

**Standard Operating Procedure (SoP)
For
Implementation of Net Metering (NM),
Virtual Net Metering (VNM) and Group
Net Metering (GNM) Mechanism**

Contents

I. Definitions	3
II. Maximum capacity of Renewable Energy System and Consumer Registration/Applications	3
III. Procedure For Application	5
a. Net Meter Application Submission	5
b. Technical Feasibility	5
c. Work Completion and Joint Inspection Report	5
d. Net Metering agreement and Permission	6
e. Commissioning and Meter installation	6
IV. Billing and Payment	7
V. Energy Accounting and Settlement	8
VI. Penalty or Compensation	10
VII. Dispute Resolution	10
VIII. Regulatory Context	10
IX. General Instructions for the Applicant	10
Annexure-I: Delegation of Power	11
Annexure-II: Timeline & responsibility	12

I. Definitions:

- a) "Net-metering" means a mechanism whereby solar energy exported to the Grid from Grid Interactive Solar Photovoltaic system of a Prosumer is deducted from energy imported from the Grid in units (kWh) to arrive at the net imported or exported energy and the net energy import or export is billed or credited or carried-over by the distribution licensee by using a single bidirectional energy meter for net-metering at the point of supply.
- b) "Group Net Metering" means a mechanism whereby surplus energy generated/ injected from a Renewable Energy System or Battery Energy Storage System (BESS) charged through Renewable Energy System is exported to the grid through Net Meter and the exported energy is adjusted in more than one electricity service connection(s) of the same consumer located within the same distribution licensee's area of supply.
- c) "Virtual Net Metering" means a mechanism whereby entire energy generated/ injected from a Renewable Energy System or Battery Energy Storage System (BESS) charged through Renewable Energy System is exported to the grid from renewable energy meter/gross meter and the energy exported is adjusted in more than one electricity service connection(s) of participating consumers located within the same distribution licensee's area of supply.
- d) "Eligible Consumer" means a consumer of electricity in the area of supply of the Distribution Licensee, who uses a self-owned or third party owned solar power project, to offset part or all of the consumer's own electricity requirements.
- e) "Prosumer" means a Consumer of electricity in the area of supply of the Distribution Licensee, who uses a self-owned or third party-owned Solar Power System installed at the Consumer's premises, to offset part or all of the Consumer's electricity requirements and can also inject electricity into the Grid using same point of supply.

II. Maximum capacity of Renewable Energy system and Consumer Registration/ Applications:

- a) The capacity of the renewable energy system under Net Metering (NM)/ Group Net Metering (GNM) or Virtual Net Metering (VNM) framework to be installed by any consumer / applicant shall be allowed upto five Hundred kilowatt (500 kW) or upto the sanctioned load, whichever is less, as long as it is within the limit of the 75% of the associated transformer capacity of the Distribution system. The capacity of the Renewable Energy System under GNM or VNM frame work shall not be less than 5 kW and more than 500 kW. Virtual Net Metering framework shall be applicable for consumers under "Domestic" and "Specified Public Purpose" category as per OERC Distribution (Condition of Supply) Code, 2019 as amended from time to time, and also for the offices of Government/Local authorities.
- b) For renewable energy system under framework, the capacity of the system should not be less than 5kW and shall be primarily for its own consumption and limited to 75% of the associated transformation capacity of the distribution system.
- c) If a consumer intends to install a Solar PV System of a capacity that exceeds the Contracted Load, the consumer shall submit an application for Contracted Load enhancement (limited to 500 kW) along with the Solar Net Metering application. The Contracted Load enhancement application will be processed by the TPCODL as per standard procedure for such applications.

N.B: The aforesaid capping is undertaken as specified under OERC Net Metering Order No 1131 dated 19/08/2016 amended up to 05/05/2022, as amended from time to time.

- d) A third party developer/installer cannot avail Group Net Metering facility. In case of Virtual Net Metering arrangement, a third party developer/installer of the Renewable Energy System can also generate electricity and inject such power to the grid for offsetting the consumption of the participating consumers. The energy injected to the grid by such arrangement should be net off considering the auxiliary consumption of the third party developer/installer. However, the third party

developer/installer of such system under VNM should have agreement with the participating consumers.

