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Comment Submission

For the kind attention of:

Shri (Dr.) Rajendra G. Ambedkar, Hon'ble Secretary, MERC
World Trade Centre, Centre No.1,
13th Floor, Cuffe Parade,
Mumbai-400005
Tel. No.: 091-22-22163964/65/69 or 091-22-69876666
Email: mercindia@merc.gov.in; secretary@merc.gov.in

Comments to MERC on the Draft Maharashtra Electricity Regulatory Commission (Framework for Resource Adequacy) Regulations, 2024 and Explanatory Memorandum

Background

We thank the Maharashtra Electricity Regulatory Commission (MERC) for this opportunity to comment on the Draft MERC Framework for Resource Adequacy Regulations, issued on March 7, 2024.

We applaud the MERC for being the very first state in India that has developed and issued these important regulations, and we are grateful for the chance to contribute the Regulatory Assistance Project's (RAP's) perspectives to assist the evolution of the provisions.

As is the case with all our public comment submissions, our interest is solely to provide assistance to the MERC and Maharashtra state power sector decision-makers as you seek, through reform and regulation of the country's electricity systems, to make it more efficient, achieve important public policy goals, and to contribute to serving the public good in India. We trust that you will find our observations below to be objective, independent, and tailored to support MERC's guidance.

RAP wishes to offer some general comments on the draft regulations, plus some suggestions for MERC's evaluation, as follows:

GENERAL COMMENTS

Both the regulations and the explanatory Memorandum describe a very carefully conceived process to reach an efficient RA procurement. In general, we believe the capacity credit methodology proposed provides a fair measurement of the contribution of different types of resources.

Over and above this general observation, we appreciate MERC's consideration of the following suggestions:

1) **Role of State Load Dispatch Center (SLDC) vs Distribution Licensee (DL):** We suggest that the SLDC play a stronger role in a few steps of the process. For instance, as conceived in the current draft regulations, the DLs are expected to calculate the Planning Reserve Margin (PRM). While we believe DLs have the inputs to properly forecast their demand, the calculation of the PLM may be better performed at the SLDC level. As resources are shared within the SLDC, determination of the PRM at the SLDC would result in a more efficient level of PRM.

2) **Basis for setting the PRM:** Section 11.2 of the draft regulations state that the PRM "shall be based on the reliability indices in terms of Loss of Load Probability (LOLP, for example, 0.2%) and Normalized Energy Not Served (NENS, for example, 0.05%) as may be specified by the Authority or separately computed by the distribution licensee and STU/SLDC at state level, subject to approval of by Commission, and the same shall be considered by entities in their planning for resource adequacy requirement and generation resource capacity planning."

   Using these different metrics to determine PRM will produce vastly different results. There should be one primary metric specified to derive the PRM while other metrics can be considered. And, that metric should be used consistently across the different SLDCs. For example, please see the calculations of the different results in a recent study in New York Control area[1]. As shown on page 2 there, the LOLP criterion of 0.1 yielded an annual Installed Reserve Margin of 23.1%. This level also produced Loss of Load Hours (LOLH) of 0.378/year and Normalized Expected Unserved Energy (NEUE) of 0.00015%. As stated there, other systems around the world that design to LOLH have a criteria of less than 3 to 8 hours per year, and criteria based on NEUE is typically less than 0.002%. Accordingly, the SLDC will require further guidance to calculate the PRM. These are inputs that needs to be standardized among all the participants, and only the authority can provide them in a way that is consistent with public interest.

[1] https://www.nysrc.org/wp-content/uploads/2023/12/2024-IRM-Study-Technical-Report-11-28-23_ICS_284_clean_bp-approved-12-8-2023.pdf

3) **Role of Imports/Exports:** Another topic which may require further explicit consideration in the determination of the PRM is the treatment of imports and exports with other States. In the current draft, it is unclear as to what extent the State's RA plan is considering reliance on other states for imports or to what extent some internal resources should not be included because exports are expected to happen. Also, if there are emergency assistance procedures with neighbors, they should be accounted for in determining the PRM.

4) **Time Period**: It is unclear whether the PRM will be determined annually and for what period? We recommend that the time period should be clearly stated.

5) **Statewide vs Locational Capacity Requirements**: While the PRM may be determined on a Statewide basis, there may be specific locational capacity requirements if there are transmission constraints within the system. Locational capacity requirements will determine the need for generation resources in a specific load area due to transmission constraints.

