Mytrah Energy (India) Private Limited
(Formerly known as Mytrah Energy (India) Limited)
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Ref No: MEIPL/F&S/APERC/04032020
WITHOUT PREJUDICE

4th March 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")

Kind attention: The Secretary, APERC

Dear Sir,

With due respect, we convey our heartiest greetings to you in the name of Mytrah Energy (India) Private Limited, a company based in Hyderabad and is into the business of developing and operating renewable power projects in India through its subsidiaries. Mytrah is one of the largest Independent Power Producers ('IPP') in renewable energy in India with a committed portfolio of 2.4 GW capacity of which 1.9 GW is under operation and close to completion.

Mytrah currently owns and operates a 365.1 MW capacity wind power projects at Vajrakarur/Pottipadu in Anantapuram District and Burugula/Aspari in Kurnool District respectively in the state of Andhra Pradesh and is engaged in the business of generating wind energy and sale of the same to the distribution licensee (APSPDCL). We have a total operational capacity of 365.1 MW in Andhra Pradesh, which would be severely affected by proposed amendments of the APERC Forecasting, Scheduling and Deviation Settlement of Solar and Wind Generation Regulations, 2017.

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 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 whereunder various orders effectively:

Mytrah Energy (India) Private Limited

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(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

For **Mytrah Energy (India) Private Limited**

S. Nagarjuna

Authorised Signatory

Mytrah Energy (India) Private Limited

Creating Balance

Ref. No.-MAL/DEL/2020/752 **Dated: 4th March, 2020**

To,

The Secretary,

Andhra Pradesh Electricity Regulatory Commission,

4th Floor, Singareni Bhavan, Red Hills,

Hyderabad-500004

Sub: Your Public Notice Dated: 13/02/2020 inviting Comments and Suggestions in the matter of Amendment to Regulation No.4 of 2017.

Sir,

We, Manikaran Analytics Limited, are engaged in providing the services of Forecasting, Scheduling and Deviation Settlement Mechanism in various states and are acting as a QCA for major renewable energy generators including both wind and solar, all across the country. We have few comments and suggestion on the Draft amendment to APERC (Forecasting, Scheduling and Deviation Settlement of Solar and Wind Generation Regulation, 2017) provided on your web-site.

Please find the Comments and Suggestions on the aforesaid amendment enclosed herewith.

We shall be grateful if the Hon'ble Commission considers our comments and suggestions as provided below.

Thanking You,

Regards,

Yash Dubey-Legal Officer

MANIKARAN ANALYTICS LIMITED
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COMMENTS IN RESPONSE TO THE APERC'S PROPOSED AMMENDMENT FOR FORECASTING AND SCHEDULING

1. **APERC's Proposed Amendment:**
   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.

APERC's Justification for Proposed Amendment

- *The formula for error should invariably contain one of the two parameters in the numerator as well as in the denominator.*
- *The absolute error defined in the Regulation contains an unrelated parameter in the denominator.*
- *Grid requirements are planned duly taking into account of the forecast/schedules from RE generation on day ahead basis which will be taken into account together with other sources.*
- *Any deviation of such forecast In VRE generation is burden to the utility. By dividing the deviation with available capacity as stated in present regulations, the error becomes infinitesimal and the regulation becomes redundant or toothless.*
- *Further, since the RE generation never reaches of its maximum capacity i.e., available capacity, the denominator should be replaced with scheduled generation.*
- *Therefore amendment to definition 'Absolute Error' is necessary In the Interest of justice*

MANIKARAN ANALYTICS LTD., (MAL's) Comments:

Change in formula for error would create serious prejudice against VRE (Variable Renewable Energy) as Renewable energy is predictable to some extent however, it's forecasting and scheduling accuracies cannot be treated at par with conventional energy generators. Renewable Generation has fairly good impact of Numerical Weather Prediction (NWP). For instance in case of a wind generating plant an error of 0.5 m/s (meter per second) in wind speed may result in 12% to 15% variation in terms of power generated and 0.5 m/s is the minimum error observed worldwide, and on an average error observed for a wind plant is around 0.7 m/s.

For another instance, in case of Solar plant an error of 100 watt per meter square in GHI results into an error of 10% variation in terms of power and on an average error for solar sites is around 100 watt per meter square in GHI.

Additionally, for day ahead forecast average error is increased to more than 0.9 m/s for wind plants which ultimately results to an absolute error near to 20~25% in terms of power and for solar plant an error of 100 to 150 watt per square meter is an average error on day ahead basis which ultimately leads to an absolute error of 15% in terms of power.

