<u>DRAFT</u>

PROCEDURE FOR FORECASTING, SCHEDULING AND DEVIATION SETTLEMENT OF SOLAR AND WIND GENERATION SOURCES, 2019

1. PREAMBLE:

This Procedure is framed in compliance of provisions of Uttar Pradesh Electricity Regulatory Commission (Forecasting, Scheduling, Deviation Settlement and Related Matters of Solar and Wind Generation Sources) Regulations, 2018 (herein after referred as "the Regulations") and shall be called the Procedure for Forecasting, Scheduling and Deviation Settlement of Solar And Wind Generation Sources, 2019, (herein after referred as "the Procedure").

2. SCOPE & APPLICABILITY:

- (1) The Procedure shall be applicable on following :-
 - (a) Uttar Pradesh State Load Despatch Centre (herein after referred as "SLDC"), all Solar (excluding rooftop solar covered under UPERC RSPV Regulations) and Wind Energy Generator(s) in the State of Uttar Pradesh connected to the Intra-State Transmission System and having minimum individual or combined installed capacity of 5MW, or above.
 - (b) The Solar or Wind Generator(s) of having minimum individual or combined installed capacity of 5MW or more, using the power generated for self consumption.
- (2) The procedure shall be implemented from the as notified by the Commission.

3. DEFINITIONS AND INTERPRETATION

All other words and expressions used herein although not specifically defined shall have the meaning assigned to them in the Electricity Act 2003 and Uttar Pradesh Electricity Regulatory Commission (Forecasting, Scheduling, Deviation Settlement and Related Matters of Solar and Wind Generation Sources) Regulations, 2018, as amended from time to time.

4. QUALIFYING CRITERIA FOR THE QCA

(1) The Qualified Coordinating Agency (QCA) shall be appointed with the approval of the generators connected having at least 51% of the combined installed capacity at pooling substation on mutually agreed terms and conditions as may be agreed between QCA with Wind and Solar generators. The QCA shall be exclusively either for Solar or Wind generators at a given pooling station. Provided that the Solar or Wind generator connected alone to a pooling station and having a capacity of 50 MW or more may act as a QCA.

- (2) The Generator(s) shall satisfy themselves that the QCA is technically and financially competent to undertake on their behalf the designated functions as defined under the Regulations and may consider following technical and financial criteria as guiding principles for the appointment of QCA. Adherence to these principles would be up to the Generator(s) which shall not be binding and may be in the interest of the Generator(s):-
 - (a) The QCA shall be a Company incorporated in India under the Companies Act 1956/ 2013.
 - (b) The QCA shall have the experience of minimum 1 year in the field of Wind / Solar Power forecasting and scheduling.
 - (c) The financial strength of the QCA must be such that it should be in a position to handle the risk of penalties on account of deviation by the generator. Accordingly, the net worth of the QCA from forecasting & scheduling services must be positive amounting to at least Rs. 2.0 Crores in the recent last financial year which should reflect from its audited balance sheet or from the certificate of a practicing Chartered Accountant.

5. THE ROLES AND RESPONSIBILITIES OF THE QUALIFIED COORDINATING AGENCY (QCA)

- (1) QCA shall be treated as an intra-state entity for the purpose of the Uttar Pradesh Electricity Regulatory Commission (Forecasting, Scheduling, Deviation Settlement and Related Matters of Solar and Wind Generation Sources) Regulations, 2018.
- (2) The QCA shall have the capability to provide real time monitoring systems or equivalent systems for seamless flow of information to and from SLDC and RLDC in order to facilitate scheduling, revision of schedule, intimation of outages / grid constraints etc.
- (3) The Qualified Coordinating Agency (QCA) shall act as coordinating Agency on behalf of wind and Solar generators connected to the Pooling Station.
- (4) QCA shall be the single point of contact with the SLDC on behalf of its coordinated generator(s) connected to a pooling station to perform following functions:-

- (a) Provide schedules with periodic revisions as per the Regulations on behalf of all the Wind/Solar Generators connected to the pooling station.
- (b) Provide the actual generation (Generator wise) in MW (hourly) and MU for the previous day latest by 8 AM of current day.
- (c) Responsible for coordination with STU/SLDC and other agencies for metering, data collection and its transmission and communication.
- (d) Undertake commercial settlements on behalf of the generators, of such charges pertaining to generation deviations only including payments to the State pool account through the concerned SLDC.
- (e) Undertake de-pooling of payments received on behalf of the generators from the State Pool account and settling them with the individual generators in accordance with these Regulations.
- (f) Undertake commercial settlement of any other charges on behalf of the generators as may be mandated from time to time.
- (g) Maintain records and accounts of the time- block schedules, the actual generation injected and the deviations, for the pooling Sub-Station and the individual Generators separately.
- (h) All other ancillary and incidental matters.
- (5) Each pooling station shall have one QCA. However, in case a particular solar or wind generator alone is connected to a pooling station, that generator shall also act as a QCA.

Note :-

In case a new Solar/Wind Generator(s) are connected with a pooling station, the newly added generator(s) shall have to be included as member(s) of the existing QCA. In such condition, it will be responsibility of the QCA to take necessary step to intimate the changes to the SLDC for necessary change in the registration. Charging code by SLDC in respect of new generator will be released after changes duly registered with SLDC.

- (6) The QCA shall establish protocol for communication with Generator(s) to implement the instructions of system operators and SLDC.
- (7) The QCA shall establish a control center and shall have complete control over Wind/ Solar injection feeders connected to Pooling station. The Control center shall have the facilities of voice communication along with fax with SLDC, internet connection available for all the 24 hours.
- (8) Declaration of Available Capacity of the Generating Station(s) to SLDC to which it is representing.

