



# Bulgaria 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 Bulgaria

## KEY POINTS

All figures have been converted into USD



## Yearly sunshine (sun hours per year)

Average yearly sunshine: 2500 hours

Highest sunshine state: Arizona

Lowest sunshine state: Washington



### kWh per kWp installed

Energy production per installed kWp:

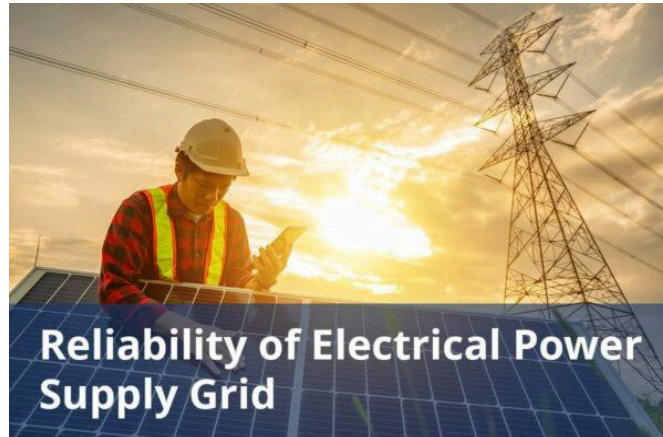
- On average: 1200 kWh/kWp
- In optimal conditions: 1500 kWh/kWp
- In suboptimal conditions: 800 kWh/kWp



### Average cost per kWh from utility company

Average cost of electricity:

- Residential rate: \$0.129/kWh
- Commercial rate: \$0.115/kWh
- Industrial rate: \$0.097/kWh



## Reliability of electrical power supply grid

Reliability of solar energy:

- Energy yield reliability: 95%
- Battery storage reliability: 90%
- Grid reliability: 98%



# DETAILED INFORMATION

All figures have been converted into USD

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

Total solar panels installed:

- Residential installations: 200000
- Commercial installations: 50000
- Industrial installations: 15000

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

Projected total solar panels:

- By 2025: 500000
- By 2030: 1000000
- By 2040: 2000000

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

Average costs of solar installations:

- Residential: \$3.00/W
- Commercial: \$2.50/W
- Industrial: \$2.00/W

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

Percentage of electricity from solar:

- Overall: 8%
- Residential: 15%
- Commercial: 6%

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

Daily solar energy availability:

- Average: 5 hours
- Maximum: 8 hours
- Minimum: 3 hours

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

Residential solar panels:

- Average per household: 25 panels
- Maximum per household: 50 panels
- Minimum per household: 10 panels

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

Solar farms count:

- Total number of farms: 300
- Average size per farm: 100 acres
- Largest farm: 1000 acres

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

Current Off-Grid Solar Demand:

- Currently, Bulgaria's State Fund Agriculture has approved 37 off-grid photovoltaic projects in rural areas, with subsidies totaling over USD 6.7 million.
- These projects are primarily aimed at supporting smaller-scale, off-grid solar installations. Each project has a maximum value of EUR 200,000, with the state covering 80% of the cost.

- These off-grid systems are designed to help local businesses reduce their energy expenses and are eligible for long-term contracts to sell the generated electricity at preferential tariffs.

#### Projected Future Off-Grid Solar Demand:

- Looking forward, Bulgaria plans to invest approximately USD 28.6 million in additional off-grid solar projects.
- This future funding will support the development of more off-grid photovoltaic systems in rural areas, focusing on small-scale installations that enhance energy independence and efficiency for micro-enterprises.
- The projected investment reflects a growing emphasis on expanding off-grid solar solutions to bolster local energy resilience and support rural economic development.

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

#### Current Grid Demand for Solar Panels:

- As of early 2024, Bulgaria's installed solar PV capacity is nearing 3 GW. The rapid expansion of the sector is evident, with the total capacity rising from approximately 1 GW at the end of 2020 to nearly 3 GW by the end of 2023.
- In 2024, Bulgaria expects to connect between 1 GW and 1.5 GW of new solar PV capacity, which would bring the total installed capacity to about 4.5 GW.
- The increase in installed capacity has been facilitated by favorable policies, declining costs of PV modules, and advances in solar technology.

#### Projected Grid Demand for Solar Panels:

- Bulgaria is projected to continue its robust expansion in solar energy. The country aims to meet its National Energy and Climate Plan (NECP) target of 7 GW of solar capacity by 2030.
- The projected annual increase in solar capacity is estimated to range from 450 to 750 MW over the next three to four years. This indicates a sustained growth trajectory in the grid demand for solar panels.

