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**JHARKHAND STATE ELECTRICITY REGULATORY COMMISSION, RANCHI**

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**NOTIFICATION**

**28<sup>th</sup> September 2016**

**No.57**--The objective of these regulations is to facilitate large-scale grid integration of solar and wind generating stations while maintaining grid stability and security as envisaged under the Grid Code, through forecasting, scheduling and commercial mechanism for deviation settlement of these generators.

**A1: SHORT TITLE, COMMENCEMENT AND EXTENT**

- 1.1 These Regulations may be called the Jharkhand State Electricity Regulatory Commission (Forecasting, Scheduling, Deviation Settlement and Related Matters of Solar and Wind Generation Sources) Regulations, 2016;
- 1.2 These Regulations shall extend to the entire state of Jharkhand;
- 1.3 These Regulations shall come into force from the date of their publication in the Official Gazette of the Government of Jharkhand and unless reviewed earlier or extended by the Commission, shall remain in force up to 31<sup>st</sup> March, 2021.

**A2: DEFINITIONS AND INTERPRETATION**

2.1 In these Regulations, unless the context otherwise requires-

- (a) **'Absolute Error'** means the absolute value of the error in the actual generation of wind or solar generators with reference to the scheduled generation and the 'Available Capacity' (AvC), as calculated using the following formula for each 15 minute time block:

$$\text{Error (\%)} = 100 \times [\text{Actual Generation} - \text{Scheduled Generation}] / (\text{AvC});$$

- (b) **'Act'** means the Electricity Act, 2003 (36 of 2003);
- (c) **'Actual Drawal'** in a time-block means electricity drawn by a buyer, as the case may be, measured by the interface meters;
- (d) **'Actual Injection'** in a time-block means electricity generated or supplied by the seller, as the case may be, measured by the Interface meters;
- (e) **'Available Capacity or AvC'** for wind or solar generators means the cumulative capacity rating of the wind turbines or solar inverters that are capable of generating power in a given time-block;
- (f) **'Beneficiary'** means a person purchasing electricity generated from a generating station;
- (g) **'Buyer'** means a person, including beneficiary, purchasing electricity through a transaction scheduled in accordance with the regulations applicable for short-term open access, medium-term open access and long-term access;
- (h) **'CERC'** means the Central Electricity Regulatory Commission referred to in subsection (1) of section 76 of the Act;
- (i) **'Deviation'** in a time-block for a seller means its total actual injection minus its total scheduled generation and for a buyer means its total actual drawal minus its total scheduled drawal;
- (j) **'Gaming'** in relation to these regulations, shall mean an intentional mis-declaration of available capacity or schedule by any seller in order to make an undue commercial gain through Charge for Deviations;
- (k) **'JSEGC or Grid Code'** means the Grid Code specified by Jharkhand State Electricity Regulatory Commission under clause (h) of sub-section (1) of Section 86 of the Act;
- (l) **'IEGC'** means the Grid Code specified by CERC under clause (h) of sub-section (1) of Section 79 of the Act;

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- (m) **'Interface Meters'** means interface meters as defined by the Central Electricity Authority under the Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006, as amended from time to time;
- (n) **'Pool Account'** means state account for receipts and payments on account of deviation by buyers or sellers including wind and solar generators;
- (o) **'Pooling Station'** means the sub-station where pooling of generation of individual wind generators or solar generators is done for interfacing with the grid / transmission or distribution system:

Provided that where there is no separate pooling station for a wind / solar generator and the generating station is connected through common feeder and terminated at a sub-station of distribution company/STU/CTU, the sub-station of distribution company/STU/CTU shall be considered as the pooling station for such wind/solar generator, as the case may be;