- (9) QCA should be equipped with Forecasting tool. The QCA shall prepare aggregate day ahead & week ahead forecasting on behalf of the solar/wind generator(s) connected with it and shall provide the same to SLDC. The forecast so done shall be generator centric. The QCA will have the option to make forecast based on the forecast made by SLDC of solar/wind generation that is expected to be injected into the State Grid. In such a condition, the consequence of any error shall be borne by the QCA. SLDC shall not be responsible for the error.
- (10) Based on the forecasting, QCA shall submit schedule data as per Annexure -II, through EASS/Scheduling portal of SLDC.
- (11) Keep SLDC indemnified at all times and shall undertake to indemnify, defend and save the SLDC 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 as per Annexure- IV on Non Judicial Stamp Paper of value notified from time to time by the State Government at the time of registration.

6. Role of SLDC:

- (1) The SLDC shall open and maintain a separate account which shall be called "State Deviation Settlement Account for Wind and Solar Generations" for receipts and payments on account of deviations by Wind and Solar Energy Generators.
- (2) The SLDC shall provide access to the EASS/ scheduling portal along with login id and password for use of QCA for following purpose :-
 - (a) Uploading of day ahead and Week ahead Generation forecasts
 - (b) Uploading of revisions in schedules
 - (c) Communication of Grid Constraints and curtailment if any.
 - (d) Mechanism for monitoring deviations in Scheduled & Actual generation along with commercial impact and acquisition of Meter reading.
 - (e) Any other data as communicated by SLDC
- (3) The SLDC shall under take aggregate forecasting of solar/wind power expected to be injected into the state grid.
- (4) The SLDC shall be responsible for forecasting scheduling, communication and coordination with QCA. Forecasting of the generation done by the SLDC shall be available on the website of the SLDC. The forecast by SLDC shall be done with the

objective of ensuring safe and secure grid operationby planning for the requisite balancing resources.

- (5) The SLDC shall be responsible for processing the interface meter data and computing the net injections by each QCA, and accordingly prepare DSM account.
- (6) The SLDC shall prepare monthly energy accounts and maintain separate records and account of time block wise schedules, actual generation and deviations and failure/error in data provided by Generator/QCA.

7. ROLE AND RESPONSIBILITIES OF THE GENERATOR

- (1) The Solar / Wind generating plant(s) whose power is already being scheduled by the SLDC, already covered or as and when covered by the Regulations and the Procedure, shall have to appoint the respective QCA and the QCA shall be registered with SLDC as per these procedure within 60 days failing which SLDC shall have the right to not to schedule the power of such generating plant(s).
- (2) The Generators in the Pooling Sub-Station shall appoint QCA and give consent for registration of QCA at SLDC.
- (3) All the Generators shall save and store the block-wise generators injection data or any other data desired by SLDC through their QCA and shall provide the same within (7) days from the date of demand from SLDC.

8. PROCEDURE FOR REGISTRATION OF QCA WITH SLDC

- (1) The application for Registration as a QCA shall be submitted to the SLDC as per Annexure- IV (Registration Form) along with following:
 - a. Non Refundable registration charges of Rs 15000/MW plus applicable taxes subject to maximum of Rupees one lakh (Rs100000/-) payable in Lucknow account as notified by SLDC.
 - b. Consent letters from all the generators connected to the respective QCA as per the Performa consent letter attached as Annexure- V
 - c. Irrevocable Bank guarantee or Fixed Deposit Receipt/Term Deposit Receipt for payment security issued by any Scheduled Nationalized Bank Branch situated in the State of Uttar Pradesh as specified in the procedure.
 - d. Submit the details as per Annexure- I, attached along with the Procedure.

- e. An undertaking to comply the UPERC Regulations and its procedure on Non Judicial Stamp Paper of value notified by the State Government from time to time as per Annexure-VI.
- f. Any other charges like SLDC Annual Fee, etc or documents as specified by SLDC or by the Commission from time to time.
- (2) The registration will be valid for a specified injection/drawal point with respect to intrastate transmission system.

Provided that any change(s) in governance structure of QCA or injection/drawal point or in the pool of generators or quantum in MW, this injection/drawl point shall be considered as a new connection and a fresh application for registration of QCA shall be submitted along with applicable charges for registration as per 8(1).

(3) SLDC shall acknowledge the receipt of the application and after scrutinizing the application shall intimate about the deficiencies if any to the applicant within 7 working days from the date of receipt of the application.

Provided that if the application is complete in all respect, SLDC shall register the applicant as QCA and intimate the same to the applicant in 7 working days.

- (4) The applicant shall remove the defects as intimated by the SLDC and shall re-submit the details within seven (7) working days from the receipt of intimation.
- (5) SLDC after receiving the complete application in all respect and after removal of all defects by the QCA, shall process the application and register the QCA within 7 working days.
- (6) After completion of the registration, QCA may be allowed to schedule power for its constituent generators/pooling stations for which the necessary access to EASS/ scheduling portal along with login ID and password shall be provided by SLDC for forecasting and scheduling of RE generator for Day ahead as well as intraday revisions. The same shall be used by the QCA / RE Generator to know their relevant data of scheduling and energy accounting.

9. DE-REGISTRATION OF QUALIFIED CO-ORDINATING AGENCY

(1) The QCA may request SLDC 03 months in advance for de-registration along with the consent of the generator(s), however, in such cases, it shall be the responsibility of the QCA and generator(s) to settle all commercial obligations between themselves

and with SLDC. A copy of the request will also have to be served by QCA to the buyer(s).

