



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

In accordance with
Maharashtra Electricity Regulatory Commission
(Forecasting, Scheduling and Deviation Settlement of
Solar and Wind Generation) Regulations, 2018 and
Common Order dated 30.09.2019

**Prepared by
Maharashtra State Load Despatch Centre**

&

**Approved by
Maharashtra Electricity Regulatory Commission
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PROCEDURE FOR FORECASTING, SCHEDULING AND DEVIATION SETTLEMENT OF SOLAR AND WIND GENERATION

1. OUTLINE:

1.1. This Procedure is in accordance with the various provisions of MERC (Forecasting, Scheduling and Deviation Settlement of Solar and Wind Generation) Regulations, 2018, hereinafter referred as “the Regulations” and Common Order issued by the Commission dated 30.09.2019 in the matter of 43 Nos. of Petitions filed by various stakeholders and other subsequent Orders in the similar matter related to F&S Regulations and Procedure thereunder. All applicants shall abide by the provisions of the Regulations.

1.2. APPLICABILITY OF THE PROCEDURE:

1.2.1. All Wind and Solar Energy Generators in Maharashtra connected to the Intra-State Transmission System, on or after the date notified by the Commission of coming into force of the Regulations, including those connected through Pooling Sub-Stations and using the power generated for self-consumption or sale within or outside the State.

Provided that the combined installed capacity of the Solar or Wind Generators connected to a particular Pooling Sub-Station, or that of an individual Generator connected to some other Sub-Station, shall not be less than 5 MW.

Provided further that till further direction in this matter this Procedure shall not be applicable for Solar power generation projects developed under ‘Mukhyamantri Sour Krishivahini Yojana’ as these projects are load serving embedded generation connected to distribution network of distribution licensee.

1.2.2. As per the State DSM regime, all the Distribution Licensees shall anticipate the generation from various Wind/Solar Generators having capacity less than 5 MW which are contracted by them or by their consumers while submitting Demand forecast to MSLDC.

2. QUALIFYING CRITERIA FOR THE QCA:

- 2.1. As per Regulation 6.1 of MERC F&S Regulations, 2018, Generators at Pooling Substation shall appoint one amongst themselves or any other entity as QCA. The QCA shall be a company incorporated in India under the Companies Act 1956/2013.
- 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 F&S framework in the state.
 - 2.2.1. The QCA shall have the capabilities of Modeling wind energy generation potential on seasonal time scales with impact surfaces, a tool to visualize the wind 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 one (1) year including pilot project work with appropriate accuracy levels in forecasting.
 - 2.2.3. The financial strength of the QCA must be such that it should be in a position to handle the risk of penalties due to deviation charges applicable to generator. Considering this, the Average Net Worth of the QCA for forecasting & scheduling services shall be in positive amounting to at least Rs.1.50 Crores (Net worth = Share Capital + Reserve – Revaluation Reserve – Intangible Asset – Misc. Expenditure to the extent not written off – Carried Forward Losses – Liabilities) in the current 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. Energy model,
 - d. Software developers
 - e. 24 x 7 operation and monitoring team,

The corresponding supporting certificates/documents justifying qualification should be submitted along with the application for registration.

- 2.3. It is envisaged that Generators acting as QCA themselves, shall also strive to build requisite skillsets, 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 at least 51 % of the Generators connected in the Pooling Sub-Station in terms of their combined installed capacity for appointment as QCA. (Not applicable if Generator is connected through dedicated inter-connection facility with the Grid) at the time of Registration.

The authorization shall be strictly as per the prescribed format as per **Annexure – I** only. The Authorization letter shall not have any validity period and/or conditions between QCA and Generator. In such case, the authorization letter shall be treated as invalid and shall not be considered for calculating percentage authorization.

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 MSLDC and the Generators to whom it is representing in the Pooling Sub-Station.
- 3.3. The QCA shall verify the total installed capacity of the Pooling Sub-Station based on the installation of individual WTG/Solar Modules at the time of submission of QCA Registration Application to MSLDC.

In case of any discrepancy in the total installed capacity, the revision application shall be accompanied by following documents:

- a. synchronization permissions granted by DISCOMs/MSETCL,
 - b. information of PPA from DISCOMs / OA consumer with which RE generator has PPA,
 - c. Commissioning certificates issued by concerned DISCOM,
 - d. MEDA Infrastructure clearances.
- 3.4. Once QCA is registered with MSLDC for a particular Pooling Sub-Station, it shall not apply for De-registration at least for the period of 2 years without providing any valid reasons as mentioned in the Own De-Registration clause mentioned in subsequently in the said procedure.

- 3.5. The QCA shall establish a Control Center round the clock and shall have complete control over Wind/Solar injection feeders connected to Pooling Sub-Stations. The Control Centre shall have facilities of voice communication with MSLDC and Wind/Solar Generators with voice recording facilities, Fax machine and internet connection available for all the 24 hours. The QCA shall comply the instructions of the System Operator in normal condition as well as during emergencies, appropriate decisions taken by the System Operators in view of Grid security and safety.
- 3.6. The QCA shall have established alternate voice and data communication with MSLDC.
- 3.7. The QCA shall establish protocol for communication with individual generators to implement the instructions of System Operators and MSLDC.
- 3.8. Declaration of Available Capacity of the Generating Station to MSLDC to which it is representing.
- 3.9. Provide aggregated Day ahead & Week ahead forecast (based on their own forecast or on the forecast done by MSLDC) and Schedule as per **Annexure - II** through a web-based application maintained by MSLDC.

Provided that if the QCA is representing on behalf of the multiple Pooling Sub-Stations, the Scheduling, Energy accounting and Deviation monitoring for each Pooling Sub-Station of wind and/or solar power generation shall be undertaken separately.

Provided further that, Generators/QCA shall submit Buyer-wise & Contract-wise (LTOA/MTOA/STOA) schedules of their respective Pooling Sub-Stations through a web-based Scheduling software developed by MSLDC.

- 3.10. OCA in coordination with Generator shall provide real time data for power generation parameters (at Pooling Sub-Station level) and real time generation data (turbine and inverter level) and weather data wherever available as per **Annexure - III**.
- 3.11. In case of non-availability of Real Time Data (at Turbine Level /inverter Level), QCA in coordination with Generator shall maintain and provide time block wise generation data at (turbine and inverter level) and weather data on Weekly basis:
 - For wind plants, at the turbine level:

Average wind speed, Average power generation at 15-min time block level

- For solar plants, for all inverters* \geq 1 MW:
Average Solar Irradiation, Average power generation at 15-min time block level.

**if a solar plant uses only smaller string inverters, then data may be provided at the plant level.*

- 3.12. Be Responsible for metering and meter data acquisition in co-ordination with STU/Transmission Licensee/Distribution Licensee, and co-ordination with RLDC, MSLDC, STU, CTU, MSEDCL and other agencies as per IEGC and CERC/MERC Regulations.
- 3.13. Undertake commercial settlement of all deviation-settlement charges as per applicable MERC and CERC DSM Regulations.
- 3.14. Maintain records and accounts of the time block-wise Schedules, the actual generation injected and the deviations, for the Pooling Sub-Station and the individual Generators separately.
- 3.15. Prepare deviation accounts on weekly basis as per regulation 15 of the Forecasting, Scheduling and Deviation Settlement of Solar and Wind Generation Regulations, 2018.
- 3.16. QCA shall execute an agreement with MSLDC wherein it is mentioned that QCA shall undertake all operational and commercial responsibilities on behalf of the Constituents as per the prevalent MERC Regulations.
- 3.17. Use Automatic meter reading (AMR) technologies for transfer, analysis and processing of interface meter data to MSLDC in line with Metering /AMR protocol and Metering/AMR standards to be finalised by STU in accordance with provisions of Metering Code and CEA Metering Regulations, as amended from time to time. STU/MSLDC/Transmission Licensee/Distribution Licensee, as the case may be, shall co-ordinate, facilitate and provide necessary support to Generators/QCA for installation of Meters and AMR facilities as per the Orders/directions of the Commission from time to time.
- 3.18. Perform commercial settlement beyond the connection point (De-pooling arrangement among each generator in the Pooling Sub-Station) and technical coordination amongst the generators within

the Pooling Sub-Station and up to the connection point as the case may be.

- 3.19. Shall furnish the PPA rates on notarized affidavit as per **Format - 2**, for the purpose of Deviation charge account preparation to MSLDC supported by copy of the PPA.
- 3.20. Shall provide details of Generator-wise PPA such as Name of Generator, Capacity, Name of buying Discom (in case of Third-Party Sale or Self Consumption, name of Discom in which power is drawn), Period of PPA (Effective/Expiry Date), Type of Open Access (LTOA/MTOA/STOA), rate (in case of Inter-State Sale), etc as per **Format - 3**.
- 3.21. The QCA, within seven (07) days, shall inform the details to MSLDC in case there is any change in:
- The Generating Station Capacity (in case of individually connected generator),
 - Pooling Sub-Station Capacity,
 - Individual generators in the Pooling Sub-Station,
 - Notice issued by any Generator for withdrawal of Authorization
 - Reduction in authorization from generators in a Pooling Sub-Station below 51 % of the total installed Capacity of the Pooling Sub-Station.
 - Modification of PPA details of Generators to whom it is representing.
- 3.22. Keep MSLDC indemnified at all times and shall undertake to indemnify, defend and save the MSLDC 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 - 4**) 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 Sub-Station shall appoint QCA and give authorization for a period of at least 2 years as per **Annexure – I**, for registration of QCA at MSLDC.
- 4.2. The Generator shall not appoint and authorize multiple QCAs for a particular Pooling Sub-Station. In such case, the authorization provided by the Generator shall be treated as invalid & MSLDC shall process the application of the QCA as per the provisions of this procedure and the decision of MSLDC on registration of QCA shall be binding on such generator.
- 4.3. In case of non-consensus among the generators connected through a common feeder for appointment of QCA, then such generators shall take separate connectivity from STU/DISCOM and furnish the schedules by appointing separate QCA in accordance with these regulations and procedure.
- 4.4. Once the QCA is registered, the generator/s shall not re-appoint another QCA, at least within two (2) years from the date of successful registration of the QCA at MSLDC.

Provided that in case of defaults by the QCA, the generator/s can re-appoint another QCA by giving prior notice of three (3) month to MSLDC and the process of registration of new QCA shall be carried in accordance with these regulations and procedures.

- 4.5. All the generators shall save and store the block-wise generator injection data or any other data desired by MSLDC and make available the same to their respective QCA so that it could be sent to MSLDC within (7) days from the date of demand from MSLDC.
- 4.6. Since QCA is a State Entity and single point contact between MSLDC & Generators, any data such as technical details of WTGs/Solar Modules/Invertors, PPA, etc. sought by MSLDC to QCA shall be provided by the Generators to QCA for onward submission.
- 4.7. In most of the cases, Group of generators are operating the Generating Plant and implementing modifications in the Generation (through pitch control, hand-tripping of feeder, etc.). In such case, Generators shall establish a protocol for implementation of the curtailments& restoration instructions issued by MSLDC and ensure implementation of the instructions of MSLDC.

As per the said regulations, QCA being State Entity, shall be part of said protocol and necessary communications shall be routed by the Generators through QCA. Such protocol shall be prepared and intimated to MSLDC through QCA within one (1) month from the date of publication of the said procedure.

- 4.8. Generators shall nominate at least two Nodal Officers for communication with MSLDC (if required, as QCA is single point contact) and inform the contact details such as Name, Designation, Mobile No. alternate contact No., E-mail ID, Address, etc to MSLDC 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 MSLDC within seven (7) days.

- 4.9. It shall be binding on all the Generators in the concerned Pooling Sub-Station to enter in to an agreement with their respective QCA and pay share of Corpus amount/registration fee, QCA's Forecasting & Scheduling Charges as may be agreed mutually, Deviation Charges as per provision of the Regulations, along with technical details of the Generation & commercial details as per Clause No. 3.20, to MSLDC through QCA for modelling in Forecasting & Scheduling Software of MSLDC.

If generators fail to comply the provisions of the Regulations & Procedure, QCA shall intimate the details of such Generators to MSLDC which shall be intimated to the Discoms/STU/Transmission Licensees for initiating actions as follows:

A. Discom embedded Generators:

- i. PPA with Discoms: Disconnection from Grid.
- ii. Opting Open Access: Suspension of Open Access, Disconnection from Grid.

B. InSTS Connected Generators:

- i. PPA with Discoms: Disconnection from Grid.
- ii. Opting Open Access: Suspension of Open Access, Disconnection from Grid.

5. ROLES AND RESPONSIBILITIES OF MSLDC:

5.1. MSLDC shall develop a web-based Software 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.
- Communication of Grid Constraints, curtailments if any and restorations thereof.
- Mechanism for monitoring deviations in Scheduled & Actual generation along with commercial impact for MSLDC and QCAs' along with acquisition of Meter Reading of all the Nodes in the State for calculation of Deviations and Charges thereof.

5.2. MSLDC shall maintain registry of all Wind/Solar Generators. DISCOMS/MSETCL shall submit all relevant information of connectivity & synchronization in the format as prescribed by MSLDC as per ANNEXURE – 5 from time to time. MSLDC shall maintain & update the registry of all Wind/Solar Generators based on the information submitted by DISCOM/MSETCL.

MSLDC shall verify the application submitted by QCA as per the information available in the registry and accord approval for QCA registration.

5.3. The MSLDC shall be responsible for scheduling, communication, coordination with QCAs. Forecasting of the renewable energy generation shall be done by the MSLDC and the forecast will be available on the website. The generation forecast shall be done on the basis of the weather data provided by IMD or on the basis of other methods used by the Forecasting Agency whose service may be availed. However, the forecast by the MSLDC shall be with the objective of ensuring secure grid operation.

