Procedure for implementation of Forecasting, Scheduling and Deviation Settlement for Wind and Solar Generation

In accordance with
Tamil Nadu Electricity Regulatory Commission
(Forecasting, Scheduling and Deviation settlement and Related Matters for Wind and Solar Generation) Regulations, 2024.

Prepared by
Tamil Nadu State Load Despatch Centre

and Approved by

Tamil Nadu Electricity Regulatory Commission

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PROCEDURE FOR FORECASTING, SCHEDULING AND DEVIATION SETTLEMENT OF WIND AND SOLAR GENERATION

1. PREAMBLE:

1.1. In exercise of the powers conferred by Regulation 5.21 and other provisions of Tamil Nadu Electricity Regulatory Commission (Forecasting, Scheduling and Deviation Settlement and related matters for Wind and Solar Generation) Regulations, 2024 hereinafter referred as "TNERC FSDSM Regulations 2024" issued vide Notification No.TNERC/ F&S Wind & Solar/1/ 2024 Dt. 22-01-2024, this procedure submitted by Tamil Nadu State Load Despatch Centre (TNSLDC) is approved. All entities shall abide by the provisions of these Procedures as amended from time to time.

1.2. This procedure may be called the "Procedure for implementation of Forecasting, Scheduling and Deviation Settlement of Wind and Solar Generation" or in short "TNSLDC FSDSM Procedure for Wind & Solar Generation, 2024" and shall be read in conjunction with the TNERC FSDSM Regulations 2024, Indian Electricity Grid Code (IEGC), Tamil Nadu Electricity Grid Code (TNEGC), Intra State Open Access Regulations and subsequent amendments issued thereof.

1.3. APPLICABILITY OF THE PROCEDURE:

This procedure shall apply to all Wind and Solar Energy Generators including hybrid (wind and solar) systems (excluding Grid Interactive Solar PV Energy Generating System projects (Rooftop PV Solar power projects) of capacity less than 1 MW) in Tamil Nadu connected to the Intra-State Transmission System or Distribution System, including those connected through pooling substations, and using the power generated for self-consumption or sale within or outside the State.

1.3.1 Whenever the Commission notifies amendments to the Regulations, irrespective of whether the procedure is amended or not, the amended provisions of the Regulations shall be followed and no action taken on the

basis of such amendments shall be called in question on the ground that the consequent amendments were not effected to the procedures. However, the TNSLDC shall take immediate action to obtain approval for the procedures and incorporate the same in these procedures in line with amendments.

1.3.2 The Tamil Nadu Electricity Regulatory Commission (Forecasting, Scheduling and Deviation Settlement and related matters for Wind and Solar Generation) Regulations 2024 have been notified on 30-01-2024. The commercial settlements i.e. levy and collection of deviation charges shall commence from 01-04-2024 as notified by the Commission. TNSLDC shall ensure that the necessary infrastructure to implement the Deviation Settlement Mechanism is put in place before the commencement of commercial mechanism.

2. QUALIFYING CRITERIA FOR QCA:

2.1. In accordance with Regulation 6.2 of TNERC FSDSM Regulations 2024, majority of Generators in terms of installed capacity in the State shall appoint Single QCA for Wind and Solar separately or majority of Generators in terms of installed capacity at each Pooling Substation (PSS) shall appoint QCA for wind and solar jointly. An individual Generator connected alone to a Pooling Substation may opt to function as a QCA on its own. The QCA to be appointed either at Pooling Substation level or at State level shall be a registered entity under the relevant statutory enactments.

2.2. In case of appointment of entity other than Generator(s) at Pooling Substation, the Generators shall consider following guiding principles for appointment of QCA. Adherence to these guiding principles for appointment of QCA would be in the interest of Generators and would facilitate smooth implementation of TNERC FSDSM Regulations 2024 in the state.

2.2.1. The QCA shall have the capabilities of modeling energy generation potential on seasonal time scales with impact surfaces with a tool to visualize the energy generation potential in “Climate Space”.

2.2.2. The QCA shall have the experience in the field of Wind/Solar Power forecasting and scheduling in different terrain and regions for minimum period of two (2) years excluding pilot project work with appropriate accuracy levels in forecasting. However, in case of the Wind Turbine Manufacturer or individual Wind/Solar generator acting as QCA, this clause is not applicable.

2.2.3. The Average Net Worth of the QCA for forecasting & scheduling services must be in positive amounting to at least Rs.2.5 Crores (Net worth = Share Capital + Reserve – Revaluation Reserve – Intangible Asset – Misc. Expenditure to the extent not written off – Carried Forward Losses – Liabilities) in the last financial year which should reflect from its audited balance sheet or CA’s certificate.

2.2.4. QCA should have established team of:

a. Renewable resource analyst,
b. Modeling statisticians,
c. Software developers,
d. 24 x 7 operation and monitoring team and
e. An Energy model.

The corresponding supporting certificates/documents justifying qualification should be submitted along with the application for registration. This is not applicable in respect of Generator acting as QCA.

2.3. It is envisaged that Generators acting as QCA themselves, shall also strive to build requisite skill sets, capacity and technical competence adhering to qualification requirements over the period of two years.

2.4. The QCA shall possess/provide authorization as per **Annexure–I** from majority of the Generators connected in the Pooling Substation or at State level in terms of their combined installed capacity for appointment as QCA at the time of Registration.

3. ROLES AND RESPONSIBILITIES OF THE QCA:

3.1. In accordance with these Procedures and Regulations, the QCA shall be the State Entity.

3.2. The QCA shall be the single point of contact between the TNSLDC and the Generators whom it represents in the Pooling Substation. QCA shall submit separate schedules for Wind and Solar, inter-state and intra-state generations in the Pooling Substation.

3.3. The QCA shall establish a 24x7 Control Center and shall be responsible for real time co-ordination with its generators on all matters pertaining to implementation of regulations. In case of QCAs attending to multiple PSS, it is left to the QCA to establish control centres for each of its PSS or a common control centre covering all its PSSs. The Control Centre shall have facilities of voice communication with TNSLDC and Wind/Solar Generators with voice recording facilities, internet connection available for all the 24 hours. The QCA shall comply with the instructions of the System Operator in normal condition as well as during emergencies keeping in view Grid security and safety.

3.4. The QCA may establish mechanism ~~protocol~~ for communication with individual generators to implement the instructions of System Operators and TNSLDC.

3.5. In case of any curtailment planned and communicated by the TNSLDC due to line maintenance or other reasons in certain time blocks of a day, the generator/QCA shall cause to implement such instructions from TNSLDC. QCA shall act on curtailment instructions as per regulation 15.2 of TNERC FSDSM Regulations 2024 and as per the RE curtailment procedure to be issued by the Commission in this regard. The revisions of schedule per generator under the QCA shall be as per inter se arrangement between them.

3.6. It is the responsibility of the Generator to establish facilities of communication of meter data, (through any channel of communication such as GPRS/MPLS/VSAT) ensure maintaining meter data readings for each

generator. QCA shall be responsible for data collection, transmission and co-ordination with RLDC, TNSLDC, STU, CTU, TANGEDCO (DISCOM), Distribution Licensee and other agencies as per CEA Metering Regulations, IEGC and CERC/TNERC Regulations. In case of non-receipt of meter data through AMR system by TNSLDC, QCA may coordinate with DISCOM/ STU for manual data downloading through CMRI and submit the same as decided by TNSLDC/ within 10 working days from the date of intimation.

3.7. In accordance to Regulation 30 of TNERC Grid Connectivity and Intra State Open Access Regulations 2014, check meters of the same specifications as that of the main meters shall be provided by STU or Distribution licensee.

3.8. In case of Inter-State transaction, the QCA shall declare Available Capacity (AvC) of the Pooling Substation which the QCA represents to TNSLDC. The AvC is mandatory input for computation of Absolute error for the Generators who are selling power outside of Tamilnadu.

3.9. QCA shall provide PSS wise Week ahead, Day ahead and Intra-day forecast (based on their own forecast or on the forecast provided by TNSLDC) and Schedule as per Annexure-II through a web-based application maintained by TNSLDC.

Provided that if the QCA is representing a PSS in which both wind and solar generators are connected, the Scheduling, Energy accounting and Deviation monitoring shall be carried out for wind and solar power generators separately,

Provided that if the QCA is representing on behalf of the multiple Pooling Substations, the Scheduling, Energy accounting and Deviation monitoring shall be performed by aggregating all the Pooling Sub-stations together but for wind and solar generators separately.

Provided that if the QCA is representing for State Level, the Scheduling, Energy accounting and Deviation monitoring for State wide aggregate for wind / solar power generation shall be undertaken separately.

3.10. QCA in coordination with Generator(s) may provide real time generation data (at Pooling Substation level) as per Annexure–III through SCADA/email/web based application of TNSLDC.

3.11. In case of non-availability of Real time data for the old machines (at Turbine Level/inverter level), QCA in coordination with Generators may maintain and provide time block wise generation data and weather data on Weekly basis.

3.12. QCA shall:

(i) Undertake commercial settlement of deviation charges pertaining to Inter-state transactions as per applicable TNERC FSDSM Regulations 2024 and its amendments.

(ii) Maintain records and accounts of the time block-wise Schedules, the actual generation injected and the deviations, for the Pooling Substation and the individual Generators separately.

3.13. Prepare deviation accounts on Monthly basis for State Wide Aggregate or for each Pooling Substation as per regulation 16.2 of TNERC FSDSM Regulations 2024.

3.14. QCA shall execute an undertaking with TNSLDC as per Annexure-V to undertake all technical and commercial responsibilities on behalf of the Constituents as per the prevalent TNERC FSDSM Regulations 2024.

3.15. QCA shall perform commercial settlement beyond the connection point (De-pooling arrangement among each generator in the Pooling Substation) and technical coordination amongst the generators within the Pooling Substation and up to the connection point as the case may be.

