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संदर्भ: ग्रिड इंडिया/पारेषण मूल्य निर्धारण/

दिनांक: 10 मार्च, 2023

To

All States/ DICs / ISTS Licensees

विषय: Seeking comments/suggestions on draft revised procedures for implementation of Sharing Regulations (First Amendment), 2023

- संदर्भ: 1. CERC (Sharing of Inter-State Transmission Charges & Losses) Regulations, 2020 dated 04thMay 2020
2. CERC (Sharing of Inter-State Transmission Charges & Losses) (First Amendment) Regulations, 2023 dated 07thFebruary 2023

महोदय,

CERC had notified (Sharing of Inter-State Transmission Charges & Losses) (First Amendment) Regulations 2022 vide notification dated 07thFebruary 2023. As per Regulation 23 (4), the Implementing Agency (NLDC) shall publish the detailed revised procedures and formats for collection of data and information for various agencies and entities for implementation of provisions of these Regulations. The relevant clause of the Regulation is reproduced below:

Quote

23. Procedures to be framed under these Regulations

(4) The Implementing Agency shall, within 45 (forty-five) days of the notification of this amendment, publish the revised detailed procedures for implementation of the provisions of this amendment after stakeholder consultation.

Unquote

Accordingly, Implementing Agency had prepared the following draft revised procedures for implementation of Sharing Regulations 2020 and First Amendment thereof. (enclosed with this letter)

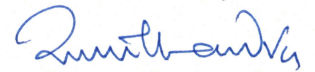
1. Procedure for computation and sharing of ISTS charges
2. Procedure for computation and sharing of ISTS losses
3. Procedure for collection of data and information

It is requested to submit your comments/suggestions on the draft revised procedures to IA by 24.03.2023 (Friday) so that the procedures shall be finalized and published as per the CERC time line. The comments may be sent in electronic form through email to the following:

implementingagency@grid-india.in; sannymachal@grid-india.in; laxmanrawat@grid-india.in

सादर धन्यवाद,

भवदीय



(एस. सी. सक्सेना)

कार्यपालक निदेशक, रा.भा.प्रे.के

Copy to: Secretary, CERC

**Procedure for
Computation and sharing of Inter-State Transmission
System Charges**

in compliance of

**Central Electricity Regulatory Commission
(Sharing of Inter-State Transmission Charges and Losses
Regulations, 2020) and First Amendment thereof**

March,2023



**The Implementing Agency
(National Load Despatch Centre)**

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Procedure for Computation and sharing of ISTS Charges

1.0 Outline

- 1.1 This Procedure is made in compliance with Regulation 23(4) of Central Electricity Regulatory Commission (Sharing of Inter State Transmission Charges and Losses) Regulations 2020 and amendments thereof herein after called as the “Sharing Regulations, 2020 and amendments thereof”.
- 1.2 This procedure provides the modalities followed by Implementing Agency for computation of Inter-State transmission charges for each DIC.

2.0 Scope

- 2.1 This procedure shall be applicable to the following:
 - A. Customers who use the ISTS as below:
 - (a) All Designated ISTS Customers (DICs)
 - (b) Generating Stations which are regional entities under the IEGC, 2010 and any subsequent amendments made thereto.
 - (c) ISTS Licensees
 - (d) Non-ISTS Licensees whose assets have been approved by CERC as being used for inter-State transmission of electricity and to be considered under Sharing Regulations 2020 and amendments thereof
 - (e) Any Bulk consumer directly connected with ISTS
 - (f) Any other designated entity representing a physically connected entity as per clauses (b), (d) and (e) above.
 - B. Others
 - (a) Central Transmission Utility
 - (b) National Load Despatch Centre (NLDC), Regional Load Despatch Centres (RLDCs), State Load Despatch Centres (SLDCs) and Regional Power Committees (RPCs)

3.0 Notification of Peak Block by IA

- 3.1 As per Regulation 2 (1) (r), Peak block is the block in which sum of net ISTS draws by all States is maximum. For identifying peak block, negative net ISTS drawl of any State in a time block shall be treated as zero.
- 3.2 The processed Special Energy Metered (SEM) data of the billing period shall be considered for identification of Peak Block of the billing period. For the period for which SEM data is not available as on first day of the month following the billing period, NLDC SCADA data shall be considered for identifying Peak Block.
- 3.3 As per Regulation 24(2), Peak block for the billing period shall be published by IA, on its website, on the first day of the month following the billing period.

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- 3.4 The peak block once declared on first day of the month following the billing period shall be treated as final and shall not be reviewed later based on the SEM data available for the remaining period.
- 3.5 If in case any Grid Disturbance of category GD-5 had occurred during the peak block in any region(s), next peak block shall be considered by IA based on the severity of Grid Disturbance, for notification of peak block for the billing period.

4.0 Data Acquisition and Preparation of Base case for computations

- 4.1 The Implementing Agency shall publish, on its website, the peak block for the billing period on the first day of the month following the billing period for each billing month.
- 4.2 As per Regulation (9) (1) of the Sharing Regulations 2020, Base Case shall be prepared by the IA corresponding to the peak block for each billing period comprising of:
- a. Basic Network for the power system corresponding to the peak block of the billing period
 - b. Actual generation and actual demand, in MW, at each node of the Basic Network corresponding to the peak block
- 4.3 The basic network data pertaining to the network elements along with actual nodal generation and drawl data corresponding to peak block shall be submitted by all DICs. Yearly Transmission Charges (YTC) shall be submitted by inter-State transmission licensees, Deemed ISTS licensee and Non-ISTS licensees for which tariff have been approved by the Hon'ble CERC.
- 4.4 RLDCs /IA shall verify the injection/ drawl information furnished by the DICs with reference to available SEM data/ SCADA data for the corresponding peak block. PSSE base case that is used for computation of TTC/ATC for peak scenario/ recently submitted updated base case data by the states may also be referred for verification of data submitted by DICs.
- 4.5 In case of major discrepancy of information provided by DICs with reference to SEM/ SCADA data, concerned DICs shall be informed for giving proper explanation for the discrepancy in a specific time period. If DIC fails to rectify the deficiency, IA shall consider the data as per the alternate sources.
- 4.6 The data provided by the DICs shall be as per the formats stipulated by the Implementing Agency. All drawee DICs shall also submit generation from their own generating stations for the peak block during the billing period to the Implementing Agency to prepare the Base Case for load-generation balance.
- 4.7 The Basic Network shall contain all the power system elements including generating station and transmission line at 110 kV and above. Power flow into a lower voltage system from the voltage levels indicated in the definition of the Basic

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Network shall be considered as load at that sub-station. Power flow from a lower voltage system into the electricity systems at the voltage levels shall be considered as generation at that substation.

- 4.8 Dedicated transmission lines constructed, owned and operated by the inter-State transmission licensees shall be considered to be a part of the Basic Network. However, dedicated transmission lines constructed, owned and operated by generating stations shall not be considered as a part of the Basic Network and the generating station shall be deemed to be connected directly to the ISTS at the pooling point. Actual injection of such generating stations at the pooling station shall be taken as actual injection at the pooling point.
- 4.9 While preparing basic network, major transmission lines/ Generation outages for the peak block shall also be factored in basic network, provided the outage is prolonged for the entire period of peak block. The transmission lines, which are temporarily out of service shall be included in the Base Case.
- 4.10 The transmission system declared under commercial operation on or before the last day of a billing period shall be considered for computation of transmission charge for the billing period. However, Basic Network shall be considered as in the peak block of the billing period.
- 4.11 RLDCs shall prepare basic network of their respective region as per the network data, nodal injection/ drawl data submitted by the DICs under their jurisdiction in line with Para 4.0 of this procedure.
- 4.12 If any DIC fails to submit the data as required within the stipulated time frame, IA/ RLDCs shall prepare basic network by obtaining such information from other alternate sources. The alternate sources could be NLDC SCADA/ SEM data/ recent updated base case available/ recent TTC-ATC base case for the corresponding billing period.
- 4.13 In case part of network data is missing, reasonable assumptions shall be made by the Implementing Agency based on data available with it and/or reference to standards published on the Power System Studies, such as the CEA Transmission Planning Criteria.
- 4.14 RLDCs shall furnish the prepared basic network to IA in order to further prepare all India basic network for computation of ISTS charges and losses for each billing period by 12th day of each month following the billing period.
- 4.15 IA shall prepare the All India basic network and shall be made available to all DICs on 15th day of each month following the billing period for review and comment, if any, for 2 days, in order to finalize the all India basic network to be used for the computations for the billing period.

5.0 Computation of ISTS Monthly Transmission Charges (MTC) by IA

- 5.1 All Inter-State transmission licensees, deemed ISTS Licensees and Non-ISTS Licensees whose assets are being used for inter-state transmission of electricity as approved by Hon'ble CERC shall furnish YTC to IA along with the details of bilateral billing, if any, for each billing period by the end of the billing period as per Para 6.4 of the "Procedure for collection of data and information for determination of ISTS charges and losses" published by IA.
- 5.2 IA shall check and compile the YTC data received from all entities as mentioned in Para 5.1 and shall compute Monthly Transmission Charges (MTC) by multiplying number of days in a billing period with YTC per day of the corresponding year for all the licensees in the sharing methodology.
- 5.3 In case of a new transmission element that has declared COD during the billing period, while considering the YTC of the element in the computations for that billing period, Monthly transmission charges on pro-rata basis for the total number of days that element has existed in the network shall be considered under the sharing methodology for the billing period.
- 5.4 Notwithstanding any provision to the contrary in the PPA entered into between the drawee DIC and the generating station or the seller, transmission charges for components identified under Regulations 5 to 8 of Sharing Regulations 2020 and amendments thereof shall be determined on drawl nodes. The bills for sharing of transmission charges shall be raised on the Drawee DICs and the settlement of the transmission charges inter se between the Drawee DICs and the generating station or the seller, wherever necessary, shall be made in terms of the PPA or as per the mutual agreement between the concerned.
- 5.5 As per Regulation 13(3) of Sharing Regulations, 2020 and amendments thereof, where COD of a Connectivity grantee other than Renewable Power Park Developer is delayed on or before start date of Connectivity in terms of GNA Regulations, and the Associated Transmission System has achieved COD, which is not earlier than start date of Connectivity, the Connectivity grantee shall pay Yearly Transmission Charges for the Associated Transmission System corresponding to Connectivity capacity which has not achieved COD:

Provided that where a Connectivity grantee is Renewable Power Park Developer and the generation capacity within the Renewable Power Park has not declared COD on or before start date of Connectivity in terms of GNA Regulations, and the Associated Transmission System has achieved COD, which is not earlier than start date of Connectivity, the Renewable Power Park Developer shall pay Yearly Transmission Charges for the Associated Transmission System corresponding to generation capacity which has not achieved COD:

Provided that Yearly Transmission Charges in respect of Associated Transmission System corresponding to the Connectivity capacity which have achieved COD shall be included for determination of transmission charges of DICs in accordance with Regulations 5 to 8 of Sharing Regulations 2020 and amendments thereof.

