To
The Secretary,
Central Electricity Regulatory Commission,
World Trade Centre, 6th, 7th and 8th floor,
Tower -B, Nauroji Nagar,
New Delhi-110029

Date: 03.06.2024

Subject: Submission of Comments/Suggestions on Draft Central Electricity Regulatory Commission (Deviation Settlement Mechanism and Related Matters) Regulations, 2024.

Reference:

1. Central Electricity Regulatory Commission ("CERC") public notice dated 30.04.2024 and 24.05.2024 bearing no. L-1/260/2021/CERC. **("Public Notices")**

Dear Sir,

We would like to introduce AmpIn Energy Transition Private Limited ("AmpIn") (formerly Amp Energy India Private Limited) is fastest growing integrated energy solution provider in India and is focused on delivering clean and green energy to commercial and industrial customers. AmpIn is present in 17 states with 70+ consumers across 7 sectors, 3 GW (portfolio) &2 GW (pipeline) with focus in the C&I segment (Open Access - Captive / Group Captive, Hybrid (Wind& Solar), Intra / Inter (ISTS) projects, Roof Top Solar (RTS) / Distributed Generation, Trading / VPPA, Storage, Green Hydrogen etc.), SECI /NTPC utility projects. AmpIn has investment from various leading green energy fund houses that includes Copenhagen Infrastructure Fund (CIP), LGT (Europe's largest private bank), Amp Canada, CBRE Caledon, Sumitomo, ICG (UK), AIIB etc. and leading Indian NBFCs and Financial Institutions.

We are writing you with reference to Public Notices referred above as reference item no. 1 vide which this Hon'ble Commission invited Comments/Suggestions on Draft Central Electricity Regulatory Commission (Deviation Settlement Mechanism and Related Matters) Regulations, 2024 ("**DSM Regulations 2024**"). At this outset we welcome the steps taken by the Hon'ble Commission for development of Renewable Energy and its integration with grid. We would also like to highlight certain concerns which need immediate attention of the Hon'ble commission for smooth implementation of DSM Regulations 2024. Our detailed comments/suggestion in this regard is attached as Annexure 1.

We request you to consider our comments/suggestion while finalizing the DSM Regulations 2024.

Thanks & Regards
Shriprakash Rai

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Annexure 1

Comments/Suggestions on draft Central Electricity Regulatory Commission (Deviation Settlement Mechanism and Related Matters) Regulations, 2024

(I) Charges for Deviation

For WS seller being a generating station based on Wind resource

Clause 8 (1) of DSM Regulation 2022 Amendment (Existing)				Clause 8 (4) of Draft DSM Regulation 2024				Our Proposition			
Over injection (Receivable by Seller)		Under injection (Payable by Seller)		Over injection (Receivable by Seller)		Under injection (Payable by Seller)		Over injection (Receivable by Seller)		Under injection (Payable by Seller)	
Band limits	DSM Charges	Band limits	DSM Charges	Band limits	DSM Charges	Band limits	DSM Charges	Band limits	DSM Charges	Band limits	DSM Charges
0-15%	100% of CR	0-15%	100% of CR	0-10%	100% of CR	0-10%	100% of CR	0-15%	100% of CR	0-15%	100% of CR
15-20%	90% of CR	15-20%	110% of CR	10-15%	90% of CR	10-15%	110% of CR	15-25%	90% of CR	15-25%	110% of CR
>20%	0	>20%	150% of CR	15-25%	50% of CR	15-25%	150% of CR	25-35%	80% of CR	25-35%	120% of CR
NA	NA	NA	NA	>25%	0	>25%	200% of CR	>35%	70% of the CR	>35%	130% of CR

Charges for Deviation: For WS seller being a generating station based on Solar resource/Solar-Wind hybrid resource

Clause 8 (1) of DSM Regulation 2022 Amendment (Existing)				Clause 8 (4) of Draft DSM Regulation 2024				Our Proposition			
Over injection (Receivable by Seller)		Under injection (Payable by Seller)		Over injection (Receivable by Seller)		Under injection (Payable by Seller)		Over injection (Receivable by Seller)		Under injection (Payable by Seller)	
Band limits	DSM Charges	Band limits	DSM Charges	Band limits	DSM Charges	Band limits	DSM Charges	Band limits	DSM Charges	Band limits	DSM Charges
0-10%	100% of CR	0-10%	100% of CR	0-5%	100% of CR	0-5%	100% of CR	0-15%	100% of CR	0-15%	100% of CR
10-15%	90% of CR	10-15%	110% of CR	5-10%	90% of CR	5-10%	110% of CR	15-25%	90% of CR	15-25%	110% of CR
>15%	0	>15%	150% of CR	10-20%	50% of CR	10-20%	150% of CR	25-35%	80% of CR	25-35%	120% of CR
NA	NA	NA	NAs	>20%	NA	>20%	200% of CR	>35%	70% of the CR	>35%	130% of CR