3.16. QCA may furnish Technical data of individual generators of Wind/Solar as per Format-1 as much as possible.

3.17. The QCA, within seven (7) days, shall inform in advance the details to TNSLDC in case there is any change in:

- The Pooling Substation (in case of individually connected generator),

- Pooling Substation and feeder connectivity details. (in case of multiple generators connected to PSS),
- Details of addition/ reduction of installed capacity / Repowering / Permanent dismantling details,
- Technical details of Individual generators in the Pooling Substation.
- Reduction in authorization from generators in a Pooling Substation below majority of generators in terms of the total installed Capacity of the Pooling Substation.

3.18. QCA shall keep TNSLDC indemnified at all times and shall undertake to indemnify, defend and save the TNSLDC harmless from any and all damages, losses including commercial losses due to forecasting error, claims and actions including those relating to injury to or death of any person or damage to property, demands, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the transactions undertaken by the Generators. The QCA shall submit the indemnity bond (Format–3) on Non-Judicial Stamp Paper of value notified from time to time by the State Government at the time of registration.

4 ROLES AND RESPONSIBILITIES OF GENERATORS:

4.1 The Generators in the Pooling Substation shall appoint a QCA and submit authorization through on-line as per **Annexure – I**, for registration of QCA at TNSLDC.

4.2 Once the Authorization is submitted, the hardcopy of Consent/Authorization letter with the authorized signatory and Company seal shall be submitted to TNSLDC.

4.3 The Generators shall also see the receipt of the hard copy at the TNSLDC end. Without receipt of the hard copy for verification purpose, TNSLDC shall not process the online Consent/Authorization & treated as invalid.

4.4 An incomplete authorization or details not found to be in conformity with these Procedures and Regulations shall be rejected.

4.5 The Generator shall not appoint and authorize multiple QCAs for a particular Pooling Substation. In such case, the authorization provided by the Generator shall be treated as invalid & TNSLDC shall process the application of the QCA as per the provisions of this procedure and the decision of TNSLDC on registration of QCA shall be binding on such generator.

4.6 As per Regulations 5.2 & 5.22(h), SLDC shall issue Notice to Wind and Solar Generators to appoint QCA within a month before commencement of commercial operation.

Provided if the generators fail to appoint the QCA before the commercial implementation of Regulations, 125% of capped price for energy injected into the grid shall be collected from such generators from the date of commercial operation.

Provided SLDC shall issue second Notice to such generators for appointing QCA(s) within a period of 90 days. If the generator(s) does not appoint QCA beyond 90 days, such generators will be charged at 150% of the capped price till the generator appoints QCA.

4.7 Once the QCA is registered, the Generator(s) shall not re-appoint another QCA for at least two (2) years from the date of successful registration of the QCA with TNSLDC. In extraordinary circumstances, the Generator(s) may re-appoint another QCA on obtaining prior approval from the TNSLDC.

Provided that in case of defaults by the QCA after 2 years, the generator/s can re-appoint another QCA by giving prior notice of two months to TNSLDC and the process of registration of new QCA shall be carried in accordance with these regulations and procedures.

4.8 All the Generators shall undertake commercial settlement of deviation charges pertaining to Intra-state transactions as per applicable TNERC FSDSM Regulations 2024 and its amendments.

4.9 All the generators shall furnish the change in Connectivity/ Technical details as per the clause 3.16 of said procedure to QCA within 2 days.

4.10 All the new generators shall appoint QCA as per the TNERC FSDSM Regulations 2024 and its amendments.

5 ROLES AND RESPONSIBILITIES OF TNSLDC:

5.1 TNSLDC shall provide a web-based portal for use by QCA with login and password facility for:

- Online registration/de-registration of QCA,
- Uploading of Day ahead and Week ahead Generation Forecasts,
- Uploading of the revisions in Schedules in accordance with these Procedures and Regulations,
- Viewing of Despatch schedules for each Pooling Substation/State aggregate,
- Communication of Grid Constraints and curtailments if any.

5.2 The TNSLDC shall be responsible for scheduling, communication, coordination with QCAs.

5.3 The TNSLDC shall maintain records and accounts of the time block-wise Schedules, the actual generation injected and the deviations, for the Pooling Substation / State level as case may be separately.

5.4 The TNSLDC shall Maintain State Deviation Settlement Account for as per Regulation 7.2 of TNERC FSDSM Regulations 2024 for inter and intra state transactions separately.

5.5 SLDC shall prepare the Monthly DSM Statement for each QCA/PSS as per Regulation 7.2 of TNERC FSDSM Regulations 2024 and compute Per Unit cost for each PSS/QCA. However the DSM charges shall be collected from each generator/service based on the actual energy injected into the grid by the respective generators and the Monthly DSM statements shall be published in the TNSLDC Website at the end of each financial year.

5.6 SLDC shall file a true-up petition based on the DSM Charges computed for the preceding year as per Regulation 7.2 of TNERC FSDSM Regulations 2024.

5.7 TNSLDC shall intimate the Distribution Licensee for collection of DSM Charges from Generators monthly bill, if any change in ceiling amount fixed by Commission.

6 ROLES AND RESPONSIBILITIES OF DISTRUBUTION LICENSEE:

6.1 The Distribution Licensee (TANGEDCO) shall provisionally collect the DSM Charge from each Generator/Service (Wind and Solar Generators under Intra-State Transactions) @ 3 paise per Unit as fixed by Commission for the actual energy injected into the grid from Monthly bill and transfer the collected DSM Charge to TNSLDC State Deviation Pool Account (Wind and Solar) on 15th day of every month.

6.2 The provisionally collected DSM Charges by Distribution Licensee (TANGEDCO) over every financial year shall be reconciled with the DSM charges calculated as per Regulation 7.2 of TNERC FSDSM Regulations 2024 by TNSLDC and any excess amount shall be adjusted in the subsequent monthly billing of Generators.

6.3 The Distribution Licensee (TANGEDCO) shall collect any other charges related to the DSM regulations from Generator's monthly bill upon intimation from TNSLDC and transfer to the State Deviation Pool Account.

6.4 The Distribution Licensee (TANGEDCO) shall submit the details of all the generators connected to the Pooling Substations under their ownership to TNSLDC.

Provided the details of such Pooling Substations shall be intimated by TNSLDC to the Distribution Licensee.

6.5 The Distribution Licensee shall provide to TNSLDC, 15 minutes of energy block data recorded in the Interface Meters installed in Wind and Solar Services/ Pooling Substations every 15 days for preparation for DSM Statement for Wind and Solar Generators.

6.6 As Distribution Licensees are issuing permission for Commissioning of each WTG/Solar Module connected to any Pooling Substation under their control area irrespective of ownership, the details of generators connected to all the

Pooling Substations shall be provided by Distribution Licensees to TNSLDC and the QCA concerned. The transmission/distribution licensee shall ensure the appointment of QCA by new generators during the process of grid connectivity approval. The details shall be furnished within 15 days from the publication of the said procedure. Also any modification/addition in the existing approval of generator/service shall be intimated to TNSLDC and the QCA concerned before effecting the changes. Provided that, the QCA may coordinate with TNSLDC, Distribution Licensees, Transmission Licensees and STU to map the generators within the PSS.

6.7 Submit Pooling Substation-wise Power Purchase details as per Format-2 on monthly basis by 27th of every month for modelling in the Scheduling Software developed by TNSLDC. In case of non-submission of the updated details, the details available at TNSLDC/submitted earlier shall be considered for modelling and Scheduling shall be carried out accordingly. In case of any errors in the calculations due to not providing of information, the concerned DISCOM shall be responsible.

6.8 Distribution Licensee shall co-ordinate with TNSLDC Control Room for real time operations in case of any tripping/outage planned/forced / overloading of evacuation infrastructure resulting in to curtailment/ backing down of generation and implement the instructions of TNSLDC.

6.9 Distribution Licensees shall nominate at least two Nodal Officers for communication with TNSLDC and inform the contact details such as Name, Designation, Mobile No. alternate contact No., E-mail ID, Address, etc to TNSLDC within one (1) month from the date of publication of the said procedure. In case of any changes in contact details, the same shall be communicated to TNSLDC within seven (7) days.

6.10 Ensure availability of Interface metering arrangement at Common Inter-connection Point for each Pooling Substation owned by DISCOM. Metering & its calibration arrangements shall be as per the State Grid Code, 2005 and any other Code/Regulations governing metering arrangements notified by the Commission, as amended from time to time.

6.11 Use Automatic meter reading (AMR) technologies for transfer, analysis and processing of interface meter data to TNSLDC in line with Metering /AMR protocol and Metering/AMR standards in accordance with provisions of Metering Code and CEA Metering Regulations, as amended from time to time, for the Pooling Substations under their control area.

6.12 The required Infrastructure and communication network for providing AMR data to SLDC for DSM points should be maintained by Distribution Licensee.

7 ROLES AND RESPONSIBILITIES OF TRANSMISSION LICENSEE:

7.1 STU/Transmission Licensee shall ensure availability of Interface metering arrangements at all the Pooling Substations.

7.2 STU/Transmission Licensee shall install Automated Meter Reading (AMR) facility at each Pooling Substation under their control area and ensure meter data transfer to TNSLDC for accounting purpose.

7.3 STU/Transmission Licensee shall co-ordinate with TNSLDC Control Room for real time operations in case of any tripping/outage (planned/forced)/overloading of evacuation infrastructure resulting into curtailment/backing down of generation and implements the instructions of TNSLDC.

7.4 Metering & its calibration arrangements shall be as per the Regulations governing metering arrangements notified by the Commission or other Authorities, as amended from time to time.

7.5 STU/Transmission Licensees shall nominate at least two Nodal Officers for communication with TNSLDC and inform the contact details such as Name, Designation, Mobile No. alternate contact No., E-mail ID, Address, etc to TNSLDC within one (1) month from the date of publication of the said procedure. In case of any changes in contact details, the same shall be communicated to TNSLDC within seven (7) days.

8 REGISTRATION AND DE-REGISTRATION PROCEDURE:

A. Registration as a Qualified Coordinating Agency (QCA):

8.1 The application for Registration as a Qualified Coordinating Agency (QCA) should be submitted online through TNSLDC's web-based Software.