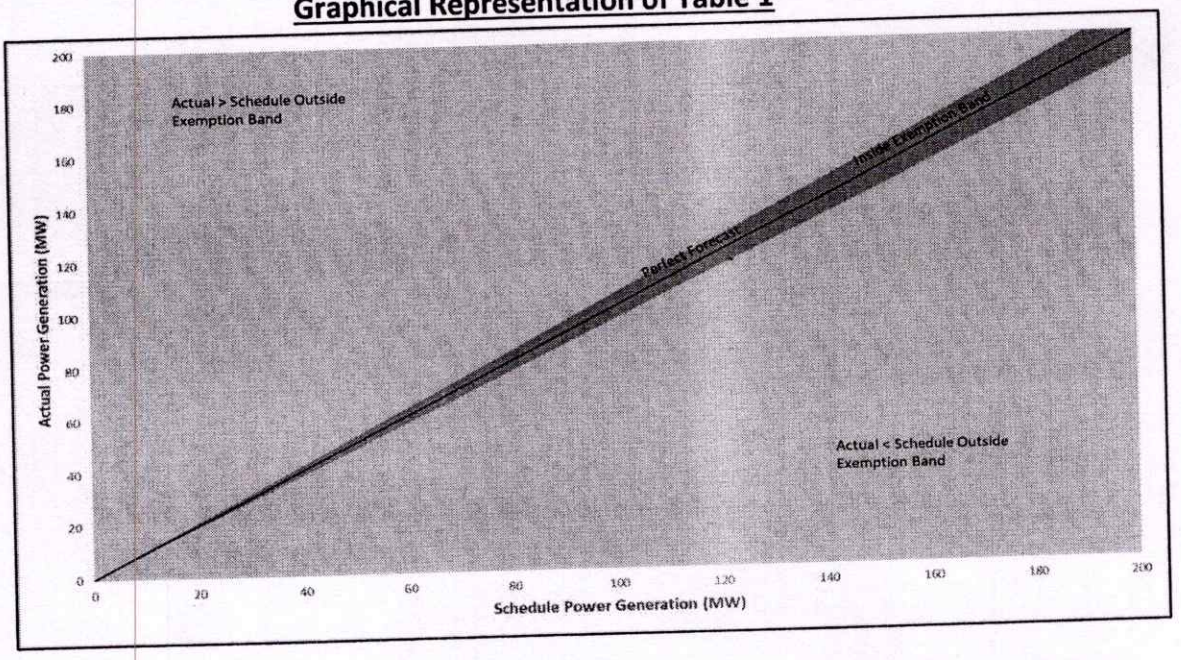
Therefore considering the present change in formula and other proposed amendment, avoiding penalties for VRE Generator would become inevitable without any fault or role by VRE Generator and entire purpose of the RE Regulation would be defeated.

For instance, in case exemption band is considered as per Schedule in denominator (as per proposed amendment 1 of APERC), which will provide an exemption of 4.89% as per the formula defined in APERC's proposed Amendment 2. Kindly refer **Table 1 and Graph1** as provided below for exemption band:

Table-1

As proposed by APERC Amendment				
PSS Generation	**PSS Schedule**	**Exemption**	**Exemption in case of Over Injection**	**Exemption in case of Under Injection**
0	0	4.89%	0.00	0.00
20	20	4.89%	0.98	-0.98
40	40	4.89%	1.96	-1.96
60	60	4.89%	2.94	-2.94
80	80	4.89%	3.91	-3.91
100	100	4.89%	4.89	-4.89
120	120	4.89%	5.87	-5.87
140	140	4.89%	6.85	-6.85
160	160	4.89%	7.83	-7.83
180	180	4.89%	8.81	-8.81
200	200	4.89%	9.78	-9.78

Graphical Representation of Table 1



The exemption range for the events when schedules are very less i.e. less than 80 MW for a 200MW PSS, the range is very narrow for VRE Generators as evident through the graph.

