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DE/EBC-1  
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**TELANGANA STATE ELECTRICITY REGULATORY COMMISSION**  
5<sup>th</sup> Floor, Singareni Bhavan, Red Hills, Lakdi-ka-pul, Hyderabad 500 004

**ABSTRACT**

TSERC – Procedure as well as relevant forms for implementation of the framework of 'Forecasting, Scheduling, Deviation Settlement and Related Matters for Solar and Wind Generation Sources' Regulation 2018 [Regulation No.3 of 2018] – Approval - Accorded.

Proceedings No. Secy / Tariff .No. 52 of 2022 D.No. 683 dated 30.11.2022

Read the following: -

DE/PPLNG  
DE/SCADA  
DE/SHIFT  
DE/MOPP-2  
DE/RE-II  
DE/DSGS  
SE/SLDC

- 1) Regulation No.3 of 2018
- 2) Lr.No.CE/SLDC/F.RE Forecasting & Scheduling/D.No.268/18 dated 19.07.2018
- 3) Proceedings No.Secy/Tariff No.66 of 2018 dated 13.08.2018
- 4) Lr.No.CE/SLDC/F.RE (F&S)/D.No.472/18 dated 12.11.2018
- 5) Public Notice dated 05.12.2019

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On 31.05.2018, the Commission has notified the Regulation No.3 of 2018 on forecasting, scheduling, deviation settlement and related matters for solar and wind generation sources.

2. Whereas for implementation of said Regulation the Commission is required under Clause 10 of said Regulation to approve the procedure and relevant formats to be adopted by the State Load Despatch Centre (TSSLDC) .
3. And whereas, in the said Regulation, under Clause 21, timelines for compliance of certain acts and setting up certain procedure have been specified i.e., the period/ duration from the date of notification of the Regulation.
4. And whereas, in reference 2<sup>nd</sup> cited above, the State Load Despatch Centre for the Telangana State (TSSLDC) has sought extension of time to comply with the timelines as specified in the Regulation due to various procedural difficulties. The Commission having considered the request of TSSLDC had accorded extension of timelines vide reference 3<sup>rd</sup> cited above.
5. And whereas, in reference 4<sup>th</sup> cited above, the TSSLDC proposed the procedure for implementation of the Framework as per Regulation No.3 of 2018 covering the following:
  - a) Role of QCA, Qualification criteria of QCA and Registration of QCAs/Generators (which are not part of QCA).
  - b) Metering, Data collection & Data Exchange between QCA/Generator and TSSLDC.



- c) Forecasting and Revisions.
- d) Covering plan for Data Telemetry and Data Acquisition System.
- e) Calculation of Energy Deviations & Deviation Charges, De-pooling of Deviation Charge and State Pool Account.
- f) Formats for submission of the schedules with revisions by Generators, formats for Technical Specifications of generator developed by TSSLDC

6. The Commission thereafter initiated public consultation process by giving a Public Notice dated 05.12.2019 to obtain comments, objections and suggestions from the stakeholders and public at large on the proposal of TSSLDC i.e., procedure as well as relevant formats for implementation of the framework of Regulation No.3 of 2018. The Public Notice as well as the TSSLDC proposed procedure with all relevant formats is placed in the official website of the Commission viz., [www.tserc.gov.in](http://www.tserc.gov.in).

7. In response to the Public Notice, six (6) stakeholders viz., M/s Vector Green Energy Private Limited, M/s Statkraft Markets Private Limited, M/s Telangana Solar Open Access Developers Association, M/s Dubbak Solar Projects Private Limited, M/s Manikaran Analytics Limited and M/s Arhyama Solar Power Private Limited have submitted their comments, objections and suggestions on the proposal of TSSLDC and the same were forwarded by letter dated 10.01.2020 to TSSLDC for comments. The TSSLDC sought time, to reply till first week of February 2020 which was acceded to by the Commission on 30.01.2020. Subsequently, TSSLDC gave reply on the comments, objections and suggestions of the stakeholders by letter dated 08.02.2020.

7. After considering the comments, objections and suggestions of stakeholders along with submissions of the TSSLDC the Commission hereby approves the procedure to be followed by TSSLDC and all Solar and Wind generators connected to the State grid including those connected via pooling stations and selling power within or outside the State or their appointed Qualified Coordinating Agency (QCA). The procedure and the annexures required to be followed are enclosed to this order for expeditious compliance of the decision of the Commission.

8. The TSSLDC shall place the procedure approved by the Commission along with annexures on its website for being accessed by all the Solar and Wind generators and their QCA(s) in the Telangana State and commence commercial arrangement specified in the Regulation No.3 of 2018.

**Enclosures:**

- *Procedure for implementation of the Framework on Forecasting, Scheduling, Deviation Settlement and Related Matters for Solar and Wind Generation Sources as per Regulation No.3 of 2018.*
- *Annexure-I QCA Registration Form*
- *Annexure-IA Registration Form (Generator)*
- *Annexure-II Declaration by the QCA*
- *Annexure-III Proforma consent letter of Generators appointing QCA*
- *Annexure-IV Undertaking to be given by prospective QCA at the time of registration*
- *Annexure-V Technical specifications, static & real time data of Solar Plant*



- Annexure-VI Static data of Wind turbine generators
- Annexure-VII Proforma of Bank Guarantee for security for compliance of Deviation amounts as per DSM
- Format for Solar forecast
- Format for Wind forecast

**(BY ORDER OF THE COMMISSION)**

  
Commission Secretary FAC

To

✓ The Chief Engineer, TSSLDC,  
TSTransco, Vidyut Soudha, Hyderabad 500 082.