5.4. The MSLDC shall maintain records and accounts of the time block-wise Schedules, the actual generation injected and the deviations, for the Pooling Sub-Station and the individual Generators separately.

5.5. Maintain State Deviation Settlement Account for Wind and Solar Generations.

6. ROLES AND RESPONSIBILITIES OF DISTRIBUTION LICENSEES:

- 6.1. Distribution Licensee shall submit the details of all the generators connected to the Pooling Sub-stations under their ownership to MSLDC.
- 6.2. As Distribution Licensees are issuing permission for Commissioning of each WTG/Solar Module connected to any Pooling Sub-Station under their control area irrespective of ownership, the details of generators connected to all the Pooling Sub-Stations shall be provided by Distribution Licensees. The details shall be as per **Format – 5** within 15 days from the publication of the said procedure.

Provided that, QCA shall co-ordinate with MSLDC to map the RE generators within the PSS and MSLDC shall further Co-ordinate with Distribution Licensee, Transmission Licensees or other central agencies like SECI/CTU to map the RE generators within the PSS.

- 6.3. Submit Pooling Sub-Station-wise Power Purchase details as per **Format – 6** on monthly basis by 27th of every month for modelling in the Scheduling Software developed by MSLDC.

In case of non-submission of the updated details, the details available at MSLDC/submitted earlier shall be considered for modelling and Scheduling shall be carried out accordingly. In case of any errors in the calculations due to non providing of information, the concerned DISCOM shall be responsible.

- 6.4. Ensure availability of ABT metering arrangement at Common Inter-connection Point for each Pooling Sub-Station owned by ~~them~~ concerned 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.

- 6.5. Use Automatic meter reading (AMR) technologies for transfer, analysis and processing of interface meter data to MSLDC in line with Metering /AMR protocol and Metering/AMR standards finalised by STU in accordance with provisions of Metering Code and CEA Metering Regulations, as amended from time to time, for the Pooling Sub-Stations under their control area.

- 6.6. As per the State DSM regime, all the Distribution Licensees shall anticipate the generation from various Wind/Solar Generators having capacity less than 5 MW which are contracted by them or by their consumers while submitting Demand forecast to MSLDC.
- 6.7. Distribution Licensee shall co-ordinate with MSLDC 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 MSLDC.
- 6.8. Distribution Licensees shall nominate at least two Nodal Officers for communication with MSLDC and inform the contact details such as Name, Designation, Mobile No. alternate contact No., E-mail ID, Address, etc to MSLDC 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 MSLDC within seven (7) days.

- 6.9. Distribution Licensee shall issue Notices to those RE Generators who have not appointed QCA and not registered its QCA with MSLDC for compliance of the provisions of F&S Regulations.

Provided that, details of such PSS shall be informed by MSLDC to the Distribution Licensee.

7. ROLES AND RESPONSIBILITIES OF STU/TRANSMISSION LICENSEES:

- 7.1. STU/Transmission Licensee shall ensure availability of ABT metering arrangements at all the Pooling Sub-Stations.

Metering & its calibration arrangements shall be as per the MERC Metering Code,2019 and other Code/Regulations governing metering arrangements notified by the Commission or other Authorities, as amended from time to time.

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

- 7.3. STU/Transmission Licensee shall co-ordinate with MSLDC 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 implement the instructions of MSLDC.

- 7.4. STU/Transmission Licensees shall nominate at least two Nodal Officers for communication with MSLDC and inform the contact details such as Name, Designation, Mobile No. alternate contact No., E-mail ID, Address, etc to MSLDC 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 MSLDC within seven (7) days.

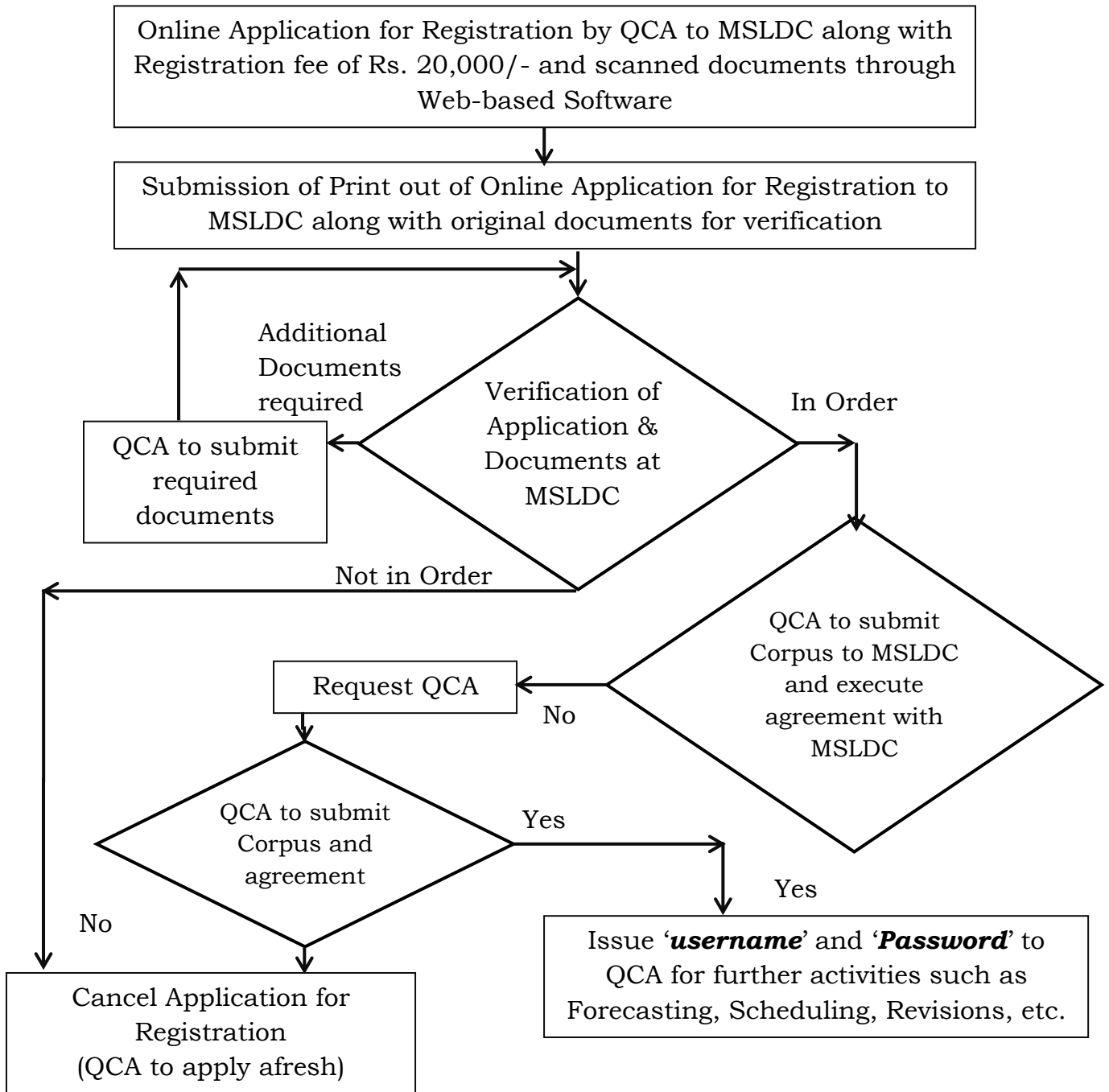
8. REGISTRATION PROCEDURE OF QCA:

A. Registration as a Qualified Co-ordinating Agency (QCA):

- 8.1. The application for Registration as a Qualified Co-ordinating Agency (QCA) should be submitted online through MSLDC's web-based Software.
- 8.2. The QCA shall submit separate application for each Pooling Sub-Station. For each Pooling Sub-Station only one application shall be accepted from the QCA.
- 8.3. The application for Registration shall be made as per the application format for registration (**Annexure - IV**) and shall contain details such as,
- Location of the generation (Village, Taluka, District)
 - Total Capacity of the Generation and inter-connection arrangement with InSTS.
 - Authorization from at least 51 % of the Generators connected in the Pooling Sub-Station in terms of their combined installed capacity for appointment as QCA. (Not applicable if Generator is connected through dedicated inter-connection facility with the Grid)
 - Names along with individual installed capacity of generation of the constituents to whom QCA is representing
 - Metering arrangements
 - Communication arrangements with MSLDC for Real time Generation, Meter reading for accounting etc.
- 8.4. The Application for Registration shall be accompanied by a non-refundable & non-transferable processing fee of Rs. 20,000/- (Twenty Thousand Rupees Only) payable through NEFT. The bank details have been uploaded on MSLDC website.

- 8.5. The scanned copies of the required documents shall be uploaded while submitting application.
- 8.6. Once the application is submitted, the print of online application with sign and seal along with required documents in original, shall be submitted to MSLDC. Without receipt of the hard copy for verification purpose, MSLDC shall not process the online application for registration.
- 8.7. The details of Nodal Officers from MSLDC for processing applications for Registration and day to day activities towards forecasting, Scheduling and Revisions thereof shall be displayed on MSLDC's website for smooth implementation of these procedures.
- 8.8. An incomplete Application, and/or an Application not found to be in conformity with these Procedures and Regulations, shall be rejected.
- 8.9. The time period for registration of QCA shall be (15) working days from the date of receipt of all the documents & information in complete to MSLDC.
- 8.10. After verification of all the documents, the QCA shall execute an agreement with MSLDC wherein it is mentioned that QCA shall undertake all operational and commercial responsibilities on behalf of the Constituents as per the prevalent MERC Regulations.
- 8.11. Within two (2) weeks from the date of Registration, the QCA shall deposit a corpus, to MSLDC towards payment security. The details of the same shall be in accordance with the Clause No. 18.7, of the said procedure.
- 8.12. Once the QCA executes agreement with MSLDC and deposits Corpus, MSLDC 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.
- 8.13. The above procedure is depicted below in the form of Flow chart for easy understanding.

Flow Chart for Registration of QCA



B. Methodology for registration of QCA in case of Non-availability of 51 % authorization:

- 8.14. MSLDC shall identify the geographically/electrically nearest registered Pooling Sub-Station having QCA to the Pooling Sub-Station for which QCA is to be allotted.
- 8.15. MSLDC shall inform the details of such un-registered Pooling Sub-Station to the QCA and seek undertaking as per the **Format – 7** and direct the QCA to apply for registration with MSLDC. The procedure for registration shall be as per Clause No. 8 (A) above, however, submission of authorizations from the generators shall not be mandatory.
- 8.16. Based on the undertaking received from the QCA, MSLDC shall issue QCA registration letter to the concerned QCA.
- 8.17. It shall be binding on all the Generators in the concerned Pooling Sub-Station to enter in to an agreement with their respective QCA and pay share of Corpus amount/registration fee, QCA's Forecasting & Scheduling Charges, Deviation Charges, along with technical details of the Generation & commercial details as per Clause No. 3.20, to MSLDC through QCA for modelling in Forecasting & Scheduling Software of MSLDC.

If generators fail to comply the provisions of the Regulations & Procedure, QCA shall intimate the details of such Generators to MSLDC which shall be intimated to the Discoms/STU/Transmission Licensees for initiating actions as follows:

A. Discom embedded Generators:

- i. PPA with Discoms: Disconnection from Grid.
- ii. Opting Open Access: Suspension of Open Access, Disconnection from Grid.

B. InSTS Connected Generators:

- i. PPA with Discoms: Disconnection from Grid.
- ii. Opting Open Access: Suspension of Open Access, Disconnection from Grid.

- 8.18. This arrangement shall be purely on temporary basis and shall be valid up to six (6) months or till the appointment of new QCA by the generators and its registration whichever is earlier. This arrangement can be extended further by MSLDC till appointment of

QCA by generators as per clause no. 8.3 in the concerned Pooling Sub-Station.

- 8.19. In the event of appointment of separate QCA by the generators, the De-registration of MSLDC allotted QCA shall be initiated by MSLDC.

Provided that, thirty (30) days prior notice shall be served by all the generators connected to the Pooling Sub-Station to the QCA allotted by MSLDC and ensure registration of new QCA with MSLDC within this notice period.

Provided further that, if new QCA is not registered with MSLDC within the said notice period, the allotted QCA (existing) shall carry out all the necessary activities such as Forecasting, Scheduling, Deviation Settlement, De-Pooling among generators and any other activities as envisaged under the said regulations.

The Corpus amount paid by the allotted QCA towards payment security mechanism shall be refunded within seven (7) working days from the final commercial settlement of the deviation accounts by the allotted QCA for the period up to which Forecasting & Scheduling services for the concerned Pooling Sub-Station have been provided.

C. Methodology for registration of QCA for Distribution Licensee connected Pooling Sub-Stations:

- 8.20. This methodology shall be applicable only to such Pooling Sub-Stations of Distribution Licensee and having total installed capacity between 5 MW or above and less than or equal to 20 MW.

Provided that already registered 33 kV/Distribution Licensee's Pooling Sub-Stations having QCA shall not be considered for re-registration under the said methodology.

- 8.21. MSLDC shall identify & declare the list of such un-registered 33 kV Pooling Sub-Stations and geographically nearest EHV Pooling Sub-Station having registered QCA within seven (7) days from the publication of the said procedure.

Accordingly, the generators in the said 33 kV Pooling Sub-Station may approach the QCA of nearest EHV Pooling Sub-Station for registration with aggregated capacity or appoint any other QCA separately and ensure submission of application for registration of

QCA within 10 days from the declaration of list of Pooling Sub-Stations on MSLDC Website.

If applications are not received within time frame mentioned above, MSLDC shall initiate the process of allotment of QCA for such Pooling Sub-Stations on aggregated basis with limitation of 20 MW to the QCA of nearest EHV Pooling Sub-Station as per clause 8.B above.

