

TAMILNADU GENERATION AND DISTRIBUTION CORPORATION LIMITED

From
B.Rajeswari, B.Com, FCMA,
Chief Financial Controller /Regulatory Cell,
7th Floor, Eastern Wing,
144, Anna Salai,
Chennai 600 002.

To
The Secretary
Central Electricity Regulatory Commission
3rd & 4th Floor, Chanderlok Building,
36, Janpath, New Delhi 11000
secy@cercind.gov.in , shilpa@cercind.gov.in

Lr. No CFC/RC/SE/CERC/EE1/AEE3/ F. SR 2020/D.147/23, dt:12.07.2023

Sir,

Sub: Draft Central Electricity Regulatory Commission (Sharing of InterState Transmission Charges and Losses) (Third Amendment) Regulations, 2023 - TANGEDCO's comments and observations -Submission of – Reg.

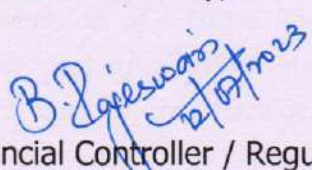
Ref: Public Notice issued vide No. L-1/250/2019/CERC Dated: 12.06.2023

This has reference to the public notice issued vide No. L-1/250/2019/CERC Dated: 12.06.2023 inviting comments/ suggestions/ objections from the stakeholders and interested persons on the Draft Central Electricity Regulatory Commission (Sharing of InterState Transmission Charges and Losses) (Third Amendment) Regulations, 2023.

In this regard, it is submitted that the proposed amendment is discriminatory, arbitrary and unjust hence needs to be revisited. The detailed views and comments are enclosed as Annexure.

Thanking you,

Yours faithfully,


Chief Financial Controller / Regulatory Cell

Encl: As above

Annexure

Comments and suggestions of TANGEDCO on the draft CERC (Sharing of Inter-State Transmission Charges and Losses) (Third Amendment) Regulations, 2023:

1) The 3rd Amendment to the Sharing Regulations 2020, proposed by the Hon'ble Commission is mooted out consequent to the concerns and objections raised by Southern Regional(SR) beneficiaries at various forums including the Hon'ble CERC on the issue of declaration of Raigarh-Pugalur-Trissur HVDC transmission system as asset of Strategic and National importance and sharing the transmission charges under National Component. Since the concerns of Southern Regional beneficiaries were not addressed, the issues were escalated to Hon'ble Prime Minister and requested to consider the matter on par with the Biswanath Chariali – Agra HVDC system. Consequently, MoP had directed CTU / POSOCO to furnish their comments and views. The nodal agencies had recommended for consideration of the subject transmission system under National component. Subsequently, Ministry of Power had directed / recommended to CERC to consider declaration of 800 KV Raigarh-Pugalur - Thrissur HVDC link as asset of National and Strategic importance. In this context, it is essential and inevitable to bring all the facts and chronology of events and regulatory process evolved over the period of time.

2) Principles adopted by the Hon'ble CERC on sharing of transmission charges of HVDC systems

- i) The Ld. Central Commission while framing the Sharing Regulations 2010, justified through the SoR that the transmission charges of the HVDC systems are apportioned to the AC nodes and allocated in proportion to the usage by the beneficiaries. The methodology adopted by CERC as per Sharing Regulation 2010 is extracted below:

2. Treatment of HVDC lines: Flow on the HVDC line is regulated by power order and hence it remains constant for marginal change in load or generation. Hence, marginal participation of a HVDC line is zero. Thus, MP-method cannot directly recover cost of a HVDC line. Therefore, to evaluate utility of HVDC line for a load or a generator, the following methodology shall be applied:

a. Step 1: Evaluate the Transmission System charges (of AC network) for all loads and generators corresponding to base case which has all HVDC lines in service.

b. Step 2: Disconnect the HVDC line and again compute the new flows on the AC system. Hence, evaluate the new transmission system charges (of AC network) for all the loads and generators.

c. Step 3: Compute the difference between the Nodal Charges (unit – Rs) with and without HVDC line and identify nodes which benefit from the presence of the HVDC lines. Benefit is new (with disconnection) usage cost minus old (with HVDC) cost. If benefit is negative, it is set to zero.

Step 4: The cost of the HVDC line is then allocated to the nodes in proportion of the benefits they derive from its presence as computed above. In the case of SR Grid, which is not synchronously connected with the NEW grid, the 'benefits' shall be computed at nodes which were indicated to have higher transmission usage costs attributed to them 'without' the HVDC line (Talcher- Kolar). When Talcher Kolar link is disconnected, the loads in the SR are reduced proportionately such that net reduction is equal to the power received from the Talchar-Kolar link. Then, new usage costs are worked out. Benefit herein is defined as old cost (base case with injection from Talchar Kolar) minus new usage cost i.e. with link disconnected. If any HVDC line can be modeled as a load with MW equal to P-order at the sending end and a generator with corresponding MW at the receiving end. A 'without' scenario for a HVDC line, corresponds to disconnecting the corresponding load-generation pair. Sensitivities for these fictitious loads and generators are not computed as they are not to be priced.

- ii) In the first amendment to Sharing Regulations 2010, the Ld. Commission directed as below:

"6 (2) The following shall be added after the first paragraph in Step 4 of clause (2) under Para 2.7 of Annexure of the Principal Regulations:

The charges of the HVDC back to back inter-Regional links at Chandrapur and Gazuwaka shall be included in the YTC of the NEW grid and the SR grid in the ratio of 1:1 and charges for Talcher – Kolar HVDC bi-pole link shall be shared by DICs of SR only."

- iii) In the second amendment dated 28th March 2012 to Sharing Regulations 2010, the Ld. Commission directed as below:

"6. Amendment to Annexure of the Principal Regulations:

..

(2) Step 4 under sub-para 2 of Para 2.7 of Annexure to the Principal Regulations shall be substituted as under:

“Step 4: The entire YTC of the Talcher - Kolar HVDC transmission link shall be borne by the DICs of the Southern Region by scaling up their PoC charges. However, the PoC injection rate for the allocated share from Talcher – II station to the State of Odisha shall be the PoC injection rate of Talcher – I station:

Provided that after the entire country is synchronously connected, the cost of all the HVDC systems shall be borne by all the DICs in the country by scaling up the YTC calculated without including the HVDC costs.”

- iv) In the third amendment dated 26th October 2015 to Sharing Regulations 2010, POSOCO and CEA had furnished their comments and observations with regard to HVDC system. The relevant portions of the comments available in the Appendix are extracted below:

“Appendix-1 –

6.1.1. POSOCO:

Treatment of HVDC: The 2nd amendment to the Sharing Regulations provides as under: “Provided that after the entire country is synchronously connected, the cost of all the HVDC systems shall be borne by all the DICs in the country by scaling up the YTC calculated without including the HVDC costs.”

In the draft Regulations, the above proviso is sought to be removed. The reason of the proposed change has not been discussed in the explanatory memorandum. The NEW grid and SR grid have been synchronized on 31st December 2013 and a single model for the entire country would be prepared for the next PoC computation for Q1 of 2014-15. Thus impact of the above change in Regulation is yet to be seen. It may be appreciated that a hybrid system is necessary for transfer of large quantum of power and new HVDC lines have to be facilitated.

The Hon“ble Commission vide SoR to 2nd amendment to PoC Regulations had observed as under:

“We have considered the suggestions and objections of the stakeholders. It is clarified that the Talcher-Kolar HVDC Bipole link was specifically constructed for evacuation of power from Talcher Stage– II to the Southern Region. This link is also used for transfer of power to other DICs in Southern Region. We are therefore of the view that the cost of this asset has to be borne by the DICs of the Southern Region by scaling up the POC charges of DICs of Southern Region proportionately.”

The following may be taken into account regarding sharing of HVDC charges:

- 1. If charges of HVDC are apportioned to nodes which get benefitted because of presence of HVDC, then there would be opposition from the states to termination of HVDC lines in respective states.*
- 2. There is substantial impact of set point of HVDC (direction and quantum of power flow) considered in base case on nodal charges. Thus the assumptions would be questioned by stakeholders affected.*

3. An 800 kV 6000 MW multi-terminal HVDC link from Biswanath Chariali / Alipurdwara to Agra is under construction. If charges are shared based on usage, PoC rates nodes nearer to the stations like NER / ER states may be affected. It is suggested that since HVDC systems are national assets, the existing provision may be retained.

6.1.2. CEA Comments:

In the present methodology, the impact of PoC rate on account of HVDC bi-pole/multi-terminal/back-to-back links is being determined through a „with and without“ methodology in marginal participation algorithm. In this regard, it is suggested that instead of the with without methodology for HVDC, the power order on the HVDC link, as given in the base case under consideration, may be reduced by 1% to account for the impact of cost of HVDC on PoC rates of various nodes. This methodology would be in line with basic principle of marginal participation i.e. to have a small perturbation.

- v) The Hon'ble CERC in the third amendment to Sharing regulations 2010 notified on 1st April, 2015 has amended the Regulations to introduce the has further stated as below:

“8. Amendment to Regulation 11 of the Principal Regulations

.....

3. HVDC charge

(i) 10% of Monthly Transmission Charges (MTC) of HVDC transmission system shall form part of Reliability Support Charges and the balance shall be billed as detailed below: Transmission charges for HVDC system created to supply power to specific regions shall be borne by DICs of such regions. The HVDC Charge shall be payable by DICs of the Region in proportion to their Approved Withdrawal. In case of Injection DICs having Long Term Access to target region, it shall also be payable in proportion to their Approved Injection.

For Generators having LTA to target region:

[HVDC Charge for Region in Rs/month] x [Approved Injection] / [Total Approved Withdrawal of the Withdrawal DIC and Approved Injection of the Generator having LTA to target Region]

For Demand:

[HVDC Charge for Region in Rs/month] x [Injection of the Generator having LTA to target Region] / [Total Approved Withdrawal of the Withdrawal DIC and Approved Injection of the Generator having LTA to target Region]

(ii) HVDC Charge shall also be applicable for additional MTOA. Over/under recovery of HVDC charges shall be adjusted in the third part of bill in a manner as provided in Regulation 11(6) of these Regulations.

(iii) Where transmission charges for any HVDC system are to be partly borne by a DIC (injecting DIC or withdrawal DIC, as the case may be) under a PPA or any other

arrangement, transmission charges in proportion to the share of capacity in accordance with the PPA or other arrangement shall be borne by such DIC and the charges for balance capacity shall be borne by the remaining DICs by scaling up of MTC of the AC system included in the PoC. Such HVDC shall not be considered under (i) above.

vi) The Hon'ble CERC in the 'Statement of reasons' dt: 26.10.2015 of third amendment to Sharing regulations 2010 has stated as below:

"1.8 The broad features of the Third Amendment to Sharing Regulations can be capitulated as under:

- a) *Sharing of transmission charges commensurate with usage close to maximum actual usage by way of (i) calculation of charges on only withdrawal nodes and for generators with LTA to target region, (ii) shift from average (energy based) base case to maximum injection/drawal based base case, (iii) removal of uniform charge, (iv) spreading number of slabs from three to nine, (v) elimination of truncation of network, and (vi) off set of transmission charges commensurate to STOA transactions in any region.*
- b) *The concept of reliability support charge has been introduced in view of the fact that DICs getting benefits which accrue to them by virtue of operating in an integrated grid. The Commission has for the present taken a decision to allocate 10% charges as Reliability Support Charges. However the Commission would like to have a better picture in this regard and hence has directed POSOCO to prepare a base paper in consultation with CEA and CTU on quantification of reliability benefit in a large inter-connected grid such as ours including market risk mitigation based on international experience.*
- c) **A separate treatment for sharing of charges of HVDC systems, being a different type of transmission asset, is unavoidable as with the marginal participation method, HVDC cost cannot be allocated. Various methods for sharing of transmission charges of HVDC systems, namely With and Without method, uniform distribution of the charges among all the DICs and sharing by withdrawing DICs of regions for whom such HVDC systems were set up, were considered and it was concluded that the charges for HVDC systems shall now be borne by the withdrawing DICs of region(s) for whom the asset has been created. In the event of better projection and appreciation of benefit of HVDC systems in due course, keeping in view evolving methodologies worldwide, the Commission may consider the proposal for review of sharing of transmission charges of HVDC system. NLDC may in consultation with CEA, CTU, IITs and international consultants submit a technical report for various solutions for allocation of cost for HVDC system in India supported by adequate calculations.**

45.10 In India, both types of systems are there i.e. HVDC Back to back and evacuation assets. While there is broad consensus on usage of back to back HVDC for common grid benefit due to power flow in both directions, the evacuation assets were planned to cater the requirement of a particular set of users or a pair of Generator and Demand customers bound by PPA as power flow is mostly unidirectional, transmission cost allocation needs to be on a separate principle. As tariff of HVDC links cannot be allocated with marginal participation method, a separate treatment is unavoidable.

45.11 It is important to mention that such a different treatment of HVDC assets specifically set up for evacuation purpose under Regional Transmission planning system, prevailed in the past. The HVDC systems were treated in the following ways:

45.12 It may be seen from above that prior to introducing POC in July 2011, the charges for HVDC were borne by beneficiaries for whom the asset was created. We note that HVDC system helps in voltage control, relieving loading of intervening AC network, power oscillation damping, sub synchronous resonance damping and enhancing power transfer capability. However the benefit to other regions has not been stated by NLDC. We have decided that 10 % of YTC of the ISTS system shall be recovered through charges known as Reliability Support Charge except for capacity for which the transmission charges for any HVDC system are to be partly borne by a DIC under a PPA or any other arrangement. While HVDC Back to Back system shall be borne by all the DICs of the country, we are not inclined to distribute the cost of HVDC lines among all DICs. For allocation of remaining 90% of cost of HVDC Line, we rely on the principles for payment of HVDC historically and principle of causation (as given in FERC order 1000 in Tariff Provisions and Agreements for Interregional Transmission Coordination - page 348 – 400). In the event of better projection and appreciation of benefits of HVDC links in due course, keeping in view evolving methodologies worldwide, the Commission may consider the proposal for review of sharing of transmission charges of HVDC links. NLDC may in consultation with CEA, CTU, IITs and international consultant submit a technical report indicating various solutions for allocation of cost of HVDC system in India supported by adequate calculations.

