

**PUBLIC WORKS NOTIFICATIONS**  
**TELANGANA STATE ELECTRICITY REGULATORY COMMISSION: HYDERABAD**  
**No. TSERC / 3 / 2018** **Dated: 30.05.2018.**  
**Regulation No. 3 of 2018**  
**Telangana State Electricity Regulatory Commission (Forecasting, Scheduling,  
Deviation Settlement and Related Matters for Solar and Wind Generation  
Sources) Regulations, 2018**

**INTRODUCTION.**

Electricity is an essential commodity and it is governed by the Electricity Act, 2003 (Act, 2003) at present. The dynamics of demand and supply are based on several factors including the weather conditions and the time of usage. As electron that is produced is required to be consumed as otherwise, it is wasted. In order to avoid the situation of wastage of generation, proper mechanism should be in place to take

maximum benefit of the limited resources and within the specific time to meet the status of essential commodity.

2. The Act, 2003 prima facie assumes and requires that the interest of consumer is paramount, but at the same time, the electron that runs through generation, transmission and distribution-cum-supply is better forecasted, settled timely on accounting of generation and punish the stakeholders for deviating from the set procedure. In order to facilitate the above position, several steps including the policy initiatives have been taken by the Government of India, State Government and other competent authorities.

3. While there are several stakeholders under the Act, 2003 starting with the Commission up to the distribution licensee and the end consumer, the generation that is made available has to be despatched properly and in an orderly manner by following a grid code providing for the technical parameters required to be adhered to by all the stakeholders.

4. To facilitate the above aspect, it is also paramount that the demand is forecasted properly, deviations in transmission, distribution and supply for the energy are properly settled, so as to avoid losses to the producers of the electricity more particularly generators. Due to the encouragement policies and magnificent targets set forth by the Governments, renewable energy generation more particularly wind and solar are being relied upon for generation and supply of power. The distribution licensees are also seeking to procure more and more power generated from these sources. As these are primarily natural sources and renewable for time immemorial to come, the same will be relied upon for meeting the demand for power supply. At the same time, the generation of power from these sources is also not on firm basis and is dependent on vagaries of nature. Therefore, there is a necessity of forecasting generation from these sources as well as proper settlement mechanism and allied aspects for deviations have to be provided for.

5. CERC had originally notified the technical rules for running the wire business commonly known as grid code. Such a code has been notified under section 79 (1) (h) of the Act, 2003. CERC made amendments to the Grid Code and the Deviation Settlement Mechanism Regulation to safeguard the Grid due to the large scale

integration of wind and solar capacity what was added to the grid in the past few years and more is expected to come online over the next 7 years, in alignment with Central Government's target of 100 GW solar and 60 GW wind capacities by 2022. Most of these stations connect directly to the State Transmission Utility (STU) grid and some are partially connected to Central Transmission Utility (CTU) grid. The CERC Regulations take care of the Grid security and stability problems associated with the Solar and Wind generating stations connecting to the CTU grid. As the same applies to the State of Telangana until this Commission frames a similar regulation under section 86 (1) (h) of the Act, 2003.

6. However, with a similar large scale integration of renewable energy based generating stations particularly wind and solar stations with the state grid in the earlier years and as well as in the near future, managing the state grid will be a daunting task for State Load Despatch Centres (SLDCs). It is essential that the grid operator has visibility into how much renewable energy (RE) is expected to be injected into the grid. This is especially critical for variable and uncertain sources such as wind and solar. Forecasting and scheduling of these generators is critical to anticipate balancing requirements and procure requisite reserves to maintain load-generation balance and grid reliability. At the same time, due to the intermittent nature of these sources, special provisions must be made so that the generators are not unduly penalized.

7. To address the above problems, Forum of Regulators (FOR) the apex body of regulators under section 166 (2) of the Act, 2003 has made available a model regulations on forecasting, scheduling, deviation settlement and related matters of solar and wind generation sources and circulated the same to the Electricity Regulatory Commissions of all the States and Union Territories.

8. The State of Telangana is also likely to face the grid security and stability problems due to the expected large scale addition of solar and wind generation capacities to the state grid in the near future. In order to mitigate the problems that may be affecting the consumers, it is felt necessary to frame a Regulation on forecasting, scheduling, deviation settlement and related matters of solar and wind generation sources that are connected and are likely to connect to the state grid. Towards this objective TSERC published a draft Regulation to elicit and consider the views of all the stakeholders before notifying the final Regulation. The objective of the

Regulation is to facilitate large scale grid integration of solar and wind generating stations while maintaining grid stability and security through forecasting, scheduling and commercial mechanism for deviation and settlement of power supplies of these generators.