Rationale-

Key issues-

Issues related to Wind & Solar energy forecasting-

1. **Weather forecasting-** One of the key parameters for energy forecast is accurately forecasting the weather. Accurately prediction of weather parameters depend on the following weather inputs-
   (i) **Temporal resolution of forecasts**- The current resolution of forecasts is available at a granularity of 1-3 hrs, which is further downsized to 15 mins basis by Forecasting agencies or QCA's as per the Indian Regulatory requirements. Interpolation from 1 hr to 15 mins assuming a constant clear sky are not realistic assumptions and creates huge forecasting errors.
   (ii) **Spatial resolution**- Indian Forecasting agencies/ QCA's use ECMWF and NCMRWF NWP models to derive the localized forecasts. These global NWP models have a grid size of 25 kms which couldn't capture the local variations in the weather forecasts. Downsizing such data to a plant level forecast further creates huge errors in forecasting. Capability to capture the local weather variation is of importance for prediction with accuracy.

   With the existing technology of weather forecasts being accurate to an extend of only 55-60% , it becomes evident that further research needs to be done at the weather forecasting technologies to improve the accuracy levels.

2. **Climatic issues-** India being a tropical climate has seen huge variations in weather patterns over the last 2-3 years. This has impacted the solar and wind generations patterns in most parts of India. The impact is such that most of the projects are not able to meet their budgeted PLF's, which has largely impacted the project IRR's. Further, with the change in weather pattern, localized weather within a grid

scale of 10 kms is different from weather outside such grid. Fast changing cloud /wind patterns have made it difficult for the forecasting agencies to predict the generation pattern with the current available technologies.

3. **Historical data-** The current set of historical data needs further training, as most of the historical data set available with the QCA are either incomplete or in correct due to remote site connectivity issues in the past. However, recent initiatives from Grid India/ state SLDC's have improved the remote site data collections. Yet, the accurate data sets available centrally are only to a tune of 1-2 years, which is not sufficient to train forecasting models (atleast require 5 years of reliable data).

Immediate requirements

1. **Weather Policy-** With huge targets to the scale of 500 GW Renewables by 2030, GOI should come up with weather policy to scale up startups in India dealing in weather forecasting activities. Currently, the startups have not yet scaled to a similar tune in weather segments as in other segment due to unclear policy and ecosystem.
2. **Weather tech investments-** The current technologies implemented by Weather forecasting agencies/QCA's are mostly being sourced from the global NWP models. With the development of policy and Weather ecosystem, the technologies will scale up which will cater to the local weather conditions and help in accurate forecasting of Solar and wind generation.

Proposition on Draft Regulations 2024

As observed at various Solar & Wind energy sites, inaccuracies could be categorized in 2 ways-

1. **Uncontrollable (Inaccurate forecasting)-** Best possible forecasting models have already been explored and limited improvement seen in accuracies due to unavailability of desired weather technologies for further improvement.
2. **Controllable (Inaccurate scheduling)-** In Accuracy as a result of scheduling errors, where generator can timely report the correct plant availability and control inaccuracies on account of energy scheduling.

At present, (1) could only be addressed with technological improvements and interventions from the government to form desired local weather ecosystem. Hence, further tightening the band limits and increasing penalties at this point may not result in improving the overall forecasting

accuracies. Instead, government should act on the immediate requirements on policy and tech front and then evaluate the revision in the bands based on preparedness for the same.

It is therefore suggested to keep the bands as highlighted above in green.