45.13 We have also considered the view of FERC that the challenges associated with allocating the cost of transmission system appear to have become more acute as the need for transmission infrastructure has grown. FERC noted that constructing new transmission facilities requires a significant amount of capital and, therefore, a threshold consideration for

any company considering investing in transmission is whether it will have a reasonable opportunity to recover its costs. It should be ensured that transmission rates are just and reasonable; the costs of jurisdictional transmission facilities must be allocated in a way that satisfies the “cost causation” principle. FERC noted that the D.C. Circuit defined the cost causation principle stating that “it has been traditionally required that all approved rates reflect to some degree the costs actually caused by the customer who must pay them. Also the cost causation principle requires that the costs allocated to a beneficiary be at least roughly commensurate with the benefits that are expected to accrue to it. 45.14 Talcher-Kolar HVDC line was specifically set up for transfer of Bulk power to Southern Region (SR) constituents. Accordingly, the beneficiaries for this HVDC are Withdrawing DICs of SR and Injecting DICs with target region as SR. However, in the present Regulations, we are providing that withdrawing DICs shall bear the injection charges for generators having beneficiaries with PPA/LTA. Hence, the charges for such HVDC will be borne by withdrawing DICs of SR and the DICs having LTA to target region (as SR). Similar logic is applicable to NR constituents for Rihand-Dadri and Balia-Bhiwadi HVDC.

45.15 Accordingly, it has been decided that 10% of YTC of these three HVDC links as discussed in para above, shall be recovered through Reliability Support Charges and the balance cost of these lines shall be borne by respective constituents in proportion to their approved withdrawal i.e. Talcher-Kolar by SR constituents and Balia-Bhiwadi and Rihand-Dadri by NR constituents. Similarly generating station which has SR or NR as target region, as the case may be, shall bear the HVDC's charges in proportion to their approved injection.

45.16 Mundra-Mohindergarh HVDC was built as dedicated line to transfer 1495 MW power to Haryana. Subsequently, it was made ISTS and M/s Adani has obligation to bear withdrawal charges of Haryana corresponding to 1495MW. Accordingly, 1495/2500 part of YTC of the HVDC line shall be borne by M/s Adani Power Ltd (APL). The remaining 1005 MW capacity can be utilized for transfer of power to any DIC in any region. Hence 1005/2500 part of YTC of the HVDC line shall be included in the PoC calculation by scaling up YTC of AC lines on all India basis. However, this arrangement will not give any right or preference to M/s APL to schedule its power on this line. The scheduling shall be done by RLDC based on system requirement. As M/S Adani Power Limited will pay transmission charges for HVDC to deliver power at Haryana periphery, and with modified approach of allocation of injection charges of Generator wherein generator would pay injection charges only for untied power, APL

would not be liable to pay PoC Charges for 1495 MW, so there shall not be any double charging to APL. APL will pay MTC towards 1495 MW for Mundra-Mohidergarh HVDC as specified by Commission in the Order.

45.17 For any new HVDC line, the Commission shall decide the methodology through an order. However, the above principle of sharing of transmission charges of HVDC lines may be reviewed based on the national transmission planning, if certain HVDC systems are planned to cater to multiple needs i.e. evacuation or reliability or Renewable integration or change in the benefits derived by the stakeholders.

45.18 Accordingly, we have decided the treatment of HVDC lines as under:
“Treatment of HVDC Lines: Flow on HVDC systems is regulated by power order and remains constant for marginal change in load or generation. Hence, marginal participation (MP) of HVDC systems is zero. Since the HVDC lines were specifically set up for transfer of bulk power to specific Regions, the DICs of the Region shall share the cost of HVDC lines. HVDC lines also help in controlling voltages and power flow in inter-regional lines and some benefits accrue to all DICs by virtue of HVDC system. Accordingly, 10 % of the MTC of these systems be recovered through Reliability Support Charges. The balance amount shall be payable by Withdrawal DICs of the Region in proportion to their Approved Withdrawal. In case of Injection DICs having Long Term Access to target region, HVDC charge shall be payable in proportion to their Approved Injection. Where transmission charges for any HVDC system are to be partly borne by a DIC (Injecting DIC or Withdrawal DIC, as the case may be) under a PPA or any other arrangement, HVDC charges in proportion to the share of capacity in accordance with PPA or other arrangement shall be borne by such DIC and the charges for balance capacity shall be borne by the remaining DICs by scaling up of YTC of the AC system included in the PoC.”

45.19 Accordingly, the cost of HVDC system (other than HVDC Back to Back systems) shall be shared as under:

a. Transmission Charges of Talcher-Kolar HVDC transmission link shall be borne by (a) Withdrawal DICs of the Southern Region in proportion to their Approved Withdrawal and (b) Injecting DICs having LTA to target region in proportion to their Approved Injection.

b. Transmission charges of Rihand-Dadri and Balia-Bhiwadi HVDC transmission links shall be borne by (a) Withdrawal DICs of Northern Region in proportion to their Approved Withdrawal and (b) Injecting DICs having LTA to target region in proportion to their Approved Injection.

c. HVDC charges for a region shall be calculated by multiplying $\{90\%$ of the Monthly Transmission Charges of HVDC systems $\} / \{$ Total Approved Withdrawal of the Withdrawal DICs and Approved Injection of the Injecting

DICs having LTA to target region}} with Approved Withdrawal of the Withdrawal DICs or Approved Injection of the Generators having LTA to target region or additional MTOA, as the case may be.

d. Transmission charges of Mundra-Mohindergarh HVDC link shall be borne by M/s Adani Power Limited in proportion to its share for transfer of capacity to Haryana (1495/2500). Balance 1005/2500 of YTC of the link shall be borne by all the DICs in the country by scaling up of YTC of the AC system considered in PoC.

45.21 For 1495 MW of power the transmission charges are to be paid by M/s Adani Power Ltd. as per PPA with Haryana. Accordingly, 1495/2500 part of transmission charges of Mundra-Mohindergarh HVDC system do not form part of recovery through the PoC mechanism and are to be borne by M/s. APL itself. However, M/s. APL will not have any exclusive right on this transmission capacity.

45.22 Remaining part (1005/2500) of HVDC charges shall be considered in PoC and recovered through scaling up of YTC of the transmission system in the PoC calculations. It may be seen that Haryana uses this HVDC system for drawal of its power from Mundra TPS with transmission charges which are already built in the generation tariff. Accordingly LTA for this quantum shall not be considered in computation of Withdrawal PoC Rate of Haryana. Since in base case no cost of HVDC has been considered, Haryana uses the HVDC system at zero cost for receiving power from Mundra TPS, as per PPA, the injection of corresponding capacity transferred through HVDC doesn't affect charges of other DICs as the HVDC cost considered in base case is Zero.

- vii) The Hon'ble CERC introduced the draft Sharing regulations 2019, wherein the following were stated in the explanatory memorandum dated 3rd December, 2019:

2.2.2 National Component-HVDC (NC-HVDC)

(i) As observed in the Jha Committee Report that HVDC systems having control features provide flexibility and hence more stability to overall Grid, and that bipole HVDC lines have been strategically planned for not only bulk power transfer but to enhance the overall operational performance of the grid. Therefore, the Committee has suggested that 30% charges for HVDC bipole shall be shared among ISTS customers of all regions in the ratio of their LTA+MTOA unless specifically directed otherwise by the Commission. Accordingly 30% transmission

charges for HVDC bipole (other than ones covered at subclause (iii) of this Clause below) is proposed to be shared by DICs of all India in the ratio of LTA+MTOA.

(ii) HVDC systems such as back to back are used for control function by system operator and hence are proposed to be covered under National Component.

(iii) For Biswanath Chariali-Agra HVDC system entire Yearly Transmission Charges and for Adani Mundra –Mohindergarh HVDC System, portion of Yearly Transmission Charges is also proposed to be covered under National Component as being done under prevailing Regulations.

12.1. The draft Regulation provided as under:

“National Component-HVDC shall comprise of the following:

(a) 100% transmission charges for “Back to Back HVDC” Transmission System; (b) 100% transmission charges for Biswanath Chariali/Alipurduar – Agra HVDC Transmission System;

(c) Proportionate transmission charges of Mundra–Mohindergarh HVDC Transmission System corresponding to 1005 MW capacity; and

(d) 30% of transmission charge for all other HVDC Transmission Systems except those covered under subclauses (a), (b) and (c) of this Clause of these regulations.”

viii) The Hon’ble CERC in the ‘Statement of reasons’ dt: 10th August, 2020 of Sharing regulations 2020 has detailed as below:

12.2. Comments have been received from ATL, RPG Trading, BRPL, GMR, Torrent Power, RUVNL, HVPN, MBPMPL, TPDDL, JSW, MSEDCL, HPTCL, GUVNL, APPCC, SRPC, DNHPDCL, TANGEDCO and BSPHCL.

12.2.1. ATL and RPG Trading have sought rationale for allocation of 30% for NC and 70% for RC in the transmission charges of Bi-Pole HVDC System.

12.2.2. RPG Trading has suggested to consider only 10% of transmission charges in the National Component to avoid excessive socialising of cost of HVDC system at national level.

12.2.3. BRPL has suggested that 100% Back-to-Back HVDC system should be considered under NC-HVDC Component and RECs for such charges may be issued. Other HVDC system should be booked to States using them (e.g. RE rich, Surplus exporting States).

12.2.4. GMR has suggested that transmission charges for HVDC system should also be based on the usage and there should not be any normative allocation of 30% to all ISTS customers.

12.2.5. Torrent Power has suggested that 100% charges for HVDC system should be under RC. RUVNL, HVPN and MBPMPL have suggested that 50% transmission charges for HVDC should be under NC-HVDC. TPDDL has suggested that entire HVDC should be under NC-HVDC. JSW, MSEDCL and HPTCL have suggested that 10% of HVDC should be under NC-HVDC.

12.2.6. GUVNL has suggested that HVDC lines were planned/ constructed based on commitment from generators/ States for enabling evacuation of contracted power from other regions to the targeted region. Therefore, sharing of such HVDC elements should not be under National Component/ Regional Component, but the same should be recovered from the generator/ States which committed for setting up of such HVDC system. Only the charges of HVDC system which have been planned under system strengthening need to be shared by DICs as National Component/ Regional Component.

12.2.7. APPCC has suggested that all High Capacity Power Transmission Corridors consisting of HVDC transmission systems connecting two different regions should be treated as Regional Assets duly taking into account the objective and purpose of the project.

12.2.8. SRPC has suggested that all HVDC systems are likely to be used to transfer bulk power in a perspective plan based on RE, Hydro and other energy resources potential. Some of the links may be used in both the directions based on season and sometimes on intra-day basis also. These links are conceived with national perspective in mind and could be shared by all the DICs of the country. 100% transmission charges of all HVDC system (including back to back) except 1,495 MW capacity of Mundra - Mohinderqarh HVDC transmission system should be under NC-HVDC. Further 70% of transmission charges for 1,005 MW of MundraMohinderqarh HVDC transmission system should be shared under Regional Component.

12.2.9. DNHPDCL has suggested that sharing of 100% transmission charges for "back to back HVDC" transmission system; and transmission system corresponding to 1,005 MW capacity are reasonable. Other HVDC systems proposed for

socializing the transmission charges were primarily built for evacuating surplus power in generation-rich States and now due to cancellation/ postponement of several large sized hydro projects, these charges should be booked to States having surplus generation and exporting power or to States that are underdrawing power.

12.2.10. DNHPDCL has further suggested that NC-RE and NC-HVDC components are basically due to over-built and stranded infrastructure. CERC may consider creating regulatory asset corresponding to such sunk cost or may recover the tariff over longer period (more than 35 years). Presently, since 10% of MTC and 10% of charges for HVDC system are treated as "Reliability Support Charges" and shared by all the DICs, socialisation to the extent of 10% is already being done and fully justified as reliability is a common good and is the responsibility of all DICs.

12.2.11. TANGEDCO has suggested that the Raigarh-Puqalur HVDC system should be declared as an asset of national importance since it is going to be used for transfer of RE power from Southern region to rest of the country. KSEBL has suggested that Raigarh-Puqalur-Madakkathara HVDC system is being created in view of long term necessity for surplus RE evacuation from SR to the rest of the country and also for strengthening of the transmission system connecting SR with NEW grid in view of huge surplus thermal generation capacity created in Chhattisgarh. The ±800 kV Raigar-Puqalur HVDC Corridor is being constructed as a system strengthening scheme for inter-regional power transfer between SR and WR. It is evident that the system was not based on any LTA applications. In the present context of huge RE target of 175 GW by 2022 and 450 GW by 2030, the 6 GW Raigar-Puqalur HVDC system is an asset of national importance, similar to Biswanath - Agra HVDC system. Hence, the transmission charges for this transmission system should also be included under 100% National Component category and shared by all DICs

12.2.12. BSPHCL during the public hearing has suggested that certain HVDC system which are located in particular regions like Rihand-Dadri and Balia-Bhivadi, are serving particular regions only and transmission charges for such transmission system should be borne by regions for whom they have been created. Other transmission systems like Biswanath Chariali-Agra HVDC system should be paid by the concerned Regions for whom it is created and should not be socialised.

12.3. Analysis and Decision

12.3.1. *Sharing mechanism of HVDC transmission system by the beneficiary regions is based on the basic purpose of HVDC system i.e. bulk power transfer to receiving States and providing flexibility and stability to overall grid. Detailed explanation of the basis of sharing was provided in the Explanatory Memorandum to the Draft 2019 Sharing Regulations.*

12.3.2. Allocation of transmission charges of HVDC system on usage basis is not feasible since marginal participation method cannot be used to determine the usage of HVDC. This was deliberated in the Statement of Reasons dated 26.10.2015, while issuing third amendment to the 2010 Sharing regulations.

