

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Explanatory Memorandum to the draft Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges and Losses) (Second Amendment) Regulations, 2012.

1.0 INTRODUCTION

1.1 The Commission had notified on 7.6.2010 the Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges and Losses) Regulations, 2010 (hereinafter “the Sharing Regulations”). The Sharing Regulations came into force with effect from 1.7.2011.

1.2 Since the regulation on the Sharing of Transmission Charges and losses was a radical change from the earlier regulations, a number of difficulties were encountered during the implementation. These difficulties were removed through various orders of the Commission under Regulation 21 on “Power to Remove Difficulties” of the Sharing Regulations. It was further mentioned in these orders that:

“We also direct the staff of the Commission to initiate appropriate measures to amend the Sharing Regulations and other related Regulations, if required, to appropriately incorporate the charges approved above.”

1.3 Subsequently, some further difficulties were either pointed out by others or noted by the staff of the Commission. M/s LANCO pointed out that the Point of Connection (PoC) injection rate (in ₹/MW/month) for its generating station in the State of Andhra Pradesh was coming unreasonably high, as the PoC injection rate was obtained by dividing the injection PoC charge of the zone by the total long-term access (LTA) of the State and LANCO was the only ISGS in Andhra Pradesh with LTA. It is observed that this would

happen when a State has inter-State generating stations with small quantum of LTA connected to the 400 kV systems in any State. There is, therefore a need to remove this anomaly. Further, Karnataka Power Transmission Corporation Ltd. (KPTCL) pointed out that while adopting the methodology as given in the Sharing Regulations, around 45% of the Yearly Transmission Charges (YTC) of the Talcher – Kolar HVDC bi-pole links was being booked to the State of Karnataka, whereas the allocation of power to the State from Talcher – II STPS, for which the HVDC bi-pole link was built to evacuate this power to the constituents of Southern Region, was only 18.86%.

KPTCL also pointed out that there were power flows through the State of Karnataka to the States of Kerala and Goa, etc. through 220 kV transmission lines between these States, whereas the transmission charges for this wheeled power are being accounted to the PoC charges of Karnataka. Northern Regional Power Committee (NRPC), Southern Regional Power Committee (SRPC) and Eastern Regional Power Committee (ERPC) have given some suggestions for identifying the transmission lines owned by non ISTS Licensees carrying inter-State power, under the Sharing Regulations.

Further, it was noticed that in some places in the Sharing Regulations, PoC rates in ₹ / MW/ month have been referred to as PoC charges. PoC charges (in ₹) have also been referred to as PoC charges. There is a need to distinguish between the two terms. The two terms have now been separately used, as per requirement.

- 1.4 With the expertise and experience developed during implementation of the Sharing Regulations, certain minor modifications need to be carried out in the Sharing

Regulations. The proposed second amendments of the Sharing regulations are in that direction.

2.0 ISSUE OF OVERLOAD CAPACITY IN THERMAL AND HYDRO GENERATING STATIONS:

2.1 The Central Electricity Authority (Technical Standards for the Connectivity to the Grid) Regulations, 2007, provide that the coal and lignite based thermal generating units shall be capable of generating up to 105% of the Maximum Continuous Rating (subject to maximum overload capability under Valve Wide Open Condition) for short duration to provide the frequency response. Further, the CEA Connectivity Regulations provide that the hydro generating units shall be capable of generating up to 110% of the rated capacity (subject to rated head being available) on continuous basis. It was observed that this overload capability of the generating unit has been considered as the Long-term Access (LTA) for the generator and demand DICs in the computation of PoC charges.

The Unscheduled Interchange Regulations state that the UI charges for injection beyond 105% of the declared capacity in a time block or 101% of the declared capacity over a day shall be paid at a reduced rate. This implies that a generating station is expected to use its overload capacity during limited periods. Therefore, the overload capacity cannot be used as the LTA of the generating station. The same has been proposed in the amendment to the regulation.

2.2 The following proviso has therefore been added in the definition of ‘Approved Injection’ in sub-clause (c) of clause (1) of Regulation 2 of the Principal Regulations:

“Provided that the overload capability of 105% of the installed capacity (MW) for thermal generating stations and 110% of the installed capacity (MW) for hydro

generating stations shall not be for calculating the injection under long term access (LTA).

