CENTRAL ELECTRICITY REGULATORY COMMISSION

NEW DELHI

Petition No. 01/SM/2016 (Suo-Motu)

Coram: Shri Gireesh B. Pradhan, Chairperson
Shri A. K. Singhal, Member
Shri A. S. Bakshi, Member
Dr. M.K. Iyer, Member

Date of Order: 29th February, 2016

IN THE MATTER OF

Determination of mark-up for delivery of Regulation Up Services, under Central Electricity Regulatory Commission (Ancillary Services Operations) Regulations, 2015.

ORDER

The Central Commission notified the Central Electricity Regulatory Commission (Ancillary Services Operations) Regulations, 2015 (hereafter termed as the 'ASO Regulations'), on 13th August 2015. For implementation of Reserves Regulation Ancillary Services (RRAS), the first step is to enable frequency control through utilization of surplus capacity available in inter-State generating stations (ISGS) or through Regulation Down instructions on ISGS.

2. Regulations 13.3 and 13.4 of the ASO Regulations are provided as under:

"13.3 The RRAS Provider(s) shall be paid at their fixed and variable charges, with mark-up on fixed cost, as decided by the Commission through a separate order from time to time in case of Regulation Up services for the quantum of RRAS scheduled, from the Regional Deviation Pool Account Fund.

Provided that, the fixed and variable charges allowed by the Commission and as applicable at the time of delivery of RRAS shall be used to calculate the payment for this service and no retrospective settlement of fixed or variable charges shall be undertaken even if the fixed or variable charges are revised at a later date.

13.4 The RRAS Provider(s) shall adjust the fixed charges to the original beneficiaries for the quantum of un-requisitioned surplus scheduled under Regulation Up service."

3. In pursuance of the aforesaid provision in the regulation, the Commission issued order proposing mark-up for the purposes of regulation up ancillary services vide public notice Petition No. 01/SM/2016 on 12th Jan, 2016. Comments were invited from all stakeholders till 29th Jan, 2016.
4. In response, written comments/suggestions/objections were received from the following stakeholders:
   1) GUVNL
   2) GRIDCO
   3) TATA POWER
   4) NTPC

The important issues raised by the stakeholders, and analysis and decision of the Commission thereon are presented below.

1. Principle of payment to Regulation Up service provider

Commission's Proposal

1.1. "The RRAS Provider(s) shall be paid at their fixed and variable charges, with mark-up on fixed cost, as decided by the Commission through a separate order from time to time in case of Regulation Up services for the quantum of RRAS scheduled, from the Regional Deviation Pool Account Fund".

Comments Received

1.2. GRIDCO has submitted that when the Ancillary Services Operations would restore the Frequency Level at desired level, there may not be any/appreciable deviation to the schedule vis-a-vis drawl quantum of energy, for which there may be reduction in flow of fund to the Regional Deviation Pool Account Fund. No alternate mechanism of payment to the Reserves Regulation Ancillary Services (RRAS) Providers has been prescribed in the above Draft Regulations in case there is insufficient fund in the Regional Deviation Pool Account Fund, Alternate source of funding to the RRAS Providers in case of insufficient fund in the Regional Deviation Pool Account Fund may be prescribed in the above Regulations.

1.3. TATA Power has suggested that Merchant capacity (Including Captive with surplus generation) should also be eligible for RRAS. Considering the huge planned capacity addition of renewable energy where there is frequent fluctuation in the generation, there is a need to plan capacity under RRAS to complement the renewable energy generation. So the Merchant capacity be allowed for RRAS. Suitable mechanism be explored for determining remuneration towards Fixed cost, Variable cost and Mark up.

Commission's Analysis and Decision

1.4. GRIDCO has expressed concern on alternate mechanism of payment to RRAS providers, should there be insufficient funds in the regional pool account. The Ancillary Services Operations Regulations 2015 state that if there is a deficit in a regional pool account due to implementation of Ancillary Services, it could be covered by other regional deviation pool accounts. Relevant provision of the regulation is as follows:

"13.2 The payment to RRAS Provider(s) shall be from the Regional Deviation Pool Account Fund. Deficit, if any, in the Regional Deviation Pool Account Fund maintained by an RLDC due to despatch of Ancillary Services, shall be made up by Regional Deviation Pool Account Fund maintained by other RLDCs."

