INDIAN WIND POWER ASSOCIATION
IWPA
helping mankind with energy from nature

Date: 04-03-2020

To,

Hon' Secretary
Andhra Pradesh Electricity Regulatory Commission
11-4-660, 4th Floor, SingareniBhavan, 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

Dear Sir,

At the outset 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.

However we noticed that the hearing for the above matter is scheduled on 10th March - this is a public holiday due to Holi. We request you to provide another date for the hearing, and let us know of the same.

About the Association: The Indian Wind Power Association (IWPA) was set up in 1996 as a non-profit organization. The Association is working closely with several national industry bodies such as the Indian Renewable Energy Development Agency, Ministry of New and Renewable Energy.

At the outset, the changes proposed by APTRANSCO will make our investment in AP completely 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 Honourable APERC should require APTRANSCO to provide justification backed by evidence from forecasting & scheduling data.

Since forecasting & scheduling activity has started in AP since July 2018, the Honourable 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.

Indian Wind Power Association

Indian Wind Power Association
NORTHERN REGIONAL COUNCIL
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Regional Council: *New Delhi*; State Councils: *Ahmedabad, Bengaluru, Hyderabad, Jaipur, Mumbai*

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

"Nopower 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 Honourable 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 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 Honourable 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	Suggested Amendments
1	**Clause 2.1 (a)**: "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 Avai/ab/e Capacity (AVC), as calculated using the fo//owing formula for each 15-minute time block.	*The formula for error calculation is suggested to be changed as:* • *Forecast Error (%) = 100 X (Schedule Generation — actua Injection)/Schedule Generation.* • *The term 'absolute error' substituted with 'forecast error'.* • *The term 'Available Capacity substituted with 'Schedule Generation'.*
	Comments by IWPA: - It may be recalled that the RRF Regulations of 2013 computed error in a similar way as being proposed by APTRANSCO - The Honourable CERC observed the following on the error formula in the RRF	

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regulation (which computed error on the basis of schedule as the denominator)

- *"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)*

- 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:

  - *"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, 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**

A similar analysis for solar, especially during the dawn and dusk periods everyday will show skewed results if the error is calculated based on scheduled generation.

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S. No	Original Regulation	Suggested Amendments
2	**Clause 2.1 (j)**: "deviation in a time block for a seller means its total actual injection minus its total/ scheduled generation. " 15% error is allowed without any DSM charges.	• *Inclusion of 'Allowable forecasted error' in calculating the deviation wherein 'Allowable forecasted error' will be calculated as:* *'Allowable forecast error' = 100 x (diversity factor 0.7 in control area at the beginning of the financial year) x (quantum of deviation limit permitted under CERC's DSM Regulation amended from time to time) / (quantum of VRE installed capacity).* • *This would be ~ 5% allowed error, beyond which, DSM charges will be applicable on the generators.*
	Comments by IWPA: - The justification provided by APTRANSCO in this proposed change is arbitrary illogical. is - 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. - 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). Infact, 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. - Since APTRANSCO will have data from July 2018 of the entire state, Honourable 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.	

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S. No	Original Regulation	Suggested Amendments
3	**Regulation 4, clause 4.1**: "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."	• *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.*

Comments by IWPA:

- 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:
  - 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.
  - The same has also been recognized by forecasting agencies worldwide, and also quoted in the SoR by CERC:
    - *"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 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.
- REMCs were inaugurated and dedicated to India on Feb 27th 2020 by Power

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	Minister which have been set up under central scheme under the guidance of Power Grid to provide greater visualization and enhanced situational awareness to the grid operators.https://pib.gov.in/newsite/PrintRelease.aspx?relid=199638 - These REMCs are co-located with SLDCs (7 REMCs statewide including Andhra Pradesh), to monitor renewable power integration and help centers to better manage grid and their power procurement cycle. These REMCs are live and are monitoring 55 GW of renewable integration into grid. These REMCs are live and are monitoring 55 GW of renewable integration into grid. Since, such capital intensive (409 core) world class monitoring stations are available with SLDC, there shouldn't be any reliability of SLDC on forecasting submitted by QCAs on behalf of renewable generators. In such case, there should be relaxing of penalties imposed on renewable generators instead of strictining of the rules. These REMCs have forecast available at PSS level as well as state level by three forecasters including one internal forecast tool which gives ample monitoring ability and foresight into renewable injection into the state of AP further allowing SLDC to manage their power sale and procurement.