Copy to:

The Chairman & Managing Director, TSSPDCL, Corporate Office, 6-1-50,  
Mint Compound, Hyderabad 500 063.

The Chairman & Managing Director, TSNPDCL, Corporate Office, 2-5-31/2,  
Vidyut Bhavan, Nakkalagutta, Hanamkonda, Warangal 506 001.

Joint Director/Law/TSERC

Joint Director/Tariff (Engineering)/TSERC

Joint Director/Tariff (Accounts & Financial Analysis)/TSERC

Joint Director/Personnel & In-charge Accounts/TSERC

P.O. to Chairman

PS to Member/Technical

PS to Member/Finance

TRANSMISSION CORPORATION OF TELANGANA LTD  
TELANGANA STATE LOAD DESPATCH CENTER, HYDERABAD

Procedure for implementation of the Framework on Forecasting, Scheduling,  
Deviation Settlement and Related Matters for Solar and Wind Generators as per  
Regulation No. 3 of 2018 of -TSERC

**1. Objective:**

- 1.1 The main objective of the forecasting and scheduling is to provide advance prediction of wind and solar power generation close to actual weather conditions, so as to assist the system operator in smooth grid operations, enhance grid security and dispatching the energy generated in most economical manner
- 1.2 In view of large scale integration of renewable energy (RE) power into the grid, the accurate forecasting of the RE power for week ahead / day ahead /- intra day has become utmost important, which will help the state load dispatch center (SLDC) in planning the generation of conventional sources of energy and scheduling, balancing the needs of demand and supply, ancillary services and operation of state grid in most optimal economic manner.
- 1.3 (a) The procedure has to be formulated by the SLDC in consultation with the Commission (TSERC) as proposed by the regulation being Telangana State Electricity Regulatory Commission (Forecasting, Scheduling, Deviation Settlement and Related Matters for Solar and Wind Generation Sources) Regulations, 2018 (Regulation No. 3 of 2018) as notified by the Commission in exercise of powers conferred under Electricity Act, 2003 (Act, 2003).  
(b) The procedure is issued by the SLDC in pursuance to clauses 4.2, 7.5, 8, 10 & 11 of Regulation:-No. 3 of 2018 herein after called the "Procedure for implementation of the framework on Forecasting , Scheduling, Deviation Settlement and Related Matters for Solar and Wind Generators" for short "RE DSM Procedure".
- 1.4 The Regulation No:- 3 of 2018 of TSERC is brought into force with effect from the date of publishing the notification on the website of SLDC.

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 21 of the regulation.

**2. Scope:**

(a) The procedure shall be followed by (SLDC), solar and wind generating stations connected to the state grid directly or through pooling stations and supplying power to the state DISCOMs, or to the third parties through open access, or for captive consumption and selling power within or outside the state and the Qualified Coordinating Agencies (QCA's).

(b) Unless the subject matter or context otherwise requires, words and expressions used in this procedure shall have the meaning assigned to them in the Electricity Act, 2003, Regulation No.: 3 of 2018 and other relevant regulations as amended from time to time.

**3. Applicability:**

This procedure shall apply to all solar or wind generators (excluding rooftop PV solar power projects) in the state of 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 solar or wind generators connected to a particular sub-station / pooling station or that of the individual generator connected to some other sub-station shall not be less than 5 MW.

4. The Qualified Coordinating Agency (QCA):

- 4.1 "Qualified Coordinating Agency or QCA" means and includes the agency appointed by solar / wind generators registered with SLDC to act as a coordinating 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 an agency has no statutory role and is not recognized as such under the Act, 2003, accordingly under this procedure also. Any action or inaction on the part of the solar or wind 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 coordinator only.

- 4.2 The QCA shall be appointed by solar or wind generators, who may be one of the generators or any mutually agreed agency.

- 4.3 (a) The QCA shall be appointed with the approval of at least 51% of the generators at pooling station / grid sub-station (who are having common Interface billing meters) in terms of their combined installed capacity and the remaining generators shall also accept the same as QCA and the generators shall also inform SLDC to this effect.

(b) The generators shall not be allowed to provide individual schedules, who are having common interface billing meter at pooling station / grid sub-station. They shall appoint a QCA and it shall give single schedule for that pooling station / grid sub-station on behalf of the generators for whom it is coordinating and shall undertake forecasting and scheduling at feeder level, however deviation accounting shall be undertaken for pooling station / grid sub-station as a whole.

Provided that where a pooling station / grid substation has more than one QCA, then all the QCAs shall coordinate with each other in giving effect to the procedure set forth herein as also the Act, 2003, rules and regulation(s).

- 4.4 (a) The solar or wind generators, who are having separate dedicated feeders and separate interface billing meters also may appoint a QCA and there is no such condition that all the generators connected to such substation shall accept that QCA only. The generator(s) who are inclined to avail the services of a separate QCA, may appoint another

QCA separately or register themselves with SLDC as QCA independently and shall undertake the functions of QCA, as mentioned in the procedure set forth herein as also the Act, 2003, rules and regulation(s).

(b) The which is coordinating the generator(s), who are connected to a grid sub-station having dedicated feeders shall give single schedule at that sub-station and also individual schedules of the generators whom it is coordinating.