Illustrative example:

- a) The planned Installed capacity for a Connectivity grantee other than Renewable Power Park Developer is 2400 MW with Connectivity for 2400 MW. The station has 3 units. If Connectivity capacity is broken up unit wise it comes out to 800 MW corresponding to each unit. Suppose the Annual transmission charges are Rs. 300 Crore. Once first unit is declared COD Rs. 100 Crore shall be considered in Regulation 5 to 8 and Rs. 200 Crore shall be billed to the Connectivity grantee. Once 2nd unit is declared COD, Rs. 200 Crore will be included in Regulation 5 to 8 and Rs. 100 Crore shall be billed to Connectivity grantee and so on. The same principle shall be applied on corresponding Connectivity as well.
 - b) Where a Connectivity grantee is Renewable Power Park Developer, planned generation capacity within Renewable Power Park is 2400MW with Connectivity for 2400MW. If 2/3rd of generation capacity i.e. 1600MW is delayed. Suppose the Annual transmission charges are Rs. 300 Crore. Annual transmission charges of Rs. 100 Crore will be included in Regulation 5 to 8 and Rs. 200 Crore will be billed to the Renewable park developer and so on.
- 5.6 As per Regulation 13(4) of Sharing Regulations,2020 and amendments thereof, where one or more of the transmission elements of the Associated Transmission System have achieved COD before the COD of the Associated Transmission System and the Connectivity grantee seeks part effectiveness of its Connectivity as per Clause (a) of Regulation 22.4 of GNA Regulations, Yearly Transmission Charges in respect of such transmission elements of the Associated Transmission System shall be included for determination of transmission charges of DICs in accordance with Regulations 5 to 8 of Sharing Regulations,2020 and amendments thereof.
- 5.7 As per Regulation 13(5) of Sharing Regulations,2020 and amendments thereof, Where only some of the transmission elements of the Associated Transmission System have achieved COD before the COD of the Associated Transmission System and if such transmission elements are certified by the respective Regional Power Committee(s) as required for improving the performance, safety and security of the grid, the Yearly Transmission Charges for such transmission elements of the Associated Transmission System shall be included for determination of transmission charges of DICs. However, the YTC of such transmission elements shall only be considered for a billing period on furnishing the details of RPC certification of the transmission elements to IA as per the stipulated time lines for furnishing data by the ISTS licensees as per this procedure.
- 5.8 As per Regulation 13(6) of Sharing Regulations,2020 and amendments thereof, if any transmission element(s) of the Associated Transmission System is required by the Connectivity grantee prior to COD of the Associated Transmission System, the Yearly Transmission Charges for such transmission element(s) shall be payable by the Connectivity grantee from the COD of the said transmission element(s) of the Associated Transmission System till the Connectivity grantee achieves COD.

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- 5.9 As per Regulation 13(7) of Sharing Regulations,2020 and amendments thereof Where Connectivity is granted to a Connectivity grantee other than Renewable Power Park Developer, on margins of existing system or on the augmented system with no ATS, and if the COD of such Grantee is delayed beyond start date of connectivity, the Connectivity grantee shall, corresponding to the capacity that is delayed, pay transmission charges from the start date of such Connectivity at the rate of Rs. 3000/MW/month:

Provided that where a Connectivity grantee is Renewable Power Park Developer and the generation capacity within the Renewable Power Park has not declared COD on or before start date of Connectivity in terms of GNA Regulations, the Renewable Power Park Developer shall pay transmission charges from the start date of such Connectivity at the rate of Rs. 3000/MW/month corresponding to generation capacity which have not achieved COD.

- 5.10 As per Regulation 13(8) of Sharing Regulations,2020 and amendments thereof, In case a generating station or unit(s) thereof has achieved COD and the Associated Transmission System is delayed, the concerned inter-State transmission licensee(s) shall make alternate arrangement at its own cost for despatch of power of the generating station or unit(s) thereof in consultation with the Central Transmission Utility:

Provided that till such alternate arrangement is made, the inter-State transmission licensee(s) shall pay to the generating station, the Yearly Transmission Charge corresponding to the quantum of Connectivity for the period for which the transmission system has got delayed.

- 5.11 As per Regulation 13(9) of Sharing Regulations,2020 and amendments thereof, where a dedicated transmission line has already been constructed or is under construction by an inter-State transmission licensee under coordinated transmission planning of the Central Transmission Utility, and the Connectivity grantee has not achieved COD on or before COD of the dedicated transmission line, the Yearly Transmission Charges for such dedicated transmission line shall be payable by the concerned Connectivity grantee to the inter-State transmission licensee from the COD of the dedicated transmission line till COD of such Connectivity grantee and after which Yearly Transmission Charge for the dedicated transmission line shall be considered in accordance with Regulations 5 to 8 of Sharing Regulations,2020 and amendments thereof.

- 5.12 Regional entity Generating station (a) drawing start-up power prior to COD or (b) drawing auxiliary power before or after COD through ISTS, shall pay transmission charges for such drawl, at T-GNA Rate for the State in which it is located and the amount so received in a billing month, shall be reimbursed to the drawee DICs in proportion to their share in the first bill in the following billing month.

- 5.13 Transmission deviation charges shall not be levied for injection of infirm power prior to COD of a generating station.

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- 5.14 As per Regulation 13(12) of Sharing Regulations,2020 and amendments thereof, in case of a transmission system where COD has been approved in terms of proviso (ii) of Clause (3) of Regulation 4 of the Tariff Regulations, 2014 or Clause (2) of Regulation 5 of the Tariff Regulations, 2019 or where deemed COD has been declared in terms of Transmission Service Agreement under Tariff based Competitive Bidding, the Yearly Transmission Charges for the transmission system shall be:
- a) paid by the inter-State transmission licensee whose transmission system is delayed till its transmission system achieves COD, or
 - b) paid by the generating company whose generating station or unit(s) thereof is delayed, till the generating station or unit thereof, achieves COD, or
 - c) shared in the manner as decided by the Commission on case to case basis, where more than one inter-State transmission licensee is involved or both transmission system and generating station are delayed. In such case, MTC and line lengths (total & to be considered in MTC) would be furnished by ISTS Transmission Licensee accordingly along-with all the computations/ relevant orders etc.
 - d) paid by the respective drawee DIC(s) of the State whose intra-state transmission system is delayed, till such intra-State transmission system achieves COD.
 - e) paid by the Bulk consumer or distribution licensee granted approval to directly connect to ISTS, whose connecting transmission line to ISTS is delayed , till such line is connected to ISTS, or
 - f) paid by the ESS whose project is delayed, till the ESS achieves COD.
 - g) paid by the Renewable Power Park developer whose Park is delayed, till it is connected to ISTS.
- 5.15 As per Regulation 13(13) of Sharing Regulations,2020 and amendments thereof, An intra-State transmission system for which tariff is approved by the Commission shall be included for sharing of transmission charges of DICs only for the period for which such tariff has been approved.
- 5.16 Monthly Transmission Charges (MTC) considered for computation of transmission charges for the billing period under Sharing Regulations 2020 and amendments thereof; shall be made available to all ISTS licensees (and Non-ISTS licensees having ISTS lines as approved by CERC) by 10th day of each month following billing period for review and comment, if any, for 2 days, in order to finalize MTC to be considered for the computations.

6.0 Computation of total GNA and GNARE of DICs by IA

- 6.1 IA shall compute total GNA and GNARE (MW) of DICs based on the details received from CTU for the billing period.
- 6.2 The computed details of total GNA and GNARE of DICs as per Para 6.1 shall be made available to RLDCs on 12th day of each month following billing period for review and comment, if any, for 2 days, in order to finalize the total GNA and GNARE of DICs.

7.0 Load Flows Studies on the Basic Network

- 7.1 The Implementing Agency shall run AC load flow on the all India basic Network, based on the network data obtained from all the DICs, inter-State transmission licensees, intra-state transmission licensees tariff of whose assets have been approved by the Commission as being used for inter-State transmission including the NLDC, RLDCs and SLDCs.
- 7.2 The real power at the generator nodes and the withdrawal nodes in the Basic Network shall be as per actual demand and generation data obtained for peak block during billing period. In case of DIC fails to submit required node wise data, Para 6.3.3 of “Procedure for collection of data and information” shall be followed.
- 7.3 As per Regulation (9) (4) of the Sharing Regulations 2020 and amendments thereof, IA may make minor adjustment in nodal injection and withdrawal data so as to maintain load generation balance in the representative base case in consultation with NLDC/ RLDCs based on the historic injection and demand data available with them.

