



The Blessings of The Sun



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ABOUT US

INTRODUCTION

We are very pleased to present you our self's as "SOL POWER" in order to help preserve the Global Environment while promoting the growth of Human Society. Sol Power is an EPC Company, Provide integrated services for Solar power generation from basic design of Solar System to construction and operations. We play a prominent role in Executing turnkey solar power plant projects includes Feasibility Analysis, Designing Systems, Procuring Equipment for small and large grid connected solar power plants (Installations, Commissioning and Maintenance of the Plant)

VISION

"Our Vision is to support the Indian Government Vision, on Solar Power Generation and Skill India Development"

MISSION

"Our mission, consist of participation of general public to use Solar Power Energy (Available in Unlimited), by providing comprehensive support in creating a Pollution free environment for Current as well as future Generations"

CORE FEATURES

- "A relentless pursuit of Excellence for every single project with best quality service
- A Culture of Innovation with continuation process of Research and Development by customizing each solution
- 100% Emphasis on Execution by Timely & systematic approach
- Helping customer to claim if any subsidy & other government benefits
- High Class Safety, Reliability and Service

SOLAR ENERGY

INTRODUCTION

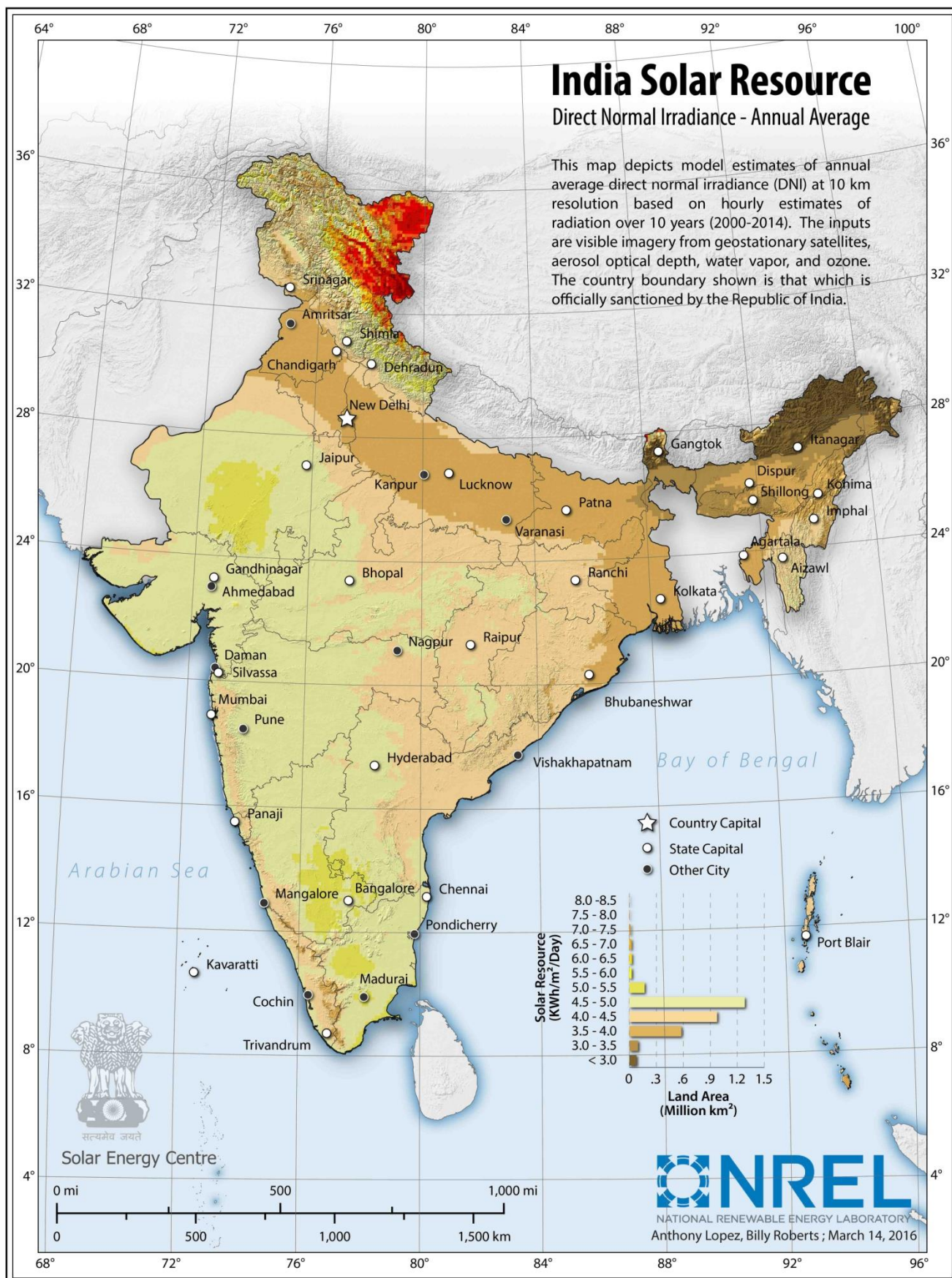
Solar Energy is the energy which is created from sunlight of the Sun. This energy is in the form of solar radiation (PV Radiation), Solar power is the conversion of sunlight into electricity which makes the production of solar electricity possible. Electricity can be produced directly from Photo Voltaic (PV), cells. (Photovoltaic literally means “light” and “electric.”) or indirectly using Concentrated Solar Power (CSP) into a small beam in which Photovoltaics convert light into an electric current using the photovoltaic effect.

