYRISTOR DCR1675 1096D, 5.2KV 4KA-DYNEX	BHADRAWATI	EA	0	0	0	1	1	5.10	5.10	0.00	0.00	0.00	5.10
447	WR1	PCB 1958/10 BOD CARD-ALSTOM	BHADRAWATI	EA	0	0	6	0	6	10.92	65.54	0.00	0.00	65.54	0.00
448	WR1	COPPER BRAIDED WIRE FOR ISOLATOR E/S	WARDHA	EA	0	0	1	0	1	9.56	9.56	0.00	0.00	9.56	0.00
449	NR1	420KV, 800A BUSHING-T/F CGL	KOTA	EA	0	0	1	0	1	6.11	6.11	0.00	0.00	6.11	0.00
450	NR1	245KV, 2500A, 50KA 3PH CIRCUIT BREAKER	CHITTORGARH	EA	0	0	0	3	3	8.08	24.24	0.00	0.00	0.00	24.24
451	NR1	245KV, 2500A, 50KA 3PH CIRCUIT BREAKER	BALLABGARH	EA	0	1	0	0	1	8.08	8.08	0.00	8.08	0.00	0.00
452	NR1	245KV, 2500A, 50KA 3PH CIRCUIT BREAKER	MEERUT	EA	0	0	2	0	2	8.08	16.16	0.00	0.00	16.16	0.00
453	NR1	HARDWARE FOR SCADA UPGRADATION	MEERUT	LS	0	0	1	0	1	9.35	9.35	0.00	0.00	9.35	0.00
454	NR1	HARDWARE FOR SCADA UPGRADATION	MEERUT	LS	0	0	1	0	1	9.35	9.35	0.00	0.00	9.35	0.00
455	NR1	420KV, 3150A, 50KA, 3PH CB W/O CR	BHIWADI	EA	0	0	0	7	7	13.95	97.65	0.00	0.00	0.00	97.65
456	NR1	DRY BLOCK CALIBRATOR	BHIWADI	EA	0	0	1	0	1	7.61	7.61	0.00	0.00	7.61	0.00
457	NR1	420KV, 3150A, 50KA, 3PH CB WITH CR	BALLABGARH	EA	0	0	2	1	3	18.76	56.28	0.00	0.00	37.52	18.76
458	NR1	HARDWARE FOR SCADA UPGRADATION	BALLABGARH	LS	0	0	1	0	1	9.35	9.35	0.00	0.00	9.35	0.00
459	NR1	HARDWARE FOR SCADA UPGRADATION	BALLABGARH	LS	0	0	1	0	1	9.35	9.35	0.00	0.00	9.35	0.00
460	NR1	SF6 GAS ANALYZER	KANKROLI	EA	0	0	1	0	1	14.51	14.51	0.00	0.00	14.51	0.00
461	NR1	DRY BLOCK CALIBRATOR	SIKAR	EA	0	0	1	0	1	7.61	7.61	0.00	0.00	7.61	0.00
462	NR1	SF6 GAS ANALYZER	JHATIKARA	EA	0	0	1	0	1	14.51	14.51	0.00	0.00	14.51	0.00
463	WR1	24 PORT LAN SWITCH	KOLHAPUR	EA	0	0	0	4	4	8.18	32.70	0.00	0.00	0.00	32.70
464	WR1	420KV, 3000A, 50KA,1-PH CT-120% RATING	BHATAPARA	EA	0	0	1	0	1	5.71	5.71	0.00	0.00	5.71	0.00
465	WR1	THYRISTOR DCR1675 1096D, 5.2KV 4KA-DYNEX	BHADRAWATI	EA	0	0	0	1	1	5.10	5.10	0.00	0.00	0.00	5.10
466	WR2	GRADING CAPACITOR-HAGT341889R6 CB-ABB	INDORE	NO	0	0	0	1	1	6.79	6.79	0.00	0.00	0.00	6.79
467	WR2	SF6 GAS ANALYZER	JABALPUR POOLING	NO	0	0	0	1	1	9.39	9.39	0.00	0.00	0.00	9.39
468	NR2	420KV,40KA SF6 CB POLE (PS) W/O CR-CGL	JALLANDHAR	SET	0	0	0	1	1	10.94	10.94	0.00	0.00	0.00	10.94
469	NR3	BUSBAR CENTRAL UNIT 7SS522-SIEMENS	BALLIA	EA	0	0	2	0	2	8.77	17.54	0.00	0.00	17.54	0.00
470	WR1	NETWORK VIDEO RECORDER HARDWARE-VMS	KOTRA POOLING	EA	0	0	1	0	1	11.86	11.86	0.00	0.00	11.86	0.00
471	WR1	NETWORK VIDEO RECORDER HARDWARE-VMS	KOLHAPUR	EA	0	0	0	1	1	11.86	11.86	0.00	0.00	0.00	11.86
472	WR1	NETWORK AREA STORAGE DEVICE-NAS	KOLHAPUR	EA	0	0	0	1	1	13.57	13.57	0.00	0.00	0.00	13.57
473	ER1	CONTROLLED SWITCHING DEVICE-420KV CB	HVDC- PUSAULI	EA	0	0	7	0	7	6.10	42.70	0.00	0.00	42.70	0.00