- 8.22. In case of aggregation of capacity with nearest EHV Pooling Sub-Station, QCA shall submit separate Schedules for the 33 kV Pooling Sub-Station.

Provided that deviation accounting shall be carried out on aggregate basis for total capacity. De-Pooling among generators shall be on pro-rata basis of actual generation for respective Pooling Sub-Station separately.

- 8.23. It shall be binding on all the Generators in the concerned Pooling Sub-Station to enter in to an agreement with their respective QCA and pay share of Corpus amount/registration fee, QCA's Forecasting & Scheduling Charges, Deviation Charges, along with technical details of the Generation & commercial details as per Clause No. 3.20, to MSLDC through QCA for modelling in Forecasting & Scheduling Software of MSLDC.

If generators fail to comply the provisions of the Regulations & Procedure, QCA shall intimate the details of such Generators to MSLDC which shall be intimated to the Discoms/STU/Transmission Licensees for initiating actions as follows:

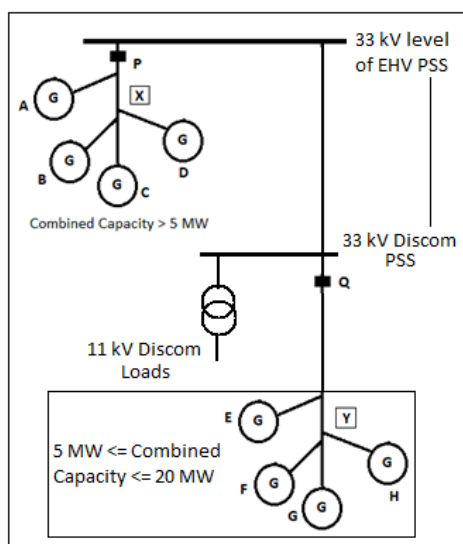
A. Discom embedded Generators:

- i. PPA with Discoms: Disconnection from Grid.
- ii. Opting Open Access: Suspension of Open Access, Disconnection from Grid.

B. InSTS Connected Generators:

- i. PPA with Discoms: Disconnection from Grid.
- ii. Opting Open Access: Suspension of Open Access, Disconnection from Grid.

8.24. A schematic diagram is shown below.



In the said diagram, a group of generators are connected to a 33 kV Discom Pooling Sub-Station connected to a 33kV level of EHV Pooling Sub-Station. In such case, the capacity of generation connected to 33 kV PSS can be aggregated with the capacity of generation connected at EHV Pooling Sub-Station.

QCA shall submit separate schedules for the generators connected at 'X' and 'Y'. The deviations shall be calculated by aggregating the schedules of both the PSS and meter data available at 'P' & 'Q'.

9. DE-REGISTRATION PROCEDURE OF QCA:

A. Case - 1: Own De-registration:

9.1. The QCA may request MSLDC for de-registration as QCA, however, in such case, it shall be the responsibility of the QCA to provide Forecasting & Scheduling services and settle all the commercial obligations of both MSLDC and Generators to whom it is representing till the expiry of notice period(3 months) or registration of new QCA whichever is earlier.

9.2. De-Registration shall be considered based on the following issues:

- a. Default by a group or single Generators having installed capacity of more than 51 % while payment of Deviation Charges.
- b. Consistent Default by the Generators or single Generators having installed capacity of more than 51 % in non-complying the instructions issued by MSLDC either directly or through QCA.

- c. In a group of Generators or single generator having installed capacity of more than 51 % in a Pooling Sub-Station or a Generator connected to an individual Pooling Sub-Station has become insolvent.
 - d. In case of continued default of a group of Generators or single generator having installed capacity of more than 51 % in a Pooling Sub-Station or a Generator connected to an individual Pooling Sub-Station, for statutory compliance leading to declaration of wilful defaulter by Competent Authority.
- 9.3. Three (3) months prior notice to be served to all the generators to whom it is representing for de-registration with copy to MSLDC.
- 9.4. The Corpus amount paid by the existing QCA towards payment security mechanism shall be refunded by MSLDC to the existing QCA within seven (7) working days from the final commercial settlement of the deviation accounts by the existing QCA for the period up to which existing QCA has provided Forecasting & Scheduling services for the concerned Pooling Sub-Station.
- 9.5. The generator/s shall be responsible for appointing new QCA and ensure registration of new QCA at MSLDC within this notice period, post which generation shall not be scheduled.

Provided that upon expiry of notice period, the existing QCA shall not be liable to provide Forecasting & Scheduling services for the concerned Pooling Sub-Station.

- 9.6. Before issuing De-registration letter to the QCA, QCA shall submit the confirmation from all the generators towards completion of settlement of all the financial accounts i.e. De-Pooling of deviation charges, share of corpus amount between QCA & Generators.

Provided that it shall be the responsibility of Generators to provide confirmation to QCAs within seven (7) days from the request from the QCA and failure to which it shall be presumed as confirmation from Generators

- 9.7. The application for De-Registration shall be supported by the documentary evidences towards above mentioned default conditions.

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

- 9.8. Three (3) months prior notice to be served by the generator to the QCA for non-authorization with copy to MSLDC, subject to Clause No. 4.4.

9.9. It shall be the responsibility of the existing QCA to provide Forecasting & Scheduling services and settle all the commercial obligations of both MSLDC and Generators to whom it is representing till the expiry of notice period or appointment of new QCA whichever is earlier.

9.10. The generator/s shall be responsible for appointing new QCA and ensure registration of new QCA at MSLDC within this notice period, post which generation shall not be scheduled.

Provided that upon expiry of notice period, the existing QCA shall not be liable to provide Forecasting & Scheduling services for the concerned Pooling Sub-Station.

9.11. Before de-registration, the generators shall ensure that all the commercial settlements pertaining to it has been completed by the existing QCA with MSLDC and provide confirmation towards the same to MSLDC for issuance of De-Registration Letter to the QCA.

9.12. The Corpus amount paid by the existing QCA towards payment security mechanism shall be refunded within seven (7) working days from the final commercial settlement of the deviation accounts by the QCA for the period up to which QCA has provided Forecasting & Scheduling services for the concerned Pooling Sub-Station.

C. Case – 3: De-registration under default condition:

9.13. The MSLDC shall initiate the process of de-registration, if the condition as per Clause No. 3.21 is violated by the QCA.

9.14. The MSLDC shall initiate the process of de-registration, in case of default conditions mentioned at Clause No. 19.1.

9.15. In such case, the process of de-registration shall be initiated as per Clause No. 19.2. In case QCA fails to address/rectify the breach expressed by MSLDC in the Notice within stipulated time, the MSLDC shall proceed with revocation of registration of QCA and disconnection from grid. In such case, notice of one (1) month for De-Registration of QCA under default conditions shall be issued to the QCA along with copy to Generators to whom it is representing.

9.16. The generator/s shall be responsible for appointing new QCA and ensure registration of new QCA at MSLDC within this notice period of one (1) month, post which generation shall not be scheduled.

9.17. It shall be the responsibility of the existing QCA to provide Forecasting & Scheduling services and settle all the commercial

obligations of both MSLDC and Generators to whom it is representing till the expiry of notice period or appointment of new QCA whichever is earlier.

- 9.18. The Corpus amount paid by the existing QCA towards payment security mechanism shall be refunded within seven (7) working days from the final commercial settlement of the deviation accounts by the QCA for the period up to which QCA has provided Forecasting & Scheduling services for the concerned Pooling Sub-Station.

10. MSLDC FEES & CHARGES AND OTHER CHARGES:

- 10.1. MSLDC fee and charges including scheduling fee and re-scheduling fee shall be payable by QCA as specified in the MSLDC ARR approved by the Commission time to time. Scheduling and re-scheduling charges shall be applicable per Pooling Sub-Station. The other charges, if any shall be levied as per the applicable MERC Regulations/Orders.

11. COMMUNICATION MODE AND PROTOCOL:

- 11.1. SCADA from the turbine level to Pooling Sub-Station in real time shall be provided up to the Pooling Sub-Station by QCA/Generators. The data from the Pooling Sub-Station to MSLDC shall be transmitted with IEC:104 protocol along with communication without any interruption by QCA.

The requirements for data visibility and interfacing requirements at MSLDC Kalwa/ ALDC Ambazari are as detailed below.

- The Remote Terminal Unit under the proposed scheme shall be capable of communication with LD Centres in IEC-104 Protocol.
- Communication media such as BSNL/MTNL leased circuit, MPLS, TATA Communication, Reliance Communication, VSAT etc. with latency less than 800ms may be used for data transmission. The typical bandwidth requirement for real-time Point to point data inter-connection bandwidth of 64 kbps communication between Pooling Sub-Station/ Generator (in case of individual generator) and MSLDC and depends upon data volume.
- Wind/Solar Generators shall submit request letter along with Single Line Diagram of their plant area to MSLDC for data points. MSLDC will issue list of data points to be transmitted from Wind/Solar Generators station 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 for approval by this office.
- Integration of Wind/Solar Generators station data into the SCADA systems at MSLDC Kalwa & ALDC Ambazari on IEC 104 protocol.
- Completion of all above is under the scope and responsibility of Wind/Solar Generators Station.
- SCADA system provided at nearest substation of MSETCL is only for the purpose of monitoring/control of Wind/Solar Generators data/ operations at local level and do not cover the scope of visibility of real-time data at MSLDC Kalwa/ ALDC Ambazari.
- Integration of Real time data from RTU of any make in IEC-104 Protocol is to be done in MSLDCSCADA system. The work of integration will be carried out by M/s Siemens. In order to carry out integration work, MSLDC has approved the rates of integration to be paid by third party vendor to M/s Siemens. The rate for integration of one RTU in MSLDC-SCADA system is Rs. 3.00 Lakhs/per RTU (Rs. Three Lakhs Only) plus GST at the rate 18 percent.

11.2. QCA shall be responsible for providing a redundant and reliable communication link between Pooling Sub-Station and MSLDC shall be made and maintained by the QCA.

12. FORECASTING AND SCHEDULING:

12.1. Forecasting of Wind/Solar injection on Pooling Sub-Station basis shall be done by the MSLDC for overall planning of resource requirements on day ahead basis in view of secure grid operation. The MSLDC may engage a forecasting agency to undertake forecasting for Wind & Solar Generators/Solar Parks /Wind Parks connected to InSTS.

12.2. The QCA shall provide Pooling Sub-Station wise forecasting for the Wind/Solar generators connected to Pooling Sub-Station to MSLDC based on their own forecast or may adopt forecast carried out by MSLDC.

12.3. In the event of QCA adopting forecast provided by MSLDC, charges amounting to Rs. 3,000/- per Pooling Sub-Station per day, shall be paid by the QCA to MSLDC. The consequences of any error in such

forecast provided by MSLDC which results in a deviation from scheduling shall be borne by the concerned Generators through their QCA and QCA shall indemnify MSLDC on account of the commercial impact.

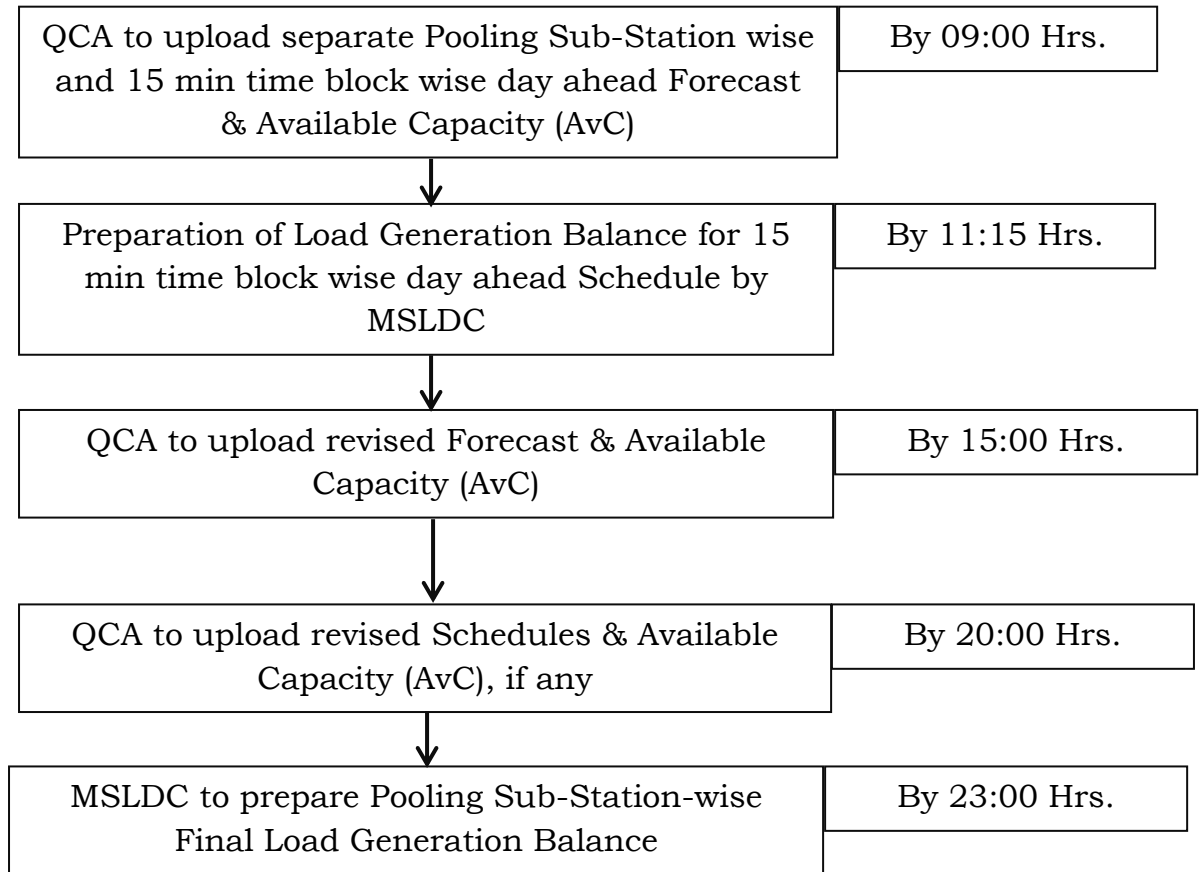
Provided that the daily Forecasting Charges shall be recovered through weekly bills generated along with the weekly deviation bills.