IMPORTANCE

There is a need to explore for renewable energy resources to reduce the carbon emission, rapid depletion of fossil fuels which resulting in global warming. It's considered to be the efficient solution to vast stretches of remote areas where actual electricity is yet to reach in an economic manner where Solar Energy is becoming an economically viable alternative for electricity supply. Before we can understand why solar energy is important we should have a good idea of what solar energy is. Solar energy is produced with the help of Sun Rays. It can be harnessed that like any other type of energy used to create electricity to run homes and businesses. Best of all, solar energy is free and does not compromise or affect the environment. Probably the best part about why solar energy is that it is a renewable source of energy, which basically means that it will stay there forever, Because, it is ultra clean, natural and a sustainable source of energy that we can utilize in the use of making solar electricity, it will be consumed for all practical human usages.

CENTRAL GOVERNMENT SCHEMES & SUBSIDIES

Currently there is NO direct or indirect subsidy offer by Central or State Government. However, we at Sol Power do undertake if any such Schemes or Subsidies provided, will be pass on to **The Customer**.



BENEFITS OF SOLAR ENERGY

Environmental Benefits

- Clean & Green Energy
- No Carbon Emission and Green House Gases
- No Coal or Wood is consumed means Indirectly saving Nature & Natural Resources for Power
- No DIRECT or INDIRECT negative effect to NATURE / PLACE / PERSON
- Another key aspect of using solar energy is that it also has financial benefits