Details of Capital Spares Consumed-5 Lakhs to 20 Lakhs

					Consumption Detail							Year wise Consumption in Rs Lakhs			
Sr. No	Region	Material Name	Plant Name	Base Unit of Measure	2019-2020 Qty	2020-2021 Qty	2021-2022 Qty	2022-2023 Qty	Total Consumption Qty	Unit Cost (Rs Lakhs)	Consumption Value (Rs	Value 2019-2020	Value 2020-2021	Value 2021-2022	Value 2022-2023
474	WR2	SF6 GAS ANALYZER	JABALPUR	NO	0	0	1	0	1	9.39	9.39	0.00	0.00	9.39	0.00
475	ER2	420KV, 3150A, 50KA, 3PH CB W/O CR	BARIPADA	EA	0	0	3	0	3	9.73	29.20	0.00	0.00	29.20	0.00
476	WR2	SF6 GAS ANALYZER	DEHGAM	NO	0	0	1	0	1	9.39	9.39	0.00	0.00	9.39	0.00
477	WR2	SF6 GAS ANALYZER	KHANDWA	NO	0	0	1	0	1	9.39	9.39	0.00	0.00	9.39	0.00
478	WR2	SF6 GAS ANALYZER	RAJGARH	NO	0	0	1	0	1	9.39	9.39	0.00	0.00	9.39	0.00
479	WR2	SF6 GAS ANALYZER	BOISAR	NO	0	0	1	0	1	9.39	9.39	0.00	0.00	9.39	0.00
480	NR1	220V, 600AH VRLA BATTERY	SIKAR	SET	0	0	1	0	1	9.44	9.44	0.00	0.00	9.44	0.00
481	WR2	SF6 GAS ANALYZER	INDORE	NO	0	0	1	0	1	9.39	9.39	0.00	0.00	9.39	0.00
482	NR1	AUTOMATIC C & TAN DELTA TEST KIT	BHADLA	EA	0	0	1	0	1	9.82	9.82	0.00	0.00	9.82	0.00
483	NR1	PORTABLE SF6 GAS FILLING PLANT	BHADLA	SET	0	0	1	0	1	10.34	10.34	0.00	0.00	10.34	0.00
484	NR1	SF6 GAS ANALYZER	HVDC DADRI	EA	0	0	1	0	1	14.51	14.51	0.00	0.00	14.51	0.00
485	NR1	LA THRC/LEAKAGE CURRENT ANALYZER	HVDC DADRI	EA	0	0	1	0	1	9.38	9.38	0.00	0.00	9.38	0.00
486	NR1	220V, 600AH VRLA BATTERY	DEHRADUN	SET	0	0	2	0	2	9.35	18.70	0.00	0.00	18.70	0.00
487	WR1	NETWORK AREA STORAGE DEVICE-NAS	SOLAPUR	EA	0	0	1	0	1	13.57	13.57	0.00	0.00	13.57	0.00
488	WR1	NETWORK VIDEO RECORDER HARDWARE-VMS	SOLAPUR	EA	0	0	1	0	1	11.86	11.86	0.00	0.00	11.86	0.00
489	ER2	PRESSURE SWITCH C1B41205534001-DC CB	TALCHER HVDC	EA	0	1	0	0	1	7.05	7.05	0.00	7.05	0.00	0.00
490	ER2	245KV, 1250A RIP BUSHING (STD)	INDRAVATI	EA	0	0	0	1	1	6.23	6.23	0.00	0.00	0.00	6.23
491	NR1	PORTABLE SF6 GAS FILLING PLANT	BASSI	SET	0	0	0	1	1	10.34	10.34	0.00	0.00	0.00	10.34
492	NR1	CONTROLLED SWITCHING DEVICE-420KV CB	BHIWADI	EA	0	0	6	0	6	9.25	55.51	0.00	0.00	55.51	0.00
493	NR1	MOBILE DRY AIR PLANT (HEATLESS TYPE)	HVDC DADRI	EA	0	0	1	0	1	12.97	12.97	0.00	0.00	12.97	0.00
494	ER2	1.6 MANIFOLD ASSEMBLY-TRANSFIX	ALIPURDUAR HVDC	NO	0	0	0	1	1	7.20	7.20	0.00	0.00	0.00	7.20
495	NR1	220V, 600AH VRLA BATTERY	SONIPAT	SET	0	0	1	0	1	9.35	9.35	0.00	0.00	9.35	0.00
496	ER2	TRANSIENT FAULT RECORDER	TALCHER HVDC	SET	0	0	1	0	1	15.55	15.55	0.00	0.00	15.55	0.00
497	NR3	220V, 600AH VRLA BATTERY	GORAKHPUR	SET	0	0	0	1	1	12.02	12.02	0.00	0.00	0.00	12.02
498	NR3	420KV, 3000A, 50KA,1-PH CT-120% RATING	LUCKNOW 400KV	EA	0	0	1	0	1	5.74	5.74	0.00	0.00	5.74	0.00
499	NR3	HYDRANT PUMP 132KW-FIRE PROTECTION SYST	RIHAND	EA	0	0	0	1	1	10.53	10.53	0.00	0.00	0.00	10.53
500	NR3	SPRAY WATER PUMP WITH MOTOR 3.2KW-LOWARA	RIHAND	EA	0	0	0	1	1	11.71	11.71	0.00	0.00	0.00	11.71
501	NR3	HORZ CENTR. DIESEL ENG PUMP 96M3/HR	RIHAND	SET	0	0	0	2	2	9.35	18.70	0.00	0.00	0.00	18.70
502	NR3	CB OVERHAULING KIT 3AQ2EI-SIEMENS	GORAKHPUR	SET	0	0	2	0	2	12.80	25.60	0.00	0.00	25.60	0.00
503	WR2	SF6 GAS ANALYZER	SHUJALPUR	NO	0	0	0	1	1	9.39	9.39	0.00	0.00	0.00	9.39
504	WR2	SF6 GAS ANALYZER	KALA GIS	NO	0	0	0	1	1	9.39	9.39	0.00	0.00	0.00	9.39
505	WR2	ACQUISITION UNIT-TRAVELLING FAULTLOCATOR	BANASKANTHA	NO	0	0	0	1	1	12.09	12.09	0.00	0.00	0.00	12.09
506	SR2	TRANSIENT FAULT RECORDER	KOLAR	SET	0	0	0	1	1	18.48	18.48	0.00	0.00	0.00	18.48
507	WR1	NETWORK VIDEO RECORDER HARDWARE-VMS	RAIPUR	EA	0	0	0	1	1	11.86	11.86	0.00	0.00	0.00	11.86
508	WR1	NETWORK AREA STORAGE DEVICE-NAS	RAIPUR	EA	0	0	0	1	1	12.96	12.96	0.00	0.00	0.00	12.96
509	WR2	SPARE-AC CURRENT TRANSFORMERS	DEHGAM	NO	0	0	4	0	4	5.75	23.02	0.00	0.00	23.02	0.00
510	SR2	48V, 1500 AH BATTERY	KUDGI	SET	0	0	0	1	1	6.18	6.18	0.00	0.00	0.00	6.18
511	SR2	220V, 400 AH BATTERY	HASSAN	SET	0	0	0	1	1	7.77	7.77	0.00	0.00	0.00	7.77
512	SR2	220V, 500 AH BATTERY	SALEM	SET	0	0	0	1	1	9.18	9.18	0.00	0.00	0.00	9.18
513	NR1	PRIMARY INJECTION TESTING KIT-2000 A	DEHRADUN	EA	0	0	0	1	1	13.30	13.30	0.00	0.00	0.00	13.30
514	NR1	SF6 GAS ANALYZER	SIKAR	EA	0	0	0	1	1	14.51	14.51	0.00	0.00	0.00	14.51
515	NR1	220V, 600AH VRLA BATTERY	BHIWANI	SET	0	0	0	2	2	9.16	18.32	0.00	0.00	0.00	18.32
516	NR1	SUBSTATION SPARES-PMUS ABROAD MAKE	KURUKSHETRA	LOT	0	0	0	1	1	5.33	5.33	0.00	0.00	0.00	5.33