(c) However, the QCA shall ensure that the schedules of the grid substation and the schedules of the individual generators do not mismatch with each other.

4.5 The generators who have not appointed any QCA and having dedicated feeders shall register with SLDC as QCA themselves. They shall provide the schedules with periodic revisions as per the regulation and undertake the functions of a QCA as mentioned in the regulation.

4.6 The QCA shall provide separate schedules for solar and wind generators connected to same sub-station / pooling station.

4.7 Any commercial impact on account of deviation from the schedule already notified to the SLDC unless revised in terms of the regulation, 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 QCA.

## **5. Qualifying criteria for QCA:**

5.1 The QCA shall have the experience in the field of solar / wind power forecasting and scheduling for a minimum period of 1 year with appropriate accuracy levels in forecasting.

5.2 The QCA shall have fully functional forecasting and scheduling tools to obtain desired outputs.

5.3 The QCA shall have capability to handle multiple

generator(s) connected to a pooling substation in order to be well positioned to de-pool deviation charges.

- 5.4 The QCA shall have experience in working in different terrain and regions as solar or wind generation depends on these factors and such experience facilitates better scheduling.
- 5.5 The QCA shall have an established team of renewable resource analysts, modeling statisticians, energy models, software developers and 24 X 7 operation and monitoring team.
- 5.6 The QCA shall have appropriate software systems in place for seamless flow of information to and from SLDC in order to facilitate scheduling, revision of schedule, intimation of outages / grid constraints, curtailment etc in the context of integrated grid operation in an efficient and economic manner.
- 5.7 The QCA shall have capability to provide real time monitoring systems (Supervisory Control and Data Acquisition System) (SCADA) in place for seamless flow of information to and from SLDC.
- 5.8 The QCA shall have established alternate voice and data communication with SLDC using latest communication facilities, both offline and online mode.
- 5.9 The QCA shall establish protocol including the communication interface for communication with Individual generators to implement the instructions of system operator and SLDC.
- 5.10 The QCA shall have a designated and qualified operator available 24 (twenty four) hours a day, every day for contact and communication with the SLDC, in accordance with SLDC instructions and other communication policies and protocols.

**6. Registration of QCA:**

The procedure for registering a QCA is as follows:

- a) The QCA shall submit application accompanied with registration fee of Rs. 5000/-, and applicable taxes for each interconnection point, as per the proforma (Annexure- I & IA) for the registration.
- b) The QCA shall submit a declaration on the letter head and non-judicial stamp paper of the value of Rs.100/- as per Annexure-II.



Explanation:- In the event of non-availability of the non-judicial paper, franking can be resorted to for the same value.

c) The QCA shall submit consent letters on their letter heads from the generator(s) on whose behalf it is coordinating and on a Non-Judicial stamp paper of the value of Rs.100/- as per the proforma attached in Annexure-III.

d) The QCA shall submit an undertaking on a Non-Judicial stamp paper of the value of Rs. 100/- from time to time in regard to compliance of regulations of TSERC and this procedure as amended from time to time as per Annexure-IV.

e) The QCA shall submit individual bank guarantees and / or revolving letter of credit from the generators whom it is coordinating, obtained from public sector bank for the amount equivalent to Rs. 33,750/- per MW for solar generation and Rs. 67,500/- per MW for wind generation as per Annexure-VII.

f) The bank guarantee submitted shall be valid for a period of 2 years with a claim period of 1 (one) year after validity period and should be obtained from a public sector bank, and shall be extended from time to time as required. The payment security may be amended from time to time by the SLDC based on actual incidence of DSM charges to be levied on the generator. g) Once QCA submits the application along with bank guarantees on behalf of the generators for whom it is coordinating alongwith registration fee, the same may be accepted by the SLDC and QCA may be allowed to schedule power on behalf of the generators / pooling stations for which the necessary login ID and password shall be provided by SLDC.

h) In case QCA has obtained registration on the basis of false information or by suppressing material information, in that event the registration of such an entity stands cancelled and revoked. The SLDC shall also have the right to initiate appropriate legal action against such entity as may be necessitated in the circumstances of each case.

i) The registration of the QCA can be revoked on the request of generators holding connection of 51% at the pooling station / grid sub-station and who (are having common interface billing meters) in terms of their-combined installed capacity.

j) The QCA may cancel the registration by submitting NOC from the generators for whom it is coordinating. The generators shall choose another QCA and get it registered before issuing NOC to old QCA.

(i) The generator, which is having dedicated billing meter, can change its QCA by submission of NOC from old QCA to SLDC.

(ii) The generator can appoint new QCA and that QCA shall be registered with SLDC as per the procedure.

(iii) After registration of new QCA, old QCA shall submit an application for "Change of Registration" as per Annexure – I.

k) In the event non-compliance of any of the terms / conditions / rules outlined under Regulation No. 3 of 2018 by QCA then the registration of the QCA will be revoked by the SLDC.

l) The SLDC shall obtain the written down agreement from the generator with regard to engagement of QCA as to rights and obligation of both the generator and the QCA so as to avoid any situation of confrontation between them and the need to resolve the same by the SLDC.