9. In this regard the following is considered by the Commission.
  - a) The CERC issued “CERC (Deviation Settlement Mechanism and related matters) Regulations, 2014” applicable to sellers and buyers involved in the transactions facilitated through short-term open access or medium-term open access or long-term access in inter-state transmission of electricity. The Regulation determined the charges for deviation, payment of charges and their accounting and limits of deviation. The objective of the Regulation is to maintain grid discipline and grid security as envisaged under the grid code through the commercial mechanism for deviation settlement through drawl and injection of electricity by the users of the grid.
  - b) Vide the second amendment to the above Regulation made dated 07.08.2015, a platform was provided to the bulk wind and solar generators which are regional entities for forecasting, scheduling and deviation settlement of energy and demand and charges for the deviation and left the forecasting, scheduling and deviation settlement of intra-state wind and solar generators to the SERCs.
  - c) The FOR has made available a model Regulation on forecasting, scheduling and deviation settlement of wind and solar generating stations at the state level facilitating the State Commissions for adoption and issue of Regulation in this matter accordingly.
  - d) The erstwhile APERC had issued regulation for balancing and settlement of energy and demand under clause 19.4 of APERC (Terms and Conditions of Open Access) Regulation, 2005 (No. 2 of 2005) and pending formulation of comprehensive settlement code for the state pool under ABT mechanism, had issued the “APERC Interim Balancing and Settlement Code for Open Access Transactions Regulation, 2006 (No. 2 of 2006)”. These Regulations provide for the scheduling, balancing and settlement of energy and demand but charges for the deviation and their payment mechanism were not devised and provided therein.

- e) Though a comprehensive balancing and settlement mechanism for the conventional sources of generators was made available by the Commission at Intra-state level, the additional generation produced from wind and solar are required to be considered for deviation, balancing and settlement to be included in the existing code as adopted at present unless separate regulation is provided for.

10. In exercise of the powers conferred under sub-section (3) of Section 32, sub-section (4) of Section 33, clause (h) of sub-section (1) of Section 86 and clauses (g) and (zo) of subsection (2) of Section 181 of the Electricity Act, 2003, (Central Act 36 of 2003) and all other powers hereunto enabling, the Telangana State Electricity Regulatory Commission hereby makes the following Regulation, namely:

#### **1. SHORT TITLE AND COMMENCEMENT**

- (a) This Regulation may be called the “Telangana State Electricity Regulatory Commission (Forecasting, Scheduling, Deviation Settlement and Related Matters for Solar and Wind Generation Sources) Regulation, 2018.”
- (b) This Regulation shall apply to all wind and solar generators connected to the state grid, including those connected via pooling stations, and selling power within or outside the State.
- (c) This Regulation shall come into force with effect from the date of publication in the Official Gazette for the State of Telangana.

Provided that the commercial arrangements specified in this Regulation and the related provisions regarding deviation charges and penalty, shall come into force in line with the time specified in the clause 19 of this Regulation.

- (d) This Regulation shall apply throughout the State of Telangana.
- (e) This Regulation shall be construed harmoniously with the provisions of the Act, Rules and other Regulations of this Commission as amended and in force from time to time. In case of any conflict or inconsistency in this Regulation with the provisions of the Act, Rules and other Regulations of this Commission, the latter shall prevail.
- (f) The Andhra Pradesh General Clauses Act shall apply to interpretation of this regulations.

## 2. DEFINITION AND INTERPRETATION

2.1 . In this Regulation, unless the context otherwise requires: -

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

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

(b) “**Act, 2003**” means the Electricity Act, 2003 (36 of 2003) as amended from time to time;

(c) “**Actual Drawl**” in a time-block means electricity drawn by a buyer or a beneficiary, as the case may be, measured by the interface meters;

(d) “**Actual Injection**” in a time-block means the 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 generator 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 receiving electricity generated from a solar or wind generating station including solar / wind captive 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 open access;

(h) “**CEA**” means the authority established under sub-section (1) of section 70 of the Act, 2003 or an authority stated under sub-section (2) of section 70 of the Act, 2003.

(i) “**CERC**” means the Central Electricity Regulatory Commission referred to and established in sub- section (1) of section 76 of the Act, 2003;

(j) “**Commission**” means Telangana State Electricity Regulatory Commission referred to and established under sub-section (1) of Section 82 of the Act, 2003 read with section 92 of The Andhra Pradesh Reorganisation Act, 2014;

(k) “**COLLECTIVE TRANSACTIONS**” means the transactions undertaken through the power exchange.

(l) “**Deviation**” in a time-block for a seller means its total actual generation minus

its total scheduled generation and for a buyer means its total actual drawl minus its total scheduled drawl;

**(m) “Distribution Licensee”** means either Southern Power Distribution Company of Telangana Limited (TSSPDCL) or Northern Power Distribution Company of Telangana Limited (TSNPDCL) as the case may be and also includes any other licensee to whom licence has been granted or deemed to have been granted under sections 14 and 15 of the Act, 2003;

**(n) “Forecasting Tools”** for the purposes of this regulation include Data Telemetry, Communication System and Data Acquisition System for transfer of information to SLDC and appropriate meters for energy accounting.

**(o) “Gaming”** in relation to this Regulation, shall mean an intentional mis-declaration of available capacity or schedule by any seller in order to make an undue commercial gain through deviation charges;

**(p) “Grid Code”** means the grid code specified by this Commission under clause (h) of sub-section (1) of Section 86 of the Act, 2003 as amended from time to time;

**(q) “IEGC”** means the grid code specified by CERC under clause (h) of sub-section (1) of Section 79 of the Act, 2003 as amended from time to time;

**(r) “Interconnection Point”** means the interface point of a generation facility with the transmission or distribution system; and shall mean, in relation to a wind or solar energy facility, the line isolator on the outgoing feeder on the High Voltage (HV) side of the pooling sub-station or as provided in the CEA (Installation and operation of meters) Regulation, 2006 as amended from time to time;

**(s) “Interface Meters”** means interface meters as defined by the CEA under the CEA (Installation and Operation of Meters) Regulations, 2006 as amended from time to time;

**(t) “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 or solar generator and the generating station is connected through a common / dedicated feeder and terminate 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 or solar generator, as the case may be;

(u) **“Qualified Coordinating Agency or QCA”** means agency appointed by wind / solar Generators registered with SLDC to act as a co-ordinating agency on behalf of wind or solar generators connected to a pooling station and one of such generators can also be such agency.

