



To,

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

04.03.2020

*6/3/2020*  
*Jaw*

**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.

**References:**

1. Letter from APTRANSCO to APERC vide Lr.No. CGM/HRD&Plg/SE/Plg/EE/RAC&Reforms/APERC/D.No 121/2019, Dt. 10.12.2019; and
2. Public Notice OP No.2 of 2020 In the matter of Amendment to Regulation No. 4 of 2017.

Dear Sir,

We thank the Hon' APERC for giving us an opportunity to offer our views and suggestions on the proposed amendment by APTRANSCO, as referred above. We have noticed that the hearing for the above matter is scheduled on 10th March which is a public holiday on account of Holi. We request you to provide another date for the hearing and let us know of the same.

We humbly feel that the proposed amendments by APTRANSCO to the Deviation Settlement mechanism is not substantiated with detailed studies. We request that all the inferences on the variability aspect of Renewable Energy be substantiated with a detailed report. Before considering any changes, we request the hon'ble APERC to demand justification backed by evidence from forecasting & scheduling data from APTRANSCO. 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.

The Para 3 of the letter from APTRANSCO (Reference 1) 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 tools 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.

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 an informed decision regarding the cost of deviation from VRE, and changes, if any that need to be made in the regulation.

The larger impact of changes proposed by APTRANSCO will result in making the renewable 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. 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:



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**Ayana Renewable Power Private Limited**

**Registered & Corporate Office:**

3rd Floor, Sheraton Grand Hotel, Brigade Gateway, 26/1, Dr. Rajkumar Road, Malleswaram (West), Bangalore-560055, Karnataka  
CIN: U40106KA2017PTC101000  
Tel: +91 080-48511001 email: [contact@ayanapower.com](mailto:contact@ayanapower.com) website: [www.ayanapower.com](http://www.ayanapower.com)

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Provision	Amendment Proposed	Comments
Chapter 5 Amendment-1	Substitute the term 'absolute error' with 'forecast error'.	<p>Change in formula for error would be against the interest of justice and would create serious prejudice against VRE as Renewable energy is predictable to some extent however, its forecasting and scheduling accuracies cannot be treated at par with conventional energy generators.</p> <p>For instance in case of a wind generating plant an error of 0.5 meter per second in wind speed may result in 15% variation in terms of power generated and 0.5 meter per second is the minimum error achieved worldwide and average error for wind plant is of around 0.7 meter per second. For another instance, in case of Solar plant an error of 50 watt per meter square as GHI results an error of 10% variation in terms of power and average error for solar sites is of 100 watt per meter square as GHI. Further, for day ahead basis the average error is increased to more than 0.9 meter per second for wind plant which ultimately results an absolute error near to 2.5% and for solar plant 100 watt per meter second is an average error on day ahead basis which ultimately leads to an absolute error of 20%. Therefore, considering the present change in formula and other proposed amendment, avoiding penalties for VRE Generator would become inevitable without any fault or role by VRE Generator and entire purpose of the RE Regulation would be defeated.</p> <p>During Low wind period and cloudy weather when scheduled energy for wind speed before 3.5 m/sec is low and when fluctuating wind hits turbine the error from 0MW to 1MW becomes 100% error and also this incremental MW addition grid of size 700MW doesn't impact stability and this was the reason why CERC took nameplate capacity as denominator than forecasted energy</p>
	Substitute the term 'Available Capacity' with 'Scheduled Generation' for calculating Forecast error as per following formula. $\text{Forecast Error}(\%) = 100 \times \frac{\text{Schedule Generation} - \text{actual Injection}}{\text{Scheduled Generation}}$	



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3 Floor, Sheraton Grand Hotel, Brigade Gateway, 26/1, Dr. Rajkumar Road, Mallewaram (West), Bangalore-560055, Karnataka  
N: U40106KA2017PTC01000  
l: +91 080-48511000 email: contact@ayanapower.com website: [www.ayanapower.com](http://www.ayanapower.com)

**Chapter 5  
Amendment-2**

The definition of 'Allowable forecast error' in percentage should be considered for inclusion.

'Allowable forecast error' =  $100 \times$  (diversity factor)  $0.7 \times$  in control area In the beginning of financial year)  $\times$  (quantum of deviation limit permitted under CERC's DSM Regulation amended from time to time) / (quantum of VRE Installed capacity)

5%.

1. Assumption taken into consideration by Hon'ble Commission may not be correct in every case. In case two VRE Generators deviate in opposite direction, in that case both the VRE Generator end up paying deviation charges despite impact upon state owing to deviation on the part of both the generators is zero.
2. Treating VRE Generator at par with conventional energy generator was never the intent of Forum of Regulator and the same is evident through methodology adopted by them in the Model Re Forecasting and Scheduling Regulation for State by Forum of Regulator, 2015.
3. If taken into consideration proposed definition of allowed error and calculation thereto, it would be in evident for VRE-Generator to avoid penalties and would be seriously discouraged to operate generating plant owing to such burdensome negative revenue impact because of such penalties.
4. If renewable energy generators are treated at par with conventional energy generators that would seriously defeat the very target of Government of India to meet its renewable energy target since VRE Generator has a very narrow scope for mismatch with respect to their revenue requirement. VRE Generators are firmly dependent upon weather conditions for their plant operation and generation and accurate projection of their electricity generation and revenue cannot be ascertained and in such a scenario reducing permissible band for deviation would totally take away the commercial viability of VRE Generators. In this context, it is proposed to not to make amendment to the definition of Absolute Error and its calculations.



