

INDIAN ELECTRICITY GRID CODE-2010

Comments

- ❖ CERC (Central Electricity Regulatory Commission) has constituted an expert group to review IEGC-2010.
- ❖ CERC requested Tata Power-DDL to provide comments and suggestion on IEGC.
- ❖ Tata Power-DDL is also invited for next meeting with expert group dated 22nd Jul 2019 vide letter Engg/2012/1/2019/CERC dated 12th Jul 2019.
- ❖ Tata Power-DDL comments with observation and comments are in subsequent slides



Tata Power-DDL comments and Observations

Clause : 2.1.(ff) Force Majeure:

Tata Power-DDL Comments :

Force majeure considered in IEGC are applicable for performance indices calculation, however the force majeure are not considered in power scheduling and dispatching activity.

A suitable definition in line with the above may also be considered for the purposes of DSM regulations. The Discom/Buyer should not be held liable for under-drawl or over drawl in case of any Force Majeure Events and consequential DSM penalties. Tripping of transmission line, STU /CTU equipment should be considered as force majeure for Distribution companies.

Impact /Benefits:

Cost reflective power with reliability onus is on discom only. Mal-function of STU/CTU equipment is sole responsibility of asset owner and should be liable for the same. Devising a commercial mechanism through DSM for respective SLDC , STU and CTU need to be thought of. It will strengthen power system and reliability of power supply.



Tata Power-DDL comments and Observations

Clause : 2.3.2- Functions of RLDC:

Tata Power-DDL Comments :

For past few years it has been observed that in case of corridor congestion during short term import transactions, RLDC (NRLDC in our case) Invites Corridor E-bidding, wherein interested bidders are requested to quote e-bidding charges for securing corridor over and above the open access charges. In this regard, it may be noted that ensuring availability of adequate transmission capacity is responsibility of CTU and beneficiaries should not be burdened with the extra transmission charges payable due to availability of less transmission/import capacity.

It is suggested that system of pro-rata corridor allocation should be implemented in place of e-bidding of corridor as being done earlier. In case e-bidding is being considered necessary by the concerned RLDC, the same may only be done with the Approval from Hon'ble CERC.



Tata Power-DDL comments and Observations

Clause : 2.8 Role of STU :

Tata Power-DDL Comments :

Following addition is proposed in functions of STU:

To consult state DISCOMs /understand their requirements and put up their issues in Regional standing committee meeting. Disseminate the decisions taken in their regional standing committee meeting to the DISCOMs and other state constituents.



Tata Power-DDL comments and Observations

Clause : 5.3(e)- Demand Estimation for Operational Purpose

Clause : 5.4:Demand Management

Tata Power-DDL Comments :

SLDC must have implemented the Online estimation of demand for operational purpose and therefore this clause should be reviewed.

Impact /Benefits: Onus of demand estimation on SLDC in addition to distribution company will improve Power system. Accurate Demand estimation plays very crucial role in power scheduling and dispatching. Concerned SLDC can take decision of generation on/off bar with data of demand estimation



Tata Power-DDL comments and Observations

Clause : 3.4- Planning Philosophy

Tata Power-DDL Comments :

- Monitoring of the implementation plan so as to ensure end to end availability in time bound manner. An independent body should monitor the progress of these projects.
- Extensive planning of transmission capacity needs to be done considering the ongoing huge RE capacity addition. However, we propose that proper due diligence needs to be done for identifying the potential locations where these projects are coming considering the expected timelines for commissioning of the expected solar/ wind power generation. It should not happen in future that a huge transmission system is created on request of certain beneficiaries/project and in case of non-commissioning of such assets, their transmission charges are billed on the other beneficiaries. Connectivity and open access should be granted to these generators only after ascertaining the feasibility of these projects.

Impact /Benefits:

- Timely execution of expansion/augmentation Projects will ensure that no load shedding occurs during peak.
- Optimization of Capex infusive will positively impact tariff.



Tata Power-DDL comments and Observations

Clause : 4.6.2_- Data and communication facilities

Tata Power-DDL Comments :

- In addition to the existing provisions contained in the grid code, there should be Proper use of data analytics to assess information/data including disturbance recorder/ sequential event recorder output at RLDC to analyze any grid disturbance/event.
- Further, there should be a strong IT infrastructure back bone which has end to end connectivity from NLDC/RLDC/SLDC to Discoms and open access consumers

Impact /Benefits:

The same is required in view of many ambitious projects being targeted by India such as Real Time Markets, Fast ancillary services market, Security constrained economic dispatch (SCED) and various other breakthrough changes being contemplated for Indian power markets. The same would ensure proper and timely information dissemination across different market players and would enable everyone to take an informed decision thereby leading to overall cost reduction. Robust IT system should be in place for effective and timely data transfer between discoms and SLDC, RLDC, STU etc.



