

Chhattisgarh State Electricity Regulatory Commission
Irrigation Colony, Shanti Nagar,

Raipur, Dated October 7, 2013

Chhattisgarh State Electricity Regulatory Commission
(Determination of tariff for procurement of power from Rooftop
PV Solar Power Projects by distribution licensees of State)
Regulations, 2013

No. 52/CSERC/2013 Govt. of India is giving thrust to develop renewable source of energy being environment friendly in nature. Also the Electricity Act 2003 provides for policy formulation by the Government of India and mandates State Electricity Regulatory Commissions (SERCs) to take steps to promote renewable sources of energy within their area of jurisdiction.

Jawaharlal Nehru National Solar Mission (JNNSM) opened up the solar electricity sector in India. The primary focus of this mission is to encourage large-scale grid-connected solar power plants. With the reduction in prices of solar photovoltaic (PV) modules and its other auxiliaries on the one hand, and the high and rising tariffs of certain consumer categories on the other, grid-connected solar Rooftop PV systems are becoming increasingly viable economically. Such solar systems are environmental friendly and can offer substantial benefits in terms of reducing T&D losses and improving power quality to certain extent. With a vowed objective to enhance solar power generation in the State it is felt that tariff for procurement of power from Rooftop PV Solar Power Projects by distribution licensee and other related dispensations be suitably addressed in a Regulation. Power procured by distribution licensee from such projects can also qualify for their renewable purchase obligation.

Keeping the above in view and in exercise of powers vested under section 61, 86 read with Section 181 of the Electricity Act 2003 (36 of 2003) and all other powers enabling it in this behalf, the Chhattisgarh State Electricity Regulatory Commission (the Commission) hereby makes the following Regulations specifying the terms and conditions of tariff for procurement of power from rooftop PV solar power projects by distribution licensees of the State.

1. Short Title and Commencement

- (1) These Regulations may be called the "Chhattisgarh State Electricity Regulatory Commission (Determination of tariff for procurement of

power from Rooftop PV Solar Power Projects by distribution licensees of State) Regulations, 2013.

- (2) These Regulations shall come into force from the date of their publication in the Official Gazette.

2. Definitions and interpretations

- (1) In these Regulations, unless the context otherwise requires,-
- a) **'Act'** means the Electricity Act, 2003 and subsequent amendment thereof;
 - b) **'Central Electricity Authority or Authority'** means the Authority referred to in sub-section (1) of Section 70 of the Act;
 - c) **'Commission'** means the Chhattisgarh Electricity Regulatory Commission as referred in subsection (1) of section 82 of the Act;
 - d) **'Consumer Meter or CM'** means a meter used for accounting and billing of electricity supplied to the consumer but excluding those consumers covered under Interface Meters;
 - e) **Existing project** means generating project which are under operation from a date prior to notifications of the Regulations;
 - f) **'Grid Meter or GM'** means import and export meter on the basis of which energy bills shall be raised by Distribution licensee;
 - g) **'Installed capacity'** or **'IC'** means the summation of the name plate capacities of all the units of the Rooftop PV Solar Power generating system or the capacity of the generating station (reckoned at the generator terminals), approved by the State Agency from time to time;
 - h) **'Inter-connection Point'** shall mean the interface point of the Rooftop PV Solar Power generating facility with the distribution network at voltage levels below 33kV;
 - i) **'MNRE'** means the Ministry of New and Renewable Energy of the Government of India
 - j) **'Rooftop PV & ground mounted Solar Power Project'** or **'Project'** means a Rooftop PV and other ground mounted solar power generating station, with a capacity more than 50 kW and upto 1MW, including the evacuation system up to interconnection point, as the case may be;
 - k) **'State Agency'** means the Chhattisgarh State Renewable Energy Development Agency;
 - l) **'Solar Meter or SM'** means a meter for used for accounting and billing of electricity generated by the Rooftop PV and other ground mounted Solar Power Generating Plant;

- m) **'Useful Life'** in relation to a unit of a generating station for a Rooftop PV and Ground mounted Solar Power Project including evacuation system shall mean the 25 years duration from the date of commercial operation (COD) of such generating facility
- n) **'Year'** means a financial year;

(2) All other expressions used herein although not specifically defined herein, but defined in the Act, shall have the meaning assigned to them in the Act. The other expressions used herein but not specifically defined in these Regulations or in the Act but defined under any law passed by the Parliament applicable to the electricity industry in the State shall have the meaning assigned to them in such law. Subject to the above, the expression used herein but specifically defined in this regulation or in the Act or any law passed by the Parliament shall have the meaning as is generally assigned in the electricity industry.

3. Scope and extent of application

These Regulations shall apply in all cases where tariff, for electricity generated from Rooftop PV and other grounded PV Solar Power Projects is to be determined by the Commission under Section 62 read with Section 86 of the Act. Provided that these Regulations shall apply subject to the fulfillment of eligibility criteria specified in regulation 4 of these Regulation.