## **7. Role of QCA:**

7.1 QCA shall be the facilitator between SLDC and all the generators connected to pooling station / grid sub station (who are having common  
- interface billing meters) for the following purposes. Subject to generality of the functions, the QCA shall perform the following functions particularly:

a) Providing schedules with periodic revisions as per the Regulation, -No. 3 on behalf of all the solar / wind generators connected to the pooling station / grid sub-satation.

b) Co-coordinating with the DISCOM / STU / SLDC, as the case may be in respect of metering, data collection, communication and issuance of instructions for despatch / curtailment of

power generation thereof.

- c) Undertaking commercial settlement of payment or recovery by or on behalf of the generators pertaining to generation of power injected into the grid, deviations in generation contrary to schedule communicated or drawl effected by the DISCOMS or third parties, apart from payment of deviation charges to the state pool account or generators by effecting de-pooling as the case may be.
- d) Undertaking de-pooling of payments received from the state pool account on behalf of the generators and settling them with the individual generators in accordance with the Regulations No.3.
- e) All other ancillary and incidental matters arising out of or in connection with generation, supply, dispatch 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 and a copy of such agreement shall be placed before the SLDC in the format as provided in this regulation.

Provided that the SLDC may, at its discretion, obtain ratification of such an agreement from the Commission.

- 7.2 The QCA shall facilitate all the payments liable to be payable on behalf of the solar / wind 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 the



regulation as also the timely payments of amounts due to either parties.

Explanation:- The SLDC shall protect the interest of any particular individual generator, who is connected to common pooling station in the event of default by one or more generators, who are also connected to the same pooling station.

- 7.3 The QCA shall have to ensure confidentiality of all the data provided by the SLDC and the data shall not be shared without written permission from SLDC.

Provided that the data gathered by the QCA from SLDC, if the same is required to be placed in the public domain for necessary action by other stakeholders or the SLDC itself has placed the same on the public domain, then the said data does not attract this function of the QCA.

- 7.4 The solar and wind generators shall provide, technical specification of the generating units and all other equipment of the solar / wind farms, either by themselves or represented by a QCA(s) to SLDC, as per the Annexure V and Annexure VI enclosed to this procedure and applicable to solar and wind generating stations within the timelines as per the Regulation No. 3 of 2018 and whenever there is any change in such technical specifications the same shall be communicated to the SLDC.
- 7.5 The QCA shall share the forecasting model with the SLDC. However, the SLDC is neither expected to comment / tinker with the same nor make public as it is placed before SLDC as part of this procedure to understand model only.
- 7.6 The QCA shall accept the energy and deviation accounts for inter-state and intra-state transactions prepared by the SLDC.
- 7.7 The QCA shall de-pool energy deviations as well as deviation charges to each generator connected at a respective pooling station in proportion to absolute deviation (MW) in each time block by each generator and upload the statement of de-pooling to SLDC on monthly basis in the SLDC web-portal and also send it through e-mail to SLDC.
- 7.8 The QCA shall maintain historical data (wind velocity, wind

direction, power generation in MW etc, for solar and wind insolation, power generation in MW etc, for solar);- all necessary and required records, registers and accounts in respect of forecasting, scheduling and deviation settlement in accordance with this procedure and shall furnish to SLDC on request or as directed by SLDC.

Provided that the historical data shall be retained / stored using the modern IT and ITES enabled services for such period as is prudently required and in any case for period of 3 years and for such further period as may be desirable in specific instances.

Provided further that the data proposed to be stored is already available on a public domain based web portal, then the same can be retained with a specific link as may be appropriately decided by the SLDC, but however the same is subject to confidentiality to be maintained.

7.9 The QCA may endeavor to record and transmit the data of low voltage ride through (LVRT) and high voltage ride through (HVRT) on monthly basis to SLDC.

7.10 The QCA shall ensure periodical testing and calibration of interface billing meters of the generators of whom it is coordinating as per the regulation on metering issued by the CEA being CEA (Installation and Operation of Meters) Regulations, 2006 (CEA regulation) and procedures of TSTRANSCO.

7.11 The QCA shall have the forecasting tool which has forecasting accuracy analysis and support in uploading forecasts to SLDC tool, information delivery to scheduling tool, support visualization of real time generation forecasts as well as provide platform to exchange required necessary information like real time data etc. for accurate forecasting through SCADA.

8. Metering, data collection & data exchange between QCA / generator acting as QCA and SLDC:

8.1 The solar and wind generator shall install the meters in accordance with the CEA Regulation as amended from time to time.

- 8.2 The distribution licensee(s) have power to examine the metering arrangements including, installations in the premises of wind or solar generator as the case may be whenever required in terms of Act, 2003, rules and regulations framed thereunder. It may also require the generators to take steps to remedy any short comings noticed if in compliance of any rules or regulations that are in force under the intimation to the SLDC
- 8.3 The QCA shall facilitate for installation of special energy meters (SEM) that is ABT compliant meter, capable of recording the energy in 15-minutes time block (with provision of 5-minutes integration)- and the energy accounting shall be done taking into consideration of such meter data. The QCA shall ensure such meter data to be compatible to EBC / SLDC or EBC / DISCOM data base.
- 8.4 The generators shall enter into an agreement after nominating a QCA and such agreement shall provide specifically the following conditions.
- a) Install modem on existing ABT meters for getting data on 15 minutes basis (with provision of 5 minutes integration).
  - b) Access to the API link for getting the data from the meter to the QCAs central server to facilitate better forecasting.
  - c) Install parallel ABT meter on the existing CT / PT set to facilitate acquisition of real time data so that best schedule can be submitted to SLDC.
- 8.5 The QCA shall place such agreement copy entered with the generator(s) before the SLDC.  
Provided that the individual generator has opted to be the QCA, then such generator shall identify its functions and liabilities as the QCA and place the same before the SLDC. Such functions and liabilities if any, being in contradiction to the Act, 2003, rules and regulations made thereunder shall stand expunged as intimated by the SLDC.
- 8.6 The QCA shall coordinate with DISCOMs for forwarding weekly / monthly meter readings to the SLDC for energy accounting purpose under this procedure.
- 8.7 The SLDC shall validate, and process the SEM data for computing the net injections by each pooling station.



