

फैक्स/स्पीड पोस्ट /FAX/SPEEDPOST

भारत सरकार केंद्रीय विद्युत प्राधिकरण दक्षिण क्षेत्रीय विद्युत समिति बेंगलूरु - 560 009	 सत्यमेव जयते	Government of India Central Electricity Authority Southern Regional Power Committee Bengaluru - 560 009	
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सं/No. SRPC/SE-II/2019/		दिनांक / Date	19.06.2019

Shri S C Shrivastava
Member Convenor-Expert Group to review IEGC
& Chief (Engineering)
CERC
New Delhi

Sir,

Sub: Expert Group to review 'Indian Electricity Grid Code and other related issues' – Reg.

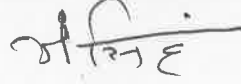
Ref: Your letter No. Engg/2012/1/2019-CERC dated 10.06.2019

With reference to the above, the comments / suggestions of SRPC Secretariat on the changes / modifications to be made in the existing IEGC in the light of large scale integration of renewables and changing power scenario in the country of SRPC Secretariat are enclosed for kind perusal and consideration.

धन्यवाद /Thanking you,

Encl: As above

भवदीय / Yours faithfully



(असित सिंह / Asit Singh)

प्रभारी सदस्य सचिव / Member Secretary I/c

SRPC Secretariat comments on IEGC and other related issues

1. Reactive support from Generators & RE generators

With the present transmission system in place and considering the future transmission growth plans the system is likely to face high voltages at 400 kV & above nodes. The immediate evacuation for solar experiences huge flow variations in a day resulting in high voltages. While similar is the case for wind which is more seasonal in nature. Present IEGC has no reactive charges for generating nodes. This clause was made when the voltages were low and it made sense to compensate reactive energy deficit close to loads. Further, it is observed that conventional generators are reluctant to absorb reactive power and to go for additional reactive compensation. **There could be a need for incentive / disincentive scheme for reactive support from generators / RE generators which may become inevitable with the generation mix likely in the coming years.**

2. Forecasting, scheduling and DSM for RE generators

Though the RE generators getting connected to ISTS come under RE framework (forecasting, scheduling and DSM), the states are in various stages of RE framework implementation. The RE framework needs to be implemented through the IEGC and the state grid codes on priority. All RE generators should come under ambit of RE framework.

3. Compliance of CEA Connectivity Regulations by RE generators

All the RE generators (getting connected to ISTS and intra-state) coming up after 06.08.2019 need to comply to CEA Connectivity Regulations 2019

12. Compliance of regulations.- (1) The licensee shall ensure that before connectivity to the grid, all the provisions with regard to the connectivity specified under these regulations are complied with by the requester. (2) Before allowing connectivity to the requester, the compliance of the provisions laid down under sub-regulations (2), (3) and (5) of regulation 6 shall be verified by the licensee and the verification of compliance of provisions of other regulations shall be in the form of self-declaration in the proforma of connection agreement which shall be checked and verified by the concerned licensee on sample basis.

(3) The user may be disconnected from the Grid by the licensee for non-compliance of any provision of these regulations and any non-compliance of the provisions of these regulations shall be reported by the licensee or the State Load Dispatch Centre or the Regional Load Dispatch Centre, as the case may be, to the appropriate Commission".

Suitable provisions in IEGC and state grid codes need to be made.

Further the testing and certification procedure for the projects/parks may be required with the high RE ingress. Whether it can be covered in IEGC/State Grid Codes needs to be looked into?

4. Primary reserve

With the reduced inertia with high RE the requirement of primary reserve becomes imminent. Standard for computing primary reserve for each control area, measurements and penal / incentive procedure needs to be formulated and implemented. The objective is for ensuring primary reserves and then the testing for primary reserve may also not be required as the penal / incentive procedure would take care of this aspect. This would also take care the requirement for synthetic inertia.

5. Secondary reserves and Tertiary reserves

There needs to be a Standard for ensuring Secondary and Tertiary Reserves which include dimensioning, procuring, usage and sharing of the charges for maintaining and usage of the Secondary /Tertiary reserves. These reserves should be exclusively under the control of the System Operators for grid reliability and security of the grid. Some component of the charges could be on the uniform basis while some component could be booked on the causer.

6. Adaptive Islanding Schemes

Presently the Islanding Schemes are designed for pre-assessed load generation balance scenario. The Intra-day & seasonal variations are so high that there may be need to have Adaptive Islands. With the use of PMU/WAMS it may be possible. An expert group could firm up the Adaptive Islanding Scheme which could be implemented through RPCs.

7. PMU/WAMS

Analytical Applications which can be put to use by system operators/transmission licensees/generators could be assessed and mandated in IEGC/state grid codes for analysis, control & protection. PMU in new substations could be mandated.

8. Special Protection Schemes for generators/ RE generators above 2000 MW

The need to have Special Protection Schemes for generators/solar parks/wind parks (hubs) of more than 2000 MW for reliable and secure system operation during complete outage of the generating station/park could be examined. Since other schemes (reserves, UFR etc) are in place a SPS for part relief may help in early restoration, if required. The quantum of 2000 MW could be increased considering the integrated grid operation and system resilience. If deemed necessary, it could be included in IEGC.

9. Flexibility Metric for thermal stations

A standard on flexibility metrics for thermal stations needs to be formulated based on ramps (up/down), fast start ups from hot/cold/warm and technical minimums. The measurement procedure and penal/incentive scheme would pave way for smooth RE integration.

Technical Minimum of other ISTS generators is yet to be implemented (though stated in the present IEGC).

10. SCADA and Communication

SCADA and Communication needs to be mandated before COD. Redundant communication channel needs to be ensured. Procedure for monitoring availability of Communication Channels and SCADA in real time could be formulated including the rectification at the earliest.

11. Provisions to take care of additional requirements as the grid emerges

The reactive energy, short circuit levels, AGC, SPS, UFR, Islanding and other schemes may be required as the grid emerges or the as the generation mix changes or the load profile changes. Therefore adequate provisions in IEGC/State grid Code are required (some are covered in CEA Connectivity Regulations/present IEGC) to address these issues by concerned users/entities.

12. ERS towers

A standard on number of ERS system (number of towers) at different voltage levels based on number of ckt kms and disaster prone areas could be included in IEGC/State Grid Codes. ERS substations at lower voltage levels could also be considered.

13. FGMO

As the frequency is getting stabilised, the system may be ready to move to FGMO from RGMO. However if Primary reserve is mandated with suitable incentive/disincentive scheme each control area will themselves take adequate necessary steps.

14. Relook on DSM

With the system moving towards 50 Hz, mandated Primary, Secondary & Tertiary reserves targeted to control frequency and Control area deviations, the cost of which could be booked to the causer, the need of DSM based on frequency dependent rates could be relooked into. If the Primary, Secondary & Tertiary reserves are provisioned coupled with Real time Market there may be small inadvertent deviations which could be suitably priced.

15. Control Area Definition and Scope

Whether Control Area definition can be expanded (like if two states want to be one control area, state plus generators, State Plus loads etc). This may help in optimising the reserve requirements and would promote self managing reliability groups.

16. Disaster Management Code for electrical infrastructure

Preparedness for Disaster Management, actions to be taken during disaster and restoration after disaster for electrical infrastructure may be mandated under IEGC/ state Grid Codes.

17. Compliance Procedure

A standard procedure for compliance of SPS reliefs, UFR reliefs, instructions of RLDC, Regulatory measures etc could be facilitated through IEGC/State grid Codes.