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<table>
<tr><th>S. No</th><th>Original Regulation</th><th>Suggested Amendments</th></tr>
<tr><td>4</td><td>Regulation 4, Clause 6.3: error calculation table for under or over - injection for sale/supply of power within the state.
<table>
<tr><th>S. No</th><th>Forecast Error</th><th>Deviation Charges in Rs per Unit</th></tr>
<tr><td>1</td><td><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>>35%</td><td>Rs. 1.5</td></tr>
</table></td><td>• Suggestion for removal of error bands and shifting to a single allowable forecast error as discussed above in the following manner:
<table>
<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>
<tr><td>1.</td><td><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>
</table></td></tr>
<tr><td></td><td colspan="2">Comments by IWPA:
- 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 Honourable APERC should require APTRANSCO to provide justification backed by evidence.

- Infact 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 Honourable APERC should consider reducing per unit DSM charges.</td></tr>
</table>

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S. No	Original Regulation	Suggested Amendments
5	**Regulation 4, Clause 2.1 (aa):** 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. "	• *Suggestion for removal of virtual pooling from clause 2.1 (aa) and clause 6.9 accordingly*
	Comments: - The document shared by APTRANSCO wrongly claims that no other state allows aggregation. This is factually incorrect. - 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. - 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.	

We once again thank the Andhra Pradesh Electricity Regulatory Commission (APERC) and APTRANSCO for the opportunity given to us to participate in the consultative process and request you to kindly consider our comments.

Thanking you,

Yours sincerely,
For Indian Wind Power Association

Authorized signatory

Indian Wind Power Association

IWPA/AP/2019-20/APERC/020
Date: 04.03.2020

To,
The Secretary,
Andhra Pradesh Electricity Regulatory Commission,
#11-4-660, 4th floor, Singareni Bhavan,
Red Hills, Hyderabad – 500 004

Dear Sir,

Sub: Public Notice seeking views / objections / suggestions in the matter of amendment of Regulation No. 4 of 2017 – Reg

We would like to introduce our self as Indian Wind Power Association (IWPA) which was set up in 1996 as a non-profit organization. The association is having more than 1500 members spread all over India with total installed capacity by our members is 26,000 MW. Since its inception it has worked consistently, towards removing barriers to wind power development and creation of an enabling regulatory and policy environment for investments in this sector. The Association is working closely with several national industry bodies such as Indian Renewable Energy Development Agency Limited (IREDA), Minister of New and Renewable Energy (MNRE), Ministry of Power, Ministry of Environment, National Institute of Wind Energy (NIWE), Central Electricity Regulatory Commission (CERC), Central Electricity Authority (CEA), Confederation of Indian Industry (CII), State Utilities, State Electricity Regulatory Commissions (SERC) and State Nodal Agencies. The Andhra Pradesh State chapter of the Association caters to the need of the respective state members and for promotion of their interests.

In reference to the pubic notice issued by Hon'ble Andhra Pradesh Electricity Regulatory Commission (APERC) O.P No.2 of 2020 in the matter of Amendment to Regulation 4 of 2017, we hereby submit the suggestions of this association as Annexure to this letter.

Before going into the suggestions on Regulation 4 of 2017, we submit the following for the consideration of Hon'ble APERC:

Renewable Energy Growth in the state of Andhra Pradesh:

- Andhra Pradesh was one of the few states in the country in taking initiative as early as in 1992 by formulating the energy policies for development of renewable energy capacity addition in the state and it has been applauded by the entire nation.
- Further, in line with the GoI initiatives for development of 175 GW renewable capacity, during RE-Invest programme 2015, AP Govt launched Online Portal for Single Window Clearance of Renewable Energy Projects granting permissions within 21 days.
- AP Solar and Wind Policies 2015 released during RE Invest to achieve the target of 10000 MW of Renewable energy capacities by 2018-19. AP Govt. assured for more incentives are in pipelines for the projects completed within one year and accordingly there was significant capacity addition from 2015 onwards and it has reached ~7500 MW by 2020.

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- The generic tariffs for renewable projects are determined by State Commission from time to time.All the PPAs entered with Wind and Solar Power Developers are approved by State Commission in accordance with the prevailing regulations.

Forecasting and Scheduling Regulations:

- APERC has come out with draft regulations on F&S on 06 Sep 2016 in line with the Model regulations framed by FOR and regulations issued by CERC.
- The F&S Regulations were finalized after thorough review of comments and suggestions from all the developers vide APERC notification dated 19 Aug 2017.
- Many other RE rich states have also adopted the Model regulations and have been managing the state grids effectively.