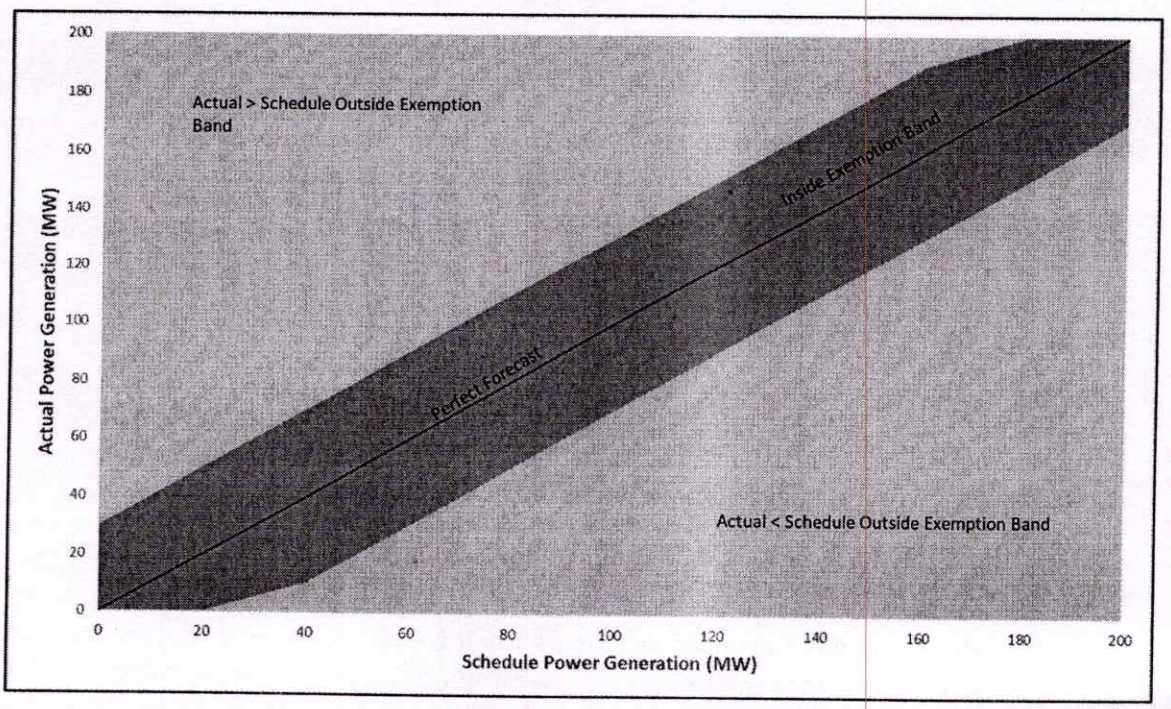
It is requested to kindly reconsider the exemption band formula i.e. instead of scheduled generation in denominator, VRE available capacity shall be considered separately for wind and solar plants, and the exemption percentage could either be:

(i) 15% of AVC as provided under Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) (Second Amendment) Regulations, 2015, and also proposed by Forum of Regulators, which has also been explained in the table below:

Table 2: Exemption of 15% of AVC

PSS capacity			200	(MW)
PSS Generation	PSS Schedule	Exemption (%) Based on PSS(A) AvC	Exemption in case of Over Injection	Exemption in case of Under Injection
0	0	15%	30.00	0.00
20	20	15%	30.00	-20.00
40	40	15%	30.00	-30.00
60	60	15%	30.00	-30.00
80	80	15%	30.00	-30.00
100	100	15%	30.00	-30.00
120	120	15%	30.00	-30.00
140	140	15%	30.00	-30.00
160	160	15%	30.00	-30.00
180	180	15%	20.00	-30.00
200	200	15%	0.00	-30.00

Graphical representation of Table 2



(ii) 12% of AVC for wind energy generators and 7% for solar energy generator as followed by GERC in its Renewable Energy Forecasting and Scheduling and Deviation Settlement Mechanism Regulation, 2019, which has been explained vide Table-3 (for Wind) and Table-4 (for Solar):

Table-3: 12% of AVC for Wind Plant

PSS capacity			200	(MW)
PSS Generation	PSS Schedule	Exemption (%) Based on PSS(A) AvC	Exemption in case of Over Injection	Exemption in case of Under Injection
0	0	12%	24.00	0.00
20	20	12%	24.00	-20.00
40	40	12%	24.00	-24.00
60	60	12%	24.00	-24.00
80	80	12%	24.00	-24.00
100	100	12%	24.00	-24.00
120	120	12%	24.00	-24.00
140	140	12%	24.00	-24.00
160	160	12%	24.00	-24.00
180	180	12%	20.00	-24.00
200	200	12%	0.00	-24.00

