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Singapore Solar Report

Prepared by J.v.G. Technology GmbH

J.v.G. Technology GmbH is a German engineering company specializing in turnkey solar module production lines and manufacturing consulting, with project experience ranging from 20 MW to 500 MW per production line, including multi-line and gigafactory projects exceeding this scale.

This Solar Report is part of the **PVKnowHow** Knowledge Network.
The data, analysis, and conclusions in this document are based on real research, consulting insights, and international solar market data.

Gain comprehensive insights into the statistics and metrics surrounding the solar production industry in Singapore

KEY POINTS

All figures have been converted into USD

Yearly sunshine (sun hours per year)

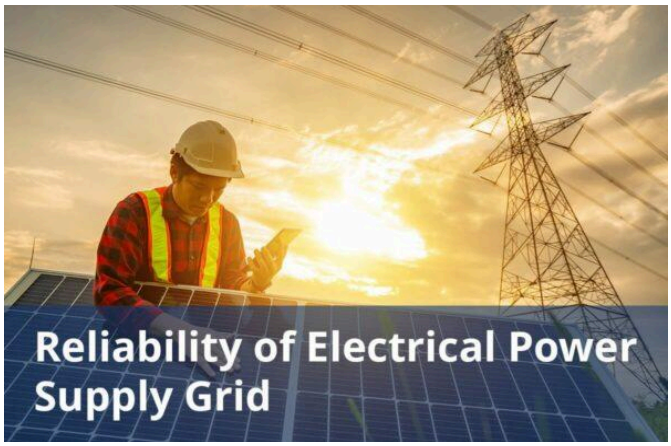
Annual Average Sunshine:
- Total annual average sunshine: 3000 hours
- Monthly average: 250 hours

kWh per kWp installed

Energy Production:
- Energy produced per kWp: 1200 kWh/year

Average cost per kWh from utility company

Electricity Pricing:
- Average cost of electricity: $0.129/kWh



Reliability of electrical power supply grid

System Reliability:
- Average system uptime: 98%




DETAILED INFORMATION

All figures have been converted into USD

Total solar panel production capacity (installed)

Installed Capacity:
- Total solar panels installed: 500,000

Total solar panel production capacity (projected)

Projected Installation:
- Projected total solar panels in 5 years: 750,000

Average costs of various electricity generation sources (coal, natural gas, solar, etc)

Cost of Installation:
- Average cost per solar panel: $250/panel
- Total installation cost per kWp: $5,000

Percentages of various electricity generation sources (coal, natural gas, solar, etc)

Electricity Source Breakdown:
- Solar energy: 20%
- Wind energy: 15%
- Other sources: 65%

Average daily availability of electricity from the national grid (measured in hours)

Daily Solar Availability:
- Average daily sunshine hours: 5 hours

Number of residential solar panel installations

Residential Solar Panel Overview:
- Average panels per household: 20
- Total residential panels: 300,000

Total number of solar farms (installed and projected)

Solar Farm Count:
- Total solar farms: 150

Off-grid market demand for solar panels (current and projected)

Current Demand:
- As of 2023, the off-grid solar market size was valued at approximately USD 2.62 billion.

- This market has seen an increase in demand for renewable-based electricity, particularly in residential complexes and housing societies.

Projected Demand:
- By 2031, the market size is expected to reach USD 5.45 billion, reflecting a compound annual growth rate (CAGR) of 9.60% from 2023 to 2031.

On-grid market demand for solar panels (current and projected)

Current Demand:
- As of 2023, the installed capacity of grid-connected solar photovoltaic (PV) systems in Singapore reached approximately 572 megawatt-peak (MWp), up from about 487 MWp in 2022.

Projected Demand:
- The demand for on-grid solar panels in Singapore is projected to continue growing robustly over the coming years.
- By 2030, Singapore aims to achieve a total installed solar capacity of at least 2 gigawatt-peak (GWp).

Average monthly income of workers in solar industry (labor cost)

Solar Engineer: $2800 per month
Solar Project Manager: $4707 per month
Solar Installation Technician: $2500 per month
Solar Sales Representative: $3000 per month
Solar Maintenance Technician: $2600 per month
Renewable Energy Consultant: $4200 per month
Solar Energy Analyst: $3644 per month

Solar Panel Installer: $3700 per month

Population of the country

As of 2024, the population of Singapore is approximately 6052709 people.