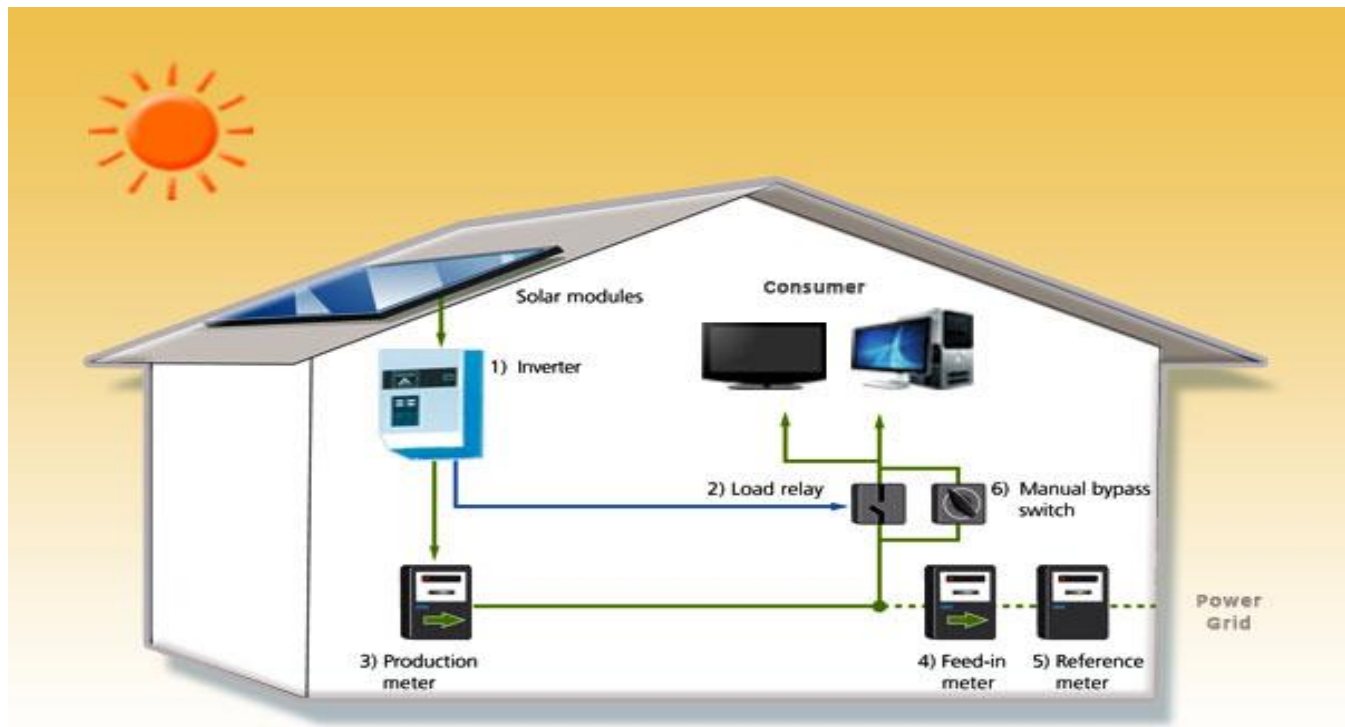
Tangible Benefits

- Usage of Roof and Shed Areas
- Very Low in Maintenance
- Government compulsion of Buying REC (Renewable Energy Certificates) is not applicable
- Curb on production Loss in case of Manufacturer's self-Dependency in Manufacturing
- Long term Financial Benefits and in terms becomes Profitable
- 100% Accelerated Depreciation on Investment
- Central Government Subsidy by MNRE (Ministry of New and Renewable Energy) *
- State Government subsidies through the Nodal Agency*
- Create own Sheds for Parking and other purpose
- Drastically Reducing Temperature of Top Floor in any Structure
- Easy handling in case of Power outage and tripping
- Savings on Electric Bills
- Reducing monthly maintenance bill of Society and their members
- Direct Revenue by selling surplus Power Generation
- Almost free Electricity for 20 Years
- High returns on Investment and better option than Fixed Deposit
- 1 Years onsite warrantee