Details of Capital Spares Consumed-5 Lakhs to 20 Lakhs

					Consumption Detail							Year wise Consumption in Rs Lakhs			
Sr. No	Region	Material Name	Plant Name	Base Unit of Measure	2019-2020 Qty	2020-2021 Qty	2021-2022 Qty	2022-2023 Qty	Total Consumption Qty	Unit Cost (Rs Lakhs)	Consumption Value (Rs	Value 2019-2020	Value 2020-2021	Value 2021-2022	Value 2022-2023
517	NR1	AUTOMATIC BATTERY DISCHARGE TEST KIT	KURUKSHETRA	EA	0	0	0	1	1	11.56	11.56	0.00	0.00	0.00	11.56
518	WR1	PHOTOACOUSTIC GAS ANALYZER-PGA 14	WARDHA	EA	0	0	0	1	1	6.61	6.61	0.00	0.00	0.00	6.61
519	NR1	MOBILE DRY AIR PLANT (HEATLESS TYPE)	MANDOLA	EA	0	0	0	1	1	12.97	12.97	0.00	0.00	0.00	12.97
520	NER	630KVA,33/0.433KV,3PH LT TRANSFORMER	DIMAPUR	EA	0	0	0	1	1	19.38	19.38	0.00	0.00	0.00	19.38
521	NR1	1KL OIL FILTRATION PLANT	BHIWANI	EA	0	0	0	1	1	5.73	5.73	0.00	0.00	0.00	5.73
522	NR1	MOBILE DRY AIR PLANT (HEATLESS TYPE)	ROORKEE	EA	0	0	0	1	1	6.48	6.48	0.00	0.00	0.00	6.48
523	NR1	MOBILE DRY AIR PLANT (HEATLESS TYPE)	GIS GURGAON	EA	0	0	0	1	1	6.48	6.48	0.00	0.00	0.00	6.48
524	NR1	MOBILE DRY AIR PLANT (HEATLESS TYPE)	NEEMRANA	EA	0	0	0	1	1	6.48	6.48	0.00	0.00	0.00	6.48
525	NER	CLOSING SPRING CHARGING MECH-145KVGIS CB	DIMAPUR	EA	0	0	0	1	1	15.77	15.77	0.00	0.00	0.00	15.77
526	WR1	LBB PROTECTION 7VK610-SIEMENS	MAPUSA	EA	0	0	0	1	1	10.50	10.50	0.00	0.00	0.00	10.50
527	ER2	OTI WTI CALIBRATOR	ANGUL	EA	0	0	0	1	1	7.61	7.61	0.00	0.00	0.00	7.61
528	ER2	OTI WTI CALIBRATOR	SUNDERGARH	EA	0	0	0	1	1	7.61	7.61	0.00	0.00	0.00	7.61
529	WR2	POLE COLUMN-420KV CB (SO) 3AP2FI-SIEM	BOISAR	NO	0	0	0	1	1	6.44	6.44	0.00	0.00	0.00	6.44
530	SR1	BANDED PAIR HEAT SINK ASSY+REACTORS-ALST	VISHAKAPATNAM	EA	0	0	0	2	2	8.94	17.87	0.00	0.00	0.00	17.87
531	NR3	CONTROLLED SWITCHING DEVICE 420KV 3PH CB	BALLIA	SET	0	0	0	11	11	9.04	99.42	0.00	0.00	0.00	99.42
532	NR3	VESDA MONITORING SOFTWARE VSM4-XTRALIS	AGRA	EA	0	0	0	1	1	13.13	13.13	0.00	0.00	0.00	13.13
533	NR3	DATABASE/IS&R SERVER-SCADA SYSTEM	FATEHPUR	EA	0	0	0	1	1	8.53	8.53	0.00	0.00	0.00	8.53
534	WR1	CONTROLLED SWITCHING DEVICE-765KV CB	CHAMPA	EA	0	0	0	1	1	8.44	8.44	0.00	0.00	0.00	8.44
535	NR1	420KV, 3000A, 50KA,1-PH CT-120% RATING	HISSAR	EA	0	0	0	1	1	5.90	5.90	0.00	0.00	0.00	5.90
536	NR1	OPTO 68 CONTROL CARD	MEERUT	EA	0	0	0	2	2	17.10	34.20	0.00	0.00	0.00	34.20
537	NR1	HARDWARE FOR SCADA UPGRADATION	NEEMRANA	LS	0	0	0	1	1	13.83	13.83	0.00	0.00	0.00	13.83
538	NR1	SOFTWARE FOR SCADA UPGRADATION	NEEMRANA	LS	0	0	0	1	1	16.39	16.39	0.00	0.00	0.00	16.39
539	NR1	BCU WITH CONFIGURATION SOFTWARE	MEERUT	SET	0	0	0	1	1	9.76	9.76	0.00	0.00	0.00	9.76
540	NR1	CT ANALYSER	BHIWADI	EA	0	0	0	1	1	19.12	19.12	0.00	0.00	0.00	19.12
541	NR1	VRLA BATTERY BANK 220V 700AH	MEERUT	SET	0	0	0	1	1	13.82	13.82	0.00	0.00	0.00	13.82
542	NR1	SF6 GAS ANALYZER	GIS GURGAON	EA	0	0	0	1	1	14.51	14.51	0.00	0.00	0.00	14.51
543	NR1	COMPARTMENT COVERS FOR 1PH ENCL	BAGPAT	EA	0	0	0	1	1	16.41	16.41	0.00	0.00	0.00	16.41
544	NR1	145KV, 3150A, 40KA,3PH,GIS BUS DUCT	BAGPAT	EA	0	0	0	1	1	6.51	6.51	0.00	0.00	0.00	6.51
545	NR1	MOBILE DRY AIR PLANT (HEATLESS TYPE)	BASSI	EA	0	0	0	1	1	6.48	6.48	0.00	0.00	0.00	6.48
546	NR1	MOBILE DRY AIR PLANT (HEATLESS TYPE)	KOTA	EA	0	0	0	1	1	6.48	6.48	0.00	0.00	0.00	6.48
547	NR1	ACQUISITION UNIT-TRAVELLING FAULTLOCATOR	AJMER	SET	0	0	0	1	1	12.09	12.09	0.00	0.00	0.00	12.09
548	NR1	220V, 500 AH BATTERY	HVDC DADRI	SET	0	0	0	1	1	18.56	18.56	0.00	0.00	0.00	18.56
549	NR1	MOBILE DRY AIR PLANT (HEATLESS TYPE)	BHINMAL	EA	0	0	0	1	1	12.97	12.97	0.00	0.00	0.00	12.97
550	NR1	HARDWARE FOR SCADA UPGRADATION	JAIPUR SOUTH	LS	0	0	0	1	1	14.06	14.06	0.00	0.00	0.00	14.06
551	NR3	MICROPROCESSOR BASED A/C-22 TR	GORAKHPUR	EA	0	0	0	1	1	7.26	7.26	0.00	0.00	0.00	7.26
552	WR1	CODEC -VIDEO CONFERENCING	WARDHA	EA	0	0	0	1	1	7.99	7.99	0.00	0.00	0.00	7.99
553	WR1	VRLA BATTERY BANK 220V 1000AH	RAIPUR	EA	0	0	0	1	1	18.82	18.82	0.00	0.00	0.00	18.82
554	ER2	420KV, 3000A, 63KA,1-PH,CT-120% RATING	ROURKELA	EA	0	0	0	1	1	6.06	6.06	0.00	0.00	0.00	6.06
555	ER2	PRESSURE SWITCH C1B41205534001-DC CB	TALCHER HVDC	EA	0	1	0	0	1	9.31	9.31	0.00	9.31	0.00	0.00
556	WR1	420KV, 3000A, 50KA,1-PH CT-120% RATING	SEONI	EA	1	0	0	0	1	5.71	5.71	5.71	0.00	0.00	0.00
557	WR1	CODEC -VIDEO CONFERENCING	WESTERN REGION-1	EA	0	0	0	2	2	7.99	15.98	0.00	0.00	0.00	15.98
558	NR2	420KV, 1250A RIP BUSHING (STD)	FATEHABAD	NO	0	0	0	3	3	18.22	54.66	0.00	0.00	0.00	54.66
559	NR1	MOBILE DRY AIR PLANT (HEATLESS TYPE)	SIKAR	EA	0	0	0	1	1	12.97	12.97	0.00	0.00	0.00	12.97