8.0 Methodology of sharing of Inter-State Transmission charges

Total ISTS Monthly Transmission Charges (MTC) shall have the following components:

- a. National Component (NC)
- b. Regional Component (RC)
- c. Transformers Component (TC) and
- d. AC System Component (ACC)

8.1 Computation and sharing of National Component (NC) of transmission charges

8.1.1 National Component shall comprise of the following components:

- a) National Component-Renewable Energy:

National Component- RE shall comprise of the Yearly Transmission Charges for transmission systems developed for renewable energy projects as identified by the Central Transmission Utility.

- b) National Component-HVDC:

This component shall comprise of the following:

- i. 100% of Yearly Transmission Charges for “back-to-back HVDC” transmission system

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- ii. 100% of Yearly Transmission Charges for Biswanath-Chariali/ Alipurdwar to Agra HVDC transmission system
- iii. Yearly Transmission Charges of Mundra–Mohindergarh 2500 MW HVDC transmission system corresponding to 1005 MW capacity
- iv. 30% of Yearly Transmission Charges for all other HVDC transmission systems except those covered under above sections.

8.1.2 Transmission Charges under National Component shall be shared by all drawee DICs in proportion to their quantum of GNA and GNARE.

8.1.3 Proportionate transmission charges of HVDC Mundra-Mohindergarh towards 1495 MW is to be borne by M/s Adani Power (Mundra) Limited or its successor company.

8.2 Computation and sharing of Regional Component RC) of Transmission Charges

8.2.1 Regional Component shall comprise of the following components:

- a) Regional Component of HVDC (RC-HVDC) comprising of 70% of Yearly Transmission Charges of HVDC transmission systems planned to supply power to the concerned region, except HVDC transmission systems covered under National HVDC Component.
- b) Yearly Transmission Charges for static compensators (STATCOMs), static VAR compensators (SVCs), bus reactors, spare transformers, spare reactors and any other transmission element(s) located in the concerned region and identified by the Central Transmission Utility as being critical for providing stability, reliability and resilience in the grid.

8.2.2 Transmission Charges under Regional Component of HVDC shall be shared by drawee DICs of the receiving region in the receiving region, in proportion to their quantum of GNA and GNARE.

8.2.3 Transmission Charges of STATCOMs, SVCs and bus reactor etc. shall be shared by drawee DICs of the region in proportion to their quantum of GNA and GNARE.

8.3 Computation and sharing of Transformer Component (TC) of Transmission Charges

8.3.1 Transformer Component for a State shall comprise of Yearly Transmission Charges for inter-connecting transformers (ICTs) along with their associated bays and downstream bays planned for drawl of power by the concerned State.

8.3.2 For transformers used for drawl requirement of more than one State, Yearly Transmission Charges shall be apportioned to such States in the ratio of number of feeders from such transformers emanating for each State.

Procedure for Computation and sharing of ISTS Charges

8.3.3 Transformer Component for a State shall be borne and shared by the drawee DICs located in the concerned State in proportion to their quantum of GNA and GNARE.

8.4 Computation and sharing of AC System Component (ACC) of Transmission Charges

8.4.1 AC System Component shall comprise of the remaining Yearly Transmission Charges which are not covered under National Component, Regional Component and Transformer Component.

8.4.2 AC System Component shall comprise of AC Usage-Based component and AC Balance component.

8.4.3 Computation of share of Transmission charges under AC usage-based component

- a) The transmission charge per circuit kilometer for a transmission line for each conductor configuration at each voltage level shall be made uniform.
- b) Total circuit kilometer for transmission lines for each conductor configuration at each voltage level shall be allocated uniform charges based on the indicative cost per circuit kilometer for a transmission line for each conductor configuration at each voltage level as furnished by CTU.
- c) The following illustration shall be followed to calculate uniform transmission charges type wise per circuit km.

Type	Cost (Rs Lakh)	Cost (Rs Lakh) /Circuit	Actual ckt-km Type Wise	Equivalent ckt km	Indicative Cost Type Wise per ckt-km
				w.r.t 400 kV D/C Quad Moose	(Rs Lakh/ckt-km)
765 kV - D/C – HEXA	a ₁	b ₁ =a ₁ /2	T ₁	K ₁ =T ₁ ×(b ₁ /b ₃)	I ₁ = ^T C _M ×(K ₁ /K)/T ₁
765 kV - S/C – HEXA	a ₂	b ₂ =a ₂	T ₂	K ₂ =T ₂ ×(b ₂ /b ₃)	I ₂ = ^T C _M ×(K ₂ /K)/T ₂
400 kV - D/C - Quad Moose	a ₃	b ₃ =a ₃ /2	T ₃	K ₃ =T ₃ ×(b ₃ /b ₃)	I ₃ = ^T C _M ×(K ₃ /K)/T ₃
400 kV - D/C - Twin Moose	a ₄	b ₄ =a ₄ /2	T ₄	K ₄ =T ₄ ×(b ₄ /b ₃)	I ₄ = ^T C _M ×(K ₄ /K)/T ₄
400 kV - S/C - Twin Moose	a ₅	b ₅ =a ₅	T ₅	K ₅ =T ₅ ×(b ₅ /b ₃)	I ₅ = ^T C _M ×(K ₅ /K)/T ₅
220 kV - D/C -	a ₆	b ₆ =a ₆ /2	T ₆	K ₆ =T ₆ ×(b ₆ /b ₃)	I ₆ = ^T C _M ×(K ₆ /K)/T ₆
220 kV - S/C -	a ₇	b ₇ =a ₇	T ₇	K ₇ =T ₇ ×(b ₇ /b ₃)	I ₇ = ^T C _M ×(K ₇ /K)/T ₇
132 kV - D/C -	a ₈	b ₈ =a ₈ /2	T ₈	K ₈ =T ₈ ×(b ₈ /b ₃)	I ₈ = ^T C _M ×(K ₈ /K)/T ₈
132 kV - S/C -	a ₉	b ₉ =a ₉	T ₉	K ₉ =T ₉ ×(b ₉ /b ₃)	I ₉ = ^T C _M ×(K ₉ /K)/T ₉
400 kV - D/C - Triple Snowbird	a ₁₀	b ₁₀ =a ₁₀ /2	T ₁₀	K ₁₀ =T ₁₀ ×(b ₁₀ /b ₃)	I ₁₀ = ^T C _M ×(K ₁₀ /K)/T ₁₀

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400 kV - D/C - Twin HTLS	a_{11}	$b_{11}=a_{11}/2$	T_{11}	$K_{11}=T_{11} \times (b_{11}/b_3)$	$I_{11}=T_{CM} \times (K_{11}/K)/T_{11}$
		Sum	T	K	

T_{CM} = Monthly Transmission Charge w.r.t. AC System Component

- d) The type wise indicative cost thus computed shall be multiplied with circuit kilometers of each transmission line in order to arrive at average MTC of the transmission line. The total MTC of all transmission lines under this sharing mechanism shall be adjusted to total AC system component by scaling up/ down in case of discrepancy.
- e) Wherever lines belonging to an ISTS Licensee are Looped In Looped Out by an Intra-State Transmission Licensee, the entire length shall be considered for Load flow studies and average cost shall be applied on the whole line.

Similarly, wherever line belonging to an Intra-State Transmission Licensee that is not certified by RPC is Looped In Looped Out by an ISTS Licensee, the charges of such lines shall not be considered in computation. The same may be recovered through scaling up the final charges.

- f) After load flow studies on the basic network, percentage usage of each line shall be computed by dividing the power flow on each line by Surge Impedance Loading (SIL) of the line. In case, power flow on any line is more than Surge Impedance Loading, percentage usage shall be capped at 100%.
- g) Percentage usage of each transmission line shall be multiplied by line wise charges of such transmission line to obtain usage-based transmission line charges.
- h) For the transmission lines covered under National RE-Component, circuit km of such transmission lines shall be considered as “zero”.
- i) Where entire Yearly Transmission Charges are to be billed to a Connectivity grantee under sections 5.5, 5.8 and 5.11 of this procedure, Circuit Km of such transmission lines shall be considered as “zero”.
- j) Where Yearly Transmission Charges are to be partly included for computation of AC usage-based transmission charges and partly to be billed to Connectivity grantee or any other entity covered under section 5 of this procedure, the circuit kilometers of such transmission lines shall be reduced pro rata corresponding to the Yearly Transmission Charges to be included for computation of AC usage-based transmission charges.

Example:

Suppose a transmission line has 500 circuit km and 50% of its Yearly Transmission Charges are to be billed to a connectivity grantee ‘A’ and 50% is to be included for computation of transmission charges in accordance with Regulations 5 to 8 of Sharing regulations 2020 and amendments thereof. For

Procedure for Computation and sharing of ISTS Charges

calculation of AC-UBC, circuit km for this transmission line shall be taken as 250 circuit km.

- k) The usage-based line cost shall then be attributed to various nodes as per their utilization factors of the line in proportion to the nodal load to arrive at the nodal transmission charges.
- l) The load flow results and usage-based cost of each line of the basic network corresponding to peak block during billing period shall form the basis of calculation of transmission charges and the input to the computation software. The output of the software shall be the computed nodal transmission charges.

Transmission charges (in Rs.) for billing towards GNA and GNARE shall be calculated only on Withdrawal nodes (as Withdrawal charges).

- m) IA shall aggregate transmission charges at drawl nodes (excluding drawl nodes of a DIC having GNA other than distribution licensee of the state located within the state control area) to determine the transmission charges of the state under AC usage-based component. Same shall be applicable for the drawee DIC which is a regional entity.
- n) The demand zones shall normally be the State control areas.

8.5 Computation and sharing of AC Balanced Component of Transmission Charges:

- 8.5.1 The Yearly Transmission Charges under AC-Balanced Component shall be the balance Yearly Transmission Charges for AC System Component after apportioning the charges for AC-Usage-Based Component.
- 8.5.2 Transmission charges under AC-Balanced Component shall be shared by all drawee DICs in proportion to their quantum of GNA and GNARE.