Provided that the generator(s) shall be responsible for appointing new QCA and ensure registration of new QCA at SLDC within this notice period, failing which generation shall not be scheduled.

(2) SLDC may also initiate the process of de-registration in case of default conditions mentioned in the Procedure after giving an reasonable opportunity of being heard.

10. Metering, Data collection and data Communication:

- (1) Interface Energy Meters ABT Compliant, AMR, compatible with UPSLDC energy accounting software EASS. Interface meters shall be installed by the State Transmission Utility as per CEA Metering Regulations, 2006 and amendments thereof for energy metering of QCA and its members.
- (2) On the basis of real time actual generation data of interface meters (MRI/AMR) and the forecast/schedule provided by the QCA, SLDC shall prepare the DSM account. Automated meter reading (AMR) system shall be preferably used for communicating interface meter data with SLDC. Internal Clock of the interface meter shall be time synchronized with GPS.
- (3) QCA shall provide data telemetry at the turbine/inverter level to the SLDC and shall ensure the correctness of the real-time data and undertake the corrective actions, if required. Frequency of real-time data updating shall be 4 second or such other frequency as SLDC may require. Further, turbine/inverter outage plan shall also be forwarded to the SLDC. The proforma data telemetry requirement for Solar and wind Generators is enclosed at Annexure III(a) and III(b).
- (4) Authorized representative of the STU shall forward monthly meter readings (MRI Data) to the SLDC within 10 days after completion of each month i.e. by 10th day of the next month of the previous month for energy accounting purpose.

11. Available Capacity (AvC):

- (1) It is mandatory for a QCA to declare the block wise AvC for its each pooling station(s) on behalf of their generators. The AvC shall be declared each day latest by 10 AM on day ahead basis and can be revised during the submission of intra-day schedules.
- (2) The Available capacity (AvC) for a wind generating plant shall be applicable for the entire 24 hours in a day. Whereas considering the availability of solar radiation only during the day, the AvC for a solar generating plant shall be applicable only between

05:00 AM to 07:30 PM. Plant having mixed capacity of wind and solar generation shall consider the AvC accordingly.

(3) If "Absolute error" is more than 15% (Over injection/under injection) and concerned QCA has not revised the Available Capacity (AvC) in more than 6 consecutive time blocks from time to time, this act may be taken as "intentional Misdeclaration" and may be treated as gaming. The SLDC may seek clarification of QCA on such matter and if SLDC is not satisfied with the justification given by the QCA, the matter may be reported to the Commission and an appropriate action shall be taken as per the directions of the Commission.

12. SCHEDULING AND DESPATCH

- (1) The QCA shall provide forecasting (along with generator wise breakup) for the wind/solar generating Plants connected to pooling substation to SLDC.
- (2) QCA shall submit schedules for inter-state and intra-state transaction separately. In case of electrical separation not being possible, then a combined schedule of inter and intra-state transaction with bifurcated inter and intra-state schedule shall be allowed to be submitted.
- (3) The schedule of QCA for each of its pooling station(s) may be revised giving advance notice to the SLDC, as the case may be. Such revisions shall be effective from 4th time block, the first being the time-block in which notice was given. There may be one revision for each time slot of one and half hours starting from 00:00 hours of a particular day subject to maximum of 16 revisions during the day for wind Generators and a maximum of 8 revisions during the day for solar generators.
- (4) Revision in schedules of QCA for each of its pooling station(s) for selling power through collective transactions shall not be allowed.
- (5) Day ahead schedules shall be required to be communicated to SLDC up to 10:00 AM of the preceding day in the proforma at Annexure-II, Format-A of Regulations. However intra-day revisions are required to be communicated to SLDC in the proforma at Annexure-II, Format-B of Regulations.
- (6) The schedules of QCA for its each pooling stations shall be updated through online scheduling portal of SLDC (EASS) which shall be accessible to QCA through login credentials. After logging-in, the QCA shall be able to transfer schedules of its pooling station which it is representing and the revisions shall also be transferred.
- (7) The forecasting, scheduling, metering, energy accounting and deviation charges shall be as per applicable UPERC Regulations, as amended from time to time.

- (8) In the event of contingencies, transmission constraints, congestion in the network, threat to system security, the transactions of QCA for its pooling station(s), already scheduled by SLDC, may be curtailed as per provisions of UPERC Grid Code for ensuring secure and reliable system operation.
- (9) QCA should maintain the final/Implemented AvC & Schedule of individual generator along with summation of the AvC & Schedule of all pool members and shall provide to SLDC as and when required by SLDC for maintaining historical data and analysis of RE generators at State level on monthly basis.
- (10) Any generating plant owned/embedded by the beneficiary (i.e. a distribution license) itself and Captive Plants or NCES based plants which are connected to the distribution system of the concerned beneficiary shall not be required to participate in the process of scheduling because the effect of such generation is embedded into the distribution system and the same shall duly be accounted for while making the drawl schedule.

13. DEVIATION SETTLEMENT AND ENERGY ACCOUNTING:

- **1.** The weighted average of the "Fixed rate" of the generators of QCA shall be considered as "Fixed rate" of QCA for computation of deviation settlement.
- 2. The Fixed rates shall be submitted by the generator(s)/ QCA on an affidavit on Non Judicial Stamp paper of value notified by the State Government from time to time duly signed by the authorized signatory of generator(s)/ QCA along with the copy of all the PPAs.
- **3.** The SLDC shall compute the absolute error for each Pooling Sub-Station/QCA and shall compute the deviation charges accordingly and prepare energy account.
- **4.** Any transaction of interstate along with intra state transaction of Solar/Wind Power plants /QCA of concerned plants/QCA will be covered or regulated as per provisions of CERC DSM Regulations 2014 and amendments thereof.