Details of Capital Spares Consumed-5 Lakhs to 20 Lakhs

					Consumption Detail							Year wise Consumption in Rs Lakhs			
Sr. No	Region	Material Name	Plant Name	Base Unit of Measure	2019-2020 Qty	2020-2021 Qty	2021-2022 Qty	2022-2023 Qty	Total Consumption Qty	Unit Cost (Rs Lakhs)	Consumption Value (Rs	Value 2019-2020	Value 2020-2021	Value 2021-2022	Value 2022-2023
560	NR1	MOBILE DRY AIR PLANT (HEATLESS TYPE)	KANKROLI	EA	0	0	0	1	1	12.97	12.97	0.00	0.00	0.00	12.97
561	NR1	VRLA BATTERY BANK 220V 1000AH	GIS MANESAR	SET	0	0	0	2	2	8.12	16.24	0.00	0.00	0.00	16.24
562	WR1	CODEC -VIDEO CONFERENCING	NAVI MUMBAI	LS	0	0	0	1	1	7.99	7.99	0.00	0.00	0.00	7.99
563	NR3	HYDROPNEUMATIC TANK	RIHAND	EA	0	0	0	1	1	8.17	8.17	0.00	0.00	0.00	8.17
564	NR3	MCC/ELECTRICAL PANEL WITH SWITCHGEAR	RIHAND	LOT	0	0	0	1	1	8.17	8.17	0.00	0.00	0.00	8.17
565	NR1	DIFFERENTIAL CT-CAPACITOR-RITZ	BALLABGARH	EA	0	0	0	1	1	9.78	9.78	0.00	0.00	0.00	9.78
566	NR3	DIGITAL LEVEL METER CUM LEVEL GENERATOR	BAREILLY	EA	0	0	0	3	3	10.55	31.66	0.00	0.00	0.00	31.66
567	NR3	VRLA BATTERY BANK 48V 900AH	ORAI	SET	0	0	0	2	2	5.38	10.75	0.00	0.00	0.00	10.75
568	NR2	LA THRC/LEAKAGE CURRENT ANALYZER	MALERKOTLA	NO	1	0	0	0	1	9.75	9.75	9.75	0.00	0.00	0.00
569	NR2	AUTOMATIC C & TAN DELTA TEST KIT	KISHENPUR	NO	0	0	1	0	1	16.47	16.47	0.00	0.00	16.47	0.00
570	NR2	AUTOMATIC C & TAN DELTA TEST KIT	WAGOORA	NO	1	0	0	0	1	16.47	16.47	16.47	0.00	0.00	0.00
571	NR2	AUTOMATIC C & TAN DELTA TEST KIT	NALAGARH	NO	0	1	0	0	1	16.47	16.47	0.00	16.47	0.00	0.00
572	NR2	AUTOMATIC C & TAN DELTA TEST KIT	ABDULLAPUR	NO	1	0	0	0	1	16.47	16.47	16.47	0.00	0.00	0.00
573	NR2	AUTOMATIC C & TAN DELTA TEST KIT	JALLANDHAR	NO	0	1	0	0	1	16.47	16.47	0.00	16.47	0.00	0.00
574	NR2	AUTOMATIC C & TAN DELTA TEST KIT	PATIALA	NO	1	0	0	0	1	16.47	16.47	16.47	0.00	0.00	0.00
575	NR2	AUTOMATIC C & TAN DELTA TEST KIT	AMRITSAR	NO	1	0	0	0	1	16.47	16.47	16.47	0.00	0.00	0.00
576	NR2	AUTOMATIC C & TAN DELTA TEST KIT	FATEHABAD	NO	0	0	1	0	1	16.47	16.47	0.00	0.00	16.47	0.00
577	NR2	HYBRID SIGNAL ANALYZER	MALERKOTLA	EA	0	0	1	0	1	11.16	11.16	0.00	0.00	11.16	0.00
578	NR2	IEC61850 STATION ANALYZER	MALERKOTLA	EA	0	0	1	0	1	9.68	9.68	0.00	0.00	9.68	0.00
579	NR2	ACQUISITION UNIT-TRAVELLING FAULTLOCATOR	KISHENPUR	SET	0	0	1	0	1	9.26	9.26	0.00	0.00	9.26	0.00
580	NR2	CT ANALYSER	PATIALA	EA	0	0	0	1	1	7.14	7.14	0.00	0.00	0.00	7.14
581	NER	SDC SOFTWARE-RAS	NAMSAI	LOT	0	0	2	0	2	5.54	11.07	0.00	0.00	11.07	0.00
582	SR1	420KV, 1250A BUSHING (STD)	KADAPA	EA	1	0	0	0	1	6.16	6.16	6.16	0.00	0.00	0.00
583	SR1	420KV, 2000A, 40KA,1-PH,CT-120% RATING	KURNOOL	EA	0	1	0	0	1	5.90	5.90	0.00	5.90	0.00	0.00
584	SR2	POLE COLUMN-245KV SF6 CB (PO)-ABB	NARENDRA	EA	0	1	0	0	1	6.23	6.23	0.00	6.23	0.00	0.00
585	SR2	SET OF GASKET-400KV 315MVA T/F-CGL	PUDUCHERRY	SET	0	1	0	0	1	10.12	10.12	0.00	10.12	0.00	0.00
586	SR2	MARSHALLING CABINET-CONVXMER	PUDUCHERRY	SET	0	1	0	0	1	7.79	7.79	0.00	7.79	0.00	0.00
587	SR2	VPS -70" LED FULL HD	YELAHANKA	EA	0	2	0	0	2	15.77	31.55	0.00	31.55	0.00	0.00
588	ER1	CONTROLLED SWITCHING DEV-420/765KV CB-SI	CHAIBASA	EA	0	1	0	0	1	12.24	12.24	0.00	12.24	0.00	0.00
589	ER2	420KV, 2000A, 50KA ,1-PH CT-120% RATING	ROURKELA	EA	0	0	0	1	1	5.94	5.94	0.00	0.00	0.00	5.94
590	ER2	WAVE TRAP AS PER TS	RENGALI	SET	0	1	0	0	1	5.60	5.60	0.00	5.60	0.00	0.00
591	WR1	420KV, 1250A BUSHING (STD)	PADGHE	EA	0	1	0	0	1	5.94	5.94	0.00	5.94	0.00	0.00
592	NR3	NUMERICAL DISTANCE RELAY 7SA522-SIEMENS	BALLIA	SET	0	1	0	0	1	7.28	7.28	0.00	7.28	0.00	0.00
593	NR3	LINE CURRENT DIFFERENTIAL RELAY	LUCKNOW	SET	0	1	0	0	1	8.64	8.64	0.00	8.64	0.00	0.00
594	NR3	420KV, 2000A, 40KA,1-PH,CT-120% RATING	VINDHYANAGAR	EA	1	1	0	0	2	6.88	13.75	6.88	6.88	0.00	0.00
595	NR1	420KV, 4400PF, 1PH CVT	GIS MAHARANIBAGH	EA	1	0	0	0	1	7.46	7.46	7.46	0.00	0.00	0.00
596	NR1	420KV, 2000A, 40KA,1-PH,CT-120% RATING	BALLABGARH	EA	0	0	0	1	1	6.11	6.11	0.00	0.00	0.00	6.11
597	NR1	FINE WATER PUMP (CNX 100-250)-VC-ABB	HVDC DADRI	SET	0	1	0	0	1	17.72	17.72	0.00	17.72	0.00	0.00
598	NR3	420KV, 2000A, 40KA,1-PH,CT-120% RATING	GORAKHPUR	EA	0	0	1	0	1	6.11	6.11	0.00	0.00	6.11	0.00
599	NR3	420KV, 1250A BUSHING-T/F EMCO	BAREILLY	SET	0	1	0	0	1	7.20	7.20	0.00	7.20	0.00	0.00
600	NR3	420KV,40KA INTERRUPTER+CR 3AT2-CB-BHEL	BAREILLY	SET	0	0	0	1	1	19.63	19.63	0.00	0.00	0.00	19.63
601	NR3	420KV, 2000A, 40KA,1-PH,CT-120% RATING	SHAHJAHANPUR	EA	1	0	0	0	1	6.07	6.07	6.07	0.00	0.00	0.00
602	NR1	420KV, 1250A RIP BUSHING (STD)	CHITTORGARH	NO	0	1	0	0	1	18.12	18.12	0.00	18.12	0.00	0.00