- 2.3 The following proviso has been added in the definition of ‘Approved Withdrawal’ in sub-clause (f) of clause (1) of Regulation 2 of the Principal Regulations:

“Provided that the overload capability of 105% of the installed capacity (MW) for thermal generating stations and 110% of the installed capacity (MW) for hydro generating stations shall not be used for calculating the drawal under the long term access (LTA).

- 2.4 It is observed that the present definition of the “Implementing Agency (IA)” states that IA is to undertake the estimation of allocation of the nodal/ zonal transmission charges and transmission losses, but IA is actually computing the nodal/ zonal transmission charges and transmission losses on the software platform developed by IIT Mumbai. Accordingly, it is proposed to modify the definition of “Implementing Agency” as below:

*“(n) **Implementing Agency (IA)** means the agency designated by the Commission to undertake the computation of allocation of transmission charges and transmission losses at various nodes/ zones for the Application Period along with other functions mandated under these regulations or as may be assigned by the Commission from time to time;”*

3.0 ISSUE OF CERTIFICATION OF NON-ISTS LINES CARRYING INTER-STATE POWER

- 3.1 Prior to the implementation of the Sharing Regulations, the transmission lines owned by the State Transmission Utilities/ State Electricity Boards were certified by the Regional Power Committees (RPCs) for carrying the inter-State power in the respective regions based on the discussions in the RPCs. Since, in the Sharing Regulations, sharing of transmission charges would not be on a regional basis, and the constituents of one region could be sharing the transmission charges of transmission system in another region, it was felt that a uniform approach should be adopted by all regions for certifying State transmission lines carrying

inter-State power. Therefore, in the Commission's Statement of Reasons dated 21.11.2011 for the Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges and Losses) (First Amendment) Regulations, 2011, the Commission provided for the following approach:

“It is clarified that the RPCs certified a lot of non-ISTS lines of their Regions for carrying inter-State power in the Implementation and Validation Committee Meetings. However, SRPC, which had already certified non-ISTS lines for carrying inter-State power, withdrew the lines already certified by them. Since, it was desired to have a uniform criteria, it was decided that a uniform methodology would be devised by all Regions agreeing on a common methodology. Since the POC rates had to be calculated before 1.7.2011, it was decided that all lines which were already certified by RPCs as on the date of publication of the Sharing Regulations and not on the date of implementation of the Sharing Regulations would continue. For lines certified for the new scenario, when system studies would next be done, the new methodology would be used.”

There were letters from ERPC, SRPC and NRPC on the ways of doing the same. In the comments on the first amendment of the Sharing Regulations, various stakeholders also gave their views on this issue. Since, this regulation was not part of the draft first amendment, no amendment was made. Subsequently, after applying our minds, we feel that the issue is very involved, and almost all intra-State lines may carry inter-State power to a small or large extent. Similarly, ISTS lines may also carry intra-State power. Therefore, at the first instance, we are inclined to consider that all transmission lines, which are naturally inter-State lines, i.e. linking one State to another, would, without doubt, carry power from one State to another and would therefore have to be inter-State lines. A new definition on “natural inter-State transmission line” has therefore been introduced.

3.2 The General Manager (National Load Despatch Centre), Power System Operation Company Ltd. has enclosed a list of transmission lines connecting two States, i.e.,

Natural inter-State lines. It is proposed to define ‘Natural inter-State line’ to be incorporated after sub-clause (p) of clause (1) of Regulation 2 of the Principal Regulations, as follows:

“(p1) ‘Natural inter-State transmission line’ means and includes those transmission lines which are physically connected at one end to one State and at the other end to another State.”

