

पावर सिस्टम ऑपरेशन कारपोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Government of India Enterprise)



CIN NO : U40105DL2009GOI188682

दक्षिण क्षेत्रीय भार प्रेषण केन्द्र, 29, रेस कोर्स क्रॉस रोड, बेंगलूर 560 009.

दूरभाष : कार्यालय : 080-2225 0047, 2235 2850, 2225 4525, 2225 1169, 2225 5962 फैक्स : 080 2226 8725, 2225 9219

Southern Regional Load Despatch Centre, 29 Race Course Cross Road, Bangalore 560 009.

Tel : Off : 080- 2225 0047, 2235 2850, 2225 4525, 2225 1169, 2225 5962, Fax : 080 2226 8725, 2225 9219 www.srdc.org / www.posoco.in

संदर्भ संख्या:एनएलडीसी/एमओ/2022

दिनांक : 03rd दिसंबर, 2022

सेवा मे/To,

1. As per distribution list

विषय/Subject: **Deviation Settlement Regulations, 2022 implementation from 05th December'2022**

महोदय/Sir,

CERC Deviation Settlement Mechanism Regulations, 2022 was notified on 14th March'2022.

The said regulation shall come into force with effect from 05th December'2022 as per CERC notification dated 31st October'2022 and the Deviation Settlement Mechanism Regulations, 2014 shall stand repealed.

As per the Deviation Settlement Mechanism Regulations, 2022 the deviation charges shall be delinked from the system frequency.

Normal rate of charges for deviation shall be published by NLDC on every Thursday for previous week (Monday to Sunday) and the same shall be available on the website (Grid-India). In line with the regulation, a Procedure/Methodology for computation & declaration of Normal Rate of Charges for Deviation Rate has been prepared and is enclosed at Annexure-1.

For smooth and secure operation of the All-India Grid, all entities are requested to maintain load generation balance and adhere to the schedule in order to ensure secure and reliable operation of Grid.

सादर धन्यवाद,

भवदीय

कार्यपालक निदेशक/ED
द. क्षे. भा. प्रे. के/SRLDC

Encl: As above

Copy to: 1. Secretary CERC, 3 rd & 4 th Floor, Chanderlok Building, 36, Janpath, New Delhi- 110001

2. Executive Director, NLDC, Grid-India, B-9 (1st Floor), Qutab Institutional Area, New Delhi -110016

पावर सिस्टम ऑपरेशन कॉर्पोरेशन लिमिटेड
(भारत सरकार का उद्यम)

Power System Operation Corporation Limited
(A Government of India Enterprise)

पुनर्नामित(Renamed as)

ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)

Grid Controller of India Limited
(A Government of India Enterprise)

Corporate Identification Number

(CIN):U40105DL2009GOI188682



Grid Controller of India limited

(Formerly Power System Operation Corporation Limited)

(A Govt. of India Enterprise)

Methodology for Computation & Declaration of Normal Rate

In accordance with

CERC Deviation Settlement Mechanism Regulations, 2022

Version-1

02nd December'2022

National Load Despatch Centre (NLDC)

New Delhi

Methodology for computation & declaration of Normal Rate in line with CERC Deviation Settlement Mechanism and Related Matters Regulations, 2022

1. Background

CERC Deviation Settlement Mechanism Regulations, 2022 (hereinafter referred to as “DSM Regulations”) was notified on 14th March 2022. The date of implementation has been notified as 05.12.2022 by CERC on 31st October 2022.

This regulation provides for declaration of Normal Rate of charges for deviation which, as per the DSM Regulations, is applicable for deviation in a time block.

The methodology to be adopted for computation of normal rate of charges for deviation is summarised below.

For the period 05.12.2022 to 04.12.2023	From 05.12.2023 onwards
<p>The normal rate of charges for deviation for a time block shall be equal to the highest of:</p> <p>i. the weighted average Area Clearing Price (ACP) of the Day Ahead Market segments of all the Power Exchanges;</p> <p style="text-align: center;">or</p> <p>ii. the weighted average ACP of the Real Time Market segment of all the Power Exchanges;</p> <p style="text-align: center;">or</p> <p>iii. the Weighted Average Ancillary Service Charge of all the regions for that time block.</p> <p>Provided further that in case of non-availability of ACP for any time block on a given day, ACP for the corresponding time block of the last available day shall be considered.</p>	<p>Weighted Average Ancillary Service Charge (in paise/kWh) computed based on the total quantum of Ancillary Services deployed and the net charges payable to the Ancillary Service Providers for all the Regions for that time block.</p>

The normal rate of charges (paise /Kwh) for deviation shall be rounded off to the nearest two decimal places.

2. Procedure for calculating the normal rate of charges:

- a. The weighted average ACP of the Day Ahead Market (DAM, G-DAM) and Real Time Market (RTM) shall be calculated bid area wise considering all Power Exchanges. The list of Bid Areas and States covered under Bid-Areas is enclosed as *Annexure-1*.
- b. Subsequently, as and when any new market segment is introduced in Day Ahead Market, this would be suitably incorporated in the rate computations.

- c. In case of non-availability of ACP in any Power Exchange for a Bid-Area for a time block, if ACP is discovered in other exchanges/exchange, the available discovered ACP shall be considered for computing the weighted average ACP for that time block.
- d. In case of non-availability of ACP for any time block on a given day in all Power Exchanges, the last available ACP for the corresponding time block shall be considered. The non-availability of ACP shall only be considered for those time blocks where the market has not cleared. In case price declared is zero by the Power Exchanges, the same shall be considered.
- e. The **weighted average ACP of the Day Ahead Market** segments of all the Power Exchanges shall be computed as follows.

