

FAQs ON GRID CONNECTED ROOFTOP SOLAR PV SYSTEM

1) What is a Grid Connected Rooftop Solar PV System?

In Grid Connected Rooftop or small SPV Systems, the DC power generated from SPV panel is converted to AC power using Power Conditioning Unit (PCU) and it is fed to the Grid of 220kv/ 66kv/ 33kV/ 11kV three phase lines or of 440/ 220Volt three/ single phase line depending on the capacity of the system installed at institution/ commercial establishment or residential complex and the regulatory framework specified for respective states.

These SPV systems generate power during the day time which is utilized fully by powering captives loads and feed excess power to the grid as long as grid is available. In case, where solar power is not sufficient due to cloud cover etc. the captive loads are served by drawing power from the grid.

2) Where such plants can be installed?

Such SPV systems can be installed at the rooftops of residential and commercial complex housing societies, community's centres, Government organization private institution etc.

3) How much roof area is required to set up the Grid Connected Rooftop Solar PV System?

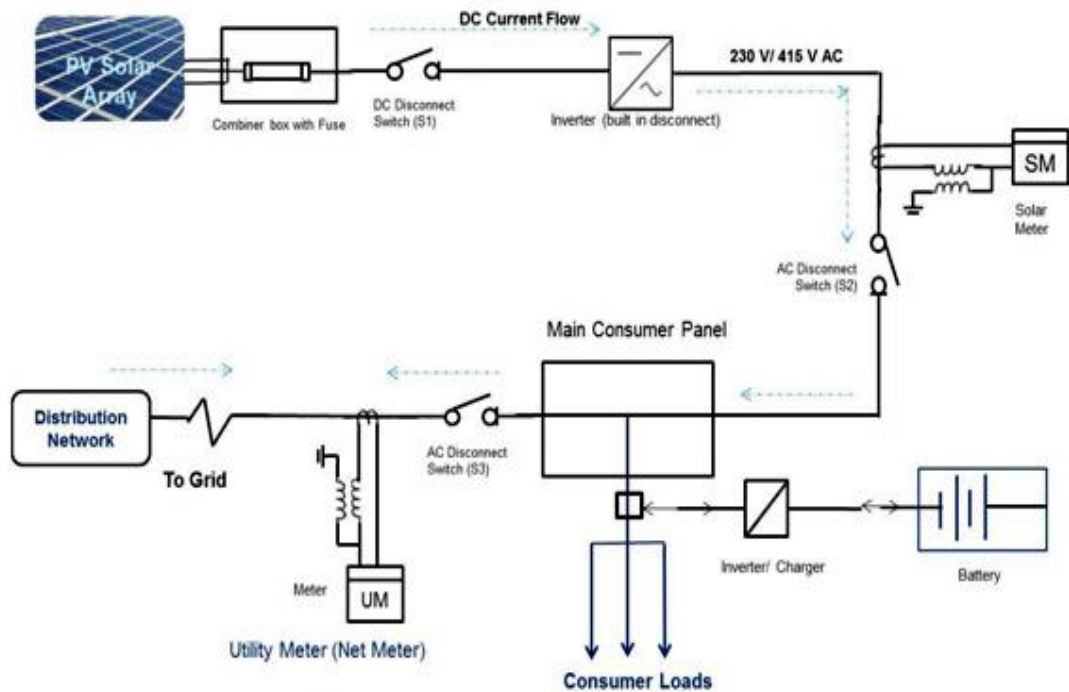
About 10-12 Sq.mt area is required to set up 1 KWp Grid Connected Rooftop Solar PV System.

4) What are advantages of installing Grid Connected Rooftop Solar PV Power plant?

- It brings down your electricity bill.
- You contribute immensely towards environmental protection.
- Consumer generates electricity according to his necessity.
- Surplus power can be supplied to the Grid.
- Reduction in electricity bill, as it is prepared after adjusting import and export of power.
- MNRE, GOI provides 30% subsidy on installation of Rooftop solar power plants in domestic sector and non- profit making institutions.
- Reduction in payback period after availing Generation Based Incentive (GBI).

5) What is Net Metering?

