

पावर सिस्टम ऑपरेशन कारपोरेशन लिमिटेड

(भारत सरकार का उद्यम)

POWER SYSTEM OPERATION CORPORATION LIMITED

(A Govt. of India Enterprise)



पंजीकृत एवं केन्द्रीय कार्यालय : प्रथम तल, बी-9, कुतुब इंस्टीट्यूशनल एरिया, कटवारिया सराय, नई दिल्ली-110016
Registered & Corporate Office : 1st Floor, B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi -110016
CIN : U40105DL2009GOI188682, Website : www.posoco.in, E-mail : posococc@posoco.in, Tel.: 011- 41035696, Fax : 011- 26536901

POSOCO/

Date: 28th February 2018

सेवा में,

सचिव

केंद्रीय विद्युत विनियामक आयोग

तृतीय एवं चतुर्थ तल, चंद्रलोक भवन

36 जनपथ

नई दिल्ली-110001

विषय: Draft Central Electricity Regulatory Commission (Grant of Connectivity and General Network Access to the inter-State transmission system and other related matters) Regulations, 2017.

महोदय,

Please find enclosed herewith the Views / suggestions on behalf of POSOCO on the CERC (Grant of Connectivity and General Network Access to the inter-State transmission system and other related matters) Regulations, 2017.

Thanking You,

Encl: As above

Yours faithfully,

एस एस बड़पंडा

(एस. एस. बड़पंडा)

महाप्रबंधक, रा. भा. प्रे. के.

POSOCO Inputs on behalf of RLDCs/NLDC on Grant of Connectivity and General Network Access to the inter-State transmission system and other related matters Regulations, 2017

1.0. Introduction

CERC draft regulation on "Draft regulation on Grant of Connectivity and General Network Access to the inter-state transmission system and other related matters" is a welcome initiative. The Draft regulation has exhaustive focus on issues and challenges in respect of transmission planning, connectivity, access, inflicting the power sector at large.

Considering the lessons and experience acquired over the years, the need of the hour is clearly in favour of adopting an optimized/techno-economic feasible approach in planning the transmission network to a level, which allows evacuation to all the generators and also facilitates development of the power market. The objective of 24x7 power supply can only be realized if the transmission infrastructure is ahead of generation capacity and the network is free of congestion. It is in the above context the draft regulation of GNA by CERC is envisaged wherein connectivity and access are dealt together and the system so developed has enough redundancy to allow injection entities to seek access either with or without the target region.

It is noted that most of the concerns expressed stem from following three issues i.e. connectivity without any liability to pay transmission charges, lesser requisition of LTA and non-declaration of drawl requirement. Transmission congestion is only a by-product of these. It needs to be examined as to how these issues are affecting transmission planning and whether design of transmission cost allocation is affecting the planning adversely. The other issue of stranded generation leading to stranded transmission needs to be tackled through a process of risk allocation among the various players.

GNA also facilitates transmission planning process. It aims at developing transmission system in sync with generators and demand centres/STUs such that available power can be transmitted with least congestion.

2.0. Major Issues

2.1. Harmonization among PoC, Planning and GNA Regulations

In GNA regime, it would not be necessary to know in advance the destination of supply for a power generation plant. With the planning for transmission augmentation, utilities must be informed regarding the likely financial burden due to transmission charges. The planning of transmission network, recovery of transmission charges and sacrosanct quantum i.e. GNA are inter-related. Therefore, GNA regulations, transmission planning regulations and sharing regulations should be harmonized.

2.2. Direct connectivity of distribution licensee

Major load centres within the state are drawing power through DISCOM network. As per Section 86 of the Electricity Act, 2003, distribution licensees fall under the jurisdiction of State Electricity Regulatory Commission (SERCs). Being a part of state control area, the accounting of distribution licensees is to be done by a state authority, even though they may be physically connected to ISTS

network. In such cases, distribution licensees should be notionally connected to STU network and further connectivity to ISTS network should be made through STU network only. Therefore, it is suggested that distribution licensees should apply for direct connectivity to STU network only. In the rare eventuality of any space constraints in setting up transmission infrastructure and direct connectivity of distribution licensee is decided as the most optimal arrangement, the same should still be treated as a deemed STU connectivity at that point. Connection Agreement should be signed between CTU, STU, distribution licensee and ISTS transmission licensee for that point.