(II) Clause 3(J) Definitions & interpretations

S. No	DSM Regulation 2022 Amendment (Existing)	Draft DSM Regulation 2024	Proposed clause
1	**Clause 3 (j) Definitions and Interpretation:** '**Contract rate' (CR)** means the tariff for sale or purchase of power, as determined under Section 62 or adopted under Section 63 or approved under Section 86(1)(b) of the Act by the Appropriate Commission or the price as discovered in the Power Exchange, as the case may be;	**Clause 3 (j) Definitions and Interpretation:** '**Contract rate' (CR)** means the tariff for sale or purchase of power, as determined under Section 62 or adopted under Section 63 or approved under Section 86(1)(b) of the Act by the Appropriate Commission or the price as discovered in the Power Exchange, as the case may be; *and in the absence of a tariff or price as above, contract rate shall mean the*	'**Contract rate' (CR)** means the tariff for sale or purchase of power, as determined under Section 62 or adopted under Section 63 or approved under Section 86(1)(b) of the Act by the Appropriate Commission ~~or~~ ~~the price as discovered in the Power Exchange, as the case may be~~; *and in the absence of a tariff or price as above, contract rate shall mean ~~the weighted average ACP of the Day Ahead Market segments of all Power Exchanges for the respective time block;~~ as follows-* 1. *In case of sale of power to the Power exchanges, Weighted average ACP of the Day Ahead Market segments of all Power Exchanges for the respective time block.* 2. *Where, the contract is bilateral arrangement between the seller and the buyer, the contract rate shall mean signed affidavit submission of PPA tariff by seller to the central nodal agency.*

		weighted average ACP of the Day Ahead Market segments of all Power Exchanges for the respective time block;	*3. Where, the buyer and seller have not submitted an affidavit and contract copy under the bilateral arrangement then contract rate shall mean minimum of the* *a. Average price of concluded ISTS connected project tenders by REIAs over the last 1 year for respective technologies i.e Solar/Wind/Wind-Solar Hybrid etc.* *b. National APPC tariff determined by CERC.*

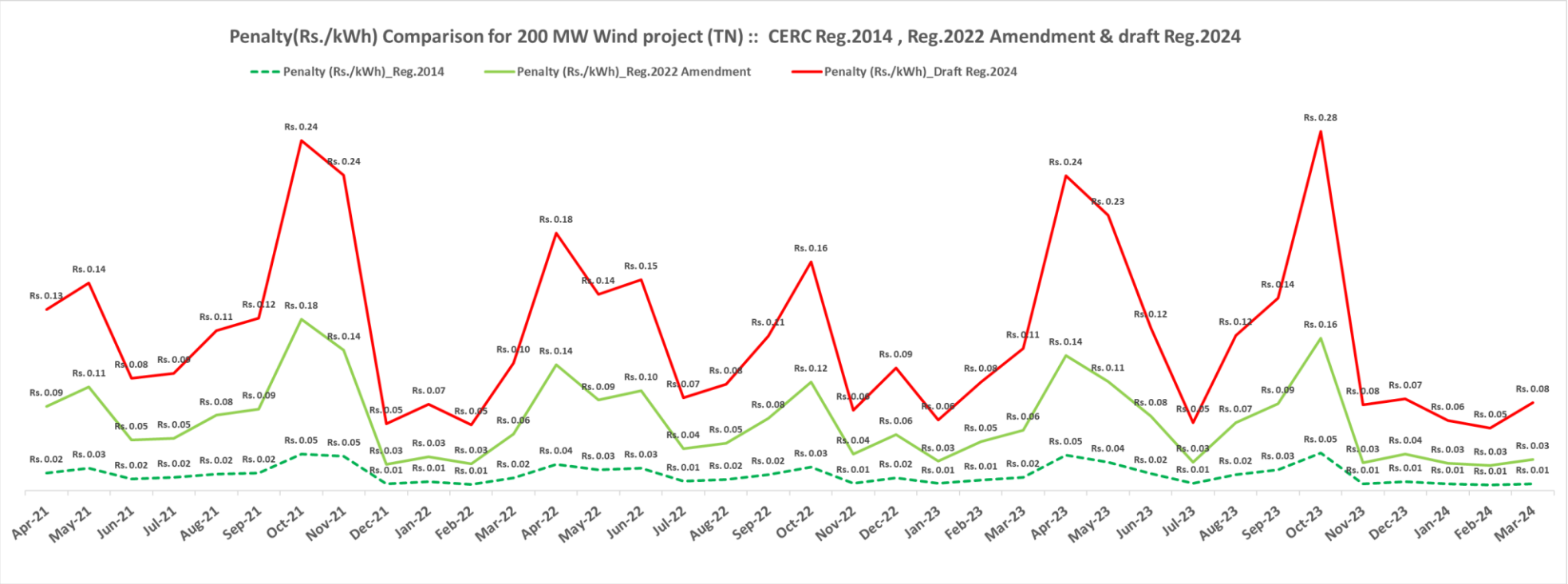
Rationale

Where, contracts have been concluded under Section 62, Section 63 or selling power on the power exchanges, the DSM charges are getting calculated at the same rate at which sale of power is being done. However, in case of bilateral PPA's where the Seller and buyer doesn't fall under the above arrangements, tariff rate for sale of power and DSM settlements shall be different. Hence, to achieve a symmetry in settlements, both the rates should be considered same. Hence, the bilateral PPA's be allowed to submit their tariff along with an affidavit to settle the DSM at a bilaterally agreed rate.

