Centre for Energy Regulation

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General Network Access and Implication for Transmission Pricing

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Contents

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- General Guidelines:
  - You may use 30 - 50 slides for each session.
  - Please follow this PPT format to prepare your slides.
  - A session should be organized in individual topics of 8-10 minutes duration each. Please provide a separate title for every identified topic.

Central Electricity Regulatory Commission (Connectivity and General Network Access to the inter-State Transmission System) Regulations, 2022

Transmission Access- Prevailing regime

- Transmission system booking
  - Long term Access (LTA)- 7 years and above
  - Medium term Open Access (MTOA)– 3 months to 5 years
  - Short term Open Access (STOA) - 1 time block to 1 month
    (up to 3 months in advance)
  - Each Access comprise of booking of system from injection point till drawl point

- Availing of the booked transmission system by scheduling
  - Scheduling of power is under contract between buyer and seller
  - LTA – PPA for duration more than one year
  - MTOA and STOA- PPA for the duration of Access to be furnished along with the application

Need for change:

- Realities of procurement of cheaper power
- Requirement of delinking of access to transmission system with fixed contract.
- Schedules under STOA cannot change 2 days hence. -Need to review inflexibility raised by stakeholders.
- Streamline relinquishment charges.

Background

- Draft GNA Regulations were notified on 14.11.2017.
- Subsequently few developments have taken place:
  - Requirements of new provisions for connectivity to projects based on renewable sources to inter-State Transmission System.
    - Detailed Procedure – May' 2018, Feb' 2021, 7th Amendment to the 2009 Connectivity Regulations.
  - Upcoming changes in sector
- Draft GNA Regulations 2021- notiifed on 16.12.2021
- Final GNA Regulations notified on 7.6.2022
- GNA Regulations 2022 consists of broadly three sections:

(A) Connectivity

(B) General Network Access (GNA)

(C) Temporary GNA (T-GNA)

Connectivity

- **Application fees : Rs 5 lakh + taxes / application**
- **Eligible Entities:**
  - Injecting entities who are seeking connectivity to the ISTS
  - Connectivity grantees shall be deemed to have been granted GNA, equal to the quantum of Connectivity from the start date of Connectivity.
  - Minimum quantum to connect to ISTS- Installed capacity of 50 MW individually or collectively through lead generator.

Additional points

- Entities having Connectivity may apply for enhancement of Connectivity of less than 50 MW subject to available capacity in transmission system.
- At a terminal bay already allocated to another Connectivity grantee with an agreement for sharing the terminal bay.
- Through electrical system of a generating station having Connectivity to ISTS with an agreement for sharing.
- Two or more Applicants may apply for grant of Connectivity at a common terminal bay with an agreement for sharing the dedicated transmission lines and the terminal bay.

Grant of Connectivity

- In-principle grant of Connectivity
  - Preliminary intimation seeking to submit Connectivity Bank Guarantees.
    - within 30/60 days (where ATS is required)

- Final Grant of Connectivity
  - On submission of required Connectivity Bank Guarantees

- Grant of Connectivity may have following situations
  - Neither the ISTS bay at which Connectivity is proposed is to be constructed under ISTS, nor any augmentation is required to ISTS-
  - Only terminal ISTS bay is constructed under ISTS or to be constructed under ISTS. No further augmentation of ISTS required
  - Augmentation of ISTS is required along with terminal bay or without terminal bay.

Connectivity Bank Guarantee (Conn-BGs): SHORT IT

- Three parts:
- Conn-BG1 amounting to Rs. 50 lakhs for all applicants.
  - Conn-BG2: Towards Terminal Bay as follows (where no ATS)

Voltage level of allocated terminal bay	Conn-BG2 (per terminal bay)
132 kV	Rs. 2 crore
220/230 kV	Rs. 3 crore
400 kV	Rs. 6 crore
765 kV	Rs. 12 crore

  - Conn-BG2: Not applicable In case entity (i) proposes to construct the terminal bay(s) on its own or (ii) seeks Connectivity at a terminal bay constructed or being constructed by another Connectivity grantee or (iii) seeks Connectivity through electrical system or switchyard of a generating station
  - Conn-BG3: Applicable if Connectivity granted on existing system @ Rs 2 lakhs/MW

Treatment of Conn-BGs:

- Conn-BG1 i.e. Rs 50/Lakh shall be returned within 30 days of COD of full capacity.
  - In case part capacity is relinquished say 200 MW out of 500 MW is relinquished then Conn-BG1 shall be returned after COD of 300 MW.
- Conn-BG2 and Conn-BG3 shall be returned in five equal parts over five years corresponding to the generation capacity which has been declared under commercial operation.
- In case Connectivity is relinquished, subsisting Conn-BG2 shall be encashed corresponding to the ATS and terminal bay(s), construction of which has already been awarded for implementation.
- The proceeds of encashed Conn-BG2 shall be used for reducing Monthly Transmission Charges under the Sharing Regulations

Eligibility for GNA

- State Transmission Utility on behalf of distribution licensees connected to intra-State transmission system and other intra-State entities. No financial liability on STUs.
- A buying entity connected to intra-State transmission system
- A distribution licensee or a Bulk consumer, seeking to connect to ISTS, directly, (50 MW & above)
- Trading licensees (engaged in cross border trade) for drawal and injection into the Grid
- Transmission licensee connected to ISTS for drawal of auxiliary power.

GNA for States:

- Each State shall have a General Network Access (GNA) to ISTS.
- To start with GNA for States shall be specified based on ISTS drawal for last 3 years.
- States shall be able to schedule power under long term or medium term or short term contracts based on its own assessment of merit order on day ahead basis within GNA quantum. This flexibility will help them optimise their overall procurement cost.
- Additional GNA may be sought by State as per their requirement.
- States shall pay transmission charges for GNA quantum in accordance with CERC(Sharing of inter-state transmission charges and losses) Regulations 2020.
- Any drawal beyond GNA shall be with additional charges.
- GNA once granted shall remain valid until relinquished.
- GNA granted to a State may be utilized by another State.
- GNA can be applied for by
  - STU on behalf of intra-state entities or
  - intra-state entity

Grant of GNA

- For the first year GNA for states shall be considered based on historical data of last 3 years for yearly maximum ISTS drawl and daily maximum ISTS drawal.

- GNA shall be the average of 'A' for the financial years 2018-19, 2019-20 and 2020-21:

where,

  - 'A' = {0.5 X maximum ISTS drawal in a time block during the year} + {0.5 X [average of (maximum ISTS drawal in a time block in a day) during the year]}

- STU shall be the entity to whom GNA shall be deemed to be granted as per above on behalf of intra state entities. Transmission charges liability shall be with intra-state entities as per prevailing regime.
- STUs within 3 months of coming into force of these regulations, on behalf of intra-state entities, may apply for additional GNA over and above the GNA deemed
- States may apply for additional GNA to be added in next 3 years, every year in September.

National Load Despatch Centre
Total Transfer Capability for April 2022

Issue Date: 28th December, 2021 Issue Time: 1700 hrs Revision No

Corridor	Date	Time Period (hrs)	Total Transfer Capability (TTC)	Reliability Margin	Available Transfer Capability (ATC)	Long Term Access (LTA)/ Medium Term Open Access (MTOA) #	Margin Available for Short Term Open Access (STOA)	Changes in TTC w.r.t. Last Revision
NR-WR*	1st April 2022 to 30th April 2022	00-06	2500	500	2000	628	1372	
		06-18				1856	144	
		18-24				628	1372	
WR-NR*	1st April 2022 to 30th April 2022	00-06	19500 18550**	1000	18500 17550**	11433 10483**	7067	
		06-18	19500 18550**	1000	18500 17550**	11822 10872*	6678	
		18-24	19500 18550**	1000	18500 17550**	11433 10483**	7067	
NR-ER*	1st April 2022 to 30th April 2022	00-06	2000	200	1800	93	1707	
		06-18	2000		1800	1308	492	
		18-24	2000		1800	93	1707	
ER-NR*	1st April 2022 to 30th April 2022	00-24	5900	400	5500	4356	1144	

Concept of ‘within region’ and ‘outside region’.

