



ASSAM ELECTRICITY REGULATORY COMMISSION

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Date: 25th June, 2018

NOTIFICATION

No. AERC/674/2018 :- In exercise of the powers conferred by sub-section (1) of section 181, of the Electricity Act, 2003 (36 of 2003), and all other powers enabling it in this behalf, the Assam Electricity Regulatory Commission has formulated the draft AERC(Forecasting, Scheduling, Deviation Settlement and Related Matters of Solar and Wind Generation Sources) Regulations, 2018.

The draft Regulations are being uploaded in the official website of the Commission, www.aerc.gov.in Page as previous publication under sub-section (3) of Section 181 of the Electricity Act, 2003. Any person/body corporate who is likely to be affected by the provision of these Regulations, may submit his comments / objections, suggestions to the Assam Electricity Regulatory Commission on or before 25th July, 2018.

The objections or suggestions in this behalf should be addressed to the *Secretary, Assam Electricity Regulatory Commission A.S.E.B. Campus, Dwarandhar, G. S. Road, Sixth Mile, Guwahati – 781 022.*

Draft Assam Electricity Regulatory Commission (Forecasting, Scheduling, Deviation Settlement and Related Matters of Solar and Wind Generation Sources) Regulations, 2018

No. AERC/674/2018.- In exercise of the powers conferred under Section 181 of the Electricity Act, 2003 (36 of 2003), and all other powers enabling it in this behalf, and after previous publication, the Assam Electricity Regulatory Commission (AERC) hereby makes the following regulations, namely:

1. Short title and commencement

1.1. These regulations may be called the Assam Electricity Regulatory Commission (Forecasting, Scheduling, Deviation Settlement and Related Matters of Solar and Wind Generation Sources) Regulations, 2018.

1.2. These regulations shall come into force from the date of their publication in the official Gazette:

Provided that the commercial arrangements specified in these Regulations, and the related provisions regarding Deviation Charges and penalty, shall come into force six month thereafter.

2. Definitions and Interpretation

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) 'Buyer' means a person, including the 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;

g) 'CERC' means the Central Electricity Regulatory Commission referred to in

subsection (1) of section 76 of the Act;

- h) **‘De-Pooling’** means the disaggregation and apportionment of the deviations and the applicable charges among the Generators at a Pooling Sub-Station;
- 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) **‘DISCOM’** means the Assam Power Distribution Company Ltd (APDCL) or any other Distribution company in the State of Assam.
- k) **‘Forecasting tools’** for the purposes of this regulation include Telemetry, Communication system and Data Acquisition System for transfer of information to SLDC and appropriate meters for energy accounting.
- l) **‘Gaming’** in relation to these regulations, shall mean an intentional misdeclaration of available capacity or schedule by any seller in order to make an undue commercial gain through Charge for Deviations;
- m) **‘Grid Code’** means the Grid Code specified by (State Regulatory Commission) under clause (h) of sub-section (1) of Section 86 of the Act;
- n) **‘Interface meters’** means interface meters as defined by the Central Electricity Authority under the CEA (Installation and Operation of meters) regulations, 2006.
- o) **‘IEGC’** means the Grid Code specified by CERC under clause (h) of subsection 1 of Section 79 of the Act;
- p) **‘Pool Account’** means state account for receipts and payments on account of deviation by buyers or sellers including wind and solar generators;
- q) **‘Pooling Station’** means the sub-station where pooling of generation of individual wind generators or solar generators is done for interfacing with the next higher voltage level:

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;

- r) **‘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 for the following purposes:
 - Provide schedules with periodic revisions as per this regulation on behalf of all the Wind/Solar Generators connected to the pooling station(s),
 - Responsible for metering, data collection/transmission, communication, coordination with DISCOMS, SLDC and other agencies.
 - Undertake commercial settlement of all charges on behalf of the generators, including payments to the State UI pool accounts through the concerned SLDC.
 - Undertake de-pooling of payments received on behalf of the generators from the State UI Pool account and settling them with the individual generators
 - Undertake commercial settlement of any other charges on behalf of the generators as may be mandated from time to time.

QCA shall be treated as a State Entity.