The weighted average ACP of the Day Ahead Market segments shall be computed by considering the block wise, area wise price and cleared volume for Day Ahead Market (DAM) and GDAM (Green Day Ahead Market) in all the operational Power Exchanges.

For a given time block, the following methodology shall be used for computation of the weighted average ACP in Day Ahead Market for sample bid Area A1.

DAM	
Volume IEX (Buy +Sell) = A1 _{IEX}	Price IEX = P1 _{IEX}
Volume PXIL (Buy +Sell) = A1 _{PXIL}	Price IEX = P1 _{PXIL}
Volume HPX (Buy +Sell) = A1 _{HPX}	Price HPX = P1 _{HPX}
GDAM	
Volume IEX (Buy +Sell) = A1 _{G-IEX}	Price IEX = P1 _{G-IEX}
Volume PXIL (Buy +Sell) = A1 _{G-PXIL}	Price IEX = P1 _{G-PXIL}
Volume HPX (Buy +Sell) = A1 _{G-HPX}	Price HPX = P1 _{G-HPX}

Volume in Kwh and Price in paisa/Kwh

Weighted Average ACP of DAM (paise/Unit) =

$$\frac{[(A1_{IEX} * P1_{IEX}) + (A1_{PXIL} * P1_{PXIL}) + (A1_{HPX} * P1_{HPX}) + (A1_{G-IEX} * P1_{G-IEX}) + (A1_{G-PXIL} * P1_{G-PXIL}) + (A1_{G-HPX} * P1_{G-HPX})]}{[A1_{IEX} + A1_{PXIL} + A1_{HPX} + A1_{G-IEX} + A1_{G-PXIL} + A1_{G-HPX}]}$$

- f. The **weighted average ACP of the Real Time Market** segment of all the Power Exchanges shall be computed as follows.

The weighted average ACP of the Real Time Market (RTM) segment of all the Power Exchanges shall be computed by considering the block wise, area wise price and volume of RTM in all the operational Power Exchanges.

In case of non-availability of ACP for any time block on a given day in all Power Exchanges, ACP for the corresponding time block of the last available day shall be considered. The non-availability of ACP shall only be considered for those time blocks where the market has not cleared. In case price declared is zero by the Power Exchanges, the same shall be considered.

For a given time block, the following methodology shall be used for computation of the weighted average ACP for Real Time Market for a sample bid Area A1

RTM	
Volume IEX (Buy +Sell) = A1 _{IEX}	Price IEX = P2 _{IEX}
Volume PXIL (Buy +Sell) = A1 _{PXIL}	Price PXIL = P2 _{PXIL}
Volume HPX (Buy +Sell) = A1 _{HPX}	Price HPX = P2 _{HPX}

Volume in Kwh and Price in paisa/Kwh

Weighted Average ACP of RTM (paise/Unit) =

$$[(A1_{IEX} * P2_{IEX}) + (A1_{PXIL} * P2_{PXIL}) + (A1_{HPX} * P2_{HPX})]$$

$$[A2_{IEX} + A2_{PXIL} + A2_{HPX}]$$

g. The **weighted average Ancillary Service Charge** shall be computed as follows.

The weighted average Ancillary Service Charge of all the regions for that time block shall be computed duly considering the RRAS (Regulation Up and Regulation down) and SRAS (Up and down) despatched on all India basis.

The following shall be used for computation for a sample time block:

RRAS	SRAS
RRAS_Up Volume (Mwh) = RRASUP _{v1.....vn} Variable Cost (Rs/Unit) = VC _{1.....n} Fixed cost (Rs/Unit) = FC _{1.....n} Mark Up (Rs/Unit) = 0.5 RRAS_Up (Rs) = (FC ₁ + VC ₁ + 0.5) * 1000 * RRASUP _{v1+....} + (FC _n + VC _n + 0.5) * 1000 * RRASUP _{vn} n = number of stations	SRAS_Up Volume 15 min (Mwh) = SRASUP _{v1(15).....vn(15)} Energy charge/compensation charge (Rs/Unit) = VC _{1.....n} Mark Up (Rs/Unit) = M _{1.....y} SRAS Up price = SRASUP _{p1.....pn} SRAS_Up (Rs) = (VC ₁ * SRASUP _{v1(15)+...+} + VC _n * SRASUP _{vn(15)}) * 1000 n = number of stations
RRAS_Down Volume (Mwh) = RRASDN _{v1.....vn} Variable Cost (Rs/Unit) = VC _{1.....n} RRAS_Down (Rs) = (RRASDN _{v1} * 0.75 * VC ₁ + + RRASDN _{v1} * 0.75 * VC _n) * 1000	SRAS_Down Volume 15 min (Mwh) = SRAS-DN _{v1(15).....vn(15)} Energy charge/compensation charge (Rs/Unit) = VC _{1.....n} SRAS_Down (Rs) = (SRAS-DN _{v1(15)} * VC ₁ + + SRAS-DN _{vn(15)} * VC _n) * 1000
	SRAS_Incentive SRAS Incentive Rate (Rs/Unit) = P ₁₋₆ SRAS_Up Volume 05 min (Mwh) = SRASUP _{v1(5).....vn(5)} SRAS_Down Volume 05 min (Mwh) = SRAS-DN _{v1(5).....vn(5)} P ₁ = 0.5, P ₂ = 0.4, P ₃ = 0.3, P ₄ = 0.2, P ₅ = 0.1, P ₆ = 0; SRAS_Incentive = (SRASUP _{v1(5)} + SRAS-DN _{v1(5)}) * P ₁₋₆ + + (SRASUP _{vn(5)} + SRAS-DN _{vn(5)}) * P ₁₋₆

**SRAS performance would be measured on a daily basis to arrive at the Incentive Rate which would be used for computing the incentive for the block for the station.*