- (p) **'Qualified Coordinating Agency or QCA'** means the agency coordinating on behalf of Wind/ Solar Generators connected to a pooling station. QCA may be one of the generators or any other mutually agreed agency. QCA shall be treated as a State Entity.
- (q) **'Scheduled Generation'** at any time or for a time block or any period means schedule of generation in MW or MWh ex-bus given by the Load Despatch Centre;
- (r) **'Scheduled Drawal'** at any time or for a time block or any period time block means schedule of despatch in MW or MWh ex-bus given by the Load Despatch Centre;
- (s) **'Seller'** means a person, including a generating station, supplying electricity through a transaction scheduled in accordance with the Regulations applicable for short-term open access, medium-term open access and long-term access;
- (t) **'State Commission'** means Jharkhand State Electricity Regulatory Commission established under sub-section 1 of Section 82 of the Act;
- (u) **'State Entity'** means an entity which is in the SLDC control area and whose metering and energy accounting is done at the State level;
- (v) **'State Load Despatch Centre or SLDC'** means Load Despatch Centre of the State, established under sub-section (1) of Section 31 of the Act, responsible for coordinating scheduling of the state entities in accordance with the provisions of the State Grid Code;

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- (w) **'Time-block'** means a time block of 15 minutes, for which specified electrical parameters and quantities are recorded by special energy meter, with first time block starting at 00.00 hrs;
- 2.2 Save as aforesaid and unless repugnant to the context or the subject-matter otherwise requires, words and expressions used in these regulations and not defined, but defined in the Act, or the Grid Code or any other regulations of this Commission shall have the meaning assigned to them respectively in the Act or the Grid Code or any other regulation;

**A3: SCOPE OF REGULATIONS AND EXTENT OF APPLICATION**

3.1 These Regulations shall apply to

- (a) Wind power generators supplying power to the Discoms, or to the third party consumers through Open Access (OA) or for captive consumption through OA within or outside the State:
  - (i). Wind power generators having individual or combined capacity of 5 MW and above whether connected to the State Grid independently or through pooling stations;
  - (ii). Wind power generators of any capacity connected to the State Grid through pooling station with total capacity of 5 MW and above.
- (b) Solar power generators supplying power to the Discoms, or to the third party consumers through Open Access (OA) or for captive consumption through OA within or outside the State:
  - (i). Solar power generators having Individual or combined capacity of 5 MW and above whether connected to the State Grid independently or through pooling stations and/or solar parks;
  - (ii). Solar power generators of any capacity connected to the State Grid through pooling station and /or solar park with total capacity of 5 MW and above.

**A4: FORECASTING AND SCHEDULING CODE**

4.1 These Regulations provide methodology for day-ahead scheduling of wind and solar energy generators which are connected to the State grid and re-scheduling them on one and half hourly basis, and the methodology of handling deviations of such wind and solar energy generators. Appropriate meters shall be provided for energy accounting. Telemetry/communication system & Data Acquisition System shall also be provided for transfer of information to the SLDC.

4.2 The Qualified Coordinating Agency (QCA) as defined in Regulation 2.1(p) may be a Principal Generator and shall be nominated based on consensus and mutually agreed terms and conditions amongst the wind and/or solar generators connected to the pooling station. The wind and solar generators shall also inform SLDC to this effect. There shall be only one QCA per pooling station. The functions of the QCA shall be as follows:

- (i). Provide schedules with periodic revisions as per this regulation on behalf of all the Wind/ Solar Generators connected to the pooling station(s);
- (ii). Responsible for metering, data collection/transmission, communication, coordination with DISCOMS, SLDC and other agencies;

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- (iii). Undertake commercial settlement of all charges on behalf of the generators, including payments to the State DSM pool accounts through the SLDC;
- (iv). Undertake de-pooling of payments received on behalf of the generators from the State DSM Pool account and settling them with the individual generators;
- (v). Undertake commercial settlement of any other charges on behalf of the generators as may be mandated from time to time;

Provided QCA shall not be a compulsory requirement for the process. Some large solar or wind plants in future may aggregate their generation at one or more pooling stations themselves. Such large generators as QCA may choose to interact directly with the SLDC, if they so desire.