Graphical representation of Table 3

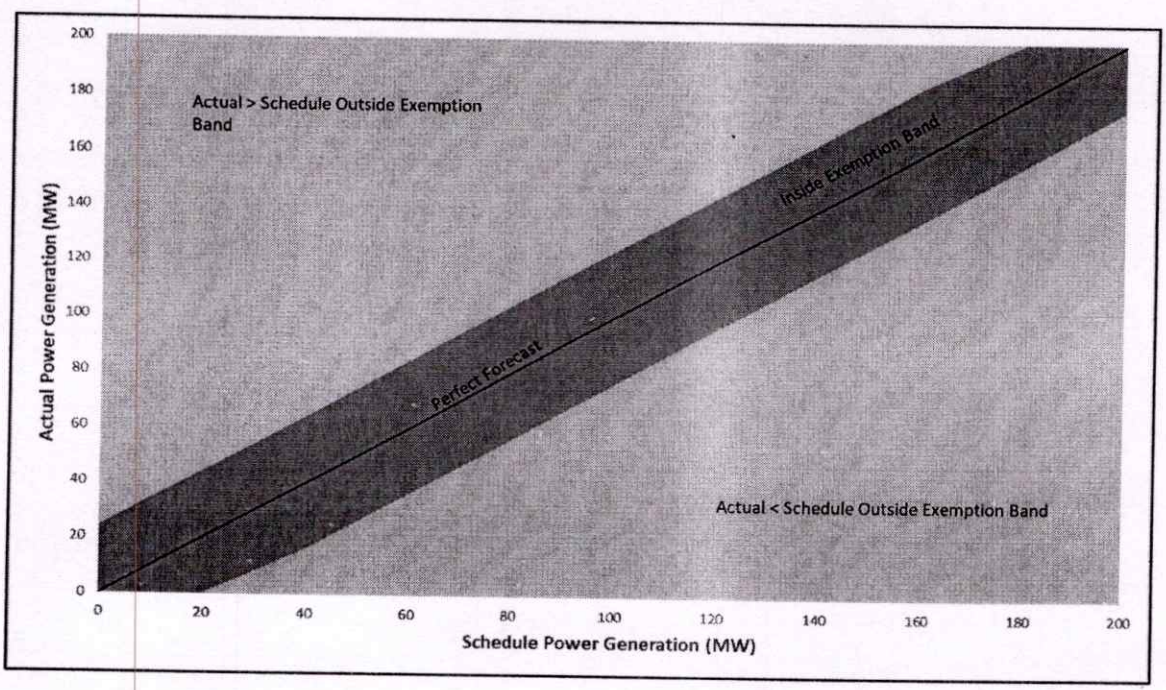
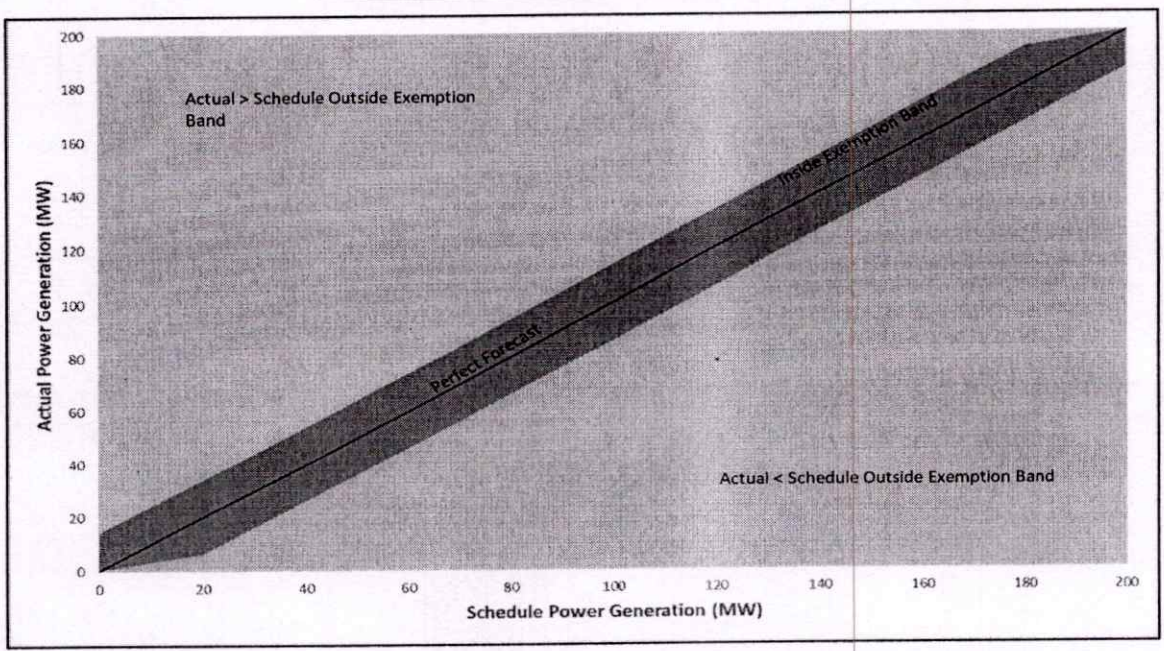


Table-4: 7% of AVC for Solar Plant

PSS capacity			200	(MW)
PSS Generation	PSS Schedule	Exemption (%) Based on PSS(A) AvC	Exemption in case of Over Injection	Exemption in case of Under Injection
0	0	7%	14.00	0.00
20	20	7%	14.00	-14.00
40	40	7%	14.00	-14.00
60	60	7%	14.00	-14.00
80	80	7%	14.00	-14.00
100	100	7%	14.00	-14.00
120	120	7%	14.00	-14.00
140	140	7%	14.00	-14.00
160	160	7%	14.00	-14.00
180	180	7%	14.00	-14.00
200	200	7%	0.00	-14.00

Graphical representation of Table 4



(iii) A combination of AVC or schedule as a denominator can be considered, whichever is higher based on schedule quantum of PSS.

