

CE/Comm/GIRREGS Regulations 2019/

No 02184

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**COMMERCIAL CIRCULAR No. 322**

**SUB:** Connectivity to the Distribution network of MSEDCL for eligible consumers installing Rooftop Renewable Energy Generating Systems in his premises under MERC (Grid Interactive Rooftop Renewable Energy Generating Systems) Regulations, 2019----- Procedure for Application, methodology for Metering & Billing, etc.

**REF.:** (1) The Electricity Act, 2003 & all other enabling provisions.  
(2) MERC (Grid Interactive Rooftop Renewable Energy Generating Systems) Regulations, 2019  
(3) CEA (Technical Standard for Connectivity of the Distributed Generation Resources) Regulations, 2013  
(4) CEA (Measures relating to Safety and Electric Supply), Regulations, 2010.  
(5) Maharashtra Electricity Regulatory Commission (State Grid Code) Regulations, 2006.

**1. Preamble**

- 1.1 In Maharashtra, there is a huge potential of Renewable energy sources such as Wind, Solar, Biomass including bagasse, bio-fuel, urban or Municipal Solid Waste, Mini, Micro and Small Hydro; for generation of electricity. The Government of Maharashtra in co- ordination with MEDA and MSEDCL has always encouraged and promoted development of generation of electricity from renewable sources by providing suitable measures.
- 1.2 MERC has notified MERC (Grid Interactive Rooftop Renewable Energy Generating Systems) Regulations, 2019 and accordingly this circular is being issued for providing guidelines on implementation for installation of Renewable Energy Generating System on Rooftop or any mounting structure by existing/new consumers of MSEDCL in their premises.

**2. Definitions:**

In MERC (Grid Interactive Rooftop Renewable Energy Generating Systems) Regulations, 2019, has included and defined important terms as:

**2.1 "Eligible Consumer"** means a consumer of electricity in the area of supply of the Distribution Licensee who uses or intends to use a Renewable Energy Generating System having a capacity less than 1 MW, installed on a roof-top or any other

mounting structure in his premises, to meet all or part or no part of his own electricity requirement, and includes a Consumer catering to a common load such as a Housing Society:

Provided that such Generating System may be owned and/or operated by such Consumer, or by a Distribution Licensee or third party leasing such System to the Consumer:

Provided further that in case of Net Billing Arrangement, the capacity limit of 1 MW shall not apply"

- 2.2 **"Inter-connection Point"** means the interface of the Renewable Energy Generating System with the outgoing terminals of the meter / Distribution Licensee's cut-outs/ switchgear fixed in the premises of the Eligible Consumer:

Provided that, in the case of an Eligible Consumer connected at the High Tension ('HT') level, the 'Inter-connection Point' shall mean the interface of the Renewable Energy Generating System with the outgoing terminals of the Distribution Licensee's metering cubicle placed before such Consumer's apparatus."

- 2.3 **"Net Metering Arrangement"** means an arrangement under which a Renewable Energy Generating System with Net Meter installed at an Eligible Consumer's premises, delivers surplus electricity, if any, to the Distribution Licensee after setting off the quantum of electricity supplied by such Licensee during the applicable Billing Period;"

- 2.4 **"Net Meter"** means a bi-directional energy meter, which is capable of recording both the import and export of electricity;

- 2.5 **"Net Billing Arrangement"** means an arrangement under which energy generated by Renewable Energy Generating System is purchased by the Distribution Licensee and the Distribution Licensee raises the bills on the consumer for his consumption at the approved grid tariff, after giving credit for total generated electricity against a predetermined tariff;

- 2.6 **"Premises"** means and includes roof-tops or any areas on the land, building or infrastructure or part or combination thereof in respect of which a separate meter has been provided by the Distribution Licensee for the supply of electricity;"

- 2.7 **"Renewable Energy Generating System"** means the Renewable Energy power system with or without energy storage installed on a Consumer's premises, and owned and/or operated by such Consumer or by a Distribution Licensee or a third party, that uses Renewable Energy for conversion into electricity;"

- 2.8 **"Renewable Energy Generation Meter"** means an energy meter used for measuring the energy generated by the Renewable Energy Generating System for the purpose of accounting and billing:

*Provided that a separate Renewable Energy Generation Meter shall be installed for each source of Renewable Energy in case of hybrid or combination of such sources;*