9.0 Computation of Transmission Charges for T-GNA and T-GNARE

- 9.1 State-wise T-GNA rate shall be calculated as follows:

T-GNA Rate for the State (in Rs./MW/time-block)

$$= \frac{1.10 \times \text{Transmission charges for all drawee DICs located in the State, for the billing month (in rupees)}}{\text{number of days in a month} \times 96 \times \{\text{GNA and GNARE quantum (in MW) for all such drawee DICs located in the State considered for billing, for the corresponding billing period}\}}$$

- 9.2 Transmission Charges for T-GNA or T-GNARE transactions shall be payable by entities located in the State, as per the last published T-GNA Rate for the State. In case of drawee entities that are users of RLDC which have no GNA or GNARE, T-

Procedure for Computation and sharing of ISTS Charges

GNA Rate of the state in which they are located shall be applicable.

10.0 Determination of Transmission Charges for DICs

10.1 Transmission charges for DICs shall be the sum of charges computed under National Component, Regional Component, Transformer Component and AC System Component.

Example: Transmission Charges (in Rs.) = NC + RC + TC + ACC where,

NC (National Component) = National Component-RE + National Component-HVDC

RC (Regional Component) = Regional Component-HVDC + Charges of STATCOM etc.

TC = Transformer Component

ACC (AC System Component) = AC usage-based component + AC Balance component

10.2 In case of under/over recovery of monthly transmission charges, transmission charges shall be scaled on pro-rata basis.

11.0 Calculation of waiver of transmission charges:

11.1 Calculation of waiver of transmission charges in respect of drawee DICs which have obtained GNA and GNARE.

- (i) Waiver of a drawee DIC other than a drawee DIC which has obtained “GNARE” shall be calculated based on the following formulae:

$$\text{Waiver(\%)} = 100 \times \frac{\sum_{n=1}^T \frac{SDRG}{SDTG}}{T}$$

Where,

“SDRG” is the drawl schedule (in MW) through ISTS under GNA from the sources eligible for waiver under Regulation 13 of Sharing Regulations 2020 and amendments thereof in nth block;

“SDTG” is the total drawl schedule (in MW) under GNA through ISTS from all sources in nth block;

“n” is the nth time block

Procedure for Computation and sharing of ISTS Charges

“T” is number of time blocks in a month = 96 X number of days in a month

Provided that in case the “SDTG” for a time block is less than 75% of the maximum schedule corresponding to GNA, the “SDTG” shall be taken as 75% of maximum schedule corresponding to GNA for a time block.

- Maximum schedule corresponding to GNA shall be considered same as the GNA quantum.

(ii) Waiver of a drawee DIC which has obtained “GNARE” shall be calculated based on the following formulae:

$$\text{Waiver}(\%) = 100 \times \frac{\text{Sum of SDRG for all time blocks in the month}}{(\text{Total number of time blocks in the month} \times 0.3 \times \text{GNARE})}$$

Where,

“GNARE” is the GNA to procure power only from the sources eligible for waiver under Regulation 13 of Sharing Regulations 2020 and amendments thereof;

“SDRG” is the drawl schedule (in MW) in a time block through ISTS under GNARE from the sources eligible for waiver under Regulation 13 of Sharing Regulations 2020 and amendments thereof;

Provided that maximum waiver shall be limited to 100%:

Provided further that if such an entity draws power from any source other than the sources eligible for waiver under Regulation 13 (2) of Sharing Regulations 2020 and amendments thereof, except after obtaining additional GNA or T-GNA or converting GNARE into GNA by making an application to CTU, it shall be charged @TDR of the State in which such an entity is located.

- 11.2 Amount of waiver for each drawee DIC shall be determined by multiplying Waiver % as calculated under para 11.1 (i) and (ii) with the transmission charges computed in accordance with Regulations 5 to 8 of Sharing Regulations 2020 and amendments thereof.
- 11.3 Transmission charges for each drawee DIC computed in accordance with Regulations 5 to 8 of Sharing Regulations 2020 and amendments thereof shall be reduced by amount of waiver calculated under para 11.2 of this procedure.
- 11.4 Total amount of waiver shall be calculated as sum of amount of waiver for all drawee DICs calculated under para 11.2 of this procedure.

Procedure for Computation and sharing of ISTS Charges

11.5 The first bill shall be sum of transmission charges as calculated under para 11.3 of this procedure and amount arrived at by apportioning the total amount of waiver as arrived under para 11.4 in proportion to transmission charges of each drawee DIC calculated as per para 11.3, and shall be used for billing under **sub clause (b) of Clause (2) of Regulation 15.**

11.6 Calculation of waiver of transmission charges in respect of drawee DICs which have obtained T-GNA or T-GNARE:

- (i) The transmission charges for ISTS for T-GNA and T-GNARE shall be computed in accordance with Regulation 11 of Sharing Regulations 2020 and amendments thereof.
- (ii) Waiver of a drawee DIC other than a DIC which has obtained “T-GNARE” shall be calculated based on the following formulae:

$$\text{Waiver(\%)} = 100 \times \frac{\sum_{n=1}^T \frac{SDRTG}{SDTTG}}{T}$$

Where,

“SDRTG” is the drawl schedule (in MW) through ISTS under T-GNA from the sources eligible for waiver under Regulation 13 of Sharing Regulations 2020 and amendments thereof in nth block;

“SDTTG” is the total drawl schedule (in MW) under T-GNA through ISTS from all sources in nth block; and

“n” is the nth time block

“T” is number of time blocks in a month = 96 X number of days in a month

Provided that in case the “SDTTG” for a time block is less than 75% of the maximum schedule corresponding to T-GNA, the “SDTTG” shall be taken as 75% of maximum schedule corresponding to T-GNA for a time block.

- Maximum schedule corresponding to T-GNA shall be considered same as the T-GNA quantum.

Procedure for Computation and sharing of ISTS Charges

- (iii) Waiver of a drawee DIC which has obtained “T-GNARE” shall be calculated based on the following formulae

$$\text{Waiver(\%)} = 100 \times \frac{\text{Sum of SDRTG for all time blocks in the month}}{(\text{Total number of time blocks in the month} \times 0.3 \times \text{T - GNARE})}$$

Where,

“T-GNARE” is the T-GNA to procure power only from the sources eligible for waiver under Regulation 13 of Sharing Regulations 2020 and amendments thereof;

“SDRTG” is the drawl schedule (in MW) through ISTS under T-GNARE from the sources eligible for waiver under Regulation 13 of Sharing Regulations 2020 and amendments thereof in a time block;

Provided that maximum waiver shall be limited to 100%:

Provided further that if such an entity draws power from any source other than the sources eligible for waiver under Regulation 13 (2) of Sharing Regulations 2020 and amendments thereof, except after obtaining additional GNA or T-GNA or converting T-GNARE into T-GNA by making an application to CTU, it shall be charged @TDR of the State in which such an entity is located.

- 11.7 Amount of waiver for each drawee DIC shall be determined by multiplying Waiver % calculated under para 11.6 (ii) and (iii) with the transmission charges computed under para 11.6(i).
- 11.8 Amount of waiver for each drawee DIC as calculated under para 11.7 shall be reimbursed by CTU from the already paid T-GNA or T- GNARE charges on finalization of schedules, by 15th day of the next month.
- 11.9 As per Regulation 14(1) to Sharing Regulations 2020 and amendments thereof, The Implementing Agency shall publish transmission charges payable by drawee DICs for the billing month in Rupee terms.
- 11.10 Implementing Agency shall provide the following information to RPC on completion of computation of transmission charges:
- Corresponding GNA and GNARE (MW) data for each month based on the details received from CTU.
 - Component-wise breakup of Transmission charges (in Rs) payable by each drawee DIC for the billing month.
 - Direct drawl as specified in Annexure-II of GNA Regulations 2022 and amendments thereof; for preparation of Regional Transmission Deviation Account.

Procedure for Computation and sharing of ISTS Charges

- 11.11 Based on the information furnished by the Implementing Agency, Secretariat of the respective Regional Power Committee shall issue Regional Transmission Accounts and shall publish the same on its website.
- 11.12 The Regional Transmission Deviation Account shall be prepared by RPC from the processed metered data of all SEMs furnished by RLDC to RPC on weekly basis for DSM account, Schedule drawl under GNARE/T-GNARE furnished by RLDC and direct drawl furnished by IA as per para 11.10(c).

12.0 Time lines for various activities under this procedure

Sl.No.	Name of the Activity	Time line
1	Data and information of ISTS assets to be furnished by all ISTS licensees and Non-ISTS Licensees whose assets are approved by CERC as being used for Inter-state Transmission of electricity	By last day of each billing period
2	Data and information of any new ISTS assets achieved COD by last day of the billing period	On 1 st day of each month following billing period
3	Notification of Peak Block by IA	On 1 st day of each month following billing period
4	Data and information to be furnished by all DICs/ CTU to RLDCs/ IA	By 7 th day of each month following billing period
5	Availability of finalized MTC to be considered for computations of the billing period to all ISTS Licensees and Non-ISTS Licensees whose assets are approved by CERC as being used for Inter-state Transmission of electricity for review and comment	On 10 th day of each month following billing period
6	Comments to be sent by ISTS Licensees on finalized MTC to be considered for computations of the billing period	By 12 th day of each month following billing period
7	Preparation of basic network by each RLDC	By 12 th day of each month following billing period
8	Availability of finalized GNA and GNARE agreement profile to RLDCs for review and comment	On 12 th day of each month following billing period
9	Furnishing feeder-wise SEM data and scheduled quantum for each time block by RLDC for computation of "Direct drawal" as per GNA Regulations.	On 12 th day of each month following billing period
10	Comments to be sent by all RLDCs on the details of GNA and GNARE agreement profile	By 15 th day of each month following billing period

Procedure for Computation and sharing of ISTS Charges

Sl.No.	Name of the Activity	Time line
11	Preparation of All India basic network for the billing period by IA and made available to all DICs for review and comment	By 15 th day of each month following billing period
12	Comments to be sent by all DICs on the all India basic network to IA	By 18 th day of each month following billing period
13	Notification of transmission charges payable by DICs by NLDC	By 25 th day of each month following billing period

13.0 Information to be published by IA in Public Domain

13.1 Implementing Agency shall provide following information in public domain:

- a) The Basic Network, generation at nodes and drawal at nodes considered for the Base Case and the load flow results, for each billing period and Assumptions if any;
- b) Details of transformers, list of transmission elements and corresponding transmission charges considered under Regional Component for the billing period;
- c) Details of transmission system covered under National Component;
- d) New transmission system added during billing period;
- e) YTC detail (Information submitted by the transmission licensees covered under the Regulation and computation by Implementing Agency) besides confirming to CTU in writing for the purpose of disbursement of charges to Licensees;
- f) Details of GNA and GNARE in respect of each DIC for the billing period;
- g) Detailed calculations for arriving at the average cost in respect of each transmission line using indicative cost;
- h) Transmission charges payable by each constituent for the billing month along with component-wise break-up.
- i) Detailed calculations as per Annexure –III of Sharing Regulations,2020 and amendments thereof.