- 8.8 The SLDC will monitor such data so that there is no gaming (gaming is an intentional mis-declaration of AVC by any generating station or QCA in order to make an undue commercial gain).

Provided further that the SLDC shall be free to corroborate the injection of energy at the pooling station with grid substation if it is separately provided with reference to the actual generation that is injected into the system by the generators for arriving at excess or shortfall generation contrary to schedules given by the QCA and determine the deviation applicable to the pooling station or grid substation.

For this purpose, it may be appropriate for the SLDC to collect the meter reading data from the meters on the outgoing feeder of the pooling station and incoming feeder of grid substation, if they are separately provided and identifiable.

- 8.9 The QCA shall facilitate for installation of appropriate telemetry / communication system and data acquisition system for transfer of required information for implementation of provisions of this procedure so as to retrieve the same on real time basis by the SLDC for assessing that the system operation is run on maximum economy and efficiency.
- 8.10 The QCA shall have a designated and qualified operator available 24 twenty four hours a day for contacting and communicating with the SLDC, in accordance with the SLDC instructions and communication(s) and protocols that are required to be followed in terms of this procedure, Act, 2003, rules and regulations made thereof.
- 8.11 The QCA shall communicate day ahead, week ahead and intra- day schedules including available capacity (AVC) along with revisions to SLDC through an e-mail and web portal developed by SLDC.
- 8.12 The QCA and generator shall inform real time generation at pooling station and / or at individual generator level, as required. But SLDC shall also immediately record the deviations noticed against the schedules given by them keeping in mind the real time data furnished by them.

8.13 The QCA shall provide information of grid constraints and curtailments from SLDC side to the generator. By providing to the generator the above information, the QCA shall ensure to the extent possible that deviations from the schedules given already to SLDC are minimized.

8.14 The QCA shall inform to SLDC on generation outage with reason for such outage through an e-mail and web portal developed by SLDC.

Provided that the outage of generation should be an unplanned and arising out of emergency situation only.

8.15 The SLDC shall intimate the deviation charges at the pooling station and generators to the QCA through the web portal and e-mail. The SLDC shall ensure confirmation of receipt of such information to the generators from the QCA by return of mail.

8.16 The QCA shall provide basic information of the site and ~~T~~turbines / ~~I~~nverters as per the static sheet through an e-mail and web portal. The information required to be provided by the QCA shall be in accordance with Act, 2003, rules and regulations made thereunder.

8.17 The SLDC should be able to view state level schedule along with actual generation of all the generators, which are being handled by the QCA in the web portal. The SLDC in consultation with QCA and generators develop and operate necessary technical interface using modern communication, IT and IT based services for obtaining the real time picture of the schedules. It shall also obtain ratification from the Commission of such a program for effective integrated grid operations and for achieving maximum economy and efficiency.

## **9. Forecasting & Revisions :**

9.1 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, 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.

9.2 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. Each QCA shall coordinate the aggregation of schedules of all its generators connected to a pooling station and communicate the same to the SLDC.

Provided in case the pooling station or the grid substation is serving certain individual generators who are not part of the QCA or registered themselves as a QCA or otherwise then, SLDC may opt to collect data from the outgoing feeder of such generator's power plant, so as to avoid any complication in giving effect to this procedure.

- 9.3 The QCA shall upload and access the forecasting related data that is power forecast, schedules and AVC on week ahead, day ahead as well as intra-day basis of 15 minutes time block (with provision of 5 minutes integration) including periodic revisions) in the web portal and through an e-mail as per Regulation: No3- of 2018 of the Commission.
- 9.4 The SLDC shall also undertake forecasting of solar and wind generation that is expected to be injected into the grid with the objective of ensuring secure and integrated grid operation by planning for the requisite balance resources to match the demand and supply position as also ensuring grid stability and frequency in accordance with the Act, 2003, rules and regulations made thereunder.
- 9.5 In case 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 treated as other income and shall be reflected as such in the ARR of SLDC that is filed before the Commission.
- 9.6 The SLDC is no way responsible for accurate forecasting, which is to be undertaken by the generator(s) through QCA or generator(s) duly establishing the required forecasting tools and QCA / generator(s) shall not be entitled to plead later that the error was occasioned in the scheduling due to erroneous forecast arrived at by SLDC.
- 9.7 The QCA / generator(s) may prepare their schedule based on the forecast done by SLDC or their own forecast. Any commercial impact



on account of deviation in the schedule based on the forecast shall be borne by the solar or wind generator(s) either by themselves or through the QCA appointed by them.

- 9.8 The QCA on behalf of solar and wind generator(s) or generator(s) themselves shall submit a day-ahead and week-ahead schedule of each of the generator and aggregated schedule for each pooling station, as the case may be day-ahead schedule shall contain wind or solar generation schedule at intervals of fifteen (15) minutes time- block for the next day (with provision of 5 minutes integration), 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 that is (96 X 7 \_ time-blocks). The schedules shall also take into the account the revisions as proposed by wind and solar generator(s) after notifying the schedules as permitted to the extent by the Regulation No. 3 of 2018.