2.3. GNA at each interconnection point

Generation and demand at each node in the inter-connected system would be required for carrying out the studies related to transmission planning. Hence, it is suggested that all states should provide node wise data to CTU for planning process. GNA has to be for the entire control area and not for individual inter-connection points except highly distributed drawal points such as Railways etc.

2.4. Captive Power Producer – exportable capacity

Following situations can be thought of;

- 1) where, all the units of captive generating plant are not in service and captive load is meeting its demand by drawing power from the grid
- 2) where, there is zero captive load and all the power is being injected into the inter-connected grid

Considering the above cases, it is suggested that a CGP should apply for injection GNA and drawal GNA separately and the injection GNA should be up to maximum exportable capacity.

2.5. Sharing of dedicated line

As per clause 8.4 (ii), the dedicated transmission lines which have already been constructed or are under construction by ISTS Licensee (including deemed licensees) under coordinated transmission planning shall be included in the PoC pool after operationalization of GNA and payment of transmission charges for the said dedicated transmission line shall be governed as per the CERC (Sharing of inter-state transmission charges and losses) Regulations, 2010. However, in case of new generators, the dedicated transmission lines are to be built by generators themselves. The transmission charges for such dedicated transmission lines are to be borne by the generator. In order to avoid different treatment between old and new generators, for both types of generators, it is suggested that generators should be made liable to pay the transmission charges for dedicated transmission lines.

2.6. Demarcated quantum for ISTS and STU – Jurisdictional issue

There should be a clear demarcation between the entities connected to ISTS and STU network. It is suggested that the entities connected to STU network may be kept under the jurisdiction of state load despatch centre and the entities connected to ISTS network should fall under jurisdiction of regional load despatch centre. Further in the draft regulation 7.26, it has been proposed that quantum of connectivity to CTU and STU are to be demarcated. It may be appreciated that electricity flows as per laws of physics and not as per commercial contracts. It is suggested that connectivity for full quantum may be granted either by STU or CTU after taking consent of the other.

Connectivity to both CTU and STU also has an impact on control area jurisdiction of the entity viz. RLDC or SLDC. The PPAs come up much later and the same time of operation phase, very often the state utilities start seeking exemption from payment of ISTS charges and losses even though it comes under

RLDC jurisdiction. This aspect must be made clear in the GNA regulations rather than case by case exemptions later on.

2.7. Sale of power by state at generating station bus-bar

RLDCs issue no objection certificate to the regional entities for sale of power from their ex-bus periphery. In the past, it has been observed that some of states having free share of power from the generating stations intend to sell the free share from the generator periphery. However, any grid connected entity can sell or buy power at his own grid periphery only. Further, the GNA sought by all generating stations may be made equal to installed capacity less normative auxiliary power consumption.

2.8. 5 % corridor reservation for PX

Reservation of corridor for day ahead collective transactions at the power exchanges is not in alignment with the provisions of non-discriminatory open access. Presently, the margin released is already more than 5% of ATC as considerable diversity exists in scheduling of LTA/MTOA contracts which rarely touches 100%.

2.9. Separate Injection Charges for generators

Presently, there are no separate injection charges for generators. But with the implementation of GNA, transmission rates are to be calculated considering GNA. GNA holder would pay PoC injection or drawal charges as the case may be. The injection charges payable by generating stations should be made available while preparing the regional transmission accounts. However, the method of payment by these generating stations may be specified separately. Accordingly, this would require modifications in the sharing regulations as well.

3.0. Clause-wise Comments

3.1. Some of the clauses in the draft regulations are superfluous and need to be addressed through detailed procedure. Making changes in the procedure is easy but any amendment in regulations has to go through a series of discussions and approvals. Regulations reflect the broad framework and issues arising while implementation of these regulations may be addressed through removal of difficulties at a later stage. For example, formats can be part of detailed procedure.