Contracts in each region- for a sample month

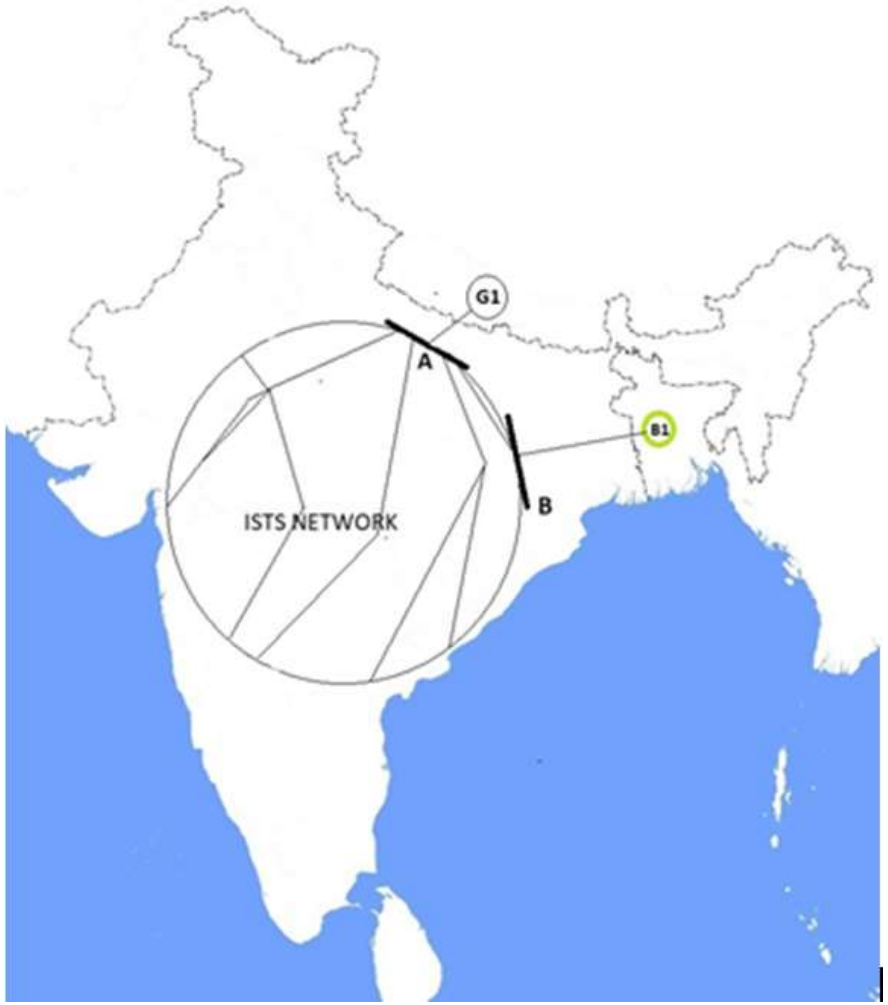
	ER	NER	NR	SR	WR	Grand Total
Himachal Pradesh	22	0	1728	0	0	1750
Uttarakhand	26	0	1078	0	93	1197
J&K	137	0	2056	0	93	2286
Delhi	1042	0	3766	0	419	5226
Rajasthan	243	0	2711	0	1258	4212
Haryana	413	150	2764	0	1084	4410
Uttar Pradesh	625	54	8130	0	2243	11052
Punjab	869	0	2386	0	1033	4288
Chandigarh	3	0	331	0	0	334
			24950		6223	34756

Grant of additional GNA to STUs

- Deemed GNA computed for a STU 'A' is 4000 MW.
- 'A' applies for additional GNA for 800 MW within next 3 months which is granted to 'A' by CTU,
  - GNA for 'A' will become 4800 MW (4000 MW + 800 MW).
- 'A' may apply once in every financial year by the month of September for additional GNA for the next 3 financial years indicating the start date for such quantum.

Financial Year	Additional GNA granted in each FY from a specified date	Total GNA after grant of additional GNA
2023-24	200 MW w.e.f. 22.6.2023	5000 MW w.e.f. 22.6.2023
2024-25	100 MW w.e.f. 18.5.2024	5100 MW w.e.f. 18.5.2024
2025-26	300 MW w.e.f. 14.9.2025	5400 MW w.e.f. 14.9.2025

GNA for Trading Licensee…contd.



- where

-G1 is a generating station located in other Country

-A is the border substation at which GNA is sought for purpose of injection into Indian grid

-B is the border substation at which GNA is sought for purpose of drawal from Indian grid

-B-1 is buying entity located in other Country.

