

Ref: NBC/PROD/GE/2.1/2020/606

04/03/2018

To,  
Hon'ble Secretary  
Andhra Pradesh Electricity Regulatory Commission  
11-4-660, 4th Floor, Singareni Bhavan, Red Hills Road,  
Khairatabad, Hyderabad, Telangana 500004

**Subject:** Comments on Draft Amendments proposed by APTRANSCO, towards the Regulation 4 of APERC Forecasting, Scheduling and Deviation Settlement of Solar and Wind Generation Regulation, 2017

Hon'ble Sir,

We offer, in subsequent Paras, our views and suggestions on the proposed amendment by APTRANSCO, on the subject matter above.

However, we would like to point out here that the hearing for the above matter is scheduled on 10th March, which is a public holiday due to Holi. We request you to provide another date for the hearing, and inform us accordingly.

About the National Aluminium Co Ltd: We are a Navaratna Central PSE headquartered at Bhubaneswar, Odisha. We own and commercially operate a Wind Project aggregating to 50.4 MW, representing Rs 274 Crores in investment in AP.

To begin with, the changes proposed by APTRANSCO along with other financial owes will make our investment in AP commercially unviable.

The proposed changes are arbitrary and one-sided. Further, these changes are supposedly based on a "detailed report". However, the "detailed report" does not provide any data on the basis of which APTRANSCO has made such recommendations. Before considering any changes, the Hon'ble APERC should require APTRANSCO to provide justification backed by robust evidence from forecasting & scheduling data.

Since forecasting & scheduling activity has started in AP since July 2018, the Hon'ble APERC should require APTRANSCO to provide this data. An analysis of such data will allow assessment of changes needed in the regulation based on real evidence.

Para 3 of the "Detailed report" by APTRANSCO states the following:

*"No power market mechanism is also available to get power at short notices".*

This is factually incorrect. A utility has several existing systems like drawing on ancillary reserves and the URS power. Further, from April 1, 2020 the "real-time" markets will become operational. APTRANSCO has not considered these aspects when proposing changes to the DSM regulations.

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Further, the Hon'ble APERC should also assess the existing practice and accuracy of demand forecasting by DISCOMS and APTRANSCO. Only a full analysis of the accuracy of demand and supply forecasting will enable making an informed decision regarding the cost of deviation from VRE and the changes, if any, that need to be made in the regulation.

The larger impact of changes proposed by APTRANSCO will only be to make the projects unviable. All the changes proposed - a change in the error calculation formula, reducing the permitted deviation to 5%, disallowing any intra-day revisions, and charging Rs 2/ unit of deviation will result in a significant cost increase, potentially making the projects unviable.

The Hon'ble APERC should assess the cost impact of such changes on a per unit basis, and assess viability of RE projects before making any changes.

Our detailed comments on each recommendation are as follows:

S. No	Original Regulation	Impugned Amendments
1	<b>Clause 2.1 (a):</b> "Absolute Error" means the absolute value of the error in the actual injection of wind or solar generators with reference to the scheduled generation and the Avail/ab/e Capacity (AVC), as calculated using the following formula for each 15-minute time block.	<p>The formula for error calculation is suggested to be changed as:</p> <ul style="list-style-type: none"> <li>• <math>\text{Forecast Error (\%)} = 100 \times (\text{Schedule Generation} - \text{actual Injection}) / \text{Schedule Generation}</math>.</li> <li>• The term 'absolute error' substituted with 'forecast error'.</li> <li>• The term 'Available Capacity' substituted with 'Scheduled Generation'.</li> </ul>
	<p><b>Comments:</b></p> <ul style="list-style-type: none"> <li>- It may be recalled that the RRF Regulations of 2013 computed error in a similar way as being proposed by APTRANSCO.</li> <li>- The Hon'ble CERC observed the following on the error formula in the RRF regulation (which computed error on the basis of schedule as the denominator) <ul style="list-style-type: none"> <li>- "The present error definition has been pointed out to be insufficient to handle varying seasons, especially very low or zero schedules, and not aligned with direct grid impact (MW deviations)" (Para 6.2.1 of SoR)</li> </ul> </li> <li>- The current method has also been stated as the scientific method in the Model Regulation by FoR. The SoR given by CERC for the Framework on Forecasting, Scheduling and Imbalance Handling of Variable RE Sources, states the following with regards to the MAE based on Available Capacity: <ul style="list-style-type: none"> <li>- "The Commission has noted that with the current definition, instances such as low/no generation cases cannot be covered. With due regard to these constraints and with a view to ensuring optimum and genuine forecasting, the Commission has decided to define the error percentage normalized to available capacity.</li> </ul> </li> </ul>	

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प्लॉट नं. १, बसपल्ली, बृहन्मैसूर, ५६१०१३, कर्नाटक, भारत

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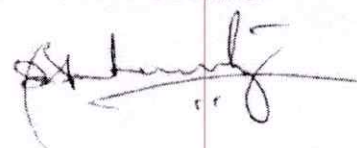
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*instead of schedule. This will ensure that the error quantity corresponds to the physical MW impact on the grid, the forecasting models are aligned to minimize the actual MW deviations, and the error definition holds valid in all seasons."*  
(Para 6.2.2 of SOR)

- This is explained below, using the example of wind energy deviation, during the seasons. If error is based on Scheduled Generation, it would be highly unfair to the Generators but at the same time have minimal or no impact on the overall grid.