13.2 The above information shall be made available for viewing as well as downloading in .xls/.csv formats on the website of IA only after logging in. The username and password for this purpose can be generated through registration on the website.

13.3 IA shall design and develop an interactive “query” to show case the results of computations includes:

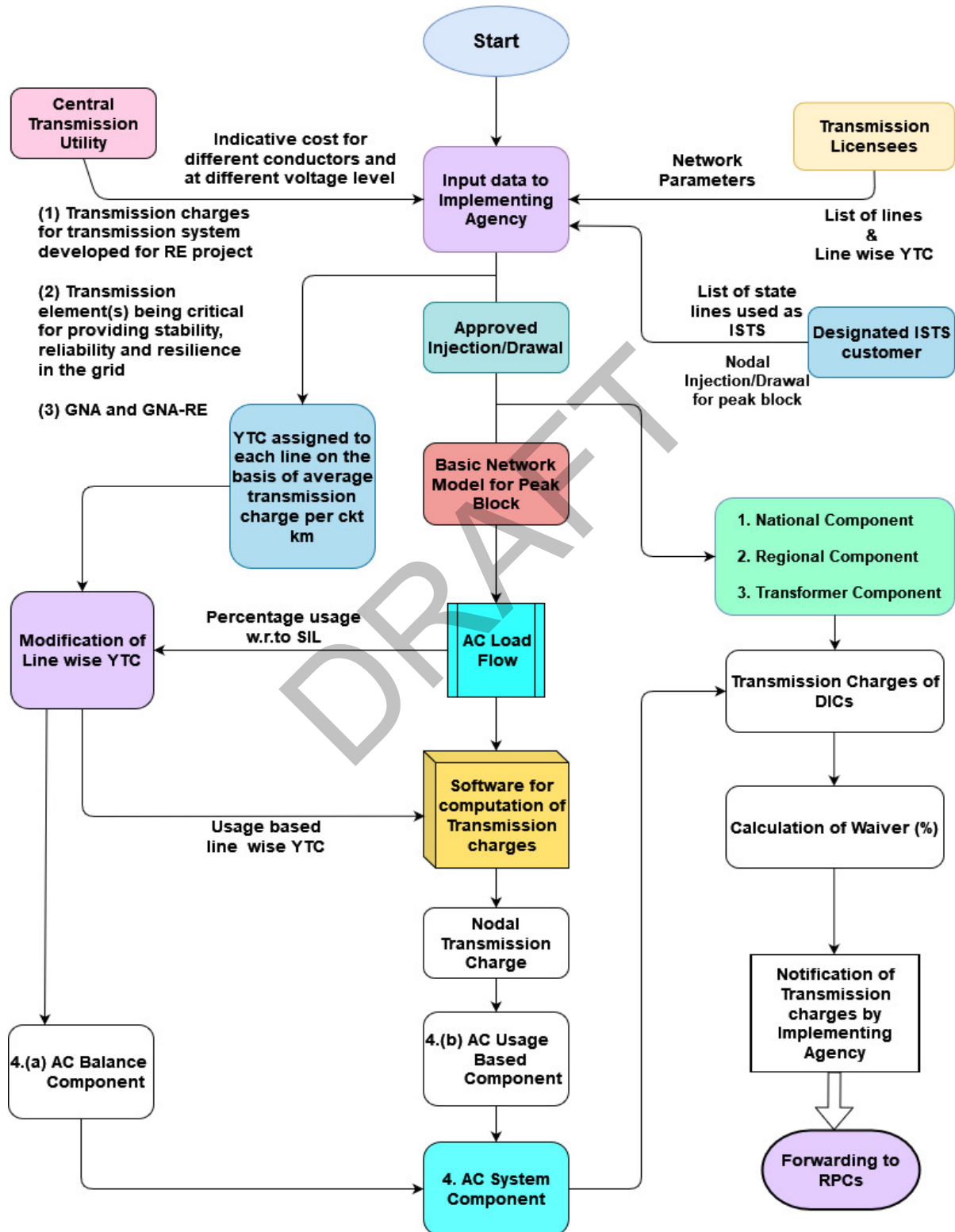
- a) a given generator is meeting which loads and in what proportion
- b) a given load(s) is met by which generators and in what proportion

Procedure for Computation and sharing of ISTS Charges

- c) a given DIC is using which transmission lines and in what proportion
- d) a given transmission is serving which DICs and in what proportion.
- e) and as required by DICs on time to time basis

DRAFT

Process Chart for Determination of Transmission Charges



Procedure for
Collection of data and information for
Determination of Inter-State
Transmission Charges and Losses

In compliance of

Central Electricity Regulatory Commission
(Sharing of Inter-State Transmission Charges
and Losses)
Regulations, 2020 and First Amendment thereof

March, 2023



The Implementing Agency
(National Load Despatch Centre)

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Formats for submission of data to Implementing Agency:

Format-I: Commercial data containing YTC of network elements

Format-II: Commercial data to be furnished by CTU

Format-III: Existing Network data for load flow

Format-IV: Actual Nodal generation and withdrawal data corresponds to peak block

Procedure for collection of data and information

1.0 Outline

- 1.1. This Procedure is made in compliance of Regulation 3(4), 9(2), 23(4) of the Central Electricity Regulatory Commission (Sharing of Inter State Transmission Charges and Losses) Regulations, 2020 and amendments thereof, herein after referred to as “Sharing Regulations 2020 and amendments thereof”.
- 1.2. This procedure provides modalities for the collection of data and information by the Implementing Agency (IA) for sharing of inter-State transmission charges and losses as specified in the Sharing Regulations 2020 and amendments thereof.

2.0 The Implementing Agency

- 2.1 As per definition of Implementing Agency provided in Regulation 2 (1) (m) of Sharing Regulations 2020 and amendments thereof, National Load Despatch Centre (NLDC) is designated as the Implementing Agency till the time such other agency designated by the Commission to undertake various functions under these Regulations.

3.0 Procedure for collecting data and information by Implementing Agency

- 3.1 As per Regulation 23(4) of the Sharing Regulations 2020 and amendments thereof, the Implementing Agency (IA) shall publish detailed procedures along with data formats for collection of data and information from Designated ISTS Customers (DICs), ISTS Licensees, Regional Load Despatch Centres (RLDCs), State Load Despatch Centres (SLDCs), Central Transmission Utility (CTU) and State Transmission Utility (STUs) / non-ISTS licensees whose assets have been approved by CERC as being used for inter-State transmission, for Implementation of the provisions of Sharing Regulations 2020 and amendments thereof after stakeholder consultation.

4.0 Relevant definitions from the Regulations

- 4.1 ‘Basic Network’ means the power system at voltage levels of 110 kV and above containing all the power system elements including generating station and transmission systems;
- 4.2 ‘Billing month’ means the month in which bills for transmission charges are raised by the Central Transmission Utility in accordance with these regulations;
- 4.3 ‘Billing period’ means the month for which bills are raised in a billing month by the Central Transmission Utility;
- 4.4 ‘Designated ISTS Customer’ or ‘DIC’ means the user of any transmission element(s) of the Inter-State Transmission System (ISTS) and shall include generating station, State Transmission Utility (STU), distribution licensee including State Electricity Board or its successor company, Electricity Department of State and any other entity directly connected to the ISTS and shall include an intra-State entity or a trading licensee that has obtained; GNA or GNARE or T-GNA or T-GNARE to ISTS, as may be applicable.

Procedure for collection of data and information

- 4.5 'Drawee DIC' shall mean the DICs which draw power through ISTS but shall not include the ESS for the purpose of sharing of transmission charges under Regulations 5 to 8 of Sharing Regulations 2020 and amendments thereof.
- 4.6 'GNA Regulations' means Central Electricity Regulatory Commission (Connectivity and General Network Access to the inter-State Transmission System) Regulations, 2022 and any subsequent amendments or re-enactments thereof;"
- 4.7 'node' means a sub-station of a transmission system or a switchyard of a generating station and shall include injection node, drawal node and regional node;
- 4.8 'Peak block' means the block in which sum of net ISTS drawals by all States is maximum during the month;
- 4.9 'regional node' means an injection node or a drawal node which is under the control area jurisdiction of a Regional Load Despatch Centre;
- 4.10 'Yearly Transmission Charges' or 'YTC' means the annual transmission charges as determined or adopted by the Commission for the transmission elements of ISTS which have achieved COD upto the last day of a billing period, and for intra-State transmission lines used for Inter-State transmission of electricity as approved by the Commission;

5.0 Notification of Peak Block by IA

- 5.1 As per Regulation 24(2), Peak block for the billing period shall be published by IA, on its website on the first day of the month following the billing period.

