

To,

Date 30.04.2015

The Secretary,
Central Electricity Regulatory Commission
3rd & 4th Floor, Chanderlok Building, 36,
Janpath, New Delhi- 110001

Dear Sir,

Sub: Submissions for consideration on the proposed framework for Forecasting, Scheduling & Imbalance Handling for Renewable Energy (RE) Generating Stations based on wind and solar at interstate level

References:

- i. CERC Indian Electricity Grid Code Regulation 2010 and amendments
- ii. CERC Deviation Settlement Mechanism and related matters Regulation
- iii. CERC Terms and conditions for recognition and issuance of REC

At the outset, we express our heartfelt gratitude for the support and guidance extended by this hon'ble commission for reviewing/revisiting the RRF mechanism envisaged in IEGC Regulations to bring in Forecasting and Scheduling Mechanism for Intra/Interstate wind and solar generators in the country.

We would acknowledge and place on record the proactive action the Honorable Commission has taken by suspending the commercial implications associated with the order dated 07.01.2014. The Commission has also decided to review the RRF mechanism and to address the bottlenecks associated with its implementation.

In response to this we have submitted our detailed view and procedure in the form of a report titled "Stakeholders Outlook on RRF Mechanism" representing the facts on the RRF mechanism bottlenecks and requested to come up with a procedure which is resolute technically, operationally and if not implied will lead to commercial implications.

The CERC stood to streamline not only the RRF mechanism but also bring in the necessary changes required in the form of amendments to related regulations in the matter as listed in references above.

On perusal of the above listed regulations we have listed following key issues emerging out of the amendment proposed by this hon'ble commission seeking comments on before 30.04.2015

1. Proposed Framework for Forecasting, Scheduling & Imbalance Handling for Renewable Energy (RE) Generating Stations based on wind and solar at Inter-State Level.
2. Draft Amendment to IEGC Regulations, 2010.
3. Draft Amendment to DSM Regulations, 2014.
4. Draft Amendment to REC Regulations, 2010.

We Mytrah Energy (India) Ltd would like to submit our responses as a key stakeholder and requests for your kind consideration.

Suggestions on Proposed Framework for Forecasting, Scheduling & Imbalance Handling for Renewable Energy (RE) Generating Stations based on wind and solar at Inter-State Level

1. Introduction

The present installed capacity of renewable generation is 34351 MW (MNRE, 28th Feb 2015) which comprises 22645 MW of Wind and 3383 MW of Solar generation as the major components. Presently, almost all of the RE capacity that is grid connected is at the sub-transmission level within the States. By the end of the 12th Plan, the RE installed capacity is expected to increase to about 46,000 MW of Wind and about 10,000 MW of Solar (Green Energy Corridor Report). Further, large Solar generation capacity addition to the tune of 20,000 MW and more is expected by 2019 and this would comprise of large Solar Parks of 500 MW and Ultra Mega Solar Projects of 4000 MW (Recent decisions of the Union Cabinet, Dec 2014).

RE generation by nature is considered intermittent, uncertain and variable. Taking into consideration these aspects and to facilitate integration of RE generation in the grid, special provisions have been made in the Grid Code. However, difficulties have been experienced on implementation of these provisions. There is, therefore, a need for creating a framework for forecasting, scheduling and handling deviations from schedule for the infirm RE generation (like wind and solar) which also factors in the variable and intermittent nature of such generation.

2. Existing Provisions in IEGC for Scheduling and Despatch of RE Generation

Extracts of the relevant provisions regarding wind and solar in the IEGC 2010 are as given below:

Regulation 6.5 (para 23):

Special dispensation for scheduling of wind and solar generation:

(i) With effect from 1.1.2011 Scheduling of wind power generation plants would have to be done for the purpose of UI where the sum of generation capacity of such plants connected at the connection point to the transmission or distribution system is 10 MW and above and connection point is 33 KV and above, and where PPA has not yet been signed. For capacity and voltage level below this, as well as for old wind farms (A wind farm is collection of wind turbine generators that are connected to a common connection point) it could be mutually decided between the Wind Generator and the transmission or distribution utility, as the case may be, if there is no existing contractual agreement to the contrary . The schedule by wind power generating stations may be revised by giving advance notice to SLDC/RLDC, as the case may be.

Such revisions by wind power generating stations shall be effective from 6th time-block, the first being the time-block in which notice was given. There may be maximum of 8 revisions for each 3 hour time slot starting from 00:00 hours during the day.