14. Payment security:

- a) The RE (solar and wind) QCA shall submit the payment security as following :
 - i. Solar QCA : Rs 10,000/- per MW
 - ii. Wind QCA : Rs 20,000/- per MW
- b) The mode of 'Payment Security' shall be Bank Guarantee (Format to be provided by SLDC), FDR/TDR of scheduled Nationalized Bank, situated in UP. in favour of officer so notified by SLDC.
- c) Payment security shall be valid for at least 03 years with additional 06 month claim period.

- d) The validity of the payment security shall be extended at the instruction of SLDC.
- e) The payment security shall be released by SLDC within 18 months of final transaction and confirmation of full payment by SLDC.

15. Curtailment Event:

- (1) In case planned curtailment/ shutdown/ system constraint necessitated in certain time blocks of a day by the SLDC, QCA shall be responsible to regulate the generation at site as per the advice of the SLDC and accordingly the QCA shall revise the schedule failing which the SLDC shall revise the Schedule as required and that will be binding on QCA.
- (2) In case SLDC imposes any unplanned curtailment due to transmission constraints, breakdown etc. for grid stability, or in case of removal of the reason of curtailment the capacities thus reduced or increased by the generators for the immediate time blocks shall be exempted from DSM calculations as per the provisions of UP Electricity Grid Code and amended from time to time.

16. Procedure for Commercial Settlement;

S No.	Action	Responsibility	Timeline
1	Publish DSM statement for the month on its website. This statement shall have detailed calculations of deviation for each pooling station/capacity under each QCA	SLDC	10th of the next month
2	File comments/rectification requests	QCA	Within 15 days from the publishing of the statement on the website
3	Carry out rectification/ modification and finalization of DSM account and convey the same through Email/on website	SLDC	Within 15 days after receiving the rectification request as per (2) above
4	Make DSM payment	QCA	Within 10 working days from the finalization of the DSM account and billing.

(1) Timelines for commercial settlement shall be as follows:

	If the payments against the	QCA	In case the payment is not
5	Charges for Deviation		made even after a lapse of
	Charges for Deviation are		60 days from the issuance
	delayed beyond ten (10)		of final DSM account,
	working days from the date		SLDC shall initiate the
	of issue of final DSM		process to invoke payment
	account and billing by		security to the extend of
	SLDC, the defaulting QCA		the pending payment
	shall have to pay simple		subject to any other action
	interest @ 1.25% per		as permissible under
	month.		law/Regulations.
			-

17. Application of Losses and Charges:

Transmission charges and losses for State Transmission Network shall be applicable as determined by the Commission from time to time.

18. SLDC Fee & Charges and other charges:

SLDC fee and charges including scheduling and operating charges shall be payable by QCA or RE (Solar and Wind) Generator, as the case may be, as specified in the Uttar Pradesh Electricity Regulatory Commission (Procedure, Terms & Conditions for payment of Fee and charges to State Load Despatch Centre and other related provisions) Regulation,2004 as amended from time to time or any other Regulations issued by the Commission for the time being in force.

19. Event of breach of procedure/regulation and consequences thereof:

Following events shall constitute breach by QCA/Generators

- a) Non-payment or delay in payment of Deviation Charges.
- b) Non-compliance of any of the terms/conditions/rules outlined under the Procedure and regulation.
- c) Non-compliance of any of the directives issued by SLDC, so long as such directives are not inconsistent with any of the provisions of Uttar Pradesh Electricity Regulatory Commission (Forecasting, Scheduling, Deviation Settlement and Related Matters of Solar and Wind Generation Sources) Regulations, 2018.
- d) Obtaining registration on the basis of false information or by suppressing material information.
- e) Non Payment of SLDC Fee & Charges including scheduling and operating charges within stipulated period.
- f) RE (Solar and Wind) Generator or QCA fails to provide day ahead schedules for continuously for 10 days.

20. Consequences for Event of default

- (1) If day ahead schedule is not provided by the RE (Solar and Wind) Generator/QCA upto prescribed time (default as per 19 (f) above) then the last schedule for those non submission days shall be considered as the schedule for that day and DSM charges shall be computed accordingly.
- (2) If QCA fails to provide the information to SLDC regarding any changes as provided in the Annexure -1 within 10 working days of that change, the SLDC shall give a notice to QCA to provide the information within 15 days failing which SLDC may initiate the deregistration process.
- (3) If QCA breaches any of event as stipulated at clause 11(1) of these Procedures, without prejudice to other actions as may be taken by SLDC, SLDC shall issue a show cause notice. In case QCA fails to address/rectify the breach expressed by the SLDC in the Notice within stipulated time, the SLDC may proceed with de-registration of QCA after providing adequate opportunity to QCA/Generator to present its case before SLDC.

Provided that in case of non payment or delay in payment of any of the charges, the SLDC shall first take action to invoke payment security as per table under clause 8 before starting the process of de-registration of QCA.

21. Grievance Redressal:

- (1) All disputes among the generator(s) and QCA shall be first settled at the level of QCA or the aggrieved parties may approach to the appropriate forum to settle the dispute as per the applicable rule/law.
 - (2) The disputes between SLDC and the QCA shall be resolved as per the provision of Section 33(4) of the Electricity Act 2003.