6.0 Guidelines and modalities for submission of data to the IA

- 6.1 As per Regulation 3(4) of the Sharing Regulations 2020, Sharing of transmission charges for the DICs shall be based on the technical and commercial information provided by the DICs, Inter-State Transmission licensees, RLDCs, SLDCs and CTU to the Implementing Agency.
- 6.2 The guidelines and modalities for submission of data by all DICs, ISTS licensees, Deemed ISTS Licensees and owners of CERC approved non-ISTS lines, RLDCs, STU/SLDCs and CTU to the IA are detailed in para 6.4.

6.3 Data and information to be submitted by all DICs

- 6.3.1 All DICs shall submit the following data to the Implementing Agency as well as to the respective RLDCs by 7th day of each month following billing period in the prescribed formats enclosed with this procedure:
- (i) Basic Network data along with the network connectivity diagram corresponding to peak block (an updated geographical power map/ single line diagram, indicating the lines which are kept open from end and bus split arrangement (if any).
 - (ii) Total actual injection and withdrawal (MW and MVar) data at various nodes or group of nodes for the notified peak block of the billing period.

Procedure for collection of data and information

(iii) Details of GNA and GNA-RE for the billing period.

6.3.2 The Basic Network shall comprise of the entire electricity system, electrical plants and/ or transmission lines at voltage levels of 110 kV and above and all the generators connected upto 110 kV level corresponding to Peak Block identified and published by IA. In the States where voltage level next to 220 kV/ 230 kV system is 132 kV, data of entire network upto 132 kV level is to be furnished. Power flow into a lower voltage system from the voltage levels indicated in the definition of the Basic Network shall be considered as load at that sub- station. Power flow from a lower voltage system into the electricity systems at the voltage levels indicated in the definition of the Basic Network shall be considered as generation at that sub-station. However, there are certain DICs, like Chandigarh, which is connected only at 66 kV level. In order to represent these States/ Union Territories (UTs) in the basic network, network data upto such level shall be furnished by those DICs.

6.3.3 If any DIC fails to submit the data as required within the stipulated time frame, IA shall compute transmission charges based on the data available from other alternate sources as per Regulation 24(5) of Sharing Regulations 2020 and amendments thereof.

In case of drawee DICs, total drawal of a DIC shall be computed based on SEM data for the peak block. Where SEM data is not available, SCADA data shall be used. DIC should provide nodewise data as per the Regulations. Where DIC shall not provide nodewise data within stipulated time period, apportionment of loads in different nodes of DIC shall be considered in proportion to the node wise data submitted by DIC for the most recent TTC/ATC computation PSSE base case/ recently submitted updated base case data by the states for peak scenario.

- a. For a few cases, DICs are distribution licensees. For preparation of base case, nodewise data for all nodes in a State is required. There may be nodes which are not under control jurisdiction of a distribution licensee within the State such as injection data for generation within the State or drawal data at nodes not covered by any distribution licensee or such distribution licensee which has no Access with under ISTS. For such nodes, respective SLDC shall provide the actual injection and drawal data for the peak block within stipulated time period.
- b. In case of generation nodes, total generation of DIC shall be based on SEM data for peak block. Where nodewise data is provided by DIC, apportionment of generation in different generation nodes shall be in proportion to the node wise data submitted by DIC for the most recent TTC/ATC computation PSSE base case for peak scenario.
- c. In case non-availability of SEM data, SCADA data at the time of peak block shall be used. In case SCADA data is not available, TTC/ATC computation PSSE base case for peak scenario alone shall be the basis for considering node wise demand/ generation.

6.4 Data and information to be submitted by all ISTS Licensees, owners of CERC approved non-ISTS lines being used as ISTS

6.4.1 The list of lines and system which forms a part of the ISTS Network for the billing period shall be furnished on or before the end of billing period by the owners of the following lines and system in the prescribed formats enclosed with this procedure:

- (i) ISTS Lines and system

Procedure for collection of data and information

- (ii) Non-ISTS Lines and system, whose tariff has been approved by CERC as they are being used as ISTS
- 6.4.2 The respective owners of lines and system shall provide the list of such lines and system to be considered for the sharing mechanism by the end of the billing period. In case of non-ISTS lines and system whose tariff has been approved by CERC as being used as ISTS, the owners shall also submit a copy of CERC approval (tariff order).
- 6.4.3 The YTC of the entire ISTS network along with the available YTC breakup of network elements shall be provided by the Inter-State Transmission Licensees, intra-state licensees, tariff for whose assets have been approved by CERC as being used for inter-State transmission.
- 6.4.4 In addition, all ISTS licensees or the generating company as the case may be, shall also provide the details of assets to be considered for bilateral billing under Clause (2) of Regulation 20 along with all relevant details to IA.
- 6.4.5 IA shall consider Monthly Transmission Charges (MTC) by multiplying number of days in a billing period with YTC per day of the corresponding year for all the licensees in the sharing methodology.
- 6.4.6 In case new transmission elements have declared COD during the billing period, the entities shall submit to the IA, network data, date(s) of commercial operation of the new transmission element and Yearly Transmission Charge of such transmission element in the format stipulated by the Implementing Agency by the end of the billing period.
- 6.4.7 In case any new transmission element has declared COD on last day of the billing period, the entity shall submit to the IA, network data, date(s) of commercial operation of the new transmission element and Yearly Transmission Charge of such transmission element in the format stipulated by the Implementing Agency by the first day of the month following billing period.
- 6.4.8 In case of a new transmission element that has declared COD during the billing period, while considering the YTC of the element in the computations for that billing period, Monthly transmission charges on pro-rata basis for the total number of days that element has existed in the network shall be considered under the sharing methodology for the billing period.
- 6.4.9 The Yearly Transmission Charges (YTC) of the new transmission elements, whose charges are to be recovered for which petitions for approval of Transmission Tariff have been filed in the Commission and for which provisional tariff have been approved by the Commission and COD of respective elements have already been achieved, shall also be submitted by the respective inter-State/ intra-state transmission Licensees whose tariff have been approved by CERC.
- 6.4.10 In case some of the transmission elements of the Associated Transmission System have achieved COD before the COD of Associated Transmission System, the YTC for such transmission elements of the Associated Transmission System shall be included, if such transmission elements are certified by the respective RPCs as required for improving the performance, safety and security of the grid. YTC of such transmission elements shall only be considered for a billing period on furnishing the details of RPC certification of the transmission elements to IA as per the stipulated time lines for furnishing data by the ISTS licensees as per this procedure.

Procedure for collection of data and information

6.5 Data and information to be provided by CTU

CTU shall provide the following data and information to IA within 7 days of the end of the billing period:

- 6.5.1 CTU shall provide the details of GNA and GNA-RE for the billing period, including the effective date of GNA and GNA-RE and the relevant sub-clause of Sharing Regulations, 2020 and amendment thereof; referred for categorization of GNA as GNA-RE.
- 6.5.2 Details of GNA and GNA-RE:
- i. As per Regulation 13(2) of Sharing Regulations 2020 and amendments thereof, Waiver of transmission charges for the use of ISTS shall be applicable for transactions under GNA and GNA-RE on fulfilling certain conditions.
 - ii. Details of such GNA and GNA-RE shall be furnished by CTU to IA along-with supporting documents.
 - iii. CTU shall provide the breakup of regional level GNA of HVDCs as given in the Annexure-I of GNA Regulations, 2022 and amendments thereof.
- 6.5.3 As per Regulation (5) (2), CTU shall identify and furnish the details of transmission systems to be considered under NC-RE component to IA.
- 6.5.4 CTU shall provide indicative cost for transmission lines for each conductor configuration at each voltage level to the Implementing Agency.
- 6.5.5 Data to be furnished for Regional Component of Transmission charges:
- (i) As per Regulation 6(b) to Sharing Regulations 2020 and amendments thereof, CTU shall provide separate region wise YTC for static compensators (STATCOMs), static VAR compensators (SVCs), bus reactors, spare transformers, spare reactors and any other transmission element(s) located in the concerned region and identified by the CTU as being critical for providing stability, reliability and resilience in the grid.
 - (ii) In case, separate YTC is not available for such transmission elements, worked out YTC for such elements apportioning Yearly Transmission Charges approved by the Commission for the integrated project, based on indicative capital cost.
- 6.5.6 Data to be furnished for Transformers component:
- (i) As per Regulation 7(1) to Sharing Regulations 2020 and amendments thereof, CTU shall provide a list of Inter- Connecting Transformers (ICTs) planned for the drawal of power by the concerned state along with the YTC of the transformers.
 - (ii) In case, YTC of ICTs for a state are not available, worked out YTC for such elements apportioning Yearly Transmission Charges approved by the Commission for the integrated project, based on indicative capital cost shall be furnished.
- 6.5.7 Additional Data to be furnished by CTU for implementing Regulation (13) of Sharing Regulations 2020 and amendments thereof.
- (i) As per Regulation 13(3) of Sharing Regulations 2020 and amendments thereof, where COD of a Connectivity grantee other than Renewable Power Park Developer is delayed on or before start date of Connectivity in terms of GNA Regulations, and the Associated Transmission System has

Procedure for collection of data and information

achieved COD, which is not earlier than start date of Connectivity, the Connectivity grantee shall pay Yearly Transmission Charges for the Associated Transmission System corresponding to Connectivity capacity which has not achieved COD:

Provided that where a Connectivity grantee is Renewable Power Park Developer and the generation capacity within the Renewable Power Park has not declared COD on or before start date of Connectivity in terms of GNA Regulations, and the Associated Transmission System has achieved COD, which is not earlier than start date of Connectivity, the Renewable Power Park Developer shall pay Yearly Transmission Charges for the Associated Transmission System corresponding to generation capacity which has not achieved COD:

Provided that Yearly Transmission Charges in respect of Associated Transmission System corresponding to the Connectivity capacity which have achieved COD shall be included for determination of transmission charges of DICs in accordance with Regulations 5 to 8 of Sharing Regulations 2020 and amendments thereof.

