

# **MADHYA PRADESH ELECTRICITY REGULATORY COMMISSION**

## **Draft Regulations**

No. MPERC/2024/ -----.

Date -----

In exercise of the powers conferred under Section 181 read with clauses (h) and (i) of sub-section (1) of Section 86 of the Electricity Act, 2003 (Act 36 of 2003) and all other powers enabling it on this behalf, and after previous publications, the Madhya Pradesh Electricity Regulatory Commission hereby makes the following Regulations namely: -

## **MADHYA PRADESH ELECTRICITY REGULATORY COMMISSION (ANCILLARY SERVICES) REGULATIONS, 2024**

### **1. Short title, extent and commencement:**

- 1.1** These regulations may be called the “Madhya Pradesh Electricity Regulatory Commission (Ancillary Services) Regulations, 2024.”
- 1.2** These Regulations shall come into force with effect from such date as may be notified by the Commission.

### **2. Objective.**

These regulations aim to provide mechanisms for procurement, deployment and payment of Ancillary Services at the state level for minimizing state deviation and aid State Load Despatch Centre (SLDC) in maintaining the grid frequency close to 50 Hz and for relieving congestion in the intra-state transmission network, to ensure smooth operation of the power system and safety and security of the state grid.

### **3. Definitions and Interpretations:**

- 3.1** In these Regulations, unless the context otherwise requires-
  - (1)** “**Act**” means the Electricity Act, 2003 (36 of 2003);
  - (2)** “**AGC signal**” means automated signal generated from the Nodal Agency through which the generation of an SRAS (Secondary Reserve Ancillary Services) Provider is adjusted;

- (3) "**Ancillary Service**" or "AS" in relation to power system operation, means the service necessary to support the grid operation in maintaining power quality, reliability and security of the grid and includes Primary Reserve Ancillary Service, Secondary Reserve Ancillary Service, Tertiary Reserve Ancillary Service, active power support for load following, reactive power support, black start and such other services as defined in the Grid Code;
- (4) "**Area Control Error**" or "ACE" means the instantaneous difference between the net actual interchange and net scheduled interchange of the State as an area, taking into account the effects of frequency bias and correction of measurement errors;
- (5) "**AS capacity obligation**" is the capacity signalled for despatch by the Nodal Agency under SRAS or the capacity procured by the Nodal Agency under TRAS;
- (6) "**Automatic Generation Control**" or "AGC" means a mechanism through which the generation of the SRAS Provider in a control area is automatically adjusted in response to the Secondary Control Signal;
- (7) **Balancing and Settlement Code or “B&SC”** Means Madhya Pradesh Electricity Balancing and Settlement Code, 2023 as amended;
- (8) "**Commission**" means the Madhya Pradesh Electricity Regulatory Commission referred to in sub-section (1) of Section 82 of the Act;
- (9) "**Compensation charge**" means the price declared by an SRAS Provider other than a generating station whose tariff is determined under Section 62 of the Act for participation in SRAS;
- (10) "**Demand Response**" means variation in electricity drawal by the licensee or an open access customer, as per the system requirement identified by the Nodal Agency;
- (11) "**DSM Regulations**" means the Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) Regulations, 2021 as amended;
- (12) "**Energy Storage**" in relation to the electricity system, means a facility where electrical energy is converted into any form of energy which can be stored, and subsequently reconverted into electrical energy;

- (13) "**Flat tie-line control**" means a mechanism of correcting ACE by factoring in only the deviation of net actual interchange from the net scheduled interchange at the state level, and ignoring frequency deviation;
- (14) "**Forecasting, Scheduling, Deviation Settlement Mechanism**" or "**FSDSM**" means Madhya Pradesh Electricity Regulatory Commission (Forecasting, Scheduling, Deviation Settlement Mechanism and related matters of wind and Solar generating stations) Regulations, 2018 as amended.
- (15) "**Frequency Response Characteristics**" means an automatic, sustained change in the power consumption by load or output of the generators that occurs immediately after a change in the load-generation balance of a control area and which is in a direction to oppose a change in frequency;
- (16) "**Gate Closure**" means the timeline as defined in IEGC;
- (17) "**Indian Electricity Grid Code**" or "**IEGC**" means the Grid Code specified by the Central Electricity Regulatory Commission under clause (h) of sub-section (1) of Section 79 of the Act;
- (18) "**Nodal Agency**" means the State Load Despatch Centre which shall be responsible for the implementation of the Ancillary Services at the intra-State level;
- (19) "**Primary Reserve Ancillary Service**" or "**PRAS**" means the Ancillary Service which immediately comes into service through the governor action of the generator or through any other resource in the event of a sudden change in frequency;
- (20) "**Secondary Control Signal**" means automated signal generated from the Nodal Agency through which injection or drawal or consumption of an SRAS provider is adjusted, and includes AGC signal;
- (21) "**Secondary Reserve Ancillary Service**" or "**SRAS**" means the Ancillary Service comprising SRAS-Up and SRAS-Down, which is activated by the Nodal Agency and deployed through secondary control signal;