Details of Capital Spares Consumed-5 Lakhs to 20 Lakhs

					Consumption Detail							Year wise Consumption in Rs Lakhs			
Sr. No	Region	Material Name	Plant Name	Base Unit of Measure	2019-2020 Qty	2020-2021 Qty	2021-2022 Qty	2022-2023 Qty	Total Consumption Qty	Unit Cost (Rs Lakhs)	Consumption Value (Rs	Value 2019-2020	Value 2020-2021	Value 2021-2022	Value 2022-2023
603	NR2	420KV, 2000A, 50KA ,1-PH CT-120% RATING	MOGA	EA	2	0	0	0	2	6.30	12.61	12.61	0.00	0.00	0.00
604	NR2	420KV, 2000A, 50KA ,1-PH CT-120% RATING	MOGA	EA	1	0	0	0	1	5.96	5.96	5.96	0.00	0.00	0.00
605	NR2	420KV, 1250A BUSHING-T/F ALSTOM	PATIALA	NO	0	1	0	0	1	7.20	7.20	0.00	7.20	0.00	0.00
606	NR2	CT ANALYSER	LUDHIANA	EA	0	1	0	0	1	14.27	14.27	0.00	14.27	0.00	0.00
607	NR2	TRANSFORMER WINDING RESISTANCE TEST KIT	LUDHIANA	SET	0	1	0	0	1	5.95	5.95	0.00	5.95	0.00	0.00
608	NR1	420KV, 1250A RIP BUSHING (STD)	JIND	NO	0	1	0	1	2	9.18	18.36	0.00	9.18	0.00	9.18
Total											9,162	1,955	2,471	2,339	2,397

Normative Interest on Loan

1) **Background:**

Under the existing Tariff Regulations, CERC fixes Annual Fixed Charges for transmission licensees which comprise of five components. Out of this, four components (i.e., Depreciation, Return on Equity, O&M expenses and interest on working capital) are allowed on normative basis whereas interest on normative loan is allowed on the basis of actual weighted average rate of interest.

For computation of actual weighted average rate of interest for every asset, CERC is required to verify the details of actual loans deployed in each of the assets/petitions which comprises of voluminous data including interest rate proofs, loan agreements, etc.

To simplify the said work, CERC in the Approach Paper for Tariff Regulations, 2024-29 has asked for inputs regarding whether interest rate on loan can also be fixed with linkage to any reference rate.

2) **Proposal:**

In this regard, POWERGRID has suggested that the reference rate may be provided as :

- Projects wherein **no foreign funding is deployed – SBI MCLR (1 Year) plus 200 basis points** which would be able to cover the interest costs and fluctuations in interest cost due to floating rate of interest.
- Project wherein **foreign loans have been deployed – Reference rate may be allowed as SBI MCLR (1 year) plus 400 basis points**. Higher spread is required to take care of foreign exchange fluctuations risk. Further, FERV upto 31.03.2024 shall need to be protected.
- Regarding proposal for allowing hedging cost instead of FERV, it is submitted that 100% hedging to foreign loans may not be possible due to following reasons:
  a) Sufficient hedging products are not available in market to cover loans of longer tenure.
  b) It is seen that hedging cost is far outweigh the cost arising from exchange rate variation.
  c) After discussion with the various banks, it is found that the hedging cost for a tenure of 10 years may go upto 7.50%, whereas FERV for the past 10 years amounts to 4% (approx.).