12.3.3. HVDC system covered under Regional Component have been planned to cater to requirement of drawl by a particular region. With developments in sector and change in load-generation mix, if need arises to consider the sharing based on bidirectional flow of power, the same shall be dealt with by the Commission at the appropriate time.

12.3.4. *The sharing mechanism of transmission charges in respect of HVDC transmission system as proposed in the Draft 2019 Sharing Regulations has been retained in the 2020 Sharing Regulations.*

.....

14.3.2 Charges under RC-HVDC shall be shared on basis of LTA plus MTOA and not on usage basis as provided in Regulation 5(3) of the 2020 Sharing Regulations.

17. Clause (6) of Draft Regulation 6

17.1 *The draft Regulation provided as under: For Mundra-Mohindergarh HVDC transmission system, proportionate transmission charges towards 1495 MW shall be borne by M/s Adani Power (Mundra) Limited or its successor company.*

17.2 WBSEDCL has submitted that Mundra-Mohindergarh HVDC transmission system should neither be considered as part of the National Component nor of the Regional Component.

17.3 Analysis and Decision:

17.3.1 The treatment of charges for Mundra-Mohindergarh HVDC transmission system is as per previous Orders of the Commission. Accordingly, charges for 1,495 MW is to be billed to M/s Adani Mundra. and charges for remaining 1,005 MW are to be shared under NC-HVDC.

Treatment of other Bipolar HVDC Transmission systems by the Hon'ble Commission

ix) Mundra - Mohindergarh HVDC transmission system :

The ± 500 kV HVDC Mundra - Mohindergarh HVDC transmission system along with associated transmission system was initially built **as a dedicated transmission system**. In the petition No.44/TL/2012 seeking grant of transmission license, the Hon'ble Commission vide order dated 08.06.2013 had observed the following:

"6. The petitioner has stated that there has been an inadvertent flow of power from other sources as well on Mundra-Dehgam D/C transmission line. The petitioner has submitted that Mundra-Mohindergarh HVDC bi-pole transmission line is designed for 2500 MW capacity and has surplus capacity after catering for 1424 MW power to UHBVNL/DHBVNL under the PPAs and another 342 MW in Northern Region for which it has been granted long-term access. The petitioner has further submitted that the dedicated transmission system laid by it creates Dehgam -Mundra - Mohindergarh - Bhiwani corridor which can be utilized for inter-regional transfer of power to the extent of available surplus capacity. It has been stated that a meeting was convened by Power System Operation Corporation Ltd (POSOCO) on 9.9.2011 to discuss various aspects of Mundra-Mohindergarh HVDC bi-pole transmission line and its integrated grid operation. The petitioner has filed the gist of discussions of the meeting which reveal, inter alia, the following deliberations:

(a) The capacity of Mundra - Mohindergarh HVDC bi-pole transmission line should be optimally utilised, and further deliberations would be needed to arrive at modus operandi of utilization of the available spare capacity and treatment of transmission charges and losses.

(b) POSOCO observed that Mundra–Mohindergarh HVDC bi-pole transmission line would be operating in parallel with existing inter-regional line between Western and Northern Regions. In case of tripping of single pole or bi-pole, the antecedent power flow on the transmission line would rush through the parallel AC network leading to a constraint in the network.

(c) Power order on Mundra - Mohindergarh HVDC bi-pole transmission line would have implication on the calculations of total transfer capability(TTC)/available transfer capability (ATC) of Western Region–Northern Region corridor.

d) Any change in power order on Mundra-Mohindergarh HVDC bi-pole transmission line in real time operation could cause/relieve congestion elsewhere. It was felt that for security of the power system as well as for market operation, Mundra-Mohindergarh HVDC bi-pole transmission lines should be taken into account for TTC/ATC calculations.

7. The petitioner has submitted that from the above deliberation, it can be inferred that the dedicated transmission system built by the petitioner should be made a part of integrated all India grid. The petitioner has further submitted that the dedicated transmission lines are connected with multiple grids; inter-State transmission system (ISTS), Gujarat intra-State transmission system (Gujarat STS) and Haryana intra-State transmission system (Haryana STS), and as such are integral part of the meshed network of ISTS. **It is therefore difficult to control the flow of power on these lines from other sources making it impossible to operate them in isolation. According to the petitioner, the dedicated transmission lines lose the dedicated character.**

Xxxx

56. **The dedicated transmission lines constructed by the petitioner are interregional in nature.** These lines cannot be left un-regulated. Therefore, the Commission feels it imperative to step in to regulate these transmission lines so as to ensure compliance of the regulatory framework in the overall interest of the grid.

59. The respondents have urged that only the beneficiaries of Mundra TPS should be made to bear the transmission charges after grant of licence. **We are not inclined to accept the plea.** The transmission charges for the regional

transmission network shall be shared by all concerned in accordance with the Commission's regulations in vogue at the relevant time. It is also stated that on grant of transmission licence, the petitioner shall also bear the transmission charges for long term access for the quantum of power to be dispatched.

x) The Hon'ble Commission directed through the SoR of the 3rd amendment to recover the tariff of the part capacity of 1005 MW of the dedicated line through the PoC pool on "All India basis" without notifying in the draft regulations for comments and views of beneficiaries. The relevant portion of the SoR to the third amendment has been extracted in the earlier paragraphs.

xi) **Biswanath Chariali-Agra HVDC system:**

The ± 800 kV Biswanath Chariali-Agra HVDC system was originally agreed as a part of associated transmission system / inter-regional system for Lower Subansiri (8x250 MW) and Kameng(4x150 MW) Hydro Electric Projects (HEP). However, the HEPs were unduly delayed, and the associated transmission system were ready for commissioning. Under such circumstances, M/s PGCIL filed the Tariff petition No.67/TT/2015 and 184/TT/2016 seeking tariff for the HVDC transmission system. In the said petitions, PGCIL had substantiated that the assets are of national importance. The relevant portions of the submissions of the petitioner are extracted from the CERC order dated 08.01.2016 in petition 67/TT/2015 as below:

"12. Further, the petitioner has submitted that the HVDC assets of the transmission systems for which tariff have been sought in the present petition are for benefit of the entire country on account of the following reasons: -

*(a) The HVDC lines will relieve the load in the intervening AC network. The petitioner has cited the examples of **Mundra-Mohindergarh and Talcher-Kolar HVDC lines which have been modulated to control flow through AC lines**. According to the petitioner, Mundra-Mohindergarh HVDC lines are relieving the load on 765 kV Gwalior-Agra lines.*

(b) HVDC lines will help in Voltage control, as power flow through parallel AC line can be increased/ decreased as per the requirement.

(c) HVDC lines will enhance the power transfer capability of the transmission systems.

(d) HVDC lines will accommodate renewable-variation and intermittency can be taken care of.

“17.....The petitioner has further submitted that that the NER –NR / WR Interconnector –I, shall provide the following benefits to the DICs:-

a) The link provides flexibility of power transfer in the seasonal varied hydro power generation of NER and would function as a pseudo phase-shifter.

b) Surplus power to the extent of 1500 MW can be exported / imported between NER and other regions.

c) Power can be imported by NER during low hydro season.

d) The link would enhance the power transfer capacity between ER and NR. With the commissioning of many generation projects coming up in NER, Bhutan and Sikkim in next 2-3 years, power flow over this link shall increase.

e) This link would provide stability to interconnection of NER with National Grid.

f) This shall reduce maximum angle spread across the NER–NR grid by 35-40degree.

Xxxxxx

26. In view of the process of planning, development and execution of the transmission system as discussed hereinabove, we are of the view that the subject transmission systems are of strategic and national importance and are in the long term interest of the economy and consumers of the country.

The ±800 kV Biswanath Chariali Agra HVDC link is the first of its kind in India and is passing through the “Chicken Neck” area. This HVDC asset once created will serve multiple purpose of evacuating hydro potential of North East, Sikkim and Bhutan to the rest of the country and would also carry power from Agra to Biswanath Charaiali during lean hydro season in NER, thereby serving needs of North East Region as well. In addition to this, the link is serving very important role of integrating the entire Indian Electrical Grid through a robust link. This asset is a unique asset due to its location and strategic importance. **This link is a strategically important and vital** connection for harnessing the present and

anticipated exploitation and optimal utilization of hydro, thermal and renewable energy resources in the country. The strategic importance of the line is established by the fact that a secure and strong linkage for the North-Eastern Region and the rest of the country is now firmly established. Pertinently, the extremely narrow "Chicken Neck" which is 18 km X 22 km has been optimally utilized solving any future right of way issues in this critical, sensitive and vital area. Therefore, the setting up of such a powerful link is not only important but infuses a high degree of confidence, certainty and assurance for development of hydropower potential in North-East Region of the country, underlining the fact that no hydel development will have to face bottling up of power or backing down on account of transmission constraints.

*27. **The Commission agrees with POSOCO** that the usefulness and importance of the subject transmission assets should not be seen in the narrow prism of its immediate utilization during the initial years but needs to be assessed over the entire life cycle of the assets which will carry the hydro power from the huge potential in Northeast for the benefit by the entire country. POSOCO has rightly pointed out that this link would provide the flexibility in power transfer, function as a pseudo phase-shifter and help in mitigating oscillations in inter-area mode and above all, the frequency controllers at BNC would help in operation of NER system, if it were to get islanded due to any reasons. Further, this bi-directional HVDC technology would enable optimal hydro thermal mix and successful integration of renewable energy resources of the country due to its connectivity with the hydro surplus Northeastern Region on one end and balance part of the country through National Grid. Strong interconnection through AC links between all the regions of National Grid would enable exchange of power between North-East Region and rest of the country. Moreover, this high-capacity interconnection between North-East Region comprising of huge hydro potential would go a long way for integration of large renewable energy resources being developed in different parts of the country. Due to direct interconnection, hydro generation can support the variability and intermittent nature of renewable generation. **Thus, this vital link is a flagship endeavor of the Indian Power Sector which will benefit the entire country.***

28. Since the transmission assets are of strategic and national importance whose benefits shall be derived by the entire country, we are of the view that the charges for the HVDC assets covered in the present petition should be shared by all the regions of the Country.

29. The Commission is conscious of the fact that the capital investments in the assets of the subject transmission systems are huge and the entire assets may not be utilised to their intended level on account of the delay in commissioning of planned hydro potential in NER. The Commission feels that there is a strong necessity to share the burden of capital cost of transmission scheme by way of assistance from the Power System Development Fund (PSDF) by way of one time grant. Accordingly, we direct the petitioner to take up the matter with the Monitoring Committee of the PSDF for assistance in the form of one time grant from the PSDF and with Ministry of Power for grant to reduce the burden of transmission charges on the DICs. We also request Ministry of Power, Government of India to arrange for funds from the PSDF as well as Government grant, considering the subject transmission systems as assets of strategic and national importance, keeping in view the utility of these assets in the long term perspective to the economy of the country.

3) Views of CTUIL in sharing of the HVDC charges:

i) Comments of CTUIL in Bakshi Committee report

Need for review of sharing of transmission charges for HVDC systems

In last 8 years, Indian Power sector and transmission grid has gone through radical transformation. The NEW grid and SR grid have been synchronized on 31st December, 2013 and Indian grid it has become one of the world's largest interconnected grids. With increasing size and complexities of the grid, which include change in generation mix due to higher participation of RE, increasing customer expectations for reliability and resilience, increasing role of power market in meeting the Discom's power supply requirement, role and need for HVDC systems in India has increased significantly. CERC and MoP have also underlined the importance of HVDC links while declaring NER-Agra HVDC link as an Asset of strategic and National importance.

(b) Further, The Government of India has established an ambitious target of 175 GW RE by 2022 that includes 60 GW of wind and 100 GW of solar. Over the past few years, the share of renewable capacity in the India has increased from 12% in 2012 to over 18% in 2017. Going forward, with renewable power achieving grid parity or even becoming cheaper than conventional power and technological advancements across the eco-system, the renewable generation is staged to play a bigger and a deeper role in the country's energy mix. Between 2017 and 2030, the share of renewable generation is expected to reach over 43% in capacity terms.

(c) Higher the penetration of renewable generation, higher will be the requirement of load following generating stations to manage the system. However, under a high renewable rich scenario, the balancing of the grid through the conventional load following generating stations such as hydroelectric plant and gas based thermal plant would not be adequate. In view of the need of integration of target renewable generation, some conventional generation units may be required to operate at their minimum operating levels and cycle up and down more frequently to accommodate the variable and intermittent renewable generation in the system. In the report, —Flexibility requirement in Indian Power System, NLDC, January 2016||, following is stated:

Quote:

*Power produced by renewable like solar and wind continues to grow, **the grid will see larger swings in total generation.** Fast ramping power plants, which have enough flexibility, are a good option to have in the system.*

Unquote:

If solar generators do not generate reactive power, then reactive power support is required across the grid, during the high solar penetration period.

Thus, in line with the contemporary scenario of increasing penetration of RE, associated issues with RE integration and importance of HVDC bi-Pole links in maintaining stability and reliability for National grid, The sharing of HVDC charges for HVDC Bi-polar links needs to be revisited.

(d) Benefits of HVDC:

i. Benefits associated with long distance HVDC transmission projects are availed by beneficiaries spread geographically across multiple utility service areas and states. The major benefits include renewable integration, increased reliability, decreased transmission congestion, reduced losses, reduced generation resource requirements, increased competition in power markets etc.

ii. Although HVDC transmission is a fairly mature technology globally, recent technological improvements have expanded its capabilities and applicability for addressing grid challenges. HVDC has the unique capability to connect asynchronous grids which has been utilized immensely by India during pre-National Grid period. HVDC bi-pole lines provide control opportunities, many of which have been utilized for several decades and for which there is significant operating experience. HVDC provides for multiple controls in the grid.

Steady-state control can be imposed by simply changing the flow on the HVDC line. It can be useful to do this in order to relieve congestion elsewhere in the network.