MAL's Proposed Amendment

In light of the above, it's requested to consider either:

1.1 ***Forecast Error (%) = 100 X (Schedule Generation - Actual Injection) / Available Capacity. (Exemption 15% of AVC);***

OR

1.2 ***Forecast Error (%) = 100 X (Schedule Generation - Actual Injection) / Available Capacity. (Exemption 12% of AVC for Wind Plants & 7% of Avc for Solar Plants);***

OR

1.3 ***Forecast Error(%) = 100 X (Schedule Generation - Actual Injection) / (Available Capacity or Scheduled Generation, whichever is higher).***

2. **APERC's Proposed Amendment**

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)

APERC's Justification for Proposed Amendment

- *The Hon'ble CERC allows a deviation limit of only: 1: 250 MW for RE Rich States.*
- *For VRE capacity of 7500 MW in the state of AP, forecast error of 15% will result In 1125 MW deviation which is not allowed by CERC.*
- *The deviation in positive direction results in backing down of conventional generation and violation notices are served by SRLDC on SLDC to adhere to IEGC Regulations while taking corrective steps for maintaining load generation balance. Deviation in negative direction results in deficit conditions which require resources to bridge the gap between load and generation.*
- *The deviation of maximum allowable quantum of 1125 MW variation in downward direction will result in over drawl from grid beyond the permissible limits and in that event It would lead to load shedding in real time operation of grid since spinning reserves are not available from conventional sources.*
- *To overcome this, it is proposed to introduce allowable forecast error to maintain & handle the AP grid system in real time operation.*
- *For example for installed VRE capacity of 7300MW in the State of AP, considering the diversity factor as 0.7 and 250 MWs deviation limit permitted under CERC's Regulations, the allowable forecast error will be 4.89% or say 5%.*
- *The deviation settlement charges will not be levied below the allowable forecast error.*
- *Therefore it is proposed to introduce Allowable forecast error in the regulation.*

MAL's Comments:

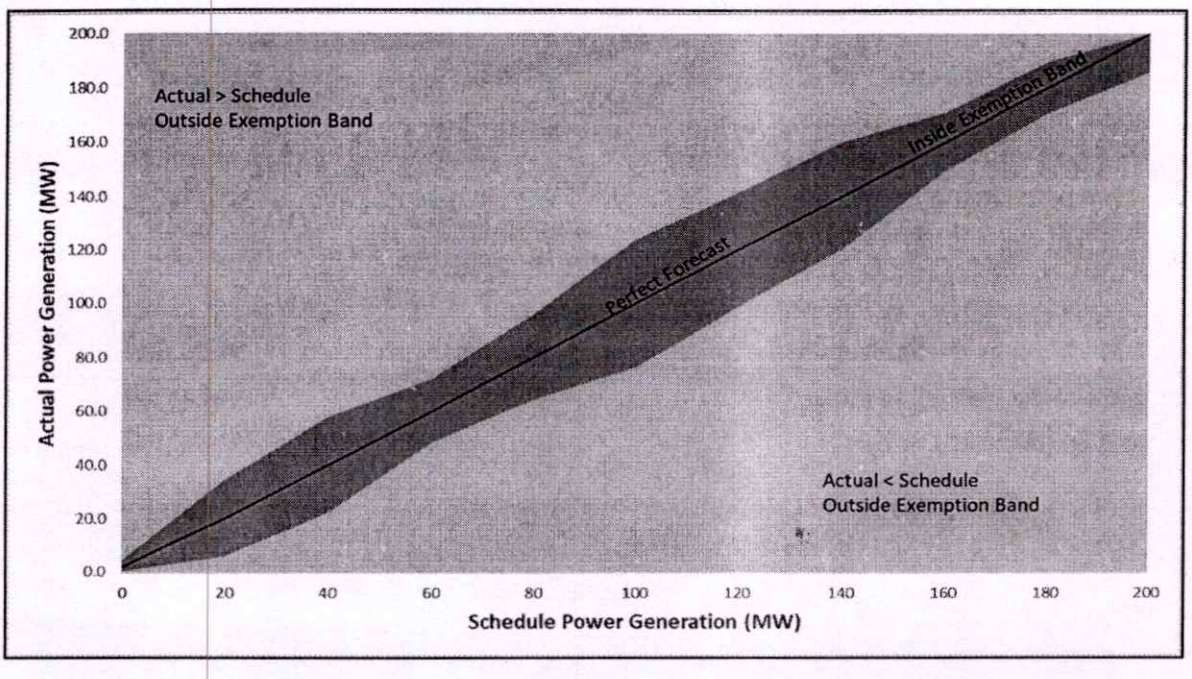
2.1 Basis for deriving diversity factor of 0.7 seems to be unclear and ambiguous as the formula proposed by Hon'ble Commission doesn't corroborate with example provided by the Hon'ble Commission in its justification for proposed amendment, in this context would request the Hon'ble Commission to facilitate requisite data/information for deriving aforesaid diversity factor. In case it is taken into consideration, final value would be (100x0.7x250)/7300= 2.397%, however, example in justification indicates that exemption is 4.89% and in this context clarity is required from the Hon'ble Commission. 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.