For each billing period, CTU shall furnish Connectivity details (date and quantum) along with other details of number of generation capacity/unit(s) declared COD, if any. In case of partly commissioned generation capacity, YTC details of ATS, YTC billed to generator (in case generation not commissioned/ partly commissioned), YTC to be considered in computation (in case generation commissioned/ partly commissioned) etc. to the IA as per the stipulated formats in this procedure.

- (ii) As per Regulation 13(4) of Sharing Regulations 2020 and amendments thereof, where one or more of the transmission elements of the Associated Transmission System have achieved COD before the COD of the Associated Transmission System and the Connectivity grantee seeks part effectiveness of its Connectivity as per Clause (a) of Regulation 22.4 of GNA Regulations, Yearly Transmission Charges in respect of such transmission elements of the Associated Transmission System shall be included for determination of transmission charges of DICs in accordance with Regulations 5 to 8 of these regulations.”

For each billing period, CTU shall furnish details of part effectiveness of Connectivity, details of ATS and associated elements of ATS to be included for determination of transmission charges of DICs etc. to the IA as per the stipulated formats in this procedure.

- (iii) As per Regulation 13(7) of Sharing Regulations 2020 and amendments thereof, for each billing period, in case CTU granted Connectivity to a Connectivity grantee on existing margins and COD of the generation capacity/ unit(s) is delayed, CTU shall furnish the details of Connectivity granted on existing margins, details of delayed generation capacity/unit(s) to the IA as per the stipulated formats in this procedure.
- (iv) As per Regulation 13(9) of Sharing Regulations 2020 and amendments thereof, for each billing period, for all applicable cases of dedicated transmission system, CTU shall furnish the YTC details of dedicated transmission line, quantum of Connectivity for the dedicated transmission line etc. to the IA as per the stipulated formats in this procedure.

7.0 Timeline for submission of data for each billing period:

- a) Basic Network Data by DICs: with in first 7 days of each month following billing period YTC to be submitted by licensees: by the end of the billing period. (by first day of the month following billing period, in case, if any new asset is commissioned on the last day of the billing period).
- b) Nodal injection and Demand Data by DICs: with in first 7 days of each month following billing period.
- c) Data as detailed in Para 6.6 by CTU: with in first 7 days of each month following billing period.

8.0 Formats for Data submission to the Implementing Agency

8.1 Formats for data submission: The formats for data submission are described below:

8.1.1 **Format - I:** Commercial data containing YTC of network elements: This format is to be filled by

- (a) ISTS licensees
- (b) Owners of deemed ISTS
- (c) Non-ISTS licensees whose assets have been approved by CERC for being used as inter-State transmission system

Format - I consists of the following three parts:

Format I-A: Summary of Line wise YTC

Format I-B: Commercial data containing YTC of ISTS network elements
Format I-C: Commercial data containing bilateral billing details of ISTS assets

8.1.2 **Format – II:** Commercial data to be furnished by CTU

Format II-A: Commercial data containing YTC of FACTS devices, Bus Reactors, Spare Transformers, Spare Reactors as identified by CTU

Format II-B: Commercial data of Inter-Connecting Transformers (ICTs) planned for drawal of power by the concerned state

Format II-C: Commercial data related to GNA

Format II-D: Commercial data related to GNA-RE details of exempted generation

Format II-E: Commercial data of RE transmission network to be considered for NC-RE component

Format II-F: Details of Indicative cost of transmission lines for available conductor configuration

Format II-G: This format has 4 nos. of sub-formats related to the additional details to be furnished

by CTU in order to implement Regulation (13) of Sharing Regulations 2020 and amendments thereof

Procedure for collection of data and information

8.1.3 **Format - III:** Existing Network data for load flow: This format is to be filled by

- (a) ISTS licensees
- (b) Owners of deemed ISTS
- (c) Non-ISTS licensees with assets approved by CERC as being used for inter-State transmission of electricity
- (d) State transmission utilities, SEBs or load serving entities
- (e) Generators which are Regional entities
- (f) Format – III consists of the following six parts: Format III-A: Bus data

Format III-B: Generator data Format III-C: AC line data

Format III-D: Transformer/ ICT data Format III-E: HVDC line data Format III-F: Switched shunt data

Format III-G: FACTS devices data

All the columns in the formats are to be filled in 'per unit' values at the 100 MVA base and concerned base voltage without leaving any blanks.

Entities may also avail an option of sending updated PSSE base case with all the data filled as mentioned in Format-III indicating all the technical parameters instead of sending filled in formats of Format-III.

8.1.4 **Format - IV:** Actual injection/ demand data:

This format is to be filled by all the DICs.

Format IV-: Actual Nodal generation and Nodal demand data for peak block for the purpose of preparation of representative base case.

8.2 **Mode of data submission**

The data shall be submitted through a web based application interface ('BRIQ') in which the formats are standardized. Each user shall be issued a login to the interface for the purpose of submitting the data as well as viewing the results.

Instructions for filling Format – I

1. Format-I is for commercial data containing line wise Yearly Transmission Charge (YTC). This is to be filled up by ISTS licensee, owners of deemed ISTS and owners of Non-ISTS licensees whose assets have been approved by CERC for being used as inter-State transmission system.
2. Only sky coloured cells are to be filled-up.
3. In YTC Details sheet, while filling up status of YTC; either FA (Finally Approved) or PA (Provisionally approved) or C (competitive bidding based) should be written depending on the position.
4. Section 6.4 of the procedure should be followed while filling-up the two sheets YTC Details and YTC Summary.
5. While filling up Reference in Format I(B), RPC certifications details is meant for the network elements of an Associated Transmission System (ATS) that are certified by RPCs to be considered under computations
6. Date of Commercial Operation for only those lines which are commissioned by the end of the billing period.

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Commercial data containing summary of line-wise YTC

Name of the Transmission Licensee:	
Address:	
Contact Person	
Contact Number	

Voltage Level (KV)	Conductor Type	Ckt Kms	Total YTC (Rs Lakhs)
765			
400			
220			
132			
66*			

* 66 kV if it is part of the ISTS, like Chandigarh, etc.

Commercial data containing bilateral billing details of ISTS assets

Name of the Transmission Licensee/ Owners of Deemed ISTS Licensees/ Owners of Non-ISTS lines certified by RPCs	
Address:	
Contact Person	
Contact Number	

Sl.No.	Region	Voltage level (kV)	Name of transmission element	YTC (Rs. Lakhs/ annum)	Status of YTC	Reference (Approval Order/ Petition No)	Date of Commercial Operation	Name of the Beneficiary for Bilateral billing

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Instructions for filling up the Format – II

Format II-A

1. Format-II A is for commercial data containing region-wise YTC of static compensators (STATCOMs), static VAR compensators (SVCs), bus reactors, spare transformers, spare reactors and any other transmission element(s) located in the concerned region and identified by the CTU as per Para 6.5 of this procedure.
2. Only sky coloured cells are to be filled-up.
3. While filling formats, sub-devices name and number of sub-devices columns shall be filled in case of STATCOMs and SVCs. For a device type, STATCOM, sub devices are STATCOM, MSR, MSC, Coupling Transformer and for a device type, SVC, sub devices are TCR, TSC, MSC, MSR, Coupling Transformer.
4. No sub-device wise YTC is required. YTC of complete device shall be filled.
5. Date of Commercial Operation for only those lines which are commissioned during the billing period.

Format II-B

1. Format II-B is for commercial data containing state-wise YTC of Inter-Connecting Transformers (ICTs) planned for the drawal of power by the concerned state.
2. Only sky coloured cells are to be filled-up.
3. Date of Commercial Operation for only those lines which are commissioned during the billing period.

Commercial data related to GNA

Details of General Network Access granted by CTU					
Sr. no.	Name of DIC	Region	GNA quantum (MW)	Effective date of GNA	Remarks

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In compliance of Regulation 13(7)

Sl.No.	Name of Connectivity grantee	Connectivity granted by CTU (MW)	Date of Connectivity granted	Commissioned Connectivity Capacity(MW)	Date of Commercial Operation	Delayed Connectivity capacity(MW)	Remarks
1	CG	Q	D	q1	d1		
				q2	d2		

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Instructions for filling-up the Format – III

1. Format-III is for network data. ISTS Licensees, owners of deemed ISTS, owners of Non-ISTS licensees with assets certified by RPCs as being used for inter State transmission and DICs whose assets are being considered in the Basic Network shall supply the network data.
2. There are seven data sheets, Format-II(A) to Format-II(G) to be filled-up containing Bus Data, Generator Data, AC Line Data, Transformer Data, DC Line Data, Switch Shunt Data, FACTS devices data and one sheet with Agency details who submits data.
3. Only sky coloured cells are to be filled-up.
4. Section 6.3 of the procedures may also be referred for filling up the formats.
5. While filling Format-IIIG, sub-devices name and number of sub-devices columns shall be filled in case of STATCOMs and SVCs. For a device type, STATCOM, sub devices are STATCOM, MSR, MSC, Coupling Transformer and For a device type, SVC, sub devices are TCR, TSC, MSC, MSR, Coupling Transformer.
6. Date of Commercial Operation for only those lines which are commissioned during the billing period.