4. Eligibility Criteria

(1) Rooftop PV and ground mounted Solar Power technologies, as approved by MNRE, fulfilling the technical requirement as outlined below:

(A) PV Modules and Inverter Systems

- (i) The Rooftop PV Solar Power Projects deploying PV modules and Inverter systems complying with relevant IEC/BIS standards and/or compliant with applicable standards as specified by Central Electricity Authority shall alone be considered to be technically qualified.
- (ii) The quality of equipment to be deployed should meet the guidelines for engineering design included in the standards and codes listed in the relevant ISI and other standards,

(B) Eligible Project Capacity

Rooftop PV Solar Power Projects, with a capacity of 50 kW and above and upto 1MW, subject to fulfillment of other technical requirements, shall alone be considered to be technically qualified.

(C) Grid Connectivity

- (i) Subject to fulfillment of other technical requirements, Rooftop PV and other grounded PV Solar Power Projects connected to the distribution network at voltage levels 33kV and below shall alone be eligible for generic tariff determined for such projects under these Regulations

SPV Capacity	Type	Evacuation level
50 kW – 100 kW	Roof top/ ground	Min 415V, 3 Phase, 50 Hz
101 kW – 1000 kW	mounted	Min 11 KV, 3 Phase, 50 Hz

Provided that if the installed capacity of the SPV project is more than the contracted load with licensee than the developer shall bear the applicable infrastructure augmentation/development charges, if any according to the provisions of prevailing Supply Code to facilitate the concern licensee for power evacuation.

- (ii) In general the requirements specified by CEA for connectivity would be applicable.
- (iii) Connectivity with distribution system of the licensees will be carried out by distribution licensee in the presence of representative from distribution licensee, Chef Electrical Inspector and State agency.

(D) Metering Arrangement

- (i) Metering requirements shall be as per CEA Regulations on "Installation and Operation of Meters".
- (ii) The metering is required to measure the solar gross generation, consumer load consumption, export of energy to the grid and import of energy from the grid besides measurement of AC system voltages and currents, frequency etc.
- (iii) Necessary changes in the proposed metering scheme to accommodate for required DG sets and/or battery inverter etc., as per need of solar developer may be adopted without affecting the security and sealing of complete metering system besides all cabling and switchgear from solar panel to the solar meter(SM).
- (iv) The Grid Meter (GM) and Solar Meter (SM) shall be interface type as envisaged in the CEA metering regulations. These meters may also comply the Time of Day (ToD) requirements so as to accommodate this type of metering in future course of

time. Also the SM would record net solar energy export reading indicated as SE(N).

- (v) Interface meters (main meter) shall be installed and maintained by the distribution licensee for and at the cost of the project developer connected to distribution licensee.

(E) Communication interface and Data Acquisition system

- (i) The communication must be able to support real time data logging, Event logging, Supervisory control, Operational modes and Set point editing. The parameters to be measured and displayed continuously include Solar system temperature, Ambient temperature, Solar irradiation/isolation, DC current and Voltages, AC injection into the grid (one time measurement at the time of installation), efficiency of the inverter, Solar system efficiency, Display of I-V curve of the solar system, any other parameter considered necessary by supplier of the solar PV system based on prudent practice. Data logger system must record these parameters for study of effect of various environmental & grid parameters on energy generated by the solar system and various analysis would be required to be provided through bar charts, curves, tables, which shall be finalized during approval of drawings.
- (ii) The communication interface shall be an integral part of inverter and shall be suitable to be connected to local computer and also remotely via the web using either a standard modem or a GSM / WiFi modem. The project developer must install all the required hardware to have this web based Supervisory Control and Data Acquisition (SCADA) operational such that the system can be monitored via the web from distribution company office. Also, full fledged SCADA is required to be installed by the developer.

(F) Power Quality Requirements

- (i) **DC Injection into the grid:** The injection of DC power into the grid shall be avoided by using an isolation transformer at the output of the inverter.
- (ii) **Harmonics on AC side:** The limits for Harmonics on AC side would be as stipulated under relevant CEA Regulations,
- (iii) **Voltage variation:** The voltage unbalance at HV side shall be governed according to relevant CEA Regulations.
- (iv) In addition to disconnection from the grid on no supply, under and over voltage conditions, PV systems shall be provided with adequate rating fuses, fuses on inverter input side (DC) as well as output side (AC) for overload and short circuit

protection and disconnecting switches to isolate the DC and AC system for maintenance.