2.2 Formula used for deriving diversity factor seems to be incorrect as VRE capacity taken into consideration by Hon'ble Commission for determining diversity factor is 7500 MW consisting of both solar as well as wind, however, AVC of solar power plant is reduced to zero during the night time and similarly AVC of wind plants changes from season to season for e.g. high wind season, low wind season. **Hon'ble Commission has fixed the AVC of VRE Generator to 7500 throughout the year, however, since VRE Generators are nature dependent, their AVC varies from time block to time block and fixation of installed capacity of entire VRE Generator throughout the year will not give the desired result. In this particular case, VRE State schedule for different time block is taken into consideration, desired result would be as per the table mentioned below:**

Table-5

PSS Generation	PSS Schedule	State Schedule	Exemption	Exemption in case of Over Injection	Exemption in case of Under Injection
0	2	300	119.05%	2.38	-2.38
20	20	500	71.43%	14.29	-14.29
40	40	800	44.64%	17.86	-17.86
60	60	1800	19.84%	11.90	-11.90
80	80	1800	19.84%	15.87	-15.87
100	100	1500	23.81%	23.81	-23.81
120	120	2000	17.86%	21.43	-21.43
140	140	2500	14.29%	20.00	-20.00
160	160	5300	6.74%	10.78	-10.78
180	180	6700	5.33%	9.59	-9.59
200	200	5000	7.14%	14.29	-14.29

Graphical Representation of Table-5



In light of the above, renewable energy schedule of the State needs to be taken into consideration. In case the MAL's proposed amendment 1.3 against APERC's proposed amendment 1, i.e. combination of either AVC or schedule whichever is higher is considered by Hon'ble Commission, we kindly request this Hon'ble Commission to kindly consider the following proposed change in amendment 2.

APERC's suggested formula: (100x250)/(0.7x7300)= 4.89% allowable error.

MAL's suggested formula: (100x250)/(0.7x5000)=7.14% allowable error.

Wherein 5000 is the state's VRE schedule considered for a particular time block and similarly during night hours the VRE schedule of the State may be as low as say 3000MW.
Thus, allowable error as per MAL's suggested formula would be: (100x250) / (0.7x3000) =11.90%.

The State's VRE schedule for a day in each 15 minutes time block shall be visible to all generators once the schedules are uploaded by all VRE Generators/QCAs. Accordingly, the generator would be aware about the exemption band and shall manage the generation at their site.

2.3 VRE Generators are nature dependent with very little role on their part and unlike conventional generators, VRE Generation cannot be regulated in the same manner as of Conventional energy. At present entire power sector is under stress and majority of generation plants are under stressed asset, and the proposed amendment may have long term detrimental effects upon VRE Generators.

Treating VRE Generator at par with conventional energy generator was never the intent of Forum of Regulator and CERC 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. If taken into consideration proposed definition of allowed error and calculation thereto, it would be inevitable for VRE Generator to avoid penalties and would be seriously discouraged to operate generating plant owing to such onerous negative revenue impact because of such penalties.

Further, assumption taken by Hon'ble Commission considers that DISCOMs are doing accurate forecasting and demand is being constant, however, such scenario of over drawl and under injection may also be a result inaccurate demand and load forecasting by DISCOMs. Demand forecasting also plays a major role in determining actual loss to DISCOMs on account of VRE Generators as variation may also be result of ineffective demand forecasting by DISCOMs. Load forecasting plays an important role in optimizing cost and losses of the DISCOMs and the same is evident as State of Gujarat is doing Energy Portfolio Management which includes load forecasting and is falling within or near the permissible band of 250 MW as provided by CERC and is evident from the Table provided below:

DSM Charges of State of Gujarat

Month	Net DSM Charge (Cr.) As per 3rd Amendment (2018 – 19)	Net DSM Charge (Cr.) As per 5th Amendment (2019 – 20)
September	20.38	1.78
October	39.85	2.52
November	18.51	1.62
December	-1.45	0.07
January	3.36	3.47

Disclaimer: Above information has been considered from WRLDC site based on WRPC results

Note:

A) Net DSM Charges for 2018-19: The SLDC was not using Demand Forecasting Services and RE Generators were also not submitting their forecasts.

B) Net DSM Charges for 2019-20: The SLDC started using Demand Forecasting Services and DSM Mechanism also implemented wherein RE Generators started submitting their forecasts.