8.2 The QCA shall submit separate application for each Pooling Substation. For each Pooling Substation only one application shall be accepted from the QCA.

8.3 If single QCA is appointed by majority of generators, the single QCA shall submit the application for state wide aggregation for Wind and Solar power separately.

8.4 The applications submitted by QCAs through on-line portal shall be scrutinized by TNSLDC. However the Registration of QCAs is subject to verification of all original documents by TNSLDC.

8.5 The application and other documentary proof uploaded by Single QCA appointed by majority of Generators for State wide aggregation for Wind and Solar power separately shall be verified by TNSLDC.

8.6 The application for Registration shall be made as per the application format for on-line registration (Annexure-IV) and shall contain details such as,

- Generator details
- Total Capacity of the Generation and inter-connection arrangement with intrastate transmission system.
- Authorization from majority of the Generators connected in the Pooling Substation/ or at State level in terms of their combined installed capacity for appointment as QCA.
- Names of the Generator(s) along with individual installed capacity of generation of the constituents to whom QCA is representing

8.7 The Application for Registration shall be accompanied by a non-refundable processing fee as follows payable through NEFT or any other modes:

Registration fees for PSS wise QCA:

- For 1-50 MW – Rs.10,000/-
- Above 50 MW and upto 100 MW – Rs.15,000/-

- Above 100 MW – Rs.20,000/-

Registration fees for Single QCA for State wide aggregate:

- Single QCA for Wind – Rs.15,00,000/-
- Single QCA for Solar - Rs.15,00,000/-

The scanned copies of the required documents shall be uploaded while submitting application.

8.8 Once the application is submitted, the printout of online application with sign and seal along with required documents in original shall be submitted to TNSLDC. Without receipt of the hard copy for verification purpose, TNSLDC shall not process the online application for registration.

8.9 The details of Nodal Officer from TNSLDC for processing applications for Registration and day to day activities towards forecasting, Scheduling and Revisions thereof shall be displayed on TNSLDC's website for smooth implementation of these procedures.

8.10 An incomplete Application, and/or an Application not found to be in conformity with these Procedures and Regulations, shall be rejected.

8.11 The time period for registration of QCA shall be fifteen (15) working days from the date of receipt of all the documents & information in complete shape to TNSLDC.

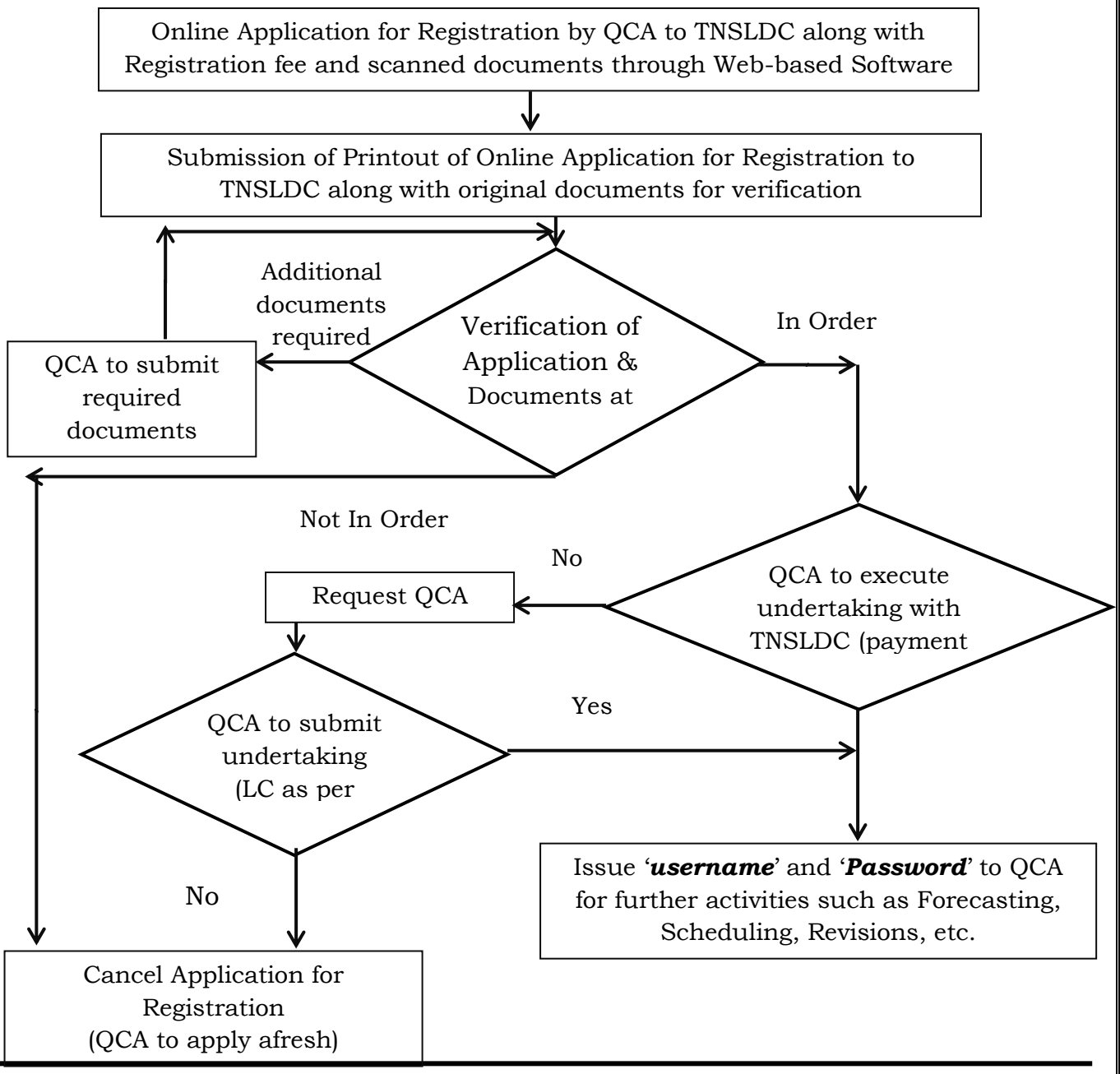
8.12 After verification of all the documents, the QCA shall execute the undertaking with TNSLDC as per Annexure-V wherein it is mentioned that QCA shall undertake all operational and commercial responsibilities on behalf of the Constituents as per the prevalent TNERC FSDSM Regulations 2024.

8.13 Once the QCA executes undertaking with TNSLDC as per Annexure-V and deposits Amount, TNSLDC shall register the QCA and issue a '***username***' and '***password***' for accessing the website for further activities such as uploading of day ahead / week ahead forecasts, revisions to existing schedules etc.

8.14 In case of inter-state transaction, the QCA shall provide payment security through an irrevocable Letter of Credit to TNSLDC within 15 days before commencement of Commercial operation as notified by Commission for the generators who are selling power outside of Tamil Nadu. The details of the same shall be in accordance with Clause 15.6 of the said procedure.

8.15 The above procedure is depicted below in the form of Flow chart for easy understanding.

Flow Chart for Registration of QCA



B. De-registration as a Qualified Coordinating Agency (QCA):

Case - 1: Own De-registration:

8.16 The QCA may request TNSLDC for de-registration as QCA, however, in such case, it shall be the responsibility of the QCA to settle all the commercial obligations of both TNSLDC and Generators to whom it is representing.

8.17 Three (3) months prior notice to be served to all the generators to whom it is representing for de-registration with copy to TNSLDC.

8.18 The generator(s) shall be responsible for appointing new QCA and ensure registration of new QCA with TNSLDC within the notice period, failing which the conditions stipulated in the Regulation 5.2 of TNERC FSDSM Regulations 2024 shall be followed until the appointment of new QCA and its registration with TNSLDC.

Case – 2: De-registration due to non-authorization of Generator:

8.19 Two (2) months prior notice to be served by the generator to the QCA for non-authorization with copy to TNSLDC, subject to Clause No 4.4 of this procedure.

8.20 Before de-registration, the generator shall ensure that all the commercial settlements pertaining to it has been completed by the QCA with TNSLDC.

Case – 3: De-registration under default condition:

8.21 The TNSLDC shall initiate the process of de-registration, if the condition as per Clause No.3.18 of said procedure is violated by the QCA.

8.22 The TNSLDC shall initiate the process of de-registration, in case of default conditions mentioned in Clause No. 16.1 of said procedure.

8.23 In such case, the process of de-registration shall be initiated as per Clause No. 16.2 of said procedure.

9 TNSLDC FEES & CHARGES AND OTHER CHARGES:

9.1 TNSLDC fee and charges including forecasting service, scheduling, system operating charges and other charges shall be payable as per the applicable Regulations of TNERC FSDSM Regulations 2024 / orders of the Commission issued from time to time.

10 COMMUNICATION MODE AND PROTOCOL:

10.1 SCADA from the turbine level to Pooling Substation in real time may be provided up to the Pooling Substation by Generators wherever possible. The data from the Pooling Substation to TNSLDC shall be transmitted with IEC: 104 protocol along with communication without any interruption by QCA.

The requirements for data visibility and interfacing requirements at TNSLDC Chennai/REMC Chennai/Sub LDC Erode/ Sub LDC Madurai are as detailed below.

- The Remote Terminal Unit under the proposed scheme shall be capable of communication with LD Centres in IEC-104 Protocol or any other protocol required by TNSLDC for communication.
- Communication media with latency less than 800 ms may be used for data transmission. The typical bandwidth requirement for real-time point to point data of 64 kbps communication between Pooling Substation/ Generator (in case of individual generator) and TNSLDC and depends upon data volume.
- Wind/Solar Generators shall submit request letter along with Single Line Diagram of their plant area to TNSLDC and to send the data parameters as per Annexure- III in real time mode.
- Wind/Solar Generators shall submit complete proposal along with schematic diagram for RTU installation and data communication with LD Centres with the above confirmations/clarifications.
- Integration of Wind/Solar Generators station data into the SCADA systems at TNSLDC Chennai/REMC Chennai/Sub LDC Erode/ Sub LDC Madurai on IEC 104 protocol.