Provided that the wind and solar generator(s), 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 each of the agreed and approved capacities allocated separately and such capacities alone shall be treated as AVCs for the purpose of the transactions under this procedure.

Provided further that settlement of energy by SLDC will be on the basis of aggregated schedule submitted by the generator(s) / QCA with reference to each pooling station and the generator(s) / QCA shall identify the capacity so delivered for each of the activity respectively including the deviations occasioned thereon.

- 9.9 a) The schedule of wind and solar generator(s) 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 (4th) time block, the first being the time-block in which notice was given.
- b) In respect of wind generator(s), there may be one revision for each time slot of one and a half hours starting from 00:00 hrs of a particular day subject to a maximum of sixteen (16) revisions during the day.

c) In respect of solar generator(s), there may be one revision for each time slot of one and a half hours starting from 05:30 hrs upto 19:00 hrs of a particular day subject to a maximum of nine (09) revisions during the day.

9.10 The solar and wind power forecast and AVC have to be delivered separately at pooling station level / grid substation level.

9.11 The day ahead forecast and AVC shall be provided by the QCA or the generator(s) as the case may be duly following provisions of the Regulation No. 3 of 2018 and state grid code in Regulation No. 4 of 2018 regarding scheduling of power every day.

Provided that in the absence any time lines in the Regulation No. 3 of 2018 or any other regulation for the time being in force, the SLDC shall make necessary notification in that regard and send specific communication to that effect to each of the QCA and also generator(s) using all the means of communications and ensure adherence by all the stakeholders.

9.12 In case unplanned curtailment / shutdown / system constraint necessitated in certain time blocks of a day by the SLDC, QCA shall intimate to the generator(s), who further shall be responsible to restrict the generation at site as per the advice of the SLDC and accordingly the QCA / generator(s) shall revise the schedule.

9.13 In case SLDC imposes any unplanned curtailment or removes the restriction / reduction in generation imposed earlier due to sudden transmission system constraints, breakdown etc. for grid stability, the capacities thus reduced or increased by the generator(s) following such instructions by the SLDC for the immediate time blocks shall be exempted from DSM calculations till the 4th time block after communication with SLDC, the 1<sup>st</sup> time block being the one in which the communication from SLDC has been made.

## **10. Telemetry and data communication:**

### **10.1 SCADA tools :**

i) For the -generators who are connecting at EHT level (that is 132 KV & above):

The real time data like MW, MVAR, voltage, frequency, transformer tap, breakers and Isolator status etc and any other data as desired by SLDC

from the plant up to the appropriate data collection point on STU network shall be transmitted by generator(s) on PLCC / fibre network on IEC 104 / 101 protocols in reliable and efficient manner.

ii) For the DISCOM embedded generator(s) (that is 33 KV & below): The real time data like MW, MVAR, voltage, frequency, transformer tap, breakers and isolator status etc and any other data as desired by SLDC from the plant up to SLDC shall be transmitted on IEC 104 / 101 protocols through leased line over MPLS in a secured VPN channel or a more reliable communication media by generator(s).

10.2 The Regulation No.3 of 2018 of Commission is in force with effect from 04.07.2018. QCA shall transmit the weather data in real time from the turbine / inverter level to SLDC that is metrological tower unique ID, wind speed, wind direction, surface pressure, ambient temperature, relative humidity, percentage cloud cover and other data as and when required by SLDC.

10.3 (a) A The solar or wind generating station(s) which is already in commercial operation on or before 04.07.2018 shall establish the forecasting tools (data acquisition system, communication system and appropriate energy meters etc) either by themselves or through a QCA within the timelines as specified by SLDC in this procedure. Provided that generator(s) shall inform the distribution licensee and SLDC about compliance of Regulation No. 3 of 2018 of the Commission. An acknowledgment to that effect shall be issued by the distribution licensee under intimation to the SLDC.

(b) A The solar or wind generating station(s) commencing commercial operation after 04.07.2018 shall not be allowed to be commissioned unless they have established the forecasting tools (data acquisition system, communication system and appropriate energy meters etc) either by themselves or through a QCA.

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

## **11. Calculation of energy deviations & deviation charges:**

a) The generator / QCA / SLDC shall endeavour to implement the

schedules: In doing so

the 15 minutes block wise implemented schedules shall be prepared by the SLDC based on the forecasting and intraday revisions provided by the QCA / generator.

b) The collection of energy meter dumps (actual energy generation) shall be under taken by the SLDC with assistance of QCA or generator as the case may be. In doing so the following shall be undertaken

1. Depending on the voltage level of the generation stations as interconnect to the transmission or distribution system, the STU / DISCOMs as the case may be download the data of actual generation from the SEM on monthly basis and the dumps will be uploaded to the TSSLDC web portal. The data dump may also be forwarded to SLDC and QCA / Generator by e-mail as backup measure.

Provided that the meter reading has to be done in the presence of the representatives of both STU and DISCOMs as the case may be along with the representative of QCA / Generator.

Provided further that the SLDC or QCA shall validate the data dump if so required in specific instances at the request of STU or DISCOMs.