Recent developments:

- GoAP has started withdrawing incentives vide its Energy Policies 2018 issued in Jan 2019.
- Furthermore, GoAP has started renegotiation of wind and solar tariffs in June 2019 for the projects who have been operating and were part of success story of renewable energy growth in the Andhra Pradesh whose PPAs were approved by Hon'ble APERC and the tariff were as per the tariff orders issued by Hon'ble APERC.
- As Hon'ble APERC would be well aware that all the developers have moved to Hon'ble AP HC and the matter is under subjudice before the Division Bench.
- In the meanwhile, AP Discoms are making all efforts to discourage the renewable developers by curtailing RE generation with out any valid reason which is also under sub judice before Hon'ble AP HC.
- It is pertinent to note that AP Discoms have submitted the new concept of VRE integration cost in the ARR filings for FY 2020-21 to reduce the tariff payable to Renewable developers. Hon'ble APERC vide its tariff order dated 10 Feb 2020 has rejected the proposal based on the terms and conditions of PPAs enteredand also suggested to promote renewable energy generation by considering in the Energy Availability for FY 2020-21.

AP Discoms have made all efforts to reduce the tariff of renewable energy projects and since their interests are not considered, they have come out with the amendments to F& S regulations under the guise of grid security and discipline which otherwise being managed effectively by RE rich states.

AP Discoms have submitted that they are not able to mange the state grid with VRE installed capacity of ~7500 MW presently, however, GoAP vide its GOMS no. 5 of 2020 dated 15 Feb 2020 has identified Solar Energy as having the full potential to provide quality power and 09 hrs day time free supply to farmerstherefore contemplating to establish 10,000 MW of Solar Power. Further, in line with the above GO, NREDCAP vide its letter dated 19 Feb 2020 have called for a meeting on 27 Feb 2020 with renewable energy developers to invite suggestions for promotion of renewable energy power projects in the state of Andhra Pradesh.

We humbly submit that AP Discoms / AP Transco should develop the transmission system in order to align with the GoAP's initiative wherein a total of 10000 MW is envisaged in the near future which will add upto the exiting 7500 MW RE capacity and should withdraw the proposed amendment of F&S regulations which is detrimental to the promotion of RE capacities.

We submit while better forecasting would achieve grid security, the state should also focus on Improvement in demand side management and forecasting consumer loads. Further, the state may further develop additional capacity of pumped storage hydro plants and spinning reserves to manage the fluctuation in demand.

In view of the above, we would request your good office to consider the suggestions submitted in line with the GoAP and GoI initiatives for promotion of Renewable Energy assets in the state of Andhra Pradesh.

Thanking You,

Yours Sincerely,
For Indian Wind Power Association

Authorized Signatory
Coordinator, IWPA AP State Council

Indian Wind Power Association Andhra Pradesh State Council

Encl : Annexure 1

Annexure 1:

Sl. No.	Clause No	Details	IWPA Suggestions
1	**Amendment 1: The clause 2.1 (a) of APERC's Regulation 4 Of 2017 reads**	"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 Available Capacity (AVC), as calculated using the following formula for each 15 minute time block Absolute Error (%) = 100 X (Actual Injection – Scheduled Generation)/AVC **<u>Amendment Proposed:</u>** Substitute the term 'absolute error' with 'forecast error' Substitute the term 'Available Capacity' with 'Scheduled Generation' for calculating Forecast error as per following formula. Forecast Error (%) = 100 X (Schedule Generation - actual Injection)/Scheduled Generation.	• We submit that Absolute Error is defined by the Hon'ble commission in line with the Central regulations on DSM and Model regulations developed by FOR considering all the scenarios such as low/no generation cases, such as during low wind season, where close to zero schedules would result in high numerical errors but with no real impact on grid wherein the definition of error, calculated w.r.t schedule, does not adequately address above instances. • Further, the objective is to maintain grid discipline by minimizing the actual MW deviations from Schedule by employing better forecast methods but not to penalize the renewable generators. • Presently, QCAs are using the latest forecasting techniques where in all the parameters are iterated to give a forecast. If the Discoms are of opinion that forecast techniques need improvement, they are authorized to examine the software tool being used by QCA/generators and may suggest for any development • The existing formula for Absolute error does not contain any unrelated parameter and AvC is the basis on which generation is being forecasted and power is being scheduled. • In view of the above, existing formula for Absolute error is to be retained and no amendment for Forecast error to be considered.

