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सं/No.	SRPC/SEII/2018	दिनांक / Date		29.08.2018	

Secretary  
 Central Electricity Regulatory Commission  
 3 rd & 4 th Floor, Chanderlok Building,  
 36, Janpath,  
**NEW DELHI – 110 001**

**Subject:** Discussion Paper on “Re-Designing Real Time Electricity Market in India

Sir,

Kind reference is invited to Public Notice No RA-14026(11)/2/2018-CERC dated 25th July, 2018 on the subject. In this regard, the comments / suggestions of SRPC Secretariat are enclosed for kind consideration, please.

Thanking you.

Encl: as above

Yours faithfully,



(S.R.Bhat)  
 Member Secretary

Discussion Paper on Re-designing Real Time Electricity Markets in India –  
Comments of SRPC Secretariat

**A. RRAS Mechanism**

*2.4 There are also some other instances reported when the ancillary services have been used for a still longer period. Use of regulation down or up services for such a long duration induces passive dependence of the discoms on this mechanism for their real time energy need. Such passivity is further accentuated as the AS costs are not “directly” incident on the utilities that were responsible for causing deviation. When demand is increasing in real time, the states whose demand is increasing should ideally buy power in the Intraday Market. Ancillary services or DSM/UI cannot and should not act as substitute for energy trade at intra-day time horizon.*

**SRPC Secretariat Comments**

It has been very rightly stated that present RRAS mechanism induces **passive dependence by the Discoms**. Cost of Ancillary Services are not **‘directly’ booked to utilities responsible for system balance** (deviation is not directly controlled through RRAS). For the DISCOM to ideally go for scheduled transactions, **the design of present RRAS may need to be addressed**. Thus, **booking the Ancillary Services cost to defaulting utilities and using the RRAS for optimal duration of time may need to be considered**.

**B. Un Requisition Surplus (URS)**

*2.8 This provision of right to recall is meant to provide flexibility to the generators to adjust their output and the discoms to meet their contingent demand closer to real time. But the fallout is that sanctity and firmness of schedule is affected in the process. Seen from the generator’s point of view, any generation capacity which remains un-utilised on day-ahead horizon cannot participate in the intra-day market as the original beneficiaries (discoms) have the right to recall such contracted generation at any time. Given that the discoms commit to bear the*

*fixed cost for such plants, they claim to have inherent right to recall and any such request is to be honoured from the fourth time block ahead. While the rationale is appreciated, it remains a fact that this often leads to sub-optimal utilisation of generation resources and also limits liquidity for the intra-day market. The un-requisition surplus remaining available and un-dispatched over the period (please see the figure below) bears out this point.*

### **SRPC Secretariat comments**

There are certain aspects which need to be considered in respect of URS. States are mandated to **maintain reserves** which they may maintain in intra-state generators or in ISG Stations. Though these reserves may reflect as URS, but they are actually reserves. With experience in trading, RE ingress etc states have also been proactive in selling the surplus (could have been URS) on their own. During other times they are giving consent to the generators for URS sale. **If the URS sale is not made through by generator or the state it comes back as URS to respective state. If these factors (reserve, return of URS) are considered there may be very little URS available which is locked up and would have to be liquidated.** Further as pointed out this is closest to real time product available for system operators to control their Deviations. **Therefore it is suggested that both RTM and URS availing/surrendering (within 4 time blocks) may run in parallel.** Further the issue of the FC liability shifting to the availing beneficiary in case of URS makes the states to go for different strategy. If the URS is likely to be availed by other beneficiary they will not give consent to generator, and if the consent is given the generator finds economic options in the market. The FC liability can remain on the original beneficiary so as to improve the volume in the RTM.

Importance of URS for system operations:

Un requisition surplus is assumed to be the power available but not utilized, where as it is the spinning reserve kept on bar for any contingency as this is the only power that can be rescheduled in shorter duration of 45 Minutes ( effective from 4<sup>th</sup> time block). In case such power is sold in market then the system operator would lose the flexibility in real time operation. In surplus system with high RE penetration such reserve are very much required and should not be perceived as sub optimal utilization.