(22) "**Secondary Reserve Ancillary Service Provider**" or "**SRAS Provider**" means an entity that provides SRAS-Up or SRAS-Down in accordance with these regulations;

(23) "**SRAS-Down**" means an SRAS that reduces active power injection or increases drawl or consumption, as the case may be, in response to the secondary control signal from the Nodal Agency;

(24) "**SRAS-Up**" means an SRAS that increases active power injection or decreases drawal or consumption, as the case may be, in response to a secondary control signal from the Nodal Agency;

(25) "**State DSM Pool Account**" means accounts maintained by SLDC under B&SC and FSDSM Regulations and amendments issued by the Commission.

(26) "**State Grid Code**" means the Grid Code specified by the Madhya Pradesh Electricity Regulatory Commission under clause (h) of sub-section (1) of Section 86 of the Electricity Act, 2003;

(27) "**Tariff Regulations**" mean the Regulations specified by the Commission from time to time under sub- section (zd) of Section 181 read with Section 61 of the Act;

(28) "**Tertiary Reserve Ancillary Service**" or "**TRAS**" means the Ancillary Service which consists of a spinning reserve or non-spinning reserve, which responds to despatch instructions from the Nodal Agency;

(29) "**Tie-line bias control**" means a mechanism of correcting ACE by factoring in deviation of net actual interchange from the net scheduled interchange at the state level as well as frequency deviation;

(30) "**Un-Requisitioned Surplus**" or "**URS**" means the capacity in a generating station that has not been requisitioned and is available for despatch, and is computed as the difference between the declared capacity of the generating station and its total schedule.

3.2 Words and expressions used and not defined in this regulation but defined in the Act or any other Regulations of the Commission shall have the same meaning as assigned to them in the Act or any other Regulations of the Commission.

**3.3** Reference to any Act, Rules and Regulations shall include amendments or consolidation or re-enactment thereof.

**4. Scope**

**4.1** These regulations shall apply to intra-state entities, including entities having energy storage resources and entities capable of providing demand response qualified to provide Ancillary Services and other entities as provided in these regulations.

**5. Types of Ancillary Services**

**5.1** There shall be the following types of Ancillary Services, namely:

- (a) Primary Reserve Ancillary Service (PRAS);
- (b) Secondary Reserve Ancillary Service (SRAS);
- (c) Tertiary Reserve Ancillary Service (TRAS); and
- (d) Any other Ancillary Services as may be specified in the M.P. Electricity Grid Code;

**5.2** The mechanism of procurement, deployment and payment of SRAS as referred to in sub-clauses (b) of clause (5.1) of this Regulation shall be as specified in these regulations.

**6. Estimation of Reserves by the Nodal Agency**

**6.1** The Nodal Agency shall estimate the quantum of the requirement of SRAS at the state level for such period and based on such methodology as specified in the detailed procedure for estimation of the requirement of SRAS and publish the same on its website:

**6.2** The Nodal Agency shall re-assess the quantum of the requirement of SRAS on day-ahead basis and incremental requirement, if any, on real-time basis and update the same on its website:

**6.3** The requirement of SRAS shall be estimated at the State level.

**Part I**

**Secondary Reserve Ancillary Service (SRAS)**

**7. Eligibility for an SRAS Provider**

**7.1** A generating station or an entity having energy storage resources or an entity capable of providing demand response, on a standalone or aggregated basis, connected to the intra-State transmission system, shall be eligible to provide Secondary Reserve Ancillary Service,

as an SRAS Provider, if it;

- (a) has a bi-directional communication system with SLDC, as per the requirements stipulated in the Detailed Procedure by the Nodal Agency;
- (b) is AGC-enabled, in case of a generating station;
- (c) can provide a minimum response of 1 MW;
- (d) has metering and Supervisory Control and Data Acquisition (SCADA) telemetry in place for monitoring and measurement of energy delivered under SRAS, as stipulated in the Detailed Procedure by the Nodal Agency;
- (e) is capable of responding to SRAS signal within 30 seconds and providing the entire SRAS capacity obligation within fifteen (15) minutes and sustaining at least for the next thirty (30) minutes;