3.3 The definition of ‘Yearly Transmission Charge (YTC)’ has been proposed to be amended to include ‘natural inter-State transmission line’ as under:

*“(y) ‘**Yearly Transmission Charge (YTC)**’ means the Annual Transmission Charges for the existing and new transmission assets of the inter-State transmission licensees, deemed ISTS Licensees, owners of the natural inter-State transmission lines and owners of the non-ISTS lines certified by Regional Power Committees for inter-State transmission of power, determined by the Appropriate Commission under section 62 of the Act or adopted by the Appropriate Commission under section 63 of the Act or as otherwise provided in these Regulations”.*

3.4 We have also incorporated the term ‘natural inter-State line’ in all other places as required.

3.5 For certifying intra-State lines used for inter-State transmission of power, the Commission is not inclined to consider them, up till a proper methodology has been devised. This requires discussions with the RPCs and technical consultations with IIT, Mumbai, if required. Therefore, for the time being, all intra-State transmission lines which were certified for carrying inter-State power prior to 15.6.2010, would continue to be dealt in the same manner, as they were being dealt with, as mentioned in the first amendment to the Sharing Regulations.

4.0 ISSUE OF HIGH PoC INJECTION CHARGE FOR LOW LTA IN A STATE:

4.1 Certain problems in computation of Point of Connection rates have been brought to the notice of the Commission in case of the DICs which are inter-State Generating Stations (ISGSs) having capacity less than 1500 MW and connected to the ISTS. In case of single ISGS with long-term access (LTA) of capacity less than 1500 MW within any State boundary and connected to the ISTS network, the whole charge of the ISTS network of that State is getting billed on such ISGS resulting in high PoC injection rate for the ISGS. This is not the intent the Sharing Regulations. Accordingly it has been proposed in the draft amendment that para (iv) of sub-clause(t) of clause (1) of Regulation 7 of the Principal Regulations shall be substituted as under:

"(iv) An inter-State Generating Station (ISGS) directly connected to the 400 kV inter-State Transmission System shall be treated as a separate zone and shall not be clubbed with other generator nodes in the area, for the purpose of calculation of PoC injection rate:

Provided that in case of a merchant power plant in a State connected to the 400 kV inter-State Transmission System, with zero LTA or part LTA to a DIC in another State, the entire merchant capacity plus the LTA to the DICs in other States shall be considered to arrive at the PoC injection rate."

4.2 In line with the above, para (v) of Regulation 7 (1) (t) is no more considered necessary and hence it is proposed to delete the said para.

5.0 ISSUE OF SLABS IN TRANSMISSION CHARGES AND TRANSMISSION LOSSES

5.1 It is observed that the Point of Connection rates are coming with large variance for the DICs. The Commission vide its order dated 22.6.2011 on Removal of Difficulties approved of putting the PoC charges and losses in three slabs. The Commission feels that the slabbing would reduce the disparity between the high and low PoC charges and losses

and should continue till the time the Commission deems fit. Accordingly, second proviso Regulation 7 (1) (l) of the Principal Regulations has been proposed to be added as under:

“Provided further that there shall be slab rates for injection and demand PoC charges for the year 2011-12 or for such period the Commission may consider appropriate.”

5.2 Regulation 7(1) (o) provides for computation of transmission charges and losses on the basis of five scenarios for peak and other than peak conditions. Accordingly, the Implementing Agency is required to carry out ten load flow studies in a year. Proviso to Regulation 7(1) (l) provides for revision of YTC on six monthly basis during the first full year and subsequently on quarterly basis i.e. on 1st April, 1st July, 1st October and 1st December. Since, YTC is required to be revised periodically, the new transmission assets which are commissioned during the year are required to be captured in the load flow studies in order to make the YTC representative in character. Accordingly, there is a requirement to provide that the Implementing Agency carries out the load flow studies for computation of PoC charges and losses commensurate with the periodicity of revision of YTC as provided in sub-clause (l) of clause (1) of Regulation 7. The following proviso has been proposed to be added after the first proviso to sub-clause (o) of Clause (1) of Regulation 7 of the Principal Regulations as under, namely:

"Provided further that the load flow studies shall be carried out by the Implementing Agency as and when the YTC is revised in accordance with proviso to sub-clause (l) of Clause (1) of this regulation."

5.3 The following proviso has also been proposed to be added at the end of sub-clause (s) of Clause (1) of Regulation 7 of the principal regulations for transmission losses:

“Provided that there shall be slabs for transmission losses in percentage for the year 2011-12 or for such period the Commission may consider appropriate.”