Un requisition surplus is computed as Declared capacity of the station – Schedule of the station.

Whereas actual Un requisition surplus is Declared capacity of the station – sum of Requisition.

The difference between the two equations is ramp rates declared by ISGS. As per the studies carried out by USAID all generators are assumed to have ramp rates of at least 1%, whereas per RRAS declaration and scheduling procedure each station has ramp rates of 0.5 % to 0.68 %. Low ramp rates hamper optimal utilization of plant capability and also reflect as URS.

In many cases when No Objection is issued by beneficiaries, and thereafter during any contingency occurs, right to recall of beneficiary is lost thereby hampering system operation. In certain cases it is observed that ISGS DC is less than Schedule since ISGS has sold power in non-flexible market. In real time various operating contingency in station may result in decreased DC, while schedule could not be revised, resulting into Deviation.

Considering the present power scenario, URS may need to be viewed as spinning reserve for aiding system operation.

### **C. Gate Closure**

*4.8 Another important feature of advanced markets is the concept of Gate Closure. This is common in Europe as well as US markets. This implies that at some point before real-time, contracts (schedules) are frozen/finalized for the Delivery/Settlement Period. The point of time that the freeze/finalization occurs for a Delivery/Settlement Period is called Gate Closure. After Gate Closure, forward looking data for the Delivery/Settlement Period, such as physical information to the System Operator and contract (schedules) volumes, cannot be changed and the system operator takes over the responsibility for balancing the system. This is considered essential for the sake of ensuring reliability.*

#### **SRPC Secretariat comments**

It has been rightly stated that the concept of closure is that **system operator takes over the balancing the system and no further scheduled transaction is permitted.** It needs to be kindly noted that Gate Closure is not to facilitate another scheduled transaction. The required reserves (secondary & tertiary) needs to be made available to system operator.

*5.6 For operationalizing real time markets, the schedules decided at the end of RTM clearing have to be both financially and physically binding. For this, the concept of Gate Closure is to be introduced.*

#### **SRPC Secretariat comments**

It appears that the concept of Gate Closure as mentioned under clause 5.6 is not in consonance with what is stated under clause 4.8. Both rescheduling and real time market can coexist. After Gate Closure, System Operator steps in.

It is mentioned that there would be gate closure at 22:30 for delivery between 00 hrs to 01 hrs. However, being an auction based market there is no certainty that the bids would be cleared. Hence, if the states are allowed to re schedule 4 blocks ahead, the real time market may not get affected.

Gate closure – The last opportunity for Market players to revise the Schedule for the approved transaction. In the present scenario the time line for revision is based on the type of transaction.

Type of Transaction	Gate Closure – ( When System operators can change schedule)
Long Term	4 <sup>th</sup> Time Block
Medium Term	4 <sup>th</sup> Time Block
Short Term ( Bilateral)	4 <sup>th</sup> Time Block --- In case of forced outage. 2 Days --- In case request made by applicant.
Short Term (Collective)	Firm Schedule – No revision allowed.

#### D. RTM for Backing Down or Reduction in Drawal

*5.5 Proposed Real-time Market design: It is proposed to re-design the intraday market mechanisms as follows:-*

*The markets shall be based on double sided closed auctions with uniform market clearing price.*

*The real time market shall be conducted once in every hour for delivery in four fifteen minute blocks in each hour.*

*Such faster transaction/settlement requires automation, and the Commission has already initiated action on this (through amendments in regulations to implement National Open Access Registry). Timelines for Real Time Markets (RTM): RTM will*

involve double sided closed auctions with Uniform Market Clearing Price, with following timelines:-

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### 5.7 Settlement in the proposed Real Time Market

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#### Scenario 1: Case with significant intermittent resources

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Thermal unit must maintain supply and demand balance, which explains high real-time price - Sells 30 MWh at real-time of INR 9000/MWh

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#### Scenario 2: Case of unexpectedly high intermittent resource output

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Thermal resource buys back 30 MWh in real-time at INR 2000/MWh

#### SRPC Secretariat comments

It appears that there would be two separate auctions for UP & Down RTM (thermal price for up is INR 9,000/MWh while for down it is INR 2,000/MWh. There is a need for separate Down RTM which needs to be adequately and clearly covered.

