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Very Narrow Tolerance Band: Sir, one of the main reasons for failure of RRF mechanism was the +/- 30% range of scheduling accuracy demanded by the suspended RRF mechanism. This was not possible technically and infeasible, due to which the RRF mechanism could not work and almost all generators complained of the RRF mechanism being onerous and impossible to comply with. As a result, CERC suspended the same.

Now, if CERC further narrows the band to +/- 12%, it would not make regulatory sense to adopt a mechanism, which is even more onerous and unfair than the earlier suspended mechanism, primarily due to the infirm nature of Wind and solar energy. The CERC may clarify whether it has obtained any strong scientific study in support of its framework to allow for forecasting and scheduling in the narrow band of +/- 12%? Whether there are any forecasting agencies available in the Indian market, which guarantee compliance to such a narrow band of +/-12%? We have searched the market and not forecasting agency or consultant is available which can assure of giving the forecasts desired by the proposed framework.

Non-consideration of Seasonality in wind and solar generation – In the proposed framework, it assumed that wind and solar generation is equal and homogenous throughout the year, which does not depict reality. We suggest Exemption from scheduling and forecasting for wind power in off-peak season (October-March) when active energy generation is so low that it becomes inconsequential to the health of National Grid.

Deviation Methodology – Instead of incorporating absolute deviation in the proposed framework, CERC must consider internationally acceptable methods such as Root Mean Square Error or Mean Absolute Error method to make the framework more scientific and operable.

CERC must consider a centralized approach to scheduling and forecasting of 100% Renewable energy being injected into the Grid at any point of time (i.e. exclusively at RLDC level rather than generator level) and socialize the cost of the same, as it is an internationally acceptable practice (for example, Germany and California). Renewable Energy is infirm energy is a law of nature and not an option opted by Renewable Energy Generators.

Use of Percentages for Deviation instead of Absolute Rupees per unit- The amounts payable or receivable in case of various instances of deviation from schedule should be mentioned in terms of a percentage of the PPA rate such as 5% and not in absolute terms such as 3 Rs./unit or Rs./unit.

Compliance cost allowed to be built in the PPAs – If the proposed framework wishes to include the currently installed capacity as part of itself, then a mechanism may be devised to built-in the cost of compliance of the proposed framework in the respective PPAs. However, if the proposed framework will apply only to future RE capacity, then such cost maybe included in the RE Generic Tariff policies.

CENTRAL ELECTRICITY AUTHORITY

Sl. No.	Reference	Provision	SRPC Sectt. Comments
1	Page 3, page 4/11	The Following methodology proposed for forecasting scheduling and imbalance handling of wind and solar generators would be applicable for the interstate wind and solar energy generators whose scheduling is done by RLDCs	Presently most of the installed Capacity in SR is connected to Intra-State network and in future too substantial capacity may be in the intra-state network. The proposed Regulation may thus be applicable only for limited % of Wind and Solar generators. The scope of the Regulation could be considered to be widened so that Wind and Solar connected to state grid would also get covered. States would get scheduled power from RE generators while deviation would be managed by the National/Regional Grid. With all India grid in place, such variations would reflect in minor frequency variations which could be absorbed.
2	Page 3.2 page 5/11	Some of the wind/solar energy generators may also transact power through short term trades. Revisions are allowed for bilateral transactions but no revision of trades discovered through collective transactions in the Power Exchange(s).is possible.	To address issue regarding variability, revisions in bilateral transactions (STOA) for RE may be permitted within short time period 4-6 time blocks.
3	Para 3.4 & Page 6/11	It is essential that desired limits be stipulated for deviation so as to provide enough signals/incentive to the wind/solar energy generator to forecast as accurately as possible. Accordingly, keeping in view th first level of volume limits as per the DSM Regulations, the desired operating band of $\pm 12\%$ is being proposed for the wind and solar energy generators.	It is suggested that range in MW also needs to be stipulated for maximum (150/200/250 MW) deviations as in DSM.

4	Para 3.4 Page 7/11	If the actual generation is below 88%, the wind/solar energy generator would pay @ Rs. 4/kWh for the shortfall energy to the DSM Pool (may be reviewed periodically by the Commission through an Order). In addition, the wind/solar energy generator would buy RECs (equivalent to the shortfall energy) and transfer them to the buyer to enable it to fulfil its renewable purchase obligation in this case (that is, in the event of deviation beyond 12%), there is a clear disincentive as the outgo for the wind/solar energy generator would be more than what it earns based on scheduled generation.	In this RE Generator may continue to make profit if its negotiated rate is more than Rs.5.50 (Wind)/7.50 (Solar). Therefore the rate should increase (slope) if the accuracy goes beyond 88%
5	Para 3.4 & Page 8/11	Beyond 12% on the positive side, the wind/solar generator would be issued only RECs for the excess generation. No payment would be made to such generators from the DSM Pool for generation above 112d% of the schedule.	To avoid this the RE Generator would try to be under-inject that to over-inject). Therefore the rate should decrease (slope) if the accuracy goes beyond 112% and not abruptly end.
6	Para 5	Data Telemetry and Communication Facilities.	The scope could be expanded to RE Generators (Group of RE) though selling power to host state. These RE Generators must ensure these facilities at interface point. Huge capacity is envisaged in wind & solar and at least for upcoming RE generators it could be mandated and covered under this Regulation.
	Para 3.3	Metering	
Other Issues			
States do not have necessary infrastructure to handle the variability since wind generation is there for short period (3-4 months). Even during surplus conditions, there are issues relating to technical minimum, backing down., rigidity in STOA transactions and no mechanism available to handle the huge surplus. <u>Therefore if RE is deemed integrated to IST grid, states would get firm shares while deviations</u>			

would be handled by the National/Regional Grid States would be required to manage only the deviations excluding the RE generators. It is understood that different PPA agreements exist between RE Generators and Stat utilities. Therefore, State could be member for eligible state embedded RE generators to settle the deviations in Regional DSM account. State Utility (for RE) could settle the account with Coordinating Agency (RE) based on weekly DSM Accounts by RPC secretariat. Suitable Depooling arrangement could be worked out between the Coordinating Agency (RE) & RE Generators. RE Generators need to ensure SEMs, Data Telemetry & communication Facilities. However, in case of high deviations from schedule leading to high line loadings, high frequency or low frequency, schedules could be revised by NLDC/RLDC/SLDC.

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1. In effect, SLDCs could treat all RE generators as one aggregate generator for each cluster. Instead of the forecasting and scheduling rules applying to each RE generator individually (and in this process, incurring more costs), they could apply to aggregate RE capacity.
2. Concerned system operator could procure system-level forecasts from appropriate parties ("forecasting agencies or aggregators") under an appropriate mechanism –e.g. multiple vendors can be contracted and the most accurate forecast gets an additional incentive thereby creating a competitive environment for continued improvement in RE forecasts. The associated costs could be collected from at RE generators in form of an annual fee.
3. The approach will result in the lowest ultimate cost to consumers because this takes full advantage of tapping the geographical diversity that minimizes both uncertainty and variability while improving forecasting accuracy of RE generation, thereby minimizing the incremental ancillary services required for RE.
4. Further it is note that I this approach, the concerned RLDC or NLDC bears no risk – whatever, incremental costs it faces due to RE – e.g. procuring centralized forecasts from forecasting agencies and integrating them in system operations, deviation from forecasts and the resulting ancillary service costs – can all be recovered as an 'annual fee\ from all RE generators on a per MWh basis.