- (v) Fuses of adequate rating shall also be provided in each solar array module to protect them against short circuit.
- (vi) Manual Disconnection Switch: In order to avoid possibility of malfunctioning with the automatic disconnection system of the inverter, manual disconnection switch besides automatic disconnection to grid would also be provided to isolate the grid connection by distribution licensee's personnel and to carry out any maintenance. This switch shall be locked by the distribution licensee's personnel during the planned shutdown of the distribution licensee's feeder. Locking of the switch may be required only under shutdown.
- (G) Any other generators operating in parallel to the off-grid SPV shall not be eligible for tariff specified under these Regulations.
- (H) The project developer shall ensure compliance safety standards as prescribed by the Central Electricity Authority (CEA).

(2) Solar roof top and ground mounted power projects which fulfil the requirements of captive generating plant as prescribed in the Electricity Rules, 2005, shall only be eligible for generic tariff specified according to these Regulations.

(3) Tariff for Off Grid Solar Photovoltaic (Off-grid SPV) power plant, either roof top or ground mounted, under these Regulations shall be applicable for MNRE, approved projects which are installed in phase -1 under JNNSM with capital assistance from Central Govt. as well as State Govt., The projects should qualify as captive generating plant as mandated in the Electricity Rules, 2005. Projects installed in Government hospitals and health centres, other hospital and health centre of any private charitable organization, Government and Government aided schools and academic institutions, Government offices and organizations, any housing complex already promoted for this purpose by MNRE or State agency for the development of renewable sources, local bodies like municipalities, panchayats and cooperative societies of consumers located in the same premises and other non-domestic installations.

5. Control Period or Review Period

The Control Period or Review Period under these Regulations shall be of three years, from 01.04.2013 to 31.03.2016.

6. Tariff period

- (1) The tariff period for Rooftop PV Solar Power Projects shall be twenty five (25) years from the date of commercial operation of the solar power generating systems.
- (2) Tariff period under these Regulations for existing project shall be considered from the date as mutually agreed between project developer and distribution licensee.
- (3) Tariff determined as per these Regulations shall be applicable for the entire duration of the Tariff Period as stipulated under Clause 6(1).

7. Tariff

- (1) Applicable tariff for new project will be 50% of the generic levelled tariff determined for Solar PV based Power Projects for relevant year as per provisions of the Chapter 7 of the Chhattisgarh State Electricity Regulatory Commission (Terms and conditions for determination of generation tariff and related matters for electricity generated by plants based renewable energy sources) Regulations, 2012.
- (2) Applicable tariff for existing project will be 50% of the generic levelled tariff determined for Solar PV based Power Projects for relevant year as per provisions of the Chapter 7 of the Chhattisgarh State Electricity Regulatory Commission (Terms and conditions for determination of generation tariff and related matters for electricity generated by plants based renewable energy sources) Regulations, 2012.
- (3) Tariff determined under these Regulations shall be generic levelled tariff.
- (4) The Commission vide Order dated May03, 2013 in Suo-Motu Petition No. 18 of 2013 has specified generic levelled tariff for Solar PV based Power Projects achieving CoD in the year 2013-14. Accordingly tariff for existing projects as well as achieving CoD in FY 2013-14 will be Rs. 4.35 per kWh for the solar PV plants. Developers will have to execute long term PPA for its useful life with distribution companies in the State. Tariff for the projects commencing CoD after 2013-14 will be governed through subsequent Orders.

8. Billing methodology

- (1) Distribution licensee shall bill to the consumer, in whose premises project is installed, for power supplied by it, in accordance with tariff applicable to the consumer category

- (2) Distribution licensee shall pay to the project developer for the energy received from the project at tariff specified in Clause (7) of these Regulations.
- (3) Not less than fifty one percent of the aggregate net electricity generated in such plant, determined on an annual basis, should be consumed for the captive use. Annual energy injection by the projects to the distribution system shall not be more than 49% of the annual net generation. In case the annual energy injection by project is more than 49%, the excess energy supplied to distribution licensee shall not qualify for export of energy and no payment will be made for such excess energy.

9. Late Payment Surcharge

- (1) In case the payment of any bill for charges payable under these Regulations is delayed by a distribution licensee beyond a period of 30 days from the date of billing, a late payment surcharge at the rate of 1.25% per month or the part thereof on outstanding amount shall be levied by the project.
 - (2) Late payment surcharge for the retail consumer shall be recoverable as per the provisions of relevant tariff order.
10. Power procured by distribution licensee from such projects, which are governed by these regulations,, shall qualify for their renewable purchase obligation.

Only the quantum for which payment has been made by distribution licensee shall qualify for RPO. The developers governed under these regulations.

11. Power to remove difficulties

If any difficulty arises in giving effect to these Regulations, the Commission may, of its own motion or otherwise, by an order and after giving a reasonable opportunity to those likely to be affected by such order, make such provisions, not inconsistent with these regulations, as may appear to be necessary for removing the difficulty

By the Order of the Commission

**(P.N. Singh)
Secretary**