(ii). The schedule of solar generation shall be given by the generator based on availability of the generator, weather forecasting, solar insolation, season and normal solar generation curve and shall be vetted by the RLDC in which the generator is located and incorporated in the inter-state schedule. If RLDC is of the opinion that the schedule is not realistic, it may ask the solar generator to modify the schedule.

(iii) Concerned RLDC and SLDC shall maintain the record of schedule from renewable power generating stations based on type of renewable energy sources i.e wind or solar from the point of view of grid security. While scheduling generating stations in a region, system operator shall aim at utilizing available wind and solar energy fully.

Annexure - I: Complementary Commercial Mechanisms

5. The wind generators shall be responsible for forecasting their generation upto an **accuracy of 70%**. Therefore, if the actual generation is beyond **+/- 30%** of the

schedule, wind generator would have to bear the UI charges. For actual generation within +/- 30% of the schedule, no UI would be payable/receivable by Generator, The host state, shall bear the UI charges for this variation, i.e within +/- 30%. However, the UI charges borne by the host State due to the wind generation, shall be shared among all the States of the country in the ratio of their peak demands in the previous month based on the data published by CEA, in the form of **a regulatory charge known as the Renewable Regulatory Charge operated through the Renewable Regulatory Fund (RRF)**. This provision shall be applicable with effect from 1.1.2011, for new wind farms with collective capacity of 10 MW and above connected at connection point of 33 KV level and above, and who have not signed any PPA with states or others as on the date of coming into force of this IEGC. Illustrative calculations in respect of above mechanism are given in Appendix.

6. **A maximum generation of 150%** of the schedule only, would be allowed in a time block, for injection by wind, from the grid security point of view. For any generation above 150% of schedule, if grid security is not affected by the generation above 150%, the only charge payable to the wind energy generator would be the UI charge applicable corresponding to 50- 50.02 HZ

7. *In case of solar generation no UI shall be payable/receivable by Generator. The host state, shall bear the UI charges for any deviation in actual generation from the schedule. However, the net UI charges borne by the host State due to the solar generation, shall be shared among all the States of the country in the ratio of their peak demands in the previous month based on the data published by CEA, in the form of regulatory charge known as the Renewable Regulatory Charge operated through the Renewable Regulatory Fund as referred to in clause 5 above. This provision shall be applicable, with effect from 1.1.2011, for new solar generating plants with capacity of 5 MW and above connected at connection point of 33 KV level and above and, who have not signed any PPA with states or others as on the date of coming into force of this IEGC. Illustrative calculations in respect of above mechanism are given in Appendix.*

Because of various difficulties faced in implementation, the date of implementation of the above Regulatory provisions was **extended to 01.01.2012** vide CERC notification dated 14.01.2011. Further, vide CERC Order in Petition no. 356/SM/2013 **dated 7th Jan 2014, the Renewable Regulatory Fund (RRF) mechanism has been suspended pending a review of the entire mechanism.**

The Commission has since reviewed the mechanism and proposes the following methodology for forecasting, scheduling and deviation settlement of infirm RE sources like wind and solar.

3. Proposed Methodology for Forecasting, Scheduling & Imbalance Handling for infirm RE Generators (wind and solar) at Inter-State Level

The following methodology proposed for forecasting, scheduling and imbalance handling of wind and solar generators would be applicable for the inter-state wind and solar energy generators whose scheduling is done by RLDCs.

3.1 Forecasting:

Wind / Solar energy generation is uncertain and variable but uncertainty and variability can and should be minimized to the extent possible through proper forecasting. In the earlier framework provided in the IEGC, the wind energy generators were mandated to undertake forecasting and scheduling subject to pre-specified tolerance limit. The solar energy generation being at its infancy was not subjected to commercial impact on account of deviation from schedule. Over the period, however, we have gained experience on solar front as well. In fact, solar is considered equally, if not more firm than wind. As such, both wind and solar energy generation are being brought under the requirement of forecasting and scheduling. Accuracy of forecasts can be increased inter alia by maximizing geographic diversity in wind / solar energy generation as the errors in forecasts tend to offset each other, the larger the number of generators covered and broader the area included in the forecasts. In order to maximize the accuracy of forecasts, meteorological models must incorporate maximum possible data about as many wind / solar energy generators as possible in as high a resolution (spatial and temporal) as possible, which has to be provided on a mandatory basis by all wind / solar energy generators whose scheduling is done by RLDCs as specified in the grid code.