- 12.4. The MSLDC shall consolidate and forecast, based on various parameters and weather data obtained from IMD or from any other forecast service provider (which could be different from that provided by QCA)
- 12.5. The submission of Pooling Sub-Station wise day ahead forecast shall be in accordance with the timelines specified in Scheduling & Despatch Code.
- 12.6. The Pooling Sub-Station wise day ahead forecast submitted by QCA shall be on 15 min time block basis in MW up three Decimal places. The fourth Decimal place shall be rounded off to 3rd Decimal place as per standard practice. Deviation Volume and Value shall be calculated accordingly.
- 12.7. The QCA may revise Pooling Sub-Station schedule for the InSTS (excluding collective and inter-state bi-lateral transactions) by giving advance notice to the MSLDC;

Provided that, such revisions shall be effective from the fourth (4th) time block following the time block in which notice was given.

Provided further that, there shall be one (01) revision for each time slot of one and half hours starting from 00.00 hours of a particular day, subject to a maximum of sixteen (16) revisions during the day.

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



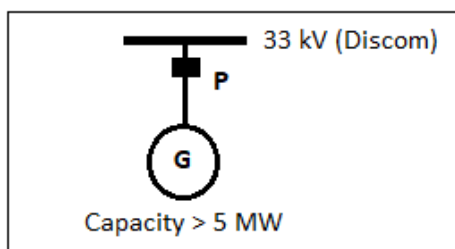
Note: No revision in Forecast shall be accepted after 20:00 Hrs.

12.9. The various cases indicating point of Forecast and Scheduling are as follows:

Inter-connection at Distribution Level:

Case – 1:

Single Generator or group of generators having capacity above 5 MW connected at 33 kV level of Discom’s Pooling Sub-Station, selling power within the State:



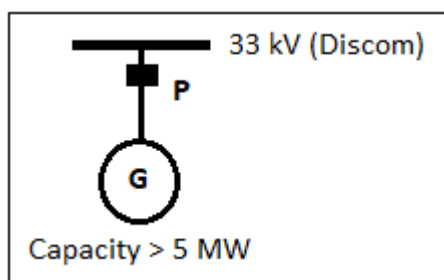
In this case, the Forecasting shall be provided by the QCA at Point ‘P’. Scheduling and Accounting shall be done by MSLDC at Point ‘P’.

The Distribution losses as approved by the Commission shall be applicable.

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 having capacity above 5 MW connected at 33 kV level of Discom Pooling Sub-Station, selling power outside the State:



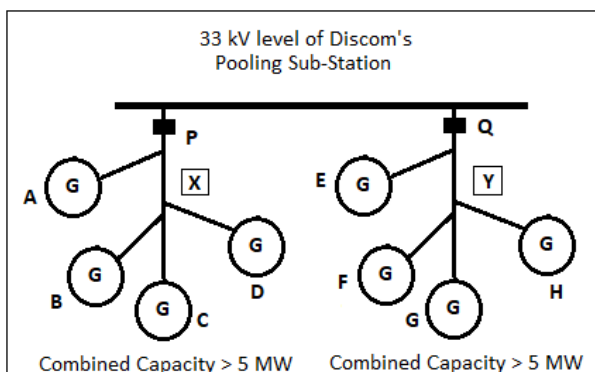
In this case, the Forecasting shall be provided by the QCA at Point ‘P’. Scheduling and Accounting shall be done by MSLDC at Point ‘P’.

The Distribution losses and Transmission losses up to State Periphery as approved by the Commission shall be applicable.

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

Case – 3:

Multiple Generators connected at 33 kV level of Discom's 33 kV Pooling Sub-Station through dedicated feeder and selling power within and Outside the State:



In such case, generators 'A' to 'D' are connected through a common & dedicated feeder 'X' having inter-connection point at 'P', selling power within the State. Generators 'E' to 'H' are connected through a common & dedicated feeder 'Y' having inter-connection point at 'Q', selling power outside the State.

In such case, the QCA shall submit separate feeder-wise forecast at Point 'P' and 'Q' i.e. for Intra-State and Inter-State. MSLDC shall Schedule at Point 'P' being Intra-State and at State Periphery for Point 'Q' by applying Transmission losses as approved by the Commission.

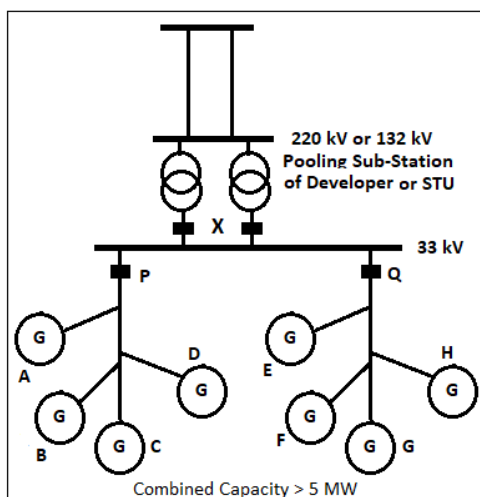
Further, in both the cases, Distribution losses as approved by the Commission shall be applicable.

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

Inter-connection at Transmission Level:

Case – 4:

Single Generator or group of generators having capacity above 5 MW connected at 33 kV level of EHV Pooling Sub-Station, selling power within the State:



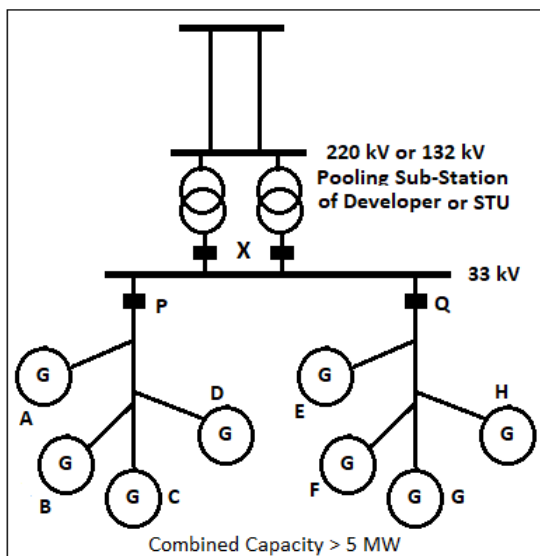
In this case, a group of generators ('A' to 'H') are connected at 33 kV level of the EHV Pooling Sub-Station through common 33 kV feeders.

In such case, Forecast shall be done by the QCA at Point 'X'. Scheduling and Accounting shall be done by MSLDC at Point 'X'.

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

Case – 5:

Single Generator or group of generators having capacity above 5 MW connected at 33 kV level of EHV Pooling Sub-Station, selling power Outside the State:



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

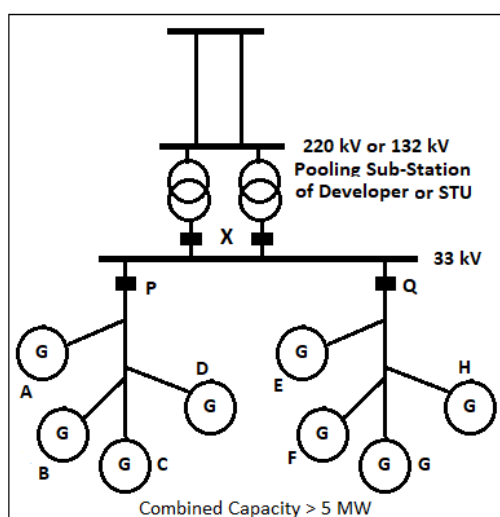
In such case, the Forecast shall be done by the QCA at Point 'X'. Scheduling and Accounting shall be done by MSLDC at State Periphery by applying Transmission Losses as approved by the Commission as per Point 'X'.

QCA shall de-pool the deviation charges among respective generators

separately based on the mechanism developed within themselves.

Case – 6:

Multiple Generators connected at 33 kV level of EHV Pooling Sub-Station through dedicated feeder and selling power within and Outside the State:



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

The Generators 'E' to 'H' are connected at 33 kV level of the EHV Pooling Sub-Station through common 33 kV feeders selling power outside the State.

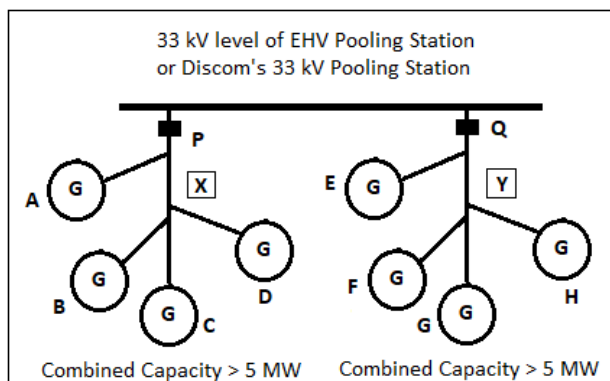
In such case, QCA shall submit separate feeder-wise forecast at Point 'P' and 'Q' i.e. for Intra-State and Inter-

State respectively. MSLDC shall Schedule at Point 'P' being Intra-State and at State Periphery for Point 'Q' by applying Transmission losses as approved by the Commission.

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

Case – 7:

Multiple Generators connected at 33 kV level of EHV Pooling Sub-Station or 33 kV Pooling Sub-Station of Discom, through dedicated feeder:



In this case, Generators ‘A’ to ‘D’ and ‘E’ to ‘H’ are connected to a Pooling Sub-Station of STU or Discom through separate & dedicated feeders having separate inter-connection points at ‘P’ and ‘Q’ respectively.

In such case, there shall be only one QCA. The QCA shall submit

consolidated Forecast for all the Generators for a Pooling Sub-Station and maintain separate forecast at Point ‘P’ & ‘Q’.

MSLDC shall carry out scheduling and accounting for Pooling Sub-Station as a whole and the QCA shall de-pool the deviation charges among respective generators separately based on the mechanism developed within themselves.

However, in case of Intra and Inter-State transactions, separate feeder-wise forecast (for Intra & Inter-State) shall be submitted by the QCA. In such case, MSLDC shall separately schedule the power accordingly. For Inter-State schedules, Transmission Charges, as approved by the Commission shall be applicable.

If the Pooling Sub-Station is of Discom, then Distribution losses as approved by the Commission shall be applicable.

13. PROTOCOL FOR CURTAILMENTS:

13.1. In-spite of having ‘MUST RUN’ status for Wind & Solar Generation, during real time operations there are chances for issuing curtailment/backing down instructions to such generators even though all the efforts for accommodating RE generation is taken by the System Operators.

13.2. The need for curtailment may arise due to planned/forced outages on the evacuation infrastructure and Demand crash in the State with heavy under-drawl from ISTS & all the conventional generations are running at technical minimum with frequency beyond higher permissible limits, etc.

13.3. Curtailed Schedules shall be effective from the 4th time block starting from the block in which instructions from MSLDC Control Room have been issued. QCAs/Generators/Transmission Licensees/Discoms shall immediately implement the actions required for curtailments from the 1st time block.

Provided that if reducing trend in actual injection of generation within Three time blocks is observed then these time blocks shall be excluded from deviation calculations.

13.4. Transmission Licensee, Distribution Licensee, Generator & QCA shall intimate the incidences causing backing down/curtailment of Wind & Solar Generation to MSLDC Control Room and take action as instructed by MSLDC Shift In-charge for respective Pooling Sub-Stations under their ownership. The incidences resulting into curtailment of Wind/Solar Generation which shall be intimated to MSLDC area follows:

- Planned / Forced Outages on Evacuation infrastructure or Generating Plant,
- Tripping of any transmission elements/Evacuation infrastructure /Generating Plant,
- Overloading of any transmission elements/Evacuation infrastructure.

13.5. In case of planned outages, the Transmission Licensee/Distribution Licensee/Generator shall plan the outage period so as to avoid curtailment of Wind/Solar generation.

13.6. All the Planned/Forced Outages resulting in the backing down/curtailment of Wind & Solar Generation shall be submitted to MSLDC through Web-based portal as per the procedure uploaded on MSLDC Website. No outages shall be availed without approval from MSLDC. Also, no planned outages shall be considered if not submitted at least (2) days prior to the date of Outage.

13.7. In case of tripping of any Transmission element/Evacuation Infrastructure/Generating Plant resulting in to curtailment/backing down of generation, it shall be the responsibility of concerned Transmission Licensee/Distribution Licensee/Generator (for their respective Pooling Sub-Stations) through their QCA or separately to intimate the same immediately to MSLDC Shift In-charge telephonically and through e-mail for required modifications in the Schedules along with tentative time for restoration.