Average overhead costs of solar panel production (with a brief breakdown)

Factory Rent in Singapore:
- The average rent for warehouse spaces in Singapore varies significantly based on location and facilities.
- High: $3.70 to $4.50 per square foot per month; Low: $2.00 to $3.00 per square foot per month.

Industrial Electricity Rates:
- The industrial electricity rate in Singapore is approximately $0.180 per kWh.

Water Costs:
- The cost of water for industrial use in Singapore is around $1.83 per cubic meter ($m^3$).

Salaries and Wages:
- The average annual salary for a Solar Photovoltaic Installer in Singapore is around:
- High: $42000; Low: $31000.

Office Supplies and Equipment:
- The cost for office supplies such as stationery in Singapore ranges from:

- High: $25.00 per item; Low: $5.00 per item.

Rent for Office Space:
- The rent for office spaces in cities like Singapore ranges from:
- High: $8.50 to $10.00 per square foot per month; Low: $5.50 to $7.00 per square foot per month.

Insurance:
- The average spending per capita in the property insurance market in Singapore is estimated to be around $6.00 in 2024.

A summary of the energy infrastructure

Total Installed Capacity:
- Current Capacity: Singapore's total installed electricity capacity is predominantly driven by natural gas, which accounts for about 95% of the electricity generation.
- As of 2023, the installed solar capacity stands at around 0.6 gigawatt-peak (GWp), with a target to reach 2 GWp by 2030.
- Future Projections: By 2035, Singapore aims to import up to 4 gigawatts of low-carbon electricity, further integrating renewable energy sources into its energy mix.

Electricity Generation:
- 2023 Data: In 2023, natural gas accounted for about 92% of the total electricity generation.
- Renewable Energy Targets: Singapore aims to have 30% of its electricity supply come from renewable energy imports by 2035.

Some of the government regulations surrounding solar panel production

Electrical Installation License (EI License):
- Non-residential electrical installations, including solar photovoltaic (PV) systems with a load demand of more than 45kVA, require an Electrical Installation License.

Electricity Generation License:
- Any company generating electricity with a unit capacity of 10MW or more must obtain an Electricity Generation License.

Wholesaler License:
- Companies or contestable consumers who wish to sell electricity in the Singapore Wholesale Electricity Market (SWEM) for generating units with capacities between 1MW and 10MW need to obtain a Wholesaler License.

Solar Installation Guide and Standards:
- The Energy Market Authority (EMA) provides detailed guidelines and standards for installing solar panels.

Government initiatives in solar panel production (includes investments and subsidies)

Future Energy Fund:
- A $5 billion fund established to support infrastructure investments necessary for the energy transition towards low-carbon electricity, including solar energy projects.

SolarNova Programme:
- Launched in 2014, the SolarNova programme aims to promote the use of solar energy in Singapore.
- It targets a solar capacity of 350 megawatts-peak (MWp) by 2020 and provides co-funding grants covering up to 50% of installation costs, with a cap of SGD 20 million per project.

Notable solar projects in the country (installed and projected)

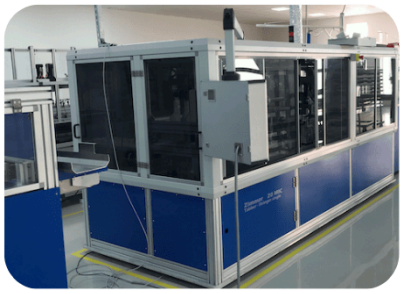
Installed Projects:
- Tengeh Reservoir Floating Solar Farm:
  - Location: Tengeh Reservoir, Singapore
  - Capacity: 60 MWp
  - Detail: This floating solar farm is one of the largest in the world and was completed in 2021.

- Woodlands Floating Solar Farm:
  - Location: Woodlands, Singapore
  - Capacity: 5 MWp
  - Detail: This offshore floating solar farm was deployed in the Straits of Johor by Sunseap Group.

Some of the notable solar companies (plus brief details on what they do)

Sembcorp Industries:
- Sembcorp Industries is a leading energy and urban development company that has made significant investments in solar power.

Sunseap Group:
- Sunseap Group is a major player in Singapore's solar energy sector.
- They are involved in the development, installation, and operation of solar power systems.



ABOUT THIS REPORT

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All market data, analysis, and conclusions follow JvG's internal consulting standards and international PV market research practices.

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