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 little or narrow scope to adjust mismatch with respect to their revenue requirement owing to very low PPA price. VRE Generators are firmly dependent upon weather conditions for their plant operation and generation, and accurate forecasting of their electricity generation cannot be ascertained thereby revenue on account of running a VRE Plant is never fixed, and in such a scenario reducing permissible band for deviation would totally take away the commercial viability of VRE Generators. Further, reducing permissible band of exemption from penalty provided to VRE Generator from 15% to 12% would be adequate enough to tackle the excessive penalties upon state periphery along with ensuring grid safety and stability.

MALs' Proposed Amendment:

100 x (quantum of deviation limit permitted under CERC's DSM Regulation amended from time to time) /(diversity factor 0.7 in control area In the beginning of financial year) x **(quantum of scheduled VRE for particular time block).**

3 **APERC's Proposed Amendment**

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 ahead basis

APERC's Justification for Proposed Amendment

- *The objective of bringing this Regulation is to maintain grid discipline and grid security as envisaged under the grid code through commercial mechanism for deviation settlement.*
- *Discoms have to plan the resources for meeting the demand on day ahead basis. The resources Include all conventional and RE Generators. Accordingly Discoms optimize the purchase and sell power through Power Exchanges.*
- *The deviation in forecast results in deficit or surplus power condition. Under deficit condition there will be deviation in drawl and Discoms have to pay high price for the power that is required to bridge the gap by availing high cost URS power or purchasing power at high cost from the exchanges during the course of the day.*
- *That apart SLDC would suffer with violation notices by SRLDC, forcing Discoms to resort to load shedding in case the above desired action is not realized.*
- *Such load shedding turns contrary to the policy mandate given by Govt. to maintain 24x7 power supply to all categories of consumers.*
- *The forecasting and scheduling Tool of VRE generators must be effective to mitigate the power shortage as well as back down of generation. As per Regulations on F & S, the generation from day ahead schedule of VRE power generation gives the quantum of variable energy for assessing the conventional energy requirements on day ahead basis.*
- *The day ahead schedule of VRE generators is crucial for any grid management which is deciding the quantum of power allocation from other sources. If day ahead forecast & scheduling is*

accurate in respect of VRE generators, there will not be any power shortage and it would mitigate the backdown instructions.

- *SLDC Is required to have accurate day ahead schedule from each wind & solar generator to avoid any variation of capacity allocation from other sources or to avoid compulsory load shedding.*
- *QCAs are submitting forecast and schedules on day ahead and Intra day revision. Discoms are planning their availability to meet the grid demand on day ahead basis and tie up power accordingly. Discoms are not able to cope up with the deficit/surplus arising due to variation in VRE Generation In real time operation because of the following reasons*
  (1) Power market mechanism is not mature
  (2) Warm and cold start-up which will take longer time to reach full load
  (3) Discoms have to tie up power subject to availability from all sources.

Hence, AP Discoms invariably resort to load shedding with a view to adhere to the IEGC Regulations.

MAL's Comments:

Assumption taken into consideration by Hon'ble Commission does not cover all the aspects for power procurement and power drawl scenario by the DISCOMs. For 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 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.

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.

Regulation 5.1 of Andhra Pradesh Wind and Solar Forecasting and Deviation Settlement Regulation provides that QCA shall be appointed to provide schedules with periodic revision on behalf of wind /solar generators. In order to ensure grid safety and stability, QCAs are getting real-time site information through SCADA and SEMs to capture real-time site conditions and weather data is also updated by service providers at regular interval to ensure enhanced accuracy and such information needs to be incorporated into schedules through revisions to fulfill the aim of regulation i.e. grid safety and stability. Accurate day ahead scheduling for wind plant is not technically possible as for e.g. wind to start at 1 A.M. on any given day may shift to T-1 hr. or T+1 hr. and as a result penalties may be imposed upon VRE Generators without any fault on their part. Further, site maintenance, plant shutdowns, breakdown are also required to be taken into consideration for effective scheduling of solar and wind power as these are frequently occurring practical scenario and accordingly schedules need to be revised otherwise VRE Generator may

end up paying for penalties out of its own pocket owing to non generation of electricity because of plant shutdown and payment of penalties on account of deviation. Provision for revising schedules is also applicable for conventional generators as plant breakdown and unscheduled maintenance are frequently occurring scenario and are beyond the control of the generators.

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 play an important role for VRE Generators as plant's generation is directly related to weather conditions. Weather condition varies from time to time in a particular given day and therefore weather data as provided by IMD or other service providers at regular intervals need 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.

Central Electricity Regulatory Commission had come up with Framework For Real Time Market with a view to ***"with a view to providing the buyers and sellers an organized platform for energy trade closer to real time had proposed a regulatory framework for real-time market"*** and steps are being taken in order to reduce time blocks for effectuating revisions to make the market further closer to real time and facilitate grid management. In case provision of revision is removed for VRE Generators that would directly be against the frame work for Real-Time Market as provided by CERC. RTM will be effective from 1st April 2020.