## **8. Activation and Deployment of SRAS**

- 8.1** SRAS shall be activated and deployed by the Nodal Agency on account of the following events to minimize the deviation of the state in addition to relieving congestion in the Intra-State transmission system or replenishing primary reserves:
  - (a) Considering the state as a control area, the Area Control Error (ACE) of the state, going beyond the minimum threshold limit of  $\pm 10$  MW or such other limit as may be notified by the Commission based on a review the performance of SRAS;
  - (b) Such other events may be specified in the M.P. Electricity Grid Code.
- 8.2** The Area Control Error (ACE) for the state would be auto-calculated at the control center of the Nodal Agency based on telemetered values, and the external inputs referred to in clauses (8.3) and (8.4) of this regulation, as per the following formula

$$ACE = (I_a - I_s) - 10 * B_f * (F_a - F_s) + Offset$$

Where,

$I_a$  = Actual net interchange in MW (positive value for export)

$I_s$  = Scheduled net interchange in MW (positive value for export)

$B_f$  = Frequency Bias Coefficient in MW/0.1 Hz (negative value)

$F_a$  = Actual system frequency in Hz

$F_s$  = Schedule system frequency in Hz

Offset = Provision for compensating for measurement error

- 8.3** Frequency Bias Coefficient ( $B_f$ ) shall be assessed and declared by the Nodal Agency as per the Detailed Procedure.
- 8.4** The offset shall be used to account for measurement errors and shall be decided by the Nodal Agency for the state.
- 8.5** Nodal Agency may operate SRAS in any of the two control modes namely, tie-line bias control mode or flat tie-line control mode depending on grid requirements.

## **9. Procurement of SRAS**

- 9.1** SRAS shall be procured at the State level by the Nodal Agency through the mechanism as specified in this Regulation:
- 9.2** An SRAS Provider willing to participate in SRAS shall be required to provide standing consent for a minimum period time of 7 (seven) days to the Nodal Agency for participation, which shall remain valid till it is modified or withdrawn:

Provided that standing consent except in case of forced outage cannot be modified or withdrawn without giving notice of at least forty-eight hours.

Provided that in case the capacity earmarked for SRAS is not called for and at the same time there is a requirement of power by the beneficiary, the same may be released by the nodal agency at its sole discretion based on a written requisition for benefit of the beneficiary.

- 9.3** The SRAS Providers that are generating stations shall be required to declare in such time interval as may be stipulated in the Detailed Procedure, the technical parameters as required by the Nodal Agency, including but not limited to installed capacity, declared capacity, maximum possible generation (Pmax), schedule, Technical Minimum, Ramp up and Ramp

down capability.

- 9.4** The SRAS Providers other than the generating stations shall be required to declare the technical requirements as may be stipulated in the Detailed Procedure.
- 9.5** The SRAS Providers that are generating stations whose tariff is determined under section 62 of the Act, shall declare their energy charge upfront on monthly basis in the manner as stipulated in the Detailed Procedure.
- 9.6** The SRAS Providers other than those covered under clause (9.5) of this Regulation, shall be required to declare a single rate of the compensation charges upfront on a monthly basis but limited to the average market clearing price of Day Ahead Market (DAM) of previous month of Power Exchange in the manner as stipulated in the Detailed Procedure.
- 9.7** The Nodal Agency, based on the estimate of the SRAS requirement as per Regulation 6 of these regulations, shall ascertain the availability of adequate SRAS capacity by factoring in the declarations made by the SRAS Providers under this Regulation, on a day-ahead basis and reviewing the same on a real-time basis.
- 9.8** In the case of the generating stations whose tariff is determined by the Commission under Section 62 of the Act, the Nodal Agency shall identify the generating stations for providing SRAS,
  - (a) On the day-ahead basis, based on the un-requisitioned capacity available after the schedule has been communicated at 23:00 hrs for the next day; and
  - (b) On a real-time basis after gate closure for incremental SRAS requirements:

Provided that the capacity so identified shall be considered for SRAS based on the actual availability of such capacity.

- 9.9** There shall not be any commitment charge for the SRAS providers for the capacity ascertained under clause (9.7) or identified under clause (9.8) of this Regulation, but not signalled for SRAS:

Provided that the Commission based on a review of the availability and performance of SRAS, may in future provide through a separate order, a mechanism for

the SRAS Providers to commit SRAS capacity in advance, and also for appropriate compensation for such committed SRAS capacity.