#### E. Settlement in RTM and DSM

5.7 Settlement in the proposed Real Time Market: 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.

If a supplier is scheduled 40 MWh on day ahead at a price of INR 2500 / MWh, it receives INR 1,00,000 for sales. Any shortfall or surplus from day-ahead generation schedule **shall be rebalanced in real-time market (unlike in the existing system where such deviations are settled through DSM)**. If a supplier 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).

Same logic applies to a discom / buying entity. If it is scheduled (day ahead) to draw 100 MWh for INR 4000/MWh (contract price) it pays INR 4,00,000 regardless of real-time consumption. If the discom / buying entity consumes 110 MWh, it **must buy additional 10 MWh** in real-time market at real-time price.

If the load-serving entity consumes 90 MWh, it sells 10 MWh not consumed in real-time market at real-time price.

**Real Time Markets must, therefore, be such that they allow generators / discoms to correct their positions in the real time markets, but with financial commitment for each such transaction.**

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5.9 Treatment of Deviation from Real Time Schedule: The real-time market is financially and physically binding. 13 Resources (Generators / DISCOMs / Traders / OA Consumers) must follow dispatch instructions. Failure to follow will attract charges under Deviation Settlement Mechanism (which eventually need be indexed to RTM prices as the next step to linking DSM price vector to DAM price)

#### **SRPC Secretariat comments**

It is stated that for supplier, generation schedule shall be rebalanced in real-time market (unlike in the existing system where such deviations are settled through DSM). The Real time market still has a delay of 01:30 minutes. The real time market can help generators / discoms to correct their positions only if it can forecast the error (in case of DISCOM) at least 01:30 minutes ahead. In case of generator it had option of revising DC (for LTOA/ MTOA) which also be effected from 4th time block but no option in case of short term (except in the case of forced outage). RTM can come into play to help to correct deviation which could be there after 01:30 minutes. The real time error upto next 0130 hours would still be through DSM only.

#### **Benefit of RTM for Discoms**



*It is expected that liquidity in the proposed RTM will increase because of the design change in the form of auction and gate closure.*

#### **SRPC Secretariat comments**

The liquidity in the RTM may increase with two separate auctions (Up & Down), minimizing the delivery as close to real time (present mechanism takes around 90 minutes) (it may need to be brought down to 45 minutes, 15 minutes or even 5 minutes). Other measures include allowing re-scheduling and RTM in parallel, delinking the FC liability for URS, RRAS design modification and DSM Regulations modifications (as already suggested by Hon'ble Commission). Gate Closure concept should be for System Operator to take over along-with mandated reserves in both directions.

5.8 Transmission Corridor Allocation and Congestion Management: Given the shorter duration of transaction in the Real Time Market, it would be desirable that POSOCO declares in advance the transmission corridor margin available for real-time transaction. Accordingly, Power exchanges shall factor in the said margin available while clearing the market in Real time. The congestion management shall be handled as per the existing practice including by way of market splitting.

The transmission corridor margin available for real-time transaction depends on two factors

- a) Available Transmission Corridor ( Assessed through Load Flow studies and Nodal Load Generation Balance)
- b) Transaction already booked under ATC.

In present scenario transaction already booked is considered with 50 % counter flow benefit. If no schedule revision is allowed then as actual schedule is known and should be considered for calculating margin available for real-time transaction.

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