Use of GNA by another GNA grantee

- Any entity having surplus GNA for a period due to reduction in load or seasonal variation, can authorize part of its granted GNA to others with prior approval of CTU. (for period not exceeding 1 year and on mutually agreed terms)
- Liability to pay GNA charges shall be with original GNA grantee
  - For example, Punjab may buy GNA capacity for a specific quantum from Delhi/Haryana in case there is diversity in their ISTS drawal requirement and optimise their transmission charges.
- Suppose UP has 10000 MW GNA and in a season, it may not need to draw for 800 MW from ISTS. Punjab may have ISTS drawal requirement additional to its GNA of 8000 MW in that season. Punjab can use GNA of UP as per mutually agreed terms.
- Subject to availability of drawal capacity of the State.
- For the purpose of calculation of transmission deviation charges, GNA of Uttar Pradesh and Punjab shall be considered as 9,200 MW and 8,800 MW respectively for that period.

Temporary GNA (T-GNA)

- Product akin to prevailing STOA.
- Can be availed over and above GNA.
- 1 time block to 11 months.
- Scheduling flexibility on day ahead basis.
- Priority to get corridor allocation after GNA grantees.
- Payment of transmission charges 1 month in advance.

T-GNA

- Applicants- buyers
  - Distribution licensee /bulk consumer/captive generating plant / ESS / generating station for auxiliary/startup
  - Trading license on behalf of buyers
  - Power exchanges

- Application fees- Rs 5000/application
- Bilateral transactions
  - Advance application for grant of T-GNA: For T-GNA starting on or after the (D+3) day- same month or next month starting
  - Exigency application for grant of T-GNA: Application made on (D) day for grant of T-GNA with scheduling for (S) day, which may be (D) day or (D+1) day or (D+2) day, with a minimum start time of 7 (seven) time blocks unless specified otherwise in the Grid Code:
    - Maximum for 1 day

Advance application category:

- Quantum of T-GNA in MW;
- Start time of T-GNA in terms of time-block and date;
- End time of T-GNA in terms of time-block and date;
- Point of injection, if available, or in the absence of the point of injection, the target injection region;
- Point of drawal;
- Standing Clearance of SLDC under whose jurisdiction the point of drawal is located, in case the buyer is an intra-State entity and;

Exigency application category:

- Contracted quantum of power (MW) to be scheduled at point of injection;
- Start time of T-GNA in terms of time-block and date;
- End time of T-GNA in terms of time-block and date;
- Point of injection;
- Point of drawal;
- Standing Clearance of SLDCs under whose jurisdiction the point of drawal and point of injection are located, in case the buyer or the supplier is an intra-State entity, as applicable.
- Copy of contract

Revision of T-GNA

- T-GNA granted under Exigency application category or under Advance application category for a period not exceeding one month cannot be revised.

- T-GNA granted under Advance application category for a period of more than one month may be reduced for the balance period with a prior notice of one (1) month by the T-GNA grantee:

- Provided that applicable T-GNA charges for the quantum of T-GNA granted shall be payable for the notice period of one (1) month.

Scheduling request for power under T-GNA

- Advance application category:

Scheduling request by T-GNA grantees under Advance application category shall be made on day ahead basis before the opening of bidding window for collective transactions under day ahead market, as per provisions of the Grid Code.

- T-GNA granted under Exigency application category shall be considered as schedule, which cannot be revised.

Transmission charges for T-GNA

- Transmission charge rate for T-GNA, in Rs./MW/time block, for a State shall be published for each month by the Implementing Agency in terms of the Sharing Regulations.

- Transmission charges for T-GNA, in case of bilateral and collective transactions, shall be payable only at point of drawal, as per the last published Transmission charge rate for T-GNA for the State where such point of drawal is located:

- Under collective transactions, transmission charges for T-GNA shall be payable for drawal schedules more than GNA quantum or T-GNA quantum or both, as applicable.

- In case any scheduling request under T-GNA is not approved by RLDC on day ahead basis or curtailed for the reasons of transmission constraints or grid security, the transmission charges for such quantum not scheduled or curtailed shall be refunded to the T-GNA grantee.

Allocation of Transmission Corridor

- State having GNA, can request scheduling from injection point of its choice as per its contract. The methodology of scheduling and priority of transmission corridor allocation shall be covered under the Grid Code.

- In case the scheduling request of the GNA Grantee cannot be accommodated by RLDC due to constrain in transmission corridor, RLDC shall allocate the available transmission corridor amongst the GNA grantees in proportion to their GNA within the region or from outside region and the GNA grantee shall be eligible to schedule power under any contract within such allocated transmission corridor. In case the revised schedule is not furnished by the GNA Grantee, RLDC shall finalise the schedule for such GNA Grantee by pro rata reduction of schedule under each contract for such constrained transmission corridor.