- s) **‘Scheduled generation’** at any time or for a time block or any period means the schedule of generation in MW or MWh ex-bus given by the concerned Load Despatch Centre;
- t) **‘Scheduled drawal’** at any time or for a time block or any period time block means the schedule of despatch in MW or MWh ex-bus given by the concerned Load Despatch Centre;
- u) **‘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;
- v) **‘State Commission’** means Assam Electricity Regulatory Commission (AERC) established under sub-section 1 of Section 82 of the Act;
- w) **‘State Entity’** means an entity which is in the SLDC control area and whose metering and energy accounting is done at the state level;
- x) **‘State Load Despatch Centre or SLDC’** means State Load Despatch Centre of Assam, 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;
- y) **‘Time-block’** means a time block as defined in CERC (Indian Electricity Grid Code) Regulations, 2010;
- z) 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.

3. GENERAL

3.1. Objective

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.

The SLDC shall make use of the flexibility provided by the conventional Generating unit and the capacity of inter-Grid tie-lines to accommodate Wind and Solar energy generation to the largest extent possible subject to Grid security.

3.2. Applicability of the Regulations

All wind and solar generators connected to the State grid (excluding Rooftop Solar PV Power Project), including those connected via pooling sub-stations, and using the power generated for self-consumption or selling power within or outside the State of Assam.

4. FORECASTING AND SCHEDULING CODE

4.1. This code provides the 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 the transfer of information to the concerned SLDC.

- 4.2.** Wind and Solar generators, represented via Qualified Coordinating Agencies (QCAs), shall mandatorily provide to the concerned 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 concerned SLDC in real time.
- 4.3.** Forecasting shall be done by wind and solar generators connected to the State grid or by QCAs on their behalf. The concerned 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 concerned 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.
- 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.

Provided that the wind and solar generators, as the case may be, having multiple transactions under a Power Purchase Agreement and intra-state and / or inter-state Open Access with a common interface meter shall submit schedules with respect to such approved capacities allocated and such capacities alone shall be treated as AvC for the purpose of these transactions under this Regulation.

- 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 the 4th-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 the maximum of 16 revisions during the day.
 - a)** In respect of wind generators, 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 a maximum of sixteen (16) revisions during the day.
 - b)** In respect of solar generators, there may be one revision for each time slot of one and half hours starting from 5:30 hours up to 19:00 hours of a particular day subject to a maximum of nine (9) revisions during the day.
- 4.6.** The SLDC shall give appropriate directions under sub-section C (I) of Section 33 of the Act, in consonance with this Regulation about the Forecasting Tools, alternative

means of communication in case of telemetry or other equipment failure, formats of forecast submission and other details on or before the first (1st) day of December, 2018.

4.7. The plan for data telemetry, formats of forecast submission and other details in this regard shall be provided in the Detailed Procedure to be prepared by SLDC and approved by the State Commission

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

5. PRINCIPLES OF APPOINTMENT OF QCA

5.1. The Generators at a Pooling Sub-Station on mutually agreed upon may appoint one amongst themselves or any other entity as a QCA.

5.2. The Generators shall satisfy themselves that the QCA is technically and financially competent to undertake on their behalf the functions and discharge the obligations specified in these Regulations.

5.3. The terms of engagement of the QCA shall include provisions on the following aspects:

- a) The respective roles and responsibilities of the QCA and Generators;
- b) The metering, billing and energy accounting arrangements;
- c) The modalities for recovery of Deviation Charges from the Generators and their settlement, including the principles for de-pooling;
- d) The payment security mechanism and related provisions;
- e) The events of default and their mitigation.

6. ROLE OF QCA

6.1. QCA shall be the single point of contact with SLDC on behalf of its coordinated generators) connected to a pooling station for the following purposes:

- a) providing schedules with periodic revisions on behalf of the Wind / Solar generators.
- b) coordinating with DISCOM / STU / SLDC for metering, data collection, communication and issuance of instructions for despatch/curtailment
- c) undertaking commercial settlement on behalf of the generators pertaining to generation deviations including payment of deviation charges to the State Pool Account
- d) undertaking de-pooling of payments received on behalf of the generators from the State Pool Account and settling them with the individual generators.
- e) undertaking the commercial settlement of any other charges on behalf of the generators connected to a pooling station, as may be mandated from time to time.
- f) all other ancillary and incidental matters.

6.2. The SLDC shall give appropriate directions under sub-section (I) of Section 33 of the Act in consonance with this Regulation about the guidelines for registration of QCAs, the data/information to be exchanged between the QCA, SLDC and the generator, the protocol for sharing the same etc.