Forecasting is an essential pre-requisite for scheduling of the wind/solar generation. Forecasting needs to be done by both the wind/solar generator and the concerned RLDC. While the forecast by the concerned RLDC would be more with the objective of secure grid operation, the forecast by the wind / solar energy generator would be wind-farm/solar facility centric and would form the basis of scheduling. Appropriate use of forecast for scheduling is also expected to reduce commercial impact for the wind and solar energy generators. It is understood that the Renewable Energy Management Centers (REMCs) are being established and these would be equipped with advanced forecasting tools. The wind/solar

energy generator may choose to utilize its own forecast or the forecast given by REMC/concerned RLDC. However, any commercial impact on account of scheduling based on the forecast would be borne by the wind/solar energy generator. It would also be prudent to have multiple forecast providers (both for REMC/RLDC & wind/solar energy generators) for better confidence levels/lower forecast errors.

Mytrah's Submission:

We request this hon'ble commission to consider this mechanism as consider in other countries with major installation of renewable energy where the "Forecasting and Scheduling" is a **"Technical problem"** and is viewed as a **"Technical Problem"**, in integrating more renewable energy into the grid. In India however the same is viewed as a **"Commercial problem"**.

We welcome the step to introduce Renewable Energy Management Centers (REMC) with advanced forecasting tools at centralized level to be utilized for forecast.

Further to this we request this hon'ble commission that before imposing commercial mechanism implication on the generators:

- REMCs shall be in place and carry out the forecast at centralized level to have a forecast with better accuracy and consistency.
- In addition, forecast from individual generators shall be collected through an online system and correlate it with the centralized forecast data for arriving at the schedule.
- There can be a nominal charge distributed among all the generators for developing the online system and recurring cost of maintaining it.
- There shall be penalty on the generators who fail to submit their individual forecast within stipulated time.
- This exercise can be continued for a period of 2 years to study the technical feasibility and system improvement before coming up with any commercial impact on the generators for the lack of accuracy in forecasting.

The generators shall be allowed to submit their individual forecast to the online system directly by assigning identification number for each of their metering point, this eliminates the dependency of the generators on one another and dependency on a coordinating agency. The condition of Coordinating Agency is shifting the focus of the IPPs from the accuracy of Forecast onto the issues related to coordinating with other generators hence compromising on the accuracy of the forecasts & schedules. A policy and regulatory framework is the single most important driver for energy investments, by bringing in Forecasting and

Scheduling commercial implication for Wind/ Solar will definitely impact on the investment and getting such projects financed by the financial institution will become more tedious.

The uncertainty of wind and solar generation shall be adjusted in the grid to tap the potential of abundant renewable energy not to put commercial burden in the form of deviation from schedule by the generating companies who are planning to invest in the sources. This approach may become the root cause of the non-implementation of such power plants.

Therefore we request the hon'ble commission to establish the technical requirements at all the fronts i.e. Generator/ SLDC/RLDC/REMCs and then run the system for a reasonable period, collate the results thus obtained, share the entire data and the results with the industry based on which any correction if required have to be carried out and only after getting a confidence that the system is able to achieve the desired result of grid stabilization within the tolerable variation, the Commission should go in for implementation of the commercial mechanism. We welcome the step to increase the number of revisions in a day from 8 to 16 but would like to request the hon'ble commission that more flexibility in revision of forecast shall be given to wind/solar generators (no restriction on no. of revision); it should be real-time revision for 2 time blocks ahead. This would encourage the generators to submit more accurate forecast as the accuracy of immediate forecast is better than day ahead forecast. The provision of revising the forecast shall be introduced in place of schedule.

3.2 Scheduling

The wind/solar generators at the inter-state level whose scheduling is done by the RLDCs, would be scheduled like any other generator and would be paid as per scheduled generation and not actual generation. Considering the fact that wind/solar generation is intermittent and variable in nature and also taking into account the fact that accuracy of forecast improves as we move closer in time, the wind/solar energy generator would be allowed more opportunities to revise the schedule. There may be a maximum of 16 revisions for each fixed one and half hour time slot starting from 00:00 hours during the day (as against 8 revisions currently allowed as per IEGC 2010).

The wind/solar energy generators may transact power through long-term, medium-term and short-term trades. Some of the wind/solar energy generators

may also transact power through short term trades. Revisions are allowed for bilateral transactions but no revision of trades discovered through collective transactions in the Power Exchange(s) is possible.

Transmission charges (POC charges) and losses would be applicable, unless exempted by the Commission through a Regulation or an Order, for the wind/solar energy generator just like any other generator. Further, reactive energy charges would also be applicable.

Mytrah's Submission:

We request the Honorable Commission that scheduling shall be done by REMC/RLDC/SLDC by correlating the central level forecast data with the data submitted by individual generators in near real time basis to achieve higher accuracy levels.