**10. Selection of SRAS Providers and Despatch of SRAS**

- 10.1** SRAS signal shall be allocated among the SRAS Providers of the state to meet the SRAS requirement of the system based on the merit order of variable charges as well as compensation charges of the available SRAS providers.
- 10.2** SRAS shall be despatched at the state level through secondary control signals by the Nodal Agency.
- 10.3** The secondary control signal for SRAS-Up and SRAS-Down shall be sent to the control centre of the SRAS Provider every 4 seconds (or any other interval decided by the Commission) by the Nodal agency. SRAS Provider shall allow its control centre to follow the secondary control signal for SRAS-Up or SRAS-Down automatically without manual intervention.
- 10.4** The SRAS Provider shall increase or decrease active power injection or increase or decrease drawal or consumption, as the case may be, as per the automatic signal from the Nodal Agency.
- 10.5** The SRAS Provider shall share real-time data with SLDC as stipulated in the Detailed Procedure.
- 10.6** The average of SRAS-Up and SRAS-Down MW data shall be calculated for every 15-minute time block in MWh for every SRAS Provider by the Nodal Agency using the archived SCADA data at the Nodal Agency and reconciled with the data received at the control centre of the SRAS Provider and shall be used for payment of energy charge or compensation charge, as the case may be, to the SRAS Provider as per Regulation 11 of these regulations.

**11. Payment for SRAS:**

**11.1** SRAS Provider shall be paid from the State DSM Pool Account at the rate of their energy charge of compensation charge, as declared by the SRAS Provider, as the case may be, for the SRAS-Up MW quantum despatched for every 15-minute time block, calculated as per clause 10.6 of Regulation 10 of these Regulations.

Provided that the energy charges or compensation charges, as declared by the SRAS Providers as applicable at the time of delivery of the SRAS shall be used to calculate the payment of SRAS by the providers and no retrospective settlement of energy charges or compensation charges shall be undertaken even if the said charges are revised at a later date.

**11.2** SRAS Provider shall pay back to the State DSM Pool Account, at the rate of their energy charge or compensation charge, as the case may be, for the SRAS-Down MW quantum despatched for every 15- minute time block, calculated as per clause 10.6 of Regulation 10 of these regulations.

**11.3** No incentive shall be provided to SRAS Provider during the introductory stage of SRAS implementation. However, the Commission after the introduction of SRAS in the State and after analyzing the financial impact therein, may introduce the incentive at a later stage through a separate order.

**11.4** Methodology of computation under clauses (11.1) to (11.3) of this Regulation shall be stipulated in the Detailed Procedure.

**12. Performance of SRAS Provider:**

**12.1** The actual response of SRAS Provider against the secondary control signals from the Nodal Agency to the control centre of the SRAS Provider shall be monitored by the Nodal Agency, as per the procedure stipulated in the Detailed Procedure.

**12.2** All measurements of secondary control signals from the Nodal Agency to the control centre of the SRAS Provider and the actual response of SRAS Provider shall be carried out on post-facto basis using SCADA data. Performance of the SRAS Provider shall be measured by the Nodal Agency by comparing the actual response against the secondary control signals for SRAS-Up and SRAS-Down sent every 4 seconds (or any other interval decided by the Commission) to the control centre of the SRAS Provider measured using 5- minute average data.

**12.3** The methodology for measurement of the performance of SRAS Provider based on this Regulation shall be stipulated in the Detailed Procedure.

**13. Failure in performance of SRAS Provider**

**13.1** Performance below 20% for two consecutive days by an SRAS Provider shall make the SRAS Provider liable for disqualification for participation in SRAS for a week by the Nodal Agency.

**13.2** Violation of directions of the Nodal agency for SRAC under these Regulations shall make the SRAS providers liable for penalties as per the provisions of Act.

**Part II**

**Shortfall in procurement of SRAS or Emergency Conditions**

**14. Shortfall in procurement of SRAS or Emergency Conditions**

**14.1** All generating stations, whose tariff is determined by the Commission under Section 62 of the Act including those having URS power, shall be deemed to be available for use by the Nodal Agency for SRAS, subject to technical constraints of such generating stations.

**14.2** The generating stations as referred to in clause (14.1) of this Regulation, whose URS is despatched as SRAS-Up shall be paid their energy charge in terms of clause (11.1) of Regulation 11.

**14.3** The generating stations as referred to in clause (14.1) of this Regulation, if despatched as SRAS-Down shall pay back to the Deviation and Ancillary Service Pool Account in terms of clause (11.2) of Regulation 11.

**14.4** In case the Nodal Agency requires any generating station to provide Ancillary Services to meet the emergency conditions for reasons of grid security as per the provisions of the Grid Code, such generating station may be compensated at the rate of the energy charge as specified by the Commission.