1.5. Tata Power has suggested that merchant capacity should also be eligible for participation in RRAS. In this context, the Commission clearly stated in the Statement of Reasons (SOR) accompanying the Principal Regulations that: "*Based on the experience of implementation of the present framework, it would be scaled up to cover other forms of ancillary services and other generating stations and reserves available in the country."*

2. Calculation of incentive to stations excluding schedule under RRAS

Commission's Proposal

2.1. "It is to be noted here that the schedule under Ancillary Services Regulation is not proposed to be considered for PLF linked incentive for the generating station. That is, if the PLF goes beyond 85% only on account of schedule under Regulation Up service, the generator shall not receive the incentive under CERC (Terms and Conditions of Tariff) Regulations, 2014. Thus, the calculation of incentive shall be only based on schedule from beneficiaries, excluding schedule under RRAS."

Comments Received

2.2. NTPC has observed that for Regulation Up service, the station with lowest variable cost would be called first. Thus, it is most likely that such low cost generating station will have PLF of 85% or more. The mark-up charges above variable cost made available to such generating station is envisaged to be 50p/kWh, which in any case the station would have got for its generation. Thus effectively, it could not get anything for providing the service. NTPC has submitted that the mark-up charge of 50p/kWh maybe made available to such generating station in addition to nominal incentive which it is entitled to get as per Tariff Regulation 2014-19. It has been further submitted that Ancillary Service Regulation envisage that there shall be no retrospective adjustment for the energy charge received by generating station from the pool any upward revision of the ECR with respect to previous month on account of higher coal price, freight, adjustment billing, higher blending etc. would need to be absorbed by the generating station. Therefore station with PLF of more than 85% may get less than 50Paisa/kWh due to absorption of increased energy charge over the previous month. In view of above, NTPC has pleaded that the mark up charges may be made available to the generating station in addition to the incentive if it is eligible as per Tariff Regulation 2014-19.

2.3. Further, NTPC has stated that there would always be retrospective revision of Fixed Charges due to true up order of Hon'ble Commission. The Regulation envisages that fixed charge received by the station from the pool would be returned to original beneficiary. To ensure full recovery of fixed charges after true-up, the order may please provide that in respect of generation provided for Regulation-UP Service, the liability for subsequent adjustment of Fixed Charges would remain with original beneficiaries.

Commission's Analysis and Decision

2.4. NTPC has pleaded that a 50p mark-up for Regulation Up Service is insufficient, especially in case where PLF goes beyond 85% and the generator would have received it in any case. It is emphasized here that schedule under Ancillary Services shall be treated separately, and will have no bearing on the incentive calculation under Tariff Regulations. Thus, the mark-up for Regulation Up is not intended to be tied to the incentive in any way.

2.5. Retrospective adjustment of fixed and variable charges shall not be allowed, as that is beyond the scope of this order. The relevant proviso to Regulation 13.3 of Principal Regulations stating this unequivocally is:

"Provided that, the fixed and variable charges allowed by the Commission and as applicable at

the time of delivery of RRAS shall be used to calculate the payment for this service and no retrospective settlement of fixed or variable charges shall be undertaken even if the fixed or variable charges are revised at a later date.”

2.6. Thus, the Commission retains the proposed clause with no changes.

3. Setting mark-up for Regulation Up service at 50p/unit

Commission’s Proposal

"Since the ISGS shall be required to comply with the instructions of concerned RLDC for Regulation Up service, the Commission feels that the incentive for Regulation Up service should be equivalent to incentive for the generating stations for achieving PLF beyond 85%. This is expected to sufficiently cover any additional operating expenses incurred.”

"Based on the above rationale, the Commission proposes to set the mark-up for participation in Regulation Up Ancillary Services at 50 paise/unit."