Power Regulation in the grid may be obtained by using the DC line to follow part or all of the MW variability in one control area to ship to another control area. This can be particularly useful when there is high penetration of variable generation in one area and available fast-ramping generation in another area. HVDC may also be used to mitigate voltage instability, to increase damping of inter area oscillatory modes, to enhance transient stability performance, and to control sub synchronous resonance.

iii. HVDC links function as a pseudo phase-shifter and help in mitigating oscillations in inter-area mode and above all, the frequency controllers at HVDC stations help in operation of regional transmission system, if it were to get islanded due to any reason.

iv. Thus, HVDC technology provides extremely rapid stability control, power flow control, and the ability to segment parts of the power system—all of which can enhance the grid's flexibility, reliability and resilience. Bidirectional HVDC technology enables optimal hydro-thermal mix of all the regional grids due to its connectivity with the hydro surplus Region on one end and thermal surplus regions on the other end. In post-National Grid period, these attributes of HVDC have become extremely critical and further, in view of RE integration, said benefits have become a prerequisite requirement for large Indian grid which completely changes the context in which utilization of HVDC bi-pole links have been analysed till recently. After RE integration, HVDC transmission system would provide flexibility by providing benefits through reduction of the need for cycling fossil fuel power plants by spreading the impact of intermittent generation across a wider geographic region. Further, it will facilitate in power balancing for grid support and smooth integration of large scale renewable generation. To conserve on the reactive power support needed, implementation of more HVDC links will be helpful. Also, there are inverters that can generate local voltage support also. Thus considering the intermittent nature of RE, these attributes of HVDC links will be required in enabling smooth RE integration in Grid.

v. Further, HVDC links provides safeguard against extreme events such as multiple or sustained generation and transmission outages. Although extreme events occur very infrequently, but when they occur they can significantly reduce the reliability of the system, induce load shed events, and impose high emergency power costs. The investment to be made in additional transmission in reducing the impact of extreme events can be significant, despite the relatively low likelihood of occurrence. While the value of increased system flexibility during extreme contingencies is difficult to estimate, system operators intrinsically know that increased system flexibility provides significant value.

vi. Besides above benefits, HVDC Bi-pole links provides flexibility to grid operators to provide margins in parallel AC networks. These margins are being utilized for STOA and MTOA thus increasing the liquidity in the market.

(e) Keeping above in view, it can be seen that HVDC assets provide benefit to the country as a whole and attributing its usage to select beneficiaries may not be appropriate

(f) Sharing of HVDC Charges:

i. As elaborated above, it may be difficult to quantify specific beneficiaries and extent of service extended by HVDC links to them. Such benefits are availed nationally for complete grid and with pan India one grid; such benefits cannot be valued locally or individually. Therefore as the importance of HVDC link at national level is established, ultimately during cost allocation analyses, utilization and requirement of HVDC link can be looked from national grid's perspective only instead of looking from individual beneficiary's perspective.

ii. As inherently HVDC links involves large capital investment, YTC for the same is also high. Continuing with cost allocation/sharing of some bipole HVDC links to DIC's of beneficiary regions as identified during planning stage will hamper the growth of HVDC system in country as no beneficiary would want to burden themselves with high cost of HVDC links. Considering the importance of HVDC bi-polar links for safe and secure operation of the grid, it is essential that the cost of all HVDC system be socialized among all beneficiaries as the benefits are availed among all grid participants.

ii) Comments of CTUIL to MoP in response to memorandum of Hon'ble Chief Minister of TamilNadu to Hon'ble Prime Minister:

CTU has recommended that Raigarh-Pugalur HVDC transmission system may be considered as National component under Sharing Regulations 2020 due to its bidirectional usage.

4) Views of POSOCO (Grid –India)

i. Observation of POSOCO in Third amendment to Sharing Regulation 2010

"Appendix-1 –

6.1.1. POSOCO:

Treatment of HVDC: The 2nd amendment to the Sharing Regulations provides as under: "Provided that after the entire country is synchronously connected, the cost of all the HVDC systems shall be borne by all the DICs in the country by scaling up the YTC calculated without including the HVDC costs."

In the draft Regulations, the above proviso is sought to be removed. The reason of the proposed change has not been discussed in the explanatory memorandum. The NEW grid and SR grid have been synchronized on 31st December 2013 and a single model for the entire country would be prepared for the next PoC computation for Q1 of 2014-15. Thus impact of the above change in Regulation is yet to be seen. It may be appreciated

that a hybrid system is necessary for transfer of large quantum of power and new HVDC lines have to be facilitated.

ii. Observations of POSOCO in Bakshi Committee Report

“4.14.2 POSOCO has suggested following with regards to HVDC:

(a) HVDC assets are for benefit of the country as a whole and attributing usage to particular beneficiaries may not be appropriate.

☒ Bi-directional power flow through HVDC links

o Power flow through Mundra - Mahendragarh and/or Talcher- Kolar HVDCs are modulated in both the directions to control flow through parallel AC system.

o Further, HVDC allows operators to quickly change the direction of power flow, which makes it suitable for connecting wind,solar and other renewable sources.

☒ Reliability Benefits

o HVDC lines help in voltage control, relieving loading of intervening AC network and enhancing power transfer capability, thereby improving reliability of the grid.

☒ Flexibility for Renewable Integration

o Renewable energy such as wind and solar are increasing their penetration in the Indian Electricity market and it is expected that an increased percentage of total power consumption and/or generation would come from renewable energy sources.

The optimal locations for these renewable energy sources are found in remote or offshore locations that are long distances away from load centres. Therefore, the generated power from these remote renewable energy sources must be transmitted to the urban areas for consumption and whenever power has to be transmitted over long distances, DC transmission is the most economical solution compared to high-voltage AC.

o HVDC also can connect AC grids to renewable sources while improving power quality, stability and reliability on those networks by reducing disturbances. The networks can be managed by control centres while

operators keep the grid balanced by injecting the necessary power when there is a dip or peak in demand.

(b) In the past, states had expressed reservation to termination of new HVDC lines in their state in view of apprehension that it would have impact on PoC rates. Thus optimal development of power sector in the country with a proper mix on AC/HVDC lines would be hampered. In a country with high growth, more such assets may be required for transferring bulk power to load centres and for accommodating renewables.

(c) In view of above, it is suggested that charges of HVDC lines may be socialized amongst all DICs. In fact, the Hon'ble Commission had initially notified node wise apportionment of HVDC charges (depending on which nodes are benefitted most on account of HVDC) w.e.f. July, 2011 but subsequently changed over to socializing the same w.e.f. April, 2014.

However, the third amendment followed by separate treatment for sharing of BNC-Agra, Champa-Kurukshetra and Mundra-Mohinderqarh, HVDC charges has resulted in uncertainty over future HVDC charges sharing. Considering the upcoming HVDCs, Raiqarh-Pugalur and Pugalur-- Thrissur which have bidirectional features (required under high RE scenario when substantial exports are expected from Southern Region), the Commission may consider to socialize the same.

5) Bakshi Committee Report –observations:

(a) Vide the third amendment it was concluded that since it is not possible to identify utilisation of HVDC on the basis of marginal participation methodology, it should be borne by beneficiaries/ DICs for whom it has been created i.e causer pays. HVDCs which are back-to-back systems and are used for control purpose are being put under reliability component since control function can be seen as benefiting everybody in the grid. Further 10% component of other HVDCs created for specific regions have also been considered under reliability based on POSOCO's suggestions that these HVDCs are also used for control. However the objective quantification of how much % such HVDCs are used for control have not been provided by POSOCO or CTU. Considering that the entire HVDCs such as Talcher-Kolar, Rihand-Dadri, Bali-Bhiwadi etc are used for control is not acceptable. These systems are largely built for evacuation of power from one region to another region. Biswanath chariali-Agra has been declared as National asset by Gol and considering its peculiarities, the sharing of transmission charges for the same was done across India.

(b) Internationally it is observed that HVDC systems are paid for by the Areas which draw power through such HVDCs. It is possible because HVDCs have been set up a radial systems in these Countries. India has a unique system where HVDC and AC system is meshed within each other. Hence it is not possible to clearly identify the utilisation of such HVDC on scientific basis and hence causer pays principle is being adopted to share its charges. The usage of HVDC charges is based on the power order decided by the system operator based on various operational factors. Hence cost allocation of HVDC system cannot be based on Load flow. HVDC is planned predominately to carry Long term power based on the system conditions. The importance of HVDC is predominately to carry Long term demand rather than meeting the peak demand of a state. Hence cost of HVDC is based on the LTA+MTOA of the region for which it is meant.

(c) Keeping in view that HVDC are largely set up for evacuation, it is recommended that existing provisions for sharing of HVDC charges on 'causer pays' principle should continue under both modified PoC method as well as Uniform charges method. HVDC back to back systems should be considered under reliability component in Modified PoC and under YTC to be shared uniformly with all entities in Uniform charges method.

(d) Currently 10% component of HVDC except back to back is covered as reliability component. In proposed modified PoC mechanism, recovery of transmission charges is done in 3 categories Usage, Reliability and Residual for AC system.

Since usage for HVDC and reliability cannot be quantified through load flow and considering meshed nature of HVDC and AC system with each other where flow in HVDC is controlled as per flow in AC system, it is proposed to consider All India reliability% calculated for AC network to be same as for HVDC except Back to back and National asset. MTC corresponding to % of reliability to be shared in ratio of non coincidental peak.

(e) HVDC back to back systems should be considered under reliability component in Modified PoC and under YTC to be shared uniformly with all entities in Uniform charges method. HVDC declared national assets to be shared as per CERC orders.

(f) With regards to HVDC charges for MTOA customers, it is clarified that HVDC charges are shared by MTOA customers in the same ratio as LTA customers.

Further we agree that HVDC charges should also be paid by STOA customers till mechanism of GNA comes into place where no separate charges for STOA are envisaged.

(g) During meeting of taskforce, representative of POSOCO had suggested that it may happen that HVDC created for specific region is used for transfer of power in reverse direction with upcoming renewables for eg. Talcher-Kolar or Raigarh- Pugalur. In such circumstances, the methodology of HVDC sharing may be reviewed.

6) Views and recommendations of SRPC

- i. The Southern Regional Power Committee vide letter dated 30.07.2019 addressed to MoP requested to declare the assets as Strategic and National importance. The copy of the letter addressed to Secretary (Power) / MoP is Annexed as **Annexure- A**

- ii. The issue was once again discussed in the 36th TCC and 37th SRPC meeting held on 30.1.2020 and 1.2.2020. SRPC vide letter dated 02.06.2020 addressed to Secretary (Power)/ MoP requested once again to consider the request of SR constituents. The copy of the relevant portion of the minutes of the 36th TCC and 37th SRPC meeting is annexed as **Annexure-B**. The copy of the letter dated 02.06.2020 addressed to Secretary (Power) / MoP is Annexed as **Annexure-C**
- iii. SRPC vide letter dated 07.01.2021 requested the Hon'ble Commission to consider the case of Raigarh-Pugalur-Trissur HVDC similar to Biswanath Chariali-Agra HVDC system and include the tariff under National component. The copy of the letter dated 07.01.2021 addressed to Chairperson /CERC from Chairperson /SRPC is annexed as **Annexure-D**

7) Views and directions of MoP regarding sharing of transmission charges of HVDC systems

- i. During the Meeting between the Hon'ble Chief Minister of Tamil Nadu and Hon'ble Minister of State (I/c) for Power and NRE / GoI held on 8th July, 2020 at Chennai, it was requested to declare the assets as National assets. In response, it was stated that being a regulatory matter, it may be appropriately taken up with the CERC
- ii. In a letter dated 18th March 2021 addressed from MoP to SRPC, it was stated that sharing of ISTS charges is Regulatory issue and within the jurisdiction of CERC
- iii. Based on the response of MoP, Chairperson /SRPC addressed a letter dated 13.12.2021 to Chairperson / CERC communicating the copy of the letter received from MoP and requested to consider the request of SR constituents favorably. The copies of the letter dated 18th March 2021 from MoP to SRPC and the copy of the letter dated 13.12.2021 addressed to Chairperson CERC from Chairperson SRPC are annexed as **Annexure- E and Annexure-F**.
- iv. The issue was flagged by Hon'ble Chief Minister of Tamil Nadu with Hon'ble Prime Minister of India through the memorandum during the meeting held on held on 31.03.2022. The copy of the extract of memorandum dated

31.03.2022 from Hon'ble Chief Minister of Tamil Nadu with Hon'ble Prime Minister is annexed as **Annexure –G.**

- v. Based on the VIP reference, Ministry of Power had addressed a letter dated 29th August 2022 to Hon'ble Chief minister of Tamil Nadu communicating the letter dated sent to CERC for considering all the HVDC inter regional links including the subject HVDC transmission system under National component subject to certain conditions as extracted below:

"Accordingly, CERC is requested to consider transmission charges of all HVDC inter regional links under National component(100% transmission charges to be borne by all Designated Inter State transmission customers), provided that

i) There is certain quantum to bi-directional power flow through the concerned HVDC inter-regional link

ii) The quantum of bi-directional power flow [for considering 100% of transmission charges of the link under national component] may be decided by CERC in consultation with stake holders including POSOCO, CEA and CTU."

The copy of the letter dated 30.05.2022 addressed to CERC from MoP and letter dt. 29.08.2022 from Hon'ble Minister for Power and NRE / GoI to Hon'ble Chief Minister of Tamil Nadu are annexed as **Annexure- H and Annexure-I.**

- vi. Hon'ble Minister of Power, Union of India vide letter dated 20.02.2023, has sent a Communication to the Hon'ble Minister for Electricity, Prohibition & Excise, Government of Tamil Nadu stating as follows:

*"MoP has already directed the CERC to consider declaration of 800 KV Raigarh-Pugalur-Thrissur HVDC link as asset of National and Strategic importance based on the case study furnished by Grid-India.
I hope this clarifies the position"*

The copy of the letter dated 20.02.2023 addressed from Hon'ble Minister for Power and NRE / Gol to Hon'ble Minister for Electricity, Prohibition & Excise, Government of Tamil Nadu is annexed as **Annexure-J**.