Initially, during planning of RE Integration with the grid, deviations on account of VRE Generators was taken into consideration and it was proposed to propound 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 losing end.

MALs' Proposed Amendment

Proposed amendment must be struck down and Variable Renewable Energy Generators shall be allowed to submit revised schedules on Intra Day with atleast 16 revisions by Wind Generators and 9 Revision by Solar Generators.

4 Amendment Proposed

S.No	Forecast Error the in 15 min. time block	Pool in 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

Justification

- *With regard to VRE Generation, during the real time operation of Grid, huge variation occurs between the forecast schedules and actual generation. Due to error in forecast of RE Generation, Discoms are resorting to purchase high cost power from power exchange.*
- *On Many occasions, Discoms have purchased at the rate of 660 paise per unit. That means, Discoms are incurring Rs.2 per unit more than the average VRE power purchase cost.*
- *Even in that eventuality, sufficient power is not available at that point of time. Hence, Discoms have to go for load relief which has deleterious effect on State GDP-. Considering an Energy elasticity of GDP of 0.8, this translates to crores rupees in losses to the State GDP.*
- *Another aspect of difficulty in this regard Is if the actual VRE generation is more than the forecast, conventional generation has to be backdown which has associated costs to be borne by the Discom. The following are associated costs are involved in over injection which comes to Rs.2 per unit*

Adequacy costs Rs.1.60 per unit

Balancing costs Rs. 0.40 per unit

The adequacy costs of 1.60 paise per unit is derived by considering the difference between VRE costs and weighted average pooled variable cost. The balancing costs of 0.40 per unit arrived at considering the deterioration of station heat rate, Increased oil consumption, and excluding wear & tear of the equipment when thermal stations are required frequently backed down,.

MAL Comments:

Justification provided for the proposed amendment is very narrow to the extent as it's already assumed that in case of deviations, 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 APPC 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. 4.5per KwH and such penalties may amount to more than 20% of the total revenue of the VRE Generator and thereby posing negative impact upon the plant sustainability.

It had been already assumed that only due to error on account of VRE Generators, DISCOMs are resorting to purchase power at a high cost which is prima facie arbitrary as such variation may also be the result of inaccurate demand and load forecasting by DISCOMs. No information is provided with respect to load and demand forecasting being done by DISCOMs in order to optimize their power procurement cost and effective identification of electricity demand within their control area. Penalties of Rs.2/Unit would be so onerous that it would showcase a negative outlook of the State to protect the interest of the investment being done in the State and would have a detrimental effect upon overall investors in the State.

In case of under injection, VRE Generators will end up paying penalties out of their own pocket without any recovery and as a result VRE Generators would be seriously discouraged to operate their plant. At present aggregation at state level may be a reason for enhanced deviation window band without penalty which can be tackled effectively if energy accounting and deviation settlement mechanism is being under taken at PSS level or by limiting the extent of aggregation. End result of grid safety and stability would not be fulfilled by the proposed amendment, and the only goal seems to be achieved by aforesaid amendments is to penalize the VRE Generators in monetary terms.

Grid safety and stability can be achieved by efficient and effective demand and load forecasting and by undertaking deviation settlement mechanism at PSS level or limiting the extent of aggregation. Justifications and scenario provided by Hon'ble Commission for proposed amendment may have arisen owing to unlimited size of aggregation, and in case its limited to a finite size with adequate quantum, entire purpose of the regulation of ensuring grid safety and stability and minimizing the losses may be achieved without challenging VRE Plant's sustainability. Innovative way such as load forecasting have to be undertaken by progressive State like Andhra Pradesh to ensure grid safety and stability without penalizing VRE Generator.

Initially, during planning of RE Integration with the grid, deviations on account of VRE Generators was taken into consideration and it was proposed to propound 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 losing end.
Some of the state commission have reduced the exemption with respect to Available capacity and also reduced the Deviation charges as per below table.

Sr. No.	Absolute Error in the 15-minute time block	Deviation Charges payable to State DSM Pool
1	<= 12%	None
2	>12% but <=20%	At Rs. 0.25 per unit for the shortfall or excess energy for absolute error beyond 12% and up to 20%
3	>20% but <=28%	At Rs. 0.25 per unit for the shortfall or excess energy beyond 12% and up to 20% + Rs. 0.50 per unit for balance energy beyond 20% and up to 28%
4	> 28%	At Rs. 0.25 per unit for the shortfall or excess energy beyond 12% and up to 20% + Rs. 0.50 per unit for balance energy beyond 20% and up to 28% + Rs. 0.75 per unit for balance energy beyond 28%

MALs' Proposed Amendment

It is requested to the commission to reconsider for reduction of the flat penalty amount of Rs. 2Per unit and shall consider to introduce penalty in different exemption bands that too with variable deviation charges as may be deemed fit by the Hon'ble Commission.