2	**Amendment 2. The clause 2.1 (j) of Regulation 4 of 2017 reads**	"Deviation in a time block for a seller means its total actual injection minus its total scheduled generation." **<u>Amendment proposed:</u>** The definition of phrase 'Allowable forecast error' in percentage should be considered for inclusion. 'Allowable forecast error' = 100 x (diversity factor 0.7 in control area in the beginning of financial year) x (quantum of deviation limit permitted under CERC's DSM Regulation amended from time to time) / (quantum of VRE installed capacity)	• As submitted in our comment no.1, Forecast error is not to be considered and therefore, the amendment for inclusion of Allowable Forecast does not arise. • Further, the justification submitted by AP SLDC is baseless in regard to deviation of 1125 MW based on 7500 MW installed capacity. • Based on installed capacity (AvC) of 7500 MW, the possible schedule would be in the range of 1500 to 1800 MW and the forecast error of 15% would be 225 MW to 270 MW only which is well with in the limits of allowable deviation for RE rich states. • There is no basis for considering the diversity factor of 0.7. • To overcome the deviation, CERC has introduced and made effective the Real time market Regulations (an hour ahead market) w.e.f 01 April 2020 wherein the DISCOMS/Generators are having the option to purchase/sell power effectively ensuring a total generation/drawal close to their original schedule ensuring load generation balance. • Further, instead of the amendments proposed whereby RE capacity would suffer, Discoms should focus on maintaining spinning reserves to handle the variation in downward direction and load shedding. • In view of the above, there is no need to include Allowable Forecast Error.
3	**Amendment 3. The clause 4.1 of Regulation 4 of 2017 reads Quote:**	"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	• As it is well aware that forecast would be more accurate closer to the real time than long term and accordingly, by submitting revisions renewable generators are helping the grid to maintain its discipline. • As submitted above, the deviations would be much larger as many real time parameters are not captured in the day ahead schedule resulting greater instability in the grid would be suffering more. • There are many options available in the market to maintain load

		generating stations shall be as stated here under and accordingly forecasting tools shall beprovided by the generator concerned." **<u>Amendment proposed</u>**. It is proposed to remove the option of rescheduling of forecast on one and half hourly basis during the day of operation and strictly adhere to scheduling on day ahead basis	generation balance like intraday, day head contingency and with the recent Realtime market option, schedules can be managed one hour ahead. • Mechanism of forecasting and scheduling of renewable energy was introduced to better integrate the RE power in the power systems but not penalize the generators. • Further, instead of the amendments proposed whereby RE capacity would suffer, Discoms should focus on maintaining spinning reserves to handle the variation in downward direction and load shedding • In view of the above, the existing option of rescheduling of forecast on one and half hourly basis should be retained.
4	**Amendment 4. As per the provision 6.3 of Regulation 4 of 2017**	The deviation charges for over or under injection for sale/supply of power within the State are tabulated here under: • <=15%- None • >15% but <=25%- Rs. 0.50 per unit for the shortfall orexcess energy for absolute error beyond 15% and up to 25% • >25% but <=35% - At Rs. 0.50 per unit for the shortfall or excess energy for absolute error beyond 15% and upto25% + Rs. 1.0 per unit for balance energy beyond 25% and upto 35%	• We humbly submit that the deviation band requested by most of the generators during draft regulations without penalties is 30%, however, it has been considered only 15% in line with the central regulations for which all the renewable generators are suffering by paying huge penalties. • All of us should appreciate the fact that schedules are being forecasted based on tools factoring many real time parameters on which absolutely there is no control of generators and still generators are bearing penalty for the fault of developing environment friendly sustainable renewable energy projects. • It's important to have rational penalty mechanism in place to incentivize the quality of forecast by RE Generators, therefore having incremental penalty bands promotes better forecast without any harsh commercial impact. • Furthermore, neighbouring RE rich state Tamil Nadu's final regulation also incentivizes the generator by capping the penalty and paying back deviation charges if the deviation charges of the entire year are greater than Rs 0.50 per unit. • AP Discoms/SLDC may hire independent third party to conduct analysis on our forecasting techniques adopted by QCAs and may