- 2.9 ***“Renewable Energy sources”*** means the renewable sources or combination of such sources, such as Mini, Micro and Small Hydro, Wind, Solar, Biomass including bagasse, bio-fuel, urban or Municipal Solid Waste as defined in the Maharashtra Electricity Regulatory Commission (Terms and Conditions for Determination of Renewable Energy Tariff) Regulations, 2019, as amended from time to time, and such other sources as are recognized or approved by the Ministry of New and Renewable Energy, Government of India;”

The general guidelines for implementation of MERC (Grid Interactive Rooftop Renewable Energy Generating Systems) Regulations, 2019 are as under:

### **3. Scope & Applicability**

These Regulations cover three different kinds of arrangements:

- a) Net Metering Arrangements;
- b) Net Billing Arrangements;
- c) Grid Connected Renewable Energy Generating Systems connected behind the Consumer's meter, who have not opted either for Net Metering Arrangement or Net Billing Arrangement.

### **4. General condition under Net-Metering & Net-Billing Arrangement**

- 4.1 The Eligible Consumer of all categories may set up the Renewable Energy Generating System under the Net Metering Arrangement or Net Billing Arrangement.
- 4.2 Net Metering Arrangement or Net Billing Arrangement shall be permitted Distribution Transformer-wise or feeder wise 'first come, first serve' basis to Eligible Consumers who have installed or intend to install a Renewable Energy Generating System connected to the Network of MSEDCL.

### **5. Individual Project capacity and Capacity limits at Distribution Transformer level**

- 5.1 The minimum size of the Renewable Energy Generating System that can be set up under Net Metering Arrangement and Net Billing Arrangement would be 1 kW.
- 5.2 The capacity of the Renewable Energy Generating System to be connected at the Eligible Consumer's premises under any of the three arrangements shall not exceed the Sanctioned load (in kW) or the Contract Demand (in kVA) of the Consumer, as applicable.

- 5.3 The maximum Renewable Energy Generating System capacity to be installed at an Eligible Consumer's premises shall be subject to the cumulative capacity of all Renewable Energy Generating Systems under Net Metering Arrangements and/or Net Billing Arrangements connected to a particular Distribution Transformer/feeder of the Licensee shall not exceed 70% of its rated capacity.

Provided that the variation in the rated capacity of the System within a range of five percent shall be allowed.

- 5.4 HT (11 kV and above) Consumers may install and connect Renewable Energy Generating System at their LT Bus Bar System:

Provided that, in such cases, the Net Meter shall be installed on the HT side of the Consumer's Transformer.

- 5.5 An Eligible Consumer may install or enhance the capacity of, or upgrade the Renewable Energy Generating Systems at different locations within the same premises:

Provided that the total capacity of such Systems within the same premises shall not exceed the capacity limits specified as above.

- 5.6 Consumers with pending arrears with the MSEDCL shall not be eligible for Net Metering Arrangement or Net Billing Arrangement under these Regulations.

## **6. Inter-connection with the Distribution Network**

- 6.1 The Renewable Energy Generating System can be connected with the outgoing terminals of the meter / MSEDCL's cut-outs/ switchgear fixed in the premises of the Eligible Consumer:

However, in the case of an Eligible Consumer connected at the High Tension ('HT') level, the interface of the Renewable Energy Generating System shall with the outgoing terminals of the MSEDCL's metering cubicle placed before such Consumer's apparatus.

## **7. Grid, Standards and Safety**

- 7.1 Inter-connection of the Renewable Energy Generating System with MSEDCL's network shall conform to the specifications, standards and other provisions specified in the CEA (Technical Standard for Connectivity of the Distributed Generation Resources) Regulations, 2013, the CEA (Measures relating to Safety and Electric Supply), Regulations, 2010, and the Maharashtra Electricity Regulatory Commission (State Grid Code) Regulations, 2006, or as may be specified in future
- 7.2 The Eligible Consumer may install a Renewable Energy Generating System with or without storage.
- 7.3 If an Eligible Consumer opts for connectivity with storage, the inverter shall have appropriate arrangement to prevent the power from flowing into the grid in the

absence of grid supply, and that an automatic as well as manual isolation switch shall also be provided.