- 13.8. For the Pooling Sub-Stations under the control area of ALDC, Ambazari (Vidarbha, Marathwada & North Maharashtra) the Planned & Forced outages shall be communicated to ALDC Shift In-Charge, which shall be finalized by ALDC and communicated to respective Transmission/Distribution Licensee, Generator, QCA and MSLDC, Airoli. The details of Backing down/Curtailment required shall be communicated by ALDC to MSLDC, Airoli immediately for implementation in the RE Scheduling Software.
- 13.9. The details of nodal officers of MSLDC & ALDC for communication shall be uploaded on MSLDC website.
- 13.10. The Transmission Licensee, Distribution Licensee, Generator and QCAs shall follow the instructions issued by the MSLDC Shift In-charge and implement the curtailments. The instructions from MSLDC Shift In-charge shall be communicated to the Nodal Officer/Control Room of respective Transmission/Distribution Licensee, Generator & QCA for implementation telephonically (being real time operations), which shall be confirmed through mail later on within a day's time. MSLDC, Transmission/Distribution Licensee, Generator and QCA shall maintain log-book for recording such instructions and actions taken thereof for implementation of such instructions. The log-book shall be made available for verification up on request from MSLDC.
- 13.11. In case of non-compliance/implementation of the instructions of MSLDC by the Transmission Licensee, Distribution Licensee, Generator and QCA, appropriate action shall be taken based on the provisions of Electricity Act, IEGC, State Grid Code & relevant regulations, as amended from time to time.

14. Meter Data Acquisition in the absence of AMR facility:

- 14.1. QCA in co-ordination with STU/Transmission Licensee/Distribution Licensee shall download the weekly meter data on monthly (4 weekly) basis using Meter Reading Instrument (MRI) of each Pooling Sub-Station and upload the encrypted file on MSLDC Web-Portal of REMC Software.

Provided that if the meter data is not submitted to MSLDC, Actual Generation shall be considered as 'ZERO' & deviation accounting and billing shall be carried out accordingly. In such case, it shall be the responsibility of the QCA to settle deviation charges with MSLDC.

14.2. QCA, STU, Transmission Licensee & Distribution Licensee shall nominate Pooling Sub-Station-wise representatives for joint meter reading and submit the contact details to MSLDC for further co-ordination. In case of changes in the contact details, the same shall be intimated to MSLDC immediately within two (2) days.

14.3. Monthly (Four (4) weekly) meter data shall be submitted by the QCA on web-portal on every Tuesday by 24:00 Hrs of the 5th week.

Provided that after operationalization of AMR facility, the meter data shall be directly available with MSLDC.

In case of non-availability of AMR facility due to any technical reasons, above mentioned process of meter data acquisition shall be followed by all the stake holders i.e. QCA, STU, Transmission Licensee& Distribution Licensee.

14.4. Illustrative example indicating meter data acquisition starting from 06.01.2020 is as follows:

Week – 1 : 06.01.2020 to 12.01.2020

Week – 2 : 13.01.2020 to 19.01.2020

Week – 3 : 20.01.2020 to 26.01.2020

Week – 4 : 27.01.2020 to 02.02.2020

Encrypted file of Meter data for each Week to be uploaded by QCAs on the web-portal on Tuesday by 24:00 Hrs. i.e. on 04.02.2020.

1st week shall be the week from which Commercial implementation has been stated based on the notification of the Commission. 5th week shall be week followed by 4 weeks irrespective of calendar month.

15. ENERGY ACCOUNTING:

15.1. The energy accounting shall be undertaken on the basis of the data recorded by the Special Energy Meters (SEM) provided at interface points such as EHV/HV feeders or LV side of Power Transformers at STU/Distribution Licensee's Pooling Sub-Stations capable of recording the energy in 15-minute time blocks. The SEMs shall be under the control of STU & Distribution Licensee for EHV & 33 kV Pooling Sub-Stations respectively.

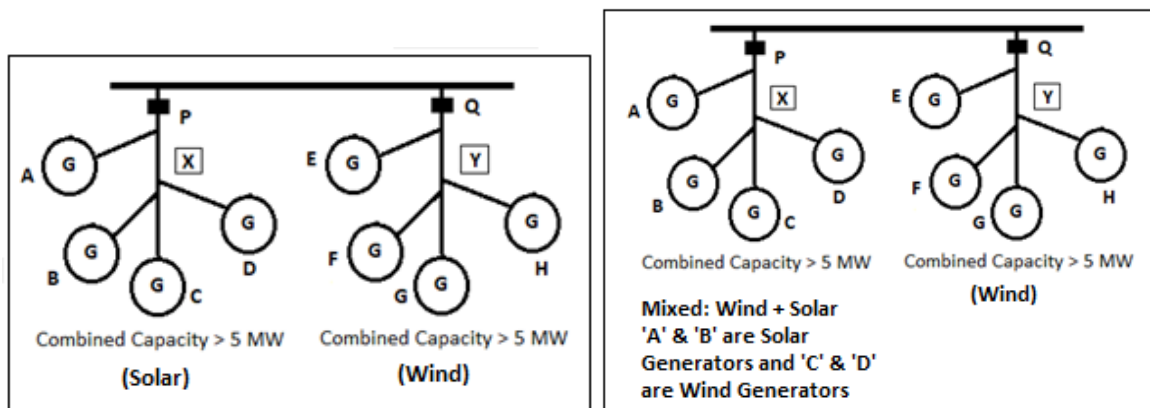
15.2. MSLDC shall process the monthly (four (4) weekly) meter data and furnish the weekly deviation accounts to all the QCAs by every Thursday midnight (24:00 Hrs) of 5th Week.

Provided that after operationalization of AMR facility, the deviation accounting shall be carried out on weekly basis on every Thursday midnight (24:00 Hrs) for the preceding week.

15.3. In case of hybrid Pooling Sub-Stations i.e. combination of Wind & Solar Generation through common or separate interconnection facility, the QCA shall submit separate AvC and buyer-wise & Contract-wise Schedules for Wind & Solar Generation.

The deviations shall be calculated for total aggregated capacity of Wind & Solar Generation for each time block. However, the AvC & Schedule for Solar Generation during night hours i.e. 18:30 Hrs. to 06:15 Hrs. shall be considered as 'ZERO' as it is a well known fact that solar plants do not generate power during night hours.

The schematic diagrams of Hybrid Pooling Sub-Stations are depicted below:



Dia. - A

Dia. - B

In above diagrams, Solar & Wind Generation is connected either through separate feeders 'X' & 'Y' having separate metering arrangement at 'P' & 'Q' as per Dia. - A or mixed generation connected on same feeder 'X' in Dia. - B.

In such cases, QCA shall submit separate schedules for Wind & Solar Generation for the Pooling Sub-Station. Energy Accounting and Deviation Charges shall be calculated by aggregating the Schedules & Actual Generation of Solar & Wind capacity.

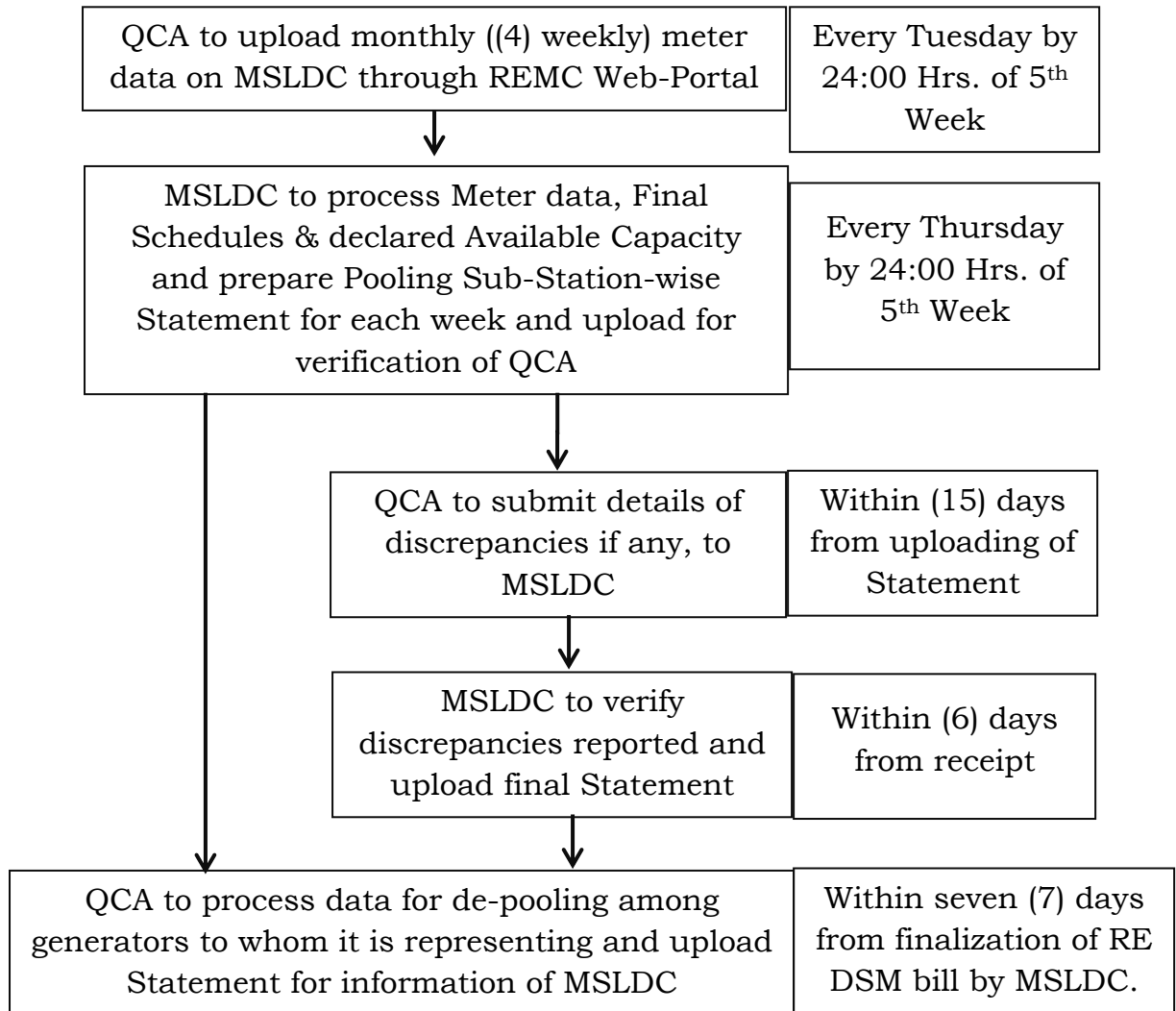
15.4. All accounts relating to de-pooling of deviations charges shall be prepared by the QCA on a weekly basis, based on Pooling Sub-

Station level inputs from the MSLDC, and shall be accessible to the MSLDC through an IT-enabled system and software.

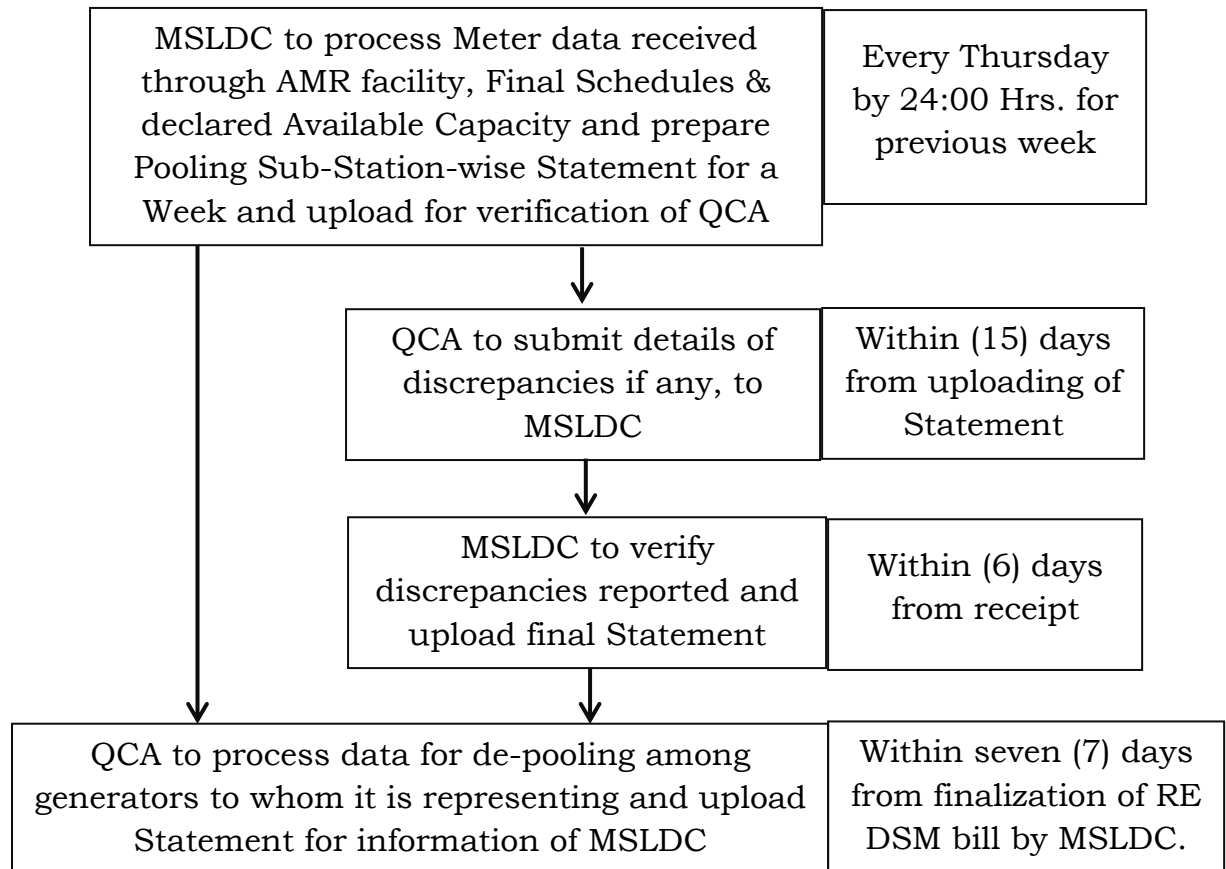
- 15.5. The QCA shall communicate any discrepancies to MSLDC within (15) days which shall be corrected forthwith by MSLDC after due verification. Any of the discrepancies reported after (15) days shall not be considered by MSLDC and in such case, the Statement prepared by MSLDC shall be final.