Season	Capacity (AvC)	Sch. (MW)	Act (MW)	Absolute Deviation (MW)	Error based on AvC	Error based on Sch.	Impact on Grid
High Wind	100	60	80	20	20%	33.33%	High
Low Wind	100	10	13	3	3%	30%	Low

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2	<p><b>Clause 2.1 (j):</b> "deviation in a time block for a seller means its total actual injection minus its total scheduled generation."</p> <p>15% error is allowed without any DSM charges.</p>	<ul style="list-style-type: none"> <li>• Inclusion of 'Allowable forecasted error' in calculating the deviation wherein 'Allowable forecasted error' will be calculated as: 'Allowable forecast error' = <math>100 \times (\text{diversity factor } 0.7 \text{ in control area at the beginning of the financial year}) \times (\text{quantum of deviation limit permitted under CERC's DSM Regulation amended from time to time}) / (\text{quantum of VRE installed capacity})</math>.</li> <li>• This would be ~ 5% allowed error, beyond which, DSM charges will be applicable on the generators.</li> </ul>
	<p><b>Comments:</b></p> <ul style="list-style-type: none"> <li>- The justification provided by APTRANSCO in this proposed change is arbitrary is illogical.</li> <li>- The APTRANSCO proposes to use a multiplier of 0.7 as "diversity factor" in calculation of "allowable forecast error". However, no where in the "detailed report" or any other place is such a "diversity factor" either defined, explained or any basis of the "0.7" multiplier elaborated upon.</li> </ul>	

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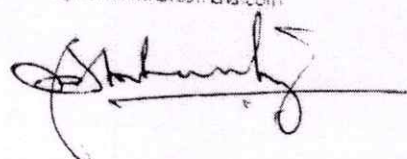
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	<ul style="list-style-type: none"> <li>- Similarly, the APTRANSCO cites that 15% error will result in a deviation of 1125 MW in AP. This is an illogical argument as it assumes that all sites will have equal or similar deviation in the same direction (ie. either all will over-inject or all will under-inject). In fact, projects spread out over a large and geographically diverse area will result in low overall error, as often errors of individual projects cancel each other out.</li> <li>- Since APTRANSCO will have data from July 2018 of the entire state, Hon'ble APERC should ask for a detailed, factual analysis to determine if deviation from VRE sources at any time was equal to or more than 1125 MW at the state level.</li> </ul>
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3	<b>Regulation 4, clause 4.1:</b> "The Methodology for day-ahead scheduling of wind and solar energy generating stations which are connected to the Grid and rescheduling them on one and half-hourly basis and the methodology of handling deviations of such wind and solar energy generating stations shall be as stated hereunder and accordingly forecasting tools shall be provided by the generator concerned."	<ul style="list-style-type: none"> <li>• <i>It is suggested to remove the option of rescheduling of forecast on one and half-hourly basis during the day of operation and strictly adhere to schedule on a day-ahead basis over violation notices to the Discoms.</i></li> </ul>
	<b>Comments:</b> <ul style="list-style-type: none"> <li>- The suggestion for removal of one and half hourly revision on the basis that the DISCOMS have to plan on a day ahead basis is not in the right spirit due the following reasons: <ul style="list-style-type: none"> <li>- Variability of generation from VREs, can only be bridged if revisions are allowed close to real time, so that the variations can be kept at a lower level. Allowing only Day Ahead schedule for VREs may significantly escalate the deficit/surplus scenario for the DISCOMs, due to much higher variations in the Day Ahead forecast, and this has been discussed and documented in several meetings of SLDC with the stakeholders involved.</li> <li>- The same has also been recognized by forecasting agencies worldwide, and also quoted in the SoR by CERC: <ul style="list-style-type: none"> <li>- <i>"The Commission recognizes that accuracy of forecasting improves as one gets closer to time of dispatch. This is borne out by plenty of research that is available on how forecasting accuracy improves as more updates</i></li> </ul> </li> </ul> </li> </ul>	

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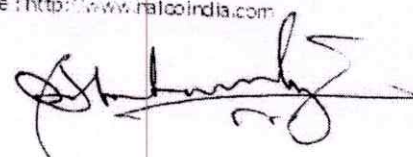
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	are done aligned with shorter scheduling intervals."
-	Further, Real Time Electricity Market in India will become a reality soon, and the utilities will then have access to real time electricity trading market options so that the deficits/surplus can be better managed on a real time basis.