- Completion of all above is under the scope and responsibility of Wind/Solar Generators Station.

10.2 Integration of Real time data from RTU of any make in IEC-104 Protocol is to be done in TNSLDC SCADA system. The work of integration will be carried out TANTRANSCO.

10.3 The owner of the PSSs (Transmission/Distribution Licensee/Developer of the PSS) shall be responsible for providing a redundant and reliable communication link between Pooling Substation and TNSLDC and the Generators are responsible for providing online AMR data to the TNSLDC through reliable communication link.

10.4 The data from existing AMR metering arrangements available with TNSLDC will be shared to QCAs appointed by generators. QCAs shall make their own arrangements to capture, transfer and analyse the respective data shared by TNSLDC without disturbing the working of their system.

10.5 TNSLDC shall share the real time AMR data to QCA on request by the concerned QCA.

11 FORECASTING AND SCHEDULING:

11.1 Forecasting of Wind/Solar injection on Pooling Substation/ or State level Aggregate basis shall be done by the TNSLDC for overall planning of resource requirements on day ahead basis in view of secure grid operation. In case of state level aggregation by the single QCA and/or QCA appointed for multiple PSSs, it is sufficient to upload the single aggregated schedule by the QCA to the TNSLDC and in addition to that the QCA may share the data on PSS wise schedule with the TNSLDC for their internal use.

11.2 The QCA shall provide Pooling Substation or State level aggregate wise forecasting for the Wind/Solar generators connected to Pooling Substation to TNSLDC based on their own forecast or may adopt forecast carried out by TNSLDC.

11.3 In the event of QCA adopting forecast provided by TNSLDC, charges amounting to Rs. 2,000/- per Pooling Substation per day, shall be paid by

the QCA to TNSLDC. The consequences of any error in such forecast provided by TNSLDC which results in a deviation from scheduling shall be borne by the concerned Generators through their QCA and QCA shall indemnify TNSLDC on account of the commercial impact.

11.4 The TNSLDC shall consolidate and forecast, based on various parameters and weather data obtained from any forecast service provider.

11.5 The submission of day ahead forecast shall be in accordance with the time lines specified in IEGC/State Grid Code.

11.6 The day ahead forecast submitted by QCA shall be on 15 min time block basis in MW up to two decimal places.

11.7 The QCA may revise schedule in the TNSLDC Web-based Software for the current day;

11.8 Provided that, such revisions shall be effective from the sixth (6th) time block and a maximum of sixteen (16) revisions during the day starting from 00.00 hours of a particular day.

11.9 Process for submission of a day ahead Forecast for Intra-State Transactions is as follows:

		PSS wise/ State wide Scheduling	
Activity No.	**Time in 24 Hrs**	**Process**	**RE PSS**
		Configuration in Software	Available capacity/Scheduled generation as the case may be, Contract quantum at the level of RE PSS or State level Aggregate.
1	10:00	Submission by QCA	PSS wise or State level Aggregate Available Capacity / Declared Schedule/ Quantum as the case may be.
2	10.15	Acknowledgement by Software.	Software shall acknowledge the receipt of declared capabilities. Also software shall log and send warning to QCA who have not submitted.
3	18:30	Computation by Software	Dispatch Schedule

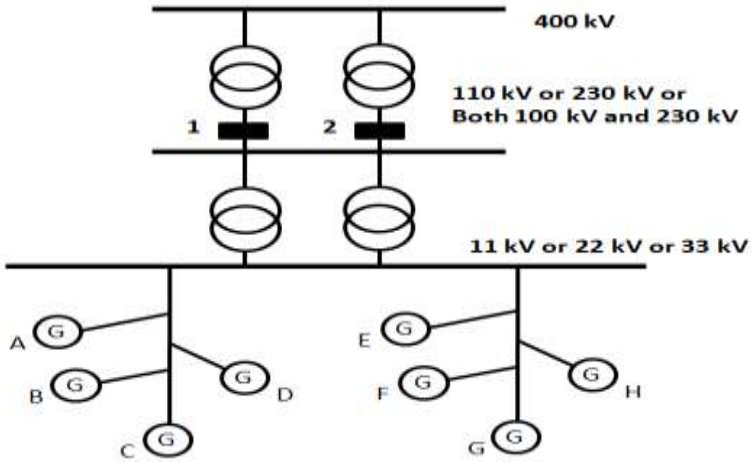
4	22:30	Submission of revisions by QCA	Revised Available capacity and declared quantum /schedule as the case may be.
5	23:15	Computation by Software	Final Day ahead Dispatch Schedule of RE at PSS level/ State level.
6	23:30	Issue of Final day ahead individual and consolidated dispatch schedules and drawal schedules after approval by TNSLDC.	

Note: No revision in Forecast shall be accepted after 22:30 Hrs.

Latest revision of Available forecast/schedule will be taken as day-ahead Forecast/Schedule incase QCA fails to provide forecast/schedule before 10 AM for the purpose of day ahead load generation planning by TNSLDC.

11.10 The various types of Pooling Sub-Stations identified in Tamil Nadu are indicated in the below diagrams. DSM charges at State level/PSS level will be arrived based on the actual generation injected into the grid for the metering points mentioned in the Diagram.

Case – 1: Single Generator or group of generators connected at 11 kV or 22 kV or 33 kV level of EHV Pooling Substation (400 kV), selling power within the State:



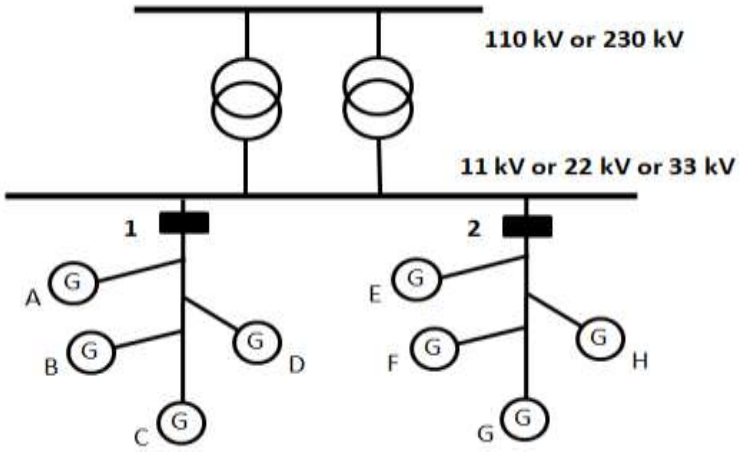
In this case, a group of generators ('A' to 'H') are connected at 11/22/33 kV level of the EHV Pooling Station through common 11/22/33 kV feeders.

In such case, the Forecast shall be done by the QCA at Points 1 & 2 together. Scheduling and Accounting shall be done by TNSLDC at Points '1 & 2' together for the Pooling Substation. The QCA shall de-pool the

deviation charges among respective generators separately based on the mechanism developed within themselves.

Case – 2: Single Generator or group of generators connected at 11 kV or 22 kV or 33 kV level of Pooling Substation (110 kV or 230 kV), selling power within the State:

In this case, a group of generators ('A' to 'H') are connected at 11/22/33 kV level of the Pooling Station through common 11/22/33 kV feeders.

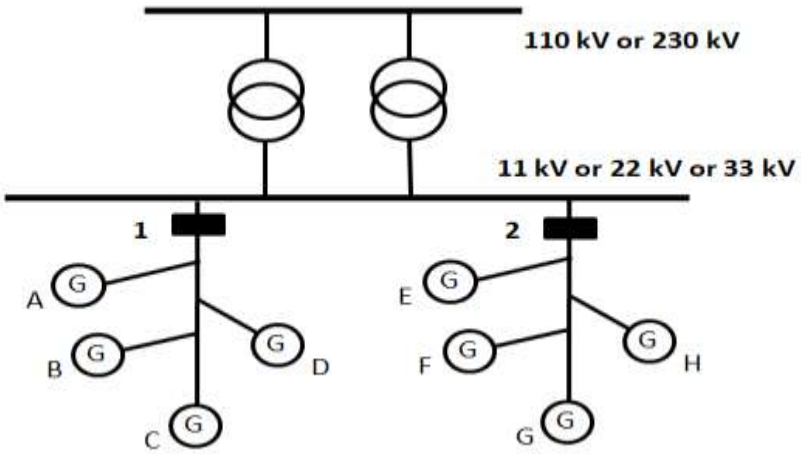


In such case, the Forecast shall be done by the QCA at Points 1 & 2 together. Scheduling and Accounting shall be done by TNSLDC at Points '1 2' together for the Pooling Substation. The QCA shall de-pool the deviation charges among respective generators separately based on the mechanism developed within themselves.

Case – 3: Single Generator or group of generators connected at 11 kV or 22 kV or 33 kV level of EHV Pooling Substation, selling power within and outside the State:

In this case, multiple generators ('A' to 'D') are connected at 11/22/33 kV level of the EHV Pooling Station through common 11/22/33 kV feeders selling power within the State.

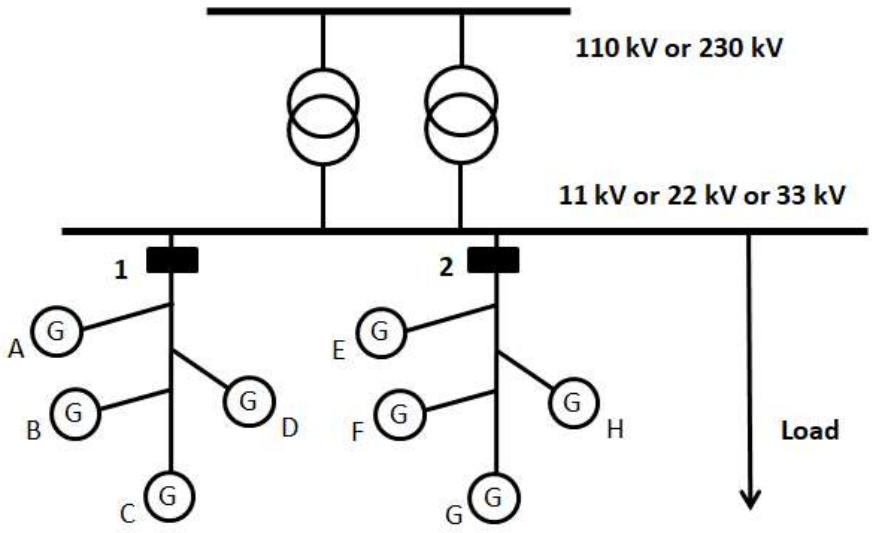
The Generators 'E' to 'H' are connected at 11/22/33 kV level of the EHV Pooling Substation through common feeder selling power outside the State.



