

## Solar Plant Installation—A Study on Consumer Perception

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**Abstract:** The concept of having Solar Plant on roof top is often sold rather than being bought willingly by customers. Hence, it becomes imminent for the Solar Plant Integrators to analyze the customers buying pattern and do a need based selling. This being a capital intensive investment where Government regulations are also involved, the selling becomes all the more challenging. No doubt that generating electricity from Solar is not only Sustainable, Viable and Eco-friendly, analyzing customers' perception makes the job of selling a real cake-walk. The following study attempts to evaluate the customers' perception as they take a decision to invest on Solar Power Plant to be installed

**Keywords:** Solar Power, Eco-Friendly, Return on Investment (ROI), Customer Perception, DISCOM (Distribution Companies)

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Date of Submission: 19-04-2020

Date of Acceptance: 03-05-2020

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### I. Introduction

Energy developed from fossil is getting obsolete as the resource is rapidly depleting. The massive use of nuclear and fossil energy resources will endanger the existence of human beings. Predicted climate change, nuclear contamination and insoluble risks from plutonium production in nuclear reactors, pose as even bigger threats. On account of dependency on fossil and nuclear energy sources, till date, a large share of the world population still doesn't have a direct access to the benefits of our conventional Energy supply. As the Demand-Supply ratio goes, the faster these resources deplete, the higher will be the cost of the energy that gets produced through it. This will have an impact on the end users monthly electricity expense. The end users can avoid the higher concurrent expense, by moving to look for sustainable alternative energy resources and it is solar which is being the most viable of all the alternatives. Hence an attempt is made to examine the Users perception towards investing on Solar Energy Plants by identifying the barriers and devising a strategy to change the customers' perception.

Objectives:

- To provide conceptual background as to solar power plant installation
- To know the Government regulations
- To identify the factors that influence users' decision for installing solar power plant.

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### 1.Introduction

The Indian Government has proposed series of policies to help combat greenhouse gas emissions in India. Success of such policies will largely depend on the following parameters Solar Plant. A simple scientific system where conversion of photons to electrons takes place with the help of Photovoltaic cells. The electricity generated through this gets either used directly as Direct Current (DC) or as Alternate Current (AC). If we have a solar plant on top that generates electricity that you require for our home 24x7, you may not fully depend on the electricity supplied by DISCOM

### Types of Solar Plant

A home can opt for three types of Solar Plants.

(1) Off-Grid Solar Plant (2) Grid-Tied Solar Plant (3) Hybrid Solar Plant

**Off-Grid Solar Plant** – An off-grid Solar Plant comes with Solar Panels installed on Rooftop along with Batteries that can give you backup when there is a power cut. Using this system, if the electricity generated through Solar

Plant matches with your day to day requirement, you may end up not depending on Grid Electricity and hence, called as “Off-Grid” Solar Plant

**Grid Tied Solar Plant** – Through this system, we will have a tie up with local electricity DISCOM and the electricity produced through the Solar Plant will get directly exported to DISCOM. The electricity units that you consume from DISCOM is termed as Import and Electricity you give to DISCOM is called as EXPORT and difference of these two is what is calculated for payment or for credit, as the case may be. Since we ought to have a tie up with DISCOM, this system is called “Grid Tied” Solar Plant

**Hybrid Solar Plant** – As the name suggests, a hybrid Solar Plant is a combination of Off-Grid and Grid-Tied Solar Plant and hence called as “Hybrid” Solar Plant.

## 2. Government Policies

Indian Government has been highly meticulous to work in tandem with the commitment that it made in Paris Accord on Climate Change. India has undertaken to install at least forty percent of its total electricity generation capacity from non-fossil fuel sources by 2030. As on 29<sup>th</sup> February 2020, a cumulative renewable energy capacity of 132.15 GW had been installed in the country, with an additional capacity of 46.69 GW under various stages of implementation and 34.07 GW under various stages of bidding. As on same date, the country had cumulative installed capacity of 138.93 GW from non-fossil fuels sources. The cumulative renewable energy capacity and cumulative capacity from non-fossil fuel sources constituted 35.80% and 37.63% of total electricity generation capacity of 369.12 GW installed in the country as on 29<sup>th</sup> February, 2020, respectively. A total of 47.86 GW of renewable energy capacity has been installed in the country during the last six years i.e. March, 2014 to October, 2019, which is a mammoth increase vis-à-vis the performance over the last 15 years.