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4	<b>Regulation 4, Clause 6.3:</b> error calculation table for under or over - injection for sale/supply of power within the state. <table border="1"> <thead> <tr> <th>S. No</th><th>Forecast Error</th><th>Deviation Charges in Rs per Unit</th></tr> </thead> <tbody> <tr> <td>1</td><td>&lt;15%</td><td>Zero</td></tr> <tr> <td>2</td><td>15-25%</td><td>Rs. 0.5</td></tr> <tr> <td>3</td><td>25-35%</td><td>Rs. 1.0</td></tr> <tr> <td>4</td><td>&gt;35%</td><td>Rs. 1.5</td></tr> </tbody> </table>	S. No	Forecast Error	Deviation Charges in Rs per Unit	1	<15%	Zero	2	15-25%	Rs. 0.5	3	25-35%	Rs. 1.0	4	>35%	Rs. 1.5	<ul style="list-style-type: none"> <li>Suggestion for removal of error bands and shifting to a single allowable forecast error as discussed above in the following manner:</li> </ul> <table border="1"> <thead> <tr> <th>Sr. No.</th><th>Forecast Error in the 15 min. time block</th><th>Deviation charges payable to State Pool Account</th></tr> </thead> <tbody> <tr> <td>1.</td><td>&lt;Allowable Forecast Error</td><td>None</td></tr> <tr> <td>2.</td><td>Allowable Forecast Error</td><td>At Rs. 2.00 per unit for the shortfall or excess injection</td></tr> </tbody> </table>	Sr. No.	Forecast Error in the 15 min. time block	Deviation charges payable to State Pool Account	1.	<Allowable Forecast Error	None	2.	Allowable Forecast Error	At Rs. 2.00 per unit for the shortfall or excess injection
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	<b>Comments:</b> <ul style="list-style-type: none"> <li>The APTRANSCO has proposed a price of Rs 2/ unit above the "allowable forecast error". This is derived on the basis of - "adequacy costs of Rs 1.6/unit" and "Balancing cost of Rs 0.4/ unit". However, detailed calculations of how these costs have been arrived at are not available. Before considering these changes, the Hon'ble APERC should require APTRANSCO to provide justification backed by evidence.</li> <li>In fact other states have taken an opposite approach - that of reducing per unit DSM charges. In Gujarat, DSM charges are Rs 0.25/ Rs 0.5 and Rs 0.75 per unit. This is done in conjunction with marginal reduction in accuracy thresholds. The reduction in per unit DSM charge is in line with the recent PPA tariffs, which have been significantly lower than the Rs 5/unit benchmark used by FoR when determining the current DSM charges. Similarly, the Hon'ble APERC should consider reducing per unit DSM charges.</li> </ul>																									

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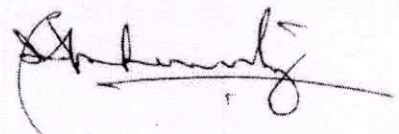
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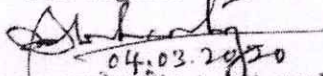


5	<p><b>Regulation 4, Clause 2.1 (aa):</b> Virtual Pool means the virtual/ grouping of various pooling stations wherein the generators in such pooling stations have an option for accounting their deviational in an aggregated/combined manner through a QCA for the purpose of availing the benefit of larger geographical / area and diversity. "</p>	<ul style="list-style-type: none"> <li>• Suggestion for removal of virtual pooling from clause 2.1 (aa) and clause 6.9</li> </ul>
	<p><b>Comments:</b></p> <ul style="list-style-type: none"> <li>- The document shared by APTRANSCO wrongly claims that no other state allows aggregation. This is factually incorrect.</li> <li>- The concept of Aggregation had been proposed in the FoR Model Regulation, and in the most recently it has been proposed at the Inter-State RE DSM in the draft IEGC 2020 code.</li> <li>- Further, Karnataka has successfully implemented Aggregation along with Andhra Pradesh, and the result of Aggregate level schedules and revisions have resulted in much lower overall deviation at the state levels.</li> </ul>	

The proposed move by the APTRANSCO would be counter-productive, given that the larger goal is to decarbonise the economy and reduce our carbon foot-print. The moves, if implemented, would make existing RE projects, which are already distressed, commercially unviable and would stall fresh investment in the sector, defeating the very purpose of tapping RE power.

Therefore, we would pray the Hon'ble APERC to take a considered view in the matter in the larger interest of the stake holders.

Best Regards

  
04.03.2020

सुब्रत कुमार मोहान्ती/ Subrat Kumar Mohanty  
सहायक महा प्रबंधक (यंत्रिका)/Asst. General Manager (Mech.)  
कॉर्पोरेट कार्यालय/ CORPORATE OFFICE  
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