Georgia 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 Georgia

KEY POINTS

All figures have been converted into USD

Yearly sunshine (sun hours per year)

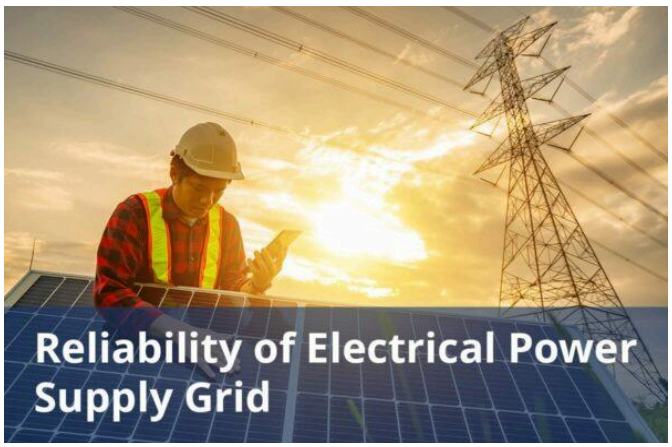
Yearly Sunshine Data:
- Average yearly sunshine: 2600 hours
- Best month: July
- Average daily sunshine: 7.1 hours
- Low sunshine days: 4 per year

kWh per kWp installed

kWh per kWp:
- Standard panel efficiency: 800 kWh/kWp
- High-efficiency panel: 1100 kWh/kWp
- Older model efficiency: 600 kWh/kWp

Average cost per kWh from utility company

Average Cost per kWh:
- Residential: $0.130/kWh
- Commercial: $0.104/kWh
- Industrial: $0.080/kWh



Reliability of electrical power supply grid

Reliability of Solar Energy:
- Expected lifespan of panels: 25 years
- Percent of uptime: 98%
- Maintenance frequency: once a year




DETAILED INFORMATION

All figures have been converted into USD

Total solar panel production capacity (installed)

Total Solar Panels Installed:
- Residential: 2 million
- Commercial: 500 thousand
- Utility-scale: 1 million

Total solar panel production capacity (projected)

Total Solar Panels Projected:
- By 2030: 10 million
- By 2040: 25 million

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

Average Costs:
- Installation cost per panel: $300
- Maintenance cost per year: $100

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

Percentages of Electricity from Solar:
- Combined total: 20%
- Residential solar share: 30%
- Commercial solar share: 15%

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

Daily Solar Power Availability:
- Peak sun hours: 5 hours/day
- Average load: 600 kWh
- Total daily generation: 3000 kWh

Number of residential solar panel installations

Number of Residential Solar Panels:
- Average per home: 20 panels
- Total homes with panels: 1 million

Total number of solar farms (installed and projected)

Number of Solar Farms:
- Total operational: 200

- Under development: 50
- Planned: 30

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

The adoption of off-grid solar solutions is rapidly increasing in Georgia, particularly in remote and rural regions as well as for commercial use.

The Georgian government has launched initiatives like a $704,000 project for autonomous micro-PV plants in sparsely populated mountainous areas.

Since 2019, nearly $500,000 in credit has been granted for off-grid solar power stations, with businesses ranging from online supermarkets to heavy production companies embracing renewable energy.

For instance, OmniFactory in Georgia has installed 1,000 solar panels, transitioning 70% of its electricity consumption to renewable sources with the goal of becoming fully off-grid.

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

Georgia introduced its net metering system in 2016, initially limiting connections to energy-generating stations with a capacity of up to 100 kW, primarily benefiting private households.

In 2020, the Georgian National Energy and Water Supply Regulatory Commission (GNERC) raised the limit to 500 kW, enabling small and

medium-sized businesses to connect and allowing generating and utilizing stations to operate in different locations.

Since then, 316 stations with a total capacity of over 10 MW have joined the system.

GNERC has ensured micro power plants have free network access and established fixed tariffs under the Electricity Supply and Consumption Rules (Resolution No. 20).

In Tbilisi, where peak load averages 550-600 MW, the installed solar capacity is currently at about 10 MW, or just under 2%. While the grid can handle up to 10-12% of peak load from microgeneration sources, the lack of financially viable battery storage systems limits improvements in grid reliability and capacity.

In a major step forward, Masdar, in collaboration with the Georgian Energy Development Fund (GEDF), will develop Georgia's largest solar power plant, a 100 MW photovoltaic facility in Gardabani Municipality.