22. Removal of difficulties:

In case of any difficulty in implementation of this procedure, SLDC may approach the Commission for review or revision of the procedure or the Commission may issue necessary directions from time to time.

Details of QCA and Wind/Solar generating stations connected to Pooling Station to be submitted by				
QCA/Individual generator (if connected to other sub-station)				
Source:	Wind/Solar			
Copy of Agreement between QCA and the generators				
connected to Pooling Station				
Total Installed Capacity of the generators connected to the				
Pooling Station				
Total Number of Units with details				
Physical location/address of Pooling Station				
Physical location/address of all Generating Stations				
Address of QCA Registered office				
QCA address for correspondence				
Whether any PPA has been signed:(Y/N)	If yes, then attach details			
Connectivity Details	Location(name of substation)/Voltage Level			
Metering Details with sealing certificate	Meter No. 1. Main			
	2. Check			
	3. Standby			
Connectivity Diagram	(Please Enclose)			
Static data	As per attached sheet			
Contact person details of the QCA	Name :			
	Designation :			
	Number: Landline Number, Mobile Number,			
	Fax Number			
	E- Mail Address :			
Contact Details of the Alternate Person	Name :			
	Designation :			
	Number: Landline Number, Mobile Number,			
	Fax Number			
	E- Mail Address :			

Data to be submitted by the QCA for each RE (Solar & Wind) Generator

S.No	Particulars	
1.	Туре	
2.	Manufacturer	
3.	Make	
4.	Model	
5.	Capacity	
6.	Commissioned date	
7.	Hub height	
8.	Total height	
9.	RPM range	
10.	Rated wind speed	
11.	Performance Parameter	
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	

For Wind turbine generating plants

	Low Voltage Ride Through (LVRT) setting	
12.		
13.	High Voltage Ride Through (HVRT) setting	
14.	Lightning strength (KA & in coulombs)	
15.	Noise power level (db)	
16.	Rotor	
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 ration	
17.	Blade	
a)	Length	
b)	Diameter	
c)	Material	
d)	Twist angle	
18.	Generator	
a)	Generator type	

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b)	Generator no of poles	
0)	Generator speed	
c)	Generator speed	
d)	Winding type	
e)	Rated Gen. Voltage	
f)	Rated Gen. frequency	
g)	Generator current	
h)	Rated Temperature of generator	
i)	Generator cooling	
j)	Generator power factor	
k)	KW/MW @ Rated Wind Speed	
1)	KW/MW @ peak continuous	
m)	Frequency Converter	
n)	Filter generator side	
o)	Filter grid side	
19.	Transformer	
a)	Transformer capacity	
b)	Transformer cooling type	
c)	Voltage	
d)	Winding configuration	
	xx7 • 1 /	
20.	weight	
a)	Rotor weight	

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b)	Nacelle weight	
c)	Tower weight	
21.	Over Speed Protection	
22.	Design Life	
23.	Design Standard	
a)	Latitude	
b)	Longitude	
c)	COD Details	
d)	Past Generation History from the COD to the date on which DAS facility provided at	
	UPSLDC/RLDC, if applicable	
e)	Height above mean sea level	

For Solar generating Plants

Static data points:

- 1) Latitude
- 2) Longitude
- 3) Turbine Power Curve (In case of Solar Thermal based Plants)
- 4) Elevation and orientation angles of arrays or concentrators (In case of Solar Thermal based Plants)
- 5) The generation capacity of the Generating Facility
- 6) Height above mean sea level etc.
- 7) COD details
- 8) Rated voltage
- 9) Details of Type of Mounting: (Tracking Technology If used, single axis or dual axis, auto or manual)
- 10) Manufacturer and Model (of Important Components, Such as Turbine, Concentrators, Inverter, Cable, PV Module, Transformer, Cables)
- 11) DC installed Capacity
- 12) Module Cell Technology
- 13) I-V Characteristic of the Module
- 14) Inverter Rating at different temperature
- 15) Inverter Efficiency Curve
- 16) Transformer Capacity & Rating, evacuation voltage, distance from injection point

<u>FORMAT : A</u> (to be submitted a day in advance) Date of submission:

Forecast applicable for date:

Forecast and Schedule Data to be submitted by QCA

15 Min time block	Time	Installed	
		Capacity (MW)	Day Ahead Availability (MW)
1	00:00 - 00:15		
2	00:15 - 00:30		
3	00:30 - 00:45		
4	00:45 - 01:00		
-			
-			
-			
94			
95			
96			

Note : The forecast should ideally factor in forecasting errors. As such schedule should ordinarily be same as forecast.

FORMAT : B (to be submitted on the day of actual generation, revision of availability and schedule, if any, shall be done as per provisions of the relevant Regulations.