- e) Since both Net Metering and Virtual Net Metering (VNM) are two different mechanisms and require different metering arrangements at consumer premises, a consumer cannot opt for both Net Metering and Virtual Net Metering arrangements at the same point of supply. A Net Metering consumer would be allowed to apply for Group Net Metering (GNM) and the adjustment of energy consumption of the consumer shall be done for all the locations (within same Distribution licensee's area of supply) having service connections where energy is consumed. However, the Net Metering consumer shall cease to exist as a Net Metering consumer, once it is recognized as a Group Net Metering consumer. In case a consumer opts for Group Net Metering, settlement shall be done considering the consumption at all locations having different service connections of the same consumers. In case a consumer opts for Virtual Net Metering, settlement shall be done considering the consumption of all the participating consumers. In both VNM & GNM arrangements, excess energy generation (above 90%) at the end of the financial year would be considered as free energy and shall not be offset against consumption.
- f) The Eligible consumer(s)/applicant(s) shall make an application to Distribution Licensee for Net Metering (or) Virtual Net Metering (or) Group Net Metering in the prescribed format along with non-refundable fee of Rs. 500 (Five Hundred Rupees) inclusive of all applicable taxes, which includes applicable taxes, as registration and feasibility analysis fee for the proposed installed capacity. All the necessary forms and formats are enclosed with the document.

III. PROCEDURE FOR APPLICATION:

The key authority overseeing the Solar Net Metering process is the Divisional Estimator, who will serve as the primary contact and central coordinator (SPOC) for all related matters.

a) Net Meter Application Submission

The Eligible consumer(s)/applicant(s) shall make an application to TPCODL for Net Metering (or) Virtual Net Metering (or) Group Net Metering in the prescribed format along with non-refundable fee of Rs. 500 (Five Hundred Rupees) inclusive of all applicable taxes, which includes applicable taxes, as registration and feasibility analysis fee for the proposed installed capacity. The Eligible Consumer(s) who propose to install a Solar PV System under the above arrangements shall apply to the **CRE/designated official** as specified by TPCODL with all documents as mentioned below

- Completely filled Form-1/-1V/-1G of OERC Net Metering Order by Eligible consumer (Available at all offices of TPCODL & Website- www.tpcentralodisha.com)
- Copy of latest electricity bill with all dues cleared.
- Any Govt. approved ID proof.

On submission of application form along with all necessary documents, general screening will be done by the designated Officers and application shall be registered with acknowledgement No and processing fee Rs.500 will be received from the consumer. The acknowledgement No & consumer No should be mentioned in the MR issued. The copy of MR should be attached with the submitted documents.

The designated Officer shall maintain a database mentioning details such as date of receipt of application, Name of consumer, consumer No, Tariff, Solar PV System Capacity, name of vendor, acknowledgement no, agreement date, permission no & date, date of charging etc. He should keep a track of the application. The monthly report to be submitted to concerned division for record. The concerned division should maintain the database of all the Solar PV System irrespective of CD.

b) Technical Feasibility

After getting complete application from consumer, the same is to be forwarded to the following designated officer (Table 1.0) of TPCODL for **technical feasibility study**, in the format enclosed at Form-2 within ten (10) working days of receipt of letter. In case of any deficiency in documents, it shall be communicated to the customer indicating how the application is deficient and should comply the deficiencies within 30 days.

Consumer CD	Designated Officer For technical feasibility / metering arrangement Study
Up to 10 KW	JE (Dist) or SDO (Engg)
From 10 KW up to < 50 KW	SDO (Engg) or (Comm)
From 50KW up to < 500 KW	Divisional Manager (Dist.) and (MRT)
All 33 KV Consumers	Circle Incharge (Dist.) and (MRT)

Table 1.0

c) Net Metering agreement

Upon receiving the completed application, along with all necessary supporting documents and the technical feasibility report, and if the system is deemed technically feasible, the assigned officer (refer to Table-2.0) will proceed to enter into a standard **Net Metering agreement** (the agreement must be printed in TPCODL office) with the consumer or their authorized representative.