8) Inequitable approaches of Hon'ble CERC

- a) While introducing the SR 2010, the Hon'ble Commission stated that since marginal participation cannot be applied to recover the cost of HVDC, separate treatment is required.
- b) In the first amendment to SR2010, despite the specific request to share the charges of Talcher-Kolar HVDC the central commission stated that charges of Talcher – Kolar HVDC bi-pole link shall be shared by DICs of SR only.
- c) In the second amendment to SR 2010, the Central Commission had stated that **after the entire country is synchronously connected, the cost of all the HVDC systems shall be borne by all the DICs in the country by scaling up the YTC calculated without including the HVDC costs.**
- d) **In the third amendment to Sharing Regulations 2010 the Ld Commission proposed to remove the above proviso. POSOCO raised strong reservation not to remove the above proviso since the** NEW grid and SR grid have been synchronized on 31st December 2013 and stated that the 800 kV 6000 MW multi-terminal HVDC link from Biswanath Chariali / Alipurdwar to Agra is under construction. If charges are shared based on usage, PoC rates nodes nearer to the stations like NER / ER states may be affected. It suggested that since HVDC systems are national assets, the existing provision may be retained.
- e) However, the Hon'ble Commission went on to include the charges of part capacity of Mundra-Mohindergarh HVDC under national pool to be recovered **from all the DICs. Further a new proviso has been introduced as below:**
“45.17 For any new HVDC line, the Commission shall decide the methodology through an order. However, the above principle of sharing of transmission charges of HVDC lines may be reviewed based on the national transmission planning, if certain HVDC systems are planned to cater to multiple needs i.e. evacuation or reliability or Renewable integration or change in the benefits derived by the stakeholders.”

- f) Subsequently, the Hon'ble Commission while approving the tariff of the 800 kV Biswanath Chariali-Agra HVDC system planned for evacuation of power from Hydro Electric projects declared that the asset is of national and strategic importance despite the fact that it was intended for a specific region. Further, the recommendations PGCIL and POSOCO were given importance in deciding the sharing methodology. Further, the Commission proceeded as below:

23. The SoR of the 3rd Amendment to the Sharing Regulations, 2010, provides as under:

“45.17 For any new HVDC line, the Commission shall decide the methodology through an order. However, the above principle of sharing of transmission charges of HVDC lines may be reviewed based on the national transmission planning, if certain HVDC systems are planned to cater to multiple needs i.e. evacuation or reliability or Renewable integration or change in the benefits derived by the stakeholders.”

24. Keeping in view of the above provisions of Sharing Regulations, we proceed to decide the proposed methodology for sharing of transmission charges for the HVDC link

The methodology of sharing of the charges was decided as per the above proviso under third amendment to SR2010.

- g) The Hon'ble Commission while notifying the Sharing Regulations 2020, in response to TANGEDCO and KSEBs contentions to include the Raigarh-Pugalur - Trissur HVDC system under National component stated as below:

12.3.2. Allocation of transmission charges of HVDC system on usage basis is not feasible since marginal participation method cannot be used to determine the usage of HVDC. This was deliberated in the Statement of Reasons dated 26.10.2015, while issuing third amendment to the 2010 Sharing regulations.

12.3.3. HVDC system covered under Regional Component have been planned to cater to requirement of drawl by a particular region. With developments in sector and change in load-generation mix, if need arises to consider the sharing based on bidirectional flow of power, the same shall be dealt with by the Commission at the appropriate time.

h) In the meanwhile, the Hon'ble Commission while approving the tariff of the Raigarh-Pugalur -Trissur HVDC system observed vide its RoP dated 10.09.2021 in the lead petition 685/TT/2020 observed that

“ the issue of declaring the asset as “Strategic and National importance” does not come under the jurisdiction of CERC and the decision involves policy decision.”

i) TANGEDCO and other SR beneficiaries strongly contended that the Central Commission had exercised its power in declaring the BNC-Agra HVDC as National asset and directed to share the charges on All India basis. Further, as per the third amendment, Commission can decide the methodology of sharing of transmission charges of any HVDC system and decided in the case of BNC-Agra citing this proviso.

j) Subsequently, MoP had requested CERC to consider transmission charges of all HVDC inter regional links under National component(100% transmission charges to be borne by all Designated Inter State transmission customers), vide their letter dated 30.05.2022.

k) However, without considering the recommendations of MoP, CTU and SRPC and genuine grievances and concerns of the Southern Regional constituents submitted through the pleadings & affidavits and contrary to its own direction in declaring the other two bipolar HVDCs as national assets that are billed under National component, Hon'ble CERC vide order dated 29.09.2022 in petition No. 685/TT/2020, has directed as below:

“We are of the view that the Commission is not the appropriate forum for declaring any transmission asset to be of national and strategic importance. It is further observed that transmission system being of national importance and a transmission system considered as a National Component are two different aspects. Therefore, we are not inclined to approve the 100% yearly transmission charges of Raigarh-Pugalur-Trissur HVDC system under National Component”

l) Further, the Hon'ble Commission adopted the provisions under the original unamended Principle Regulation 11 (4) of the Sharing Regulations 2010. Since the COD of the asset falls under Sharing Regulation 2010, the transmission charges are to be shared as per the proviso under 45.17 of the SoR to third amendment to SR 2010 which was adopted in the case of BNC-Agra.

m) Further, the Hon'ble Commission also stated as

"We are of the view that if need be to consider the sharing based on bi-directional flow of Raigarh-Pugalur-Thrissur HVDC transmission system due to change in load-generation mix, the same shall be dealt with by the Commission at the appropriate stage".

Despite the fact that from the COD of the RPT HVDC system, it is being used bidirectionally for transfer of power.

n) The above submissions clearly shows that the decisions taken by the Hon'ble Commission in the cases of Raigarh-Pugalur-Trissur HVDC systems are contrary to law laid down by Hon'ble CERC and discriminatory and inequitable. The Electricity Act does not permit discrimination of one regional consumers from other regional consumers in terms of sharing of charges.

9) Comments and views of TANGEDCO on the proposed draft third amendment Sharing Regulations 2023.

Issues in the draft amendment:

i. The Hon'ble Commission in the explanatory memorandum to the proposed amendment has stated as below:

1.3 The High Voltage Direct Current (HVDC) Bipole Transmission system is a cost intensive system and is generally used for long distance and bulk power transmission to facilitate the transmission of electricity from power rich regions to power deficit regions. Therefore, the transmission charges against the HVDC transmission systems were paid by the concerned regional beneficiaries for which it was planned under the CERC (Sharing of inter-State transmission charges and losses) Regulations 2010 as well as the Sharing regulations, 2020.

1.4 However, under the Sharing Regulations, 2020, 30% of the transmission charges of such bulk transfer HVDC transmission systems is considered under the National component considering the Jha Committee Report, which states that HVDC systems having control features provide flexibility and hence more stability to the overall Grid, and that bipole HVDC lines have been strategically planned for not only bulk power transfer but also to enhance the overall operational performance of the grid.

1.5 Further, the Commission in the Statement of Reasons for the Sharing Regulations 2020 mentioned as below: "12.3.3. HVDC system covered under Regional Component have been planned to cater to requirement of drawl by a particular region. With

developments in sector and change in load-generation mix, if need arises to consider the sharing based on bidirectional flow of power, the same shall be dealt with by the Commission at the appropriate time.” As per above, an HVDC planned for the drawl requirements of a particular region may be considered for different sharing mechanisms based on bidirectional flow of power.

1.6 MoP, vide letter dated 30.05.2022, requested the Commission to consider the transmission charges of HVDC inter-regional links under the National component based on bi-directional power flow.

1.7 With the development of more RE generation in the RE rich states, a change in the pattern of the power flow in the HVDC Bipole Transmission System is being observed during the day hours, specifically during high generation periods. It is being noticed that there is also a power flow in the reverse direction.

1.8 Grid-India, vide its letter dated 09.12.2022, also submitted a study report regarding the bi-directional flow of the HVDC Raigarh-Pugalur-Thrissur HVDC Transmission System. Grid-India has stated that there have been significant changes in the pattern of NEW – SR corridor flow with high export from SR during high RE generation periods and that the installed capacity of Renewable Energy sources in the Southern Region has increased from 38620 MW in March 2019 to 46908 MW in March 2022.

1.9 The HVDC of the Raigarh-Pugalur Bipole line has been planned for drawl of power by Southern region States to transfer power from the generation rich area of Raigarh in the Western Region to the Southern region. The HVDCs also have some reverse capacity to give reliability support to the grid, and hence, despite the said HVDC being planned to cater to the Southern region, 30% of it was kept under the National component. The Maximum Capacity of HVDC Raigarh – Pugalur in the Forward direction (WR -> SR) and the Reverse Direction (SR -> WR) is 6000 MW and 3000 MW respectively, which implies only 50% capacity is there in the reverse direction as compared to capacity in the forward direction. In any case, including more than 50% of the YTC of the said HVDC in the National component is not appropriate since not more than 50% flow can happen in the reverse direction. Under the National component the charges for said HVDC shall be shared by all beneficiary states of India, such as the Eastern region, the North-eastern region, the Western region and the Northern region apart from the Southern region.

1.10 An analysis of the detailed power flow pattern on the Raigarh-Pugalur HVDC line has been done for the period April 2022 to April 2023, and it is noted that the Raigarh-Pugalur Bipole line is capable of carrying 6000 MW of power in the forward direction, i.e. from the surplus Western region to the SR deficit region, to cater to the demand of the SR constituents, however, on the reverse side, i.e. from SR to WR the capability is limited to the extent of 3000 MW only.

...

1.12 From the above table, it is observed that, during the months May 2022 to September 2022, there was a considerably high order of power flow in the reverse direction (from the Southern Region to the Western Region). However, as the demand increases in the Southern Region from November 2022 onwards, there is a continuous high order of forward direction power flow (from the Western to the Southern region). This indicates that the Raigarh-HVDC Bipole line is very critical for meeting the demands of SR constituents.

1.13 With the integration of additional renewable generation in the Southern Region, Western Region, and Northern Region, the HVDC Bipole Lines will play an important role in the flow of renewable power in other parts of the country by providing flexibility in power flow, both quantum and direction, under various scenarios of load-generation balance.

1.14 As discussed in the above paragraphs, a similar type of power flow pattern may be seen in other HVDC Bipole lines where there is power flow in both directions. In this regard, it is pertinent to mention here that all the HVDC Bipole lines are generally planned for the transfer of power to the power deficit region, but 30% of its tariff is already considered under the National Component as per the existing Sharing Regulations 2020, irrespective of utilization in the reverse direction, as they provide flexibility and stability to the grid.

1.15 However, considering that there is also power flow in the reverse direction in some HVDCs, which may vary based on the nature of use, it is desirable that the sharing of the transmission charges under the National Component should be linked to the nature and quantum of power flow in the reverse direction.

1.16 Accordingly, the following provision is proposed to be inserted under sub-clause (a) of Clause (1) of Regulation 6 of the Principal regulations: "Provided that where an interregional HVDC transmission system planned to supply power to a particular

region is operated to carry power in reverse direction due to system requirements, the percentage Yearly Transmission Charges of such transmission system to be considered in the regional component and the National component shall be calculated as follows:

HVDCr (in %) =

$\frac{\sum \text{Maximum power flow in reverse direction (in MW) in any timeblock on } k\text{th day} \times 100}{\text{Capacity of HVDC transmission system in forward direction (MW)} \times \text{number of days in a month}}$

Capacity of HVDC transmission system in forward direction (MW) X number of days in a month

Where k, is a day of a month with total 'n' days

where HVDCr >30%, the Yearly Transmission charges corresponding to HVDCr shall be considered in the National component and the balance in the regional component.

where HVDCr is < 30%, 30% of Yearly Transmission Charges shall be considered in the National component and 70% in the Regional component."

Comments and observations of TANGEDCO

- a) The Hon'ble Central Commission has time and again reiterated in the evolution of Sharing of transmission charges of HVDC system that allocation of transmission charges of HVDC system on usage basis is not feasible.
- b) In the SoR to Sharing Regulations 2020 also the same stand has been taken by the Commission.
- c) Now, the methodology proposed is contrary to the Hon'ble Commission's own stand and also against the principles of sharing of transmission charges being followed internationally.
- d) Despite the fact that the Hon'ble Commission adopted different analogy when it comes to other Bipolar HVDC system ie. Elaborately dealing with the accrued benefit to the entire country, stability and reliability provided by the HVDC to the National, flexibility to accommodate and promote RE by reverse operation and reduction of loading of parallel AC systems, the Hon'ble Commission has not considered any of such characteristics of the Raigarh-Pugalur -Trissur HVDC system in facilitating the betterment of National grid.
- e) The Hon'ble Commission also does not consider the fact that the RPT HVDC system is a System Strengthening scheme planned by the Central Transmission Utility of India and implemented by Power Grid Corporation of India without any specific generator and beneficiary tie-up and totally based

on anticipated surplus generation in Western Region and projected deficit in Southern Region. Though the scenario has completely changed and the HVDC system is used for facilitating transfer of RE from RE rich Southern States to benefit the entire country.

- f) The Hon'ble Commission also does not appreciate the fact that the Southern Regional States are imposed with a huge tariff burden on account of the direction of the Hon'ble CERC to share the charges of BNC-Agra HVDC system planned for evacuation of Hydro power and a dedicated transmission system planned and built by Adani Power Limited for sale of power from their generating station. TANGEDCO alone has been imposed with an unwarranted financial liability of Rs 800 Crore(Approx) so far due to the above two HVDC systems without reaping any benefit.
- g) Hon'ble Commission has not considered the recommendation of the Ministry of Power in the true spirit that the RPT HVDC system is benefiting the entire nation and is a strong inter regional tie line facilitating promotion of RE at the cost of SR beneficiaries.
- h) Hon'ble Commission has not explained why the BNC-Agra and Mundra-Mohindergarh HVDC system are not brought under the ambit of the proposed amendment.
- i) It is evident that the assets of RPT were ready for commissioning when the Sharing Regulation 2010 was in force and the major assets were declared under commercial operation. However, instead of applying the relevant amended Regulation, the Hon'ble Commission applied inapplicable provision of the SR 2010 for sharing of charges of RPT HVDC system in contrary to its own law. The RPT HVDC system should have been put under National Component from COD and any new amendment will have prospective effect from the date of implementation. Once the RPT HVDC system is included under National component from COD on par with BNC-Agra, any contrary provisions /amendment will not apply of this system.