Provided such agency has no statutory role and is not recognized as such under the Act, 2003, accordingly under this regulation also. Any action or inaction on the part of the wind or solar generator shall be attributable to such generator or other stakeholders as the case may be only, thus leaving the QCA to be simple facilitator or coordination only.

(v) **“Regional Load Despatch Centre”** means the Centre established under sub-section (1) of Section 27 of the Act, 2003.

(w) **“Scheduled Generation”** at any time or for a time-block or any period means schedule of generation in MW or MWh at ex-bus;

(x) **“Scheduled Drawl”** at any time or for a time-block or any period of time block means schedule of despatch in MW or MWh at ex-bus given by the concerned despatch centre being either state or regional;

(y) **“Seller”** means a person, including a generating station, either selling power to distribution licensee or supplying electricity for captive use or through a transaction scheduled in accordance with the regulations applicable for short-term open access, medium-term open access and long-term open access;

(z) **“State”** means the State of Telangana;

(aa) **“State Level Entity”** means an entity which is in the SLDC control area and whose metering and energy accounting is done at the state level;

(ab) **“State Load Despatch Centre or SLDC”** means load despatch centre of the State, established under sub-section (1) of Section 31 of the Act, 2003 responsible for coordinating scheduling of the state entities in accordance with the provisions of the State Grid Code and also IEGC;

(ac) **“State Pool Account”** means a separate account to be maintained by SLDC for receipts and payments on account of deviations specified under this Regulation;

(ad) **“STU”** means the Transmission Corporation of Telangana (TSTRANSCO), which is recognized and notified by the Government of Telangana to be the State Transmission Utility under sub-section (1) of Section 39 of the Act, 2003;

(ae) “**Time-block**” means a time block of fifteen (15) minutes or any such shorter duration as may be notified by Central Commission and State Commission, for which specified electrical parameters and quantities are recorded by special energy meter, with first time block starting at 00.00hrs or such other period as the Commission may stipulate;

2.2. Words and expressions used and not defined in the Regulations but defined in the Act and Reform Act shall have the meanings assigned to them in the Act or Reform Act, Expressions used herein but not specifically defined in the Regulations or in the Act but defined under any law passed by a competent legislature and applicable to the electricity industry in the state shall have the meaning assigned to them in such law. Subject to the above, expressions used herein but not defined by a competent legislature shall have the meaning as is generally assigned in the electricity industry.

2.3. In the interpretation of these Regulations, unless the context otherwise requires;

- a) words in the singular or plural term, as the case may be, shall also be deemed to include the plural or the singular term, respectively;
- b) references herein to the ‘Regulation’ shall be construed as a reference to these Regulations as amended or modified by the Commission from time to time in accordance with the applicable laws in force.
- c) the headings are inserted for convenience and may not be taken into account for the purpose of interpretation of these Regulations.
- d) reference to the statutes, regulations or guidelines shall be construed as including all provisions consolidating, amending or replacing such statutes, regulations or guidelines, as the case may be, referred to.

### **3. GENERAL**

#### **3.1 Objective**

a) The objective of this regulation is to facilitate a the large-scale grid integration of solar and wind generating stations that are established in the State of Telangana while maintaining grid stability and security as envisaged under the state grid code through forecasting, scheduling and deviation settlement of power generation by these generators.

b) In order to maintain system security, stability and reliability, the SLDC shall take into consideration the forecasts done in respect of wind and solar generation for

week-ahead, day-ahead and intra-day operations and scheduling and long term forecasts for planning supply of electricity.

c) The SLDC shall make use of the flexibility provided by conventional generating units 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**

This Regulations shall apply to all wind or solar generators (excluding Rooftop PV Solar power projects) in Telangana connected to the intra-state transmission system, including those connected through pooling stations and supplying power to the DISCOMs, or to third parties through open access or for captive consumption through open access, and selling power within or outside the State.

Provided that, the combined installed capacity of the wind or solar generators connected to a particular sub-station / pooling station or that of individual generator connected to some other sub-station shall not be less than 5 MW.

## **4. FORECASTING AND SCHEDULING**

4.1. The methodology for day-ahead scheduling of wind and solar energy generating stations which are connected to the state grid and re-scheduling them on one and a half (1.5) hourly basis and the methodology of handling deviations of such wind and solar energy generating stations shall be as stated hereunder and accordingly forecasting tools shall be provided by the generator concerned or by QCA in writing as obtained from the generator(s).

4.2. (a) Wind and solar generators, either by themselves or represented by QCAs, shall provide to the SLDC the technical specifications of the generating units and all other associated equipment of the wind / solar farm, in such format as may be specified by the SLDC, within the timelines specified in clause 19 of this Regulation and thereafter, whenever there is any change in such technical specifications.