3.2. Clause 10: Metering shall be done at the interface point of connection of the generator with transmission system of licensee as specified in the CEA Metering Regulations subject to following:

(a) In case dedicated transmission Lines are owned/ constructed by generator, such metering point shall be at the pooling sub-station of ISTS licensee.

(b) In case generator is connected to more than one pooling station, metering shall be at the bus bar of the generating station.

***Comment:** In case of multiple dedicated lines from generator to different pooling stations then metering shall be at bus bar of the generator. If the generator is connected to only one pooling station through dedicated line then main meter will be at pooling station. As per 10(a) losses are not pooled but as per 10(b) losses are pooled. This may lead to disputes in future.*

3.3. Clause 11.4: In case of allocation of power by Ministry of Power, Govt. of India in respect of generating stations owned or controlled by Central Government, the concerned generating company may make application to CTU for GNA on behalf of the allocatees on the basis of their written authority for making the application. After grant of GNA, it shall be the responsibility of the concerned generating company to facilitate signing of GNA Agreement by the allocatees with CTU within the stipulated period as prescribed in these Regulations.

Comment – There are changes in the GOI allocation and the reallocation of the unallocated 15% share. It is suggested that generator may take GNA corresponding to installed capacity minus normative auxiliary consumption, so that there is no impact of reallocation of power.

3.4. Clause 13.1: Interface meters shall be installed –

(a) by the Central Transmission Utility for and at the cost of the regional entities;

Comment – Installation and operation of interface meters should be followed in accordance with Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 and amendments, thereof. Practices related to installation of meters and their operation, need to be harmonised among different regions.

3.5. Clause 16.5: GNA by a Captive Generating Plant

(a) In case of captive power plants (CPP) with co-located captive load, the CGP shall have option to take Injection GNA corresponding to Installed Capacity less normative Auxiliary Power Consumption less the captive load estimated by the CPP for the co-located captive plant.

(b) Where CGP is not located at the same place as captive load, the CGP may take Injection GNA corresponding to the captive load to be met and for any surplus power.

Comment – Captive Generating Plants should apply for Import GNA and Export GNA separately.

3.6. Clause 16.5. (C) The captive user of CGP may seek drawal GNA if it intends to draw power through long or medium or short term agreement through ISTS through connection point of CGP and in such cases, it shall be subject to the charges as may be imposed by the respective State Commission. The scheduling segregation among power sold by CGP and power purchased by captive user shall be done by concerned RLDC /SLDC as the case may be

Comment: As per the above statement power sold & purchased by CPP can be segregated but the actual interchange cannot be measured separately if both are through same lines. Then the existing DSM calculation for Seller/Buyer cannot be done for such case. This will lead to generator buying and selling power simultaneously and who will keep the check on whether they are trading or actually consuming for captive load. Presently simultaneous sell & buy by generator is not allowed.

3.7. Clause 20: Communication of Estimate of Transmission Charges

While granting General Network Access, the nodal agency shall communicate to the applicant, the date from which GNA shall be made operational and an estimate of the transmission charges likely to be payable based on the methodology of sharing of transmission charges specified by the Central Commission.

Comment: CTU is the nodal agency for grant of connectivity and GNA. While granting General Network Access, CTU has to calculate and communicate to the applicant an estimate of the transmission charges likely to be payable based on the methodology of Sharing Regulations. It is suggested that CTU may be designated as nodal agency for PoC also.

3.8. Clause 29: Curtailment

When for the reason of transmission constraints, it becomes necessary to curtail power flow on a transmission corridor after finalization of day ahead schedule and in real time, the transactions already scheduled may be curtailed by the Regional Load Despatch Centre. The transactions shall be curtailed on the basis of duration of transaction with short term transactions shall be curtailed first, followed by curtailment of medium term transactions and thereafter curtailment of long term customers. Amongst the customers of same category, curtailment shall be carried out on pro rata basis.

