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 15th day of each month following billing period
12	Comments to be sent by all DICs on the all India basic network to IA	By 18th day of each month following billing period
13	Notification of transmission charges payable by DICs by NLDC	By 25th 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

c) a given DIC is using which transmission lines and in what proportion

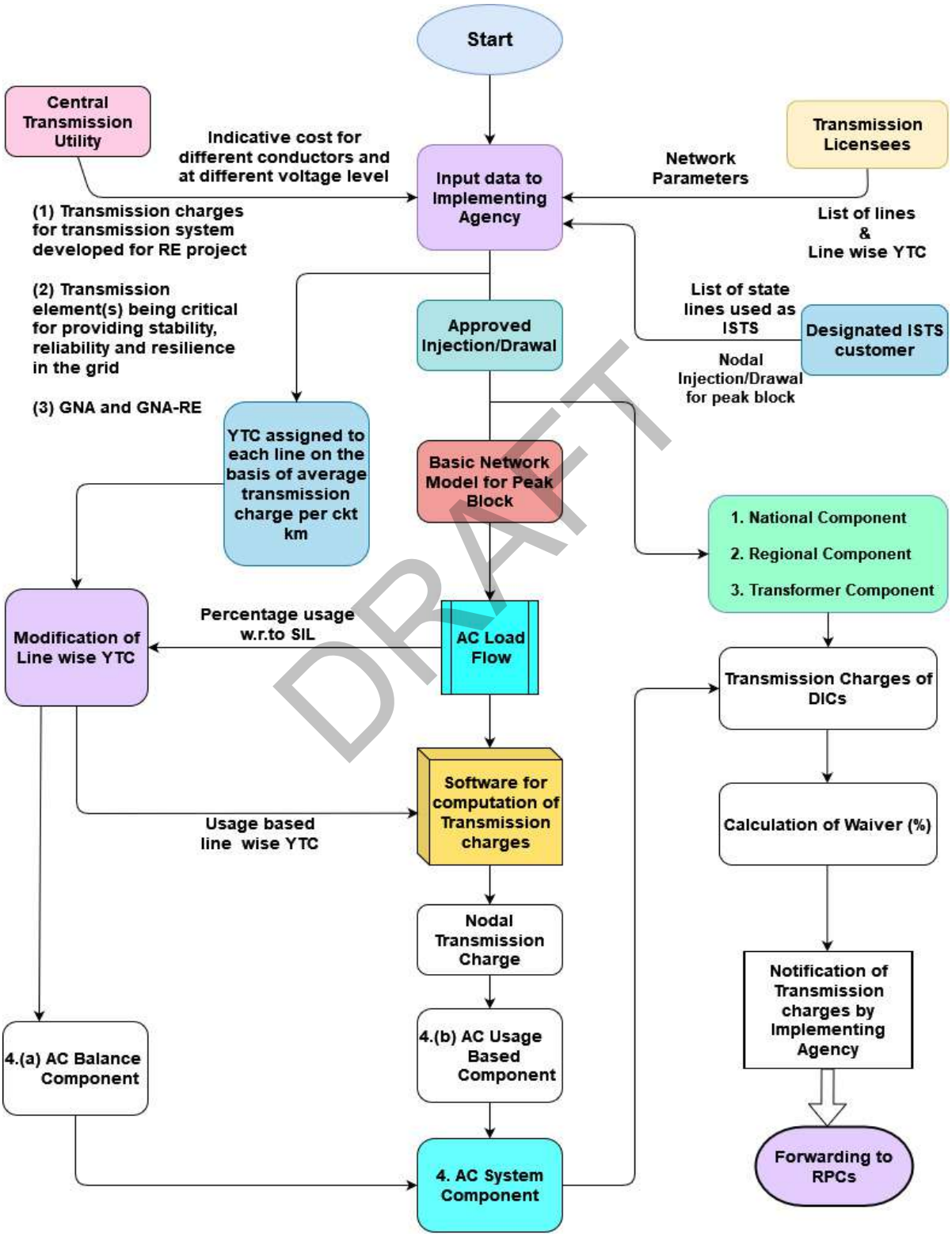
d) a given transmission is serving which DICs and in what proportion.

e) and as required by DICs on time to time basis

***

Annexure I

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:

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.