15.6. The process chart for Accounting is as below:

15.6.1. Process chart for Accounting till Operationalization of AMR Facilities:



15.6.2. Process chart for Accounting post Operationalization of AMR Facilities:



16. DEVIATION ACCOUNTING:

- 16.1. MSLDC shall consider the deviation charges for the State as a whole at the periphery of the State as issued by WRPC weekly DSM bills.
- 16.2. MSLDC shall determine the impact of deviation of Wind & Solar injection at Pooling Sub-Station from schedule and its contribution on the total deviation charges at the State periphery as per WRPC weekly DSM bills.
- 16.3. MSLDC shall compute the absolute error for each Pooling Sub-Station and shall calculate the deviation charges in accordance with the regulations.
- 16.4. Any shortfall in the aggregate amount of Deviation Charge payable by Solar and Wind Energy Generators at the State periphery and the amount receivable from them by the Pool Account shall be paid by the respective QCAs in proportion to their deviation reflected at the State periphery.

16.5. MSLDC shall compute the deviation charges and issue bills to the QCAs’.

17. DEVIATION CHARGES METHODOLOGY:

17.1. All EHV Pooling Sub-Stations shall be classified in three categories i.e.

- a. **Intra-State Pooling Sub-Station:** where all wind & solar generators connecting through HV feeders are having delivery point within the State.
- b. **Inter-State Pooling Sub-Station:** where all the wind & Solar generators connecting through HV feeders are having delivery point out-side the State.
- c. **Mixed Pooling Sub-Station:** where some of the feeders are having delivery point outside the State and balance within the State.

17.2. Methodology for Intra-State Transactions:

17.2.1. Charges towards sale of Energy shall be settled by the Procurer on the basis of their actual generation, whereas the charges towards deviation of Energy from its given schedule shall be settled by the Generator.

17.2.2. 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 **Table - 1.**

Table - 1

Sr. No.	Absolute Error in %age terms in 15-minute time block	Deviation Charge payable to Pool Account for Wind/Solar Generation
1	< = 15%	None #
2	>15% but <=25%	At Rs. 0.50 per unit for the shortfall or excess beyond 15% and up to 25%
3	>25% but <=35%	At Rs. 0.50 per unit for the shortfall or excess beyond 15% and Up to 25% + Rs. 1.00 per unit for the balance energy beyond 25% and Up to 35%
4	>35%	At Rs. 0.50 per unit for the shortfall or excess beyond 15% and Up to 25% + Rs. 1.00 per unit for the shortfall or excess beyond 25% and Up to 35% + Rs. 1.50 per unit for the balance energy beyond 35%

[# : subject to the conditions specified in Regulation 12 of MERC F&S Regulations, 2018]

17.2.3. Even though there are no deviation charges for the deviation within +/- 15 %, the charges on account of impact on State periphery due to deviation shall be applicable.

17.2.4. The % error shall be calculated on the basis of available capacity and deviation as actual – schedule and % error shall be calculated by rounding up to second decimal place.

17.2.5. Illustrative examples for calculation of deviation and its apportionment of deviation charges are briefed subsequently.

In order to calculate the impact of RE deviation at State Periphery, a virtual pool of all Intra-State Pooling Sub-Stations and Intra-State part of mixed Pooling Sub-Stations shall be formed.

17.2.6. To determine the impact of RE deviation at State periphery, the part of DSM weekly bill issued by the WRPC shall be apportioned to the net deviation of Intra-State RE on the basis of applicable composite per unit rate (inclusive of additional DSM or capping DSM charge, excluding charges towards sign violation) for particular time block.

17.2.7. Based on the net deviations of RE DSM Pool, total deviation charges for each time block shall be calculated at a rate arrived from the WRPC weekly bill.

17.2.8. Deviation charges for individual Pooling Sub-Station shall be calculated based on the permissible band as specified in Table – 1.

The charges arrived through deviations based on individual deviations shall be deducted from the total charges arrived as per Clause No. 16.2.8 and balance amount shall be considered for apportionment as State Periphery impact on all the Pooling Sub-Stations.

17.2.9. The apportionment of deviations of RE Pooling Sub-Stations shall be carried out for absolute deviation. Deviation percentage of each Pooling Sub-Station shall be carried out in percentage basis with respect to total absolute deviation depending upon whether State drawl and corresponding Injection of the RE Generators in RE DSM Pool.

17.2.10. The RE Pooling Sub-Stations having deviations within +/- 15 % may not contribute to Pooling Sub-Station level deviation pool, however, this Pooling Sub-Station shall contribute to impact of RE deviation at State Periphery.

17.2.11. As per the CERC Deviation Settlement Mechanism and related matters, Regulations, 2014 as amended from time to time, following scenarios for state periphery impact shall be applicable:

- a. State Overdrawing -> State Payable
- b. State Overdrawing -> State Receivable (Not possible under existing CERC regulations)
- c. State Under-drawing -> State Receivable (Within permissible frequency band)
- d. State Under-drawing -> State Payable (Frequency above permissible frequency band)

17.2.12. In Case (a) i.e. State is Overdrawing and Deviation charges at State Periphery are payable by the State, any Over-Injecting Generation within the State shall be supporting the State. Hence, impact of State periphery deviations shall not be made applicable to such Pooling Sub-Stations which are Over-Injecting. The Impact shall be made applicable to those Pooling Sub-Stations which are Under-Injecting in proportion

to the absolute deviations of all the Under-Injecting Pooling Sub-Stations.

17.2.13. The Case (b) i.e. State is Overdrawing and Deviation charges at State Periphery are receivable by the State, is not possible under existing CERC DSM regime. Hence, this case is not considered in Wind/Solar Deviation Settlement.

17.2.14. Case (c) i.e. State is Under-drawing and Deviation charges at State Periphery are receivable by the State. In this case, deviations charges are receivable by the State with a cap of 250 MW and frequency is within permissible band i.e. below 50.05 Hz. In such case, any Under-Injecting Generation within the State shall be supporting the State. However, the energy injected by Over Injecting Generators is injected at State Periphery, hence, impact of State periphery deviations shall be made applicable to such Pooling Sub-Stations which are Over-Injecting, i.e. the amount shall be paid to such Pooling Sub-Stations in proportion to the absolute deviations of all the Over-Injecting Pooling Sub-Stations. The Impact shall not be made applicable to those Pooling Sub-Stations which are Under-Injecting.

17.2.15. Case (d) i.e. State is Under-drawing and Deviation charges at State Periphery are payable by the State. In this case, deviations charges are payable by the State irrespective of the under-drawl Cap of 250 MW when frequency is above 50.05 Hz. In such case, any Under-Injecting Generation within the State shall be supporting the State. Hence, impact of State periphery deviations shall not be made applicable to such Pooling Sub-Stations which are Under-Injecting. The Impact shall be made applicable to those Pooling Sub-Stations which are Over-Injecting in proportion to the absolute deviations of all the Over-Injecting Pooling Sub-Stations.

17.2.16. In all the above cases, if the deviations of such Pooling Sub-Stations are beyond applicable band of $\pm 15\%$, the deviation charges as per Table – 1 mentioned above shall be made applicable.

17.2.17. The illustrative examples are tabulated below:

Case (a - 1) State Overdrawing -> State Payable

Block No.	1	Net Deviation @ Periphery	1000	Total Deviation Charges @ PSS	6750	Total Deviation Charges due to RE	-5000				
Block DSM Rate (Rs.)	5.00	Absolute Deviation @ Periphery	21000	Deviation Charges @ Periphery	0	DO NOT CHANGE COLOUR FIELDS					
Date	01-07-2019	DRAWAL STATUS	O/D			DRAWAL STATUS					
		SLAB	15%	25%	35%	>35%	O/D				
		RATE	0	0.5	1	1.5	U/D				
Sr. No.	Name of Pooling Sub-Station	Schedule (kWh)	Actual (kWh)	AvC (kWh)	Deviation (kWh)	Absolute Deviation (kWh)	% Deviation	% Contribution @ Periphery	Deviation Charges @ PSS	Deviation Charges @ Periphery	Total Deviation Charges
1	PSS-1 (OI)	2500	6000	10000	3500	3500	35.00%	16.67%	1500	0	1500
2	PSS-2 (OI)	3000	6000	10000	3000	3000	30.00%	14.29%	1000	0	1000
3	PSS-3 (OI)	3500	6000	10000	2500	2500	25.00%	11.90%	500	0	500
4	PSS-4 (OI)	4000	6000	10000	2000	2000	20.00%	9.52%	250	0	250
5	PSS-5	5000	5000	10000	0	0	0.00%	0.00%	0	0	0
6	PSS-6 (UI)	6000	5000	10000	-1000	1000	-10.00%	4.76%	0	0	0
7	PSS-7 (UI)	7000	5000	10000	-2000	2000	-20.00%	9.52%	250	0	250
8	PSS-8 (UI)	8000	5000	10000	-3000	3000	-30.00%	14.29%	1000	0	1000
9	PSS-9 (UI)	9000	5000	10000	-4000	4000	-40.00%	19.05%	2250	0	2250
Total (ABS Deviation)		48000	49000	90000	1000	21000	1.11%		6750	0	1750
					U/D DEVIATION	10000					
					O/D DEVIATION	11000					

Case (a - 2) State Overdrawing -> State Payable

Block No.	1	Net Deviation @ Periphery	4000	Total Deviation Charges @ PSS	10750	Total Deviation Charges due to RE	-20000				
Block DSM Rate (Rs.)	5.00	Absolute Deviation @ Periphery	24000	Deviation Charges @ Periphery	9250	DO NOT CHANGE COLOUR FIELDS					
Date	01-07-2019	DRAWAL STATUS	O/D			DRAWAL STATUS					
		SLAB	15%	25%	35%	>35%	O/D				
		RATE	0	0.5	1	1.5	U/D				
Sr. No.	Name of Pooling Sub-Station	Schedule (kWh)	Actual (kWh)	AvC (kWh)	Deviation (kWh)	Absolute Deviation (kWh)	% Deviation	% Contribution @ Periphery	Deviation Charges @ PSS	Deviation Charges @ Periphery	Total Deviation Charges
1	PSS-1 (OI)	1000	6000	10000	5000	5000	50.00%	20.83%	3750	0	3750
2	PSS-2 (OI)	2000	6000	10000	4000	4000	40.00%	16.67%	2250	0	2250
3	PSS-3 (OI)	3000	6000	10000	3000	3000	30.00%	12.50%	1000	0	1000
4	PSS-4 (OI)	4000	6000	10000	2000	2000	20.00%	8.33%	250	0	250
5	PSS-5	5000	5000	10000	0	0	0.00%	0.00%	0	0	0
6	PSS-6 (UI)	6000	5000	10000	-1000	1000	-10.00%	4.17%	0	925	925
7	PSS-7 (UI)	7000	5000	10000	-2000	2000	-20.00%	8.33%	250	1850	2100
8	PSS-8 (UI)	8000	5000	10000	-3000	3000	-30.00%	12.50%	1000	2775	3775
9	PSS-9 (UI)	9000	5000	10000	-4000	4000	-40.00%	16.67%	2250	3700	5950
Total (ABS Deviation)		45000	49000	90000	4000	24000	4.44%		10750	9250	0
					U/D DEVIATION	10000					
					O/D DEVIATION	14000					

Case (c) State Under-drawing -> State Receivable

Block No.	1	Net Deviation @ Periphery	-1750	Total Deviation Charges @ PSS	7500	Total Deviation Charges due to RE	8750				
Block DSM Rate (Rs.)	-5.00	Absolute Deviation @ Periphery	20250	Deviation Charges @ Periphery	-8750	DO NOT CHANGE COLOUR FIELDS					
Date	01-07-2019	DRAWAL STATUS	U/D				DRAWAL STATUS				
		SLAB	15%	25%	35%	>35%	O/D				
		RATE	0	0.5	1	1.5	U/D				
Sr. No.	Name of Pooling Sub-Station	Schedule (kWh)	Actual (kWh)	AvC (kWh)	Deviation (kWh)	Absolute Deviation (kWh)	% Deviation	% Contribution @ Periphery	Deviation Charges @ PSS	Deviation Charges @ Periphery	Total Deviation Charges
1	PSS-1 (OI)	1250	5000	10000	3750	3750	37.50%	18.52%	1875	-3547	-1672
2	PSS-2 (OI)	1750	5000	10000	3250	3250	32.50%	16.05%	1250	-3074	-1824
3	PSS-3 (OI)	3250	5000	10000	1750	1750	17.50%	8.64%	125	-1655	-1530
4	PSS-4 (OI)	4500	5000	10000	500	500	5.00%	2.47%	0	-473	-473
5	PSS-5	5000	5000	10000	0	0	0.00%	0.00%	0	0	0
6	PSS-6 (UI)	6000	5000	10000	-1000	1000	-10.00%	4.94%	0	0	0
7	PSS-7 (UI)	8000	5000	10000	-3000	3000	-30.00%	14.81%	1000	0	1000
8	PSS-8 (UI)	8000	5000	10000	-3000	3000	-30.00%	14.81%	1000	0	1000
9	PSS-9 (UI)	9000	5000	10000	-4000	4000	-40.00%	19.75%	2250	0	2250
Total (ABS Deviation)		46750	45000	90000	-1750	20250	-1.94%		7500	-8750	7500
					U/D DEVIATION	11000					
					O/D DEVIATION	9250					