Submission of network data for Load Flow Study

**Details of ISTS licensee/ owner of deemed ISTS/ DIC whose assets are included in
basic network**

Name of the data submitting Agency	
Whether ISTS licensee/deemed ISTS owner/DIC	
Address	
Contact Person	
Contact Number	

Procedure for collection of data and information

Network data for Load Flow Studies

Information to be submitted by ISTS licensee/deemed ISTS owner/ DIC

Date of Commercial Operation	Bus Name	Base Voltage (kV)	Bus Type *	Shunt Admittance		In service/ Out of service during Peak Block
				Conductance (MW)	Susceptance (MVAR)	

Note: Bus Type

1 - Load Bus

2 - Generator Bus

3 - Swing Bus

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Procedure for collection of data and information

FORMAT – III (D)

Network data for Load Flow Studies Information to be submitted by ISTS licensees/deemed ISTS owners/ DICs

Date of Commercial Operation	From Bus Name	To Bus Name	Ckt ID	In Service/ Out of service during Peak Block	Rate A	Rate B	Rate C	Nominal Tap Ratio	Transformer Phase shift angle	Resistance (R)	Reactance (X)	Controlled Bus	Max. Turns Ratio	Min Turns Ratio	Max Controlled Volts	Min Controlled Volts	Turns Ration Step Increment	Table

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Instructions for filling-up Format-IV

FORMAT-IV

1. Format-IV is to be filled up by DICs with withdrawal / injection data.
2. Only green coloured cells are to be filled-up.
3. Withdrawal & injection figure of each node upto 110 KV level are to be entered.
4. In case of injection / withdrawal in a particular node, both data are to be entered against the said node.

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Actual Injection / Withdrawal data corresponds to peak block at all nodes upto 110 kV Information to be submitted by DICs

Name of the DIC:						
Address						
Contact Person:						
Contact Number:						
E-Mail ID:						
Block						

FINANCIAL YEAR						
Billing Period:						
		Date :				
SI. No.	Name of Node	Voltage level	Actual Withdrawal		Actual Injection	
			MW	MVAr	MW	MVAr

**Procedure for
Computation and sharing of Inter-State Transmission System
Losses**

In compliance of

**Central Electricity Regulatory Commission
(Sharing of Inter-State Transmission Charges and Losses)
Regulations, 2020 and First Amendment thereof**

March, 2023



**The Implementing Agency
(National Load Despatch Centre)**

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1.0 Outline and Scope

- 1.1 This procedure provides the detailed methodology for application of the inter-State transmission system (ISTS) losses on the DICs for the purpose of scheduling power on the ISTS under GNA and T-GNA.
- 1.2 The ISTS losses as arrived as per this procedure shall be applied on all the Regional Entities in line with Regulation (10) of Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges and Losses) Regulations, 2020 and amendments thereof (hereinafter referred to as “Sharing Regulations 2020 and amendments thereof”). The entities embedded within the State jurisdiction shall have to share additional losses for using intra-State system as applicable in the respective control area.

2.0 Objective:

- 2.1 The procedure aims to provide methodology for computation of the transmission losses and accordingly finalize schedules at various State/ regional boundaries.
- 2.2 The procedure also aims to ensure that the computed transmission losses to be applied for scheduling of generation and demand under various contracts are as near to the actual transmission losses as possible.

3.0 Computation of Transmission Losses

- 3.1 As per methodology outlined in the Sharing Regulations 2020 and amendments thereof, Transmission losses for ISTS shall be calculated on All India average basis by the Implementing Agency for each week, from Monday to Sunday, as under:

$$\text{All India Average transmission Losses for ISTS} = \frac{In - Dr}{Ir} \times 100$$

Where,

‘In’ denotes sum of injection into the ISTS at regional nodes for the week;

‘Dr’ denotes sum of drawal from the ISTS at regional nodes for the week;

$$Ir = In - ISre$$

'ISre' denotes injection at ISTS by solar, wind, solar-wind hybrid, Hydro PSP and BESS Projects with following conditions:

- a) generation based on solar power resource for the useful life of the projects commissioned during the period from 1.7.2011 to 30.6.2017.
 - b) generation based on solar or wind power resources for a period of 25 years from the date of commercial operation, fulfilling the following conditions:
 - i. Such generation capacity has been awarded through competitive bidding; and
 - ii. Such generation capacity has been declared under commercial operation during the period from 1.7.2017 to 12.2.2018 for solar based resources or during the period from 30.9.2016 to 12.2.2018 for wind based resources; and
 - iii. Power Purchase Agreement(s) have been executed for sale of power from such generation capacity to the Distribution Companies for compliance of their renewable purchase obligation.
 - c) generation based on solar or wind power resources , for a period of 25 years from the date of commercial operation, fulfilling the following conditions:
 - i. Such generation capacity has been awarded through competitive bidding process in accordance with the guidelines issued by the Central Government; and
 - ii. Such generation capacity has been declared under commercial operation during the period from 13.2.2018 to 30.6.2023 or date of operation of the First amendment to these regulations, whichever is earlier; and
 - iii. Power Purchase Agreement(s) have been executed for sale of such generation capacity to all entities including Distribution Companies for compliance of their renewable purchase obligations.
 - d) generation based on solar, wind, solar-wind hybrid, Hydro PSP and BESS Projects whose bidding was completed on or before 15.1.2021 and which are declared under commercial operation within the date specified in their respective PPAs.
- 3.2 In case multiple the injection data of solar or wind generators are connected at a common connection point out of which some qualify under Regulation 13(1) and some doesnot qualify, prorata injection shall be considered for the purpose of Regulation 13(1) under ISre.
- 3.3 Notwithstanding above, where it is not possible to segregate the portion of solar/wind generation as applicable under (a) and (b) as above, ISre shall be considered as zero.
- 3.4 Drawal schedule of DICs shall be prepared as per provisions of the Grid Code taking into account the transmission losses of the week preceding the last week.

- 3.5 Transmission losses for ISTS shall be considered as zero while preparing injection schedule of DICs including that for Collective Transactions in the Power Exchanges.
- 3.6 The injection and withdrawal in the ISTS by the Regional Entities is metered with the help of Special Energy Meters (SEMs) installed at their interface boundary with ISTS. The SEM data is collected and processed weekly for the previous week starting from 0000 hours of Monday to 2400 hours of Sunday.
- 3.7 Each RLDC shall process the last week SEM data and shall send to IA by Thursday of each week for the purpose of computation of all India average transmission loss for ISTS.
- 3.8 The actual losses for All India shall be computed from the data of Injection and withdrawal for each time block by the Regional entities and the inter- regional exchanges as computed from the SEMs installed at the Regional Entities' boundaries.
- 3.9 IA shall compile SEM data sent by each RLDC and shall prepare and calculate All India average transmission loss for ISTS.
- 3.10 The Regional boundaries shall be as per Annexure - 1 of Indian Electricity Grid Code (IEGC) Regulations, 2010 and any subsequent amendments made thereto.

4.0 Application of losses while scheduling of contracts

- 4.1 Based on the actual average weekly loss percentage computed as in Para 3.1 based on data of previous week (w-1), Implementing Agency shall declare average weekly loss to be used for scheduling during the subsequent week (w+1).
- 4.2 IA shall notify the all India average transmission loss for ISTS on its website on each Friday for application of calculated loss from Monday to Sunday of next week.
- 4.3 In case of any unforeseen extreme circumstances, in the absence of significant quantum of SEM data of any region, if it is not possible to compute All India average transmission loss for ISTS, then the notified ISTS loss of previous week shall continue to remain in force for scheduling for subsequent week.
- 4.4 The losses once scheduled shall not be revised subsequently.

4.5 Scheduling of Transactions under GNA and T-GNA:

- 4.5.1 For the purpose of scheduling, transmission losses for ISTS is applicable to withdrawal DICs only. Transmission losses for ISTS shall be considered as zero while preparing injection schedule of DICs including that for Collective Transactions in the Power Exchanges.

- 4.5.2 The net drawal schedule of a drawee DIC from an injecting DIC shall be computed by deducting the percentage loss applicable as illustrated below:

Illustration

Say X, Y, Z are the injecting DICs (with Installed Capacity of 100 MW each). Let 'A' be drawee DIC with 'L' being the average all India transmission loss. Let 'A' has 25% share in each injecting DIC 'X', 'Y', 'Z' .

Suppose on a day for a block, 'A' has requisitioned full power from each generator (X,Y,Z). Suppose X,Y,Z has no schedule from any buyer other than A and A has no schedule other than X,Y,Z. Then the ex-bus schedule of X,Y,Z in any 15-minute time block of the day would be 25MW each.

The net drawal schedule of 'A' at its periphery with ISTS in same block would be $25*(1-L/100)+ 25*(1-L/100)+ 25*(1-L/100)$.

- 4.5.3 The total losses attributable to the drawee DIC shall be shown in one separate column along with different ex-bus power plant schedule from each injecting DIC for each 15 minute time block to compute the net drawal schedule of the drawee DIC in that time block.

4.6 Scheduling of Bilateral and Collective transactions under T-GNA

- 4.6.1 For all transactions under this category, ISTS transmission losses shall be applied on drawee DIC only. Accordingly, the drawee DIC shall draw contracted quantum of power after deducting the applicable losses.
- 4.6.2 In case the DIC is embedded within a State Control Area, loss in that State control Area loss shall be in addition to the above ISTS losses for each embedded entity, the schedule of the drawee embedded entity shall be further scaled down by the applicable losses of that State. Further, the schedule of injecting embedded entity shall be scaled up by the applicable losses of that State.

4.7 Computation of Inter-Regional Schedules for Bilateral and Collective transactions under T-GNA

- 4.7.1 The contracted power shall be at the ex-bus of regional control area. All schedules of the injecting and demand DICs at their respective bus-bars/ State boundaries (in the case of embedded entity) shall be arrived at by applying the transmission losses of withdrawing DIC. The sample calculation of schedule at the inter-regional boundaries is illustrated below:

Example: Let the Injecting DIC is located in Region-1 and the power is wheeled through Region-2 and the Drawee DIC is located in Region-3.

Let the contracted quantum power be P.
Let All India average loss percentage be 'L'.

Then the injecting DIC must inject 'P'

The schedule at the inter-regional boundary between Region-1 and Region-2 shall be P and that between Region-2 and Region-3 shall also be P.

The schedule of drawee DIC shall be $= P * \left(1 - \frac{L}{100}\right)$

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