- 4.3 Forecasting shall be done by wind and solar generators connected to the State grid, or by QCAs on their behalf. The SLDC is also mandated to undertake forecasting of wind and solar power that is expected to be injected into the State grid, by engaging forecasting agency(ies), if required. The forecast by the SLDC shall be with the objective of ensuring secure grid operation by planning for the requisite balancing resources. The forecast by the QCA or wind and solar generator, as the case may be, shall be generator centric. The QCA or wind and solar generators will have the option of accepting the SLDC's forecast for preparing its schedule or provide the SLDC with a schedule based on their own forecast. The QCA shall coordinate the aggregation of schedules of all generators connected to a pooling station and communicate it to the SLDC.

Provided the existing wind and solar generators or QCA on their behalf shall establish the forecasting tools and week-ahead, day-ahead forecasting and scheduling to be furnished to SLDC within three months from the date of coming into effect of these Regulations. However, all the new wind and solar generators or QCA on their behalf shall establish forecasting arrangements before commissioning of the plant and connecting to the State Grid.

- 4.4 The QCA or the wind and solar generator shall submit a day-ahead and week-ahead schedule for each pooling station or each generating station, as the case may be. Day-ahead schedule shall contain wind or solar energy generation schedule at intervals of 15 minutes (time-block) for the next day, starting from 00:00 hours of the day, and prepared for all 96 time-blocks. Week-ahead schedule shall contain the same information for the next seven days.
- 4.5 The schedule of wind and solar generators connected to the State grid (excluding collective transactions) may be revised by giving advance notice to the SLDC. Such revisions shall be effective from 4<sup>th</sup> time block, the first being the time-block in which notice was given. There may be one revision for each time slot of one and half hours starting from 00:00 hours of a particular day subject to maximum of 16 revisions during the day.

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- 4.6 Any commercial impact on account of deviation from schedule based on the forecast shall be borne by the wind and solar generator, either directly or transacted via the representing QCA.

### **A5: METERING, TELEMETRY AND DATA COMMUNICATION**

- 5.1 Wind and Solar generators covered under these Regulations shall be governed under interface metering requiring installation of Special Energy Meters (SEM) with a provision for recording and storing all the load survey and billing parameters for every 15-minute time block. Monthly meter readings shall be forwarded to the SLDC in addition to data acquisition through SCADA for energy accounting.
- 5.2 Data telemetry shall be adopted at the turbine/inverter level. Wind and Solar generators, represented via Qualified Coordinating Agencies (QCAs), shall mandatorily provide to the SLDC, in a format as prescribed by SLDC, the technical specifications at the beginning and whenever there is any change. The data relating to power system output & parameters and weather related data as applicable shall also be mandatorily provided by such generators to the SLDC in real time.

Provided that the full data telemetry and communication facilities shall be provided by the wind and solar generator or QCA for whom scheduling is done by SLDC. However, a preparatory window shall be provided by SLDC for the wind and solar principal generator or QCA to ensure installation of data management and telemetry equipment and for SLDC to prepare their systems and teams for receipt of regular Data and schedules.

- 5.3 The plan for data telemetry, Communication requirement, formats of forecast submission and other details in this regard shall be provided in the Detailed Procedure to be prepared by SLDC. SLDC shall publish the aforesaid details on their website to solicit public comments and shall submitted it to the Commission for approval within two months of the date of publication of these Regulations in the Official Gazette.

### **A6: COMMERCIAL AND DEVIATION SETTLEMENT**

- 6.1 The DSM specified under these Regulations henceforth shall be applicable to all wind and solar generators covered under Regulation and connected to the State Grid.
- 6.2 The wind or solar generators connected to the State grid and selling power within the State shall be paid by the buyer as per actual generation.
- 6.3 The wind and solar generator or the QCA, as the case may be, shall have the option of accepting the SLDC's forecast for preparing its schedule or provide the SLDC with a schedule based on its own forecast, and such schedule shall be used as reference for deviation settlement.
- 6.4 The QCA shall undertake all commercial settlement on behalf of the generator(s) connected to the respective pooling station(s).