Consumer CD	Designated officer (for signing of Standard agreement)
Up to 10 KW	SDO (Engg) for permission and SDO(Engg) /(Comm) for agreement signing
From 10 KW up to < 50 KW	Divisional Manager
From 50KW up to < 500 KW	Divisional Manager
All 33 KV Consumers	Circle Incharge

IV. Table 2.0

This approval will be valid for 90 days from the date of issue of the permission for NM and GM, and 220 days from the date of issue of permission for VNM & GNM. The Solar PV system has to be commissioned within this period, failing which the approval will be treated as cancelled

d) Work Completion and Joint Inspection Report

After, getting the Net Metering Permission from TPCODL, the eligible consumer shall install the proposed Solar PV Power Plant through the designated vendor following all given technical specifications, regulations and guidelines. After completion of installation consumer/vendor/developer shall intimate the designated officer, who shall verify the standard of installation as mentioned in the permission letter issued earlier and shall issue a jointly signed work completion and Inspection Report.

Work Completion and Inspection Report report (Form-4) (indicating details of equipment, protection etc.) signed by both consumer, solar developer and TPCDOL officer (as in Table 3.0).

Consumer CD	Designated Officer for Joint site Inspection
Up to < 10 KW	JE (Dist) or SDO (Engg) and SDO (MRT)
From 10 KW up to < 500 KW	SDO (Dist) or EE (Dist) and EE (MRT)
All 33 KV Consumers	EE (Dist) or SE (Dist) and EE (MRT)

Table 3.0

Required Documents

1. Approval from Electrical Inspector for the said Solar PV Power Plant (Solar PV Plant Capacity 50 KVA and above)/ Inspection report from Designated Safety Officers of TPCODL for below 50KVA Solar PV Power Project.
2. Single line schematic diagram in respect of system facility.

3. Certificates/Ratings/ test reports of all project equipment (Inverter, PV Module and Cable & Connector etc.).
4. Copy of drawing and diagrams showing important equipment, protection logic (specifically islanding Protection) and control features.
5. Copy of drawing and diagrams showing details/specification of Earthing, lightning protection and other safety equipment as per applicable standards and regulations.
6. Test Certificate of bi-directional meter/Net Meter from MRT division, TPCODL(if meter provided by the applicant/consumer)
7. NOC and system study from OPTCL and GRIDCO if the Solar PV Power Plant is synchronized to 132 KV feeder and above / Consumer is availing PS through 33KV dedicated feeder emanating from OPTCL Grid irrespective of load.

N.B : Consumer and system developer should certify all the documents submitted. The maximum time frame for completion of installation work in all respect by the applicant is 60 days from the date of issue of permission for NM & GM and 180 days from the date of issue of permission for VNM & GNM .

In the meantime consumer/Vendor shall approach concerned designated officer of TPCODL (Table 1.0) for testing of meter/other equipment procured by him. The designated officer shall send the meter/other equipment to central MRT lab, TPCODL with necessary meter testing fees as applicable following prevailing guidelines. If the consumer intends to install TPCODL purchased meter/other equipment he shall submit a declaration. The cost of meters, cost of connectivity and all other related cost for setting up the meters etc. have to be borne by the eligible consumers as applicable following prevailing guidelines.

e) Commissioning and Meter installation

After ensuring compliance and addressing any deficiencies identified by site inspecting officers with relevant standards (BIS/IS/IEEE/IEC), MNRE/IEGC/OGC/CEA and OERC net metering regulations and amendments, the Designated Officer (Table 3.0) will forward the documents to the designated officer (Table-4.0) for the issuance of the Solar PV system's synchronization/charging order.

Consumer CD	Designated Officer for Charging
< 10 KW	SDO (Engg)
From 10 KW up to < 500 KW	EE (Dist)/ Divisional Manager
All 33 KV Consumers	Circle Incharge

Table 4.0

The Solar PV Power Plant must be commissioned and synchronized within 7 days after the consumer submits the work completion report and necessary documents.

- a. The location and installation of meter(s) associated with the RTS system shall be in accordance with CEA (Installation and Operation of Meters), Regulations, 2006 as amended from time to time. All equipment and net meters must be properly sealed by the responsible MRT in accordance with departmental procedures.
- b. Two meters would have to be installed by the solar power generator (Consumer). One is for measuring solar generation (solar Meter) and the other one is for Import/Export measurement (Net Meter). The first meter, the solar generation meter, has to be installed at the generator end after the inverter at the ground floor of the premises to facilitate easy access for meter reading.
- c. In case of multiple solar generations sources in a single premise, separate solar meters would have to be installed by the solar power generator for each of the sources with facility for installation of modem along with all the solar meters for remote recording of monthly generation data through

GSM or GPRS to the Divisional Engineer . As an alternate, the consumer can provide the soft copy of dump data of solar generation meter in .xml / cdf / dmd / emd / mrd format through email to the concerned Divisional Engineer in the first day of succeeding month. Notwithstanding the above provision of remote meter reading, manual reading can also be taken by the designated Officers of TPCODL as per consumer CD in case of emergency or if situation so warrants arising out of technical deficiencies or force majeure situations. In that case the manual reading shall be treated as final reading for all purposes.