Comment: There is no clarity regarding the curtailment of collective transactions in the Power Exchanges. More complexities are involved in real time curtailment of collective transactions. It is suggested that collective transactions may be given higher priority.

3.9. Clause 34: Transmission Corridor Allocation for power markets: 5% of each corridor for which separate ATC is declared shall be reserved for day ahead collective transactions at the power exchanges. In case of non-utilisation of the corridor by exchanges, National Load Despatch Centre (NLDC) shall release the capacity for contingency market. The percentage of reservation shall be reviewed after five years of operation.

Comment: Reservation of corridor for day ahead collective transactions at the power exchanges is not in alignment with the provisions of non-discriminatory open access. Presently, the margin released is more than 5% of ATC.

4.0. Additional comments:

The provisions of GNA regulations must be in harmony with different regulations of CERC and CEA for dispute free and smooth implementation. CEA (Technical Standards for Connectivity to the Grid) Regulations, 2007 defines the term "Requester" who can seek connectivity to the Grid at voltage level 33kV and above. Extracts from the regulations in this regard are quoted below:

"(25) "Requester" means a person such as a Generating Company including captive generating plant or Transmission Licensee (excluding Central Transmission Utility and State Transmission Utility) or Distribution Licensee or Bulk Consumer, who is seeking connection of his new or expanded electrical plants to the Grid at voltage level 33kV and above."

As per CEA (Technical Standards for Connectivity to the Grid) Regulations, 2007, "Requesters" are also required to sign connectivity agreement, once they are granted connectivity. The relevant extracts from the regulations are quoted below:

"(7)(1) Every connection of a requester's system to the grid shall be covered by a connection agreement between the requester and

a) Appropriate Transmission Utility in case of connection to inter-state transmission system or intra state transmission system as the case may be;

- b) *Distribution licensee in case of inter-connection to distribution licensee’s system; and*
- c) *Transmission licensee and Appropriate Transmission Utility, in case of inter-connection to a transmission licensee (tri-partite agreement)”*

On the other hand, draft CERC (Grant of Connectivity and General Network Access to the inter-state transmission system and other related matters), Regulations, 2017 defines “Applicant” with respect to grant of connectivity as follows:

“(c) Applicant for connectivity means

- (i) A thermal generating station with installed capacity of 250 MW and above, including a captive generating plant of exportable capacity of 250 MW and above; or*
- (ii) A hydro generating station or renewable energy generating station having installed capacity of 50 MW and above individually or with an aggregate installed capacity of 50 MW and above through a lead generator ; or*
- (iii) Any renewable energy generating station of 5 MW capacity and above but less than 50 MW capacity developed by a generating company in its existing generating station of the description referred to in sub-clauses (i),(ii) above and seeking connectivity to the inter-State transmission system through the electrical system of the existing generating station; or*
- (iv) Any company authorised by the Central Government or the State Government as:*
 - a. Solar Power Park Developer or*
 - b. Wind Power Park Developer or*
 - c. Wind-Solar Power Park Developer*
- (v) Distribution Licensee who intends to avail supply for a minimum load of 250 MW from the inter-State transmission system*
- (vi) Consumer who intends to avail supply for a minimum load of 250 MW from the inter-State transmission system*