3) **Reasoning for above proposal:**

- **Projects wherein no foreign funding is deployed:**

  Approximately, 48% of the total outstanding loans of POWERGRID as on 31.03.2023 and 69% of the domestic loans outstanding as on 31.3.2023 comprise of domestic bonds issued which carry fixed interest rates. Therefore, the amount of interest to be paid to the bondholders is fixed and independent of any changes in interest rates in the market (i.e., MCLR).

  At present, POWERGRID has bonds carrying interest rates as high as 9.65%, whereas MCLR rate has gone down upto 7% in the recent past. To protect fluctuation in MCLR rates and considering the fixed interest rates on loans already tied up, it is proposed to fix the interest rate as SBI MCLR (1 Year) plus 200 basis points.

- **Project wherein foreign loans have been deployed –**

  Interest rates of loans taken from foreign institutions are highly volatile and dependent on a lot of external factors. As seen in the recent past, various events such as disruptions due to COVID pandemic, Ukraine war, Israel-Palestine war have led to drastic increase in the interest rates of the foreign loans. Further, FERV for interest payments and principal repayments is currently allowed as reimbursement shall also be included as part of the reference rate.

  As per USD historical data for the past 10 years, it may be seen that there is an average 4% p.a. increase in USD rates, hence, the FERV annually comes to more than 4%, which itself increases the cost of borrowing by 4% every year.

  Considering high forex volatility and the costs, the effective rate of interest of FCB borrowing is presently as high as 12.65% (SOFR:5.32+CAS:0.43+Bank Spread:2.9%+FERV/Hedging Cost:4%).

  Considering high volatility of the Rupee Term Loans & FCB loans, high forex risk variations, absorption of hedging, other costs etc. and in view of the long tenure of transmission projects, there is a requirement of reasonable margins available over the base rate to cover the borrowing risk.

  Therefore, it is proposed that the reference rate may be allowed as **SBI MCLR (1 year) plus 400 basis points**, which shall also be inclusive of FERV.

A-iv

Reasons for high variation in O&M expenses of HVDC station on Year on year basis

Name of Transmission Company:		Power Grid Corporation of India Limited
Name of Transmission Region:		HVDC
Particulars	**Year**	**Reason**
Kolar		
Repairs & Maintenance (R&M)	2021-22	Decrease in power charges due to reduction in power allocation
Repairs & Maintenance (R&M)	2022-23	Payment of approx 1.3 Cr paid to NTPC for power charges due to revision of unit charges.
Pugalur		
R&M and A&G	2021-22	Increase from 2020-21 due to commissioning in the middle of 2020-21
R&M and A&G	2022-23	Increase due to commissioning of balance poles
Trichur		
R&M and A&G	2021-22	Increase from 2020-21 due to commissioning in the middle of 2020-21
R&M and A&G	2022-23	Increase due to commissioning of balance poles
Raigarh		
R&M and A&G	2021-22	Increase from 2020-21 due to commissioning in the middle of 2020-21
R&M and A&G	2022-23	Increase due to commissioning of balance poles
Balia		
Repairs & Maintenance	2020-21	High power charges paid in 2020-21
Vindhyachal		
Repairs & Maintenance	2020-21	Payment of Bay Maintenance charges to NTPC (total 1.6 Crs) for previous years done in 2020-21.
BNC		
R&M	2021-22	Decrease in power charges due to reduction in power allocation
Dadri		
Repairs & Maintenance	2019-20	Increase in R&M expense of Building due to payment of old township charges to NTPC in 2019-20
Repairs & Maintenance	2022-23	Increase in Power charges due to increase in load after refurbishment
KURUKSHETRA		
All expenses	2018-19	Increase from 2017-18 due to commissioning at fag end of 2017-18
Repairs & Maintenance	2019-20	Decrease in power charges due to change in allocation

Reasons for high variation in O&M expenses of HVDC station on Year on year basis

Name of Transmission Company:		Power Grid Corporation of India Limited
Name of Transmission Region:		HVDC
Particulars	**Year**	**Reason**
A&G Expenses	2020-21	Mega insurance increased in FY 20-21 due to commissioning of Bipole II, III and IV
Bhadrawati		
Repairs & Maintenance	2019-20	Refurbishment of converter transformers in 19-20 amounting to Rs 22 cr (approx)
Repairs & Maintenance	2021-22	Refurbishment of converter transformers in 21-22 amounting to Rs 39 cr(approx)
Champa		
All expenses	2018-19	Increase from 2017-18 due to commissioning at fag end of 2017-18
R&M and A&G	2019-20	Increase due to commissioning of pole 3
A&G	2020-21	Increase due to commissioning of pole 4
Repairs & Maintenance	2021-22	Power charges reduced due to allocation change in FY 21-22
Sasaram		
Reparis & Maintenance	2021-22	Less R&M in 2020-21 due to COVID Pandemic
Alipurduar		
Repairs & Maintenance	2020-21	Power charges reduced due to reduction in contract demand of SEB supply in FY 2020-21
Talcher		
Repairs & Maintenance	2020-21	Less R&M in 2020-21 due to COVID Pandemic
Repairs & Maintenance	2021-22	Power Charges being booked under Talcher from 21-22. Power Charges of Talcher was being booked under Kolar head in previous years.

A.V

Details of Bays in POWERGRID

Total AIS and GIS bays							
Region	**Voltage**	**31-03-2018**	**31-03-2019**	**31-03-2020**	**31-03-2021**	**31-03-2022**	**31-03-2023**
NR	765KV	134	145	182	191	213	215
	400KV	770	790	821	832	883	916
	220KV	415	434	459	467	504	548
	132KV	19	19	38	38	38	40
ER	765KV	48	56	67	71	71	71
	400KV	405	443	466	474	485	494
	220KV	160	176	181	182	184	186
	132KV	56	58	60	60	61	61
WR	765KV	269	315	324	324	336	337
	400KV	557	606	612	624	643	652
	220KV	**184**	211	213	225	235	241
	132KV	0	0	0	0	0	0
SR	765KV	49	66	76	76	76	76
	400KV	430	501	517	543	563	565
	220KV	172	189	191	195	199	201
	132KV	0	0	0	0	0	0
NER	765KV	0	0	0	0	0	0
	400KV	76	87	89	107	111	112
	220KV	35	36	43	46	47	47
	132KV	138	159	159	160	161	161
Total		**3917**	**4291**	**4498**	**4615**	**4810**	**4923**