Following initiatives were taken by the Government to explore New and Renewable energy sources in the country

- ❖ Permitting Foreign Direct Investment (FDI) up to 100 percent under the automatic route
- ❖ Waiver of Inter State Transmission System (ISTS) charges and losses for inter-state sale of solar and wind power for projects to be commissioned up to December, 2022
- ❖ Notification of standard bidding guidelines to enable distribution licensee to procure solar and wind power at competitive rates in cost effective manner
- ❖ Declaration of trajectory for Renewable Purchase Obligation (RPO) up to the year 2022
- ❖ Launching of New Schemes such as, Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY). PM-KUSUM, Solar rooftop phase II, 12000 MW CPSU scheme Phase II
- ❖ Suryamitra Scheme to increase the number of skilled people working for this industry

Any scheme will not be successful, until it is monitored closely. And the entire major programs/schemes being implemented by the Ministry, have successful mechanisms to monitor the implementation of this scheme and ensure that it reaches the needy.

### Making people understand the benefit of Government Policies

Any Government formulates schemes to benefit the needy. It becomes an important task for the Solar System Integrators to act as a medium between end users and Government. It should be a concurrent process for them to identify the prospect, explain them the benefit of Government policies and then, make a deal that is mutually beneficial for both the parties.

## 3. Factors influencing investing in solar power plant

### Affordability in terms of ROI

Through Solar Rooftop scheme, Government offers subsidy to install Solar Plant in your rooftop. By doing this, investment on Rooftop Solar Plant becomes affordable, which is capital intensive otherwise.

<i>Solar Plant Size</i>	<i>1 kW</i>	
<i>Cost of Solar Plant (per kW)</i>	<i>60000</i>	<i>INR</i>
<i>Government Subsidy (30%)</i>	<i>18000</i>	<i>INR</i>
<i>Net Cost</i>	<i>42000</i>	<i>INR</i>
<i>Per Unit cost of Electricity</i>	<i>7</i>	<i>INR (Avg Across India)</i>
<i>Savings per Year</i>	<i>10730</i>	<i>INR</i>
<i>ROI</i>	<i>4 years</i>	

**Inclination towards Eco-Friendliness**

Biggest advantage of Solar Based projects for generation of Electricity is that the source is inexhaustible and perennial (Sun) and is ever reliable. And it doesn't emit harmful gases while generating electricity. It is highly eco-friendly and reduces carbon footprint to a greater extent. The proud feel of generating our own electricity, for having reduced the carbon foot-print and to have contributed to the environment by generating electricity in an Eco-Friendly way act as further catalyst to a better ROI.