		• >35% - At Rs. 0.50 per unit for the shortfall or excess energy for absolute error beyond 15% and upto 25% + Rs. 1.0 per unit for balance energy beyond 25% and upto 35% + Rs. 1.50 per unit for balance energy beyond 35% **<u>Amendment Proposed:</u>** The levy and collection of DSM charges should be amended as shown below • <Allowable Forecast error – None • Above Allowable Forecast error – At Rs.2.00 per unit for the shortfall or excess injection	suggest improvements to be implemented. • Further, it is a well-known fact that Coal fired plants release CO2 equivalent to 0.8 to 0.9 Kg/kWh i.e 0.8 ton -0.9 ton of CO2 emissions for every one MWhr and social cost of carbon as per the 2018 estimates is USD 86 per ton of CO2 emission. The energy availability projected by AP Discoms from thermal generators is 60816 MU for FY 2020-21 which is equivalent to social cost of carbon of Rs 37657 Crores (approx.) (https://economictimes.indiatimes.com/news/economy/indicators/co2-emissions-cost-india-usd-210-billion-every-year-study/articleshow/65961331.cms). • Further, Carbon dioxide emissions are costing the Indian economy up to USD 210 billion every year, according to a global study which found that the country is likely to suffer highest economic damage from climate change after the US. • In comparison to the above social cost of Rs 37657 Crores from thermal generation, it would be a very wise decision to continue with the renewables which is having a long term positive effect on the social life in comparison to the assumed and illusionary associated costs as submitted by AP Discoms/SLDC of Rs 2.0/kWh. • We humbly submit that the allowable deviation without any penalties should be amended to 30% instead of 15% under the current regulations as there is no fault of generators in deviation of schedules and to encourage the renewable generation in view of the above social cost.
5	**Amendment 5. The clause 2.1 (aa) of Regulation 4 of 2017 reads**	"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	• It is advisable and appropriate to do power forecasting at the state level as demand forecasting is also being done at state level. • As it is a well-known fact that Aggregation of power in the form of virtual pool is beneficial to the grid by lowering the uncertainty of power by reducing forecast error. A large interconnected power system is beneficial because it enables aggregation of imbalances

		manner through a QCA for the purpose of availing the benefit of larger geographical area and diversity." **<u>Amendment proposed:</u>** The definition phrase of virtual pooling may be considered to be deleted from definition 2.1 (aa) and also be deleted at clause 6.9 of Regulation 4 of 2017.	from a large geographical area. The errors are not uniformly distributed in time within a region, therefore forecasting errors for a region are smaller than for a single site. • It is submitted by international agencies in their suggestions to Central Commission that *"if two RE generators deviate in the opposite direction with no net deviation from the aggregate schedule, both generators are expected to be penalized depending on the extent of their individual deviation even though they may not impose any additional costs on the overall system. Their research shows that the aggregate variation (in percentage terms) over multiple sites is typically lower than the variation in output on one site; moreover, the forecasting accuracy is higher for aggregate forecast over multiple sites. Therefore, for scheduling purposes it is desirable to use the aggregate (total balancing area) level forecasts of RE generation."* • We humbly submit that there is no indiscipline in submitting the forecast and schedules as submitted by AP Discoms/SLDC. It is only the available capacity that generators provide to QCAs and rest is taken care by forecasting tools. • State level aggregations is also being followed by RE rich states like Karnataka and they are managing the grid effectively.

In view of the above cited suggestions, we request your good selves to ensure that the interest of the renewable industry is protected and Generation of clean energy continues. We look forward to render our services with best of our abilities in the renewable sector for all times to come!

Thanking you!

For Indian Wind Power Association

Authorized Signatory
IWPA - AP State Council

Indian Wind Power Association Andhra Pradesh State Council

INDIAN WIND POWER ASSOCIATION

IWPA

helping mankind with energy from nature

IWPA/AP/2019-20/ APERC/021
Date: 05.03.2020

To,
The Secretary,
Andhra Pradesh Electricity Regulatory Commission,
11-4-660, 4th Floor, Singreni Bhavan,
Red Hills, Hyderabad- 500 004.

Sub: Public notice dated 13.02.2020 regarding public hearing to be held on 10.03.2020 in respect of proposed amendment of Regulation 4 of 2017 i.e., APERC (Forecasting, Scheduling and Deviation Settlement of Solar and Wind Generation) Regulations, 2017 ("Regulations").

Dear Sir,

We would like to introduce our self as Indian Wind Power Association (IWPA) which was set up in 1996 as a non-profit organization. The association is having more than 1500 members spread all over India with total installed capacity by our members is 26,000 MW. Since its inception it has worked consistently, towards removing barriers to wind power development and creation of an enabling regulatory and policy environment for investments in this sector. The Association is working closely with several national industry bodies such as Indian Renewable Energy Development Agency Limited (IREDA), Minister of New and Renewable Energy (MNRE), Ministry of Power, Ministry of Environment, National Institute of Wind Energy (NIWE), Central Electricity Regulatory Commission (CERC), Central Electricity Authority (CEA), Confederation of Indian Industry (CII), State Utilities, State Electricity Regulatory Commissions (SERC) and State Nodal Agencies. The Telangana and Andhra Pradesh State chapter of the Association caters to the need of the respective state members and for promotion of their interests.