- 5.4 Para 2.7 of Annexure of the principal regulations has been proposed to be amended by adding clause 12 at the end:

“12. There shall be slabs for the percentage transmission losses in the NEW grid and SR grid for the year 2011-12 or till such period the Commission may consider appropriate.”

6.0 ISSUE OF SHARING OF TRANSMISSION CHARGES OF TALCHER-KOLAR HVDC BI-POLAR LINK

- 6.1 Step 4 of para 2.7 of Annexure to the principal regulations is reproduced as below:

“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 Talcher - Kolar HVDC line. When Talcher-Kolar HVDC 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 power received from Talchar – Kolar HVDC link) 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.”

It is observed that the transmission charges for the Talcher- Kolar HVDC line are to be borne by the constituents of the Southern Region. It is seen, however, that this method of transmission charge allocation, loads the transmission charges of Talcher- Kolar HVDC line to the extent of approximately 45% on the State of Karnataka, since this HVDC line terminates in Karnataka (Kolar). Before the Sharing Regulations came into force, the charges of Talcher- Kolar HVDC line were being borne by the Southern Region constituents in the ratio of the allocation of power from Central Generating Stations of the Southern Region and Eastern Region.

Moreover, it is seen that for transmission of power from NEW grid to SR grid, other than for evacuation of power from Talcher Stage - II generating station, there are only three HVDC links i.e., HVDC back-to-back links at Gazuwaka and Chandrapur and the Talcher- Kolar HVDC bi-polar link. For Gazuwaka back-to-back HVDC link and Chandrapur back-to-back HVDC link, the charges are shared in the ratio of 1:1 as given in the Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges and Losses) (First Amendment) Regulations, 2011. For Talcher- Kolar HVDC line, it is mentioned that that the charges shall be shared by the DICs of SR. The same is reproduced below:

“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.”

- 6.2 The methodology for the sharing of charges of Gazuwaka back-to-back HVDC link and Chandrapur back-to-back HVDC link is to increase the YTC of the NEW grid and SR grid in 1:1. However, the methodology for the sharing of charges of Talcher- Kolar HVDC bi pole link, as is given in the Sharing Regulations, is being done based on the difference of PoC charge between injection of Talcher Stage - II generating station at Kolar (Karnataka) end and without that injection, as provided in the Sharing Regulations.

In view of the above, the sharing of charges of Talcher- Kolar HVDC bi pole link should be done in the same way, as is being done for the HVDC back-to-back links at Gazuwaka and Chandrapur, i.e. by including the YTC of Talcher- Kolar HVDC bi pole link to the total YTC of SR grid. This implies that the charges of Talcher- Kolar HVDC bi pole link shall be shared by all the DICs of the Southern Region on pro-rata basis.

For the case of injection PoC rate of Talcher Stage - II STPS for 200 MW share of Odisha in Talcher-II STPS, this shall be as per Sharing Mechanism in the NEW grid.

The Commission has further given thought on the issue of treating all the HVDC systems in the country. It is observed that the cost of HVDC systems is high, but they are important from the point of view of security and reliability of the whole grid. All the HVDCs shall be treated/ classified as national assets and once the whole country is synchronously connected, the total YTC of all the HVDC systems shall be pooled and shared among all the beneficiaries by scaling up the YTC of the all India grid. Accordingly, it has been proposed to substitute Step 4 under sub-para 2 of Para 2.7 of Annexure of the Principal Regulations 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. PoC injection charge for 200 MW allocated from Talcher – II station to the State of Odisha shall be charged at the PoC injection rate of Talcher – II station as per Sharing Mechanism in the NEW grid.

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.

7.0 ISSUE OF TREATING STATES OF NORTH-EASTERN REGION AS SEPARATE ZONES

7.1 Principal Secretary (Power), Govt. of Manipur vide letter dated 16.8.2011, wrote to Member (Grid Operation & Distribution), CEA to consider each State of North Eastern Region (NER) as a separate zone. General Manager, NLDC while commenting on the first draft amendments of the Sharing Regulations, submitted to consider each State of NER as separate demand and generation zones. Since the zonal charges for the North-Eastern States vary widely among the States, there is sufficient justification to have separate zones for the North-Eastern States. Therefore, it has been proposed to do away

with a single zone for all the States of NER. Accordingly, Regulation 7 (1) (t) (ii) of the Principal Regulations has been proposed to be substituted as under:

“The nodes within zones shall be combined in a manner such that they are geographically and electrically proximate. The demand zones shall be the geographical boundary of the State.”