We request the Honorable Commission to consider to extend the exemption of transmission charges and losses (POC charges) for wind generators as the same is exempted for solar generators.

3.3 Metering

SEMs would have to be placed to facilitate boundary metering, accounting and settlement for the wind/solar energy generator. Weekly meter readings would be forwarded to the RLDC for energy accounting as per the existing practice.

Mytrah's Submission:

We request the hon'ble commission to define the model/class of SEMs as per the CEA metering regulations and such standard should not vary from state to state. We request the commission to include all the costs involved in Forecasting and scheduling as a part of project cost /evacuation cost while determining the tariff, and all SERCs shall be guided by the same set of regulations.

3.4 Imbalance Handling

One of major concerns raised by the wind/solar energy generators is the variability of charges payable for deviation as these are variable and linked to the system frequency. Hence, a mechanism also needs to be evolved to provide more certainty of the payment liability on account of deviation from the schedule.

Deviations from schedule are bound to occur for the wind/solar energy generator. Presently, the deviations at the inter-state level (for Regional Entities) are settled based on the provisions of the CERC DSM Regulations. Considering the fact that wind/solar energy generation is variable and intermittent, more opportunities to revise the generation schedules have been proposed above. However, the deviations from schedule are still bound to occur and a methodology to account for and settle the deviations by wind/solar energy generators is required.

It is essential that desired limits be stipulated for deviation so as to provide enough signals/incentive to the wind/solar energy generator to forecast as accurately as possible. Accordingly, keeping in view the first level of volume limits as per the DSM Regulations, the desired operating band of $\pm 12\%$ is being proposed for the wind and solar energy generators.

If the tariffs for wind and solar generation are assumed to be in the range of Rs. 5/kWh and Rs. 7/kWh respectively, it would imply that wind/solar energy generator would receive payment at these rates approximately for the energy scheduled. Further, the buyer would be paying these rates for the energy scheduled to the wind/solar energy generators and demonstrating RPO compliance based on schedule.

When the wind/solar energy generator under-injects, he still receives payment for the energy injected as per schedule @ wind/solar Tariff. However, because of deviation he would be liable to pay a pre-defined charge to the DSM Pool and also buy REC for the energy equivalent to deviation. The total payout for the wind/solar energy generator should be such that it modulates its behaviour to remain within the desired operating band as far as possible. The same philosophy should apply for over-injection as well.

If the actual generation is in the range 88% to 100% of schedule, the wind/solar generator would pay for the shortfall energy @ Rs. 3/kWh (may be reviewed periodically by the Commission through an Order) to the DSM Pool. In addition, the wind/solar energy generator would buy RECs (equivalent to the shortfall energy) and transfer them to the buyer to enable it to fulfill its RPO obligation. Assuming the current market rate of REC at Rs. 1.50/- per unit for non-solar and Rs 3.50 per unit, the outgo for a wind/solar energy generator [Rs 3 plus Rs 1.50 per unit (assumed REC price) for wind energy generator and Rs 3 plus Rs 3.50 per unit assumed REC price for solar energy generator] would be less than what it earns based on scheduled generation [Rs 5 per unit for wind energy generator and Rs 7 per unit for solar energy generator (assumed wind and solar tariffs respectively)], if it operates within 12% deviation. This is being consciously allowed to motivate

the Wind/Solar energy generator to remain within the desirable band of 12% deviation. This can be treated as an incentive for better forecasting.

If the actual generation is below 88%, the wind/solar energy generator would pay @ Rs. 4/kWh for the shortfall energy to the DSM Pool (may be reviewed periodically by the Commission through an Order). In addition, the wind/solar energy generator would buy RECs (equivalent to the shortfall energy) and transfer them to the buyer to enable it to fulfill its renewable purchase obligation. In this case (that is, in the event of deviation beyond 12%), there is a clear disincentive as the outgo for the wind/solar energy generator would be more than what it earns based on scheduled generation.

If the wind/solar energy generator over-injects, ideally it should not be paid for as the variable cost is zero. However, in order to encourage wind/solar energy generation, when the actual generation is in the range of 100% to 112% of schedule, the wind/solar energy generator would be paid @ Rs. 4/kWh for the excess generation (may be reviewed periodically by the Commission through an Order). In addition, the wind/solar energy generator would also be issued RECs for such excess generation. Here again, there is an incentive for the wind/solar energy generator for remaining within the band of positive 12%.

Beyond 12% on the positive side, the wind/solar generator would be issued only RECs for the excess generation. No payment would be made to such generators from the DSM Pool for generation above 112% of the schedule.