With reference to the above subject, we would like to bring to your kind attention that several wind and solar companies across the country have challenged the legal and constitutional validity of Forecasting, Scheduling and DSM Mechanism Regulations passed by respective State Electricity Regulatory Commissions in various High Courts and interim orders have also been passed to the effect that no coercive actions be taken against the renewable energy generating companies.

Similarly, aggrieved by the APERC (Forecasting, Scheduling and Deviation Settlement of Solar and Wind Generation) Regulation, 2017 i.e. Regulation No. 4 of 2017, some wind and solar companies have filed certain Writ Petitions before the Hon'ble High Court of Andhra

Andhra Pradesh Electricity Regulatory Commission Hyderabad
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- 5 MAR 2020

Indian Wind Power Association - Andhra Pradesh State Council
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Pradesh (**High Court**) bearing numbers WP 5706 of 2019, WP 15513 of 2019 and WP 13860 of 2019 and the Supreme Court of India, challenging the legal and constitutional validity of the Regulations where under various orders effectively:

(i) Order dated 26.04.2019 of the Hon'ble Supreme Court in CA 4404 of 2019;
(ii) Interim orders dated 30.12.2019, 17.10.2019, 25.06.2019, 17.06.2019, 03.06.2019, 03.06.2019 and 25.04.2019 passed by the Hon'ble High Court in WP No. 5706 of 2019;
(iii) Interim orders dated 30.12.2019, 17.102019, passed by the Hon'ble High Court in WP 15513 of 2019;
(iv) Interim orders dated 30.12.2019, 17.10.2019 and 19.09.2019, passed by the Hon'ble High Court in WP 13860 of 2019;

From review of the aforesaid orders, it is apparent that the Hon'ble High Court has:

(i) passed interim orders not to take any coercive steps on bank guarantees;
(ii) admitted the aforesaid writ petitions and posted for final hearing;
(iii) directed to continue the interim orders until then.

Further, it is significant to state the Hon'ble Supreme Court in the matter CA No.4404 of 2019, has by its order dated April 26, 2019, remanded the issue of adjudication on the AP Electricity Regulatory Commission (Forecasting, Scheduling and Deviation Settlement Mechanism for Wind and Solar Generation Sources), Regulations, 2017 to the Hon'ble AP High Court, for disposal on merits and the same is sub-judice before the Hon'ble AP High Court.

Therefore, in view of the above, we humbly request that the public notice issued by Hon'ble APERC for holding a public hearing on March 10, 2020, with regard to amendment of the said Regulation No. 4 of 2017, be kept in abeyance until the matter on the constitutional validity of the Regulations is finally decided by the Hon'ble High Court at Andhra Pradesh.

Thanking You,

Yours Sincerely,
Indian Wind Power Association

Indian Wind Power Association Andhra Pradesh State Council

Kataru Ravi Kumar Reddy
President

INDIAN WIND POWER ASSOCIATION

(Northern Region Council)

6/3/2020

Date 04.03.2020

To,
The Secretary
APERC
4th Floor, Singareni Bhavani, Red Hills,
Hyderabd - 500004,

Subject: Indian Wind Power Association (IWPA) submission in the matter of amendment to APERC Regulation No. 4 of 2017.

Dear Sir,

At the outset, we extend our gratitude to this Hon'ble Commission for inviting the stakeholder's comments/objections in the matter of amendment to APERC Regulation No. 4 of 2017.

We would like to introduce our self as the Indian Wind Power Association (IWPA), an Association of wind power developers and investor of India and was set up in 1996 as a non-profit organization under the Tamil Nadu Societies Registration Act, 1975. Started with 37 members, the Association is now having 1100 members spread all over India. Since its inception, IWPA has been working towards removing barriers to wind power development and creation of an enabling regulatory and policy environment for better investments in the sector.

06/03

The Association is working closely with several national industry bodies such as the Indian Renewable Energy Development Agency, Ministry of New and Renewable Energy, Ministry of Power, Ministry of Environment, Confederation of Indian Industry, State Utilities, State Electricity Regulatory Commissions etc.

IWPA (Northern Region Council) hereby enclosing its comment/objections on the Indian Wind Power Association (IWPA) submission in the matter of amendment to APERC Regulation No. 4 of 2017 and request this Hon'ble Commission to kindly consider the same before finalising the same.

