Ref No. CERC/082018/1 **Date: 29th August 2018**

To,

Shri Sanoj Kumar Jha,
Secretary,
Central Electricity Regulatory Commission (CERC)
3rd & 4th Floor, Chanderlok Building,
36, Janpath,
New Delhi-110 001

Email Id: secy@cercind.gov.in

Subject: Comments / suggestions on draft Discussion Paper on "Re-Designing Real Time Electricity Market in India"

Ref: CERC Public Notice no. RA-14026(11)/2/2018-CERC dated 25th July 2018

Dear Sir,

This is with reference to the above referred public notice vide which CERC had invited comments / suggestions from all the stakeholders in reference to the subject cited Discussion Paper.

In this matter, please find enclosed (Annexure I) relevant comments / suggestions from my end.

It is requested to consider the detailed points while finalizing the subject cited regulation.

Thanking You,
Yours Sincerely,

(Janmejaya Mahapatra)
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Enclosure: Annexure I – Comments / Suggestions on draft Discussion Paper on "Re-Designing Real Time Electricity Market in India"

Annexure - I

Comments / Suggestions on draft Discussion Paper on

"Re-Designing Real Time Electricity Market in India"

1.0 General

It is commendable on the part of the Hon'ble Commission to try to ease the mess and clear out the confusion that is prevalent in the present-day power sector, as much as possible, through strategic interventions. The four such landmark changes that are in the pipeline are:

a. Deviation Settlement Mechanism and related matters (Fourth Amendment) Regulations, 2018
b. Grant of Connectivity, Long-term Access and Medium-term Open Access in inter-State Transmission and related matters (Seventh Amendment) Regulations, 2018
c. Open Access in inter-State Transmission) (Fifth Amendment) Regulations, 2018
d. Pilot Project on 05-Minute Scheduling, Metering, Accounting and Settlement for Thermal / Hydro, and on Hydro as Fast Response Ancillary Services (FRAS).

The goal to take the Power Exchange to the next level, as envisaged in the Discussion Paper on Redesigning Real Time Electricity Market in India, is perfectly in sync with the above four endeavours.

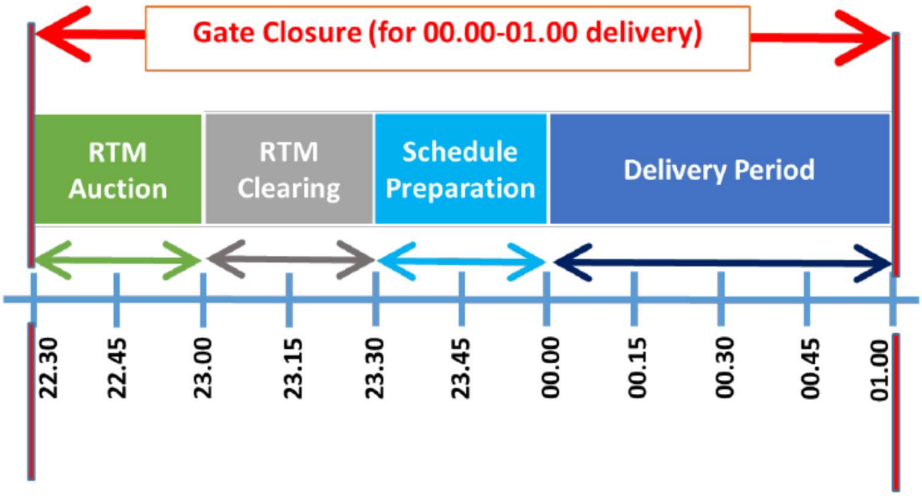
Since India is in the cusp of a major transition with regard to the integration of the high volume of the renewable energy into a grid which is not expanding at a rate proportionate to the size of the former, all steps aimed to ease the burden should be taken cautiously. In this regard the following observations on the discussion paper may kindly be considered.

2.0 Clarity on the important and critical concept of "Gate Closure" (Para 5.5 & 5.6 of the Discussion paper)

2.1 Gate Closure has been defined as "*the point of time at which the freeze / finalisation occurs for a Delivery / settlement period. After Gate Closure, forward looking data for delivery / settlement period, such as physical information to the system operator and contract (schedule) volumes, cannot be changed and the system operator takes over the responsibility for balancing the system.*"

Gate Closure, as a restriction to effect schedule revision and vesting all controls to the system operator, is not new and is in vogue even now – for the power exchange transactions (Day Ahead, Intraday and contingency Markets) the Gate Closure is in force for the whole day of delivery while for bilateral contracts (Long, medium and short term) it is for three blocks - two clear blocks before the block in which the revision is sought for.