In the above process, the charges for deviation from schedule for wind/solar energy generator would be delinked from the frequency based charges as applicable under the DSM mechanism. It is also possible to argue that RE generation is to be treated as must run and hence, charges for deviation should not be linked to frequency. The mechanism also provides a payment cap for the charges payable by the wind/solar energy generator in different scenarios reducing the uncertainty. The 12% volume limits would provide an incentive to the wind/solar energy generator to make efforts to improve the forecast accuracy, minimize deviations from schedule and maximize his payoff. Another advantage achieved is that it provides enough signals so that the wind/solar energy generator does not game the system.

Some of the wind/solar generators, especially the embedded small wind/solar energy generators, may argue that it is difficult for them to adhere to the schedule within the specified limits of 12% on account of variability of the wind/solar energy

generation. It has been noted, however, that the special provisions/dispensations given for these wind/solar energy generators in the IEGC are not being utilized by the wind/solar energy generators to revise the schedules periodically. The scheme proposed in this paper is for the wind/solar energy generators whose scheduling is done by the RLDCs, and such wind/solar energy generators should make all efforts & investment for proper forecasting and scheduling of the generation. Further, as such generating stations are yet to come up, the necessary tools/techniques for forecasting may be made part of the capital investment. This is also essential from the perspective of secure & reliable grid operation.

Mytrah's Submission:

We request the Honorable Commission to consider the fact that wind/solar are infirm source and any deviation from the forecast or the schedule is not a willful action by the generator as it is totally dependent on the atmospheric conditions which are beyond the control of the generators. While acknowledging the need for a more stable grid to integrate more & more renewable energy into the grid without compromising on the security of it. However, the imbalance handling shall be handled with a joint responsibility to find a technical solution to achieve the objectives rather than penalizing the generators for the reasons which are beyond their control which will detrimental to the interests of the investors/ lenders and the growth of the industry would slow down.

The CERC has also considered wind/solar as a Non-firm power and clearly mentioned that RE generation is dependent upon nature's phenomenon and cannot be accurately predicted. Therefore, any commercial payment against Deviation Mechanism is unjustified and unreasonable.

We would like to request CERC to introduce the concept of wheeling and banking for interstate sale of power from wind/solar. The generation which is over and above to forecast/schedule should be allowed to bank and would be settled and paid based on provisions carved by CERC for interstate wheeling and banking instead of Deviation settlement mechanism for wind/solar.

Almost all wind/solar rich states have wheeling and banking provisions, Such banking provision is a necessity significant for infirm generation like wind/solar the same concern has been shown by APTEL in its order dated 21 September, 2011 in Appeal No.53, 94 & 95 of 2010 that it would be impossible to set-up the Wind Energy Units without the banking facilities due to the very characteristics of such power generation.

4. Fulfillment of RPO

The distribution licensee purchasing wind/solar energy would be using the wind/solar energy procurement to demonstrate compliance with the RPO in the respective State. There could be a difference in the quantity of RE contracted/scheduled and the energy actually delivered by the RE generator. Hence, a methodology must be available to handle the difference.

For the purpose of fulfilment of RPO by the buying utility, the 'scheduled energy' would be considered as the quantum of renewable energy procured by the concerned utility. On the supply side, if the wind/solar energy generator injects more than the scheduled quantum then REC may be issued to the generator equivalent to the excess energy generated for the green component. If the wind/solar energy generator injects less than the scheduled quantum, then it would have to procure RECs from the Power Exchanges equivalent to the shortfall quantum. It is also important to mention that solar RE generators would procure or get (as the case may be) Solar RECs and wind generators would procure or get (as the case may be) Non-solar RECs. The difference settled in terms of REC ensures indirectly that energy equivalent to the difference of schedule and actual has been physically injected into the system.

In order to ensure that RPO compliance is fulfilled, the quantum of RECs to be given to the wind/solar energy generator or the quantum of RECs to be procured by such generator to balance the energy difference be clearly specified in the DSM account published by the RPC of the Region where the wind/solar energy generator is physically located. This would also provide a monitoring mechanism for each wind/solar energy generator.

The above proposed methodology obviates the need for a physical settlement either in terms of revision of schedules to account for actual energy or in terms of operating a pool account as was being done under the erstwhile RRF mechanism.

Mytrah's Submission:

The CERC REC mechanism, the REC market has not seen any significant growth in last 4 years. Even with all regulations and procedures are in place the obligated entities are not taking the RPO regulation seriously because of lack of enforcement.