In net-metering, the excess solar energy is exported to the grid. The same excess solar energy exported is deducted from the energy imported from the grid subject to certain conditions. The consumer pays for the net-energy imported from the grid.



Net Metering Diagram

6) What is Group Net Metering?

In Group Net Metering arrangement, all energy produced by a collectively owned solar PV System is fed into the grid, which is credited on pro-rata basis into the electricity bill of each participating consumer.

7) What is Virtual Net Metering?

In Virtual Net Metering arrangement the surplus solar energy generated is exported to the grid from a solar Power Plant at the location of Solar Power Plant and can be adjusted in any other electricity service connection of the consumer in the area of the same Discoms. .

8) Whether Net Metering Guidelines has been notified in Delhi?

Yes, a Net Metering Regulation for Renewable Energy 2014 is notified in Delhi by DERC. <http://www.derc.gov.in/Regulations/DERCRegulations/Regulations%202014/Renewable%20Energy%20Net%20Metering%20Regulations%202014.pdf>

9) What are the other fiscal benefits available for installing Grid Connected Rooftop Solar PV Power Plants?

- Generation Based Incentive (GBI)
- Exemption on open access as provided by DERC
- Exemption on conversion charges for residential consumers
- Exemption on wheeling charges, banking, cross subsidy and other charges for installing SPV power plants systems installed under Net Metering scheme.
- Excise Duty Exemption as provided by Ministry of Finance, Govt. of India. for installing minimum 100 KWp Grid Connected Rooftop SPV power plant.
- Accelerated Depreciation benefit and Tax Holiday

10) Whether any Central Financial Assistance for Residential Consumers by MNRE is provided for installing Grid Connected Rooftop Solar PV Power Plants?

Yes, Central Financial Assistance (CFA) of 30 % of the bench mark cost or as applicable from time to time is provided for 1 KWp upto 500 KWp Grid Connected Solar Power Plants to Residential Consumers (irrespective of the electricity connection) for installing Grid Connected Rooftop Solar PV Power Plants.

11) Whether any Central Financial Assistance for institutional (Hospitals, Schools etc.) /Social Sector is provided by MNRE for installing Grid Connected Rooftop Solar PV Power Plants?

Yes, Central Financial Assistance (CFA) of 30 % of the bench mark cost or as applicable from time to time is provided for 1 KWp upto 500KWp Grid Connected Solar Power Plants to institutional(Hospitals ,Schools etc) /Social Sector (irrespective of the electricity connection) for installing Grid Connected Rooftop Solar PV Power Plants.

12) Whether any Central Financial Assistance to Government buildings both State, Central , local Government covering all buildings, PSUs, all buildings owned directly or indirectly, Government educational/Health institutions etc. is provided by MNRE for installing Grid Connected Rooftop Solar PV Power Plants?

No, Central Financial Assistance (CFA) is provided to Government buildings State, Central, local Government covering all buildings, PSUs, all buildings owned directly or indirectly, Government educational/Health institutions etc. for installing Grid Connected Rooftop Solar PV Power Plants.

However, MNRE provides an Achievement linked Incentives/ Award vide 03/88/2015-16/GCRT dated 04.05.2016 to Government buildings both State, Central , local Government covering all buildings, PSUs, all buildings owned

directly or indirectly, Government educational/Health institutions etc. for installing Grid Connected Rooftop Solar PV Power Plants.

<http://mnre.gov.in/file-manager/UserFiles/gcrt-incentives-award-040516.pdf>

13) Whether any Central Financial Assistance or Achievement linked Incentives/ Award to Commercial and industrial establishment or to the private sector Consumers is provided by MNRE for installing Grid Connected Rooftop Solar PV Power Plants.

No, neither any Central Financial Assistance (CFA) nor any Achievement linked Incentives/ Award is provided to Commercial and industrial establishment or to the private sector Consumers is provided by MNRE for installing Grid Connected Rooftop Solar PV Power Plants.

14) What are requirements for installing Grid Connected Rooftop Solar PV Power Plants?