In such case, the QCA shall submit separate feeder-wise forecast at Point '1' and '2' i.e. for Intra-State and Inter-State respectively. TNSLDC shall Schedule at Point '1' being Intra-State and at State Periphery for Point '2' by applying Transmission losses as per TNERC FSDSM Regulations 2024 and its amendments.

The QCA shall de-pool the deviation charges among respective generators separately based on the mechanism developed within themselves.

Case – 4: Multiple Generators connected at 11 kV or 22 kV or 33 kV levels of EHV Mixed Pooling Substation and selling power within the State:



In this case, multiple generators ('A' to 'H') are connected at 11/22/33 kV level of the EHV Pooling Station through common 11/22/33 kV feeders selling power within the State.

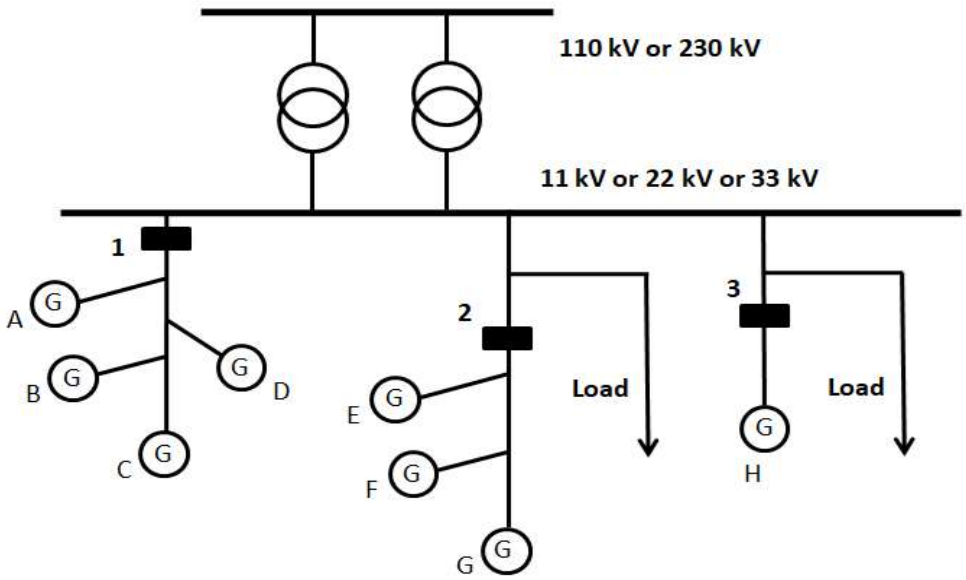
In such case, the Forecast shall be done by the QCA at Points 1 & 2 together. Scheduling and Accounting shall be done by TNSLDC at Points '1 & 2' together for the Pooling Substation.

The QCA shall de-pool the deviation charges among respective generators separately based on the mechanism developed within themselves.

For selling power outside the state (inter-state), dedicated feeder is mandatory.

Case – 5: Multiple Generators connected at 11/22/33 kV level of EHV Mixed Pooling Substation with mixed feeders.

In this case, Generators 'A' to 'D' and 'E' to 'G' and 'H' are connected to a Pooling Station through mixed feeders (both Distribution Load and Generators) with interconnection points at '1' and '2' and '3' respectively.



TNSLDC shall carry out scheduling and accounting at Points '1, 2 & 3' for Pooling Station as a whole and the QCA shall de-pool the deviation charges among respective generators separately based on the mechanism developed within themselves.

Note:-

1. TNSLDC shall compute deviation and accounting for the scheduled generation furnished by QCA at PSS end for the RE DSM points indicated in the above diagram as case may be.
2. If interface meters are not available at the above places, TNSLDC shall carryout / allow scheduling and accounting activities at the generator ends.
3. If the generator(s) is connected with the 33/11 kV side of the 110/33/11 kV or 110/33-11 kV Sub-Station, such 110/33/11 kV or 110/33-11 kV Sub-Station would be considered as PSS.

12 ENERGY ACCOUNTING FOR DEVIATION:

12.1 Energy adjustment at the end of Open Access Consumers shall be carried out as per the respective wind/solar tariff orders issued by the Commission from time to time.

12.2 The energy accounting for the purpose of deviations shall be undertaken on the basis of the data recorded by the Interface Meter with DLMS provided at the point of interconnection of LV side of 400/230/110kV TANGEDCO/ TANTRANSCO Pooling Sub Stations capable of recording the energy in 15-minute time blocks. The TNSLDC/QCA shall adopt the suitable correction factor between the interface meters recorded at the Generator end and the PSS end so as to incorporate the line losses between the generator and the PSS.

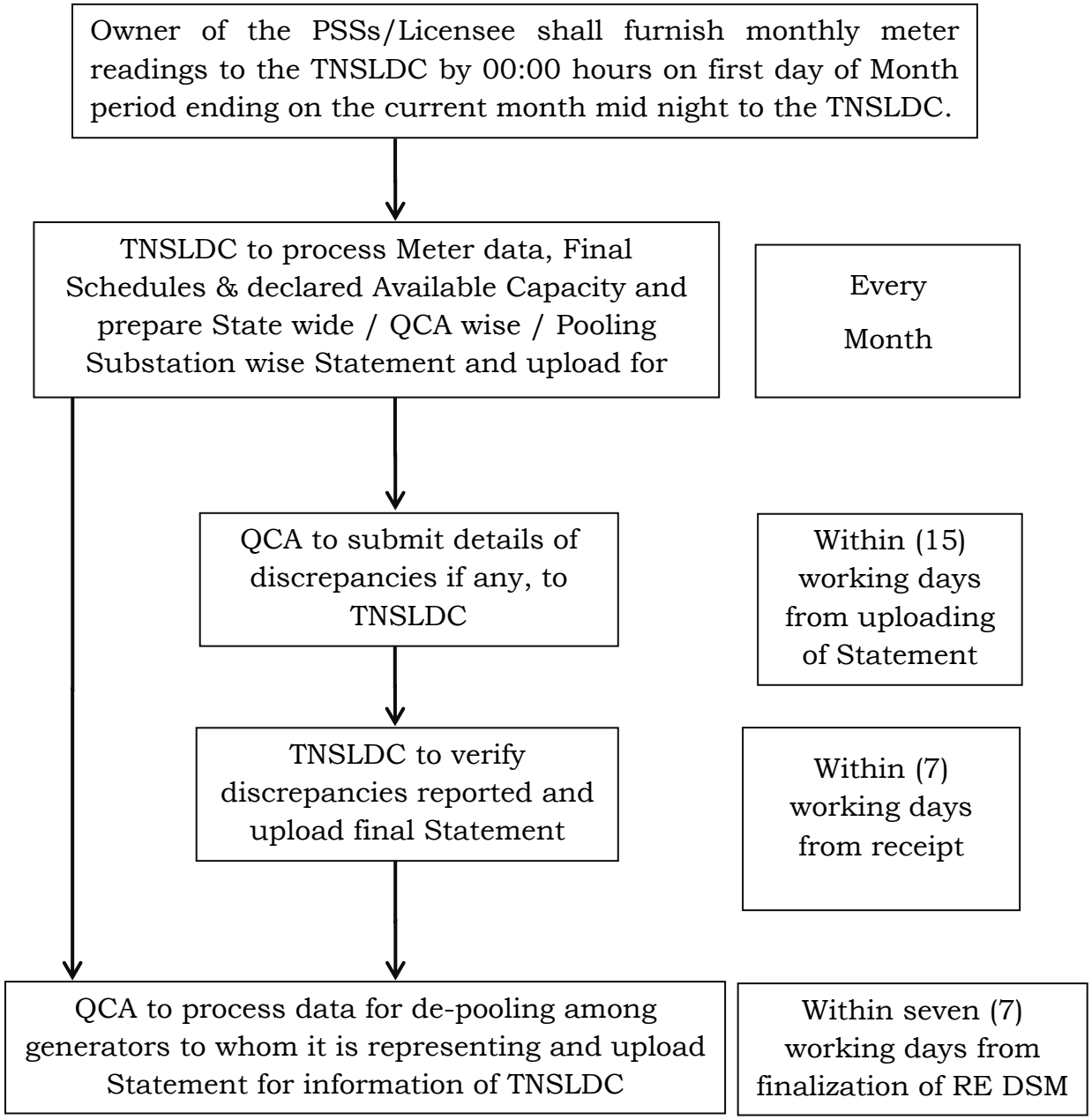
12.3 The owner of the PSSs shall furnish monthly meter readings for the Mid-Night of First day of Month period ending on the current month mid night to the TNSLDC, In respect of PSSs owned by the Licensee, the same may be provided by them.

12.4 TNSLDC shall process the data provided as above and furnish processed data to respective QCA for the preparation and publishing the Monthly Energy Deviation Account to the QCA for the State wide aggregate or the Pooling Substation or the stand-alone Generator, as the case may be.

12.5 All accounts relating to de-pooling of deviations charges shall be prepared by the QCA on a monthly basis and shall be accessible to the TNSLDC through an IT-enabled system and software.