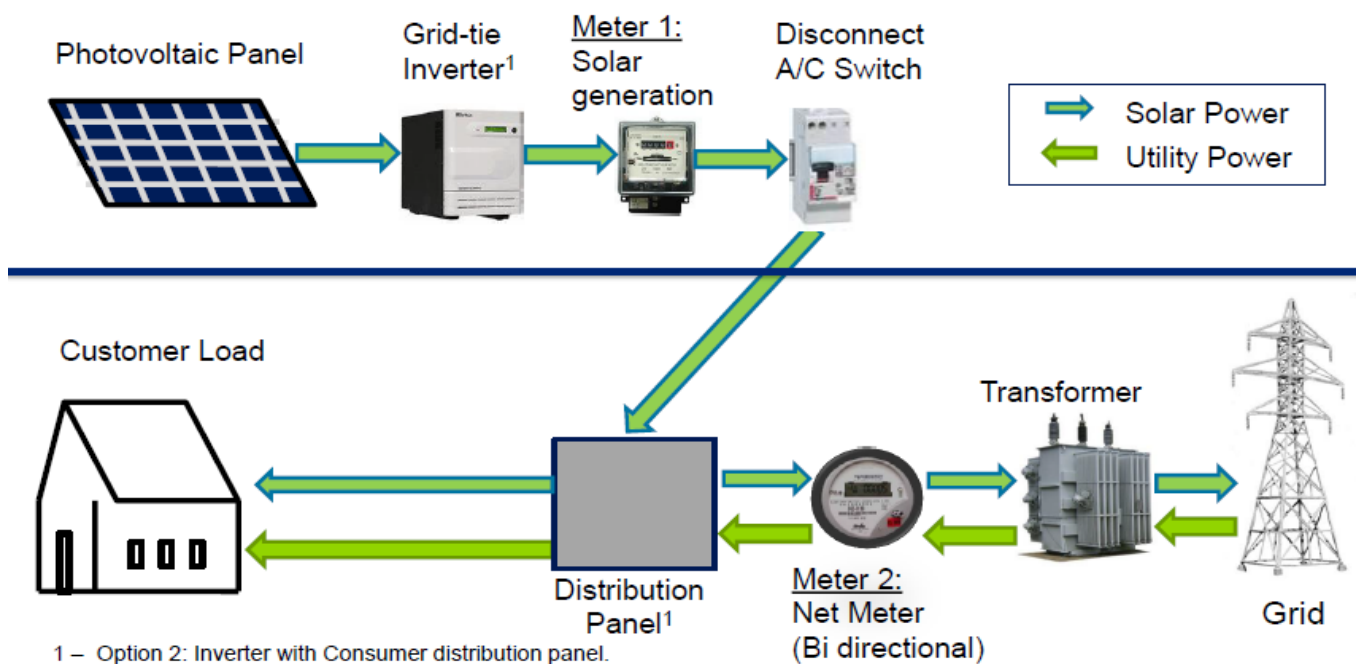
Non-Tangible Benefits

- Helping in meeting CSR (Corporate Social Responsibilities)
- Self-dependency and Long term sustainable Energy resource
- Cost Effective
- Own Power Generation House
- 99% free from Noise Pollution
- Leakage proof and no consumption of oil
- Increase in Property Value
- Helping Government Indirectly

SCHEMATIC DIAGRAM



Net-Metered Rooftop solar



CERTIFICATES / CREDENTIALS
- Carbon Credits - MEDA (Maharashtra Energy Development Agency) - MNRE (Ministry of New and Renewable Energy) - Pollution Control Board - Micro Small & Medium Enterprises & Care Rating

USAGE & INSTALLATION HIGHLIGHTS
- Easy to Install on Roof and Sheds - Least Government Approval Required - Easy to Claim Government Subsidy if any available - Easy to Relocate the whole plant in case of Shifting at a Nominal Charges

**** subject to terms and conditions of varies states nodal agency**

LIMIT FOR ROOFTOP SOLAR SYSTEM

Capacity limits for Rooftop Solar system connected at voltage level: In line with MERC (Standards of Performance of Distribution Licensee, Period of giving Supply and Determination of Compensation) Regulations, 2014, shown as follows;

S. No.	Voltage Level	Threshold Limit of Rooftop Solar PV System
1	230/240 V (1 ϕ)	Less than 8kW/40 A
2	230/240 V (3 ϕ)	Less than 90kW/100kVA Less than 150kW/187kVA (Municipal Corporation Areas)
3	11kV and above	- 80kW and less than 1000kVA - 150kW and less than 1000kVA - (Mumbai Metropolitan Region)

REFERENCE CASE – ENERGY ACCOUNTING UNDER NET METERING

MONTH	Generation (kWh)	Consumption (kWh)	Net Electricity (kWh)	Effective Bill (kWh)
Apr	150	160	10	10
May	150	180	30	30
Jun	150	20	-130	-130
Jul	150	260	110	-20
Aug	150	100	-50	-70
Sep	150	260	110	40
Oct	150	140	-10	-10
Nov	150	200	50	40
Dec	150	220	70	70
Jan	150	100	-50	-50
Feb	150	250	100	50
Mar	150	0	-150	-150
Yearly Total	1800	1890	90	
Annual Power Generation against Consumption (In %)				95