Date:

Revision No.:

15 Min time block	Time	Current	
		schedule	Revised Schedule
		(MW)	(MW)
1	00:00 - 00:15		
2	00:15 - 00:30		
3	00:30 - 00:45		
4	00:45 - 01:00		
-			
-			
-			
94			
95			
96			

Real-time Data Telemetry requirement (Suggested List)

Wind turbine generating plants

- 1) Turbine Generation (MW and MVAR)
- 2) Wind Speed (meter/second)
- 3) Generator Status (on/off line)- this is required for calculation of availability of the WTG
- 4) Wind Direction (degree from true north)
- 5) Bus Voltage (Volt) and fq
- 6) Ambient air temperature (°C)
- 7) Barometric pressure (Pascal)
- 8) Relative humidity (in percent)
- 9) Air Density (kg/m^3)

For Solar generating Plants

- 1) Solar Generation unit/ Inverter-wise (MW and MVAR)
- 2) Voltage and fq at interconnection point
- **3)** Generator/Inverter Status (on/off-line)
- 4) Global horizontal irradiance (GHI)- Watt per meter square
- **5)** Ambient temperature (°C)
- 6) Diffuse Irradiance Watt per meter square
- 7) Direct Irradiance Watt per meter square
- 8) Sun-rise and sunset timings
- 9) Cloud cover- (Okta)
- 10) Rainfall (mm)(Today from 00 hrs and last 24 hrs)
- 11) Relative humidity (%)
- 12) Performance Ratio-

Mode & Protocol of Communication for exchange of information and data between the QCA and <u>SLDC</u>

1. IEC-60870-5-101

Analog: Short Floating Point Values (ASDU Type ID-13)

Digital: Double Point status with full time tag ASDU Address 31 for CB and Single Point Status with time ASDU -30 For Isolators

SOE : 7 Octect

IOA Size :3 Byte

ASDU Size -1Byte

Link Address size - 1 Byte

2. IEC -60870-5-104

Analog: Short Floating Point Values (ASDU Type ID-13)

Digital: Double Point status with full time tag ASDU Address 31 CB and Single Point Status with time ASDU -30 For Isolators

SOE :7 Octect

IOA Size :3 Byte

ASDU Size -2 Byte

Link Address size - 0 Byte

Tel : Fax : Email :

State Load Dispatch Centre Uttar Pradesh Power Transmission Corporation Limited

QCA Registration Form

Tio	ek relevant box			
	New Registration		Change of registration	Cancel registration
	I	1		

Tick relevant box

|--|

1	Name of the Entity	

2	Primary business	
	(brief description)	

3	Business address		
---	------------------	--	--

Phone	Mobile	Fax	Email	Website

4	Postal address	ess		

5

Phone	Mobile	Fax	Email

6	Name of Directors	Position	Mobile	Email
a				
b				

7	Financial	details
---	-----------	---------

8 Pooling sta	tion details			
Pooling stat Name and addr	tion Total ess Installed capacity	Injecting Transmission Grid Sub Station details	Voltage Class	Type (Wind/Solar)
	0			
consent let	æ ters egal			
Owners of WTO (Enclose Copies	Gs. 3)			

9	Details deposit	of	BG/Security	Solar	MW capacity	Amount (Rs)
				Wind	MW capacity	Amount
						(Rs)

10	Bank account Details of	A/C No.	
	QCA for handling DSM		
	mechanism	IFSC Code	
		Name of the	
		bank	
		Address	

Authorized Signature Name And official seal

(For QCA)

Enclosures:

- 1 Certified copies of Agreement/ Agreements Between QCA and each Solar/Wind Power Plant which are coming through pooling substation.
- 2 QCA/Individual Solar & Wind Power Plants's Authorised Signatory declaration.
- 3 Consent letter from Solar/Wind Generator about appointing QCA.
- 4 Undertaking to be given by Prospective QCA at the time of Registration.
- 5 Certified copies of Power Purchase Agreement between solar & wind power plants and beneficiaries.
- 6 Certified copies of Connectivity Agreement between Solar & Wind Power Plants and STU along with Certified Copy Single line diagram of each Solar & wind power Plants with clearly showing the interface meter location along with CT & PT location on emanating feeder from plant to STU substations. Also Certified copy of Single line diagram of transmission substation. In case of pooling generating station interface meters configuration should be in compliance of para7.1(A) of CEA (Installation and operation of meters) Regulation2006 & amendments thereof, should also be commissioned by STU/Discom for connecting bus each pooling generator/member to common bus and work as standby Interface meter.
- 7 Certified copies of Long term Access Approvals for Each Solar & Wind Power Plants & each beneficiaries and STU in compliance of UPERC Terms and Conditions for Open Access Regulations and its Amendment.
- 8 Certified copies of Sealing Certificates of Interface meters for Plant end as well as Trans/Discom. substation end
- 9 Monthly MRI Data of each interface meters should be uploaded to EASS server of SLDC by Transmission licensee (declaration to be given by QCA)
- 10 UPSLDC Annual fee shall be submitted for long term intra state open access transactions as per para 8 of UPERC Terms and Conditions for Open Access Regulations, 2005 and amendments time to time. (declaration to be given by QCA)
- 11 Clearance for Protection System of elements from Testing & Commissioning Unit of transmission licensee and clearance from Electrical Safety Department.
- 12 Availability of Real Time DATA to sub LDC/SLDC as per Connectivity regulation of CERC & UPERC and CEA Standard (Certified by SE (SCADA & IT) Unit Gomti Nagar ,Lucknow (declaration to be given by QCA)
- 13 Long term PPA customers to submit the basic details of entity on the following link-<u>http://www.eass.upsldc.org/eass/REPreRegistration.jsp</u> (Only for Long Term Customers which are covered under CRE regulation of UPERC).
- 14 Other documents which are necessary require for Schedule, dispatch & Energy Accounting along with DSM billing.

Annexure-IV (Contd.)

DECLARATION

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

I/We certify that all information furnished above/ herein is/are true to the best of my/our knowledge and belief.

I/We shall abide by such terms and conditions that the UPERC, SLDC may impose to participate in the DSM for Solar & Wind from time to time.

I/We hereby also confirm that:

I/We have obtained consent from all the generators connected to the pooling.

Stations as QCA and the Agreement is attached.