Case (d-1) State Under-drawing -> State Payable

Block No.	1	Net Deviation @ Periphery	1000	Total Deviation Charges @ PSS	6750	Total Deviation Charges due to RE	-5000				
Block DSM Rate (Rs.)	5.00	Absolute Deviation @ Periphery	21000	Deviation Charges @ Periphery	0	DO NOT CHANGE COLOUR FIELDS					
Date	01-07-2019	DRAWAL STATUS	U/D				DRAWAL STATUS				
		SLAB	15%	25%	35%	>35%	O/D				
		RATE	0	0.5	1	1.5	U/D				
Sr. No.	Name of Pooling Sub-Station	Schedule (kWh)	Actual (kWh)	AvC (kWh)	Deviation (kWh)	Absolute Deviation (kWh)	% Deviation	% Contribution @ Periphery	Deviation Charges @ PSS	Deviation Charges @ Periphery	Total Deviation Charges
1	PSS-1 (OI)	2500	6000	10000	3500	3500	35.00%	16.67%	1500	0	1500
2	PSS-2 (OI)	3000	6000	10000	3000	3000	30.00%	14.29%	1000	0	1000
3	PSS-3 (OI)	3500	6000	10000	2500	2500	25.00%	11.90%	500	0	500
4	PSS-4 (OI)	4000	6000	10000	2000	2000	20.00%	9.52%	250	0	250
5	PSS-5	5000	5000	10000	0	0	0.00%	0.00%	0	0	0
6	PSS-6 (UI)	6000	5000	10000	-1000	1000	-10.00%	4.76%	0	0	0
7	PSS-7 (UI)	7000	5000	10000	-2000	2000	-20.00%	9.52%	250	0	250
8	PSS-8 (UI)	8000	5000	10000	-3000	3000	-30.00%	14.29%	1000	0	1000
9	PSS-9 (UI)	9000	5000	10000	-4000	4000	-40.00%	19.05%	2250	0	2250
Total (ABS Deviation)		48000	49000	90000	1000	21000	1.11%		6750	0	1750
					U/D DEVIATION	10000					
					O/D DEVIATION	11000					

Case (d-2)State Under-drawing -> State Payable

Block No.	1	Net Deviation @ Periphery	2250	Total Deviation Charges @ PSS	11000	Total Deviation Charges due to RE	-11250				
Block DSM Rate (Rs.)	5.00	Absolute Deviation @ Periphery	24250	Deviation Charges @ Periphery	250	DO NOT CHANGE COLOUR FIELDS					
Date	01-07-2019	DRAWAL STATUS	U/D			DRAWAL STATUS					
		SLAB	15%	25%	35%	>35%	O/D				
		RATE	0	0.5	1	1.5	U/D				
Sr. No.	Name of Pooling Sub-Station	Schedule (kWh)	Actual (kWh)	AvC (kWh)	Deviation (kWh)	Absolute Deviation (kWh)	% Deviation	% Contribution @ Periphery	Deviation Charges @ PSS	Deviation Charges @ Periphery	Total Deviation Charges
1	PSS-1 (OI)	1250	6000	10000	4750	4750	47.50%	19.59%	3375	90	3465
2	PSS-2 (OI)	1750	6000	10000	4250	4250	42.50%	17.53%	2625	80	2705
3	PSS-3 (OI)	3250	6000	10000	2750	2750	27.50%	11.34%	750	52	802
4	PSS-4 (OI)	4500	6000	10000	1500	1500	15.00%	6.19%	0	28	28
5	PSS-5	5000	5000	10000	0	0	0.00%	0.00%	0	0	0
6	PSS-6 (UI)	6000	5000	10000	-1000	1000	-10.00%	4.12%	0	0	0
7	PSS-7 (UI)	8000	5000	10000	-3000	3000	-30.00%	12.37%	1000	0	1000
8	PSS-8 (UI)	8000	5000	10000	-3000	3000	-30.00%	12.37%	1000	0	1000
9	PSS-9 (UI)	9000	5000	10000	-4000	4000	-40.00%	16.49%	2250	0	2250
Total (ABS Deviation)		46750	49000	90000	2250	24250	2.50%		11000	250	0
					U/D DEVIATION	11000					
					O/D DEVIATION	13250					

17.3. Calculation of impact of Wind/Solar generators at State Periphery shall be subject to revision in case the WRPC post facto revise DSM bill for concern week at any time.

17.4. In case of calculation of impact of Wind/Solar generators at State periphery, an amount payable to Wind/Solar generators shall be paid if sufficient balance amount is available in RE DSM pool account. However, in case sufficient balance amount is not available, payment to Wind/Solar generators on account of impact at State periphery shall be paid when sufficient balance is made up in RE DSM pool account.

17.5. Methodology for Inter-State Transactions:

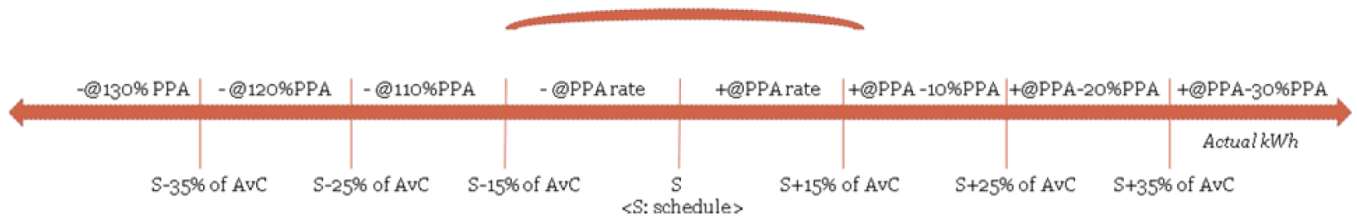
17.5.1. Inter-State transactions at a Pooling Sub-Station shall be permitted only if the concerned Generator or group of generators is connected through a separate feeder.

17.5.2. The Generator/s, through the QCA, shall submit a separate Schedule for its energy injection at Pooling Sub-Station, in accordance with these Regulations, to the MSLDC.

17.5.3. The Inter-State Schedule submitted by the QCA shall be grossed-up to State Periphery by applicable transmission losses at par with conventional scheduling & settlement mechanism and further shall be forwarded to Regional Load Despatch Centre (RLDC) to in-corporate in the State drawl schedule.

17.5.4. The MSLDC shall prepare the deviation settlement account for such Generator on the basis of measurement of the deviation in the energy injected as per CERC's F&S Regulation.

17.5.5. The rate for deviation settlement shall be based on PPA rates or in case of multiple PPAs, it will be based on Weighted Average PPA Rate.



17.5.6. The Generator shall pay the Deviation Charges applicable within Maharashtra in case of deviations in the State DSM Pool Account, the consequences of such deviation at the Inter-State level being governed by the CERC Regulations governing the Deviation Settlement Mechanism and related matters.

17.5.7. The Deviation Charges for actual injection is lower/higher than the scheduled generation (Under-Injection/Over-Injection) by Generators connected to the InSTS and selling or consuming power **outside Maharashtra** shall be in accordance with **Table-5&Table-6**.

Table - 5

Sr. No.	Absolute Error in %age terms in 15-minute time block	Deviation Charges payable to State DSM Pool Account
1	< = 15%	At the fixed rate for the shortfall in energy for Absolute Error up to 15%
2	>15% but <=25%	At the fixed rate for the shortfall in energy for Absolute Error up to 15%(+) 110% of the fixed rate for the balance energy beyond 15% and up to 25%
3	>25% but <=35%	At the fixed rate for the shortfall in energy for Absolute Error up to 15%(+) 110% of the fixed rate for the balance energy beyond 15%, and up to 25%(+) 120% of the fixed rate for the balance energy beyond 25% and up to 35%
4	>35%	At the fixed rate for the shortfall in energy for Absolute Error up to 15%(+) 110% of the fixed rate for the balance energy beyond 15% and up to 25% (+) 120% of the fixed rate for balance energy beyond 25% and up to 35% (+) 130% of the fixed rate for the balance energy beyond 35%

Table – 6

Sr. No.	Absolute Error in %age terms in 15-minute time block	Deviation Charges payable from State DSM Pool Account
1	< = 15%	At the fixed rate for the excess energy up to 15%
2	>15% but <=25%	At the fixed rate for the excess energy up to 15%(+)90% of the fixed rate for excess energy beyond 15% and up to 25%
3	>25% but <=35%	At the fixed rate for the excess energy up to 15% (+) 90% of the fixed rate for excess energy beyond 15% and up to 25% (+)80% of the fixed rate for excess energy beyond 25% and up to 35%
4	>35%	At the fixed rate for the excess energy up to 15% (+)90% of the fixed rate for excess energy beyond 15% and up to 25%(+) 80% of the fixed rate for excess energy beyond 25% and up to 35%(+) 70% of the fixed rate for excess energy beyond 35%

17.5.8. Deviations in respect of Inter-State and Intra-State transactions shall be accounted separately at each Pooling Sub-Station.

17.5.9. The MSLDC 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.

17.5.10. The generator or group of generators selling power outside the State shall not be the part of apportionment of impact at State Periphery and shall not form part of virtual pool in order to avoid double settlement.

17.6. Deviation Accounting and settlement in ABT Regime at State Level (in FBSM):

17.6.1. As per Intra-State ABT mechanism operating in the State known as Final Balancing and Settlement Mechanism (FBSM), any entity selling power outside the State or having Inter-State transaction shall be State Pool participant in FBSM.

17.6.2. In accordance with above provision, generators selling power out-side the State shall become State Pool Participants.

17.6.3. As an interim arrangement, till new deviation settlement mechanism in place of FBSM comes in force, Inter-State

Wind/Solar generators shall be FBSM Pool members and bill will be calculated as per approved procedure for FBSM.

17.6.4. However, any amount payable/receivable by Inter-State Wind/Solar generators in FBSM pool shall be compensated from RE DSM Pool so as to balance Energy Pool and Zero-Sum Pool in FBSM.

17.6.5. The revisions in schedule received by MSLDC for Inter-State RE transactions under LTOA/MTOA shall be forwarded by MSLDC to WRLDC for incorporation in the State schedule and shall be governed by CERC F&S Regulation.

17.6.6. In case of revisions in schedule of Inter-State RE transactions under STOA, it shall be governed by the provisions of CERC's Open Access Regulations.

17.6.7. In case of Collective transactions, no revisions are allowed.

18. DEVIATION CHARGES PAYMENT MECHANISM:

18.1. All the commercial transactions shall be through Electronic Clearance System(ECS) only.

18.2. The QCA shall open Bank Account in any Nationalized Bank and intimate the details of the same to MSLDC.

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

18.4. If the QCA fails to pay charges within time frame, a late payment surcharge amounting to 1.25% per month shall be levied for the period of delay.

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

18.6. After successful registration of the QCA, it shall be the responsibility of the QCA to deposit corpus to ensure payment security mechanism which shall need to be maintained as per Clause no. 18.7.

18.7. The amount of the corpus 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 which shall be paid only by the QCA to MSLDC.

- 18.8. No corpus shall be received from individual Generators in the Pooling Sub-Stations. The QCA may enter into suitable back-to-back arrangements to avail payment security from Wind/Solar Generators that they are representing.
- 18.9. In case of Wind/Solar Generators which are State owned PSUs and the Wind/Solar Generators whose cases are currently pending before NCLT, such generators may deposit corpus amount or irrevocable revolving non-transferable e-LC to MSLDC through their QCA. The QCA may enter into suitable back-to-back arrangements to avail payment security from RE Generators that they are representing.
- 18.10. Upon gaining the experience of F&S regime and RE-DSM Pool operation at State level, after one (1) year MSLDC may review the existing payment security mechanism and approach the Commission for modifications in the existing mechanism.
- 18.11. In case of insufficient/exhausted corpus, QCA shall make up corpus amount within seven (7) days from receipt of such information from MSLDC. Failure to make up corpus amount within prescribed time limit, the Wind/Solargeneration which QCA is representing shall not be scheduled.
- 18.12. If the QCA fails to pay deviation charges within Ninety (90) days from the issue of the accounts and billing, MSLDC shall utilize the corpus deposited by the QCA during registration process for payment of deviation charges.

19. MECHANISM FOR MONITORING COMPLIANCE:

- 19.1. **The event of breach or default of the procedure shall be as follows:**
- 19.1.1. Non-payment or delay in payment of Deviation Charges.
- 19.1.2. Non-compliance of any of the terms/conditions/rules outlines under this procedure.
- 19.1.3. Non-compliance of any of the directives as per the provisions of this regulation issued by MSLDC.
- 19.1.4. Obtaining registration on the basis of false information or by suppressing material information.
- 19.1.5. QCA fails to provide schedules continuously for 10 days.

- 19.1.6. QCA fails to provide metering data continuously for 2 billing cycles.
- 19.1.7. Non-availability of real time data continuously for three (3) days without justified reason.
- 19.1.8. In case the Available Capacity (AvC) is intentionally and repeatedly mis-declared by the QCA.
- 19.1.9. Non-submission of accounts to MSLDC relating to de-pooling of deviations charges prepared by the QCA.
- 19.1.10. Non-payment of RE DSM charges to RE DSM Pool by QCA for consecutive three (3) weeks.
- 19.1.11. In case the QCA has become insolvent
- 19.1.12. In case of continued default for statutory compliance leading to declaration of wilful defaulter by Competent Authority.