- j) The sample working based on the proposed methodology reveals that there is absolutely nothing beneficial to the SR States. The sample calculation is enclosed as **Annexure-K**.
- k) IT is also to be submitted that the following HVDC systems with huge capital cost are already planned and approved by NCT for implementation:
- 800 kV Bhadia-II- Fatehpur HVDC line**
 - 350 Kv Pang -Kaithal HVDC line**
 - 800 kV Barner II-Jabalpur HVDC line**
 - 800 KV Khavda-Aurangabad HVDC**
- l) The Hon'ble Commission has not dealt with the huge anticipated tariff impact on account of the above HVDC systems and methodology of sharing by the intended beneficiaries and the rest of the country; whether the proposed usage based method or different method will be adopted.
- m) The Hon'ble Commission has not clarified why the usage based methodology has been diluted and uniform charges methodology has been introduced in the case of AC systems(contributing major part of YTC) and a specific usage based methodology is proposed of this specific HVDC system which is benefitting the entire nation.
- 10) Under the above circumstances, since the proposed amendment is not inline with the objectives of Electricity Act, contrary to the law laid down by CERC, inequitable, and discriminatory it is requested that the proposed amendment may be dropped.
- 11) It is further submitted that the Rigarh-Pugalur-Traissur HVDC system is benefitting the entire country by forming a strong Inter Regional link through system strengthening scheme and hence it becomes the most eligible case to find a place under National component under Sharing Regulations 2020. Hence, it is submitted that Hon'ble Commission may issue appropriate orders by exercising its power to include the subject Raigarh-Pugalur-Trissur HVDC system under the National component and render justice equitably.

ಡಾ|| ಎಸ್. ಸೆಲ್ವಕುಮಾರ್, ಐ.ಆರ್.ಎ.,
ವ್ಯವಸ್ಥಾಪಕ ನಿರ್ದೇಶಕರು

Dr. S. SELVAKUMAR, IAS.,
Managing Director
& Chairperson, SRPC



Page 1 of 2
ಕರ್ನಾಟಕ ವಿದ್ಯುತ್ ಪ್ರಸಾರಣ ನಿಗಮ ನಿಯಮಿತ
**Karnataka Power Transmission
Corporation Limited**
Kaveri Bhavan, Bengaluru - 560 009.
CIN : U40109KA1999SGCO25521
Office : 080-22244556 / 22214342
Fax : 91-80-22213526
e-mail : md@kptcl.com

30th July 2019

The Secretary (Power),
Ministry of Power,
Government of India.
Shram Shakti Bhavan, Rafi Marg,
New Delhi - 110 001.

Sir,

The efforts of MoP in strengthening the Inter-Regional Corridors enabling the DISCOMs to procure power on economic principles and making available the renewable power from RE rich states to other states is well valued. In the 36th Meeting of Southern Regional Power Committee (SRPC) held on 12th July 2019, the progress of WR-SR 6000 MW HVDC Bipole Link Raigarh (Chhatisgarh) – Pugalur (TN) project was reviewed. PGCIL had informed that Raigarh - Pugalur Pole 1 would be ready by 3rd Quarter of 2019 while Pole 2 was targeted for completion by April 2020. In this regard the following are submitted for kind perusal and consideration:

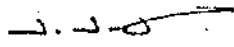
- HVDC Bipole Link Raigarh - Pugalur was envisaged when SR was in power deficit condition. Considering the strategic importance of the link, MoP had awarded the project to POWERGRID under regulated tariff mechanism.
- In the studies by CTU and CEA (as noted in 2nd SRSC meeting held on 10.06.2019) considering the large scale capacity addition from RE sources in Southern States and commissioning of generation projects based on conventional sources by the year 2021-22 and the likely electricity demand in the year 2021-22, it has been seen this HVDC link would also be utilized for export of 29000 MW from Southern Region to other Regions during high RE ingress and low demand in the region. Out of 29000 MW export from SR, 3000 MW (surplus RE) could be exported to WR on this link. However this link would also be utilized to meet peak demand of SR in the range of 3500- 4000 MW.

This quantum of flow can increase in both the directions with strengthening of associated AC systems.

- It may please be noted that Hon'ble CERC in respect of Diswanath Chariali - Agra \pm 800 kV, 6000 MW HVDC Bipole link, has directed to share the transmission charges by all the regions of the Country, since the transmission assets are of strategic and national importance whose benefits shall be derived by the entire country,
- In the 36th meeting of SRPC, CTU had opined that transmission charges for all HVDC links in the country except for specific generation evacuation schemes may be shared on all India basis.

Ministry of Power may bestow its kind attention to declare WR-SR 6000 MW HVDC Bipole Link Raigarh (Chhatisgarh)-Pugalur (Tamil Nadu), a project of national and strategic importance and the transmission charges of the HVDC link may be shared by all the regions as it is likely to benefit the States/Stakeholders across the country.

Yours faithfully,


Chairperson, SRPC,
Bengaluru.

11. Transmission charges / sharing related issues

11.1 CERC has brought out draft CERC (Sharing of inter-state transmission charges and losses) Regulations, 2019 on 31.10.2019). A Workshop in this regard has been arranged by CERC with STU/DISCOMs/SLDCs of SR/ER/NER and is scheduled on 06.01.2020.

11.2 Relinquishment Petitions (55/MP/2015; 303/MP/2015; 3/MP/2016; 137/MP/2016; 246/MP/2016; 11/MP/2017; 21/MP/2017 along with IA No.9/IA/2017; 129/MP/2017; 164/MP/2017; 169/MP/2017 along with IA No. 43/IA/2017; 253/MP/2017 along with IA No. 87/IA/2017) were heard by CERC on 03.09.2019. After hearing the learned senior counsel for the Petitioners and learned counsels for the Respondents, the Commission directed the Respondent, TANGEDCO to file its reply, on or before, 18.9.2019 with an advance copy to the Petitioners who may file their rejoinders, if any, by 27.9.2019.

11.3 Additional Agenda Item No.1.1

TANGEDCO vide letter dated 27.01.2020 (**Annexure-XIII**) had furnished their views/comments on the draft CERC (Sharing of inter-state transmission charges and losses) Regulations, 2019.

11.4 KSEBL letter dated 30.01.2020 which was circulated in TCC meeting (**Annexure-XIV**) had furnished their views, suggestions and comments in respect of the draft CERC (Sharing of inter-state transmission charges and losses) Regulations, 2019 for detailed discussion and recommendation of SRPC.

11.5 **TCC Deliberation:**

- i. MS, SRPC informed that time was extended two times for furnishing the comments from public / stake holders on draft CERC (Sharing of inter-state transmission charges and losses) Regulations, 2019. CERC had held a meeting with SR, ER & NER power entities. TN & Kerala had presented their viewpoints in this regard stating that existing methodology is scientific and in line with Tariff Policy and raised their concerns on the proposed Regulations. SRPC secretariat had submitted the comments on draft regulations to Hon'ble CERC and hoped all the states had also submitted their comments.
- ii. CE (SO), KSEBL stated the comments/views had been given to this SRPC forum on draft sharing Regulations. In the draft Regulations, spirit of Tariff Policy was violated. Existing PoC mechanism is scientific and is in line with tariff policy and Electricity Act. The efficacy of the existing PoC mechanism has been examined and acknowledged by the taskforce formed for reviewing the framework of Point of Connection charges and concluded that PoC has served its purpose as enshrined in the mandate under EA, 2003 and Tariff Policy namely sensitive to distance, direction and quantum of flow. The mechanism has enabled the power market and has helped in reducing congestion by improvement in investment in the sector. The taskforce further observed that the current mechanism has not inhibited the development of

transmission system and has rather led to development of transmission system which grew @20% Compounded Annual Growth Rate. The proposed changes were due to the request of some states which were charged higher transmission charges under the existing PoC mechanism. Proposed PoC mechanism brought components like National Component (NC), Regional Component (RC), Transformers Component (TC) and AC System Component (ACC). The exact category under this National Component is not known and in that case Raigarh (Chattisgarh) - Pugalur (TN)-Trissur (KER) HVDC should also be considered as National Component in view of the likely power flow in both the directions due to the high RE generation in SR. He further informed that in the public hearing held on 29th January, 2020 KSEBL had requested CERC for considering Raigarh-Pugalur-Trissur HVDC line as a National Component in view of its national importance. CERC had directed that MoP may be approached through SRPC forum.

Huge RE evacuation systems are being created and as per National Policy, transmission cost for RE is exempted. In case AC transmission system cost, sharing is based on Usage (22%) & on Fixed cost (65%), by going back to old postage stamp system. KSEBL strongly recommend dispensing with fixed cost based sharing mechanism. This had come because of underutilization which had to be seen from the prospective of redundancy, N-1 criteria, excessive transmission system as some generators relinquished the LTA etc. and these aspects should be studied. If any stressed assets identified, those cases shall be studied separately as there are many mechanisms to relieve the stress like by restructuring the debt part, reduction of RoE etc. Fixed cost mechanism encourages ineffective investments by planning the excess transmission system which is against the principle of Tariff Policy as there is no usage concept. Except National Component and RE component, other components should be shared based on usage.

- iii. TANTRANSCO/ TANGEDCO endorsed the views of KSEBL.
- iv. It was noted that the states had furnished their views to Hon'ble CERC on draft CERC (Sharing of inter-state transmission charges and losses) Regulations, 2019.
- v. ED, SRLDC informed that as per the studies of SRLDC reliability team, for SR transmission system 30% is variable component and 70% fixed component in the cost. As per this 70% of fixed cost had to be borne by other regions, in similar way SR also required to bear the cost of other regional systems. Fixed component of the transmission cost is proportional to the LTA granted.
- vi. CE(SO), KSEBL stated that out of 1,10,000 MW of LTA granted, around 47% were not operationalized for the reasons of delayed CoD of generating stations or Transmission systems. Those relinquishments and some of the Regulations had not been complied. So the recovery process of such cases should come into existence.
- vii. CE (IPC & PS), APTRANSCO informed that they had submitted their views to Hon'ble CERC. They had requested to add proviso stating that "*All the states need to submit the details of intrastate generation injections/drawals as may be required by*

the Implementing Agency, for the same notified block subject to the scrutiny by RLDCs/RPCs”.

viii. CTU informed that in respect of relinquishment petitions, a hearing had been taken place on 5th November 2019 and Commission had clubbed all the petitions. Commission had also asked additional submissions by 21.11.2019. No hearings had taken place later.

ix. **Recommendation:**

Chairperson, SRPC may be requested to take up the matter regarding consideration of Raigarh (Chhatisgarh)-Pugalur (TN)-Trissur (KER) HVDC system as National Component.

11.6 **SRPC Deliberation:**

- i. Director (Trans), KPTCL stated that only Raigarh (Chhatisgarh)-Pugalur (TN) HVDC section could be recommended for National component.
- ii. CMD, TANTRANSOCO & TANGEDCO stated that TANGEDCO views have been expressed in the TCC meeting. The draft scheme brought out by CERC would be against the interest of Tamil Nadu. As most of the central generating stations from where power is drawn by TN are located within the state, present scheme of things works to TN's advantage. As per the draft CERC (Sharing of inter-state transmission charges and losses) Regulations, 2019 huge outgo may be there for TN in terms of PoC. TN's strong opposition to CERC's draft Regulations may be placed on record. Further the draft is not in compliance with National Tariff Policy. SRPC may kindly bring it to the notice of CERC. At every level the draft has been opposed.
- iii. KSEBL stated that strong opposition to Draft Regulations needs to be recorded. The concern of some of the constituents on new PoC mechanism needed to be taken by SRPC with MoP, CERC & CEA.
- iv. **Decision/Approval:**
Chairperson, SRPC agreed to take up with MoP regarding consideration of Raigarh (Chhatisgarh)-Pugalur (TN) HVDC system as National Component.

Chairperson, SRPC suggested that Pugalur (TN) – Trissur (KER) HVDC may be discussed in next TCC regarding system as National Component.

12. Preparation for meeting revised environment norms as per environment (Protection) Amendment Rules, 2015

12.1 Revised water consumption and emission norms for existing as well as new thermal units (installed from 01.01.2017 onwards) as per Environment (Protection) Amendment Rules, 2015 had been notified by Ministry of Environment, Forest & Climate Change (MOEF & CC) (Gazette Notification dated 07.12.2015). MOEF guidelines had classified thermal generators into three categories with different norms. The three

Most Immediate

28

VIP Reference
URGENTNo.2/8/2020-Trans
Government of India
Ministry of Power

Shram Shakti Bhawan, Rafi Marg, New Delhi – 110001

Dated, 2nd June, 2020

To

1. Chairperson, CEA, New Delhi
2. COO, CTU, POWERGRID, Gurugram, Haryana.

Sub:- VIP reference received from Shri Pinarayi Vijayan, Hon'ble Chief Minister, Govt. of Kerala, regarding Raigarh- Pugalur- Thrissur HVDC transmission line as National Component under the Proposed sharing regulations.- Reg.

Sir,

I am directed to forward herewith a copy of DO letter No. PWR/179/C2 /19/POWER/CM, dated 14.05.2020 received from Shri Pinarayi Vijayan, Hon'ble Chief Minister, Kerala, on the above mentioned subject, which is self-explanatory.

2. It is, therefore, requested that the issue raised in the above said D.O. letter may please be examined and comments may be shared with this Ministry, for framing a draft reply to the VIP reference, urgently.