Further under the bilateral PPAs other than Section 62 and 63, the tariff agreed is at par with rates discovered under the competitive bidding tenders conducted by Renewable Energy Implementing Agencies. Such rates are far lesser as compared to rate discovered on power exchanges. The proposed reference rate will expose such projects to higher level of DSM penalties making them financially unviable. In the event, the parties have not submitted the PPA's/affidavit, minimum of (i) average price of concluded tenders in the last 1 year; (ii) National APPC tariff; should be considered for DSM settlements.

Comparative Analysis

Following graphs represents the Penalty (Rs./kWh) contribution w.r.t Regulation 2014 , 2022 amendment and Draft 2024 for 3 selected ISTS projects (Wind and Solar).


Penalty(Rs./kWh) Comparison for 200 MW Wind project (TN) :: CERC Reg.2014 , Reg.2022 Amendment & draft Reg.2024
Penalty (Rs./kWh)_Reg.2014
Penalty (Rs./kWh)_Reg.2022 Amendment
Penalty (Rs./kWh)_Draft Reg.2024
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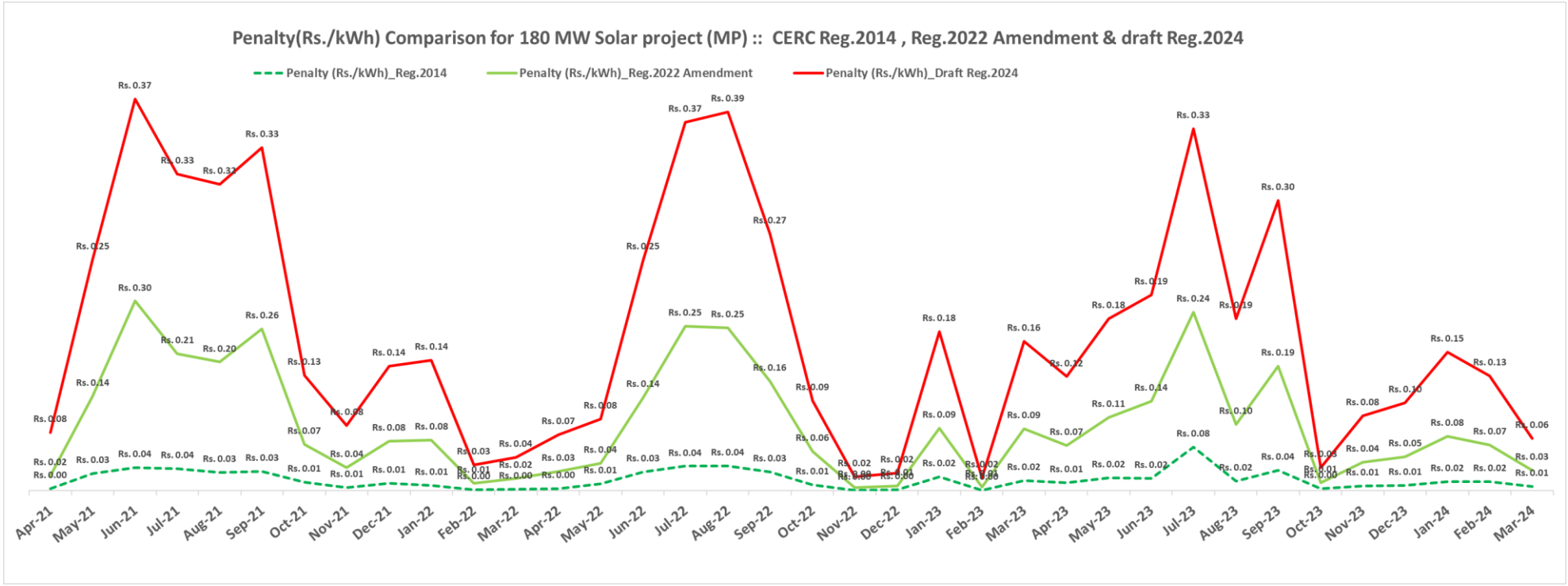
Penalty(Rs./kWh) Comparison for 180 MW Solar project (MP) :: CERC Reg.2014 , Reg.2022 Amendment & draft Reg.2024
Penalty (Rs./kWh)_Reg.2014
Penalty (Rs./kWh)_Reg.2022 Amendment
Penalty (Rs./kWh)_Draft Reg.2024
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