Also, we request this Hon'ble Commission to represent/submit some additional submission at the time of public hearing.

04/03/2020

For IWPA-NRC
Rahul Shrivastava
8826430333

Northern Regional Council: 513-514, World Trade Center, Barakhamba Road, New Delhi-11001
Phone No. 011-23417044
Fax No. 011-41528590

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6/3/2020

We hereby would like to bring to the notice of this Hon'ble Commission that the amendments proposed by AP Transco in the present APERC F&S Regulation 2017 are in contradict with the provisions of the Central Commission.

S. No.	Clause No.	Comments	Suggestions
1	<u>Original</u>: "2.1 *(a) '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 'Available Capacity' (AvC), as calculated using the following formula for each fifteen (15) minute time block:* *Absolute Error(%)= 100 X [Actual Injection - Scheduled generation] /(AvC);"* <u>Amendment Proposed:</u> Substitute the term 'absolute error' with 'forecast error'. Substitute the term 'Available Capacity' with 'Scheduled Generation' for calculating Forecast error as per following formula. *Forecast Error(%) = 100 X (Schedule Generation-actual Injection)/Scheduled Generation*	CERC in its Statement of Reasons - F&S Regulations 2015, has given reasoning for providing AvC at denominator. The relevant extract is provided below for ready reference of this Hon'ble Commission: *"6.2.1 The Commission has reviewed the inputs of the stakeholders. 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).* *6.2.2 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*	First of all, we would like to bring to the notice of this Hon'ble Commission that Model Frequency & Scheduling (F&S) Regulations of Forum of Regulators (FOR), F&S Regulations of Central Commission and other State Electricity Regulatory Commissions (SERCs) have also considered the error formula based on AvC at denominator. Also, Clause 2(m) and Appendix –I (d) of the impugned regulation related to Gaming are adequate to avoid the possibility of mis-declaration of AvC by RE generators. 2 (m) *"'gaming' in relation to this regulation, shall mean an intentional mis- declaration of available capacity or schedule by any seller in order to make an undue commercial gain through deviation charges;"*
		available capacity, 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.	Appendix – I (d) *"The Commission, either suo-motu or on a petition made by SLDC, or any affected party, may initiate proceedings against any generating company or seller on charges of gaming and if required, may order an inquiry in such manner as decided by the*

		Revised definition shall be: *Error(%) = (Actual Generation – Scheduled Generation) / (Available Capacity)x100 "*	*Commission. When the charge of gaming is established in the above inquiry, the Commission may, without prejudice to any other action under the Act or Regulations there under, disallow any Charges for Deviation received by such generating company or the seller during the period of such gaming"* Therefore when there is no possibility of gaming when AvC is at denominator and also in order to ensure uniformity at national/regional level, We herby suggest this Hon'ble Commission to continue with the Error formula which is based on AvC at denominator.
2	<u>Original</u>: *"2.1 (j) 'deviation ' in a time-block for a seller means its total actual injection minus its total scheduled generation;"* <u>Amendment Proposed:</u> The definition of phrase 'Allowable forecast error' in percentage should be considered for inclusion. *'Allowable forecast error' = 100 x (diversity factor 0.7 in control area in the beginning of financial year) x (quantum of deviation limit permitted under CERC's DSM Regulation amended from time to time)/ (quantum of VRE installed capacity)*		In the justification of same it is mentioned that with VRE capacity of 7500 MW in state of AP with forecast error of 15% yields 1125 MW of deviation. Here we would like to mention that RE generators have been provided with 16 intraday revisions in order to provide the better quality of forecasting. Also, it is mentioned in the same justification that -+1125 MW of deviation will result in huge over-drawl and under-drawl, but there won't be any case that total 1125MW will go towards under-drawl or over-drawl in a single shot. hence there would be some ratio and as there are 16 intraday revisions are allowed in

			the schedule which provides with better forecasting and scheduling. Also in the last para of justification the calculation need to be clarified. As taking the VRE capacity of 7300MW , diversity factor 0.7 and deviation permitted limited 250MW, the allowable forecast come to be 2.39%
3	<u>Original</u>: *"4.1 The methodology for day-ahead scheduling of wind and solar energy generating stations which are connected to the Grid and re-scheduling 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"* <u>Amendment Proposed:</u> It is proposed to remove the option of rescheduling of forecast on one and half hourly basis during the day of operation and strictly adhere to scheduling on day ahead basis		Issue raised by APTransco is out of the scope of the impugned F&S Regulation as F&S Regulations, provides treatment to Deviation settlement for RE generators only. Also, the provisions of existing F&S Regulation, related to number of revisions are in line with IEGC provisions and any change in the process of revision of schedules at State level will have impact on scheduling at regional level also which may create operational issues for RLDC as well as SLDC Therefore it is suggested that this Hon'ble Commission should continue with the existing provisions of the regulation in this regard.