19.2. Consequences for event of default:

- 19.2.1. If schedule is not provided by the QCA (default as per 19.1.5) then the previous day's schedule (d-1) for those non-submission days shall be considered and DSM charges shall be computed accordingly. The non-submission of schedule shall attract scheduling charges as per the provisions of the MSLDC's ARR approved by the Commission as amended from time to time.
- 19.2.2. In case of default for acts covered under as per 19.1.1 to 19.1.12 without prejudice to other actions as may be taken by MSLDC, the MSLDC shall issue a notice of period not less than 15 days for revocation of registration of QCA and non-scheduling of Pooling Sub-Station to which said QCA represents and adequate opportunity shall be given to QCA to present its case before MSLDC.
- 19.2.3. In case QCA fails to address/rectify the breach expressed by MSLDC in the Notice within stipulated time, the MSLDC shall proceed with revocation of registration of QCA and disconnection from grid.

20. GRIEVANCE REDRESSAL:

- 20.1. MSLDC shall refer the Complaints regarding unfair practices, delays, discrimination, lack of information, supply of wrong information or any other matters to the Commission for redressal.

20.2. Any disputes between QCA and concern generators shall be governed as per the dispute resolution mechanism under their Agreement, failing which it shall be subject to jurisdiction of the MERC. Pending the decision of the State Commission, the directions of the MSLDC shall be complied by the QCA and concerned generator(s).

21. REMOVAL OF DIFFICULTIES:

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

22. GENERAL:

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

22.2. The Generators and QCA shall abide by the provisions of the Electricity Act, 2003, the MERC Regulations and Indian Electricity Grid Code and MERC (State Grid Code) Regulation - 2006, and applicable CERC and MERC regulations as amended from time to time.

22.3. 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 MSLDC with prior approval of Commission.

The MSLDC Software is already in place since June'2019. As on 24.10.2019, Scheduling/Re-Scheduling activities of around 66 Nos. of Pooling Sub-Stations is being carried out. Based on the availability of meter data with MSLDC, the deviation accounting and bill preparation for the registered Pooling Sub-Stations is underway. Hence, after approval of the amended procedure by the Commission, MSLDC shall initiate the process of registration of balance Pooling Sub-Stations in accordance with the provisions of the procedure. The trial operation of Scheduling, RE-Scheduling, Deviation Accounting & billing without commercial settlement shall be carried out till 00:00 Hrs. of 31.12.2019 or the date as notified by the Commission.

23. ANNEXURES & FORMATS:

23.1. List of Annexures and Formats are listed below:

Sr. 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
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 Sub-Station	FORMAT - 2
7	Format for Indemnity Bond to be submitted by QCA	FORMAT - 3
8	Generator Details to be provided by MSEDCL	FORMAT - 4
9	Break-up of Pooling Sub-Station-wise Monthly Contracted Capacity to be furnished by Discoms	FORMAT - 5
10	Undertaking to be furnished by QCA in the event of QCA allotment to adjacent Pooling Sub-Station	FORMAT - 6

ANNEXURES AND FORMATS

**Consent/Authorization Letter from Generator for appointment of
QCA**

Proforma Consent Letter

Date:

To,
The Chief Engineer,
Maharashtra State Load Dispatch Centre,
Thane-Belapur Road, P.O. Airoli,
Navi Mumbai - 400 708.

Sub : Appointment of QCA as per MERC (Forecasting, Scheduling and
Deviation Settlement for Solar and Wind Generation) Regulations,
2018.

Dear Sir/Madam,

We would like to inform you that we, as the Wind/Solar power generator
at Pooling Sub-Station have decided to exclusively appoint only as the
Qualified Coordinating Agency (QCA) for Forecasting, Scheduling and
Commercial Settlement, as per the MERC (Forecasting, Scheduling and
Deviation Settlement for Solar and Wind Generation) Regulations, 2018.
Kindly find below the details of our capacity at Pooling Sub-Station
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 Pooling Sub-
Station will be taken care by _____

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,

Date: _____

Sign: _____

Place: _____

Authorized Signatory

Name: _____

Designation: _____

Name of Generator: _____

Seal:

Annexure – II

MSLDC REMC Scheduling Software generated format for uploading Day-Ahead Schedules and Intra-Day Revisions

POS Name			FOR INTRA-STATE TRANSACTIONS					
Energy Type			WIND/SO LAR	WIND/SO LAR	WIND/SO LAR	WIND/SO LAR	WIND/SO LAR	WIND/SO LAR
Contract Type			LTOA	MTOA	STOA	LTOA	MTOA	STOA
Transaction Type			INTRA	INTRA	INTRA	INTRA	INTRA	INTRA
Buyer Name			Name of DISCOM	Name of DISCOM	Name of DISCOM	OA- UNDER DISCOM	OA- UNDER DISCOM	OA- UNDER DISCOM
Block	Declared Forecast	AvC	Schedule	Schedule	Schedule	Schedule	Schedule	Schedule
1								
2								
3	Total of all the contract- wise Schedules	Total AvC of the PSS	Buyer-wise, Contract-wise schedules to be entered. The total of all these schedules shall be equal to the Declared Forecast.					
.								
..								
...								
95								
96								

POS Name			FOR INTER-STATE TRANSACTIONS		
Energy Type			WIND/SO LAR	WIND/SO LAR	WIND/SO LAR
Contract Type			LTOA	MTOA	STOA
Transaction Type			INTER	INTER	INTER
Buyer Name			INTER- STATE	INTER- STATE	INTER- STATE
Block	Declared Forecast	AvC	Schedule	Schedule	Schedule
1					
2			Buyer-wise, Contract-wise schedules to be entered. The total of all these schedules shall be equal to the Declared Forecast.		
3	Total of all the contract- wise Schedules	Total AvC of the PSS			
.					
..					
...					
95					
96					

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 (°C)
- Barometric pressure (Pascal)
- Relative humidity (in percent)
- Air Density (kg/m³)

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/m²)
- Ambient temperature (°C)
- Diffuse Irradiance (Watt/m²)
- Direct Irradiance (Watt/m²)
- 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 MERC (Forecasting, Accounting and Deviation Charge Settlement of Solar& Wind Generation) Regulations, 2018

Sr. No.	Name of the QCA	
1	Type of Generator	Wind / Solar
2	Location of Generator (Village, Tal, District)	
3	Total Installed Capacity of Generating Station	
	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 Sub-Station	(Please attach consent from at least 51 % of Generators in the Pooling Sub-Station) (Please attach copy of agreement executed with Generators)
	Details of the individual Generators in the Pooling Sub-Station	(Please attach names with installed capacity of each & individual Generator in the Pooling Sub-Station)
5	Name & Voltage level of the Pooling Sub-Station to which Generation is connected	
	Latitude & Longitude of Pooling Sub-Station	
	Schematic diagram of Connectivity with the Grid& Metering Arrangement	(Please attach)
6	Whether any PPA has been signed: (Y/N)	If yes, then attach Notarized Affidavit indicating 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: Fax 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: Fax 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 Sub-Station	(Please attach detailed information as per Format: 2)
12	Indemnity Bond	(Please attach as per Format: 4)

Date: _____

Sign: _____

Place: _____

Authorized Signatory

Name: _____

Designation: _____

Name of QCA: _____

Seal:

Format – 1

Technical Details to be submitted by the QCA

Pooling Sub-Station Name: _____ **Pooling Sub-Station No.:** _____
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	Details of PPA (Name of Procurer, Effective Date, Validity Date, per Unit Rate, Escalation in per unit energy rate per year (if any))
3	Performance Parameters:
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)
4	Rotor Parameters:
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
5	Blade Details:
a	Length
b	Diameter
c	Material
d	Twist Angle
6	Generator Details:
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
7	Transformer Details:
a	Transformer Capacity
b	Transformer Cooling type
c	Voltage
d	Winding Configuration
8	Weight Details:
a	Rotor
b	Nacelle
c	Tower
9	Over Speed Protection
10	Design life
11	Design Standard
12	Latitude
13	Longitude
14	COD Details
15	Past Generation History from the COD to the date on which DAS facility provided to MSLDC
16	Elevation above Mean Sea level (MSL)

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

(To be submitted on Notarized Affidavit)

Pooling Sub-Station Name: _____ **Pooling Sub-Station No.:** _____

Name of QCA: _____

Sr. No.	Name of Generator	Installed Capacity (MW)	Type of Sale (Discom / Third Party / Captive)	Name of Discom under whose area power is withdrawn	Contract Type (LTOA/MTOA /STOA)	Effective Date of Contract	Expiry Date of Contract
1							
2							
3							

Note: In case Generator is having multiple contracts then the details of each contract (PPA) for shall be specified separately.

Sr. No.	Name of Generator	Installed Capacity (MW)	PPA with	Effective Date	PPA Validity Date	Rate per Unit (Rs.)

Date: _____

Sign: _____

Place: _____

Authorized Signatory

Name: _____

Designation: _____

Name of QCA: _____

Seal:

Format – 3

(To be submitted by QCA in excel format through mail)

Sr. No.	Name of PSS	Name of Generator	E-mail ID	WTG ID/Solar Module ID	Capacity of each WTG/Solar Module	Type of Sale (Discom / Third Party / Captive)	Name of Discom under whose area power is withdrawn	Contract Type (LTOA/MTOA /STOA)	Effective Date of Contract	Expiry Date of Contract

Note: Above information shall be submitted for each WTG or Solar Module even if Generator & PPA is same.

Format - 4

(On the Non-Judiciary Stamp Paper)

INDEMNIFICATION

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

Name of Pooling Sub-Station: _____

Type of Generation: Wind / Solar

Installed Capacity (MW): _____

Date: _____

Sign: _____

Place: _____

Authorized Signatory

Name: _____

Designation: _____

Name of QCA: _____

Seal:

Format – 5

(To be submitted by Discoms in excel format through mail)

Pooling Sub-Station Name: _____

Type of Generation (Wind/Solar/Hybrid): _____

Total Installed Capacity: _____ **MW** **(Wind: ____; Solar: ____)***

(In case of hybrid Pooling Sub-Station)*

Sr. No.	Name of PSS	Name of Generator	E-mail ID of Generator	Phone No. of Generator	WTG/Solar Module ID	Capacity of each WTG/Solar Module	Latitude of each WTG/Solar Module	Longitude of each WTG/Solar Module	Make of WTG/Solar Module	Date of Commissioning of WTG/Solar Module	Feeder No. to which connected

Format – 6

(To be submitted by all the Discoms in the State in excel format through mail for the next month on 27th day of every month)

Wind & Solar Power Purchase Break-up for the month of _____																			
Sr. No.	PSS Name	Total Capacity of PSS (MW)	Type of PSS (Wind / Solar)	Wind/Solar Purchase: Name of Discom															
				Purchased by: Name of Discom								Open Access taken by Consumers under: Name of Discom							
				Note: The details of Power purchased by respective Discom based on the period of purchase to be entered. In case of multiple expiry dates, total capacity which is valid for the entire month is to be specified. If any capacity is expiring before last date of the month, the same shall be mentioned separately by adding row for that PSS along with dates. separately by adding row for that PSS along with dates.								Note: The capacity of Power Purchased by various Consumers of the respective Discom is to be specified. In case of multiple purchases having different expiry dates, the total capacity which is valid for entire month is to be specified. The capacity which is expiring before the last day of the month is to be specified by adding separate row for the respective PSS.							
				In case of hybrid, fill details on separate row	LTOA	Effective Date	Expiry Date	MTOA	Effective Date	Expiry Date	STOA	Effective Date	Expiry Date	LTOA	Effective Date	Expiry Date	MTOA	Effective Date	Expiry Date
	Period >= 12 years			3 months <= Period <= 3 years			Period <=1 month			Period >= 12 years			3 months <= Period <= 3 years			Period <=1 month			

Format – 6

(To be submitted on Letter head of QCA)

Date:

To,
The Chief Engineer,
Maharashtra State Load Dispatch Centre,
Thane-Belapur Road, P.O. Airoli,
Navi Mumbai - 400 708.

Sub : Undertaking for providing various Services as per the MERC (Forecasting, Scheduling and Deviation Settlement for Solar and Wind Generation) Regulations, 2018.

Ref: 1) The MERC (Forecasting, Scheduling and Deviation Settlement for Solar and Wind Generation) Regulations, 2018.

2) MERC approved Procedure dated ____.

3) Letter from MSLDC No. ____, dated _____ .

Dear Sir/Madam,

In response to letter received from your office, M/s. _____ (Name of QCA)____ hereby undertake that for ____ (Name of PSS)____, shall provide all the required services entrusted to QCA by the Regulations and procedures cited under reference (1) & (2) to all the Generators connected to said PSS.

Further, we undertake to the generators of ____ (Name of PSS)____, we shall charge same rate for various activities as charged to the generators connected to the ____ (Name of PSS)____ adjacent to the said PSS.

We shall abide by the provisions of the said regulations and procedures and in case the generations appoint another QCA at any stage of time, we shall smoothly handover the details to newly appointed QCA or Generators.

Within (3 days) we shall submit application for Registration as a QCA for the said ____ (Name of PSS)____ to MSLDC.

This is for your kind information and records.

Regards,

Date: _____

Place: _____

Sign: _____

Authorized Signatory

Name: _____

Designation: _____

Name of Generator: _____

Seal:

Abstract of Payments to be made to MSLDC by the QCA

Sr. No.	Reason for Payment	Amount (Rs.)	Time of Payment
1	Registration Charges	20,000/-	For each Pooling Sub-Station during Application for Registration
2	Scheduling Charges	2,250/-	For every day. As per the MERC Order dated 18.03.2019, charges have been deferred till further orders.
3	Revision in Schedules	2,250/-	For every revision. As per the MERC Order dated 18.03.2019, charges have been deferred till further orders.
4	Forecasting services	3,000/-	Per day, if availed
5	Corpus	25,000/- per MW for Solar 50,000/- per MW for Wind	During Registration
6	Top-up of Corpus	As required	In the event of reduction in Corpus as per Sr. No. 5
7	Any other charges	As required	As required