

APPLICATIONS OF SOLAR PROJECTS

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PREAMBLE

The solar PV cost has almost achieved grid parity in many states for selected type of consumers such as industrial and commercial. In some states even the cost of domestic supply is also near par with solar power cost. However unless entire solar power generated at a solar unit is evacuated/utilised, the parity will not be achieved

Solar power plant installation require incurring cost upfront though it is recovered in a period varying from 4-7 years depending on applicable grid power cost for the category of consumer and its location in a particular state

Most cost effective application of solar power is achieved when there is unrestricted evacuation or utilisation of solar power

SOLAR PROJECTS PV GENRALLY HAVE THREE CATEGORIES OF APPLICATIONS AS UNDER

1 Grid connected large MW class solar plants

These plants are connected to grid and power evacuation depends on stability and health of grid. Entire generated solar power is available for evacuation as long as grid is healthy

2 Off grid solar application

These plants have battery backup and any solar power surplus to load at any time gets stored in batteries and available for utilisation 24/7. It is best suited for rural areas, telecom towers, petrol pumps etc having no access to grid power

3 Rooftop grid connected or hybrid application

Installation of solar plants on rooftops of residential, commercial and industrial buildings is one of the significant and vital applications of solar power

This category has large potential for expansion of solar applications and mitigating the issue of grid power shortage. However it has major issues of restricted utilization of plant capacity, making it uneconomical and major hindrance towards development of cost effective solar power

Best advantage of solar power is achieved by decentralised generation, eliminating transmission and distribution network and hence T&D losses to a large extent. Each power user, having access to sun at his rooftop can have its own solar generator and supply its power requirement reducing drastically distance between generation and load centres.

KEY ISSUES RESTRAINING THE GROWTH OF ROOFTOP SOLAR POWER GENERATION

Some vital categories of consumers as under, by nature of their load requirement generally face reduced utilisation time

- i) Educational Institutions: MNRE has provided subsidies to many educational institutions across the country. However most of these institutions are closed on weekends, national and festival holidays and vacations. Annual working days range only from 180 to 250. Even on normal working days the institutions close in the afternoon whereas sun sets late in the evening. Use of solar generation capacity for reduced time make the solar projects uneconomical
- ii) Urban residential consumers: Similar is the case of urban residential consumers particularly when there is less power requirement at daytimes, weekends or vacation etc which reduce the cost benefits of solar power
- iii) Industrial units have weekly offs in addition to national and social holidays when electrical loads are minimal and solar power is not utilized
- iv) Commercial units too have weekly offs when electrical loads are very low

In the current regime most of the state utilities have consumer energy meters which do not differentiate between import and export of power. The solar power generated excess to the consumer load measures even export of power to grid and add to import bills forcing consumer to pay for exported power also

I recently inspected a few solar rooftop plants in Gujarat recently on behalf of MNRE. I found schools closed on vacation, loads much below the capacity of plant. School managements fear very slow return on investment on account of poor loads for large portion of solar generating time

Sustainable policy for net metering permitting flow of surplus solar power back to grid, allow banking to the plant owner, has potential to solve the issue of optimum utilisation of green solar power.

Policy of net metering of solar power already prevails in states of Kerala and erstwhile Andhra Pradesh. Similar policies on basis of net metering concepts are prevalent in many developing and developed countries.

Immediate steps are required to be undertaken by MNRE to develop guidelines for net metering as national policy and guide states to follow suit.

Central Electricity Authority may develop guidelines for trouble free export of power back to grid and standardise technical specifications for islanding protections, Import/Export energy meters and associated equipments. It will not only provide relief to the grid, deficit in power most of time, prevent bottling of solar power but also provide much needed boost to the solar industry and its fast growth.

Economy of scale will help further reduction of cost of solar power plants. With crisis of coal in the country increased dependence on polluting fossil fuel for thermal power needs to be arrested by focussing more and more on renewable natural resources as solar.

P K KAUSHAL

Advisory Board Director, Solar eTribe

Solar Consultant and Empanelled Inspecting officer, MNRE

Email: Pawan.kaushal@solaretribe.org / pkksl@yahoo.co.in

Gurgaon (Haryana)