12.6 The QCA shall communicate any discrepancies to TNSLDC within 15 days which shall be corrected forthwith by TNSLDC after due verification. Any of the discrepancies reported after 15 days shall not be considered by TNSLDC and in such case, the Statement prepared by TNSLDC shall be final.

12.7 The process chart for Accounting is as below:



13 DEVIATION ACCOUNTING:

13.1 TNSLDC shall compute the absolute error at State level or multiple PSS aggregate for each QCA or for each Pooling Substation and shall calculate the Intra-state deviation charges as per Regulation 7.2 of TNERC FSDSM Regulations 2024 and inter-state deviation charges as per Regulation 8.5 of TNERC FSDSM Regulations 2024 and its amendments.

13.2 TNSLDC shall determine the impact of deviation of Wind & Solar injection at Pooling Substation from schedule and its contribution on the total deviation charges at the State periphery.

13.3 TNSLDC shall compute the deviation charges and issue Monthly DSM Statements to the QCAs'.

13.4 Timelines for issuance & rectification of DSM Account and commercial settlement shall be as follows:

S.No	Action	Responsibility	Timelines
1	Publish Monthly DSM Account on Website. The Account shall have day-wise, block-wise Deviation Charges, Schedule, Actual for each pooling station under QCA.	**TNSLDC**	Every Month
2	File comments / rectification requests.	**QCA**	Within 15 working days from the date of publishing of the DSM Account on the website.
3	Carry out rectification / modifications of DSM account and convey the same through email / on website.	**TNSLDC**	Within 7 working days after receiving the rectification request from QCA.
4	DSM Charges payable to Pool Account.	**QCA** in case of inter-state transactions and **Generator** in case of intra-state transaction.	Within 10 days from the date of issue of DSM Account by TNSLDC.
5	If payments against the Charges for Deviation are delayed by more than two days, i.e., beyond twelve (12) days from the date of issue of the statement by the TNSLDC, the defaulting QCA shall have to pay simple interest@ 0.06% for each day of delay.	**QCA** in case of inter-state transactions and **Generator** in case of intra-state transaction.	In case the payment is not made even after a lapse of 30 days from date of issuance of DSM Account, process to invoke LC shall be initiated beside any other action as permissible under law / regulations.

14 DEVIATION CHARGES METHODOLOGY:

14.1 All Pooling Substations shall be classified in four categories i.e.

a. **Intra-State Pooling Substation**: where all wind & solar generators connected through feeders are having delivery point within the State.

b. **Inter-State Pooling Substation**: where all the wind & Solar generators connected through separate feeders and metering arrangements are having delivery point to outside the State.

c. **Mixed Pooling Substation**: where some of the feeders are having delivery point outside the State and balance within the State.

d. **Mixed Feeders Pooling Substation**: where some of the feeders are having both distribution load and RE generating stations.

14.2 Methodology for Intra-State Transactions:

14.2.1 Charges towards sale of Energy by Generator on the basis of actual generation shall be settled by the Procurer, whereas the charges towards deviation of Energy from its given schedule shall be settled by the QCA in case of inter-state transaction. In case of intra-state transaction, the DSM Charges shall be collected from the Generators' Monthly bill through Distribution Licensee. (TANGEDCO)

14.2.2 The charges towards deviation in case of actual generation are lower/more than scheduled generation (Under-Injection/Over-Injection) shall be in accordance with the Regulation 7.2 of TNERC FSDSM Regulations 2024 and its amendments.

14.2.3 The % error for Intra-state shall be calculated as per Regulation 2.1(a) of TNERC FSDSM Regulations 2024 and its amendments. The % error thus calculated will be rounded to second decimal place.

14.2.4 All the Generators shall pay deviation charges provisionally @ 3paisa per unit for the actual energy injected into the Grid and the same shall be collected by Distribution Licensee (TANGEDCO) from the Generators' monthly bill.

14.2.5 SLDC shall prepare monthly DSM Statements for each QCA for pooling Substations / Multiple PSSs aggregate / State level for Wind and Solar separately and the reconciliation of the DSM Charges shall be done at the end of financial year.

14.2.6 The total deviation charges remitted on account of deviation by a wind/solar generator(s) into state deviation pool account (wind and solar) in a financial year shall be capped at the ceiling rate of 3 paise per unit as may be stipulated by the commission from time to time through separate order.

14.2.7 If the deviation charges computed as per the Regulation 7.2 (Table1/Table2) of the TNERC FSDSM Regulations 2024 is less than the capped amount, such charges shall be adjusted in the subsequent billing of next financial year.

14.3 Methodology for Inter-State transactions:

14.3.1 Inter-State transactions at a Pooling Substation shall be permitted only if the concerned Generator or group of generators is connected through a separate feeder with meter arrangement at PSS end.

14.3.2 The Generator(s), through the QCA, shall submit a separate Schedule for its energy injection at Pooling Substation, in accordance with these Regulations to the TNSLDC.

14.3.3 The Inter-State Schedule submitted by the QCA shall be grossed-up to State Periphery by applicable transmission losses.

14.3.4 The QCA shall submit the schedule based on the Schedule furnished to the SRLDC. However the final implemented schedule taken from SRLDC shall be utilized for computation of DSM Charges for Inter-State Transactions after including state loss.

14.3.5 The TNSLDC shall prepare the deviation settlement account for such QCA on the basis of measurement of the deviation in the energy injected as per Regulation 8.5 of TNERC FSDSM Regulations 2024 and its amendments.

14.3.6 The QCA shall pay the Deviation Charges prepared by TNSLDC to the State Deviation Pool Account (Wind and Solar).

14.3.7 The Deviation Charges for actual injection is lower/higher than the scheduled generation (Under-Injection/Over-Injection) by Generators selling or consuming power outside Tamil Nadu shall be in accordance with the Regulation 8.5 of TNERC FSDSM Regulations 2024 and its subsequent amendments.

14.3.8 The % error for Inter-state shall be calculated as per Regulation 8.5 of TNERC FSDSM Regulations 2024 and its amendments. The % error thus calculated will be rounded to second decimal place.

14.4 Deviations in respect of Inter-State and Intra-State transactions shall be accounted separately at each Pooling Substation/ (Intra State- PSS/ or at State level).

14.5 The TNSLDC shall provide separate DSM accounts for Inter-State and Intra-State transactions to the QCA, who shall settle the Deviation Charges with the concerned Generators.

14.6 The TNSLDC shall prepare the DSM Statement for the actual deviation charges for each QCA per PSS / State wide aggregate and publish the same in the website, which can be viewed by the QCA(s)/Generators.

15 DEVIATION CHARGES PAYMENT MECHANISM:

(Applicable for Generators who are selling power outside of Tamil Nadu)

15.1 The QCA shall operate Bank Account in any Nationalized / scheduled Bank and intimate the details of the same to TNSLDC.

15.2 The Deviation Charges shall be paid by the QCA within ten (10) days from the issue of the accounts and billing by the TNSLDC.

15.3 If payments of the above deviation charges are delayed by more than 2 days i.e. beyond 12 days from the date of issue of statement, a simple interest of 0.06% for each day of delay shall be levied. This is without prejudice to any action that may be taken under Section 142 of the Act in

addition to any action under Section 56 of the Act and other relevant Regulations.

15.4 The responsibility of ensuring the payment of the Deviation Charges to the TNSLDC by the QCA shall remain to that of the concerned Generators.

15.5 After successful registration of the QCA, it shall be the responsibility of the QCA to provide payment security through an irrevocable Letter of credit (LC) which shall be maintained as per Clause no.15.6 of said procedure.

15.6 The LC amount shall be the interest free amount equivalent to Rs.25,000/- (Twenty Five Thousand Rupees only) per MW for Solar Generation and Rs. 50,000/- (Fifty Thousand Rupees only) per MW for Wind Generation.

15.7 If the QCA fails to pay deviation charges within thirty (30) days from the issue of account and billing, TNSLDC shall encash the LC amount of the concerned QCA.

15.8 In case of insufficient/exhausted LC amount, QCA shall make up LC amount within thirty (30) days from receipt of such information from TNSLDC. Failure to make up LC amount within prescribed time limit, the Wind/Solar generation which QCA is representing shall not be scheduled. TNSLDC shall publish the names of QCAs under default in the website.

16 MECHANISM FOR MONITORING COMPLIANCE:

16.1 The event of breach or default of the procedure shall be as follows:

16.1.1 Non-payment or delay in payment of Deviation Charges.

16.1.2 Non-compliance of any of the terms/conditions/rules outlines under this procedure.

16.1.3 Non-compliance of any of the directives as per the provisions of this procedure issued by TNSLDC.

16.1.4 Obtaining registration on the basis of false information or by suppressing material information.

16.1.5 QCA fails to provide schedules continuously for 10 days.

16.1.6 In case the Available Capacity (AvC) is intentionally and repeatedly Mis-declared by the QCA in respect of Inter-state transactions.

16.1.7 In case the Scheduled generation is intentionally and repeatedly Mis-declared by the QCA in respect of Intra-state transactions.

16.1.8 Non-submission of accounts to TNSLDC relating to de-pooling of deviations charges prepared by the QCA.

16.1.9 Non-payment of RE DSM charges to State Deviation Pool Account (Wind and Solar) by QCA for consecutive three (3) weeks.

16.1.10 In case the QCA is insolvent.

16.1.11 In case of continued default of statutory complaints leading to declaration of wilful defaulter by competent authority

16.2 Consequences for event of default:

16.2.1 If schedule is not provided by the registered QCA (default as per Clause 16.1.5 of said procedure) then the previous day's schedule (d-1) for those non-submission days shall be considered and DSM charges shall be computed accordingly and penalty will be levied as per regulation 5.2 of TNERC FSDSM Regulations 2024.

16.2.2 In case of default for acts covered under as per 16.1.1 to 16.1.11 of said procedure without prejudice to other actions as may be taken by TNSLDC, the TNSLDC shall issue a notice of period not less than 15 days for revocation of registration of QCA and non- scheduling of pooling Substation to which said QCA represents and adequate opportunity shall be given to QCA to present its case before TNSLDC.