Figure 7 Concept of Gate Closure



2.2 The Concept of Gate Closure as explained in Para 5.6 of the discussion paper doesn't explicitly mention whether the gate closure for the schedule revision shall be applicable to the Long term PPAs.

Assuming that the Gate Closure would be uniformly applicable to all contracts regardless of the tenure, the change is significant.

Presently the revision can be requested for any period, with a minimum possible resolution of one block (of 15 minutes), in any previous block which is two clear blocks ahead of the first block from which the schedule revision is being sought for. The present gate closure mechanism freezes all schedule revisions for next three blocks, standing on any block.

With the envisaged Gate Closure process, there will be freeze on the schedule revision for 10 time blocks – 6 Time Blocks before the 4 Time Blocks of delivery.

2.3 While affecting such a change, the schedule revision process of Discoms and Generators under long-term PPAs cannot and should not be undermined. A Discom would definitely maintain some spinning reserve to meet the imbalance instead of going to the market on every occasion. While the imbalance created (mainly due to Renewable Energies) would be generally met by the thermal generation sources, restrictions due to gate closure for such large durations would be detrimental to the discoms and would result in opportunity loss.

2.4 All long term PPAs do not permit supply of power from alternate sources in case of outage of the generating unit. Neither schedule revision for 10-time blocks nor permission to supply power from alternate source is going to be extremely painful for the generators financially in case of eventual outage of any unit, since the shortfall for such large duration has to me made up either through DSM or RTM purchase as envisaged here.

2.5 However, there is no gainsaying the fact that the RTM redesign is for the betterment of the sector as a whole. Therefore, the same should be endeavoured to be implemented with finer resolution. It is a fact that even at present, the whole process of auction, clearing and schedule preparation is largely automated and there will be only marginal augmentation requirement to hasten the whole process.

2.6 The DSM 4th Amendment will effectively shift a major portion of the energy presently being settled through DSM to power exchange, mostly DAM. As has been observed in the other advanced countries, the broad spread of the short-term market (excluding bilateral contracts) which accounts for 5% of the total energy transacted in Indian Grid is expected to be as follows:

Day Ahead Market (DAM) - Approximately 4%
Real Time Market (RTM) - Approximately 0.5%
DSM - Approximately 0.5%
As per the present trends, the RTM quantum is expected to remain between 12 to 24 mUs per day for the next two years. Therefore, neither the number of bids is expected to be very large nor the Clearing & Scheduling process is expected to be very onerous.

2.7 Assuming that transition to the 5 – minute time block regime is only a matter of time, the 30 minutes time period (6 nos. of 5 – minute time blocks) for RTM clearing and a similar time period for preparation of schedule is too long. Both these activities should be possible to be conveniently completed in 30 minutes.

2.8 The Delivery period may also be reduced to 45 minutes and the auction time could be reduced to be for a duration of 15 minutes since the number of blocks for which the auction is being held is only 3.

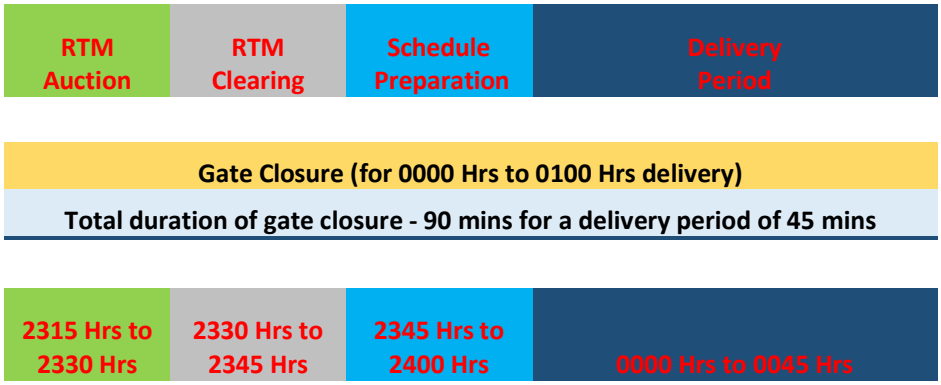
This will result in an effective gate closure time of 90 minutes i.e. 6 Time Blocks as follows:

Duration of RTM Auction – 15 Minutes

Duration of RTM Clearing – 15 minutes

Duration of Schedule Preparation & Communication – 15 minutes

Duration of Delivery Period – 45 minutes



The auction platform should have a facility wherein a market participant can bid for a delivery duration more than the delivery period of, say, 45 minutes. While the price of the immediate 45 minutes shall be promptly discovered (for which the clearing shall be held in the next 15 minutes), the subsequent clearing will consider the volume and the price which were bid earlier by the participant for the next 45-minute delivery period and so on. This should continue till the participant doesn't withdraw or alter his bid. This would avoid repeated placing of the bid throughout the day, both by the generators as well as the consumers.

3.0 Issues on the Settlement in the proposed Real Time Market (Para 5.7 of the Discussion paper)

3.1 It is indicated that *All day-ahead schedules (as a matter of principle) are "firm financial commitments". Firm financial commitment means that a supplier (generator or trader) receives revenue from day ahead schedules regardless of real time output of its generation unit*.

Again, it doesn't explicitly mention whether the "Day ahead Schedule" as specified in the above para shall be equally applicable to the Long term PPAs. If it is applicable, then the "Gate Closure" as referred to in the discussion paper is only relevant to the bidding process and not to the schedule revision, since the gate closure for the schedule revision shall be in force for the whole day of delivery, akin to power exchange transactions.

3.2 Examples have been furnished of two deficit scenarios – one in case of a generator falling short by 10 MWHr from its agreed generation schedule on a day and a discom drawing 10 MWHr more than its agreed drawal shedule. It is well known that the present crisis is more as a result of "problem of plenty" rather than shortfall. Two issues are worth considering in this regard:

3.2.1 Process of Settlement: Shortfall

The discussion paper states as follows:

If a supplier is scheduled 40 MWh on day ahead ……and produces only 30 MWh in real time, it must purchase 10 MWh (to match day ahead commitment) from real time market at real time price. This "purchase" by the generator is not for sale to the discom – this must be construed as generator making up for shortfall from its day-ahead commitment (day ahead schedule).

It has not been clarified whether the shortfall has to be made up on a real time basis starting from the next immediate auction cycle or it is envisaged to be only a financial settlement to be completed in the next day. Since the proposed DSM 4th Amendment is set to link the DSM price to the DAM price and RTM price is also expected to be near to (or slightly less than) the DAM price, this repeat transaction is not expected to serve any purpose except to project a greener picture wherein least energy (less than 1%) is settled through system imbalance handling and major portion of the energy requirements (more than 99%) is settled through Day Ahead Scheduling or Real Time Market.

This requirement of settling deficit or surplus through RTM seems to have been incorporated to facilitate compliance of the requirement of keeping Actual Generation (AG) as a percentage of Scheduled Generation (SG) between 101% and 99% (± 1% band). The relevant stipulation of the Draft DSM 4th Amendment is produced below for ready reference:

4.4 "Provided also that the total deviation from schedule in energy terms during a day shall not be in excess of 3% of the total schedule for the drawee entities and 1% for the generators and additional charge of 20% of the daily base DSM payable / receivable shall be applicable in case of said violation".

Clarity also needs to be brought whether the above settlement needs to be on the DAM Round-the-Clock (RTC) average price base or the RTM price as discovered during the periods of deviation.

3.2.2 Process of Settlement: Surplus

3.2.2.1 Surplus with Discom

Slightly altering the example furnished in the discussion paper, we encounter a situation wherein the discom had scheduled to draw 100

MWhr and in view of the decrease in load or increase in its own generation, requires a less load of 90 MWhr and therefore has to sell 10 MWhr in Real Time Market. The price obviously is going to be low.

And a generator can under-generate and buy an equal quantum of low-priced energy at suitable time of the day so as to comply with the (-1%) limit as set forth in the DSM Regulations. If this is the essence of this stipulation, then it is just redesigning of the market purely through accounting.