Details of Bays in POWERGRID

Total GIS Bays							
Region	**Voltage**	**31-03-2018**	**31-03-2019**	**31-03-2020**	**31-03-2021**	**31-03-2022**	**31-03-2023**
NR	765KV	37	44	48	54	54	54
	400KV	89	101	105	109	125	140
	220KV	44	50	68	68	72	91
	132KV	0	0	18	18	18	20
ER	765KV	0	0	6	6	6	6
	400KV	45	57	62	66	73	73
	220KV	27	32	33	33	34	35
	132KV	5	5	5	5	6	6
WR	765KV	22	25	25	25	25	25
	400KV	65	73	75	81	89	90
	220KV	27	28	28	32	35	39
	132KV	0	0	0	0	0	0
SR	765KV	23	33	43	43	43	43
	400KV	37	55	59	77	80	80
	220KV	10	12	12	16	17	18
	132KV	0	0	0	0	0	0
NER	765KV	0	0	0	0	0	0
	400KV	0	1	2	11	13	13
	220KV	5	6	10	10	16	16
	132KV	7	14	14	14	44	44
Total		**443**	**536**	**613**	**668**	**750**	**793**

Details of Bays in POWERGRID

Total AIS Bays							
Region	**Voltage**	**31-03-2018**	**31-03-2019**	**31-03-2020**	**31-03-2021**	**31-03-2022**	**31-03-2023**
NR	765KV	97	101	134	137	159	161
	400KV	681	689	716	723	758	776
	220KV	371	384	391	399	432	457
	132KV	19	19	20	20	20	20
ER	765KV	48	56	61	65	65	65
	400KV	360	386	404	408	412	421
	220KV	133	144	148	149	150	151
	132KV	51	53	55	55	55	55
WR	765KV	247	290	299	299	311	312
	400KV	492	533	537	543	554	562
	220KV	157	183	185	193	200	202
	132KV	0	0	0	0	0	0
SR	765KV	26	33	33	33	33	33
	400KV	393	446	458	466	483	485
	220KV	162	177	179	179	182	183
	132KV	0	0	0	0	0	0
NER	765KV	0	0	0	0	0	0
	400KV	76	86	87	96	98	99
	220KV	30	30	33	36	31	31
	132KV	131	145	145	146	117	117
Total		**3474**	**3755**	**3885**	**3947**	**4060**	**4130**

Annexure-F

1. **Average nos. of bays based on the data submitted by POWERGRID for FY 2017-18 to FY 2022-23;**

Average no. of AIS Bays in Operation							Average equivalent 400 kV AIS bays in Operation				
Type	**18-19**	**19-20**	**20-21**	**21-22**	**22-23**	**Weightage Factor**	**18-19**	**19-20**	**20-21**	**21-22**	**22-23**
765 kV	449	503.5	530.5	551	569.5	1.40	628.6	704.9	742.7	771.4	797.3
400 kV	2071	2171	2219	2270.5	2324	1.00	2071	2171	2219	2270.5	2324
220 kV	885.5	927	946	975.5	1009.5	0.70	619.85	648.9	662.2	682.85	706.65
Up to 132 kV	209	218.5	220.5	206.5	192	0.50	104.5	109.25	110.25	103.25	96
	3614.5	**3820**	**3916**	**4003.5**	**4095**		**3424**	**3634**	**3734**	**3828**	**3924**

2. **Average nos. of Ckt Kms based on the data submitted by POWERGRID for FY 2017-18 to FY 2022-23;**

Average Ckt-km in operation						Weightage Factor	Equivalent Ckt-km (Twin Conductor) in operation				
Lines	**FY 19**	**FY 20**	**FY 21**	**FY 22**	**FY23**		**FY 19**	**FY 20**	**FY 21**	**FY 22**	**FY23**
S/C Hexa	332	333	334	335	335	1.5	498	499	500	502	502
S/C Quad	14464	14618	14679	14679	14679	1.5	21696	21926	22019	22019	22019
S/C Triple	2	2	6	13	16	1	2	2	6	13	16
S/C Twin	16338	16392	16500	16553	16553	1	16338	16392	16500	16553	16553

Average Ckt-km in operation						Weightage Factor	Equivalent Ckt-km (Twin Conductor) in operation				
Lines	**FY 19**	**FY 20**	**FY 21**	**FY 22**	**FY23**		**FY 19**	**FY 20**	**FY 21**	**FY 22**	**FY23**
S/C Single	3000	3131	3321	3404	3404	0.5	1500	1566	1661	1702	1702
D/C Hexa	17723	19586	22213	24687	25982	1.31	23217	25657	29099	32340	34036
D/C Quad	25759	26076	26849	27980	28961	1.31	33745	34159	35172	36654	37938
D/C Triple	5781	5930	6259	6569	6674	0.88	5087	5218	5508	5781	5873
D/C Twin	58536	59279	59949	60486	60872	0.88	51512	52166	52755	53227	53567
D/C Single	8695	8918	9130	9206	9249	0.38	3304	3389	3469	3498	3514
M/C Quad	411	407	407	407	407	1.15	472	468	468	468	468
M/C Twin	404	379	406	436	496	0.77	311	291	313	336	382
DC on MC Quad	0	0	0	0	0	1.15	0	0	0	0	0
DC on MC Twin	80	159	159	159	159	0.77	61	122	122	122	122
Total	**1,51,525**	**1,55,207**	**1,60,210**	**1,64,912**	**1,67,786**		**1,57,743**	**1,61,855**	**1,67,592**	**1,73,215**	**1,76,692**

ANNEXURE- G

F. No. 34-3/18/2022-Trans

भारत सरकार / Government of India

विद्युत मंत्रालय / Ministry of Power

(पारेषण प्रभाग / Transmission Division)

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श्रम शक्ति भवन, रफी मार्ग, नई दिल्ली- 110001

Shram Shakti Bhawan, Rafi Marg, New Delhi-110001

दिनांक: 03 अगस्त, 2022

कार्यालय ज्ञापन / OFFICE MEMORANDUM

Subject: Policy on shifting of transmission lines by transmission licensee for other infrastructure projects – regarding

The undersigned is directed to say that a number of references have been received from other infrastructure departments like National Highways Authority of India Ltd (NHAI) for waiver of transmission charges for the shutdown period availed by transmission licensee for shifting of their transmission lines.

2. The matter has been considered in the Ministry. It has been noted that generally customers of transmission lines are not affected by shutdown of a particular transmission line during the period of shifting of utilities, because of redundancy in the power system. Accordingly, it has been decided that:

(i) RPC Secretariat shall provide deemed availability certificate for the shutdown period availed by transmission licensees (both RTM and TBCB) for shifting of their Inter State Transmission System (ISTS) lines for all national importance infrastructure projects of NHAI, Railways, BRO etc., provided that transmission customers are not affected by the shutdown of the line.

(ii) All such applications for deemed availability shall be considered irrespective of date of application. However, deemed availability for past shifting of lines, where the diversion work has already been completed, shall not be considered.