8.0 Amendments to bring clarification between the words “charge(s)” and “rate(s)”

8.1 It has generally been observed that the word “charge(s)” have been used invariably at different places in the Sharing Regulations, whereas this should have been “rate(s)” at certain places. Accordingly, it is proposed to replace the word “charge(s)” by “rate(s)” at these places in the Sharing Regulations. Accordingly, the first para of sub-clause (t) of Clause (1) of Regulation 7 of the Principal Regulations has been proposed to be substituted as under:

“The Implementing Agency shall aggregate Point of Connection charges for the geographically and electrically contiguous nodes on the ISTS to create zones within the geographical boundary of the State, in order to arrive at uniform zonal rate in ₹ / MW / month. The Implementing Agency shall create zones for each generation and demand DICs within a State. Such zoning shall be governed by the following considerations:”

8.2 In sub-clause (n) and sub-clause (o) and sub-clause (t) (iv) of clause (1) of Regulation 7 and in clauses (4), (5) and (7) of Regulation 11, of Principal Regulations, the word ‘charge’ has been proposed to be substituted with the word ‘rate’. Similar changes have been proposed in para 2.7.8, para 2.8 and para 2.8.1 of Annexure to the Principal Regulations.

9.0 Amendment to other provisions of the Annexure to the Principal Regulations

9.1 In order to accurately depict the method of calculation of PoC rate, the table in para 2.8.1 of Annexure of the Principal Regulations has been proposed to be modified. The figures in the table are indicative only. The table is reproduced below:

ZZ zone computation in a particular scenario:

	Transmission Charge (₹/month)	Approved Injection/ Approved withdrawal*(MW)	Zonal Transmission Rate (₹/MW/month)
PP	45,00,000	250	70,000
AA	50,00,000		
KK	80,00,000		
ZZ - Zone	1,75,00,000	250	

* Approved Injection/ Approved withdrawal (MW) shall be the Long-term Access for the average scenario based on the CEA generation and demand data. Otherwise, for the scenarios mentioned in Regulation 7 (1) (o) of the Principal Regulations, it shall be the Approved Injection/ Approved withdrawal.

9.2 It has been proposed to delete clause (d) of Regulation 3, which has become redundant after the notification of the first amendment of the Sharing Regulations. Accordingly, the following clause stands deleted:

“(d) Any designated entity representing a physically connected entity as per clauses (a), (b) and (c) above.”

9.3 Typographical errors were observed in the last two paras of clause (1) of Regulation 10 of the principal regulations. Further, in line with the “Removal of Difficulties” Order dated 2.6.2011, clause (2) is proposed to be modified. Accordingly, it has been proposed that last two paras of clause (1) of Regulation 10 of the principal regulations shall be substituted as below:

“(2) RPCs shall, based on Regulation 10 (1) (a), 10 (1) (b) and 10 (1) (c), issue Regional Transmission Accounts on the next working day of the issue of Regional Energy Account for the previous month, to all the Designated ISTS Customers, CTU and other ISTS Transmission Licensees and display the same on its web site.

(3) RPCs shall, based on Regulation 10 (1) (d), issue Regional Transmission Deviation Accounts by 15th of every month for the previous month to all Designated ISTS Customers, CTU and other ISTS Transmission Licensees and display the same on the website of the respective RPCs.”

9.4 In order to provide greater clarity, the paras immediately after 2.1.2 (g) on ‘Switch Shunt Data’ which deals with Yearly Transmission Charges has been numbered as a separate para 2.1.3 on “Yearly Transmission Charges”.

9.5 It is proposed to replace the “Annexure-I” in sub-clause (p) of clause (1) of Regulation 7 of the principal regulations by “Annexure”, as this was a typographical error.