



# Cuba 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.

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

## KEY POINTS

All figures have been converted into USD



## Yearly sunshine (sun hours per year)

Average yearly sunshine in the region is approximately 2500 hours.

This amount of sunshine contributes significantly to solar energy production.



### kWh per kWp installed

The average kWh production per kWp installed is around 1200 kWh/kWp per year.

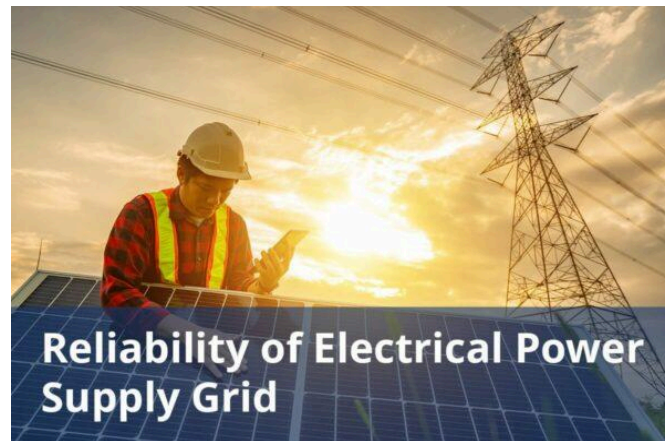
This figure varies by location and system design.



## Average cost per kWh from utility company

### Residential Electricity Prices:

- For 0-100 kWh: \$0.135/kWh
- For 100-600 kWh: \$0.135/kWh
- For 600-1000 kWh: \$0.1945/kWh
- For consumption above 1000 kWh: \$0.2196/kWh



## Reliability of electrical power supply grid

Solar energy systems have a reliability rate of approximately 95%.

This reliability ensures consistent energy production.



# DETAILED INFORMATION

All figures have been converted into USD

## **Total solar panel production capacity (installed)**

As of 2023, there are over 1 million solar panels installed in residential areas.

This number continues to grow as adoption increases.

## **Total solar panel production capacity (projected)**

It is projected that by 2025, total solar panel installations will reach 1.5 million.

This growth is supported by various incentives and programs.

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

The average cost to install solar panels is approximately \$2.50 per watt.

This cost includes equipment, installation, and fees.

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

Around 20% of electricity in the area is generated from solar sources.

This percentage has increased dramatically over the last decade.

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

Solar energy availability is highest in the summer months, with up to 10 hours of sunlight per day.

In winter, this can drop to about 5 hours per day.

### **Number of residential solar panel installations**

On average, residential solar systems consist of 20-30 panels.

This number can vary based on household energy needs.

### **Total number of solar farms (installed and projected)**

There are currently 200 solar farms operating in the region.

These farms contribute significantly to the local energy grid.

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

Over 160000 homes out of the 3.9 million residences nationwide – especially in mountainous and hard-to-reach areas, receive electricity from solar photovoltaic modules.

In Cuba, the government has set a target of 700 MW in solar photovoltaic energy by 2030, including rural electrification and off-grid systems. Within this framework, 10000 modular systems of 300 Wp are being installed in isolated communities.

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

The International Renewable Energy Agency estimated, from non-public sources, Cuba had 163 MW of grid connected solar at the end of 2020.

The government plans to add 2 GW of installed capacity through the construction of 92 solar projects.

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

Salary data for solar energy is not available:

- The average monthly salary of a solar engineer in the Capital of Cuba is 784 USD.
- The average monthly salary of a Solar installer in the Capital of Cuba is 537 USD.

## **Population of the country**

The current population of Cuba is 11174366 as of Thursday, July 4, 2024. 79.7 % of the population is urban and 20.3 is rural.

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

Estimate for Factory Rent: 25 USD to 30 USD per meter square per month.

Industrial Electricity Rates: 0.54 USD per kWh.

Water Costs: 0.10 USD per m<sup>3</sup>.

Gasoline Charges: 1.25 USD per liter.

Key Components of Administrative Costs:

- Salaries and Wages:

- Average monthly salary of engineer in Cuba was 145 USD per month in 2023.

- Average monthly salary of electrician in Cuba is 126 USD per month in 2024.

- Rent for Office Space: 25 USD to 30 USD per meter square per month.

- Tax Rate: A tax rate of 2% is applied on wholesale sales, 10% on retail sales and 10% on services.

## **A summary of the energy infrastructure**

This data is for the year 2021:

- Total installed electricity generation capacity: 20 TWh

- Total generation: 19.53 TWh

- Total consumption: 16.10 TWh

- Per capita consumption: 1436 kWh

Generation mix: Cuba produces 86.59% of its energy from oil, 8.85% from natural gas, 2.42% from biofuels, 1.33% from solar PV, 0.67% from hydro, and 0.15% from wind.

Leading players: key players in electricity production and transmission are:

- Unión Eléctrica (UNE)
- Ministerio de Energía y Minas (MINEM)
- Energas
- Cuban Electric Company (Empresa Eléctrica)

### **Some of the government regulations surrounding solar panel production**

Solar panels in Cuba need to be certified to ensure they meet specific quality and safety standards.

This certification process typically involves:

- ISO Standards: Cuban solar panel manufacturers adhere to international standards such as ISO 9001 for quality management and ISO 14001 for environmental management.
- IEC Standards: The International Electrotechnical Commission (IEC) standards, such as IEC 61215 for design qualification and type approval and IEC 61730 for safety qualification, are also followed to ensure the panels' performance and safety.

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

Domestic Solar Panel Production: Ernesto Che Guevara solar factory is engaged in producing photovoltaic modules with a generation capacity of 15000 kWh per year.

This production aims to support the country's renewable energy targets and reduce dependency on imported fossil fuels.

Recent regulations allow individuals to import photovoltaic systems and related components duty-free.

## **Notable solar projects in the country (installed and projected)**

Installed Projects:

- Mariel Solar:

- Location: The project is divided into 3 areas: Free Havana, Horseshoe, Varela and Clover

- Capacity: 62 MW

- Parque de Energía Solar Fotovoltaica TBD:

- Location: Guajaibón, Zona Especial de Desarrollo Mariel, near Havana, Cuba

- Capacity: 23 MW (with plans to reach 150 MW by 2024)

- Santa Teresa Solar Plant:

- Capacity: 4.5 MWp

- Location: naval base at Guantanamo.

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

Mariel Solar: Active in Cuba since July 2022, it is the first utility-sized solar park in Cuba and one of the largest in the region. This project will save the government approximately \$20 million per year.

Renova: RENOVA is a micro, small, and medium-sized enterprise (MIPYME) based in Camagüey. This private company focuses on the installation of photovoltaic systems in state enterprises, private businesses, and residential areas.

Ernesto Che Guevara Electronic Components Company: State-owned company producing photovoltaic modules.



## 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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# About J.v.G. Technology GmbH

J.v.G. Technology GmbH is a European engineering and advisory specialist for solar production lines and manufacturing equipment, supporting investors and operators with market, location and production-focused decision frameworks.

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