16.2.3 In case QCA fails to address/rectify the breach expressed by TNSLDC in the Notice within stipulated time, the TNSLDC shall proceed with revocation of registration of QCA and collect the deviation charges as per the conditions stipulated in the Regulation 5.2 of TNERC FSDSM Regulations 2024 shall be followed.

17 GRIEVANCE / DISPUTE REDRESSAL:

17.1 All Complaints regarding unfair practices, delays, discrimination, lack of information, supply of wrong information or any other matters in the first instance shall be mutually resolved by the QCA and TNSLDC and only in the event of irreconcilable differences/ disputes the matter shall be referred to the Commission for clarification or adjudication.

17.2 Any disputes between TNSLDC, QCA and concerned generators *inter se* shall be governed as per dispute resolution mechanism under their agreement and in the event of disagreement, the dispute shall be referred to the State Power Committee for reconciliation. In the event of disagreement still, it shall be subject to jurisdiction of the TNERC only after recording that the dispute is irrecoverable mutually. Pending the decision of the State Commission, the directions of the TNSLDC shall be complied by the QCA and concerned generator(s), which shall be subject to the final outcome of the proceedings before the Commission.

18 REMOVAL OF DIFFICULTIES:

18.1 In case of any difficulty in implementation of this procedure, TNSLDC may approach the Commission for review or revision of the procedure with requisite details.

18.2 In the event of any inconsistency between these procedures and the Regulations, the provisions of the Regulations shall prevail and any dispute arising out of the implementations of these procedures shall be referred to the Commission either by the TNSLDC or by the QCA or the individual generators and the decision of the Commission thereon shall be final.

18.3 The procedure is in addition to TNERC FSDSM Regulations, 2024 or any other Regulations of the Commission in force and not in derogation of the same.

19 GENERAL:

19.1 All costs/expenses/charges associated with the application, including bank charges, Affidavits etc. shall be borne by the applicant.

19.2 The Generators and QCA shall abide by the provisions of the Electricity Act, 2003, the TNERC FSDSM Regulations 2024 and Indian Electricity Grid Code and TNERC (State Grid Code) Regulation -2005, and applicable CERC and TNERC regulations as amended from time to time.

19.3 This procedure aims at easy and pragmatic Forecasting, Accounting and Settlement of Deviations for Wind and Solar Generations. However, some teething problems may still be experienced. The various implications would be known only after practical experience is gained by way of implementing these procedures. In order to resolve the same, this procedure shall be reviewed or revised by the TNSLDC with prior approval of Commission.

20 ANNEXURES & FORMATS:

20.1 List of Annexure and Formats are listed below:

Sl. No.	Particulars	Annexure / Format No.
1	Consent/Authorization Letter from Generator for appointment of QCA.	ANNEXURE - I
2	Format for submission of Forecast & Revision.	ANNEXURE - II
a	For Forecast and Schedule Data to be submitted by QCA	FORMAT – A
b	For Revision of Availability & Revision	FORMAT – B
3	Real-time Data Telemetry requirement	ANNEXURE - III
4	Application for Registration of QCA	ANNEXURE - IV
5	Technical Data of individual Generators	FORMAT – 1
6	PPA details of individual Generators in the Pooling Substation. (Generators selling power outside of Tamilnadu)	FORMAT – 2
7	Format for Indemnity Bond to be submitted by QCA	FORMAT – 3
8	Undertaking to be given by Prospective QCA At The Time Of Registration	ANNEXURE - V
9	Declaration	ANNEXURE - VI
10	Abstract of payments to be made to TNSLDC by the QCA	ANNEXURE - VII

Annexure – I

Consent/Authorization Letter from Generator for appointment of QCA

Proforma Consent Letter

Date:

To,

The Chief Engineer/Grid Operation,

State Load Despatch Centre,

3rd Floor, TANTRANSCO Building,

144, Anna Salai,

Chennai-600002.

Sub : Appointment of QCA as per TNERC (Forecasting, Scheduling and Deviation Settlement and Related Matters for Wind and Solar Generation) Regulations, 2024.

Dear Sir/Madam,

We would like to inform you that we, as the Wind/Solar power generator at Pooling Substation have decided to exclusively appoint M/s._____ only as the Qualified Coordinating Agency (QCA) for Forecasting, Scheduling and Commercial Settlement, as per the TNERC (Forecasting, Scheduling and Deviation Settlement and Related Matters for Wind and Solar Generation) Regulations, 2024.

Kindly find below the details of our capacity at_____ (Name) Pooling Substation having ___ MW.

S. No	Customer Name	No of WTGs/Panels	Contact Person	E-mail ID & Contact No.	Capacity in MW

We would like to state that henceforth the role of QCA at _____(Name) Pooling Substation will be taken care by M/s._____

Contact Details:

- **Contact Person-1**:

  Name & Designation:

  Address:

  Phone No. (O): Mobile No.:

  E-mail:

- **Contact Person-2**:

  Name & Designation:

  Address:

  Phone No. (O): Mobile No.:

  E-mail:

- **Contact Person-3**:

  Name & Designation:

  Address:

  Phone No. (O): Mobile No.:

  E-mail:

Details of Forecasting Operations Desk:

Address:

Phone No. (O): Mobile No.:

E-mail:

This is for your kind information and records.

Regards,

Generator Authorized Signatory

Sign: _____

Name:

Designation:

Name of QCA:

Seal:

Date: _____

Place: _____

Annexure – II (Format for submission of forecast & Revision)

FORMAT – A: For Forecast and Schedule Data to be submitted by QCA for date: dd/mm/yyyy

(to be submitted a day in advance)

Pooling Substation Name: _____

Name of QCA:

_____

15 Min time block (96 Block in a day)	Time	Available Capacity (MW) (for Inter-State transaction) - Day Ahead	Day Ahead Forecast/ Declared Quantum/ Schedule (Inter/Intra) (MW)
1	00:00 – 00:15		
2	00:15 – 00:30		
3	00:30 – 00:45		
4	00:45 – 01:00		
…			
…			
95	23:30 – 23:45		
96	23:45 - 00:00		

FORMAT – B: For Revision of Availability & Revision for

date: dd/mm/yyyy

(to be submitted on the day of actual generation by QCA)

Pooling Substation Name: _____

Name of QCA:

_____

Revision No.: _____

15 Min time block (96 Block in a day)	Time	Current Available Capacity (MW) (for Inter-State transaction)	Current Forecast/ Declared Quantum/Schedule (Inter/Intra) (MW)
1	00:00 – 00:15		
2	00:15 – 00:30		
3	00:30 – 00:45		
4	00:45 – 01:00		
95	23:30 – 23:45		
96	23:45 - 00:00		

Annexure – III

Real-time Data Telemetry requirement (Suggested List)

Wind turbine generating plants:

- Turbine Generation (MW/MVAR)
- Wind Speed (meter/second)
- Generator Status (on/off-line)- this is required for calculation of availability of the WTG
- Wind Direction (degrees from true north)
- Voltage (Volt)
- Ambient air temperature (^{o}C)
- Barometric pressure (Pascal)
- Relative humidity (in percent)
- Air Density (kg/m^{3})

For Solar generating Plants:

- Solar Generation unit/ Inverter-wise (MW and MVAR)
- Voltage at interconnection point (Volt)
- Generator/Inverter Status (on/off-line)
- Global horizontal irradiance (GHI) (Watt/m^{2})
- Ambient temperature (^{o}C)
- Diffuse Irradiance (Watt/m^{2})
- Direct Irradiance (Watt/m^{2})
- Sun-rise and sunset timings
- Cloud cover (Okta)
- Rainfall (mm)
- Relative humidity (%)
- Performance Ratio

Annexure – IV

Application to be submitted for Registration as a Qualified Co-ordinating Agency (QCA) under the TNERC (Forecasting, Scheduling and Deviation Settlement and Related Matters for Wind and Solar Generation) Regulations, 2024.

Sr. No.	Name of the QCA	
1	Type of Generator	Wind / Solar
2	Location of Generator (Village, Taluk, District)	
3	Total Installed Capacity of Generators connected to Pooling Substation	
	Total Number of Units with details	
4	Individual or on Behalf of Group of generators	
	If on behalf of Group of generators connected to a Common Pooling Substation	(Please attach consent from majority of Generators in terms of combined installed capacity in the Pooling Substation) (Please attach copy of agreement executed with Generators)
	Details of the individual Generators in the Pooling Substation	(Please attach names with installed capacity of each & individual Generator in the Pooling Substation)
5	Name & Voltage level of the Pooling Substation to which Generation is connected	
	Latitude & Longitude of Pooling Substation	
	Schematic diagram of Connectivity with the Grid & Metering Arrangement	(Please attach)

6	Whether any PPA has been signed: (Y/N)	If yes, then attach PPA details as per Format-2
7	Metering Details	Meter No. 1. Main 2. Check
8	Contact Details of the Nodal Person	Name: Designation: Landline Number: Mobile Number: E - Mail Address:
	Contact Details of the Alternate Nodal Person	Name: Designation: Landline Number: Mobile Number: Fax Number: E - Mail Address:
	Contact Details of Control Room for Communication on Forecasting, Scheduling, Revisions, event of Curtailments etc.	Landline Number: Mobile Number: E - Mail Address:
9	Details of Payment towards Registration as QCA	
10	Technical Data of Generators	(Please attach detailed information as per Format: 1)
11	Statement of PPA of individual Generators in Pooling Substation	(Please attach detailed information as per Format: 2)
12	Indemnity Bond	(Please attach as per Format: 3)
13	Undertaking to be given by prospective QCA at the time of Registration.	(Please attach as per Annexure: V)
14	Declaration	(Please attach as per Annexure: VI)

15	Undertaking :	
(i)	We hereby undertake to abide by the instructions issued by the TNSLDC for compliance of regulatory provisions of TNERC (Forecasting, Scheduling, Deviation Settlement Mechanism and related matters for Wind and Solar Generation) Regulations, 2024 and subsequent amendments thereof	
(ii)	We also undertake to inform TNSLDC regarding termination / breach of the agreement if any and shall not discharge the QCA functions without valid authorizations by Generators.	