- A Minimum vacant roof area of 10 – 12 Sq. mtr or 100-120 Sq. Ft is required for installation of 1 kWp SPV system.
- The Consumer shall have 3 Phase/ 1 Phase supply service connection.
- Mandatory safety precautions/features shall be installed as per the norms.
- A Single bi-directional meter shall be installed for export and import.
- The standard equipment as per the norms of MNRE shall only be installed

15) What are the different business models under which I can install Grid Connected Rooftop Solar PV Power Plants?

One can install Grid Connected Rooftop Solar PV Power Plants under Renewable Energy Service Company (RESCO) or CAPEX business Model.

16) What is Renewable Energy Service Company (RESCO) or 3rd Party business model installation of Grid Connected Rooftop Solar PV Power Plants?

When Renewable Energy Service Company (RESCO) or 3rd party implements the solar facility and provides services to the consumers is called RESCO or 3rd Party business model. The combinations could be:

- i) Arrangement as a captive generating plant for the roof owners. The 3rd party implements the facility at the roof or within the premise of the consumers; the consumer may or may not invest as equity in the facility as mutually agreed between them. The power is then sold to the roof owner.
- ii) Solar Lease Model, Sale to Grid The 3rd party implementing the solar

facility shall enter into a lease agreement with the consumer for medium to long term basis on rent. The facility is entirely owned by the 3rd party and consumer is not required to make any investment in facility. The power generated is fed into the grid and the roof top owner gets a rent.

17) What is CAPEX business model installation of Grid Connected Rooftop Solar PV Power Plants?

When the Grid Connected Rooftop Solar PV Power Plants is built, owned and maintained by the consumer by investing upfront capital than the model is CAPEX business model installation of Grid Connected Rooftop Solar PV Power Plants.

18) Which business model is best for me?

For consumers that have adequate manpower/expertise for O&M, rooftop access concerns, availability of upfront funds, CAPEX model is better. Consumers in states that have net metering regulations can take benefit of the same in case they have substantial excess generation. On the other hand, consumers who prefer not to take responsibility for the system O&M, do not have rooftop security concerns and prefer to pay on a monthly basis rather than bulk upfront payment may choose to go for RESCO model.

19) From where I can install the Grid Connected Rooftop Solar PV Power Plants?

One can install the Solar Rooftop Power plant from the firm/vendor empanelled with IPGCL.

20) What is the process of availing 30 % Central Financial Assistance (CFA) from MNRE?

The empanelment of vendors for installation of Solar PV Plants in the state of Delhi is in process. The process for availing Central Financial Assistance (CFA) of 30% shall be shared on the portal of EE & REM Centre, Department of Power, GNCTD soon after empanelment of vendors.

21) What is Generation Based Incentive (GBI)?

Generation Based Incentive (GBI) is an incentive linked with Generation of Solar Power from the Grid Connected Rooftop SPV Plants is being provided by State Government through EE&REM Centre.

22) What is the process of availing Generation Based Incentive (GBI) from EE&REM Centre?

Residential/Domestic Consumers need to be registered with EE&REM Centre by filling a form. A GBI of INR 2.00 per unit (kWh) of gross solar

energy generated is for 3 years till 31st December 2018 for net metered connections in the domestic/residential segment on first come first serve basis. This GBI will reduce payback time and increase adoption.

23) What is the minimum eligibility for availing Generation Based Incentive (GBI) from EE&REM Centre?

The minimum eligibility criteria for GBI will be 1,100 solar energy units (kWh) generated per annum. For solar plants that generate less than 1,100 units (kWh) a year, the GBI facility will not apply. The annual solar energy generation that is eligible for GBI shall be capped at 1,500 kWh per kWp, irrespective of the readings of the solar generation meter.

24) What is the annual energy generated from a 1 KW Solar Power Plant?

The usual benchmark for energy generated from a 1 KW Solar Power Plant is considered as 1500 units per annum. The amount of actual energy generated from a solar Power Plant in a year depends on both internal and external factors.

External factors which are beyond the control of a solar power developer can include the following:

- Number of sunny days
- Solar irradiation
- Day temperatures
- Air mass
- Location

25) What are the factors affecting generation?

- Plant Location
- Quality of equipment used
- Workmanship
- Module Cleaning
- O&M activities