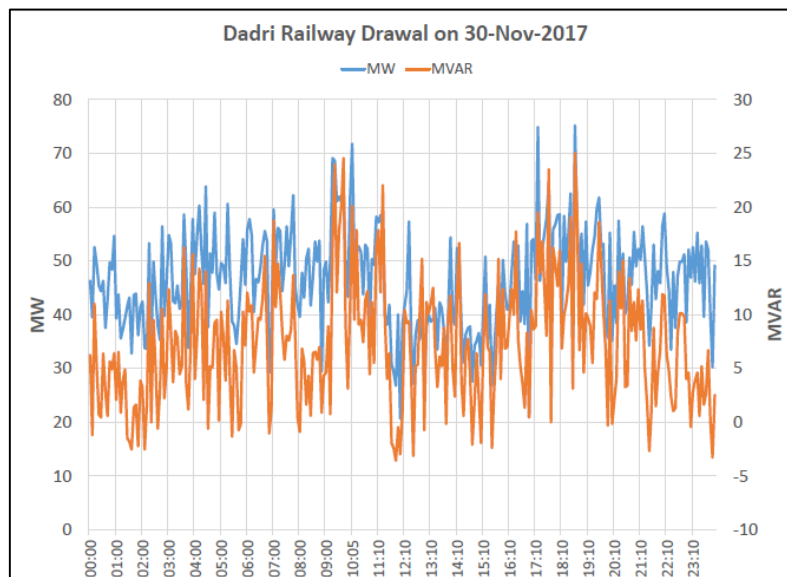
Further these draft regulations require “Applicants” to sign the connection agreement with CTU and inter-state transmission licensee. The relevant extracts from the regulations are given below:

“7.30. The Connection Agreement shall be signed amongst the Applicant, Central Transmission Utility and the inter-State Transmission licensee (whose sub-station or pooling station or switchyard or the transmission line has been identified by the nodal agency for connectivity) subject to fulfilment of requirements of Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007. “

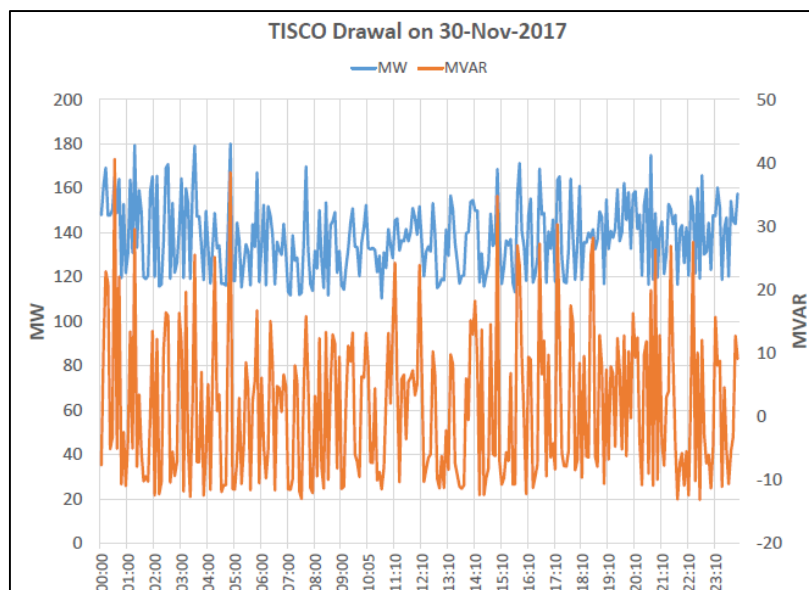
The present definition of “Applicant” in the draft regulation does not cover deemed licensees, high power testing labs, transmission licensees owning HVDCs and bulk consumers connected to the grid which avail supply for a load less than 250 MW. It is important to include such applicants under the ambit of these regulations as they impact the grid significantly and must adhere to the connectivity standards or the provisions of connection agreement. Some relevant cases in this regard are given below:

1. **Railways** have been given deemed licensee status and are accordingly seeking connectivity to ISTS at different nodes of 400/220 kV. However, Railways are yet to sign a connection