Encl. As above

Yours faithfully,


21/6/2020
(Bihari Lal)Under Secretary to the Govt. of India
Telefax: 2332 5242
Email:transdesk-mop@nic.in



N.S. PILLAI, IA & AS
Chairman & Managing Director
& Chairperson, SRPC

No. CMD/105/SRPC/11/2021

Dated : 07.01.2021

To

The Chairperson,
Central Electricity Regulatory Commission,
Chandralok Building,
36, Janpath,
New Delhi-110 001.

Sir,

Subject : HVDC link Raigarh - Pugalur- Trissur as National Component - reg.

The "WR-SR 6000 MW HVDC Bipole Raigarh (Chhatisgarh) - Pugalur (TN) along with 2000 MW VSC Based HVDC System Pugalur (TN)-Trissur (KER) is in advanced stage of completion. PGCIL has declared COD w.e.f. 06.09.2020 of part of Raigarh - Pugalur 6000 MW HVDC transmission system comprising of Raigarh HVDC Station & Pugalur HVDC Station with 1500 MW HVDC terminal (Pole-1), Raigarh (HVDC Station) - Pugalur (HVDC Station) HVDC line.

It may please be noted that for Biswanath Chariali - Agra ± 800 kV, 6000 MW HVDC Bipole line, Hon'ble CERC has directed to share the transmission charges by all the regions of the Country, since the transmission assets are of strategic and national importance whose benefits shall be derived by the entire country. As per CERC (Sharing of Inter-State Transmission Charges and Losses) Regulations, 2020 Biswanath-Chariali/Alipurduwar to Agra HVDC transmission system is under National Component- HVDC and 100% of Yearly Transmission Charges shared under **National Component (NC)**.

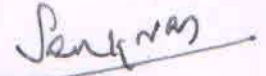
Similar to Biswanath Chariali - Agra HVDC transmission system, the Raigarh - Pugalur - Trissur HVDC system could be considered as strategic and national importance considering the huge surplus RE potential planned to be transmitted from Southern Region to rest of the country.

In the 38th meeting of SRPC held on 23.12.2020, the constituents requested Chairperson, SRPC to take up with CERC regarding consideration of Raigarh (Chhatisgarh)-Pugalur (TN)- Trissur (KER) HVDC system as National Component for

sharing of transmission charges. In view of the possibility of bidirectional power flow, i.e., from WR to SR as well as SR to WR on this link, CTU & SRLDC have strongly recommended that CERC may be requested to declare the asset as national component and strategic project.

The Commission may consider the request of SR constituents to include **WR-SR 6000 MW HVDC Bipole link Raigarh (Chhattisgarh) - Pugalur (TN) & 2000 MW VSC Based HVDC System Pugalur (TN) - Trissur (KER) under National Component (NC) and share 100 % of the transmission charges of this HVDC links under National Component** as it will benefit the states/Stakeholders across the country.

Yours faithfully,



**CHAIRPERSON,
SOUTHERN REGIONAL POWER COMMITTEE.**

ANNEXURE-E

Annexure - ATR3 (Page 4 of 6)

No. 3/7/2017-Trans-Part (1)
भारत सरकार / Government of India
विद्युत मंत्रालय / Ministry of Power
(परिष्करण प्रभाग / Transmission Division)

श्रम शक्ति भवन, रफी मार्ग, नई दिल्ली- 110001
Shram Shakti Bhawan, Rafi Marg, New Delhi-110001

दिनांक: 18 March, 2021

To,

Chairperson (SRPC)

Kerala State Electricity Board

Thiruvananthapuram

Sub:- Declaration of HVDC Raigarh- Pugalur- Thrissur as National project - Reg.

Sir,

I am directed to refer to your D.O. No. CMD/105/SRPC/9/2021, dated 07.01.2021 regarding proposal declaring Raigarh- Pugalur- Thrissur HVDC transmission link as National and Strategic importance and charges could be shared by all the Designated Inter State Customers (DICs) of the country as it will benefit the states/Stakeholders across the country.

2. The matter has been examined. It has been noted that ± 800 kV Raigarh- Pugalur- Thrissur HVDC system was planned for import of power into Southern Region. During planning of this line, the Southern Regional constituents agreed for development of this line for Southern Region. However, with addition of expected Renewable Energy generation in Southern Region, surplus power in Southern Region during the period of high solar generation could also be exported from Southern Region to other Regions through this link.

3. It may also be noted that sharing of Inter State Transmission Charges are determined in accordance with CERC (Sharing of Inter State Transmission Charges and Losses) Regulation 2020, as amended from time to time. As per these regulations, National Component of Transmission charges are shared by all drawee DICs and injecting DICs in the country. Following HVDC system are part of National Component of transmission charges for DICs:

- 100% Yearly Transmission Charges for HVDC back to back system
- 100% Yearly Transmission Charges for Biswanath/Chariali/Alipurduar to Agra HVDC Transmission System

T.C 4

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Annexure - ATR3 (Page 5 of 6)

c) Yearly Transmission Charges for Mundra-Mohindergarh 2500MW HVDC transmission system corresponding to 1005MW capacity;

d) 30% of Yearly Transmission Charges for all other HVDC transmission systems


4. Therefore, it may be noted that 30% of Yearly Transmission Charges of ± 800 kV KV Raigarh- Pugalur- Thrissur HVDC system is already shared by all DICs in the country.

5. The Sharing of ISTS charges is a regulatory issue and within the jurisdiction of CERC.

6. This issues with the approval of the Competent Authority.

Yours faithfully,

Encl.: As above.


18/5/2024
(बिहारी लाल)

अवर सचिव, भारत सरकार,

टेलीफैक्स: 2332 5242

ई-मेल: transdesk-mop@nic.in

T.C h



Dated 13th December 2021

To

The Chairperson

Central Electricity Regulatory Commission
3rd & 4th Floor, Chanderlok Building, Chanderlok Building
36, Janpath, New Delhi-110 001

Sir,

Subject: Sharing of Transmission charges of HVDC link Raigarh- Pugalur- Trissur under National Component-HVDC- reg.

Chairperson, SRPC vide letters dated 07.01.2021 & 22.03.2021 had requested that Hon'ble Commission may consider the request of SR Constituents to include WR-SR 6000 MW HVDC Bipole link Raigarh (Chhatisgarh)-Pugalur (Tamil Nadu) & 2000 MW Pugalur (Tamil Nadu) - Trissur (Kerala) under National Component (NC) and share 100% of the transmission charges of this HVDC link under National Component as it is likely benefit the states/stake holders across the country.

Chairperson, SRPC has taken up the issue with Secretary (Power), Ministry of Power (MoP), Government of India also. In reply, MoP vide letter dated 18th March, 2021 has conveyed that **sharing of ISTS charges is a regulatory issue and falls within the jurisdiction of CERC.**

It may please be noted that Central Electricity Regulatory Commission (Sharing of Inter-State Transmission Charges and Losses) Regulations, 2020 stipulate that National Component-HVDC shall comprise the following:

- (a) 100% of Yearly Transmission Charges for "back-to-back HVDC" transmission system;
- (b) 100% of Yearly Transmission Charges for Biswanath-Chariali/ Alipurdwara to Agra HVDC transmission system;

Similar to Biswanath Chariali - Agra HVDC transmission system, the Raigarh - Pugalur - Trissur HVDC system could be considered National Component (NC) considering the huge surplus RE potential planned to be transmitted from Southern Region to rest of the country.



In view of the possibility of bidirectional power flow, i.e., from WR to SR as well as SR to WR on this link, CTUIL & SRLDC have strongly recommended that CERC may be requested to consider sharing 100 % of the Yearly Transmission Charges of Raigarh (Chhatisgarh)-Pugalur (TN)- Trissur (KER) HVDC system under National Component-HVDC.

In the 3rd Interaction meeting of the Commission with RPCs held on 17th November 2021, SRPC has requested Hon'ble Commission to consider +/- 800 kV Raigarh – Pugalur - Thrissur HVDC system under National Component for sharing of 100% transmission charges. In that meeting, the Commission has conveyed that while hearing the Tariff Petition in respect of the said HVDC system, the issue would be considered.

In the 39th meeting of SRPC held on 06.12.2021, the Constituents requested Chairperson, SRPC to take up with CERC regarding consideration of Raigarh (Chhatisgarh)-Pugalur (TN)- Trissur (KER) HVDC system under National Component for sharing 100 % of transmission charges. CTUIL has reiterated their stand that they fully support SR-Constituents for including the Raigarh (Chhatisgarh)-Pugalur (TN)- Trissur (KER) HVDC system under National Component since the HVDC link would be utilized in both directions (Export to other regions & Import to SR from other regions).

The Commission may consider the request of SR constituents to include **WR-SR 6000 MW HVDC Bipole Link Raigarh (Chhattisgarh)-Pugalur & 2000 MW VSC Based HVDC System Pugalur (TN)-Trissur (KER) under National Component (NC) for sharing 100 % of the transmission charges under National Component-HVDC (NC-HVDC).**

Yours faithfully,


CHAIRPERSON, SRPC

AGENDA

Sl. No.	Issues	Page No.
1	Electricity Act, 2003 (Amendment), Bill, 2020	1
2	Coal Issues – Increase Coal Rakes, Coal Tolling	2
3	Chandrabilla Coal Block	3
4	Interest reduction on Borrowings from Central Government Financial institutions	5
5	R-APDRP Part B conversion of Loan to grant	6
6	Revamped Distribution Sector Scheme – To increase the grant amount.	7
7	SECI trade margin – To reduce from 7 paise/unit to 1 paise/unit	8
8	Declaration of Raigarh- Pugalur HVDC transmission corridor as strategic and national importance	9
9	Expedite the allocation of 1500MW through PTC (MTOA).	10
10	TEDA – CFA pending with MNRE	11
11	Rectification of wrong calculation of Inter-State Transmission Charges and losses for TANGEDCO due to erroneous inclusion of deemed LTA	12
12	Payment Security Mechanism- Letter of Credit	13

8. Declaration of Raigarh- Pugalur HVDC transmission corridor as strategic and national importance

- i. The Raigarh – Pugalur –Trissur - HVDC transmission system is implemented by PGCIL at an investment cost of Rs.20,000 crore (approx) for the purpose of system strengthening to transfer surplus power from Chhatisgarh State(Raigarh) to Southern Region and also as part of green energy corridor for transfer of RE power from RE rich Southern States to the rest of the country and facilitates to achieve the GoI's ambitious RE targets of 175 GW by 2022.
- ii. CERC / MoP had already declared similar HVDC systems viz. Biswanath Chariali / Alipurdwar(North Eastern Region) - Agra(Northern Region) HVDC and Mundra(Western Region)–Mohindergarh(Northern Region) HVDC transmission system both benefitting only NER, NR and WR as **strategic and national importance** and the transmission tariff of this asset is recovered on All India basis, even though Southern region is not benefitted on account of this corridor. TANGEDCO has paid Rs.601 crore(since 2015) and Rs.13.22 crore(data available since 2020) towards the above two HVDC systems without any usage. Hence, this transmission asset should to be declared as National asset and the charges for this transmission system under the CERC (Sharing of Inter-State Transmission Charges and Losses) Regulations, 2020 have to be billed under National component of HVDC to be shared by all the beneficiaries across the country.
- iii. The transmission charges on account of the Raigarh-Pugalur-Trissur HVDC system if treated as regional asset would impose **huge additional financial burden to a tune of Rs.720 crore per annum**, whereas the tariff burden would be **Rs.216 crore** per annum if declared as National asset.

Hence, MoP may give a recommendation to CERC for declaration of **Raigarh -Pugalur –Trissur ±800kV, 6000 MW HVDC system** as asset of **strategic and national importance as done in the case of Biswanath Chariali / Alipurdwar(North Eastern Region) - Agra(Northern Region) HVDC**.

**No.2/5/2022-Trans
Government of India
Ministry of Power
Shram Shakti Bhawan, Rafi Marg, New Delhi**

Dated: 30th May, 2022

To,

Secretary,
Central Electricity Regulatory Commission
3 rd & 4 th Floor, Chanderlok Building,
36, Janpath, New Delhi – 110001

Sub: Declaration of Raigarh-Pugalur-Thrissur HVDC line as National Component

Sir,

I am directed to say that references have been received from Hon'ble Chief Ministers of Karnataka and Tamilnadu on declaration of +800kV, 6000 MW Raigarh – Pugalur-Thrissur HVDC transmission system (4000 MW terminal at Pugalur and 2000 MW at Thrissur) as National & Strategic Component and transmission charges for the system to be shared under "National Component" as per CERC (Sharing of Transmission Charges and Losses) Regulation 2020.

2. The matter has been examined in the Ministry in consultation with Central Transmission Utility of India (CTUIL) and Power System Operation Corporation (POSOCO). It has been observed that

(i) As per existing CERC (Sharing of Transmission Charges and Losses) Regulation 2020, transmission charges of all HVDC back to back substations are under National Component and shared by Designated Interstate Transmission Customers (DICs). For HVDC links, 70% of the charges is under Regional component and are shared by Regional beneficiaries and 30% under National Component, and shared by all beneficiaries, except for following 2 links, where 100% charges are under National Component:

- Biswanath-Chariali/Alipurduar-Agra HVDC transmission system
- Mundra-Mahendragarh 2500 MW HVDC transmission system corresponding to 1005 MW capacity

ii) As per existing CERC Sharing Regulations 2020, 70% transmission charges for Raigarh-Pugalur-Thrissur system is under Regional Component and 30% is under National Component.

iii) +800kV, 6000 MW Raigarh – Pugalur-Thrissur HVDC transmission system (4000 MW terminal at Pugalur and 2000 MW at Thrissur along with 5 ac links) was planned to facilitate direct interconnection between pit head generating stations in Chhattisgarh and load centres in Southern Region and primarily meant for supply power to Southern

Region. 4 poles of Raigarh-Pugular were commissioned from Sept 2020- Oct 2021, whereas 2 poles of Pugular-Thrissur were commissioned from March 2021-June 2021.

iv) Power flow pattern through this link from April 2021-March 2022 is enclosed. During the period, power flow from Western Region (WR) to Southern Region (SR) is at 64%, while power flow from SR to WR is 36%. With the commissioning of more RE generating Stations in Southern Region, power from SR to WR may also increase.