- 7.4 The Eligible Consumer shall be responsible for the safe operation, maintenance and rectification of any defect in the Renewable Energy Generating System up to the point of Net Meter or Renewable Energy Generation Meter.
- 7.5 The Renewable Energy Generating System must have appropriate protection for islanding the RE generating system from the network of MSEDCL to prevent any feeding into the grid in case of failure of supply or grid and the same shall be verified / certified by concern MSEDCL Testing division in consultation with concerned subdivision/Circle as per applicable IEC/IEEE Technical Standards.
- 7.6 MSEDCL shall have the right to disconnect the Renewable Energy Generating System from its network at any time in the event of any threat of accident or damage from such System to its distribution system so as to avoid any accident or damage to it: Provided that MSEDCL, considering the criticality, may call upon the Consumer to rectify the defect within a reasonable time.
- 7.7 Every Renewable Energy Generating System shall be equipped with an automatic synchronization device: Provided that the Renewable Energy Generating System using inverter shall not be required to have separate synchronizing device, if it is inherently built into the inverter.
- 7.8 The Total Voltage Harmonic Distortion (THD) shall be within the limits specified in the Indian Electricity Grid Code (IEGC)/IEEE technical standards.
- 7.9 Grid Connected Renewable Energy Generating Systems connected behind the Consumer's meter, and not opting for either Net Metering Arrangement or Net Billing Arrangement, shall be allowed only after prior intimation as per Annexure-5 of Regulations: Provided that the Consumer shall be responsible for ensuring that all necessary safeguarding measures as specified by Central Electricity Authority (CEA) are taken.

## **8. Metering**

- 8.1 The Net Metering Arrangement shall include a single-phase or a three-phase Net Meter, as may be required, located at the point of inter-connection as ascertained by the MSEDCL.
- 8.2 All meters installed at the Renewable Energy Generating System shall comply with the CEA (Installation and Operation of Meters) Regulations, 2006.
- 8.3 All meters shall have Advanced Metering Infrastructure (AMI) facility with RS 485 (or higher) communication port.
- 8.4 Existing Meter in the premises of the Eligible Consumer shall be replaced by the Net Meter at the cost of the Consumer.
- 8.5 If the Eligible Consumer is within the ambit of Time-of-Day ('ToD') Tariff, the Net Meter installed shall be capable of recording ToD consumption and generation.

- 8.6 MSEDCL shall be responsible for the testing, installation, and maintenance of the metering equipment, and its adherence to the applicable standards and specifications.
- 8.7 Renewable Energy Generation Meter conforming to the applicable CEA Regulations to measure the energy generated from the Renewable Energy Generating System shall be procured by consumer. The Generation meter shall be maintained by MSEDCL.
- 8.8 The Net Meter and the Renewable Energy Generation Meter shall be installed at such locations in the premises of the Eligible Consumer as would enable easy access to the MSEDCL for meter reading.
- 8.9 Check Meter of appropriate class to be installed by the MSEDCL for the Renewable Energy Generation Meter for RE systems with capacity above 20 kW.
- 8.10 In case of Renewable Energy Generating System set up under Net Billing Arrangement, an additional Check Meter for the Renewable Energy Generation Meter of appropriate class shall be installed by the MSEDCL.

## 9. Procedure for Application and Registration

- 9.1 Procedure for Application for connectivity of Renewable Energy Generating System with MSEDCL's Network is given in Annexure-I & Application Form for installation of Renewable Energy Generating System under Net Metering Arrangement or Net Billing Arrangement in Annexure-II.
- 9.2 A consumer intending to set up a Renewable Energy Generating System or who has already installed such a System may submit the online Application Form available on the MSEDCL's website and submit all technical details of the System and pay the fee online.
- 9.3 MSEDCL shall register the Application on first come first served basis and acknowledge its receipt within three working days; or intimate the Applicant within that period of any deficiency or incompleteness.
- 9.4 MSEDCL's authorities for processing the applications are as under:

Voltage level	Threshold limit of Rooftop RE Generating system	Authority for processing the application.
230/240 V ( 1 Phase )	Less than 8 kW/40 A	Concerned sub- division office
400/415 V (3 Phase)	Up to 150kW/187 kVA	
11 kV and above	Above 150 KW/187 KVA	Concerned Circle office

- 9.5 The time limits for sanctioning the RE generating system is given in the Procedure of Application in Annexure-I which shall be followed scrupulously.

- 9.6 All applications and payment of fees shall be compulsorily allowed through web-based processing system by electronic means only.
- 9.7 All correspondence by the MSEDCL with the Consumer shall be through email and mobile only.