Tata Power-DDL comments and Observations

Clause : 5.2.u_– Dispatchability requirements for Solar/wind generation.

Tata Power-DDL Comments :

In the current regulations the RLDC and SLDC have been conferred authority for curtailing Solar / Wind generators for the purpose of grid security and safety. However in alignment with the current government policy, 40% of the solar addition is to be in the form of roof top solar installation. While individually these installation are very small and cannot impact grid security as such, as an aggregated generation, they can have profound impact on the grid. As these installations would be connected to DISCOM network, DISCOMs need to be conferred the authority to disconnect distributed generation during periods of grid instability

Impact /Benefits:

This will help manage underdrawl during emergency conditions and enhance grid Security.



Tata Power-DDL comments and Observations

Clause : 5.4. :Demand Management: In current form, this section deals with demand reduction measures for grid security. This should incorporate all modes of Demand Response

Tata Power-DDL Comments :

As more and more distributed generation is added behind consumer meters, the provisions and definitions of Demand Management should evolve to incorporate the same. In addition to current defined processes of demand curtailment, provisions for consumer generation curtailment should also be incorporated. A certain percentage of demand by the prosumers should be compulsorily made available for demand response (e.g. auto curtailment/battery storage) for a specified time (say 30Mins) .

Impact /Benefits: Improved frequency profile of the grid.



Tata Power-DDL comments and Observations

Clause 6.5 , scheduling and Dispatch procedure(point -25):

Tata Power-DDL Comments :

Post facto revision of schedule should not be allowed in circumstances as real time power management is done as per drawl schedule. Hence final drawl schedule of the day should be used for all commercial and operational purpose. Any revision in end of day schedule after the 00:00 Hrs. of the day should be though proper approval of buyer and seller.

Impact /Benefits: Post facto correction of schedule is indirect manipulation of facts. Automatic Bill should be generated from last revision uploaded. If any correction desired due to software issue etc. consent of beneficiary need to taken and incorporated the same. It will make the process more streamline and transparent



Tata Power-DDL General Observations

- **Central Power scheduling and billing software for RLDC, SLDC and DISCOMs:**

Without intervention of technology, adherence to timely scheduling is very difficult. Major concern is that while going through acceptance procedure of RLDC and respective SLDC, message reaches to beneficiary or generator before one or two time block of actual implementation resulting in deviation between schedule and drawl and resultant deviation charges.

Further, commercial activities of RLDC and SLDC are still through MS-Excel which is completely manual and needs human intervention. The non-co-ordination of commercial and operational teams is evident as schedule data in real time power management and billing varies to a great extent resulting into issuance of provisional and final REA.

Centralized web-based scheduling and power optimization software is need of an hour for all the entities. Having common platform for scheduling and dispatching shall ensure the transparency and minimize the risk of grid security.

- **Utilization of PSDF (Power System Development Fund):**

PSDF is collection of funds on account of DSM deviation from generator and distribution companies. The scheme related to grid security and DSM regulation like intra state ancillary, battery storage, expansion of transmission corridors should be given priority through utilization of PSDF.

Tata Power-DDL General Observations

- **Intra-state ancillary:**

Ancillary services are an indispensable part of the power system operation, which are required for improving and enhancing reliability of the power system. Ancillary Services may include a number of different operations such as frequency support, voltage support, and system restoration.

Hon'ble Commission has issued regulations on Reserves Regulation Ancillary Services (RRAS) which have been in operation for more than a year now on regional level. In view of above, it is now necessary to lay down **Intra-state ancillary services**. Objective of the proposal of intra-state ancillary services to smooth implementation of DSM regulation and absorbing the challenges of renewable penetration at state level. It helps to keep spinning margin at state level for contingency management and it is to be control by state LDC.

Triggering Criteria of Reserves Regulation Ancillary Services (RRAS):

- Extreme weather conditions such as storms/cyclones, dust storms, fog, hail storms, etc.
- Grid Security during contingency
- Generating unit or transmission line outages, the transmission corridor or violation of ATC of any forced outage of any element, outage of hydro generating units due to silt
- Trend of load met
- Trends of frequency;
- Loop flows leading to congestion, for example, in a scenario where real time flows are different from those considered while estimating the TTC/ATC and line loading issues.