(b) The QCA on behalf of wind and solar generators or generators themselves, shall also provide the real time data related to power generation parameters as applicable to the SLDC.

(c) The SLDC shall give appropriate directions under sub-section (1) of Section

33 of the Act, read with this Regulation about the information required on technical specifications and protocol for sharing information on or before the timelines specified in clause 19 of this Regulation.

(d) The generators are also required to share with the SLDC such technical specifications about the establishment of the generating station, maintenance and operation of the same, information relating to tie-lines, sub-stations and dedicated transmission lines in accordance with this Regulation as may have been required to be furnished to other competent authorities under any law for the time being in force.

- 4.3. Forecasting shall be done by every wind and solar generator connected to the state grid directly or through pooling station, either by itself or by a QCA on its behalf. The SLDC shall also undertake forecasting of wind and solar power that is expected to be injected into the grid with the objective of ensuring secure grid operation by planning for the requisite balancing resources.

Provided that the QCA while doing forecasting on behalf of generator, shall obtain a written consent of satisfaction of the generator before submitting such data to the SLDC.

- 4.4. The forecast done by a wind or solar generator or the QCA as the case may be, shall be provided separately for each pooling station. The wind or solar generator or QCA will 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. Each QCA shall coordinate the aggregation of schedules of all its generators connected to a pooling station and communicate the same to the SLDC.

- 4.5. (a) In case generator / QCA avails the services of SLDC forecast, the SLDC shall recover the charges for such services from the beneficiary generator / QCA as approved by the Commission. The amount recovered from this service by SLDC shall be considered as other income and shall be given effect in the ARR of SLDC. The generator / QCA may submit the schedule based on their own forecast.

(b) Where the generator(s) through QCA or QCA itself avails the services of SLDC for forecasting or scheduling, they are estopped from taking the plea, that the error was reflected in the scheduling due to erroneous forecast by SLDC.

(c) The SLDC is in no way responsible for accurate forecasting which is to be

undertaken by the generator through QCA or generator duly establishing the required forecasting tools.

- 4.6. The QCA on behalf of wind and solar generator(s) or generator(s) themselves shall submit a day-ahead and week-ahead schedule of each generator and aggregated schedule for each pooling station, as the case may be. Day-ahead schedule shall contain wind or solar energy generation schedule at intervals of fifteen (15) minutes time-block for the next day, starting from 00:00 hours of the day, and prepared for all ninety-six (96) time-blocks. The week-ahead schedule shall contain the same information for the next seven days or (96 X 7 time-blocks):

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 AvCs for the purpose of these transactions under this Regulation.

Provided further that settlement of energy by SLDC will be on the basis of aggregated schedule submitted by the generators / QCA with reference to each pooling station.

- 4.7. (a) The schedule of wind and solar generators connected to the state grid, excluding collective transactions, may be revised by giving an advance notice to the SLDC. Such revisions shall be effective from the fourth (4<sup>th</sup>) time block, the first being the time-block in which notice was given.
- (b) In respect of wind generators, there may be one revision for each time slot of one and a half hours starting from 00:00 hours of a particular day subject to a maximum of sixteen (16) revisions during the day.
- (c) In respect of solar generators, there may be one revision for each time slot of one and a 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.
- 4.8. The SLDC shall give appropriate directions under sub-section (1) of Section 33 of the Act, 2003 read 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 along with timelines for compliance on or before the timelines specified in clause 19 of this Regulation

Provided that the directions issued by SLDC for establishing telemetry or other communication equipment and forecasting tools shall be adhered by all generators. In case of failure to comply with such directions, the schedules of the generator will not be accepted and SLDC shall be at liberty to take such action as may be desirable or expedient to safeguard the safety and security of the grid.

4.9. Any commercial impact on account of deviation from the schedule based on the forecast made available by the generator or its QCA shall be borne by the wind or solar generator either by itself or through their presenting QCA.

4.10. (a) A wind or solar generating station which is already in commercial operation as on the date of publication of this Regulation or which may commence its commercial operation before the date of publication of this Regulation in the official gazette shall establish the forecasting tools either by itself or through a QCA within the timelines as specified by SLDC in clause 19 of this Regulation.

(b) A wind or solar generating station commencing commercial operation on or after one month of the publication of this Regulation shall not be allowed to be commissioned unless it has established the forecasting tools either by itself or through a QCA.

Provided that the distribution licensee shall confirm with the SLDC about compliance of establishing forecasting tools before the generator is allowed to synchronize with the grid on commercial basis.

## **5. METERING**

5.1. The wind and solar generator shall install the meters in accordance with the CEA (Installation and Operation of Meters) Regulations, 2006 as amended from time to time.

5.2. The wind and solar generator shall also install appropriate telemetry / communication system and Data Acquisition System for transfer of required information for implementation of provisions of this Regulations so as to retrieve the same on real time basis by the SLDC.

## **6. QUALIFYING CRITERIA FOR A QCA**

6.1. The QCA shall be appointed by wind / solar generators who may be one of the generators or any mutually agreed agency. Such QCA shall possess sufficient experience in forecasting and scheduling.