- Monthly accounting requires, previous month credit (If Any) to be accounted
- Generation as a percentage of consumption to be calculated at the end of Financial Year

FINANCIAL ANALYSIS AND OTHERS

Cost Estimation & Expected returns - 10 kWp Rooftop Solar PV System		
South facing Wall, Roof or Balcony Required	=	Shadow Free
Approximately space required	=	900 Sq Ft
System Cost without Battery Bank	=	7.00 Lakhs
MNRE Subsidy @ 30% (Not Available)	=	Not Consider
Depreciation (Subject to IT Department Rules)	=	Not Consider
Estimated Power Generation/Day	=	30 Units
Estimated Sunny Day / Year	=	280 Days
Estimated Net Power Generation	=	8,400 Per Year
Avoided Cost / Savings	=	1,00,800/- Rs.
Payback without Depreciation & MNRE Subsidy	=	6.50 to 7 Years
Total Estimated Plant Life	=	25 Years
Approximated Industrial Tariff	=	09.00 Rs. Per Unit
Approximated Commercial Tariff	=	12.00 Rs. Per Unit

Economics of Rooftop PV Solar System		
Initial Cost / kWp for Minimum 10 kWp	=	70,000 Rs
Cost of Electricity Generation per Unit	=	4.00 Rs. Appox
Economic Viability	=	YES

Technical Challenges Installation as per MNRE Standards		
Technical Specifications of Equipment's as per the International Standards published by Ministry of New & Renewable Energy (MNRE)	=	Solar Panel
	=	Inverters
	=	Structure
	=	Wiring
	=	Safety Arrangements
	=	Fuses

** Interconnection with Grid as per CEA Regulation

** Metering and Billing as per SERC Regulations

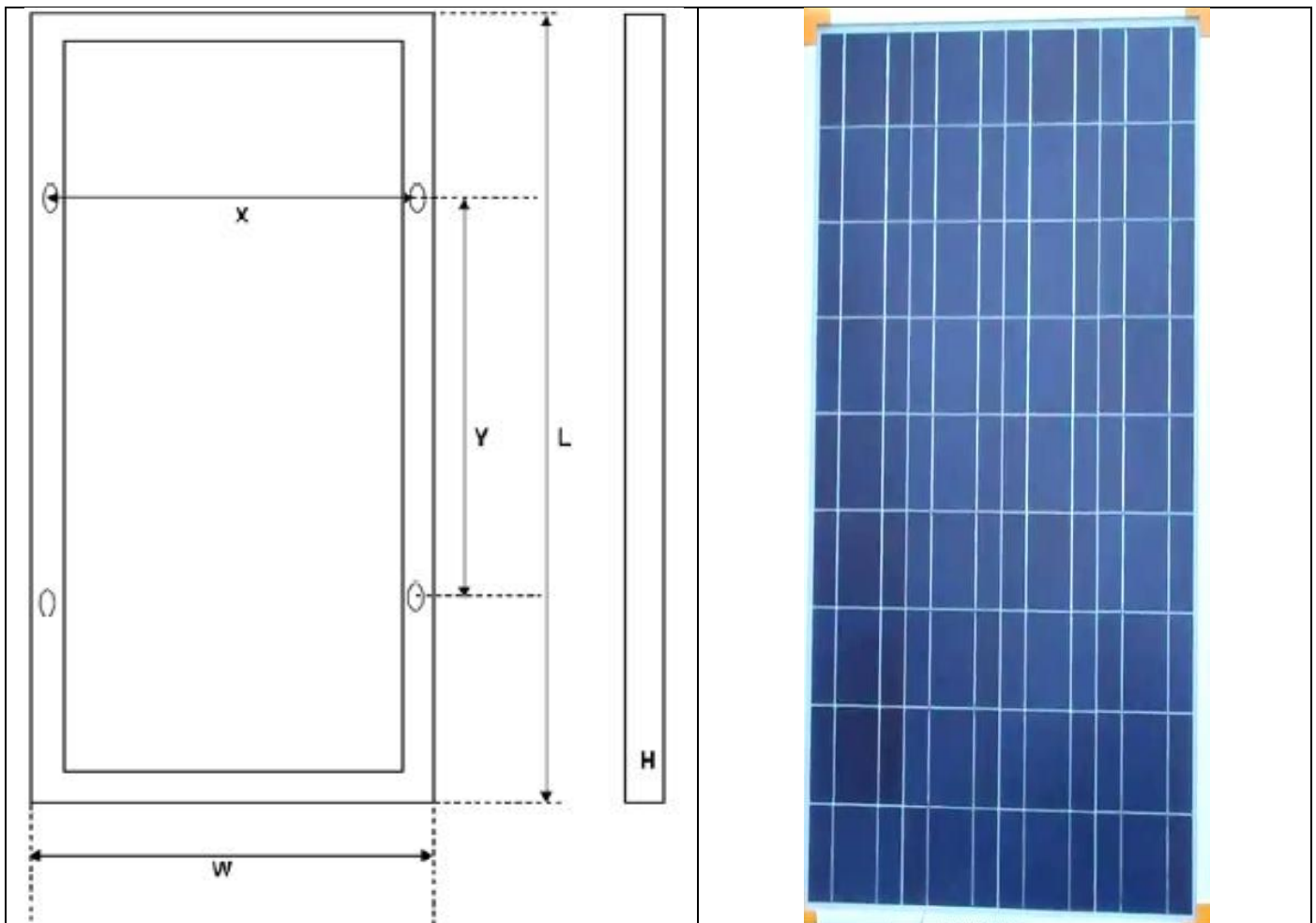
MERC (Net Metering for Rooftop Solar PV Systems)–Regulation 2015