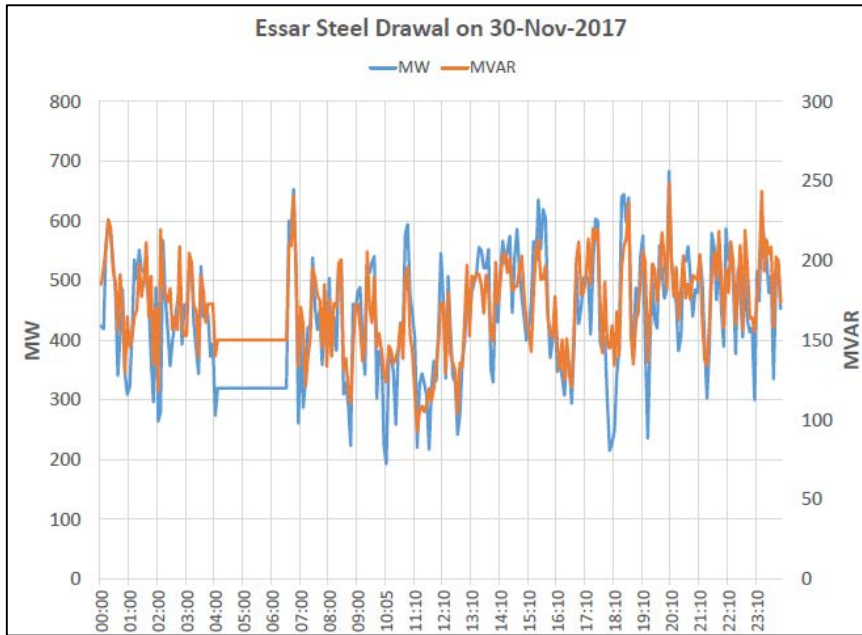
agreement in this regard. Railways draw of active as well as reactive power from the grid varies significantly during the day. A plot indicating the same for a typical day is given below:



- Steel Plants** which draw large reactive power also gets connected to the grid. One such example is of TISCO which is connected to ISTS through LILO of 400 kV Khargpur-Baripada. A plot indicating the drawl pattern of TISCO is given below



It is worth mentioning here that the reactive power drawal profile of TISCO has improved over the years reportedly due to reactive power management measures such as installation of STATCOM taken at TISCO. Similarly, Essar steel which is a regional entity is also connected to ISTS. Drawal pattern of Essar steel is given below:



3. **National High Power Testing Laboratory (NHPTL)** which is state-of-the-art on-line High Power Short Circuit Test Facility in India for short circuit testing of electrical equipment has been granted connectivity at 765/400 kV Bina substation. At present, NHPTL is a signatory of connection agreement with CTU. The short circuit testing requires drawal of large current for a short duration. This may lead to voltage drops at nearby stations and may also impact the nearby consumers in some cases.
4. **HVDCs** draw large reactive power from the system and hence filters are planned with HVDC systems. These filters are automatically switched in or out depending upon HVDC power order. The switching of filters with change in power may lead to large impact on voltages at nearby stations depending upon the fault level of these stations. Filter sizing and its switching sequence is left to the vendor with minimal involvement of CTU. Signing of connection agreement at the time of designing would mean involvement of CTU which may improve the overall design of the system considering the impact on actual power system. Hon'ble Commission has already been apprised in this regard with respect to POSOCOs input in petition no. 67/TT/2015 regarding tariff determination of HVDC Biswanath-Chriali-Agra.
5. **DISCOMS/SEZ** connected to the ISTS grid must also be covered under these regulations as they have the potential to impact the security and reliability of the grid.

Considering the above it is therefore suggested to include the above mentioned applicants in the definition of "Applicant" in the draft regulations. The definition of "Requester" in CEA (Technical Standards for Connectivity to the Grid) Regulations, 2007 is broad and cover all with exception of CTU and STU. Hon'ble Commission may consider using the definition of "Requester" as definition of "Applicant" in the draft regulations without excluding CTU and STU. It would not be necessary to know in advance the destination of supply for a power generation plant.

5.0. Data Analysis and Indicative GNA

Every state has a dynamic drawal pattern. States would be able to analyse and forecast their drawal GNA on the basis of past drawal patterns. An extensive exercise has been carried using the data for

annual year 2017. It has been observed that smaller states with no own generation, meet their entire demand by drawing power from outside the state. Therefore, in such cases GNA should be 100% of their maximum demand. States with maximum demand in the range of 500 – 2000 MW generally draw a substantial quantum of power from outside and GNA for such cases should be about 80% – 90% of their maximum demand. Larger states have their own generation and therefore the minimum GNA for such states should be at least 50% of their maximum demand.

