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Guatemala 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 Guatemala

KEY POINTS

All figures have been converted into USD

Yearly sunshine (sun hours per year)

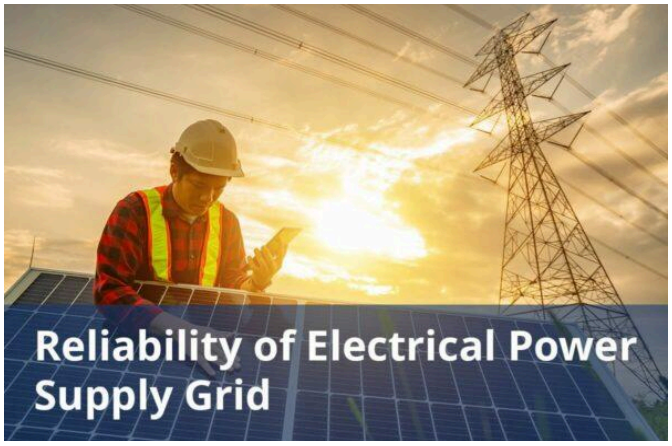
Annual Average Sunshine:
- In January: 155 hours
- In February: 163 hours
- In March: 228 hours
- In April: 263 hours
- In May: 303 hours
- In June: 312 hours
- In July: 330 hours
- In August: 310 hours
- In September: 248 hours
- In October: 204 hours
- In November: 183 hours
- In December: 154 hours

kWh per kWp installed

kWh Production per kW:
- For 1 kWp: 1000 kWh/year
- For 2 kWp: 2000 kWh/year
- For 3 kWp: 3000 kWh/year

Average cost per kWh from utility company

Average Cost Per kWh:
- Residential Rate: $0.130/kWh
- Commercial Rate: $0.115/kWh
- Industrial Rate: $0.105/kWh



Reliability of electrical power supply grid

System Reliability:
- Downtime: 2.5%
- Maintenance Frequency: Quarterly
- Performance Ratio: 80%




DETAILED INFORMATION

All figures have been converted into USD

Total solar panel production capacity (installed)

Total Solar Panels Installed:
- Residential: 150000
- Commercial: 70000
- Industrial: 30000

Total solar panel production capacity (projected)

Projected Solar Panels by 2030:
- Residential: 300000
- Commercial: 150000
- Industrial: 60000

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

Average Costs:
- Installation Cost: $2500/kW
- Maintenance Cost: $150/year
- Operation Cost: $100/year

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

Percentage of Electricity from Solar:
- Residential Use: 20%
- Commercial Use: 15%
- Industrial Use: 10%

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

Daily Availability:
- Average Daily Sunshine: 5.5 hours
- Peak Sun Hours: 6.2 hours

Number of residential solar panel installations

Number of Residential Solar Panels:
- Average Home: 15 panels
- Typical System Size: 4 kW

Total number of solar farms (installed and projected)

Number of Solar Farms:
- Large Scale: 25
- Medium Scale: 50
- Small Scale: 100

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

IDB Invest is promoting off-grid solar energy access in rural areas of Guatemala and Colombia by investing in Kingo Energy, a company that provides clean energy solutions to approximately 45000 households across both countries.

Guatemala's off-grid market may lack comprehensive data, but it's clear that solar adoption is on the rise. The demand for dependable electricity in off-grid areas is driving the expansion of solar home systems, which provide a viable and eco-friendly alternative to traditional grid infrastructure, particularly in remote or underserved regions.

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

Current Demand: By 2022, Guatemala had successfully installed 105 MW of photovoltaic (PV) capacity.

Projected Demand: Guatemala's on-grid solar PV market is expected to sustain its upward trajectory, targeting an additional 65 MWp of solar capacity by 2025, followed by a further 235 MW of capacity to be brought online between 2026 and 2028.

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

Solar Panel Technician: In Guatemala, solar panel technicians earn an average gross salary of $10808.60/year ($5.16/hour) plus a $282.16 bonus. Salaries range from $8275.38 (entry-level, 1-3 years) to $13240.74 (senior-level, 8+ years), based on employer and employee surveys.