At present the generators are suffering the cash crunch of Total of Rs. 3317. 30 Crs. From REC as detailed below:

Solar inventory reached: 1780872 RECs X 9300 = 16, 56 2,109,600

Non Solar inventory reached: 11073929 RECs X 1500 = 16,610,893,500

To enforce the RPO, we request this hon'ble commission to provide a direct offset mechanism for under generation cases and let the generator inform the NLDC to direct offset the number of REC issued in generators account. There will be no need for the generator to be register as seller as well as buyer.

And same can be extended on all types of obligated entities such as utilities, captive, open access consumers. The power exchange floor price can be the reference price. The above recommendation is a better option, in the interest of encouraging renewable energy, than implementing the commercial penalties towards deviation in schedules.

5. Data Telemetry and Communication Facilities

The wind/solar energy generator whose scheduling is done by the RLDCs, shall provide full data telemetry and communication facilities to the concerned RLDC.

Mytrah's Submission:

We request this hon'ble commission to standardize the data telemetry and communication facilities requirement of RLDCs. For the purpose of speedy implementation same shall not be kept open ended.

6. Compliance to Technical Standards

The wind/solar energy generator whose scheduling is done by the RLDCs, shall comply with the technical standards such as for fault ride through, etc. as per the CEA Technical Standards for Connectivity of the Distributed Generation Resources Regulations 2013.

Mytrah's Submission:

We are in same view as of Commission

7. Other Issues

a. It is mentioned above that the quantum of RECs to be given or procured would be as per the DSM account issued by the RPC. However, effective monitoring and compliance mechanisms also need to be put into place to ensure the effective implementation of the proposed scheme. The Central Agency would be assigned the task of tracking and monitoring compliance by the wind/solar generators.

Mytrah's Submission:

We are in same view as of Commission, same shall be notified as procedure by this hon'ble commission.

b. The SERCs would need to be informed about the proposed mechanism in detail so that the scheduled energy quantum is accepted as energy procured towards RPO compliance of the buying utility in the concerned State. The entire scheme could be taken up in the meeting of the Forum of Regulators (FOR) to sensitize the SERCs.

Mytrah's Submission:

Interstate purchase of power from renewable energy sources shall be accounted by state as fulfillment of RPO

c. The wind/solar energy generators whose scheduling is done by the RLDCs and functioning as ISGS would be a new type of entity under the REC mechanism. As per the present scheme of things under the REC mechanism, the SNA provides accreditation and CA registers the RE generator and issues the RECs. At the Regional level, the RLDCs may be designated for verification of metering etc. for the ISGS wind/solar energy generator whose scheduling is done by the RLDCs. Based on the certification by concerned RLDC, the Central Agency may Register the wind/solar generator.

Mytrah's Submission:

We request this hon'ble commission to bring in draft notification introducing /amending the REC procedure.

d. The wind and energy generator who would be part of this scheme would need to act as both a "seller" and a "buyer" of RECs. Hence, under the present REC mechanism, such generator would be registered both as a buyer and a seller in the Power Exchange.

Mytrah's Submission:

We request this hon'ble commission to provide a direct offset mechanism for under generation cases and let the generator inform the NLDC to direct offset the number of REC issued in generators account. There will be no need for the generator to be register as seller as well as buyer.

In view of the aforesaid methodology, amendments have been proposed to the following regulations, via:-

- i. IEGC Regulations, 2010;
- ii. DSM Regulations, 2014 and
- iii. REC Regulations, 2010

Suggestions on Central Electricity Regulatory Commission (Indian Electricity Grid Code) (Third Amendment) Regulations, 2015

Central Electricity Regulatory Commission

Notification

New Delhi, the ___ March, 2015

No. _____. - In exercise of powers conferred under clause (h) of sub-section (1) of Section 79 read with clause (g) of sub-section (2) of Section 178 of the Electricity Act, 2003 (36 of 2003), and all other powers enabling it in this behalf, the Central Electricity Regulatory Commission hereby makes the following regulations to amend the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 including the first and second amendments thereof (hereinafter referred to as "the Principal Regulations"), namely:-

1. Short title and commencement - (1) These regulations shall be called the **Central Electricity Regulatory Commission (Indian Electricity Grid Code) (Third Amendment) Regulations, 2015,**

(2) These regulations shall come into force with effect from the date of their publication in the Official Gazette.

2. **Amendment of Regulation 1 of Part 1 of Principal Regulations:** Sub-Regulation (v) under Regulation 1.4 of the Principal Regulations, shall be substituted as under:-

"Part 6: Scheduling and Despatch Code: This section deals with the procedure to be adopted for scheduling and Despatch of generation of the Inter-State Generating Stations (ISGS) and scheduling for other transactions through long-term access, medium-term and short-term open access including complementary commercial mechanisms, on a day-ahead and intra-day basis with the process of the flow of information between the ISGS, National Load Despatch Centre (NLDC), Regional Load Despatch Centre (RLDC), Power Exchanges and the State Load Despatch Centres (SLDCs), and other concerned persons.