7. TREATMENT TO THE GAMING

- 7.1.** Any intentional mis-declaration of Available Capacity to the SLDC for its own undue commercial gain or that of a Generator shall be considered as gaming and shall constitute a breach of these Regulations.
- 7.2.** Upon identification of gaming by SLDC, the QCA shall be liable to pay a penalty of three times the Deviation Charges that would have been applicable had the Available Capacity been correctly declared.
- 7.3.** The amount of penalty shall be payable by the QCA to the State Deviation Settlement Mechanism (DSM) Pool, through the SLDC.
- 7.4.** The SLDC may, after giving due notice and as stipulated in the Detailed Procedure, cancel the registration of the QCA upon repeated events of mis-declaration.

8. COMMERCIAL AND DEVIATION SETTLEMENT

- 8.1.** Energy accounting and payment for the energy generated to the wind and solar generators connected to the Grid shall be in accordance with the procedures prescribed and specified, therefore.
- 8.2.** 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.
- 8.3.** The wind or solar generators connected to the State grid and selling power outside the State shall be paid by the buyer as per scheduled generation.
- 8.4.** The wind and solar generator or the QCA, as the case may be, shall have the option of accepting the concerned SLDC's forecast for preparing its schedule or provide the concerned SLDC with a schedule based on its own forecast, and such schedule shall be used as a reference for deviation settlement.
- 8.5.** The QCA shall undertake all commercial settlement on behalf of the generator(s) connected to the respective pooling station(s).
- 8.6.** 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 **Table – I** below:

Table – I: Deviation Charges in case of under or over-injection, for sale of power within the State

Sr. No.	Absolute Error in the 15-minute time block	Deviation Charges payable to State DSM Pool
1	$\leq 10\%$	None
2	$>10\%$ but $\leq 20\%$	At Rs. 0.50 per unit for the shortfall or excess energy for absolute error beyond 10% and up to 20%
3	$>20\%$ but $\leq 30\%$	At Rs. 0.50 per unit for the shortfall or excess energy beyond 10% and up to 20% + Rs. 1.0 per unit for balance energy beyond 20% and up to 30%
4	$> 30\%$	At Rs. 0.50 per unit for the shortfall or excess energy beyond 10% and up to 20% + Rs. 1.0 per unit for the shortfall or excess energy beyond 20% and up to 30% + Rs. 1.50 per unit for balance energy beyond 30%

8.7. Provided that deviation charges for under or over injection by wind or solar generator connected to the State grid and selling power outside the State shall be payable or receivable as per the framework provided in **Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) (Second Amendment) Regulations, 2015**, The accounting for this purpose shall be done by the SLDC.

8.8. Deviations for Inter-State and Intra-State transactions at Pooling Station shall be accounted for separately.

8.9. The SLDC shall provide separate Energy and Deviation accounts for inter-State and intra-State transactions to QCA or the wind or solar generators.

8.10. QCA shall separately settle Deviation Charges with Wind or Solar Generators for inter-State and intra-State transactions.

a) The QCA shall also de-pool the energy deviations as well as deviation charges to each generator in proportion to actually generated units for each time-block for each generator.

8.11. In order to aggregate the forecasting and scheduling of different pooling stations to avail the benefit of larger geographical area and diversity, a QCA in agreement with the generators in different pooling stations shall have the freedom to go for the option of Virtual Pool. Under a virtual Pool, the declaration of the availability/schedule in respect of the generators shall be made available pooling station wise to SLDC, in order to maintain the sanctity of a control area. However, while computing the deviations, they shall be considered as a combined pool and the QCA shall be responsible for de-

pooling the deviations, first amongst the different pooling stations and then amongst the different generators of the respective pooling station.

8.12.The SLDC shall maintain all necessary and required records, registers and accounts in respect of forecasting, scheduling and deviation settlement in accordance with this Regulation.

8.13.The SLDC shall give appropriate directions under sub-section (I) of Section 33 of the Act in consonance with this Regulation on the manner of making the State Pool Account settlement and dealing with the default in respect of the same; the manner of de-pooling of energy deviations and deviation charges, operation of virtual pool and State Pool Account on or before the first (1st)day of December, 2018.

9. MISCELLANEOUS

9.1. 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

9.2. Issue of orders and directions

Subject to the provisions of the Act and these regulations, the Commission may, from time to time, issue orders and practice directions with regard to the implementation of these regulations and procedure to be followed for such implementation and matters incidental or ancillary thereto.

9.3. Power to Amend

The Commission may from time to time add, vary, alter, suspend, modify, amend or repeal any provision of these regulations.

9.4. Interpretation

All issues arising in relation to the interpretation of these regulations shall be determined by the Commission and the decision of the Commission on such issues shall be final

(By the order of the Commission)

Sd/-

S. K. Roy, Secretary,
Assam Electricity Regulatory Commission