6.2. The generators at a pooling sub-station may appoint one amongst themselves or any other entity as a QCA.

6.3. The QCA shall be appointed with the approval of at least 51% of the generators at a pooling sub-station, in terms of their combined installed capacity.

Provided that QCA may undertake forecasting and scheduling at feeder level, however deviation accounting shall be undertaken for pooling sub-station as a whole.

6.4. 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 this Regulations.

6.5. 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.

Provided that the QCA is not statutorily recognized authority for omissions and commissions made by the generators and the generators shall be directly responsible for compliance of the provisions of the Act, 2003 and the regulations made thereunder.

## **7. ROLE OF QCA**

7.1. For the purposes mentioned hereunder, the QCA will be facilitator between the SLDC and all the generators, who are connected to a pooling station.

- (a) providing schedules with periodic revisions on behalf of the wind / solar generators.
- (b) co-ordinating with the DISCOM / STU / SLDC, as the case may be in respect of metering, data collection, communication and issuance of instructions for despatch of power / curtailment thereof.
- (c) undertaking commercial settlement on behalf of the generators pertaining to generation of power injected into the grid, deviations in generation or drawl by either of the parties, apart from payment of deviation charges to the State

Pool Account.

- (d) undertaking de-pooling of payments received from the State Pool Account towards generation or deviations made on behalf of the generators and settling them with the individual generators.
- (e) all other ancillary and incidental matters arising out of or in connection with generation, supply, despatch and payments as may be required to be undertaken on behalf of the generators.

Provided that in case of QCA appointed by wind / solar generator for forecasting and scheduling work, the QCA shall facilitate the payment of the sum payable on behalf of the generator. The individual generator and QCA shall execute an agreement specifying that the QCA shall be the facilitator for compliance of all obligations and liabilities arising out of the scheduling, forecasting and other activities to be carried out by the wind / solar generator.

- 7.2. The QCA shall facilitate all the payments liable to be payable on behalf of the wind / solar generators as appointed by the generator. The generators are responsible for payment of dues to the DISCOMs or SLDC as the case may be and have a right to recover any sums due from the DISCOMs or SLDC, in doing so the QCA will be the facilitator. In case of non-compliance of payments or receipts of either of the parties, the QCA shall facilitate and ensure compliance of this Regulation as also the payments.
- 7.3. For this purpose, the generators, who have appointed the QCA, the QCA itself and the SLDC will enter into arrangements by way of agreement clearly specifying the rights and obligations of all the parties in terms of this Regulation.
- 7.4. To give effect to the above provisions, the SLDC shall in consultation with the generators and QCA prepare a draft agreement and place it before the Commission for evaluation and consent. The Commission will on its part consider the same duly following the procedures set out under Conduct of Business Regulation, 2015 as amended from time to time for this purpose.
- 7.5. The SLDC shall give appropriate directions under sub-section (1) of Section 33 of the Act, read 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., within the timelines specified in clause 19 of this Regulation.

## 8. ENERGY ACCOUNT, DEVIATION SETTLEMENT AND ELIMINATION OF GAMING.

- 8.1. The energy generated shall be accounted for and payment made for the energy generated by the wind and solar generators, who are connected to the state grid, accounting as well as payments, shall be in accordance with the guidelines and procedures specified by the Commission or such other competent authority under the Act, 2003.
- 8.2. In the event of actual injection 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 or solar generator through QCA or generator(s) themselves, as the case may be, to the State Pool Account, as per the schedule specified in the table below:

**Table: Deviation Charges in case of under or over-injection for sale / supply of power within the State**

<b>Sl. No.</b>	<b>Absolute Error in the 15- minute time block</b>	<b>Deviation Charges payable by Wind and Solar generator through QCA or generator(s) themselves to State Pool Account</b>
1	<=15%	None
2	>15% but <=25%	At Re. 0.50 per unit for the shortfall or excess energy for absolute error beyond 15% and up to 25%
3	>25% but <=35%	At Re. 0.50 per unit for the shortfall or excess energy beyond 15% and up to 25%. +Rs.1.0 per unit for balance energy beyond 25% and up to 35%
4	>35%	At Re. 0.50 per unit for the shortfall or excess energy beyond 15% and up to 25% +Rs.1.0 per unit for shortfall or excess energy beyond 25% and up to 35% + Rs.1.50 per unit for balance energy beyond 35%

- 8.3. The 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 CERC (Deviation Settlement Mechanism and Related

Matters) Regulations, 2014 as amended from time to time.

8.4. The Commission will review the absolute error as specified in this Regulation after a period of 3 years for the wind and solar generators connected to the state grid.

8.5. Appropriate incentive mechanism will be considered after due examination of the implementation of this Regulation after one year.

For this purpose, the SLDC shall place before the Commission a report duly certifying the status of compliance of the provisions of this Regulation on and from the date of its notification in the official gazette for the State of Telangana and up to the end of one year falling in the next calendar year.

The Commission will take a view on the report only after placing the same on its website and inviting the view of the relevant stakeholders (generators, QCA and DISCOMs).

8.6. The distribution licensee(s) have power to examine the metering arrangements including, installations in the premises of wind or solar generator whenever required. It may also require the generators to take steps to remedy any short comings noticed by it in compliance of any rules or regulations that are in force under the intimation to the SLDC and the Commission.