- d. The cost of meters, cost of connectivity and all other related cost for setting up the meters etc. have to be borne by the eligible consumers under guidance of TPCODL. Either consumer or TPCODL shall procure the meter. TPCODL shall test and install the same.
- e. For easier data acquisition for billing in TPCODL, AMR modem to be fitted with Bidirectional or Net Meter/ Solar generation meter by the consumer. The monthly meter reading for both the net meter and solar generation meter (s) shall be taken by the designated Officers of TPCODL as per consumer CD. He shall submit the same to concerned Divisional Manager . This shall form the basis for commercial settlement. The concerned Divisional Manager of TPCODL shall furnish a copy of solar energy generated (monthly) to the consumer (who is not defined as an obligated entity from the rooftop solar PV projects under net-metering arrangement) with a copy to TPCODL Head Office (DSM Cell).

IV. Billing and Payment:

- a. The consumer shall receive a monthly net import/export bill indicating either net export to the grid or net import from the grid.

“Import”- means energy drawn from the TPCODL network.

“Export”- means energy injected into the TPCODL network.

- b. Concerned designated Officers of TPCODL as per prevailing system shall capture present reading of Generation meter provided at solar side. They shall submit the same to concerned Divisional Manager for further processing. Solar side meter reading is used only for MIS report (to measure the quantum of solar generation) and shall not be used for monthly billing purpose.
- c. The designated Officers of TPCODL as per as per prevailing system shall capture both import & export energy and other billing parameters recorded by the Net Meter/ bi-directional meter. They shall submit the same to concerned Divisional Manager for further processing. Concerned divisional Manager is responsible for preparation of monthly energy bill and serving to the consumer.
- d. In case of net import bill, i.e. if any electricity is supplied by the TPCODL to the consumer, the Divisional Manager shall raise invoice for the net electricity imported after taking into account. Any carry forward of export energy from previous billing periods shall be within the same financial year only. The net energy imported has to be billed by the TPCODL as per the tariff in force applicable to that category of consumers.
- e. In case of export of energy in excess of the consumption of the consumer in a billing cycle shall be carried forward to the next billing cycle for adjustment against next month's import bill if any. No interest will be payable on this carry forward energy amount.
- f. In case of defective net metering/ bi-directional , Virtual Net Metering and Group Netmetering, the followings shall apply:
 - i. If the solar net-metering facility has been in service for more than 12 months the active energy import, active energy export and active energy net import readings of the corresponding period of the previous year will be taken for billing purpose by the TPCODL.
 - ii. If the solar net-metering facility has been in service for less than 12 months. The net active energy to be billed by TPCODL per month = (Average energy consumption (imported active energy) during the last three billing cycles prior to the installation of the bi-directional/ net meter) - KWP of Solar PV generator x 124
- g. For any other clarification regarding billing Net metering order and its amendments may be referred.

V. Energy Accounting and Settlement:

Any energy injected prior to commissioning of the Rooftop solar installation shall be deemed as inadvertent power. The consumer/prosumer of Solar PV plant is not eligible to receive any monetary compensation/adjustment of energy generated from RTS system for such inadvertent power.

Meter readings shall be taken as per the applicable billing cycle as provided in the OERC Distribution (Condition of Supply) Code, 2019 and subsequent amendments thereof;

The details of Energy Accounting and Settlement that shall be followed is given below:

(a) For Net Metering:

- i. Electricity generated from a Solar PV project shall be capped cumulatively at 90% of the electricity consumption by the eligible consumer at the end of a settlement period which ends with the financial year to allow for seasonal variation in generation. In case Commercial Operation Date (COD) occurs in between the financial year, the 90% capping shall be on the energy consumed by the consumer from the date of COD to the end of the financial year.
- ii. The carry forward of excess energy generation will be allowed from one billing cycle to the next billing cycle till the end of the same financial year. Any excess generation (above 90 per cent) at the end of the financial year would be considered as free energy and shall not be offset against the consumer's consumption. There shall not be any carry forward of energy to the next financial year.
- iii. The consumer/prosumer shall be eligible for normal ToD benefit for imported quantum of energy as per the order of the Commission prevailing at that time.