- Transmission corridor shall be allocated on day ahead basis to GNA grantees and TGNA grantees as per the priority and indicative time-line as indicated in following illustration:

Curtailment

- For the reason of transmission constraints or in the interest of grid security, transactions already scheduled may be curtailed:
  - Transactions under T-GNA shall be curtailed first followed by transactions under GNA.
  - Within transactions under T-GNA, bilateral transactions shall be curtailed first followed by collective transactions under day ahead market followed by collective transactions under real time market.
  - Within bilateral transactions under T-GNA, curtailment shall be on pro rata basis based on T-GNA.
  - Within transactions under GNA, curtailment shall be on pro rata basis based on GNA.

Relinquishment of GNA

- STU may relinquish GNA on behalf of identified Intra-state entity and the concerned Intra-State entity shall pay relinquishment charges that shall be equal to 24 times the transmission charges paid by such intra-State entity for the last billing month, corresponding to the relinquished quantum.

- Intra-State entities granted GNA under the 2021 Draft GNA Regulations may relinquish full or part GNA and shall pay relinquishment charges corresponding to the relinquished quantum for 24 months or balance period of the GNA whichever is lower.

Draft first amendment

- Issued on -27.1.2023, comments invited till -17.2.2023
- Main changes proposed
  - Documents to be furnished with application of connectivity- LOA/PPA/Land
  - Financial closure within 12 months or 50% completion schedule
  - Revocation of connectivity- in case COD is achieved till SCOD
  - Relinquishment charge for States – reduced as 18 months
  - Treatment of direct drawl by states for generating stations connected to both ISTS and intra-state system
  - Concept of GNARE and T-GNARE introduced as per comments received in Sharing regulations

Transmission Charges

- Transmission charges towards ISTS -to be paid by the entities drawing power from ISTS.
- Under the prevailing arrangement, the buying entities pay the transmission charges either explicitly or implicitly by way of transmission charge being embedded in the sale price of the seller.
- Payment of transmission charges shall be as per CERC(Sharing of inter-state transmission charges and losses)Regulations,2020 as amended from time to time.

CERC(Sharing of inter-State transmission charges and losses) Regulations 2020

Monthly Transmission Charges

- National Component (NC)
  - National Component-HVDC (NC-HVDC)
  - National Component-Renewable Energy (NC-RE)
- Regional Component (RC)
  - HVDC (RC-HVDC)
  - STATCOM,SVC, Bus Reactors
- Transformers Component (TC)
  - State where located
- AC System Component (ACC)
  - Usage Based Component (AC-UBC)
  - Balance Component (AC-BC)

National Component-Renewable Energy (NC-RE)

- Transmission system built for renewables which are covered under waiver of transmission charges to be separately billed as “National Component” in the ratio of LTA+MTOA (GNA after it becomes effective) of all DICs across the Country.

- Linewise YTC for such transmission system shall be taken at “zero cost”
  - no cost implication shall be there under usage component for such system.

National Component-HVDC (NC-HVDC)

- 30% transmission charges for HVDC bipole
- HVDC systems such as back to back are used for control function by system operator
- Biswanath Chariali-Agra HVDC system entire Yearly Transmission Charges and for Adani Mundra –Mohindergarh HVDC System, portion of Yearly Transmission Charges.
- To be shared by DICs of all India in the ratio of LTA+MTOA

Regional Component

- HVDC (RC-HVDC)- 70% of transmission charges of bipole HVDC Transmission System- to be shared by drawing DICs of receiving region & injecting DICs for LTA to target.

  Example

- Static Compensator (STATCOM), Static VAR Compensator (SVC), Bus Reactors, and any other transmission element(s) identified by Central Transmission Utility being critical for providing stability, reliability and resilience in the grid - to be shared by DICs in the region in which these devices are located in the ratio of LTA+MTOA.

  Drawing DICs

  Injecting DICs- untied capacity

Transformers Component (TC)

- The transformers are planned as ISTS to cater to the drawal requirement of the State by the CTU. CTU to provide list of such transformers.

  - where the actual tariff for such transformer is not available, CTU shall provide indicative cost in such cases for billing. This cost shall be excluded from Monthly transmission charges to determine AC component transmission charges.

- If 220kV substation feeders are connected to neighbouring state such that drawal transformer is actually catering to drawl requirement of state other than the state in which transformer is located, proportionate transmission charges shall be levied to such state.

