

MNRE Pilot Scheme for Large Scale Grid Connected Roof Top Solar Power Generation



Solar Energy Corporation of India

(A Government of India Enterprise)

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Solar PV Power Generation:

Sunlight is converted to electricity directly when made to fall on solar photovoltaic (SPV) modules. Systems /devices are made for various applications based on SPV modules connected with suitably designed power conditioning units for meeting electricity requirements. These systems/devices are designed to work in off-grid mode (usually supported with batteries to allow use when sunlight is low or during night).

Grid connected roof top solar PV System:

In recent years solar PV systems became viable and attractive. Utility scale plants are being set up worldwide with promotional mechanisms which are set up on ground surface. Available roof-top area on the buildings can also be used for setting up solar PV power plants, and thus dispensing with the requirement of free land area. The electricity generated from SPV systems can also be fed to the distribution or transmission grid after conditioning to suit grid integration.



Schematic lay out of roof top PV system

The roof top solar PV systems

- Are easy to install and maintain
- Have long life of 25 years.

Are modular in nature; capacity can be enhanced in future to meet increased requirement of electricity.

How does it Work?

Based on available roof area solar PV panels will be installed on the roof of the building. The output of the panels (DC electricity) connect to the power conditioning unit / inverter which converts DC to AC. The inverter output will be connected to the control panel or distribution board of the building to utilize the power. The inverter synchronizes with grid and also with any backup power source to produce smooth power to power the loads with preference of consuming solar power first. If the solar power is more than the load requirement, the excess power is automatically fed to the grid. For larger capacity systems connection through step up transformer and switch yard may be required to feed the power to grid.

Operation and Maintenance Requirements:

There are no moving parts in the system and it requires only minimal attention. Depending upon the dust level, the system requires periodic cleaning.

Advantages:

The grid connected roof top solar PV system would fulfill the partial/full power needs of large scale buildings. The following are some of the benefits of roof top SPV systems:

- Generation of environmentally clean energy.
- Consumer becomes generator for his own electricity requirements.
- Reduction in electricity consumption from the grid.
- Reduction in diesel consumption wherever DG backup is provided.
- Feeding excess power to the grid.

Implementation:

30% subsidy on the project cost is available from Ministry of New and Renewable Energy, Government of India, through Solar Energy Corporation of India (SECI). The balance cost is to be met by the consumer. The project would be implemented through vendors shortlisted by SECI after competitive bidding.

Estimates of Financial Benefits:

System size	100 kWp
System cost	0.8 -0.9 crore
Subsidy	30%
Expected electricity generation	140000 – 160000 units
Payback period @ Grid electricity cost	5-6 years
Payback period with Accelerated Depreciation	4-5 years
Pay back @ diesel power cost	3-4 years
Plant life	25 years

With finance cost the pay back will extend for 3 more years.

Who Can Participate?

All buildings of the Government, PSUs, Commercial establishments, hospitals, cold storages, warehouses, industries and educational institutions and large scale gated communities.

Interested parties may please write to

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