



ReNew
POWER

Recommendation for IEGC

Issues relevant to Renewable Energy

- Forecasting & Scheduling (F&S) of wind and solar generation
- Curtailment
- Market based mechanisms
- Broad Recommendation IEGC

- Forecasting and Scheduling (F&S) activities for wind and solar based project is highly dependent upon weather forecast.
- Multiple real time revisions required for alignment of forecasted parameters with actuals.
- Regulatory framework differs across state:
 - Barring few, many states doesn't allow aggregation. **(High Deviation charges)**
 - States are trying to pass the impact of frequency linked state level deviations **(against the basic construct)**.
 - Individual default by generators not dealt with clarity, the transaction between Qualified Coordinating Agency and generators is not regulated **(QCA Centric Regulations)**

High magnitude of deviation charges are impacting the projects' financial viability

Comparison of F&S Regulations Across state

Regulations	Aggregation	Error Based on	Permissible Deviation	Charges on Deviation	No of Revisions
FoR - Model Regulation	Yes	Available Capacity	+/- 15% Old +/- 10% New	Fixed rate of Rs./Unit	Every 1.5 hours
CERC Inter State DSM Regulation	No	Available Capacity	+/- 15% for all	As % of PPA	Every 1.5 hours
Chhattisgarh	No	Available Capacity	+/- 15% for all	As % of PPA	Every 1.5 hours
Karnataka	Yes	Available Capacity	+/- 15% for all	Fixed rate of Rs./Unit	Every 1.5 hours
Andhra Pradesh	Yes	Available Capacity	+/- 15% Old +/- 10% New	Fixed rate of Rs./Unit	Every 1.5 hours
Rajasthan	No	Available Capacity	+/- 15% for all	Fixed rate of Rs./Unit	Every 1.5 hours
Madhya Pradesh	No	Available Capacity	+/- 15% Old +/- 10% New	Fixed rate of Rs./Unit	Not specified
Telangana	No	Available Capacity	+/- 15% for all	Fixed rate of Rs./Unit	Every 1.5 hours
Maharashtra	No	Available Capacity	+/- 15% for all	Fixed rate of Rs./Unit	Every 1.5 hours
Gujarat	No	Available Capacity	+/_ 8% for all	Fixed rate of Rs./Unit	Every 1.5 Hours
Tamil Nadu	No	Available Capacity	+/- 15% for all	Fixed rate of Rs./Unit	Every 1.5 hours

- **Centralised forecasting** is widely considered a best-practice approach for economic dispatch. Administered by the balancing authority or system operator, centralized forecasts provide system wide forecasts for all RE generators within a balancing area.
- **Centralised Forecasting provides:**
 - **Greater consistency in results** due to the application of a single methodology.
 - **Lower uncertainty** due to the system operator's ability to aggregate uncertainty across all generators
 - **Reduced financial burden** for RE plants to produce and submit individual forecasts.
- Need to appoint centralized F&S agency at Transmission System Operator (TSO) Level.
- QCA remuneration on MW basis to be fixed ensuring recovery of cost towards F&S activity.
- Generators to be liable to provide all the required data in regulated manner to F&S agency.
- An incentive model based on degree of accuracy to be developed in phased manner for F&S agency – aligned with the TSO mandate
- Generators to be responsible for:
 - Providing timely access to adequate data
 - Paying fixed fee per MW
 - Informing availability of machines
 - Deviation charges, in case they deviate from Centralised forecast

Harmonize DSM regulations across states-

- Allow aggregation at State level for state entity and Regional level for regional entities, keeping with the primary objective of the regulations and not make it punitive
- Standardize error calculation methodology to AvC based error
- Standardize permissible deviations and also provide long-term trajectory for the same
- With tariffs having come down significantly, DSM charges should have ceiling limits linked to tariff; the current mechanism puts new projects at a significant disadvantage.

Allow more number of revisions and reduce time-block

- This will enable capturing the rapid fluctuations in generation
- Will be in line with thermal generators
- Lack on ground-based infrastrucre for weather forecasting (eg. ground based weather monitoring stations, radar's, etc) result in weather forecast accuracy to be lower than in developed countries

Exclude time-blocks where grid was unavailable for any reason:

- Current regulations are silent on such an exclusion
- Rajasthan is a lead example of incorporating such an exclusion; this should be made standard practise across all states
- Frequent grid unavailability also impact forecasting model accuracy, which relies on Maching Learning and AI based approaches, thus reducing overall accuracy.

Identificion of QCA as an legal entity:

- Concept of QCA shall be integrated into rom Electricity Act 2003 and Grid Code.
- QCA shall be made responsible for F&S activities.
- An incentive model based on degree of accuracy to be developed in phased manner.
- Role of generators to be made limited to providing access to data and paying fixed F&S fees.

Curtailment of wind and solar generations

- The incumbent legislative framework accords a MUST RUN status to wind and solar based generation projects
- Curtailment of wind and solar generation is done on the pretext of grid security and safety.
- No reasons are communicated by system operators for such curtailment.
- Even written instructions are not made available
- Huge loss of revenue due to single part tariff structure are making the projects unviable.

Suggestions

- All system operators should be mandated to communicate reasons along with each backing down instruction.
- All system operators should mandatorily create a repository containing details of backing down instruction, reasons and grid parameter for the duration of curtailment.
- All system operators should mandatorily report this data to Central Electricity Authority which will then facilitate creation of central curtailment data repository.
- All stakeholder should be given access to such repository for confirmation and to avoid dispute in future.

Real Time and Ancillary Market

- Define Real Time Market and Ancillary Market and platforms under which such trade will be closed.
- Empowering System operator to issue approvals for transaction and manage these markets.

Gate closure and reduction in time block duration

- Defining Gate Closure time with respect to finalization of trade in market and Scheduling.
- Duration of time block to be reduced from 15 minutes to 5 minutes.
- To amend the minimum time block duration for scheduling and rescheduling from 4 time block to 6 time block

Delegation of Commercial power to System operators

- Delegate commercial power to system operator to enable grid balancing at real time basis.
- Mechanism to ensure availability of funds for such despatch to be ensured either through allocation of funds from pool account or by way of socialising the cost.

Real time curtailment in generation schedule

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Grid connectivity of solar and Hybrid projects

- Connectivity of transmission access of solar projects should be checked with reference to inverter capacity deployed.
- Connectivity and transmission access of hybrid project should be delinked to the installed capacity of plant.

Technical Minimum with reference to thermal plants to be defined

- Procedure for ascertaining and reviewing of Technical Minimum for thermal based plant to be formulated by CEA and approved by CERC.
- Commercial mechanism to be devised for compensating thermal based power plants for additional cost implication incurred on account of operating on technical minimum.

Broad Recommendation for IEGC

- Duration of Long term contract to be amended to 35 years in line with TCBC transmission contract.
- Grid connected Energy storage system: to provide ancillary services.
- System planning to take into account the growth in electric vehicle market, distributed solar generation and all other such arrangements.
- Lower limit of RGMO to be relaxed to accommodate more renewable capacity.
- Grid code to differentiate between different energy storage system.
- Battery based storage system to be used for grid support functions.
- Allow RLDC to use any spare transmission capacity on long term basis available with TCBC based transmission licensee.
- Allowing usage of transmission line for hosting telecommunication system.