AC System Component (ACC)

- Includes AC transmission lines, AC substation, line and bus reactor and Inter-connecting transformers (excluding the drawl transformers which have been proposed to be shared by the State, SVCs, STATCOMs and such other devices which have been proposed to be shared by region in which they are located).

- Following parts:

(i) Usage Based Component (AC-UBC); and

(ii) Balance Component (AC-BC).

Usage Based Component

Actual data –

injection / drawl for the month.

Lines in use

“Peak block” for the month shall be considered as the block in which sum of ISTS drawl for all States is maximum to determine utilisation component of AC transmission charges. While identifying peak block, the injection into ISTS by a State shall be ignored .

Balance Component-AC-BC

The transmission charges under AC system component after allocating the charges under ”Usage based” component –AC-UBC shall be shared as balance component –AC-BC in the ratio of Contracted capacity of LTA and MTOA .

Transmission charges for Short Term Open Access / T-GNA

(1) Short Term Open Access Rate (in paise/kWh) shall be published for each billing month by the Implementing Agency which shall be calculated State-wise as under:

Transmission charges of the State for the billing month (in rupees) / (7200 X the quantum, in MW, of Long Term Access plus Medium Term Open Access of the State for the corresponding billing period)

Draft Amendment

(1) T-GNA Rate (in Rs./MW/block) :

Transmission charges for GNA for entities located in the State, for the billing month, under first bill (in rupees) X 1.10 / (number of days in a month X 96 X GNA quantum, in MW, for all such entities located in the State considered for billing, for the corresponding billing period.)

Transmission Deviation

Transmission Deviation Rate in Rs./MW, for a State or any other DIC located in the State, for a time block during a billing month shall be computed as under:

1.05 X (transmission charges of the State for the billing month in Rs.)/ (quantum in MW of Long Term Access plus Medium Term Open Access of the State for the corresponding billing period X 2880)

Draft Amendment

(2) Transmission Deviation Rate in Rs./MW, for a State or any other DIC located in the State, for a time block during a billing month shall be computed as under:

1.35 X (transmission charges for GNA of entities located in the State, under first bill for the billing month in Rs.)/ (GNA quantum in MW of such entities located in the State, considered for billing, for the corresponding billing period X number of days in a month X 96

Deviation

(a) For a generating station, net metered ex-bus injection, in a time block in excess of the sum of Long Term Access, Medium Term Open Access and Short Term Open Access:

(b) For a State net metered ex-bus injection or net metered drawal, in a time block, in excess of the sum of Long Term Access and Medium Term Open Access.

(c) For any drawee DIC, which is a regional entity other than distribution licensees, net metered drawal in a time block in excess of the sum of Long Term Access, Medium Term Open Access and Short Term Open Access

Generating station with PPA

- Where Generating Stations or sellers have been granted Long term Access or Medium Term Open Access and have entered into Power Purchase Agreement for supply of power under such Long Term Access or Medium Term Open Access, the transmission charges towards such Long Term Access or Medium Term Open Access shall be determined at the drawal- nodes and zone and billed to the buyer.

Waiver of the Transmission Charges on the Electricity generated from the RE Sources

Draft Amendment

- "(1) No transmission charges for the use of ISTS shall be levied for the following GNA quantum (GNA_{RE}), for scheduling power from (i) REGS or RHGS based on wind or solar sources or (ii) ESS charged with REGS or RHGS based on wind or solar sources:

- GNA_{RE} (in MW)= GNA X $\frac{\sum_{n=1}^{T}\left(\frac{SDR_G}{SDT_G}\right)}{T}$

Where

- **SDR_G is drawl schedule (in MW) through ISTS under GNA from entities covered under subclauses (i) and (ii) of this Regulation in nth block.**
- **SDT_G is total drawl schedule(in MW) under GNA through ISTS from all sources in nth block.**
- **'n' is the nth time block**
- **T is number of time blocks in a month = 96X number of days in a month**

- Provided that in case total drawl schedule (in MW) under GNA through ISTS from all sources, for nth time block, is less than 75% of Maximum schedule corresponding to GNA, the "SDT_G" shall be taken as 75% of maximum schedule corresponding to GNA for the nth block.

Thank You

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Methods employed in arriving at Point of Connection Charges

Hybrid Method

Marginal Participation + Average Participation

Average Participation