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.

(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

(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.

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

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

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.

FORMAT – I (A)

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.

FORMAT – I (B)

Commercial data containing YTC of ISTS Network elements

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

Sl. No.	Voltage Level (kV)	Name of ISTS Network element	Type of Network element	In case of transmission line			YTC (` Lakhs per annum)	Status of YTC	Reference (Approval Order/ Petition No/ RPC certification details)	Date of Commercial Operation*
				Type of Conductor	No. of sub-Conductors	Length (ckt km)				

* Only for those lines which are commissioned by the end of the billing period

FORMAT – I (C)

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

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.

FORMAT II-A

Commercial data containing YTC of FACTS devices, Bus Reactors, Spare Transformers, Spare Reactors as identified by CTU

S.No.	Name of ISTS Licensee	Voltage Level (kV)	Substation Name	Region	Name/ Type of the Equipment	Date of Commercial Operation	Total MVAR Capacity	YTC to be considered in computation (Rs. Lakh per annum)	YTC to be billed under bilateral charges (If any) (Rs. Lakh per annum)	Remarks

FORMAT II-B

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

S.No.	Name of ISTS Licensee	Voltage Rating	Transformation Capacity (MVA)	Name/ type of the element	Name of Sub-Station	Name of serving State-1	No. of Feeders serving State- 1	Name of serving State-2 (if applicable)	No. of Feeders serving State- 2 (if applicable)	Date of Commercial Operation	YTC (in Lakhs)	YTC to be billed under bilateral charges (If any)	Remarks

FORMAT II-C

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**

FORMAT II-D

Commercial data related to GNA-RE details of exempted generation

S.No	Name of the Connectivity grantee	Region	Quantum of Connectivity Granted by CTU	Name of the beneficiaries (for GNA granted)	Quantum of GNA	Effective date of GNA	Exempted quantum (in MW)	Sub-clause of Regulation 13(2) referred for exemption	Remarks	Pooling Station
1	CG	R	Q	X	q(x)	d1	eq(x)			
				Y	q(y)	d2	eq(y)			

Procedure for collection of data and information

FORMAT II-E

Commercial data of RE transmission network to be considered for NC-RE component

S.No.	Name of the ISTS Licensee	Voltage level	Project Name	Asset name	Equipment type	Line name	In case of Transmission line			YTC in Lakhs	YTC to be considered for NC-RE	YTC to be billed under bilateral charges(if any)	Reference (Approval Order/ Petition No)	Date of Commercial Operation	Remarks
							Type of Conductor	No. of sub-Conductors	Line Length (ckt km)						

FORMAT II-F

Details of Indicative cost of transmission lines for available conductor configuration

Sl. No.	Voltage level (kV)	Type of conductor configuration	Indicative cost (Rs.Lakh/km)

FORMAT II-G(1)

In compliance of Regulation 13(3)

S.No.	Name of the Transmission Licensee	Details of Connectivity grantee				Details of Associated transmission system (ATS)						YTC to be billed to Connectivity grantee (Rs.Lakhs/ Annum)	YTC to be considered under computations (Rs. Lakhs/ Annum)	Remarks
		Name of Connectivity grantee	Connectivity granted by CTU (MW)	Commissioned Connectivity Capacity	Date of Commercial Operation	Voltage level (kV)	Name of Transmission element	Ckt (Km)	YTC (Rs. Lakhs/ annum)	Reference (Approval Order/ Petition No)	Date of Commercial Operation			

Procedure for collection of data and information

FORMAT II-G(2)

In compliance of Regulation 13(4)

Sl.No.	Details of Connectivity grantee					Details of Associated transmission system (ATS)						
	Name of Connectivity grantee	Installed Capacity (MW)	Date of Commercial Operation	Connectivity granted (MW)	Part Operationalization of Connectivity capacity (MW)	Voltage level (kV)	Name of transmission element	Status of COD (Commissioned(C)/ Not Commissioned(NC)) **(As on date of Part Operationalisation of Connectivity capacity)**	YTC (Rs. Lakhs/ annum)	Reference (Approval Order/ Petition No)	Date of Commercial Operation	Asset considered in part operationalization of Connectivity capacity (Y/N)