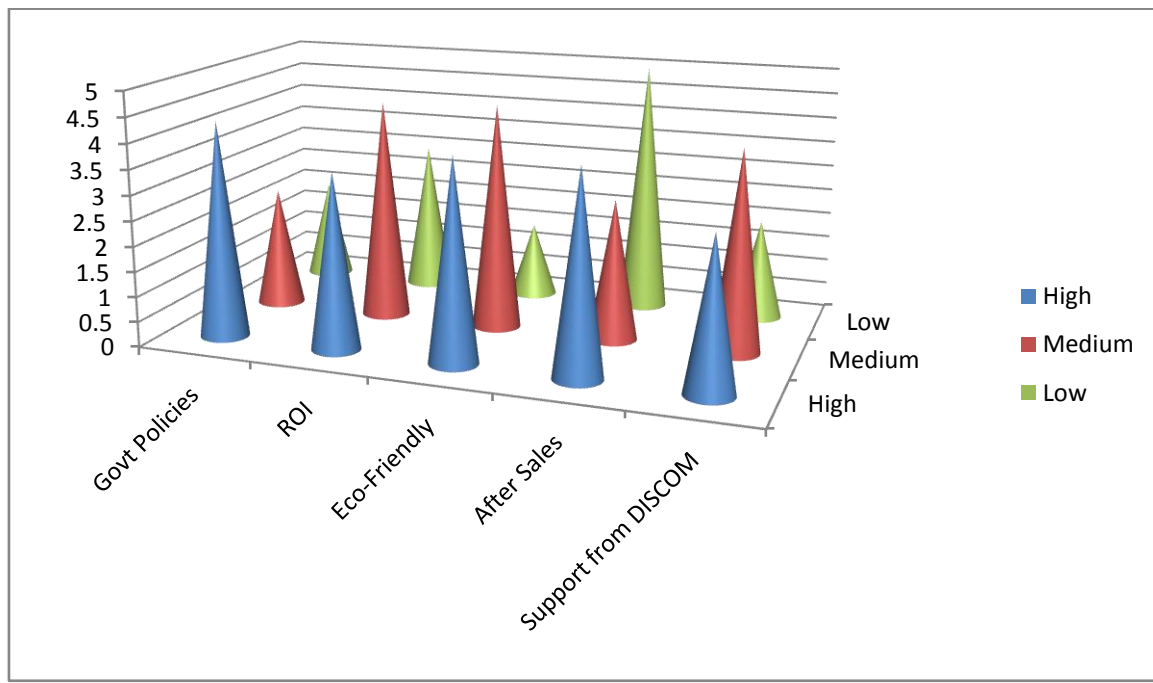
**Clearing the ambiguity with respect to after sales service**

Solar System Integrators should always invest on quality products and a good workforce. A dedicated service team will ensure that issues faced by clients are immediately addressed, which will earn their trust. As Lisa Masiello rightly said "Happy customers are your biggest advocates and can become your most successful sales team too".

**Support from electricity DISCOMs**

For every sale of Grid Tied Solar Plant, the DISCOMs in the respective state have to approve so that the bi-directional meter (that record import and export) gets installed by them. Though, MNRE set up by the Central Government formulates Solar Policy year on year, the nodal agencies in every state set up their own policies, which goes in line with the central policy. Speed at which the application for bi-directional meter gets processed and the knowledge level of the person, who takes reading from the installed meter month on month, plays a major role in determining the satisfactory index of the client

For analyzing the data the researcher took a convenient sample of around 100 people spread across the following states in India, Tamilnadu, Kerala, Madhya Pradesh, Jharkhand and Maharashtra .



The observation is when the policies framed by Government become friendly; it acts as a major influencer in making them decide to go for Solar Plant. ROI, Eco-Friendliness and Support from local DISCOM plays second important role and most of them have not considered After-Sales service as a factor as Solar system doesn't require frequent service support.

**II. Conclusion**

Rooftop Solar Plant acts as a Mini electricity Sub-Station by itself, kept in the roof of a house. It not only caters to the need of Self-Production of electricity that gets used by a household, it also gives you a sense of achievement when one thinks about the contribution to Green energy.

To change the customer perception about solar power it is imperative to understand the factors that influence their decision. We conclude that when Government forms friendly policies that are taken forward with consumers in a proper way, backed up a good ROI and a support from local DISCOMs, consumer perception towards installation of Solar Plant in rooftop changes and the consumers start giving a serious thought about

reducing their carbon footprint and being Eco-Friendly. That indeed creates an impact and makes them go for Installation of Solar Plant.

”You cannot get through a single day without having an impact on the world around you. What you do makes a difference and you have to decide what kind of a difference you want to make” —Jane Goodall

N SrinivasaRagavan. “Solar Plant Installation—A Study on Consumer Perception.” *IOSR Journal of Business and Management (IOSR-JBM)*, 22(4), 2020, pp. 21-24.