Comments Received

3.1. According to GRIDCO, the view that incentive for Regulation Up service should be equivalent to incentive for the generating stations for achieving PLF beyond 85%, may not be logical, as the Generator is liable to be incentivized at a PLF beyond 85%, whereas in case of Ancillary Regulation Up Service, the Generating Station is not bound to operate beyond 85% capacity. Even, any ISGS, operating on part-load and which has not received full requisition shall be eligible to participate for providing the Reserves Regulation Ancillary Services as per Sub-Regulation 5.1 of CERC (Ancillary Services Operations) Regulations' 2015. As per Draft Regulation No.4, "mark-up shall be applied to fixed cost, and shall be decided based on factors such as age, ramp rate, loss of efficiency, additional wear and tear of the unit, etc. It is clarified that both the generating station and the original beneficiary(ies) are being remunerated through payment of fixed and variable charges for providing Regulation Up service. The mark-up seeks to only compensate for the additional wear and tear or loss in efficiency, if any, that may be caused due to increased ramp up and ramp down cycles under Ancillary Services scheduling". As per Draft Regulation No. 6, "A similar approach is proposed to be adopted in case of Regulation Up services; however, data on ramp rate, loss of efficiency and additional wear and tear (if any) is not available at this point of time. The Commission feels that this data shall be gathered and compiled over time once the Ancillary Services Regulations are implemented by NLDC and RLDCs which will help quantify the requisite compensation". As per the above stipulations, the Mark-Up is intended to compensate the Generator on additional wear and tear, irrespective of loading of the Generating Station, whereas the incentive is intended to cover up the additional operating expenses beyond a PLF of 85%. In view of the above, the Incentive and the Mark-Up cannot be treated on same footing, as the Ancillary Services can be provided beyond any quantum of loading, whereas the Incentive can be availed only for the PLF beyond 85%. The wear and tear of the Generating Station due to increased Ramp Up and Ramp Down cycles cannot be same for all loadings of the Generating Station. Further, as the Data on Ramp Rate, loss of efficiency and additional wear and tear (if any) is not available at this point of time as per above Draft Regulations, it may not be feasible to adopt 50 Paise/Unit as Mark-Up for all loadings of the Generating Station(s). It is therefore proposed that till determination of Data on Ramp Rate, Loss of Efficiency and additional wear and tear for different loadings of the Generating Stations, there should be a Graded Pricing of Mark-Up for different loadings with a maximum capping price of 50 Paise/Unit for Regulation Up Ancillary Services.

3.2. GUVNL has commented that purpose of incentive to Generating Station is to reward the efficient running Plants beyond the optimum level. However, the off take of Generating Station is dependent upon the requirement of power. In case, the Requirement of power is less, the Generator has to be backed down. The Inter State Generating Stations (ISGS) are paid fixed charges based on availability and energy charges based on scheduling. Under the Ancillary Service Regulation, the ISGS are ensured of recovery of total cost (fixed + energy charges). To perform the Ancillary Services, the ISGS may have to ramp up / ramp down the Stations and incur the wear and tear of the Unit for which additional O&M may be sufficient. The proposed mark-up of 50 paise / unit at flat rate seems to be on higher side and requires moderation. Also, since in Power Market the dynamic price hovers around variable cost or little higher than that it is proposed that compensation for loss of efficiency / wear and tear on ramp rate should be nominal and not incentivizing rate. It is to be considered that the Regulation Up Services are taken from the Generators by NLDC / RLDC to control the frequency and Generators get rewarded through total cost recovery instead of backing down of the generation. Therefore the Generators are merely contributing by complying to the Regulations and not by any extra effort which can be incentivized. Therefore it is proposed that the power scheduled to the Beneficiaries through Regulation Up Services in "Pool" may be marked up at 25 paise / unit till the data on various factors become available for deriving appropriate compensation.

3.3. TATA Power has suggested for determining the Mark Up rate by considering the following factors:

* Ramp rate- Maximum ramp rate for better equipment life as recommended by OEM is 2 MW / min (for super critical units). It is suggested that Markup to be given on ramp rate to generating station based on UI charges at frequency for additional ramping.

* Efficiency- Effect of low scheduling on the efficiency will be

PLF 100% v/s 80% -loss in efficiency will be approximately 0.87%

PLF 100% v/s 60%- -loss in efficiency will be approximately 2.02%

PLF 100% v/s 40% - loss in efficiency will be approximately 4.29%

Thus, the effect of higher loading would increase the efficiency thus reducing the Mark Up.

* Additional wear & tear- Low scheduling will result in throttling of Turbine control valves BFP feed water control valve operation CEP deareator control valve operation. These result in wear and tear of valves and duct. Due to high velocity of fluid there is erosion in downstream pipeline / components

Analysis and Commission's Decision

3.4. Gridco has pointed out that mark-up for Ancillary should not be linked to the incentive for PLF beyond 85%, instead, it should be a function of plant loading. It has been mentioned that wear and tear of the plant will depend on the load the plant is running on. The reasoning by Gridco is well taken. However, linking mark-up to PLF will be very complex and encounter operational difficulties. In this context, Tata Power has submitted that with Regulation Up, plant is expected to become more efficient, even though there might be some additional wear and tear due to cycling.