(iii) A consolidated Standard Operating Procedure for shifting of Transmission line by transmission licensees for other infrastructure projects shall be prepared by CEA and submitted to the Ministry. The same will be put up for approval of the Competent Authority in the Ministry.

3/8/22.

(iv) The CERC shall make necessary changes quickly in the CERC (Terms and Conditions of Tariff) Regulations to enable declaration of deemed availability certificate by Regional Power Committees for shifting of transmission lines for other infrastructure projects, provided that transmission customers are not affected by the shutdown of the line.

3. This issues with approval of the Hon'ble Minister of Power and New & Renewable Energy.

3/8/22

(बिहारी लाल)
अवर सचिव, भारत सरकार,
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ई-मेल: transdesk-mop@nic.in

To

1. Chairperson, CEA, New Delhi
2. Secretary, CERC
3. Member Secretary, ERPC / NERPC / SRPC / WRPC / NRPC
4. CMD, POWERGRID, Gurugram
5. COO, CTUIL, Gurugram

भारत सरकार/Government of India
विद्युत मंत्रालय/Ministry of Power
केन्द्रीय विद्युत प्राधिकरण/Central Electricity Authority
विद्युत प्रणाली स्कंध / Power System Wing

CEA-PS-14-77/4/2022-PSETD Division Date:19.09.2023

To,

Member Secretary, Northern Regional Power Committee 18-A, Qutab Institutional Area, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110 016	Member Secretary, Eastern Regional Power Committee 14, Golf Club Road Tollygunje Kolkata-700033 (W.B.)
Member Secretary, Southern Regional Power Committee, 29, Race Course Road, Bengaluru, 560009 Karnataka	Member Secretary, North Eastern Regional Power Committee, NERPC Complex, Dong Parmaw Lapalang, Shillong – 793006 (Meghalaya)
Member Secretary, Western Regional Power Committee F-3, MIDC Area, Marol, Opp. SEEPZ, Central Road, Andheri (East), Mumbai - 400 093	CE (NPC), CEA CE (GM), CEA CE (PSPM), CEA CE (PSPSA-I/II), CEA SA to Member (GO&D), CEA SA to Member (E&C), CEA

विषय: Deemed availability certificate by Regional Power Committees (RPCs) for shutdown period availed by transmission licensee/Transmission Service Provider (TSP) for shifting of their Inter-State Transmission System (ISTS) lines (including but not limited to shifting/raising the height of towers/diverting/modifying the layout or change of configuration).

महोदय/महोदया,

The issues and references to the subject matter are deliberated at various fora from time to time. It is considered that the RPCs are the appropriate forum to decide the deemed availability certificate in the subject matter. With regard to the above, the following is relevant:

1. It may be appreciated that for the development/execution/construction/ augmentation of any infrastructure projects in the country for broader public utilization/benefit by any entity, many times the existing electrical transmission lines are required to be shifted (including but not limited to shifting/raising the height of towers/diverting/modifying the layout or change of configuration). For this shifting works, not granting the deemed availability to these transmission lines [of any TSP awarded through Regulated tariff Mechanism (RTM) or Tariff Based Competitive Bidding (TBCB) or any other route] is basically a

disincentive/undue penalization without any fault on the part of the concerned TSP.

2. In this regard, MoP's OM No. 34-3/18/2022-Trans Dated 03-08-2022 provides a broad principle and states that Transmission Lines Availability may be granted for shifting of Transmission Line required for the construction of Infra Project by Railway, Highway, BRO etc, provided the Transmission Customers are not affected due to shut down of the said transmission line.

3. In view of the above, it is felt that granting deemed availability in the cases, where shifting of lines is necessitated on account of execution of all types of developmental/infrastructure projects with broader public utilization/benefits may be considered for grant of Deemed Availability in true spirit of above OM of MoP.

4. Therefore, it is advised that apart from the projects of NHAI, BRO and Railways, projects of UPEIDA, NCRTC, Yamuna/ Ganga Expressway or any other project(s) executed by the Central Government and/or State Government(s)/ their PSUs meant for broader public utilization shall be considered under the meaning of "etc" of the said OM of MOP for certification of deemed availability in respect of transmission lines. Before granting Availability, the respective RPC Secretariat shall ensure whether the Transmission Customers were affected or not during the shutdown period with inputs from the concerned RLDC/ SLDC as applicable.

5. Further it is stated that the infrastructure projects are planned/developed and constructed keeping in view the larger public interest/benefit and hence are of National and social importance. Infrastructure development is mutually dependent on other sectors/assets and requires the involvement of multiple stakeholders for the overall growth of the society and economy. More so ever the facilities to be created are necessary to fulfill certain objectives and provide ease of living for the people.

6. The cases of shifting of transmission lines on account of the developmental/infrastructure projects assume importance, and in such cases allowing the deemed availability of transmission lines to any Transmission Service Provider (TSP) deserves merit. Hence, it is suggested that the projects awarded through [Regulated tariff Mechanism (RTM) or Tariff Based Competitive Bidding (TBCB) or any other route] for such cases may be considered under the meaning of "etc" of MoP's OM No. 34-3/18/2022-Trans Dated 03-08-2022 for certification of deemed availability in respect of transmission lines.

7. The issuance of the "certificate of deemed availability" by respective Regional Power Committees (RPCs) for the period of shutdown

availed by the transmission licensees/transmission service providers for shifting of lines (including but not limited to shifting/raising the height of towers/diverting/modifying the layout or change of configuration) in case of the Inter-State Transmission System (ISTS) Lines [awarded through Regulated tariff Mechanism (RTM) or Tariff Based Competitive Bidding (TBCB) or any other route] necessitated due to the construction of infrastructure projects of national importance may be dealt in accordance with the above points.

8. Also, para 15, of the Standard Operating Procedure (SoP) circulated vide CEA's letter dated 10-03-2023 directs RPC's to provide a deemed availability certificate for the period of shutdown availed by transmission licensees for shifting of transmission lines (including but not limited to shifting/raising the height of towers/diverting/modifying the layout) the Inter-State Transmission System (ISTS) Lines (awarded by RTM or TBCB or any other route) necessitated due to the construction of other infrastructure projects. (i.e. the projects other than those covered under the category of national importance), under this case, the MoP accords approval for the shifting of the ISTS lines considering the wider public interest involved in such shifting and hence these are eligible for deemed availability.

In view of the above, all RPCs are therefore advised to process the cases for the issuance of the certificate of deemed availability for the period of shutdown availed by the transmission licensees in respect of transmission lines where the shifting of transmission lines is necessitated due to the construction of other infrastructure projects, in line with the above.

भवदीय ,

19-9-23

(अशोक कुमार राजपूत)
सदस्य (विद्युत प्रणाली)

Comments on Draft Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024

POWERGRID