- Consumer of electricity having a capacity less than 1 MW, can be installed on a roof-top to meet all or part of his own electricity requirement
- Generating System may be owned and/or operated by such Consumer, or by a third party leasing such System to the Consumer
- The cumulative capacity of all Roof-top Solar PV Systems under Net Metering Arrangements shall not exceed 40% of its rated capacity of Distribution Transformer
- The Eligible Consumer may install a Roof-top Solar PV System with or without battery back-up
- The Eligible Consumer may opt to procure, at his cost, the Net Meter for testing and installation by the Distribution Licensee at his premises
- A registration fee of Rs. 500 (five hundred) for Consumers with Sanctioned Load or Contract Demand up to 5 KW and Rs. 1,000 (one thousand) above 5 kW
- The Distribution Licensee and Eligible Consumer shall enter into a Net Metering Connection Agreement after approval of connectivity of the Roof-top Solar PV System with the distribution Network but before the start of actual generation from the System
- For each Billing Period, the Distribution Licensee shall show separately
 - The quantum of electricity Units exported by the Eligible Consumer
 - The quantum of electricity Units imported by the Eligible Consumer
 - The net quantum of electricity Units billed for payment by the Eligible Consumer
 - The net quantum of electricity Units carried over to the next Billing Period

SOLAR PV MODULES 320 WATTS POLY CRYSTLINE ECO 320 12X6 (72)