8.7. Deviations for generation and supply of power or otherwise in respect of Inter-State and Intra-State transactions at pooling station shall be accounted for separately.

8.8. The SLDC shall provide separate energy and deviation accounts for inter-state and intra-state transactions to QCA or the wind or solar generators.

8.9. The QCA shall separately facilitate settlement of deviation charges earned or liable to be paid by the wind or solar generators for inter-state and intra-state transactions separately.

8.10. 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.

The records of SLDC have to be maintained to a maximum possible extent in digital form with proper backing up facility for retrieval of the same at any given point of time. The SLDC may endeavour to explore the possibility of maintaining the records on real time basis, if necessary.

8.11. The SLDC shall give appropriate directions under sub-section (1) of Section 33

of the Act, 2003 read 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 and State Pool Account within the timelines specified in clause 19 of this Regulation.

- 8.12. TSTRANSCO being the STU operating the SLDC under the first proviso to sub-section (2) of Section 31 of the Act, 2003 shall provide the required manpower, funds and infrastructure to the SLDC for due implementation of this Regulation.
- 8.13. The Commission, on a petition made by SLDC, or any affected party, may initiate proceedings against any generator, ~~or~~ seller or SLDC on the charges of gaming and if required, may order an inquiry in such manner as decided by the Commission. When the charge of gaming is established in the inquiry, the Commission may, without prejudice to any other action under the Act, 2003 or Regulations made thereunder, disallow the claims or payments of any charges for deviation received by such generator or the seller for the period where the Commission has concluded that gaming has taken place.

## **9. DEVIATION SETTLEMENT FOR INTER-STATE TRANSACTIONS.**

- 9.1. The sale or self-consumption of power outside the State of Telangana by solar and wind energy generators connected to the intra-state transmission system or distribution system shall be settled by the procurers on the basis of their scheduled generation.
- 9.2. Inter-state transactions at a pooling sub-station shall be permitted only if the concerned generator is connected through a separate feeder.
- 9.3. The generator shall submit, through the QCA, a separate schedule for its energy generation, in accordance with this Regulation to the SLDC as well as the concerned Regional Load Despatch Centre (RLDC).
- 9.4. The SLDC shall prepare the deviation settlement account for such generator on the basis of measurement of the deviation in the energy injected and its impact at the state periphery.
- 9.5. The generator shall pay the deviation charges for under / over injection applicable within the State of Telangana in case of deviations in the State DSM Pool, the consequences of such deviation at the inter-state level being governed by the CERC Regulations governing the deviation settlement

mechanism and related matters.

## **10. IMPLEMENTATION PROCEDURE WITH RESPECT TO REGULATIONS.**

- 10.1. The plan for data telemetry, formats of forecast submission, ~~and~~ other modalities and requirements shall be stipulated in the detailed procedure to be submitted by the SLDC within the timelines specified in clause 19 of this Regulation, which the Commission shall approve thereafter duly following the Conduct of Business Regulation, 2015.
- 10.2. The detailed procedure shall make provision for the following aspects:
- (a) The procedure and requirements, including the payment of fees and penalties, for the registration and de-registration of generators through QCAs or generator(s) themselves and other stakeholders relevant to this Regulation by the SLDC.
  - (b) The information, data and the formats required by the SLDC from the generators through QCAs or generator(s) themselves and similarly to be provided by the SLDC to them.
  - (c) The mode and protocol of communication for exchange of information and data between the generators through QCAs or generator(s) themselves and the SLDC.
  - (d) The guidelines for energy and deviation accounting of wind and solar energy transactions under the state energy accounting framework, with illustrative examples, in accordance with the principles specified in this Regulations.
  - (e) The mechanism for monitoring compliance of the forecasting and scheduling code by the generators through QCAs or generator(s) themselves alongwith the other concerned stakeholders.
  - (f) The default conditions in the state pool settlement by the generators through QCAs along with the other concerned stakeholders and their treatment.
- 10.3. The complete accounting process will be operationalized in the manner explained in paras 10.1 and 10.2:

## **11. METERING SPECIFICATIONS.**

Interface metering for intra-state entities shall be undertaken on an urgent basis. Every entity must be metered with a Special Energy Meter (SEM) i.e. ABT compliant meter, capable of recording the energy in 15-minutes time block (with provision of 5-minutes integration). The generator through QCA or generator(s)

themselves shall forward weekly meter readings to the SLDC latest by Wednesday in respect of a previous week in addition to data acquisition provided to SCADA for energy accounting purpose under this Regulation.

*Explanation:- Week for the purpose of this clause in this Regulation shall be starting from Monday of the previously and ending with the Sunday that has gone by.*

## **12. ENERGY ACCOUNTING THROUGH METERING.**

Every intra-state grid connected entity shall be metered with a Special Energy Meter (SEM), i.e. ABT compliant meter, capable of recording the energy in 15 minutes time block (with provision of 5 minutes integration) and the energy accounting for each such entity shall be done taking into consideration of such meter data.

## **13. MEANS OF COMMUNICATION BETWEEN QCA OR GENERATOR(S) THEMSELVES AND SLDC.**

13.1. The generator through QCA or generator(s) themselves and SLDC should communicate using a software developed and facilitated by the QCA or generator(s) themselves for clauses from (a) to (h).