Tata Power-DDL General Observations

- **Battery Storage :**

To address these pressing requirements, Innovative technologies like Battery Storage would be the driving force to compensate for unpredictable renewable energy sources. Battery Energy storage can help in multiple ways to minimize financial losses:

- Utilization of Storage during Day ahead planning: This would enable overall reduction of Power purchase cost and maintenance of MOD
- Battery storage can intensively use during intraday i.e. real time power management. Considering over drawl and under drawl scenario where charging and discharging of storage will be multiple times in a day. The mechanism of incentive other than capacity and variable charges would need to be introduce for saving on deviation charges.
- DISCOM assets like Power Transformers, Distribution Transformers and Cable / Conductors are the critical and cost intensive. Overloading of these assets on account of meeting the demand, reduces the life-cycle of the asset. By having a storage of 10-20% as a buffer, will helps to reduce the peak load of the assets thereby optimizing the Technical loss as well as enhancing the asset life of the equipment.
- With more & more introduction of electronic devices, power quality is also becoming a slow but vital challenge. Battery Storage can be utilized for Power Quality Management and preferential services can be provided to Key consumers thus improving quality of power supplied.
- Battery Energy storage will substantially help to absorb the risk of weather conditions, generator availability etc. and will create a delicate balance depending upon the storage capacity.

Tata Power-DDL General Observations

- **No role for third party like Transmission Utility and concerned Load Dispatch Centers in DSM regulations**

Under the DSM Regulations, Hon'ble Commission has assigned the responsibility of maintaining the grid discipline on the Buyers and Sellers only. It may however be noted that there are certain factors which are not under the control of the sellers/buyers but can be better controlled by Transmission Utility and concerned Load Dispatch Centers. Grid security is collective effort of all entities in Power Sector chain

- **Since as per IEGC, EHV starts from voltage level exceeding 33000 volts, therefore planning criteria should be defined for 66KV and above voltage rating Grid substation and Lines for network reliability. Currently, it is defined for 132KV and above.**
- **Mechanism to be defined to ensure implementation of Detailed Project Report (DPR) on priority wherever CTU/STU fails to comply with the Planning criteria.**

Complementary Commercial Mechanism .

1. Clause 5 of Complementary Commercial Mechanism of IEGC, specifies that the deviation charges payable by the wind and solar generators which are regional entities, shall be delinked from frequency and shall be accounted for as per the provisions of CERC (Deviation Settlement Mechanism and related matters) Regulation, 2014.
2. However, Despite of being Governed by the same Regulations, There is a considerable difference in Deviation charges payable by Discoms/Utilities and generators.
3. As per 5th Amendment to IEGC (clause 3 provision 5) , The Cap rate for the charges for deviation for the generating stations, irrespective of the fuel type and whether the tariff of such generating station is regulated by the Commission or not, shall not exceed 303.04 Paise/kWh.
4. DSM charges for Discoms/ State Utilities are linked with the day ahead MCP of power Exchanges and are significantly higher[Charges for deviation for Discoms/ State Utilities goes upto Rs. 08.00 per unit].
5. Discoms/State Utilizes are forced to operate in a band of 12% of the schedule or 150 MW which is lower. However, no such band is applicable for the generators.

DSM charges applicable for Solar/wind Generators

As per DSM Regulations 2014 (Clause 1(V) Regulation 5) the DSM Charges for Renewable energy generators are payable on the Fixed Cost (PPA Rates) as mentioned in below table.

Table 1- Deviation Charges in case of under injection

Sr. No.	Absolute Error in the 15 minutes time block	Deviation charges payable to DSM Pool
1	<=15%	At the Fixed Rate for the shortfall energy for absolute error up to 15%
2	>15% but <=25%	At the Fixed Rate for the shortfall energy for absolute error up to 15%, +110% of the Fixed Rate for balance energy beyond 15% and up to 25%
3	>25% but <= 35%	At the Fixed Rate for the shortfall energy for absolute error up to 15%, +110% of the Fixed Rate for balance energy beyond 15% and up to 25%, + 120% of the Fixed Rate for balance energy beyond 25% and up to 35%
4	>35%	At the Fixed Rate for the shortfall energy for absolute error up to 15%, +110% of the Fixed Rate for balance energy beyond 15% and up to 25%, + 120% of the Fixed Rate for balance energy beyond 25% and up to 35%, + 130% of the Fixed Rate for balance energy beyond 35%.

Effects on the Discoms.

- The inability of Solar/Wind Generator to schedule power as per commitment has huge financial impact on Discoms.
- Tata Power-DDL has signed PPA's of around 600 MW from Renewable energy sources. Even a 20% reduction in schedule by the generators will result into a reduction of our schedule by 120 MW leading into undue DSM penalties as well as load shedding in our area.
- The penalty/DSM charges for solar/wind Generators are insignificant as compared to the charges applicable for the Discoms/State Utilities.
- In view of the above, RE Generators (including wind and solar) need to be made more accountable to cater to the requirement of beneficiaries.
- If reduction in schedule of the renewable generators is more than a prescribed limit (say 15 % of the schedule), it should be the responsibility of Generators to purchase the resultant shortfall from the Real time Markets and schedule the same to the beneficiaries. The same is based on the practice being followed in the PJM markets where **“Generators are required to pay for any generation that is below their scheduled quantities”**.

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THANK YOU