2. The QCA shall coordinate with DISCOM / STU / SLDC for metering, data collection, communication, storage and validation.

c) Calculation of energy deviations and deviation charges

1. SLDC shall calculate net RE deviation and deviation charges payable (D) at state periphery.

However, such calculation is with reference to interstate transmission and collective transactions, which use the state periphery for incoming supply of energy or outgoing supply of energy shall be governed by the appropriate provisions of Regulation No. 3 of 2018 or any other regulation notified by Central Commission.

2. SLDC shall calculate absolute error occurred in the scheduled energy and actual energy and deviation for each pooling station and including each generator who is not part of the pooling station and feeding directly to the substation. It shall collect the deviation charges (R) from the QCA or the generators as the case may be upon arriving at the figures as per the Regulation No. 3 of 2018.

3. The actual commercial impact for the state as a result of deviation of wind and solar generation would be the figures derived from D-R.

4. The SLDC shall further allocate this deviation amount that is D-R to each pooling station and each generator, which is not part of pooling station and feeding directly to the substation, in proportion to their deviation.

d) Deviation settlement for inter state transactions

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 of such generation on the basis of their scheduled generation undertaken by solar and wind energy generators.

2. Inter-state transactions at a pooling sub-station shall be permitted by the SLDC only if the concerned generator is connected through a separate feeder and has obtained intra-state open access both for transmission and distribution as may be required from the nodal agencies.

3. The generator shall place through the QCA, a separate schedule for its energy generation intended for sale or self-consumption out side the state of Telangana, in accordance with this procedure to the SLDC as well as the concerned Regional Load Despatch Centre (RLDC).

Provided that in giving separate schedule for sale or self consumption, the wind and solar generator(s) shall be required to certify compliance of Act, 2003, rules and regulations framed thereunder.

4. 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 (CERC Regulation) as amended from time to time.

5. 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.

6. 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 Regulation

7. A statement of energy accounting that is energy deviations and corresponding deviation charges for each pooling station shall be prepared by the SLDC on monthly basis duly corroborating the data, based on forecasting placed before it by the QCA / generator(s) and the SEM data received from the concerned DISCOM / STU.

e) Publishing the deviation account in the SLDC website

The SLDC shall publish the deviation data that is energy deviations and corresponding deviation charges in the SLDC website, which shall be open to the respective entities for checking / verification for a period of 15 days. In case of any mistake being detected by the QCA / generator(s), as reported the SLDC shall forthwith make a complete check and rectify the mistakes and publish the final deviation account. The same shall be given effect to in terms of this procedure as also Regulation No. 3 of 2018.

## **12. De-pooling of deviation charge:**

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



time block by each generator based on the published data by SLDC on energy deviations and corresponding deviation charges.

**13. Grid stability:**

All the solar and wind 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.

**14. State pool account :**

**a) State pool account:**

14.1 The state pool account means a separate account to be created, maintained and operated by the SLDC in accordance with the provisions of the Regulation No: 3 of 2018 of the Commission for receipts and payments on account of deviations specified under the Regulation No. 3 of 2018 and the actual deviations along with charges as notified by the SLDC.

14.2 The SLDC shall provide separate energy and deviation accounts for inter-state and intra state transactions to QCA or the wind or solar generator(s).

For better understanding it is made clear that the energy account will be two parts and deviation account will be in two parts to serve the inter-state and intra-state transactions separately.

14.3 The QCA shall facilitate settlement of deviation charges earned or liable to be paid by the wind or solar generator(s) for inter-state and intra-state transactions separately.

14.4 The deviation charges for shortfall or excess generation within the state shall be payable by the wind or solar generator through QCA or generator(s) themselves, as the case may be, to the intra state pool account, as per the table specified in the Regulation No. 3 of 2018.

14.5 The deviation charges for under or over injection by wind or solar generator(s) connected to the state grid and selling power outside the state shall be payable or receivable as per the CERC Regulations as amended from time to time.

14.6 The 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 as is required under this procedure including the Regulation No. 3 of 2018.

14.7 The QCA shall facilitate for commercial settlement of forecasting deviations including payment of deviation charges to the state pool account on behalf of the generator(s) involved in such deviations.

14.8 The QCA shall facilitate for de-pooling of payments received on behalf of the generator(s) involved in such deviations who are beneficiaries from the state pool account and settling them with the individual generator(s).

**b)** State pool account payment mechanism for settlement of deviations by solar / wind generator(s) and payment security:

14.9 The payment settlement of deviations charges beyond permissible limits shall be the prime responsibility of all the solar and wind generator(s) connected to respective pooling station or the sub-station as the case may be. The generator(s) shall make payment of deviation charges through the QCA nominated by them as notified by the SLDC for a particular month in terms of the rates specified in the Regulation No. 3 of 2018.

14.10 The solar or wind generator shall provide payment security to SLDC by way of bank guarantee obtained from a public sector bank situated in the state of Telangana and / or revolving letter of credit given by a public sector bank situated in the state of Telangana for Rs. 33,750/- per MW for solar generation and Rs.67,500/- per MW for wind generation covering deviation settlement mechanism payment for six (6) months.

14.11 The bank guarantee submitted shall be valid for a period of 2 years and should be issued by a public sector bank and shall be extended from time to time as required. The payment security may be amended from time to time by the SLDC

based on actual incidence of DSM charges to be levied on the generator.

14.12 The payment of all charges on account of deviations beyond the permissible limit at a pooling station by solar and wind 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.

14.13 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.