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- 6.5 In the event of actual generation of a generating station or a pooling station, as the case may be, being less or more than the scheduled generation, the deviation charges for shortfall or excess generation shall be payable by the wind and solar generator or the QCA, as the case may be, to the State DSM Pool, as given in the table below:

**Table 1: Deviation Charges in case of under or over-injection, for wind or solar generators, and selling power within the State**

Sr. No.	Absolute Error in the 15-minute time block	Deviation Charges payable to State DSM Pool
1	< = 15%	None
2	>15% but <=25%	At Rs. 0.50 per unit for the shortfall or excess energy for absolute error beyond 15% and upto 25%
3	>25% but <=35%	At Rs. 0.50 per unit for the shortfall or excess energy beyond 15% and upto 25% + Rs. 1.0 per unit for balance energy beyond 25% and upto 35%
4	> 35%	At Rs. 0.50 per unit for the shortfall or excess energy beyond 15% and upto 25% + Rs. 1.0 per unit for shortfall or excess energy beyond 25% and upto 35% + Rs. 1.50 per unit for balance energy beyond 35%

- 6.6 The QCA shall also de-pool the energy deviations as well as deviation charges to each generator in proportion to actual generation units for each time-block for each generator;
- 6.7 The State Load Despatch Centre shall maintain separate records and account of time-block wise schedules, actual generation and deviations for all generators, including wind and solar generators.
- 6.8 Once the accounting procedures as above are put in place, all renewable energy generators shall be treated together as a virtual pool within the State Pool. Deviations for and within this virtual pool could be settled first at the rates and methodology stipulated above for wind and solar generators.
- 6.9 Annual accounts as mentioned above shall be prepared by the SLDC. The amount available in the DSM pool on the last day of the Financial Year shall be transferred to a separate fund maintained and operated by SLDC in the manner as approved by the Commission based on the proposals to be submitted by SLDC or as directed on Suo-Moto basis by the Commission.



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- 6.10 The payment of charges for deviation shall have a high priority and the concerned constituent shall pay the indicated amounts within 10 (ten) days of the issue of Statement of Charges for deviation by the SLDC, into the State DSM Pool Account.
- 6.11 The charges payable for deviation from schedule by the wind and solar generators which are supplying power outside the State, i.e., regional entities, shall be accounted for and settled in accordance with the provisions of the CERC (Deviation Settlement Mechanism and Related Matters) Regulations, 2014 as amended from time to time.

### **A7: MISCELLANEOUS**

#### **Power to Remove Difficulties**

- 7.1 If any difficulty arises in giving effect to any of the provisions of these Regulations, the Commission may, by a general or special order, not being inconsistent with the provisions of these Regulations or the Act, do or undertake to do things or direct the Licensee to do or undertake such things which appear to be necessary or expedient for the purpose of removing the difficulties

#### **Power to Relax**

- 7.2 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 by grant of relaxation, may relax any of the provisions of these regulations on its own motion or on an application made before it by an interested person.

#### **Power to Issue Directions**

- 7.3 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 such directions as may be considered necessary in furtherance of the objective and purpose of these regulations.

#### **Interpretation**

- 7.4 If a question arises relating to the interpretation of any provision of these Regulations, the decision of the Commission shall be final.

#### **Enquiry and Investigation**

- 7.5 All enquiries, investigations and adjudications under these Regulations shall be done by the Commission through the proceedings in accordance with the provisions of the Conduct of Business Regulations.

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**Power to Amend**

- 7.6 The Commission, for reasons to be recorded in writing, may at any time vary, alter or modify any of the provision of these Regulations by amendment.

**By order of the Commission,**

**A.K. Mehta,  
Secretary.**

**Jharkhand State Electricity Regulatory Commission**