3.5. GUVNL has suggested that the proposed incentive is on the higher side, and a mark-up of 25p/unit be provided instead. It may be worthwhile to note here that the Ancillary Services shall be called upon typically during exigencies, and for maintaining reliability and security of the grid. Thus, the value of this service is expected to be quite high. Further, the generator is not being extended any capacity commitment charge for providing ancillary services. In view of the above and in the light of the fact that this is a first roll-out, and a lot of trial and error is expected to happen before a full-fledged Ancillary Services Market can be created, the mark-up has to be set keeping both perspectives in mind viz., cost as well as value.

3.6. The Commission retains the proposed clause with no changes. However, based on the experience gained, the Commission will review the mark-up in six months.

4. Miscellaneous

4.1. TATA POWER submitted that in case of duration of 12 time blocks, draft detailed procedure for Ancillary service operations dated 29th Sep 2015 has also discussed about minimum despatch duration of 12 time blocks in clause 8.3.2. Whereas clause 10.1 of the current document says that the RRAS could be withdrawn, once the circumstances leading to triggering of RRAS no longer exist. This means that the RRAS could be withdrawn any time during 12 time blocks. This may lead to a situation where plants are effectively getting actual schedule of 15 min under RRAS. This may lead to very frequent Ramp ups and Ramp downs. It has been suggested that the statement under clause 8.3.2. (i.e. the minimum despatch of 12 time block) is in contradiction with clause 10.1 (i.e. Withdrawal of RRAS any time during 12 time blocks). TATA Power has suggested to ensure that RRAS should not be withdrawn before the 12th time block, even if the condition triggering Regulation Up stabilizes.

Analysis and Commission's Decision

4.2. The comment is regarding the Detailed Procedure for Ancillary Services, and hence outside the scope of the present order.

5. To summarize,

5.1. Statement of Reasons accompanying Ancillary Services Operations Regulations explained that "mark-up shall be applied to fixed cost, and shall be decided based on factors such as age, ramp rate, loss of efficiency, additional wear and tear of the unit, etc." It is clarified that both the generating station and the original beneficiary(ies) are being remunerated through payment of fixed and variable charges for providing Regulation Up service. The mark-up seeks to only compensate for the additional wear and tear, if any, that may be caused due to increased ramp up and ramp down cycles under Ancillary Services scheduling.

5.2. The Commission has taken note of the submission of one of the stakeholders that increased loading would actually result in increased efficiency of the plant; However, data on ramp rate and additional wear and tear (if any) is not available. The Commission feels that once the Ancillary Services Regulations are implemented by NLDC and RLDCs, this data shall be gathered and compiled over time, which will help to quantify the requisite compensation.

5.3. The prevailing Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014, specify an incentive of 50 paise for generating stations when their Plant Load

Factor (PLF) exceeds the Normative Annual Plant Load Factor (NAPLF) of 85%. It is to be noted here that the schedule under Ancillary Services Regulation is not proposed to be considered for PLF-linked incentive for the generating station. That is, if the PLF goes beyond 85% only on account of schedule under Regulation Up service, the generator shall not be entitled to receive the incentive under CERC (Terms and Conditions of Tariff) Regulations, 2014. Thus, the calculation of incentive shall be based only on schedule from beneficiaries, excluding schedule under RRAS.

5.4. Since the ISGSs shall be required to comply with the instructions of concerned RLDC for Regulation Up service, the Commission feels that the mark up for Regulation Up service should be such as to provide the desired level of incentive to the generators to participate in the larger interest of grid stability, while at the same time it should not be onerous enough for other market participants. There is therefore a provision of refund of fixed charges to the original beneficiaries for the quantum of un-requisitioned surplus scheduled under Regulation Up service. At the same time, the present framework also does not provide for payment of any capacity commitment charge to the generator for making the capacity available for ancillary services.

5.5. Based on the above rationale, the Commission sets the mark-up for participation in Regulation Up Ancillary Services at 50 paise/kWh. Based on the experience gained, the Commission will review the mark-up in six months.

6. The petition is disposed of with the above.

Sd/-	Sd/-	Sd/-	Sd/-
(M.K. Iyer) **Member**	**(A.S. Bakshi)** **Member**	**(A. K. Singhal)** **Member**	**(Gireesh B. Pradhan)** **Chairperson**