LT Consumer	Rs. 500 for consumer having Sanctioned Load or Contract Demand upto 20 kW and Rs 100 thereafter for every 20 kW or part thereof
HT Consumer	Rs 5,000/-

- 9.8 The approval for connectivity from the MSEDCL shall indicate the maximum permissible capacity of the System, and shall be valid for a period of 6 months from the date of approval, or such extended period as may be agreed to by the MSEDCL. If the Consumer fails to set up the Renewable Energy Generating System within the above stated period, then the approval shall be deemed to be cancelled, and the Consumer shall have to apply afresh.
- 9.9 If approval cannot be granted due to inadequate Distribution Transformer capacity or any other technical constraints, the consumer should be informed through written communication also, specifying the reasons of the rejection: Provided further that the application may be considered, in chronological order of seniority and if the Consumer so opts, after such capacity becomes available/technical constraint is rectified.
- 9.10 If the application is rejected due to defects in the ambit of consumer, a notice to rectify the same shall be served to the consumer to rectify the defects within 15 days or such longer period as may be necessary, the deficiencies.
- 9.11 The Executive Engineer (O&M) Division and Sub Divisional Officer (O&M) shall be the nodal officer for implementation from application to billing. SE (O&M), MSEDCL to take monthly review and to co-ordinate the implementation of connectivity of Rooftop Solar PV systems issued by the concerned authorities as above.

## **10. Connection Agreement**

- 10.1 The eligible consumer after the approval of the RE generating system, shall have to execute the connection agreement under Net-Metering or Net-Billing as the case may be in the format Annexure-3 or Annexure-4 respectively.
- 10.2 The Connection Agreement shall remain in force for twenty years.
- 10.3 Eligible Consumer may terminate the Agreement at any time by giving 90 days' notice to the MSEDCL: Provided further that the MSEDCL may terminate the

Agreement by giving 30 days' notice, if the Eligible Consumer breaches any term of the Agreement and does not remedy such breach within 30 days, or such other longer period as may be provided, of receiving notice from the MSEDCL of such breach, or for any other valid reason to be communicated in writing: Provided also that the MSEDCL may terminate the Agreement by giving 15 days' notice in case the consumer fails to pay his dues in a timely manner or indulges in any malpractices: Provided also that the Agreement may be terminated at any time by mutual consent.

#### **11. Energy Accounting and Settlement- Net Metering Arrangement**

- 11.1 The energy accounting and billing shall be carried out by the Nodal Officer/Billing In charge.
- 11.2 The accounting of electricity exported and imported by the Eligible Consumer shall become effective from the date of connectivity of the Renewable Energy Generating System with the distribution network.
- 11.3 For each Billing Period the following information shall be made available on its bill to the Eligible Consumer-
  - a) Quantum of Renewable Energy generation recorded in the Renewable Energy Generation Meter in the billing period, including opening and closing balance;
  - b) Quantum of electricity units consumed by the Consumer in the billing period, including opening and closing balance;
  - c) Quantum of net billed electricity units, for which a payment is to be made by the Consumer;
  - d) Banked Energy and corresponding monetary compensation, adjusted in the billing period;
  - e) Renewable Energy generation units used by the MSEDCL for RPO compliance.
- 11.4 The energy generated by the Renewable Energy Generating Station shall be offset against the energy consumption of the consumer from the MSEDCL in the following manner:
  - a) If the quantum of electricity exported exceeds the quantum imported during the Billing Period, the excess quantum shall be carried forward to the next Billing Period as credited Units of electricity;
  - b) If the quantum of electricity Units imported by the Eligible Consumer during any Billing Period exceeds the quantum exported, the Distribution MSEDCL shall raise its invoice for the net electricity consumption after adjusting the credited Units;
  - c) The unadjusted net credited Units of electricity as at the end of each financial year shall be purchased by the MSEDCL at the Generic Tariff

approved by the Commission for that year, within the first month of the following year: Provided that, at the beginning of each Settlement Period, the cumulative quantum of injected electricity carried forward will be reset to zero.