S.No	Name of IPP	No.	of	turbines/	Capacit	ty	of	Total		Accepted	as
		Inverte	rs		Each	turb	ine/	Capacity	of	QCA	
					Inverte	r		IPP			
					TT (1)	0	•.				
					Total	Capa	city				
					of PS						

INDEMNIFICATION

The Renewable Energy (Solar/Wind) generator and QCA shall keep SLDC indemnified at all times and shall undertake to indemnify, defend and save the SLDC 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 obligation by or to third parties, arising out of or resulting from the Registration of QCA under DSM Mechanism.

The Renewable Energy (Solar/Wind) generator and QCA shall keep SLDC indemnified at all times and shall undertake to indemnify, defend and save the SLDC harmless from any and all damages, losses, claims and actions, arising out of disputes with SLDC, as well as with generators and QCA inclusive of confidentially issues.

Date :

Signature of the QCA Name Designation Seal

Annexure-V

Performa Consent Letter

To,

Date:

Director State Load Despatch Centre, Vibhuti Khand-2, Gomti Nagar Lucknow-226010

Sub: Appointment of QCA as per Uttar Pradesh Electricity Regulatory Commission (Forecasting, Scheduling, Deviation Settlement and Related Matters of Solar and Wind Generation Sources) Regulations, 2018.

Respected Sir,

I would like to inform you that we as the Wind/Solar power generator at (name) pooling station have decided to exclusively appoint only as the Qualified Coordinating Agency (QCA) for Forecasting, Scheduling and Commercial Settlement, as per Uttar Pradesh Electricity Regulatory Commission (Forecasting, Scheduling, Deviation Settlement and Related Matters of Solar and Wind Generation Sources) Regulations, 2018.

Kindly find below the details of our generating capacity at(name) pooling station havingMW.

S.No	Customer Name	No	of	Contact	Mail ID &	Capacity in MW
		Panels		Person	Contact No.	
1	Name	Y		Name	Maid Id and	
					contact no.	

We would like to state that henceforth the role of QCA at(name) Pooling station will be taken care by

Contact Person 1 :

Address :

 $Phones (o) : \dots, (M) : \dots, (E-mail) :$

Contact Person 2 :

(M) :, (E-mail) :.....

Contact Person 3 :

(E-mail) :....

Forecast Operations Desk details:

(O) :, (E-mail) :

This is for your kind information and records.

Regards,

<<Signing Authority Name>>

<<Signing Authority Designation>> <<Seal>>

Annexure-VI

UNDERTAKING TO BE GIVEN PROSPECTIVE QCA AT THE TIME OF REGISTRATION

Name: M//s (Name of QCA),

(Postal address)

(To be provided by the QCA on a stamp paper)

- 1) We, as a QCA will be regulated by Uttar Pradesh Electricity Regulatory Commission (Forecasting, Scheduling, Deviation Settlement and Related Matters of Solar and Wind Generation Sources) Regulations, 2018 on Wind and Solar from time to time.
- 2) The Deviation Settlement charges shall be as per the UPERC guidelines for which we as QCA will be responsible for the pooling station/RE (Solar/Wind) generator for which we represent as a QCA.
- **3)** As per the UPERC Regulations, we as a QCA, agree to provide the forecasting schedules to SLDC on day-ahead basis upto prescribed time on behalf of Wind and Solar pooling station/RE (Solar/Wind) Generator connected to STU.
- 4) We as QCA agree to provide the authorization letter from all the generators connected to the pooling station/RE (Solar/Wind) Generator for being appointed as the QCA.
- 5) We understand that we can revise the day ahead schedules for a maximum of 16 revisions during the day for wind generators and a maximum of 8 revisions during the day for solar generators as per the regulations.
- 6) We agree that if there is any deviation from the schedule, then for such energy, Deviation charges will be applicable as per the regulations and as amended from time to time.
- 7) We shall be responsible for commercial settlements with SLDC on behalf of wind and solar generators under our control connected to the pooling station and RE (Solar/Wind) generators.
- 8) We understand that SLDC will compute the comprehensive Deviation charges and raise bills for the deviation on a monthly basis.
- **9)** DSM Account shall be prepared as per Uttar Pradesh Electricity Regulatory Commission (Forecasting, Scheduling, Deviation Settlement and Related Matters of Solar and Wind Generation Sources) Regulations, 2018.
- **10)** We as QCA will abide by Uttar Pradesh Electricity Regulatory Commission (Forecasting, Scheduling, Deviation Settlement and Related Matters of Solar and Wind Generation Sources) Regulations, 2018 as amended time to time for all transcations.
- **11)** We shall establish and ensure continuous availability of necessary SCADA data of the interface point and also other points turbine/plant data as per requirement of SLDC for the purpose of monitoring and billing as per procedure.

- 12) In the event of any fault in generating system or any other reason resulting in lower generation then, we will revise the schedule and the same shall be intimated to SLDC as per the procedure.
- **13)** We agree to pay a Bank Guarantee for the amount equivalent to Rs. 10,000/MW for solar generation and Rs. 20,000/MW for wind generation.
- **14)** We agree to provide WTG's/ Inverter's static data and pooling station details as per the formats specified by SLDC.
- **15)** We agree, if payments against the Charges for Deviation Charges are delayed by more than ten days from the issue of the accounts and billing by the SLDC, failing which QCA shall have to pay simple interest @ 1.25% per month in addition and in case the payment is not made even after a lapse of 60 days from issuance of final DSM account, process to invoke BG may be initiated by SLDC.