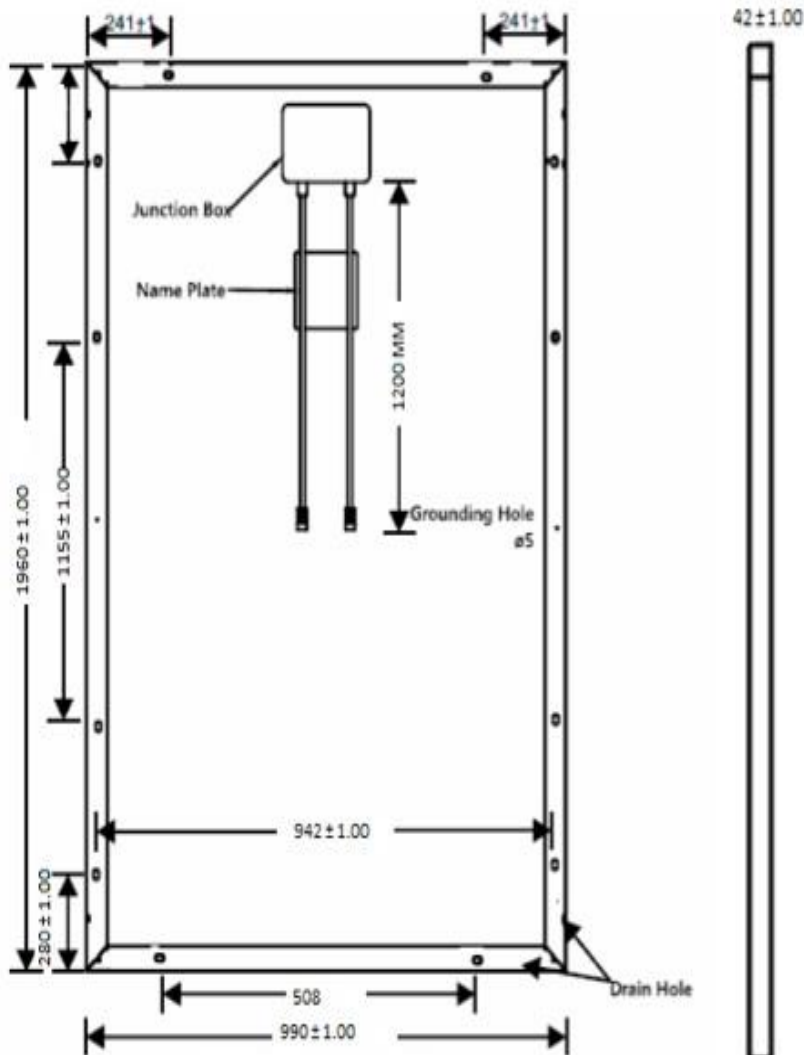
Electrical Parameter	Particulars	Particulars
Pmax (W)	(Tolerance: +3% ,-0)	320.00
Voc (V)	(Tolerance: $\pm 3\%$)	45.1
Isc (A)	(Tolerance: $\pm 3\%$)	9.22
Vmax (V)	(Tolerance: $\pm 3\%$)	36.6
Imax (A)	(Tolerance: $\pm 3\%$)	8.75
Fill Factor	(%)	>75
Module Efficiency	(%)	16.6
Maximum System Voltage	(VDC)	1000.00
Series Fuse Rating	(A)	15.00
Nominal Operating Cell Temp.	{NOCT} (°C)	45 $\pm$ 2
Temp. Coefficient of Pmax	(% / °C)	-0.38
Temp. Coefficient of Voc	(% / °C)	-0.34
Temp. Coefficient of Isc	(% / °C)	+0.053

Electrical Value Measured at STC: 25°C 1.5AM 1000 W/m³



Mechanical Parameters	Measurement / Detail	Tolerance Level
L - Length of Module	1960.00 mm	± 1.00 mm
W - Width of Module	990.00 mm	± 1.00 mm
H - Height of Module	42.00 mm	± 0.50 mm
X - Pitch Distance	942.00 mm	± 2.00 mm
Y1 & Y2 - Pitch Distance	1155.00 mm & 1400 mm	± 2.00 mm
Mounting Hole	8 Oblong of Size 12.00 mm X 08.00 mm	
Junction Box	TUV Approved, IP 67 Rated, 4 Terminal Junction Box with 3 Bypass Diode	

Module drawing of 320 W



SOLAR INVERTER

Grid-Tied Smart Inverter



The Versatile specialist for large scale commercial plants and solar power plants. The Grid-Tied Inverter is the ideal inverter for large-scale commercial and industrial plants. Not only does it deliver extraordinary high yields with an efficiency of 98.4%, but it also offers enormous design, flexibility and compatibility with many PV modules thanks to its multi-string capabilities and wide input voltage range.

Grid-Tied Inverter



Latest revolutionary designed transformer-less PV inverter is the lightest, smallest, and first wall mountable string inverter in the world. With such compact size and light weight, it offers more design flexibility for all sizes of PV plants. It comes with a peak efficiency of 98.6 %, guaranteeing better yields and returns on capital cost. The dual MPPT trackers ensure no compromise over shading losses and can accommodate PV arrays with different orientations. Integrated AC/DC switch which makes maintenance and troubleshooting easy.