MERC's Draft for State Grid Code Regulations, 2020

MERC released draft State Grid Code Regulations (MEGC, 2020) on 1st Mar 2020. MEGC, 2020 is applicable to all generators in the state connected to intra-state transmission system (InSTS), transmission licensee in the state including STU, Maharashtra SLDC, distribution licensees including deemed distribution licensees, Indian Railways, OA consumers and EHV consumers connected to InSTS. The following functional/sub committees are to be formed under Grid Coordination Committee (GCC):

Committee	Functions
Maharashtra Transmission Committee (MTC)	Planning and monitoring timely execution of transmission projects, InSTS connectivity related issues
Operation Coordination Committee (OCC)	Operation Code, Scheduling and Despatch Code
Protection Coordination Committee (PCC)	Protection Code, Co-ordination with WRLDC
Metering and Communication Coordination Committee (MCCC)	Metering Code

The draft also specifies the roles and responsibilities of STU, SLDC, transmission and distribution licensees, generators, and Qualifying Co-ordinating Agency (QCA).

- GCC to be re-constituted by STU within 60 days from the date of notification.

- STU is to explore and evaluate alternate options if capital expenditure for any new transmission system exceeds threshold limit of ₹100 crore or as declared by the Commission from time to time.

- In case of unavailability of the actual data of capacity factors for solar and wind generators, following factors can be used for capacity factor calculation for planning purpose:

Voltage/Aggregation Level	132 kV/ Individual Wind or Solar	220 kV	400 kV	State (as whole)
Capacity Factor	80%	75%	70%	60%

- SLDC need to maintain the spinning reserve margin equivalent to 3% of the system peak demand and 3% of installed capacity for the generators to manage ramp up.

- For solar rooftop of 100 kW and above within SLDC's distribution area, DISCOMs to develop online tracking and monitoring system for distributed generation and facilitate revision in drawl schedule during intra-day operation.

- The generating company can de-rate the capacity or can go for repeat trial run. The demonstrated capacity, in case of derating, will be equal to or greater than 105% of de-rated capacity for thermal InSGS and 110% for hydro generating station.

- In case of failure to demonstrate the declared capacity, the Annual Fixed Charges (AFC) due to GENCO to be counted as penalty.

- Charges equivalent to two-day fixed charges will be the penalty for first mis-declaration for any duration/block in a day. Similarly, four days equivalent fixed charges for the second mis-declaration and further, the penalty is to be multiplied in the geometrical progression for subsequent mis-declarations in the year.

- If the grid operating parameters deviate beyond permissible specified operating range, SLDC to prepare centralised MoD stack of the generators for real-time operation.

The MERC document can be accessed here.

CER Opinion:

- **Transmission Investment:** The investment approval framework should include a cost-benefit analysis considering economic efficacy of the investment and the system security over medium to long-term. Excess investment towards reliable of power supply needs to be controlled to avoid burden on consumers. Further, the transmission pricing framework should also ensure that cost burden associated with investments undertaken for a few beneficiaries are recovered from such users of the transmission system.

- **Spinning Reserve:** Framework for procurement and payment for spinning reserve capacity margin and its recovery from system participation (specially load serving entities) should be specified. If the intra-state generators are to provide this margin, they should be able to recover such investment as the reserve margin would not be part of the declared capacity which is available for scheduling for the beneficiaries.

- **Solar Rooftop Monitoring:** The benefit of real time' tracking and monitoring of 100 kW and above Solar rooftop systems would improve ability of the DISCOMs/SLDC to forecast such generation and implement schedule revision.

- **Data Availability from Monitored PV Systems:** Data from such monitoring systems should be made available in the public domain to ensure that better forecasting systems can be developed by the academic/research community, to be paid by distribution licensee.

- **Recovery of Investment in Monitoring System:** It seems that the cost associated for tracking and monitoring of 100 kW and above solar PV rooftop system would be paid by distribution licensee. Recovery of such investment should also be provided by the Commission.

- **Sampling Based Monitoring of Small PV Systems:** Growth of small-scale solar rooftop PV systems would constrain DISCOMs/SLDC to effectively forecast and manage the schedule thereof. A sampling-based monitoring system for systems above 10 kW and up to 100 kW would enhance visibility of such small-scale systems. Further, small scale rooftop systems may see significant capacity additions through PM KUSUM Scheme, hence, stratified sampling of such geographically dispersed systems would ensure a broader coverage.

- **Fast Response Ancillary Services:** Clause 30.6 requires 'instantaneous' picking up of the generation to 105/110% in case of 'sudden fall in system frequency', which should be specified. Further, generating units have technical ramp up limits (1-1.5% per minute) and hence 'instantaneous' ramping is infeasible.

  The near instantaneous ramping need can be implemented through fast response ancillary services, hence, the Commission may direct the SLDC to develop a **commercial/market-based mechanism for intra-state ancillary services** wherein flexibility associated with various system constituents can be appropriately priced.

  Development of a Demand Response Program that allows 'load curtailment' at a shorter notice, can provide flexibility to the system as well. For e.g., agricultural cold storage facilities can respond by immediate load curtailment for a few minutes' duration without compromising their services.

- In case of failure of a generating unit to demonstrate its max DC, there should be a provision for reduction in Annual Fuel Charges (AFC). (30.2)

- **MoD related Data Disclosure:** SLDC should also provide all technical parameters like capacity, ramping rates, technical minimum, start up and down cost etc. for each generating unit through its portal. This would help researchers to develop modelling solutions for Maharashtra's power system.

- **MoD:** Apart from VC, a daily MoD stack should be prepared by SLDC considering DC, ramp up/down rate of generating units, buyer's demand profile and transmission losses and system constraints. (33.1)

- **Intra-state SCED Framework:** Centralised Despatch, to be prepared on an intra-day basis, is akin to the intra-state SCED framework, which further optimises cost of power procurement. However, the resultant cost savings due to revision of the schedule are to be shared in a transparent and fair manner. (33.2)

  Energy Analytics Lab (EAL), IIT Kanpur developed a SCED modelling framework that was used to provide key inputs to POSOCO regarding multi-period optimisation, which was adopted by POSOCO in its revised SCED procedure. EAL had suggested implementation of an intra-state SCED framework to derive cost savings across buyers with the state.

- **Frequency of Preparation of Centralised MoD:** The 'frequency' of centralized MoD preparation needs to be clarified. Ideally this should be at the beginning of each 15-minute block. Practically, this can be done on a rolling basis for 5 locks at a time, as suggested by EAL, after considering operational constraints including availability of appropriate model, computing power and data communication. (33 .2)

- **Parameters for Preparation of Centralised MoD:** Given the national synchronized grid, usage of system frequency for preparation of state level MoD is no more relevant. Similarly, the available modelling solutions for MoD do not explicitly incorporate voltage as a parameter, which needs to be monitored and operationally addressed.