6) **Sensitivity Analysis:** It is unclear if there will be one base case or whether there will be a sensitivity analysis conducted to assess how the PRM might vary based on different assumptions. Sensitivity analysis can be conducted for such variables as Load forecast uncertainty, unavailability of wind or solar resources, unavailability of emergency assistance from neighbors etc.

7) **Transmission Security**: There appears to be no discussion on this topic in the regulations. Perhaps they are discussed in a different document. We suggest that this important theme be integrated into regulations that pertain to reliability. If a definition is helpful for reference, please see: "*Transmission security is the ability of the power system to withstand disturbances, such as electric short circuits or unanticipated loss of system elements and continue to supply and deliver electricity*[2]*."* While Resource Adequacy determination is probabilistic in nature, transmission security assessment is deterministic. Both components are necessary for reliability assessment. In other words the target of TTC total transfer capability and GNA general network access, of the state also needs to be assessed and followed.

[2] See New York Independent System Operator Reliability Needs Assessment Report: page 48, at https://www.nyiso.com/documents/20142/2248793/2022-RNA-Report.pdf

SPECIFIC COMMENTS

1. **Responsibilities of Open Access Participants:** Although Section 3.1 states that the regulation should apply to regulated entities, including "grid connected entities and stakeholders within Maharashtra", the document does not very clearly define all the responsibilities of open access participants.
   In particular, clarification would be helpful to determine if the open access participants will follow the same obligations that are stated for distribution licensees regarding the forecast of their demand, and the contracting of RA obligations. If this is not the case, it should be clarified which entity is expected to take their demand and resources into the state RA assessment. One possibility could be for Distribution Licensees to forecast the demand and resources from these participants, while making them responsible of contracting their own RA allocation. If DLs are to contract capacity on their behalf, it would be relevant to clarify the terms under which this procurement should be compensated.

2. **Relationship with the central planning:** Provision 12.13 proposes to make DL's procurement to be based on the expected state's peak demand. If this process is replicated in other states, the benefits of diversity of different demand and resources profiles should also be factored in. While we understand the need for the state to guarantee RA on their own borders, considering how imports and exports contribute to this objective will very likely change the results on the amount of capacity that is required.
   We suggest undertaking the planning probably in a scenario where resources are being shared, where the procurement evolves towards a regime where DL procurement is based on their contribution to the All India Peak Demand, subject to transmission constraints.

3. **Complementary enforcement measures:** The focus on critical hours for RA enforcement is a step in the right direction. The complementary measure to this would be to make payments of thermal generators contracted by DL to be contingent on being available during the real critical hours. Countries like France and Mexico, and soon Brazil, make their capacity payments contingent on the generators being available in those hours which are measured at the end of the year.

COMMENTS ON THE EXPLANATORY MEMORANDUM's CAPACITY CREDIT METHODOLOGY

The comment below is based on sections 9.5, 9.6, 10.4, 11.2, 12.10, 12.12, 12.13, 12.14, 14.6, 14.7, 14.8, 15.1, and 15.3 of the explanatory memorandum.

1. **Energy Storage Systems Capacity Credit:** While Section 14.6 mentions the possibility of contracting energy storage facilities to fulfil the RA obligations, the memorandum does not explain the way the capacity credit would be calculated. Nonetheless, the memorandum clarifies what is the capacity credit to be allocated to different technologies, including wind and solar PV. This methodology could be easily adapted to energy storage resources which are energy constrained, such as Battery Energy Storage Systems (BESS) or Pump Hydro. This would require having information of the duration of the critical demand episodes, in the last five years, since this would allow to make a calculation of the average availability of an energy-constrained resource during those hours. In particular, if a critical demand episode last four hours, a 1 hour duration BESS would be able to provide only 25% of capacity credit, while a 2 hours duration BESS would be able to provide 50%. The average of the contribution to RA during the critical episodes would be the Capacity Credit.

We hope the comments above assist with finalization of the Draft MERC (Framework for Resource Adequacy) Regulations, 2024.

Once more, we wish to applaud MERC for developing these critical regulations, and we lend our support to the reforms and advances articulated therein.

Thank you for this opportunity to comment. If we can be of further assistance, please don't hesitate to ask. We would be keen to collaborate with MERC on these and related matters.

Sincerely,

Dr. Alejandro Hernandez

Director, India and Global Opportunities Program

Regulatory Assistance Project - ahernandez@raponline.org