(b) For VNM: The energy generated from Renewable Energy System shall be credited in the monthly electricity bill of each participating connection(s) as per the ratio indicated in the application to DISCOM (**Annexure-IV**)

For GNM: The energy generated from Renewable Energy System shall be credited in the monthly electricity bill of different service connections of the same consumer as per the ratio indicated in the application form (**Annexure-VII**)

(c) For VNM: The consumer(s) shall have the option to change the share of credit of electricity from Renewable Energy System, subject to the ratio of procurement from Renewable Energy system indicated under the agreement / MoU entered by the consumer, once in a financial year with 3 Months' notice in advance.

For GNM: The consumer may revise the priority list for adjustment of the balance surplus energy against other electricity connection once in a financial year with 3 months' notice in advance.

(d) Where the service connection of any participating consumer(s) (in case of VNM)/ connection(s) (in case of GNM) is disconnected due to any reason under any law for the time being in force, the unadjusted units/ remaining credits of that consumer(s)/ connection(s) shall be paid/ compensated by the distribution licensee at the end of the financial year.

(e) For VNM: The electricity consumption shall be first compensated with the electricity generation in the same billing cycle of the participating consumer(s). Any surplus generation over and above the consumption shall be treated in the manner as applicable under the Orders on Net metering and its subsequent amendments.

For GNM: The electricity consumption shall be first compensated with electricity generation in the same billing cycle of the consumer where the Renewable Energy System is located and any surplus units injected shall be adjusted against the energy consumed in the monthly bill of service connection(s) in a sequence indicated in the priority list provided by the consumer. Any surplus generation over and above the consumption of any service connection(s) shall be treated in the manner as applicable under Net metering under the Orders on Net metering and its subsequent amendments.

(f) For VNM: Where the units credited during any billing period of any participating consumer exceeds the import of units by that consumer, such surplus credited units shall be carried forward in the next billing

period as energy credits for adjustment against the energy consumed in subsequent billing periods within the settlement period of each participating consumer(s).

For GNM: Where the exported units during any billing periods exceeds the imported units at the service connection, such surplus units injected into the grid shall be adjusted against the energy consumed in the monthly bill of service connection(s) in a sequence indicated in the priority list provided by the consumer. The sequence of priority for adjustment shall be deemed to begin with the service connection where the Renewable Energy System is located.

- (g) At the end of each settlement / financial period any electricity credits as a result of excess generation (above 90%) shall be considered as free energy and shall not be offset against the consumer's consumption in the coming settlement/ financial period. The unadjusted excess electricity from solar system shall be reset to zero at the beginning of each settlement period.
- (h) Auxiliary consumption of Solar Photo Voltaic (SPV) power plant shall be settled as
 - i. For Bi-Directional metering/ Net metering connection, auxiliary consumption shall be netted by the installed Bi-Directional meter.
 - ii. For connection, auxiliary consumption shall be billed according to the General Purpose (GP) tariff decided by the Commission.

VI. Penalty or Compensation:

Any enhancement in capacity of RTS system by the consumer/prosumer of the Plant shall be taken up with prior permission of the distribution licensee, failing which such 'Un-authorized Capacity Addition' shall be treated as illegal and Distribution Licensee shall immediately disconnect power supply and initiate appropriate action as per the provision of the prevailing Rules/ Regulations.

VII. Dispute Resolution:

All the disputes between the Solar PV prosumer and TPCODL arising out of or in connection with the agreement shall be first tried to be settled through mutual negotiation. The parties shall resolve the dispute in good faith and in equitable manner. In case of failure to resolve the dispute, either of the parties may approach the Odisha Electricity Regulatory Commission.

VIII. Regulatory Context:

Following are the complete list of guidelines and regulation for reference applied for grid connected solar PV rooftop under TPCODL area. The same may be referred for further lucidity.