(a) Communicating day ahead, intra-day and / or 3 day ahead schedule along with revisions to SLDC.

(b) Informing real time generation at pooling station and / or at individual generator level, as required.

(c) Providing information of grid constraints and curtailments from SLDC side to the generator directly or through QCA.

(d) The generator through QCA or generator(s) themselves should provide software login to the state, wherein live data for all schedules and information on the deviations shall also be made available. This method will help in online communication without time lag and facilitate prompt payment of deviation charges by the concerned stakeholders including generator through QCA or generator(s) themselves to SLDC.

(e) The software should facilitate information from generator through QCA or generator(s) themselves to SLDC on generation outage with reason for such outage.

(f) It should intimate the generator through QCA or generator(s) themselves

and other stakeholders on the deviation charges at the pooling station by the SLDC.

(g) It should provide basic information of the site and turbines / inverters (Static Sheet).

(h) SLDC should be able to view the state level schedule along with actual generation being handled by the generators through QCA or generator(s) themselves.

#### **14. ACCESS TO METERS**

14.1. The generators shall enter into an agreement after nominating a QCA and such agreement shall provide specifically the following conditions.

(a) Access to the QCAs to install modem on existing ABT meters for getting data on 15 minutes basis (with provision of 5 minutes integration).

(b) Permit access to the API link for getting the data from the meter to the QCAs central server to facilitate better forecasting.

(c) Alternatively allow the QCA to install parallel meter on the existing CT / PT set to facilitate acquisition of real time data so that best schedule can be submitted to SLDC.

#### **15. DEVIATION ACCOUNTING.**

15.1. Computation of deviation charge: The deviation charges have to be calculated and notified to the concerned stakeholders in accordance with the provisions made in clauses (a) to (e) below:

(a) Deviation charge (D) payable or  $\neq$  receivable for the state as a whole at the state periphery shall be first computed by the SLDC.

(b) SLDC shall calculate Absolute Error occurred in the scheduled energy and actual energy and deviation reflected at state periphery for each pooling station and for each generator who is not a part of the pooling station feeding directly to the sub-station.

(c) The deviation charges (R) as specified in this Regulation shall be calculated by the SLDC for the pooling stations and for each generator who is not a part of the pooling station feeding directly to the sub-station.

(d) SLDC shall calculate the deviation for each pooling station and for each generator who is not a part of the pooling station feeding directly to the sub-station, assuming (i) the share out of state level deviation charge as 'D' and (ii)

receipt of deviation charge from each pooling station and for each generator who is not a part of the pooling station feeding directly to the sub-station based on the charges for deviation, as (R). Actual commercial impact for the state as a result of deviation of wind and solar generation would be D minus R.

(e) This amount D minus R shall be further allocated to each pooling station and for each generator who is not a part of the pooling station feeding directly to the sub-station in proportion to their deviation.

**16. SETTLEMENT OF DEVIATION CHARGES**

SLDC shall prepare the State Pool Account and Deviation Energy Account and shall undertake settlement of deviation charges payable by each pooling station and each generator who is not a part of the pooling station feeding directly to the sub-station as per the provisions of this Regulation.

**17. PAYMENT MECHANISM FOR SETTLEMENT OF DEVIATIONS BY WIND / SOLAR GENERATORS AND PAYMENT SECURITY:**

- 17.1. The payment settlement of deviations charges beyond permissible limits shall be prime responsibility of all the wind and solar generators connected to respective pooling station or connected with the sub-station as the case may be. The generators shall make payment of deviation charges through QCA nominated by them as per the rates specified in clause 8.2 of this Regulation.
- 17.2. The wind or solar generator shall provide payment security to SLDC by way of bank guarantee obtained from a public sector bank and / or revolving letter of credit given by a scheduled commercial bank covering deviation settlement mechanism payment for 6 months.
- 17.3. In case the wind or solar generator defaults in payment to SLDC through QCA then QCA shall inform about the default by the generator to the SLDC and SLDC shall not despatch such generation.
- 17.4. The payment of all charges on account of deviations beyond the permissible limit at a pooling station by wind and solar generators shall have priority over other payments and shall be paid within 10 (ten) days from the issuance of the invoice along with statement of account. Such payment shall attract an interest of 0.04% per day for each day of delay in the event the payment is made beyond 12 days.

**18. ENERGY ACCOUNTING FOR (DEVIATION CHARGES AND DE-POOLING OF DEVIATION CHARGES OF WIND / SOLAR GENERATORS CONNECTED TO POOLING STATIONS.**

- 18.1. All accounts related to deviation either ways shall be prepared by the generator through QCA or generator(s) themselves on a weekly basis, based on inputs from the SLDC. The same is to be made available to the SLDC by the generator through QCA or generator(s) themselves\_using the software put in place for the said purpose.
- 18.2. SLDC shall make available the processed data on a weekly basis not later than afternoon of Thursday for the seven-day period which ended on the mid-night of previous Sunday, to the concerned generators through QCA or generator(s) themselves in a specified format, for preparation of energy accounts related to accounting of energy from the pooling station / sub-station on a weekly basis.
- 18.3. The data furnished by SLDC shall be open to all entities for checking / verification for a period of 15 days. In case any mistake is detected, SLDC shall forthwith make a complete check and rectify the mistakes.