Date: _____

Place: _____

QCA Authorized Signatory

Sign: _____

Name:

Designation:

Name of QCA:

Seal:

Format – 1

Technical Details (available with the generators) to be submitted by the QCA

Pooling Substation Name: _____

Name of QCA:

_____

For Wind turbine generating plants:

Sr. No.	Particulars
1	Type:
a	Manufacturer
b	Make
c	Model
d	Capacity
e	Unique WTG ID
f	Customer Name
g	Commissioning Date
h	Hub Height
i	Total Height
j	RPM Range
k	Rated Wind Speed
2	Performance Parameters (Optional):
a	Rated Electrical Power at Rated Wind Speed
b	Cut-In Speed
c	Cut-Out Speed
d	Survival Speed (Max. Wind Speed)
e	Ambient Temperature for Out of operation
f	Ambient Temperature for In Operation
g	Survival Temperature
h	Low Voltage Ride Through (LVRT) setting

i	High Voltage Ride Through (HVRT) setting
j	Lightening Strength (kA & in Coulombs)
k	Noise Power Level (db)
3	Rotor Parameters (Optional):
a	Hub Type
b	Rotor Diameter
c	Number of blades
d	Area Swept by blades
e	Rated Rotational Speed
f	Rotational Direction
g	Coning Angle
h	Tilting Angle
i	Design Tip speed ratio
4	Blade Details: (Optional)
a	Length
b	Diameter
c	Material
d	Twist Angle
5	Generator Details: (Optional)
a	Generator Type
b	Generator Speed
c	Winding Type
d	Rated Generation Voltage
e	Rated Generation Frequency
f	Generator Current
g	Rated Temperature of Generator
h	Generator Cooling
i	Generator Power Factor
j	kW/MW @ Rated Wind Speed
k	kW/MW @ Peak Continuous
l	Frequency Convertor

m	Filter - Generator side
n	Filter - Grid side
o	Turbine Power Curve
6	Transformer Details (Optional):
a	Transformer Capacity
b	Transformer Cooling type
c	Voltage
d	Winding Configuration
7	Weight Details (Optional):
a	Rotor
b	Nacelle
c	Tower
8	Over Speed Protection
9	Design life (Optional):
10	Design Standard (Optional):
11	Latitude
12	Longitude
13	COD Details
14	Elevation above Mean Sea level (MSL) (Optional):

For Solar generating plants:

Sr. No.	**Particulars**
1	Latitude
2	Longitude
3	Elevation and Orientation angles of arrays or concentrators
4	The generation capacity of the Generating Facility
5	Elevation above Mean Sea level (MSL)
6	COD Details
7	Rated Voltage
8	Details of Type of Mounting: (Tracking Technology if used,

	single axis or dual axis, auto or manual)
9	Manufacturer and Model (of Important Components, Such as Turbine, Concentrators, Inverter, Cable, PV Module, Transformer, Cables)
10	DC installed Capacity
11	Module Cell Technology
12	I-V Characteristic of the Module
13	Inverter Rating at different temperature
14	Inverter Efficiency Curve
15	Transformer Capacity & Rating, evacuation voltage, distance form injection point

Format – 2

(Applicable for Generators selling power outside of Tamil Nadu)

Pooling Substation Name: _____

Name of QCA:

_____

Sr. No.	Name of Generator	Installed Capacity (MW)	PPA No.,date	Effective Date	PPA Validity Date

Date: _____

Place: _____

QCA Authorized Signatory

Sign: _____

Name:

Designation:

Name of QCA:

Seal:

Format – 3

(*On the Non-Judiciary Stamp Paper*)

INDEMNIFICATION

The Renewable Energy generator and QCA shall keep TNSLDC indemnified at all time and shall undertake to indemnify, defend and save the TNSLDC harmless from any and all damages, losses, claims and actions, including those relating to injury to or death of any person or damage to property, demands, suits, recoveries, costs and expenses, court costs, attorney fees and all other obligations by or to third parties, arising out of or resulting from the Registration of QCA under DSM Mechanism.

The Renewable Energy generator and QCA shall keep TNSLDC indemnified at all time and shall undertake to indemnify, defend and save the TNSLDC harmless from any and all damages, losses, claims and actions, arising out of disputes with TNSLDC, as well as with generators and QCA inclusive of confidentiality issues

Date: _____

Place: _____

QCA Authorized Signatory

Sign: _____

Name:
Designation:
Name of QCA:
Seal:

Generator Authorised Signatory

Sign: _____
Name:
Designation:
Name of the Generator
Seal:

ANNEXURE-V

UNDERTAKING TO BE GIVEN BY PROSPECTIVE QCA AT THE TIME OF REGISTRATION

Name of QCA: …….

Postal address:

…….

[To be provided by the QCA on a 100 Rupees stamp paper]

1. We, as a QCA will be regulated by TNERC (Forecasting, Scheduling, Deviation Settlement and related matters for Wind and Solar Generation) Regulations, 2024 and subsequent amendments thereof.

2. We shall be responsible for settlement of Deviation Charges for inter-state transactions as per TNERC (Forecasting, Scheduling, Deviation Settlement and related matters for Wind and Solar Generation) Regulations, 2024 for the Pooling Substations / RE Generators for which we represent as a QCA.

3. We agree to provide the forecasting schedules to TNSLDC on Week ahead, day-ahead and intra-day basis on behalf of Wind and Solar Pooling Substations / RE Generators connected to STU / DISCOM substations.

4. We agree to provide the consent letter from all the generators connected to the Pooling Substations for being appointed as the QCA.

5. We understand that we can revise the intra-day schedules for a maximum of 16 revisions as per the regulations.

6. We agree that if there is any deviation from the schedule, then for such Energy, Deviation charges will be applicable as per TNERC (Forecasting, Scheduling, Deviation Settlement and related matters for Wind and Solar Generation) Regulations, 2024 and amended from time to time.

7. We shall be responsible for commercial settlements for inter-state transactions with the TNSLDC on behalf of wind and solar generators connected to the

pooling station as per TNERC (Forecasting, Scheduling, Deviation Settlement and related matters for Wind and Solar Generation) Regulations, 2024.

8. We understand that TNSLDC will compute the Deviation charges on monthly basis of pooling stations/generators for inter-state transactions as per the Central Electricity Regulatory Commission (Deviation Settlement Mechanism and Related Matters) Regulations, 2022 and the amendments issued time to time and the TNERC (Forecasting, Scheduling, Deviation Settlement and related matters for Wind and Solar Generation) Regulations, 2024 and publish the same on their website. We will abide by TNERC (Forecasting, Scheduling, Deviation Settlement Mechanism and related matters for Wind and Solar Generation) Regulations, 2024, as amended from time to time for all transactions.

9. The Generator(s) may establish necessary SCADA data of the turbine / inverter and pooling station for the purpose of monitoring and billing as per procedure.

10. We agree to provide payment security through an irrevocable Letter of credit for the amount equivalent to Rs.25,000 per MW for solar generation and Rs.50,000 per MW for wind generation. (For inter-state transactions only)

11. We agree to provide WTG's/ Inverter wise static data and pooling stations details as per the formats specified by TNSLDC.

12. We agree that if payments against the Charges for Deviation Charges are delayed by more than two days i.e., beyond twelve (12) days from the date of issue of DSM Statement by TNSLDC, the defaulting QCA shall have to pay simple interest@ 0.06% for each day of delay. We further agree that in case the payment is not made by us even after a lapse of 30 days from issuance of DSM Statement, process to invoke LC shall be initiated by TNSLDC. (For inter-state transactions only)

13. We agree to the above terms and conditions for registering as QCA with TNSLDC, Chennai, Tamil Nadu.

Details of Letter of Credit are enclosed.

(Name and Postal address of QCA)

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.....

.....

.....

For Pooling Substation:

TANTRANSCO/TANGEDCO Substation:

Voltage level at injecting point:

List of generators connected to the pooling station along with installed capacity for which consent is obtained:

1.

2.

Date: _____

Place: _____

QCA Authorized Signatory

Sign: _____

Name:

Designation:

Name of QCA:

Seal:

Annexure-VI

DECLARATION

(Declaration to be Signed by the M.D./CEO/Authorised Signatory of the Applicant (QCA))

I/We_____certify that all information furnished below is/are true to the best of my/our knowledge and belief.

I/We shall abide by such terms and conditions as stipulated by TNERC, TANTRANSCO, TANGEDCO, and TNSLDC with respect to DSM for Solar & Wind from time to time.

S.No	**Name of PSS**	**No of turbines/ Inverters**	**Capacity of Each turbine/Inverter**	**Total Capacity of PSS**	**Accepted as QCA (Yes or No)**
			Total capacity of PSS		

I/We hereby also confirm that: I/We have entered an agreement with all the generators connected to the _____

Pooling Substation as QCA and the Agreement is attached.

Date: _____ **Signature of the QCA**

Annexure – VII (Abstract of Payments to be made to TNSLDC by the QCA)

Sr. No.	Reason for Payment	Amount	Time of Payment
1	Registration Charges	For 1-50 MW – Rs.10,000/- Above 50 MW and upto 100 MW – Rs.15,000/- Above 100 MW – Rs.20,000/- Single QCA – Rs.15,00,000 for Wind and Single QCA – Rs.15,00,000/- for Solar	During Application for Registration
2	Scheduling Charges /System Operation Charges	As per TNERC Regulation/Order	For every day/per MW/day
3	Forecasting services	Rs.2,000/-	Per day/PSS, if availed
4	Letter of Credit (irrevocable)	Rs.25,000/- per MW for Solar Rs.50,000/- per MW for Wind	Before commencement of Commercial operation (01.04.2024)
5	Top-up of LC	As required	In the event of reduction in the amount as per Sl.No:4
6	Mis-declaration charges Schedule and AvC	Three times of deviation charges.	As required

Sd/-
Secretary
Tamil Nadu Electricity Regulatory Commission