**Chapter 5  
Amendment-3**

It is proposed to remove the option of rescheduling of forecast on one half hourly basis during the day of operation and strictly adhere to basis ahead

1. Assumption taken into consideration by Hon'ble Commission does not cover all the aspects for power procurement and power draw scenario by the DISCOMs. For instance, in case out of two VRE Generators deviating in opposite direction, in that case its impact upon deviation at state periphery would be zero and its impact for the DISCOMs have to be accessed on case to case scenario: For instance in case VRE Generator having PPA tied up with DISCOMs is under injecting and the other VRE Generator is over injecting in that case net loss of DISCOMs would be zero, instead DISCOM would be benefited by such deviation. For another instance in case DISCOMs curtailed its costly power owing to VRE Generator and if VRE Generation deviate in negative in that case electricity prices on exchange may or on account of UI Charges has to be compared with PPA rate of curtailed power by DISCOMs as electricity prices on exchange may be lower than PPA rate from which power curtailed by DISCOMs. Such benefit to DISCOMs is not passed on to VRE Generators.
2. Model Regulations on Forecasting, Scheduling & Deviation Settlement Of Wind & Solar Generator by Forum Of Regulators permits 16 revision per day and such revision is permitted owing to nature of infirm power. Accurate prediction of weather conditions on day ahead basis is not technically possible and the same has also been explained above for better clarity. State Electricity Commissions while formulating Renewable Energy forecasting and scheduling regulations needs to be guided by CERC Framework and Framework of Regulators and such proposed amendment would be in direct conflict with CERC Framework and FOR's model regulation.
3. Renewable energy forecasting and scheduling and deviation settlement mechanism regulations were put into place in order to ensure grid safety and stability. weather data and parameters plays an important role for VRE Generators as plant's generation is directly related to weather conditions. Weather conditions changes varies from time to time in a particular given day and therefore real time data as provided by IMD or other service providers needs to be taken into consideration and is to be incorporated by revising schedules in order to ensure grid safety and stability. in case provision for revising schedules is taken away in that case entire purpose of the regulation i.e. grid safety and stability would be defeated.
4. On account of equipment breakdown which are not scheduled in nature hence it is next to impossible for predicting such breakdown and account the impact while submitting day ahead schedules and current plant design doesn't have any hot stand by reserve to full fill the these transient impacts, Overhead transmission lines are exposed to environmental events which many times lead to breakdown of lines resulting outages which can't be accounted in day ahead schedules hence intraday schedule is required to make the scheduling exercise more realistic and useful for making right generation mix at state level.



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IN: U40106KA2017PTC101000

tl: +91 080-48511001 email: [contact@avanapower.com](mailto:contact@avanapower.com) website: [www.avanapower.com](http://www.avanapower.com)

Chapter 5 Amendment-4	Forecast Error in 15 min time block pool in Deviation Charges Payable to State Pool Account:
	1. < Allowable Forecast Error: None. 2. Above Allowable Forecast Error: ₹ 2/unit for the shortfall or Excess Injection.
Chapter 5 Amendment-5	The definition phrase of virtual pooling may be deleted from definition 2.1 (aa) and also be deleted at clause 6.9 of Regulation 4 of 2017.

Justification provided for the proposed amendment is very narrow to the extent as its already assumed that in case of deviation DISCOMS are purchasing power at high cost, however, same is not correct in every case. There can be instances that DISCOMs procuring power from exchange at a rate cheaper than its average pooled variable cost and thereby deviations on account of VRE Generator benefitting DISCOMs. Rs. 2 per unit for energy deviated would be so onerous for VRE Generator that running plant would become very difficult for them owing to penalties payable on account of deviations as average PPA rate of VRE Generator comes out to be Rs. 3 kWh and such penalties may amount to more than 50% of the total revenue of the VRE Generator and thereby posing negative impact upon the plant sustainability.

Further, aforesaid amendment is against the Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) (Second Amendment) Regulations, 2015, As CERC permits deviation band of 15% without deviation charges. Initially, during planning of RE integration with the grid, deviations on account of VRE Generators was taken into consideration and it was proposed to propond a balanced mechanism taking into consideration grid safety and stability and at the same time ensuring that VRE Generators are not put at a losing end owing to nature of infirm power and weather conditions. In this context, exemption band of 15% was decided. As per proposed amendment, entire equilibrium would be disturbed with VRE Generators being at the loosing end.

It is requested that Hon'ble Commission may kindly reconsider its decision of removing aggregation at state level.

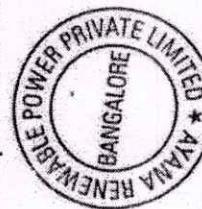
The definition phrase of virtual pooling may be deleted from definition 2.1 (aa) and also be deleted at clause 6.9 of Regulation 4 of 2017.

hope that our genuine requests are considered by the hon'ble commission before issuing any amendments to the regulations.

Thanking You,

Yours Faithfully,  


krishmi Narayanan Balasubramanian  
Senior Manager – Business Development



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#### gistered & Corporate Office:

1 Floor, Sheraton Grand Hotel, Brigade Gateway, 26/1, Dr. Rajkumar Road, Mallewaram (West), Bangalore-560055, Karnataka  
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