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<u>Original</u>:

<table>
<tr><th>S. No.</th><th>Absolute Error in the 15 min. time block</th><th>Deviation Charges payable to State Pool Account</th></tr>
<tr><td>1</td><td><=15%</td><td>None</td></tr>
<tr><td>2</td><td>>15%but <=25%</td><td>At Rs. 0.50 per unit for the shortfall or excess energy for absolute error beyond 15% and up to 25%</td></tr>
<tr><td>3</td><td>>25%but<=35 %</td><td>At Rs. 0.50 per unit for the shortfall or excess energy for absolute error beyond 15% and up to 25% + Rs. 1.0 per unit for balance energy beyond 25% and up to 35%</td></tr>
<tr><td>4</td><td>> 35%</td><td>At Rs. 0.50 per unit for the shortfall or excess energy for absolute error beyond 15% and up to 25%+ Rs. 1.0 per unit for balance energy beyond 25% and up to 35% + Rs. 1.50 per unit for balance energy beyond 35%</td></tr>
</table>

<u>Amendment Proposed:</u>

</td>
<td>This Hon'ble Commission in the impugned regulation has specified a similar deviation band for Inter-State and Intra-State transactions, considering uniform deviation band to both the generators undertaking Inter-State and Intra-State transactions whereas APTransco has suggested a separate Error Band for intra-state and inter-state transactions.</td>
<td>It is requested that, the same bands of % Absolute Error may be stipulate das stipulated by CERC.</td>
</tr>
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	S. No.	**Absolute Error in the 15 min. time block**	**Deviation Charges payable to State Pool Account**
	1	*< Allowable Forecast Error*	*None*
	2	*Above Allowable forecast error*	*At Rs.2.00 per unit for the shortfall or excess injection*

5	<u>Original</u>: 2.1 (aa) *'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 I combined manner through a QC4 for the purpose of availing the benefit of larger geographical area and diversity. "* <u>Amendment Proposed:</u> The definition phrase of virtual pooling may be considered to be deleted from definition 2.1 (aa) and also be deleted at clause 6.9 of Regulation 4 of 2017.	Karnataka Electricity Regulatory Commission ("KERC") and Andhra Pradesh Electricity Regulatory Commission ("APERC") have provision for Aggregation of Pooling Sub-Station wherein the QCA is allowed to aggregate the forecasting and scheduling of different Pooling Sub-Stations to overcome the challenges of diversity by permitting larger geographical area. Also APERC inClause 6.9 of the impugned regulation has provided a proper reasoning for aggregation of pooling S/S. *The relevant extract is provided hereby,* *"In order to aggregate the forecasting and scheduling of different pooling stations to avail the benefit of larger geographical area and diversity, a QCA in agreement with the generators in different pooling stations shall have*	It is a common understanding that aggregations of pooling substations provide better accuracy in Forecasting &Scheduling due to larger geographical area. All wind/solar generators should be treated together as a virtual pool within the state pool and deviations within this virtual pool should be settled first at the rates and methodology stipulated for wind and solar generators. Also the Report of the Expert Group on Review of Indian Electricity Grid Code published in January 2020, in Chapter 8 regarding Unit Commitment, Scheduling And Despatch Code For Physical Delivery Of Electrical Energy provides that NLDC within 6 months shall notify a procedure for aggregation of pooling S/S. The relevant extract is provided hereby: *"(14) Scheduling of wind and solar generation by QCA:*

		the freedom to go for the option of Virtual Pool. Under a 'Virtual Pool', the declaration of the availability/schedule in respect of the generators shall be made available pooling station wise to SLDC, in order to maintain the sanctity of a control area. However, while computing the deviations, they shall be considered as a combined pool and the QCA shall be responsible for de-pooling the deviations, first amongst the different pooling stations and then amongst the different generators of the respective pooling station."	---------- ---------- *c) NLDC shall notify a procedure for aggregation of pooling stations for the purpose of combined scheduling and deviation settlement for multiple pooling stations wind/solar/hybrid generating stations within six (6) month. "* In line with the above reasoning, this Hon'ble Commission is suggested to continue with the existing mechanism of aggregation of pooling S/S.