**Part III**

**Accounting and Settlement of SRAS**

## **15. Accounting and Settlement of SRAS**

- 15.1** Accounting of SRAS shall be done by the Nodal Agency on a weekly basis, based on Interface meter data.
- 15.2** Deviation of SRAS Provider in every 15-minute time block shall be calculated as under and settled as per the procedure of DSM Regulations:

MWh Deviation for AS Provider = (Actual MWh of AS Provider) - (Scheduled MWh of AS Provider) - (SRAS MWh of AS Provider)

- 15.3** The State DSM Pool Account shall be charged for:

- (a) the energy charge or the compensation charge as the case may be, of despatched SRAS- Up for every time-block on the intra-state basis, payable to the concerned SRAS Provider,
- (b) the compensation as referred to in the proviso to clause (9.9) of Regulation (9) of these regulations.

- 15.4** The SLDC shall receive credits for payments made by SRAS Provider for the SRAS- Down despatched under State DSM Pool Account.
- 15.5** The net of the charges and the credits under clauses (15.3) & (15.4) of this Regulation shall be settled through the charges collected under the B&SC.
- 15.6** Settlement of payment liabilities in respect of the SRAS providers shall be done directly by the Nodal Agency on a weekly basis considering them as virtual entities.
- 15.7** No retrospective settlement of energy charge or compensation charge, as the case may be, shall be undertaken.
- 15.8** The Nodal Agency shall publish information on its website about SRAS procured and scheduled on a weekly basis and submit quarterly detailed feedback reports to the Commission.

## **16. Transmission Charges and Losses for SRAS Provider**

No transmission charges or transmission losses or transmission deviation charges shall be payable for SRAS.

## **Part V**

### **Miscellaneous**

#### **17. Detailed procedure**

**17.1** The Nodal Agency shall submit the Detailed Procedure through an application along with a gist of application before the Commission for approval within 3 (three) months of notification of these regulations. On admitting such application, the Commission shall ask Nodal Agency to publish the gist of the application within 7 (seven) working days from the date of approval of the gist by the Commission in four widely circulated newspapers (Hindi and English) and in the website of the Nodal Agency inviting suggestions and objections on the detailed procedure from all the stakeholders including the public at large. In the website along with the gist, the concerned application shall also be uploaded with the facility to download those documents by public in pdf and editable word format. Such suggestions and objections shall be submitted to the Nodal Agency within specified time. On receiving stakeholders' suggestions and objections the Nodal Agency shall finalize the Detailed Procedures and submit to the Commission for approval.

**17.2** The Detailed Procedure shall contain the operational aspects of SRAS including, but not limited to,

- (a) bi-directional communication system as referred to in sub-clause (a) of clause (7.1) of Regulation 7 of these regulations;
- (b) metering and SCADA telemetry for monitoring and measurement of energy delivered under SRAS as referred to in sub-clause (d) of clause (7.1) of Regulation 7 of these regulations;
- (c) intervals of the automatic calculation of ACE and method of 'Offset' calculation and the meter drift issues in respect of clause (8.2) of Regulation 8 of these regulations;
- (d) details of various control modes of operation as mentioned in clause (8.5) of Regulation 8 of these regulations;
- (e) details regarding the declaration of technical parameters as referred to in clause (9.3)

- of Regulation 9 of these regulations;
- (f) technical requirements for SRAS providers as referred to in clause (9.4) of Regulation 9 of these regulations;
- (g) manner of declaration of the energy charge and the compensation charge, respectively as referred to in clauses (9.5) and (9.6) of Regulation 9 of these regulations;
- (h) methodology of sharing real time data as referred to in clause (10.5) of Regulation 10 of these regulations;
- (i) methodology for despatch of SRAS to relieve congestion;
- (j) methodology of computation for SRAS as referred to in clause (11.4) of Regulation 11 of these regulations;
- (k) details regarding monitoring of the actual response of SRAS providers as referred to in clause (12.1) of Regulation 12 of these regulations
- (l) details of the methodology for measurement of performance of SRAS Provider as referred to in clause (12.2) of Regulation 12 of these regulations;
- (m) other related and incidental matters.

**18. Power to Relax:**

The Commission may by general or special order, for reasons to be recorded in writing, and after giving an opportunity of hearing to the parties likely to be affected, may relax any of the provisions of these regulations on its own motion or on an application made before it by an interested person.

**19. Power to issue directions and Removal of Difficulties**

If any difficulty arises in giving effect to these regulations, the Commission may on its own motion or on an application filed by any affected party, issue any general or specific directions as may be considered necessary in furtherance of the objective and purpose of these regulations.

**By order of the Commission,**

**Dr. Umakanta Panda,  
Secretary**