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

The average monthly salary in Georgia is approximately $722.

Solar Engineer: the average monthly salary is approximately $2,262.

Solar Energy System Installer: the average monthly salary is approximately $702.

Solar Thermal Technician: the average monthly salary is approximately $1,334.

Population of the country

The current population of Georgia is 3807110.

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

Estimate for Factory Rent
- The average rent for industrial spaces in Tbilisi ranges between $2 to $4.5 per square meter, depending on the location and condition of the property.

Industrial Electricity Rates
- In Tbilisi, Georgia, industrial electricity rates vary based on the voltage level and the type of consumer. Here are some of the current tariffs:
- 220/380 V: For business customers, including small enterprises, the rate is 0.0356 $/kWh
- 3-6-10 kV: The rate for business consumers is 0.014 $/kWh
- 35-110 kV: The rate for business consumers is 0.007 $/kWh

These rates are applicable from January 1, 2024, to January 1, 2026, as per the current regulations.

Water Costs
- In Georgia, the water tariff for businesses (legal entities) is $3.092 per cubic meter for metered consumption. This includes $2.365 for water supply and $0.726 for wastewater treatment.

A summary of the energy infrastructure

Georgia's energy mix is dominated by hydroelectric power, which accounted for about 76% of electricity generation in 2021.

The Enguri hydro facility is a significant contributor, with a capacity of 1300 MW.

Natural gas-fired facilities generate about 19% of Georgia's electricity. The country imports natural gas primarily from Azerbaijan and Russia.

Renewable Power contributes a smaller portion, less than 1% of total electricity generation.

Some of the government regulations surrounding solar panel production

Law of Georgia on Energy Efficiency (2020): This law aims to increase energy savings, enhance energy supply security, and eliminate barriers to improving energy efficiency.

It sets procedures for developing national energy efficiency targets and adopting action plans, ensuring supervision and monitoring of energy efficiency policies.

Law of Georgia on Energy Efficiency of Buildings (2020): This law focuses on improving the energy performance of buildings by setting minimum energy efficiency requirements and establishing a methodology for calculating energy performance.

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

Net Metering System: Georgia introduced a net metering system in 2016, allowing households and small businesses to generate and sell excess energy back to the grid.

Initially, it was limited to systems up to 100 kW, but this was increased to 500 kW in 2020, enabling more businesses to participate.

Green Grants Program: The Green Grant Program, supported by the European Union and the United Nations Development Program, aims to facilitate access to renewable energy technologies in rural areas and the business sector.

Notable solar projects in the country (installed and projected)

Kaspi Solar Power Plant
- Capacity: 10 MW
- Location: Kaspi municipality, Georgia
- Year: Construction authorized in 2024, expected to start soon
- Investor: Energy Group (a Georgian private company)
- Details: This project aims to enhance energy independence and security in Georgia.

Masdar GEDF Solar PV Park
- Capacity: 100 MW
- Location: Kvemo Kartli, Georgia
- Year: Construction expected to start in 2025, operational by 2027
- Investor: Masdar (Abu Dhabi Future Energy) and Georgian Energy Development Fund (GEDF)
- Details: This will be Georgia's largest utility-scale solar power plant, supporting the country's energy diversification efforts.

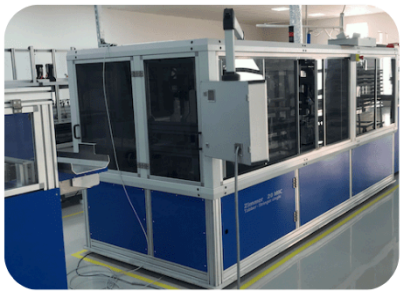
Udabno Solar Power Plant

- Capacity: 6.4 MW
- Location: Udabno village, Sagarejo municipality, Georgia
- Year: Construction expected to start in February 2025

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

Next Energy LLC
- Headquarters: Tbilisi, Georgia
- Website: https://nextenergy.ge/
- Details: They develop several prominent utility-scale solar and wind power plants across Georgia, offering comprehensive services that include identifying renewable energy projects, conducting feasibility studies, securing necessary memorandums and permits, and designing and constructing the facilities.

Sun House LLC
- Headquarters: Tbilisi, Georgia
- Website: https://sunhouse.ge/en/
- Details: A leading solar installer and pioneer in solar energy in Georgia, with 30 years of experience, specializing in photovoltaic stations and modern water heating 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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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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