3.2.2.2 Surplus with Generator

Flipping the example furnished in the discussion paper, suppose a supplier had scheduled to supply 40 MWhr as per the Day Ahead Schedule and the unit is running mostly at the technical minimum level. If one of the beneficiaries decreases its schedule (assuming that gate closure is applicable only between start of RTM auction process and till the end of Delivery Period and not for the entire day) and since the generator cannot reduce its generation further (being at technical minimum level) has to over-inject. The generator then has to buy back an equal quantum of energy at suitable time of the day so as to comply with the (+1%) limit as set forth in the DSM Regulations.

3.2.3 Scenarios cited: Inability to capture the real problem

The scenarios cited unfortunately do not depict the real problem that is encountered in the grid operations on a daily basis.

Scenario – 2 depicts a situation when RE output goes intermittently high and sells at discovered low Real Time price and the same is bought by the thermal generator. It has assumed purchase of 30 MWhr – needless to say to the (+1%) limit as set forth in the DSM Regulations has to be complied with.

This purchase is understandably to make up for the under-injection that it can resort to during the period of over generation by the RE source. Again, while

the same could well be taken care commercially through the DAM price linked DSM price as is being envisaged in the 4th Amendment to the DSM Regulations.

Similarly, **Scenario – 3** depicts a case of a generator and discom tied up in long term PPA. There are conflicting indications of whether schedule revision is possible till the gate closure of the Real Time Market or it is the Day Ahead schedule which remains in force throughout the day without any further revision, leaving all further transactions either to DSM or RTM.

It also indicates that the generator can sell the un-requisitioned surplus in the Real Time Market. Present PPAs makes it mandatory on the part of the generator to seek prior approval (which the discom can refuse) before committing any such capacity to market. Necessary amendments in the PPA shall therefore be required to implement this.

The enabling provision available for the discoms in the present PPAs to sell the surplus power from any generator and earn the entire revenue was never properly used.

4.0 Issues on the Treatment of deviation from the Real Time Schedule (Para 5.9 of the Discussion paper)

Early implementation of the Fourth Amendment to the DSM regulations will greatly enable the smooth implementation of the RTM. The former is expected to ensure much more transparent price discovery in the DAM since it is expected to compel the discoms to evaluate their Supply Vs Demand scenario in more detail on a day ahead basis. If it results in shifting of about 80% of the present DSM volume to DAM, the RTM and DSM combined will be required to cater to about 1% of the total energy requirement.

It is therefore suggested that Fourth Amendment to the DSM regulations should be implemented first before implementing the Real Time Market.

5.0 **Conclusion**

The following are the main suggestions for the Real Time Market (RTM).

a. The Concept of Gate Closure as explained in Para 5.6 of the discussion paper doesn't explicitly mention whether the gate closure for the schedule revision shall be applicable to the Long term PPAs.

b. Restrictions (and resultant inaction) due to gate closure for such large durations would be detrimental to the discoms and would result in opportunity loss.

c. Neither schedule revision for 10-time blocks nor permission to supply power from alternate source is going to be extremely painful for the generators financially in case of eventual outage of any unit, since the shortfall for such large duration has to me made up either through DSM or RTM purchase as envisaged here.

d. RTM redesign is for the betterment of the sector as a whole. Therefore, the same should be endeavoured to be implemented with finer resolution.

e. The auction platform should have a facility wherein a market participant can bid for a delivery duration more than the delivery period. This would avoid repeated placing of the bid throughout the day, both by the generators as well as the consumers.

f. It doesn't explicitly mention whether the "Day ahead Schedule" as specified in the above para shall be equally applicable to the Long term PPAs. If it is applicable, then the "Gate Closure" as referred to in the discussion paper is only relevant to the bidding process and not to the schedule revision, since the gate closure for the schedule revision shall be in force for the whole day of delivery, akin to power exchange transactions.

g. Necessary amendments in the PPAs shall be required to automatically allow a generator to sell the un-requisitioned surplus on the basis of day ahead scheduling in the Real Time Market.

h. The enabling provision available for the discoms in the present PPAs to sell the surplus power from any generator and earn the entire revenue was never properly used.

i. Fourth Amendment to the DSM regulations should be implemented first before implementing the Real Time Market

j. The staff paper doesn't throw any light on the price likely to be discovered in the Real Time Market (higher / lower than the DAM) and the relative volume that is expected to be traded as compared to DAM, based on the experience of the advanced countries like USA & EU.