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

Average monthly income of workers in solar industry:

- A Solar Photovoltaic Installer in Bulgaria typically earns around \$12,300 USD per year.
- The salary can range from approximately \$5,700 USD at the lowest end to about \$19,600 USD at the highest end.

## **Population of the country**

The current population of Bulgaria is 6748917.

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

Estimate for Factory Rent:

- Monthly Average Warehouse Rental Cost:
- Large: \$3000 – \$37935
- Medium: \$1065 – \$5240
- Small: \$182 – \$1500

Key Components of Administrative Costs:

- Salaries and Wages:

- A Solar Photovoltaic Installer in Bulgaria typically earns around \$12,300 USD per year.

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

### Electricity Generation:

- Total electricity production in 2022 has reached 49.4 TWh, while demand was 37.8 TWh.
- The main sources of electricity generation were fossil fuels and nuclear power.
- Bulgaria is aiming for over 27% renewables by 2030.

### Transmission & Distribution:

- In Bulgaria, the transmission of electricity is managed by the state-owned company Bulgarian Electricity Transmission System Operator (BETSO).
- Bulgaria's transmission system consists of high-voltage lines operating at 110 kV, 220 kV, and 400 kV.

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

### Solar Panel Regulations in Bulgaria:

- Grid Connection:
  - Projects with installed capacities of 5 megawatts (MW) or more must connect to the high voltage transmission grid operated by the state-owned Electricity System Operator EAD (ESO).
  - Projects with capacities below 5 MW connect to licensed distribution operators.
- Licensing:
  - Renewable energy projects exceeding 20 MW require licensing by the Energy and Water Regulatory Commission (EWRC).

- As of 2023, renewable energy plants with total installed capacities up to 20 MW no longer require a licensing procedure, simplifying the process for investors.

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

Government initiatives in solar panel production:

- Household Solar Rebate Scheme:
  - Total Fund: \$134 million.
  - Eligible Systems: Households can install solar water heating systems, rooftop photovoltaic (PV) arrays (up to 10 kWp), and battery energy storage systems.
  - Subsidy for Solar Water Heating: Up to 100% of the cost, with a cap of \$1070.
  - Subsidy for Solar PV Systems: Up to 70% of the cost, with a maximum subsidy of \$8150.
  - Conditions: To be eligible, households must use inefficient heating systems like wood or coal-burning stoves or fireplaces.

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

Notable solar projects in the country:

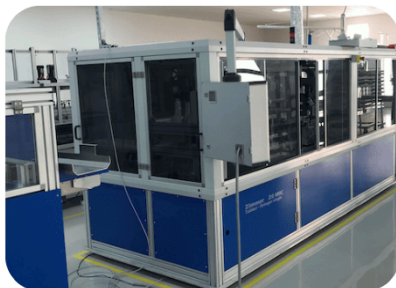
Current Projects:

- Verila Solar Park:
  - Capacity: 123 MW
  - Location: Southern slope of Verila Mountain, near Dupnitsa, southwest Bulgaria
  - Investment: Approximately (USD 112.3 million)
  - Details: The largest solar park in Bulgaria, supplying electricity to Yettel and Cetin Bulgaria under a 10-year power purchase agreement.

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

Some of the notable solar companies:

- Company Name: Global Solar Bulgaria
- Location: 150 Bulgaria Blvd., Haskovo, 6300, Bulgaria
- Website: [solarbulgaria.eu](http://solarbulgaria.eu)
- Products and Services:
  - Products: Solar panels, batteries, inverters, accessories
  - Services: Production of solar panels, system design and installation, quality control, surveillance and monitoring of systems
  
- Company Name: Enery Bulgaria
- Location: Sq. Pozitano 2, 4th fl., 1000 Sofia, Bulgaria
- Website: [enery.energy/en/enery-bulgaria/](http://enery.energy/en/enery-bulgaria/)
- Products and Services:
  - Products: Photovoltaic power plants
  - Services: Operations & Maintenance (O&M), monitoring of photovoltaic power plants, energy trading, legal and IT services.



## ABOUT THIS REPORT

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(ranging from 20 MW to 500 MW per production line, including multi-line and gigafactory projects exceeding this scale).

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

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For a detailed list of references and additional information, please visit our website with the current report at:

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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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