Most of the wind and solar energy generators are presently connected to intra-State network and in future are likely to be connected to the inter-state transmission system (ISTS) as well. Keeping in view the variable nature of generation from such sources and the effect such variability has on the inter-state grid, and in view of the large-scale integration of such sources into the grid envisaged in view of the Government of India's thrust on renewable sources of energy, scheduling of wind and solar energy generators covered under the control area of RLDCs, has been incorporated in this code."

Mytrah's Submission:

The IEGC 2010 is applicable for both interstate as well as intra state wind /solar generation. The proposed amendment to IEGC 2010 only dealt with the interstate sale of wind and solar generation, which is very limited in installed capacity as of now. As mentioned by CERC the most of the generation is connected to intra state network and sell power within state.

We would like to request clarity on the applicability of this regulation.

3. Amendment of Regulation 2 (Definitions) of Principal Regulations:

Sub-Regulation (eee) of Regulation 2 of the Principal Regulations, shall be substituted as under:-

(eee) "Pool Account" means regional account for (i) payments regarding Deviation Charges (Deviation Charge Account) or (ii) reactive energy exchanges (Reactive Energy Account) (iii) Congestion Charge, as the case may be;

Mytrah's Submission:

We would like to request again that commercial implication on generator for doing forecasting and scheduling should not be imposed.

4. Amendment of Regulation 2 of Part 2 of Principal Regulations:

Regulation 2.4.5 of the Principal Regulations, shall be substituted as under "2.4.5 RPC Secretariat or any other person as notified by the Commission from time to time, shall prepare monthly Regional Energy Account (REA), weekly deviation charge account, reactive energy account, and congestion charge account, based on data provided by RLDC, and deviation charge account for wind and solar energy generators whose scheduling is done by the RLDCs, based on data provided by SLDC/RLDC of the State/Region in which such generators are located and any other charges specified by the Commission for the purpose of billing and payments of various charges."

Mytrah's Submission:

The detailed billing and payment reports should be made available on REA/ RPC/RLDCs website for public view.

**5. Amendment of Regulation 5.5 of Part 5 of Principal Regulations:
Regulation 5.5.1 (b) of the Principal Regulations, shall be substituted as under :-**

"A daily report covering the performance of the regional grid shall be prepared by each RLDC based on the inputs received from SLDCs / Users and shall be put on its website. This report shall also cover the wind and solar power generation and injection into the grid."

Mytrah's Submission:

No Comments

6. Amendment of Regulation 6.2 of Part 6 of Principal Regulations: In

Regulation 6.2 of the Principal Regulations, the words "This code also provides the methodology for re-scheduling of wind and solar energy on three (3) hourly basis

and the methodology of compensating the wind and solar energy rich State for dealing with the variable generation through a Renewable Regulatory charge. For this, appropriate meters and Data Acquisition System facility shall be provided for accounting of UI charges and transfer of information to concerned SLDC and RLDC." shall be substituted by the words "This code also provides the methodology for re-scheduling of wind and solar energy generators whose scheduling is done by the RLDCs, on one and half hourly basis and the methodology of handling deviations of these wind and solar energy generators. For this, appropriate meters and Data Acquisition System facility shall be provided for accounting of DSM charges and transfer of information to the concerned SLDC and RLDC."

Mytrah's Submission:

We request the commission to standardize the software and hardware requirement for the purpose of forecasting and scheduling.

**7. Amendment of Regulation 6.4(2) of Part 6 of Principal Regulations:
Regulation 6.4(2)(b) of the Principal Regulations shall be substituted as under:-**

"(b) Ultra Mega Power Projects including projects based on wind and solar resources and having capacity of 500 MW and above"

Mytrah's Submission:

No Comments

8. Amendment of Regulation 6.5 of Part 6 of Principal Regulations:

Regulation 6.5 (23) of the Principal Regulations, shall be substituted as under :-

"(i) RE generation is uncertain and variable but uncertainty and variability can and should be minimized to the extent possible through proper forecasting. Accuracy of forecasts can be increased inter alia by maximizing geographic diversity in RE generation as the errors in forecasts tend to offset each other, the larger the number of generators covered and broader the area included in the forecasts. In order to maximize the accuracy of forecasts, meteorological models must incorporate data about maximum possible RE generators in as high a

resolution (spatial and temporal) as possible - e.g., wind turbine technical specifications, equipment failure, weather data (wind speed, temperature, pressure), etc. This data should be provided on a mandatory basis by the wind and solar generators to the concerned RLDC.