FORMAT II-G(3)

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		

Procedure for collection of data and information

FORMAT II-G(4)

In compliance of Regulation 13(9)

Sl. No	Details of Connectivity grantee					Details of dedicated transmission system								Remarks
	Name of Connectivity grantee	Quantum of Connectivity granted (MW)	Date of Connectivity granted	Commissioned Connectivity capacity(MW)	Date of Commercial Operation	Name of Dedicated transmission line	Owned by ISTS licensee	Voltage level (kV)	Ckt (Km)	YTC (Rs. Lakhs/ annum)	YTC to be billed to concerned Generator (Rs. Lacs/ Annum)	YTC to be considered in computation (Rs.Lacs/ annum)	Reference (Approval Order/ Petition No)	

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.

FORMAT III-A

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	

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

FORMAT III-B

Network data for Load Flow Studies

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

Date of Commercial Operation	Bus Name	Machine Identifier (ID)	MW Output (PG)	Max MW (PT)	Min MW (PB)	MVAR Output (QG)	Max MVAR (QT)	Min MVAR (QB)	Voltage Set point (VS)	Remote Controlled Bus Index (IREG)	MVA Base (MBASE)	In service/ Out of service during peak block	Machine Impedance (pu on MBASE)		Step up Transformer Impedance (pu on MBASE)		Off Nominal Tap Ratio	RMPCT
													Resistance (ZR)	Reactance (ZX)	Resistance (R T)	Reactance (XT)		

FORMAT – III (C)

Network data for Load Flow Studies Information to be submitted by ISTS licensee/ deemed ISTS owner/ DIC

Date of Commercial Operation	From Bus Name	To Bus Name	Ckt ID	Length	Owner	Type of Line (NISTS/ AISTS/ STS)	Line configuration	Shunt Admittance				Operational Limits			Electrical Parameters (In Per Unit)			In service/ Out of service during peak block
								From Bus		To Bus		SIL Limit	Thermal loading Limit	Emergency loading limit	R	X	B	
								G	B	G	B							

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

FORMAT – III (E)

Network data for Load Flow Studies Information to be submitted by ISTS licensee/ deemed ISTS owner/ DIC

Date of Commercial Operation	DC Line Number	Control Mode	Resistance	Current or Power Demand	Scheduled Compounded DC Voltage	Mode Switch DC Voltage	Compounding Resistance	Current Margin	Metered end Code	Rectifier converter Bus number	Number of Bridges	Max Rectifier firing angle	Minimum Rectifier firing angle	Rectifier Commutating Transformer resistance, per bridge	Rectifier Commutating Transformer reactance per bridge	Rectifier Primary Base AC Voltage	Rectifier Transformer ratio	Rectifier Tap setting	Maximum Rectifier Tap Setting	Minimum Rectifier Tap Setting	Rectifier Tap step	In Service/ Out of Service during Peak Block

FORMAT – III (F)

Network data for Load Flow Studies Information to be submitted by ISTS licensee/deemed ISTS owner/ DIC

Date of Commercial Operation	Bus Name	Mode	In Service/ Out of service during Peak Block	Voltage Upper Limit	Voltage Lower Limit	Voltage Set point	N1	B1	N2	B2

N: Steps for Block N

B: Admittance Increment of Block 1 in MVAR at 1.0 pu

FORMAT – III (G)

Technical data pertaining to FACTS devices

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

Voltage Level (kV)	Substation Name	FACT Device Type	Sub Device Name	Voltage level of Sub Device	Total Number of Sub Devices	MVAR/ MVA Rating	In Voltage	Out Voltage	Slope (%)	Impedance (%)	Connection Type (Star, Delta), Vector Group

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.

FORMAT-IV

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 :				
Sl. 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)

INDEX

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:

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

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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