14.14 (a) In case the solar or wind generator(s) defaults in payment to SLDC through QCA, even after a lapse of 60 days from issuance of the invoice, the corresponding BG will be invoked.

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(b) The generator and its QCA are to be treated as fresh entrants once the termination tookplace earlier under clause (a) and they are required to follow the same procedure as is required for a fresh generator and QCA.

14.15 As far as practicable all the payment transactions shall be carried out through real time gross settlement (RTGS) or national electronic fund transfer (NEFT) only. In case of non- feasibility of the same under the banking practices in any given situation, then the stakeholders are at liberty to adopt such other banking practices including but not limited issuing of cheques or demand drafts also.

c) State pool account:upload of de-pooling statement by  
QCA:

14.16 The QCA shall upload the de-pooling statement and payments made to the state pool account to the TSSSLDC web portal.

d) Event of default and consequences thereof:

14.17 Following events shall constitute event of default by QCA or generator:

- a) Non-payment or delay in payment of deviation charges by QCA or generator, as the case may be.
- b) Non-compliance of any of the terms / conditions / rules outlined under this procedure and Commission's Regulation No.: 3 of 2018 by QCA.-
- c) Non-compliance of any of the directives issued by SLDC, so long as such directives are not inconsistent with any of the provisions of the -Commission's Regulation No. 3 of 2018.
- d) In case QCA has obtained registration on the basis of false information or by suppressing material information, the registration of such entity is revoked and the generators shall be responsible for compliance of this procedure till they appoint a fresh QCA or choose to act as QCA by themselves.

Explanation: (a) In the event of QCA being restrained due to cancelation of registration the generators and SLDC shall notify each other about such cancelation and perform the duties under this procedure independent of the QCA till they make alternate arrangements.

(b) The SLDC or respective generators shall have the liberty to take such action as may be appropriate in the event of cancelation of the registration against such QCA.

e) The solar / wind generator(s) or QCA fails to provide generation schedules for continuously for 10 days.

Provided that the generation could not be undertaken due to the impossibility of performance which is not with the control of the QCA or the generator(s) will not constitute an event of default.

14.18 Consequences for event of default:

- a) If the schedule is not provided by solar or wind generator(s) / QCA, then the previous day's schedule for those non-submission days shall be considered and DSM charges shall be computed accordingly.

Provided that the said consideration of previous schedules shall not

exceed the period of ten (10) days at a stretch and beyond such period the same shall constitute an event of default.

b) In case of default as per 14.17 (e) without prejudice to its right to take other actions as may be permitted under the Act, 2003, the rules and regulations as framed thereunder or under any law for the time being in force that may be taken by SLDC, the SLDC shall issue a notice not less than 14 days period for revocation of registration of QCA and disconnection from the grid and give adequate opportunity to QCA / generator(s) to present their case in writing along with supporting material if any before the SLDC.

c) In case QCA fails to address / rectify the default expressed by the SLDC in the notice, within the stipulated time period, the SLDC shall proceed with revocation of registration of QCA and disconnection from grid.

d) In the event of revocation of registration by the SLDC, it shall be free to invoke the BG / letter of revolving credit as furnished by the QCA or the generator(s) as the case may be.

e) Further, the SLDC shall also calculate the deviation charges that may be due from the QCA or the generator(s) as the case may be and initiate the process of recovering the same.

f) For this purpose it may adjust such deviation charges due to it from the amounts, if any, payable by it to the QCA or the generator(s) and remit the balance amounts to the QCA or the generator(s) as the case may be. This is apart from the invocation of the BG / revolving letter of credit given by them and cannot be linked to the same.

g) In any case, if the SLDC is not satisfied about its dues for the amounts or that the QCA / generator(s) are still liable to pay even after recovery of the amounts by the above means, then it is at liberty to initiate proceedings before the Commission for appropriate directions for payment by the QCA / generator(s) by filing a petition duly following the Conduct of Business Regulation, 2015 and the Levy of Fee for Services Regulation, 2016.

h) For any reason the BG / revolving letter of credit is not honoured also by the public sector bank, then also the stated proceedings in

clause (g) can be initiated, Suffice it to state that such proceedings shall be independent of the recovery of any other amounts and both cannot be clubbed together as they are not consequential reliefs to one another.

Authorised officer of the SLDC

Date

Place

### ANNEXURES

- a) QCA REGISTRATION FORM (Annexure – I)
- b) REGISTRATION FORM FOR GENERATOR LOGIN (Annexure – I A)
- c) DECLARATION BY THE QCA (Annexure – II)
- d) PROFORMA CONSENT LETTER OF GENERATORS APPOINTING QUALIFIED COORDINATING AGENCY (Annexure – III)
- e) UNDERTAKING TO BE GIVEN BY PROSPECTIVE QCA AT THE TIME OF REGISTRATION (Annexure – IV)
- f) TECHNICAL SPECIFICATIIONS, STATIC & REAL TIME DATA OF SOLAR PLANT (Annexure – V)
- g) STATIC DATA OF WIND TURBINE GENERATORS (Annexure – VI)
- h) BANK GUARANTEE FOR SECURITY FOR COMPLIANCE OF DEVIATION AMOUNTS AS PER DEVIATION SETTLEMENT MECHANISM (DSM)



(Annexure – VII)

- i) FORMAT FOR SOLAR FORECAST (Annexure – VIII)
- j) FORMAT FOR WIND FORECAST (Annexure – IX)