3. Thus.c Raigarh – Pugalar-Thrissur HVDC transmission system is benefitting both WR and SR. Therefore, it appears that there is a case for considering the above transmission system under "National Component" as per CERC (Sharing of Transmission Charges and Losses) Regulations 2020. However, considering that there are other inter-regional HVDC links, it will be prudent to consider any HVDC link under National component as per CERC Sharing Region 2020.

4. Accordingly, CERC is requested to consider transmission charges of all HVDC inter-regional links under National Component [100% transmission charges to be borne by all Designated Inter State Transmission Customers], provided that

i) There is certain quantum of bi-directional power flow through the concerned HVDC inter-regional link

ii) The quantum of bi-direction power flow [for considering 100% of transmission charges of the link under National Component] may be decided by CERC in consultation with stakeholders including POSOCO, CEA and CTU.

5. This issues with the approval of competent authority.

Yours faithfully,


(Bihari Lal)

Under Secretary (Trans)
E-mail: transdesk-mop@nic.in
Telefax: 011-23325242

आर. के. सिंह
R. K. SINGH

govt/Energy
to
P. Allhand.
17/6/2022



सत्यमेव जयते

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B022
19.9.2022

विद्युत मंत्री एवं
नवीन और नवीकरणीय ऊर्जा मंत्री
भारत सरकार

Minister of Power and
Minister of New & Renewable Energy
Government of India

D.O. No. 2/5/2022-Trans-part(1)



29 AUG 2022

Dear Thiru Stalin,

Please refer to the Memorandum presented by you to the Hon'ble Prime Minister requesting that the Raigarh-Pugalur-Thrissur +800kV HVDC Transmission System be considered under the National Component for sharing of transmission charges as per the CERC (Sharing of Transmission Charges & Losses) Regulations, 2020).

The matter has been examined in the Ministry of Power (MoP). As per existing CERC (Sharing of Transmission Charges and Losses) Regulations 2020, the transmission charges of all HVDC back to back substations are covered under National Component and shared by all Designated ISTS Customers (DICs). For HVDC links, 70% of the charges is under Regional Component and are shared by Regional beneficiaries, while 30% is under National Component, and shared by all the beneficiaries in the country, except for following 2 links, where 100% charges are under National Component :-

- Biswanath-Chariali/Alipurduar-Agra HVDC transmission system
- Mundra-Mahendragarh 2500 MW HVDC transmission system corresponding to 1005 MW capacity

As per existing CERC Sharing Regulations 2020, 70% transmission charges for Raigarh-Pugalur-Thrissur system is under Regional Component and 30% is under National Component. The +800kV, 6000 MW Raigarh – Pugalur-Thrissur HVDC transmission system (4000 MW terminal at Pugalur and 2000 MW at Thrissur along with 5 ac links) was planned to facilitate direct interconnection between pit head generating stations in Chhattisgarh to the load centres in the Southern Region. The line was primarily meant for supply of power to Southern Region. Four poles of Raigarh-Pugalur were commissioned from Sep. 2020- Oct 2021, whereas two poles of Pugalur-Thrissur were commissioned from March 2021-June 2021.

From the power flow pattern through this link from April 2021-March 2022, it has been observed that power flow from the Western Region (WR) to the Southern Region (SR) is 64%, while the power flow from SR to WR is 36%.

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अनुवर्ती/Continuation....

As mentioned above, the Raigarh – Pugalur- Thrissur HVDC transmission system is benefiting both the Southern and the Western Regions – in the ratio of 64% to 36%. Considering the fact that there are other inter-regional HVDC links, where similar demand may come in future, MoP has requested the Central Electricity Regulatory Commission(CERC) vide letter dated 30.05.2022 (Copy enclosed) to consider transmission charges of all HVDC inter-regional links, including +800kV, Raigarh – Pugalur- Thrissur HVDC transmission system, under National Component [100% transmission charges to be borne by all DICs, provided that there is certain minimum quantum of bi-directional power flow through the concerned HVDC inter-regional link. The norms of quantum of bi-direction power flow [for considering 100% of transmission charges of the link under National Component] may be decided by the CERC, in consultation with the stakeholders, including POSOCO, CEA and CTU. Tamil Nadu may also present their case before the CERC.

With regards,

Yours sincerely,

(R. K. Singh)

Encl.: As above

Thiru M. K. Stalin,
Chief Minister of Tamil Nadu,
Secretariat, Fort St. George,
Chennai – 600009.

आर. के. सिंह
R. K. SINGH



विद्युत मंत्री एवं
नवीन और नवीकरणीय ऊर्जा मंत्री
भारत सरकार
Minister of Power and
Minister of New & Renewable Energy
Government of India

D.O. No. 2/5/2022-Trans

20 FEB 2023

Dear Shri Balaji,

I am writing with reference to your DO Letter No.8022/A1/2022-1 dated 03.01.2023 regarding declaration of ± 800 kV Raigarh-Pugalur-Thrissur HVDC link as asset of National and Strategic importance.

I have had the matter examined. The ± 800 kV, 6000 MW Raigarh–Pugalur-Thrissur HVDC transmission system (4000 MW terminal at Pugalur and 2000 MW at Thrissur along with 5 AC links) was planned to facilitate direct interconnection between pit head generating stations in Chhattisgarh and load centres in Southern Region and was primarily meant for supply of power to Southern Region. After receiving requests to declare the link as an asset of National Importance, the issue was taken up with the CERC, vide MoP Office Memorandum dated 30.5.2022 (copy enclosed), in which the CERC was directed to consider transmission charges of all HVDC inter-regional links under National Component [100% transmission charges to be borne by all Designated Inter-State Transmission Customers] provided that;

- i. There is certain quantum of bi-directional power flow through the concerned HVDC inter-regional link.
- ii. The quantum of bi-direction power flow [for considering 100% of transmission charges of the link under National Component] may be decided by the CERC, in consultation with the stakeholders, including GRID-INDIA (Formerly POSOCO), CEA and CTU.

Further, on a Petition No.685 / TT / 2020, the CERC has issued an Order on 29.9.2022 (relevant portion enclosed), which states as under (Para 131 refers):

"We are of the view that if need be to consider the sharing based on bi-directional flow of Rajgarh-Pugalur-Thrissur HVDC transmission system due to change in load-generation mix, the same shall be dealt with by the Commission at the appropriate stage"

In this regard, GRID-INDIA was asked to prepare a case-study on bidirectional flow of Raigarh-Pugalur-Thrissur HVDC transmission system due to change in load-generation mix and to submit the same to the CERC. In response, GRID-INDIA has

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submitted the Case-Study to the CERC, wherein the following points have been noted:

- i. During the period April 2021- November 2022, power flow through HVDC Raigarh-Pugalur from WR to SR is 55% of time, while power flow from SR to WR is 45% of time;
- ii. Based on simulation study, it has been observed that during 2027-28, power flow through HVDC Raigarh-Pugalur will be bidirectional. The maximum flow from SR to WR through this line would be about 3000 MW and from WR to SR, the projected maximum power flow from WR to SR would be 6000 MW

MoP has already directed the CERC to consider declaration of ± 800 kV Raigarh-Pugalur-Thrissur HVDC link as asset of National and Strategic importance based on the Case Study furnished by Grid-India.

I hope this clarifies the position.

With regards,

Yours sincerely,


(R. K. Singh)

Encl: As stated.

Shri V. Senthil Balaji,
Minister of Electricity, Prohibition & Excise,
Government of Tamil Nadu,
Secretariat,
Chennai : 600 009.

ANNEXURE-K

MONTH	QTM OF POWER FLOW IN REV DIRECTION (SR TO WR) IN MW - MAX	NO. OF DAYS /HRS OF POWER FLOW IN REV DIRECTION	HVDC r(in%)	TRM. CHARGES FOR TN (HVDC AS SR RC)	REV TRM. CHARGES FOR TN(AS PER 3RD AMENDMENT)	TN SAVINGS (AS PER 3RD AMENDMENT)	TRM. CHARGES FOR TN (HVDC AS NC)	TN SAVINGS (HVDC AS NC)	TOTAL ALL INDIA LTA (MW)	TOTAL SR LTA (MW)	TN LTA (MW)	LTA proportion of TN w.r.t All India	LTA proportion of TN w.r.t SR	ALL INDIA MTC (HVDC AS SR RC) 30%NC+70%RC PRESENT CONDITION			ALL INDIA MTC (Revised NC &RC) (AS PER 3RD AMENDMENT)		
														NC	RC	TOTAL MTC	NC	RC	TOTAL MTC
Apr-22	999	10 hrs	0.54%	52,80,78,648			15,73,11,513	37,07,67,135	1,01,141	23,160	8,205	8.11%	35.43%	58,17,55,329.39	1,35,74,29,101.90	1,93,91,84,431.29			
May-22	3006	20 days	32.32%	54,18,63,147	52,92,48,213	1,26,14,934	16,16,63,058	38,02,00,089	1,01,274	23,229	8,171	8.07%	35.17%	60,11,47,173.70	1,40,26,76,738.63	2,00,38,23,912.33	64,76,87,600.05	1,35,61,36,312.28	2,00,38,23,912.33
Jun-22	3005	24 days	40.07%	54,61,64,839	49,06,82,735	5,54,82,104	16,03,62,131	38,58,02,708	1,01,439	22,863	8,389	8.27%	36.69%	58,17,55,329.39	1,35,74,29,101.90	1,93,91,84,431.29	77,69,66,562.14	1,16,22,17,869.15	1,93,91,84,431.29
Jul-22	3001	22 days	35.50%	58,55,40,012	55,24,81,431	3,30,58,581	16,44,65,143	42,10,74,869	1,02,157	21,934	8,385	8.21%	38.23%	60,11,47,173.70	1,40,26,76,738.63	2,00,38,23,912.33	71,12,71,302.90	1,29,25,52,609.43	2,00,38,23,912.33
Aug-22	3002	22 days	35.51%	59,48,97,039	56,12,58,620	3,36,38,419	16,73,56,805	42,75,40,234	1,02,414	22,027	8,553	8.35%	38.83%	60,11,47,173.70	1,40,26,76,738.63	2,00,38,23,912.33	71,15,08,314.33	1,29,23,15,598.00	2,00,38,23,912.33
Sep-22	2883	16 days	25.63%	55,89,35,327			16,15,53,366	39,73,81,961	1,02,448	22,696	8,535	8.33%	37.61%	58,17,55,329.39	1,35,74,29,101.90	1,93,91,84,431.29			
Oct-22	2402	5 days	6.46%	56,77,85,652			16,75,19,856	40,02,65,796	1,02,444	23,212	8,564	8.36%	36.90%	60,11,47,173.70	1,40,26,76,738.63	2,00,38,23,912.33			
Nov-22	nil	Nil	nil	54,76,14,209			16,16,40,834	38,59,73,376	1,02,261	23,182	8,524	8.34%	36.77%	58,17,55,329.39	1,35,74,29,101.90	1,93,91,84,431.29			
Dec-22	2878	12 days	18.57%	56,79,64,748			16,59,42,793	40,20,21,955	1,02,293	22,931	8,471	8.28%	36.94%	60,11,47,173.70	1,40,26,76,738.63	2,00,38,23,912.33			
Jan-23	2401	5 days	6.45%	63,81,84,575			18,33,71,953	45,48,12,622	1,02,432	22,546	8,467	8.27%	37.55%	66,55,55,799.45	1,55,29,63,532.05	2,21,85,19,331.51			
Feb-23	577	4 hrs	0.31%	57,30,23,037			16,41,19,175	40,89,03,861	1,02,474	22,476	8,393	8.19%	37.34%	60,11,47,173.70	1,40,26,76,738.63	2,00,38,23,912.33			
Mar-23	1444	14 Hrs	0.78%	61,90,56,470			18,01,81,454	43,88,75,016	1,03,137	23,024	8,377	8.12%	36.38%	66,55,55,799.45	1,55,29,63,532.05	2,21,85,19,331.51			
Apr-23	nil	Nil	nil	59,86,47,478			17,77,89,770	42,08,57,708	1,03,477	23,616	8,598	8.31%	36.41%	64,19,36,835.62	1,49,78,52,616.44	2,13,97,89,452.05			

YTC 6,86,91,07,702 13,47,94,038 1,99,54,88,081 4,87,36,19,621
 HVDCr (in %) = **686.91 Crores** **13.48** **199.55** **487.36 Crores**
 \sum Maximum power flow in reverse direction (in MW) in any timeblock on kth day X100 yearly savings
 k=1 if declared as NC

Capacity of HVDC transmission system in forward direction (MW) X number of days in a month

Where k, is a day of a month with total 'n' days

where HVDCr >30%, the Yearly Transmission charges corresponding to HVDCr shall be

considered in the National component and the balance in the regional component.

where HVDCr is < 30%, 30% of Yearly Transmission Charges shall be considered in the

National component and 70% in the Regional component."

May-23				62,06,70,956			18,43,31,239	43,63,39,716	1,03,477	23,616	8,598	8.31%	36.41%	66,55,55,799.45	1,55,29,63,532.05	2,21,85,19,331.51
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TANGEDCO YEARLY TRANSMISSION CHARGES (YTC) FOR RAIGARH-PUGALUR HVDC LINE

in crores

FOR THE YEAR	YEARLY TRM. CHARGES (AS PER PRESENT BILLING)	REVISED YEARLY TRM. CHARGES (AS PER SHARING REGN. 3RD AMENDMENT)	YEARLY TRM. CHARGES (IF HVDC DECLARED AS NC)
APRIL 2022- MARCH 2023	686.91	673.43	199.55
TN SAVINGS		13.48	487.36