**19. DE-POOLING OF DEVIATION CHARGE.**

- 19.1. The QCA serving the generators shall de-pool the energy deviation as well as deviation charges to each generator connected at a respective pooling station in proportion to energy injected in each time block by each generator.

**20. GRID STABILITY.**

- 20.1. All the wind and solar generators have to maintain reactive power, voltage and frequency in-line with the central / state grid code regulations for maintenance of stability, safety and security of the grid.

## 21. SUMMARY OF TIMELINES

Reference	Activity / Milestone	Action by	Period / Duration from date of notification of Regulations
4.2 (a) and 4.2 (c)	Technical Specification and Information Sharing protocol by generators through QCA or generator(s) themselves to SLDC	SLDC	Three Months
4.8	Forecasting tool, alternate means of communication, formats for submission to the SLDC.	Forecasting tools to be established by the generators through QCAs or generator(s) themselves	QCA
4.10	Forecasting tools to be established by the generators through QCAs or generator(s) themselves.		Three Months
7.4	Guidelines for registration of QCA, data exchange between QCA and SLDC	SLDC	Two Months
8.11	Manner of making State Pool Account and settlement thereof	SLDC	Three Months
10.1 & 10.2	Detailed procedures covering plan for data telemetry by SLDC to the Commission	SLDC	Three Months
	Trial Run – During this period all parties shall comply with the above and the remainder period shall be termed as a Trial Run period (maximum of 3 months).	All concerned stakeholders	Six Months

Reference	Activity / Milestone	Action by	Period / Duration from date of notification of Regulations
1(c)	Commencement of Commercial arrangement specified in this Regulation	All concerned stakeholders	Six Months

## **22. DISPUTE RESOLUTION.**

- 22.1. Any dispute arising out of or in connection with issues of despatch of energy, levy of charges or payment of deviation charges, the SLDC and the generator through QCA or generator(s) themselves shall make efforts to resolve the matters by mutual discussion.
- 22.2. Failing such an action, the aggrieved stakeholders are free to agitate the issue by means of filing a proper petition under the provisions of the Act, 2003, duly complying with Conduct of Business Regulation, 2015 and Levy of Fee and Charges for the Services rendered by the Commission Regulation, 2016.

Provided that the QCA cannot independently initiate any proceedings before the Commission and can only be party to the proceedings along with generator(s) as it is not a statutory authority under the Act, 2003 to raise any issue before the Commission.

## **23. MISCELLANEOUS**

- 23.1. The interpretation of the provisions of the regulation shall be made by the Commission either upon itself noticing any difficulty in giving effect to the same or on a request of any of the stakeholders to cause interpretation of any provision. The decision of the Commission is final in the matter.
- 23.2. Nothing in this Regulation shall be deemed to limit or otherwise affect the inherent power of the Commission to make such orders as may be necessary to meet the ends of justice or to prevent abuse of process of the Commission.
- 23.3. Nothing in this Regulation shall bar the Commission from adopting a procedure, which is at variance with any of the provisions of this Regulation, if the Commission, in view of the special circumstances of a matter or class of matters and for reasons to be recorded in writing, deems it necessary or expedient for so doing in order to deal with such a matter or class of matters.

23.4. Nothing in this Regulation shall, expressly or impliedly, bar the Commission to deal with any matter or exercise any power under the Act, 2003 or Reform Act, 1998 for which no provisions have been framed, and the Commission may deal with such matters, powers and functions in a manner it deems fit in appropriate case.

**24. POWER TO REMOVE DIFFICULTIES.**

Where any difficulty arises in giving effect to any of the provisions of this Regulation, the Commission may, by general or special order, do anything not being inconsistent with the provisions of the Act, 2003 or Reform Act, 1998, which appears to it to be necessary or expedient for the purpose of removing the difficulties.

**25. 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 by grant of relaxation, may relax any of the provisions of this Regulation on its own motion or on an application made before it by an interested person in accordance with Conduct of Business Regulation, 2015.

**26. POWER TO ISSUE DIRECTIONS**

Subject to the provisions of the Act, 2003 and this Regulation, the Commission may, from time to time, issue orders and directions in regard to the implementation of the Regulation and procedure to be followed and various matters which the Commission has been empowered by this Regulation to specify or direct, as may be considered necessary in furtherance of the objective and purpose of this Regulation.

**27. GENERAL POWER TO AMEND.**

The Commission may, at any time and on such terms as to costs or otherwise, as it may think fit, rectify any defect or error in any proceeding before it, and all acts shall be done for the purpose of determining the real question or issue arising in the proceedings.

**28. REGULATIONS TO BE IN ADDITION TO AND NOT IN DEROGATION OF OTHER LAWS.**

This Regulation is in addition to and not in derogation of any provision laid under the Act, rules or regulations framed thereunder or under any other laws.

**(BY ORDER OF THE COMMISSION)**

**(SRI. UMAKANTA PANDA)  
COMMISSION SECRETARY (A/C)  
TELANGANA STATE ELECTRICITY  
REGULATORY COMMISSION**

**HYDERABAD,  
DT:30.05.2018.**