- d) In case the Eligible Consumer is within the ambit of Time of Day (ToD) tariff, the electricity consumption in any time block, i.e. peak hours, off-peak hours, etc., shall be first compensated with the quantum of electricity injected in the same time block; any excess injection over and above the consumption in any other time block in a Billing Cycle shall be accounted as if the excess injection had occurred during off peak hours;
  - e) MSEDCL shall compute the amount payable to the Eligible Consumer for the excess Renewable Energy purchased by it as specified in Regulation 11.4 (c), and shall provide credit equivalent to the amount payable in the immediately succeeding Billing Cycle.
- 11.5 Grid support charges shall be levied on the generated energy under Net-Metering system: Provided that the consumers of all Categories having Sanctioned Load up to 10 kW shall be exempted from payment of Grid Support Charges for Net Metering systems.
- 11.6 If the Eligible Consumer leaves the system or changes the Supply Licensee, the excess electricity shall be:
- a) The unadjusted Units as on date of leaving the system or changing the Supply Licensee shall be compensated at the Generic Tariff, and adjusted along with the final bill settlement with the MSEDCL;
  - b) Any injection of electricity without entering into a new Net Metering Agreement with the MSEDCL shall be considered as inadvertent injection and shall not be paid for by the MSEDCL.

## **12. Energy Accounting and Settlement- Net Billing Arrangement**

- 12.1 Net billing is the arrangement where the Renewable Energy Generating Station is: a) Installed to serve a specific consumer, b) Connected on MSEDCL side or consumer side of the consumer meter, c) Selling entire power generated to MSEDCL under Power Purchase Agreement: Provided that if the Renewable Energy Generating Station is connected on the consumer side of the consumer meter, then the consumer shall have to replace the consumer meter with a Net Meter.
- 12.2 The accounting of electricity exported and imported by the Eligible Consumer shall become effective from the date of connectivity of the Renewable Energy Generating System with the distribution network.
- 12.3 For each Billing Period, MSEDCL shall make the following information available on its bill to the Eligible Consumer:
- a) Quantum of Renewable Energy generation recorded in the Renewable Energy Generation Meter, including opening and closing balance;

- b) Quantum of electricity units consumed by the Consumer in the billing period, including opening and closing balance;
  - c) Amount of billing credit, if any, in the billing period, including opening and closing balance;
  - d) Renewable Energy generation units used by MSEDCL for RPO compliance.
- 12.4 MSEDCL shall enter into Power Purchase Agreement at the APPC approved for the respective period by the Commission: Provided that the APPC stipulated in the Power Purchase Agreement shall be constant for the entire duration of the Agreement.
- 12.5 The equation to raise the bill to the consumer is
- Energy Bill of consumer = Fixed Charges + other applicable charges and levies +  $(E_{DL} \times T_{RST}) - (E_{RE} \times T_{PPA}) - \text{Billing Credit};$
- [ Where  $E_{DL}$  means the energy units supplied (i.e., Gross Electricity Consumption by the Consumer) by MSEDCL as recorded by the consumer meter for the billing period.  $T_{RST}$  means the applicable retail supply tariff of the concerned consumer category as per the applicable retail supply Tariff Order of the Commission.  $E_{RE}$  means the energy units recorded for the billing period by the Renewable Energy Generation Meter.  $T_{PPA}$  means the energy charges as per the Power Purchase Agreement signed between the Consumer and MSEDCL].
- 12.6 In case the Consumer installs Renewable Energy Generating Systems behind the Consumer's meter without prior intimation to MSEDCL, then the total additional liabilities in terms of additional Fixed Charges or Demand Charges and any other Charges for such systems, shall be levied at twice the determined rate for such period of default.

### **13. Energy Accounting during meter defect/failure/burnt**

- 13.1 In case of defective/failure/burnt condition of any meter, the Consumer shall replace the meter. MSEDCL shall carryout testing and installation of such meter.
- 13.2 The electricity generated by the Renewable Energy Generating System during the period in which the meter is defective shall be determined based on the readings of the Check Meter: Provided that if the Check Meter is not installed, then the electricity generated shall be considered equal to the average monthly generation in the last one year or such shorter period as available.

### **14. Incentives & Penalties:**

- 14.1 Eligible consumer under these Regulations shall be eligible for incentives, which may be applicable as per MERC Tariff Order for MSEDCL consumer; only to the extent it uses MSEDCL supply.

- 14.2 The Eligible consumer shall be liable to pay the penalty charges which may be applicable as per MERC tariff order, amended from time to time, if the power factor / THD is not maintained at required level as per State Grid Code.
- 14.3 In case of default in payment of any of the charges otherwise payable by a eligible consumer / person, MSEDCL may terminate the connection agreement by giving 15 days' notice to such consumers. Upon termination of the Agreement, the eligible consumer shall disconnect forthwith its Renewable Energy Generating System from the MSEDCL's Network.

All the field officers are requested to take necessary action accordingly.

 21/01/2020  
Chief Engineer (Commercial)

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