We agree to the above terms and condition for registering as /QCA with SLDC, UPPTCL, Uttar Pradesh

Details of enclosed Bank Guarantee

(Name and Postal address of QCA with seal)

For Pooling station :

Name of Injecting Transmission Grid Station :

Voltage level at injection point :

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

- 1.
- 2.

Declaration : All that is stated in the above is true and correct.

QCA Authorised Signatory Name: Designation and seal:

GUIDELINES FOR PROVIDING TELEMETRY DATA AND COMMUNICATION SYSTEM AT SLDC, LUCKNOW

The following guidelines shall be adopted by QCA for applying for Grid connectivity to provide telemetry data and communication system to SLDC, Lucknow.

DOCUMENTS TO BE FURNISHED WHILE APPLYING:

- a) Single line Diagram of pooling station and of all generating stations and connecting STU grid station
- b) Block diagram indicating information flow with brief details of each element

INFORMATION TO BE PROVIDED AT ACTUAL PORT:

(Data to be provided through two independent communication channels on real time basis)

- a) Meter readings:
 - 1) Power flow (Both active and reactive)
 - 2) Voltage (Bus)
 - 3) Frequency (Bus)
- b) Status of Circuit Breaker
- c) Status of Isolator (Optional)

Sample Deviation settlemeny bill format

Draft Deviation Settlement Bill Format

Uttar Pradesh State Load Despatch Centre- Energy Operation

U.P. Power Corporation Ltd.

(Email: seea@upsldc.org)

Name of Injecting Entity: "Name of Solar/ Wind Power station/ QCA"

Deviation charges payable (for inter and intra-state transactions) / receivable (for inter-state transactions) on daily basis by "Name of Solar/ Wind Power station/ QCA" to DSM pool Account.

A. Monthly Summary of Intra-state DSM

Date	Available Capacity (KwH)	Sch. (KwH)	Actual (kwH)	Deviation (KwH)	Deviation/ Absolute Error (%)	DSM charges as per Absolute Error (15%- 25%) (Rs.)	DSM charges as per Absolute Error (25- 35%) (Rs.)	DSM charges as per Absolute Error (>35%) (Rs.)	TotalDSM Charges (Rs.)
	A	В	С	D= (C-B)	E= (D/A)*100	F	G	Н	I= (F+G+H)
01-Jan-2019									
-									
-									
-									
-									
31-Jan-2019								-	
Total									

B. Monthly Summary of Inter-state DSM

Date	Sch. (KwH)	Actual (kwH)	Deviation (KwH)	Deviation (%)	Deviation / Absolute Error (%)	Deviation Charges for Deviation (Rs.)	Additional Charges for Deviation (Rs.)	Total Charges for Deviation (Rs.)	Nos. of Violations	Charges for Violations (Rs.)	Total Charges (Rs.)
	A	В	С	D= (C-B)	E= (D/S)*100	F	G	H= (F+G)	1	J	K= H+J
01-Jan-2019											
÷											
-											-
-											
-											
31-Jan-2019											
Total											

C. Summary of Penalty due to mis- declaration of Available Capacity for the previous Month

Date	Nos of Blocks for which mis- declaration was observed	Total DSM charges for the corresponding blocks (Rs.)	Penalty (Rs.)
	A	В	C= (3*B)
01-Jan-2019			
-			
-			
-			
-			
31-Jan-2019			
Total			

Note:

- 1. The intra-state and inter-state DSM is calculated as per provisions of UPERC (Forecasting, Scheduling and Deviation Settlement) Regulation, 2018 and CERC Regulation 2014.
- 2. Late Payment Surcharge (LPS) shall be applicable as per provisions of UPERC (Forecasting, Scheduling and Deviation Settlement) Regulation, 2018.

Annexure-IX

<u>The guidelines for energy and deviation and accounting of Solar and Wind energy</u> <u>transactions under the State energy accounting framework, with illustrative examples</u>

Case 1- 5MW and above



Case-I

Generator(s)/QCA having capacity of 50 MW or above connected directly to the point A1, B1,C1 & D1 respectively at state grid. At the interface point A1,B1,C1 & D1, scheduling, deviation and accounting will be done by SLDC and each generator(s) can be QCA.

Case -II (Separate Generator(s)/Entities)

Let multiple generator(s) aggregating to 40 MW (5 Nos Multiple Generator(s) (as separate generator(s)/stations entities), be connected to intermediate pooling stations.

In this case, solar generating station may be developed single or multiple generator(s). Here we have considered as multiple generator(s) namely E,F,G,H & I, the generator(s) are connected to interface point E1,F1,G1,H1 & I1 and thereby connected to state grid to P point.

In such a case : Scheduling, deviation and accounting for these generator(s) need to be segregated at point E1,F1,G1,H1 & II and scheduling shall be done at these points. But in case the intermediate pooling station is acting as QCA then scheduling, deviation and accounting shall be done at point P.

Contd.

Case-III

There may be case where multiple generator(s) less than 5 MW (<5MW) capacity are connected to the intermediate pooling stations as under:



Let us consider, multiple generator(s) (say) 3 Nos (J,K,L) each having capacity less than 5 MW but collectively having an aggregate installed capacity of 5 MW or more. All these generator(s) are connected to state grid at point Z1.

Scheduling and forecasting for the generator(s)J,K,L shall be done at point Z1. In this case, SLDC shall schedule at point Z1. The QCA shall provide aggregated schedule to SLDC at Z1. Further the QCA shall do segregation of schedules and other operational and commercial activities for generator(s)J,K,L at points J1,K1,L1, at his level.