- a. OERC (Net Metering /Bidirectional metering & their connectivity with respect to Rooftop Solar PV Projects on the rooftop of Government/ PSU owned buildings) Regulations,
- b. 2014 & its amendments from time to time.
- c. OERC (Procurement of Energy from Renewable Sources and its Compliance) Regulations, 2015.
- d. CEA (Measures relating to Safety and Electric Supply) Regulations, 2010.
- e. CEA (Technical standard for connectivity of Distribution Generation resources) Regulations, 2013.
- f. CEA (Installation and Operation of meter) Regulations, 2006 and Amendment Regulations, 2010.
- g. Circulars on GEDCOL and normal project.

IX. General Instructions for the Applicant

The applicant should be the owner of the property or authorized person and Consumer of TPCODL. If the property is in the name of the Company, Trust, Co-operatives / partnership firms, then authorization shall be assigned to a person for correspondence, paperwork, execution of various agreements, etc. Such person must be authorized by the management of the organization. In case of partnership firms, the authorized signatory must be one of the partners, to whom written consent has been given by the other partners. The authorization Format - 1A/1B can be downloaded from the website.

TPCODL shall not be held responsible for any legal disputes between the applicant and SRTPV system installer arising out of their contract.

SRTPV system installer (Solar Developer) should be MNRE /OREDA/TPCODL empanelled.

The Technical, safety, grid connectivity standards to be followed as per standards and guidelines specified by the CEA/MNRE/BIS and IEC standards and its amendments orders from time to time.

This Standard Operating Procedure for Grid connectivity of Solar PV systems (On net-metering basis) will come into immediate effect from the date of issue of this order.



Chief (Commercial Services),

Encl:

1. Net Meter Application Form 1NM
2. Net Meter Application Form 1GNM
3. Net Meter Application Form 1VNM
4. Technical Feasibility report Form 2
5. Sanction & Permission letter Form 3
6. Work completion and Inspection Report Form 4
7. Net Metering Agreement 5NM
8. Net Metering Agreement 5GNM
9. Net Metering Agreement 5VNM

Annexure I

Delegation of Power

Consumer CD	Designated Officer For technical feasibility / metering arrangement Study	Designated officer (for signing of Standard agreement)	Designated Officer for Joint site Inspection	Designated Officer for Charging
Up to 10 KW	JE (Dist) or SDO (Engg)	SDO(Engg)and SDO(Engg)/(Comm)	JE (Dist) or SDO (Engg) and SDO (MRT)	SDO (Engg)
From 10 KW up to < 50 KW	SDO (Engg) or (Comm)	Divisional Manager	SDO (Dist) or EE (Dist) and EE (MRT)	EE (Dist)/ Divisional Manager
From 50KW up to < 500 KW	Divisional Manager (Dist.) and (MRT)	Divisional Manager		
All 33 KV Consumers	Circle Incharge (Dist.) and (MRT)	Circle Incharge	EE (Dist) or SE (Dist) and EE (MRT)	Circle Incharge

Annexure-II

Timeline & responsibility for installation and Metering Connection of Grid Connected Solar Rooftop PV Systems by DISCOMS.

Activity	Responsibility	Timeline (Max Working Days)	
		Net metering/	VNM & GNM
Submission of Application	Consumer	Zero Days	Zero Days
Acknowledgment of application by DISCOM	DISCOM	2 Days	2 Days
Site Verification / Technical Feasibility & issuance of Letter of Approval (LOA)/ Communication of deficiency if any to provide opportunity for Resolution/ Termination	DISCOM and Vendor	10 Days	10 Days
Execution of Metering Agreement	DISCOM and Consumer	7 Days	7 Days
Installation of Rooftop Solar System	Empaneled Vendor & Consumer	60 Days	180 Days
Submit Work Completion Report and Joint Inspection Report	Empaneled Vendor & Consumer & DISCOM	Within 7 days of installation	Within 7 days of installation
Inspection by CEIG (wherever applicable)	CEIG and Vendor	10 Days	10 Days
Installation of Meter/ Commissioning of the system	DISCOM	7 Days	7 Days
Billing Process	DISCOM	30 Days after commissioning and synchronization with Grid (may be aligned with the billing cycle of the Consumer)	30 Days after commissioning and synchronization with Grid (may be aligned with the billing cycle of the Consumer)

Chief (Commercial Services),