(ii) Forecasting would be done by the wind and solar generators as well as the concerned RLDC. The forecast by the concerned RLDC would be with the objective of secure grid operation. The forecast by the wind and solar generator would be wind-farm/solar facility centric and would form the basis of scheduling. The wind and solar generator will have the option of accepting the concerned RLDC's forecast for preparing its schedule or provide the concerned RLDC with a schedule. The concerned RLDCs may engage forecasting agency(ies) at the centralized level and prepare a schedule of inter-State renewable generating stations. Any commercial impact on account of scheduling based on the forecast would, however, be borne by the wind and solar energy generator.

(iii) The schedule by wind and solar power generating stations whose scheduling is done by the RLDCs (excluding collective transactions) may be revised by giving advance notice to the concerned RLDC, as the case may be. Such revisions by wind and solar energy generating stations shall be effective from 4th time block, the first being the time-block in which notice was given. There may be one revision for each time slot of one and half hours starting from 00:00 hours of a particular day subject to maximum of 16 revisions during the day.

(iv) The schedule of solar generation whose scheduling is done by the RLDCs, shall be given by the generator based on availability of the generator, weather forecasting, solar insolation, season and normal solar generation curve."

Mytrah's Submission:

We request this hon'ble commission to wait till the time such changes implemented in the system and run for a trail for 2 years to impose the commercial mechanism on wind/solar generators.

9. Amendment of Annexure-1 of Principal Regulations: Regulation 4 of the Annexure-1 of the Principal Regulations, shall be substituted as under :-

"The wind and solar energy generators whose scheduling is done by the RLDCs, shall forecast renewable energy generation at the following time intervals:

(i) Day ahead forecast: Wind and solar energy generation forecast with an interval of 15 minutes for the next 24 hours for the aggregate Generation capacity of 50 MW and above.

(ii) The schedule by such wind and solar energy generating stations whose scheduling is done by the RLDCs, and supplying inter-state power under long-term access and medium-term and short-term open access may be revised by giving advance notice to RLDC. Such revisions by wind and solar energy generating stations shall be effective from 4th time-block, the first being the time-block in which notice was given. There may be maximum of 16 revisions for each one and half hour time slot starting from 00:00 hours during the day."

10. Amendment of Annexure-1 of Principal Regulations: Para 5 of the

Annexure-1 of the Principal Regulations, shall be substituted as under:-

"The charges payable for deviation from schedule for the wind and solar energy generators whose scheduling is done by the RLDCs, shall be delinked from frequency and shall be accounted for and settled in accordance with the provisions of the Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) Regulations as amended from time to time."

11. Amendment of Annexure-1 of Principal Regulations: Paras 6, 7 and 9 of the Annexure-1 of the Principal Regulations, shall be deleted.

Mytrah's Submission:

The proposed mechanism will also revolve the projects around the commercial implications due to deviation from schedule. This would make it difficult for the generators to achieve financial closure for renewable projects due to uncertainty of stable revenue stream for repaying the debts to the bankers.

We request the hon'ble commission to introduce banking provision which is the very essence of wind operation and increase the band of deviation, as states having high installation may tend to vary more and have a negative impact.

We bring to the notice of hon'ble commission that the Govt of India has ambitious plans to develop the renewable energy projects for the sustainable development of the nation. Most of the state governments have also aligned their installation targets of renewable energy to achieve the goals set by the union government.

In order to achieve the targets set by the government, huge capacities of renewable energy shall be installed in the coming years, however, getting investments into the sector will be highly difficult with uncertainty about the revenue outcome of the projects.

Hence, we request the Hon'ble Commission to kindly ensure that the proposed regulations do not impact the Wind/ Solar energy generators badly.

In view of the above cited suggestions, we request your good selves to ensure that any action to be taken shall be in consultation with the generators to avoid negative impacts on the renewable industry. Further, the process of bringing stringent implications shall be gradual and with well-defined technical standards/guidelines. There are many such case studies available done by the utilities in the developed countries who have installed huge capacities of renewable energies into the grid. It is advisable to learn from their example and find a solution which supports the integration of higher capacities of renewable energy into the grid to reduce the dependence of the nation on fossil fuels.

We look forward to render our services with best of our abilities in the renewable sector for all times to come!

**Thanking you
Yours faithfully
For Mytrah Energy (India) Limited**



S.S. Murali

Head – Asset Management