Solar Engineer: In Guatemala, solar engineers average $28956.10/year ($14.01/hour) with a $828.18 bonus. Salaries range from $20971.39 (entry-level, 1-3 years) to $36430.36 (senior-level, 8+ years), based on employer and employee surveys.

Population of the country

The current population of Guatemala is approximately 18376837 people.

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

The overhead costs for solar panel production in Ivory Coast typically range from 20% to 25% of the total production cost.

The labor costs for solar PV system installation, assembly, and maintenance on roofs or structures, following site assessments and schematics, range from $8275.38 for entry-level technicians to $13240.74 for senior-level professional.

Utilities: Basic (Water, Electricity, Garbage, Heating, Cooling) $67.15 at the same time, the Internet costs is $66.14 per month.

Factory rent cost in Guatemala can vary based on location, size, and specific requirements ranging from $220 per month to $12386 per month.

A summary of the energy infrastructure

Installed capacity: Guatemala's installed electrical capacity totaled 4110 MW as of 2020, with the majority derived from hydro power

(38.38%), followed by fossil fuels (30.36%), and biomass (25.20%). In contrast, other renewable energy sources accounted for a smaller share, including wind power (2.61%), solar energy (2.25%), and geothermal energy (1.20%).

Production: Guatemala's electricity production rose from 11121 GWh in 2020, driven by hydro power (52.30%), fossil fuels (24.88%), biomass (15.55%), wind (2.81%), geothermal (2.46%), and solar energy (1.99%), to 13899 GWh in 2021, marking a significant increase in power generation.

Some of the government regulations surrounding solar panel production

The General Law of Electricity (Ley General de Electricidad): Guatemala's General Law of Electricity governs the country's electricity sector, covering generation, transmission, distribution, and marketing. The law mandates utilities to secure electricity supply contracts through competitive auctions, offering 15-year Power Purchase Agreements (PPAs) for capacity or energy.

Incentives Law for the Development of Renewable Energy Projects (Ley De Incentivos Para El Desarrollo De Proyectos De Energia Renovable): Under Accord 211 of 2005, Guatemala's incentive law provides tax benefits for renewable energy technologies, including 10-year exemptions from import duties, VAT, income tax, and commercial tax.

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

To foster investment in renewable energy sources, such as solar power, the Guatemalan government offers a range of financial incentives, including tax credits, aimed at encouraging businesses to transition to cleaner energy solutions:

Tax credit: Guatemala offers a trio of financial incentives for renewable energy investments: a 30% income tax credit, exemption from import taxes on renewable energy equipment, and a 10-year exemption from property taxes on the value of installed solar systems, making it an attractive destination for sustainable energy projects.

Notable solar projects in the country (installed and projected)

San Patricio Renovables Project:
- Status: ongoing
- Commissioning year: mid-2025
- Capacity: 65 MWp

Green Solar Project solar farm:
- Status: Operating
- Commissioning year: 2014
- Capacity: 13.5 MW

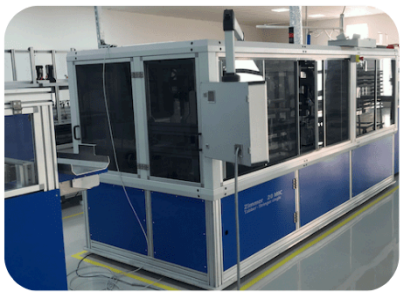
Horus Energy PV Solar Plant:
- Status: Operating
- Commissioning year: 2015
- Capacity: 58 MWp/dc and 35 MWp/dc

Zacapa solar farm:
- Status: Operating
- Commissioning year: 2022
- Capacity: 9 MWp/dc

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

Joey Solar Coban: Provides top-tier solar panel installation services in Coban, delivering exceptional solar products and expert solutions for those looking to invest in renewable energy and harness the power of the sun.

Global Pro Group, S.A: Offers cutting-edge solar solutions in Guatemala City, prioritizing sustainability and environmental stewardship. By providing energy-efficient solutions that reduce ecological impact, they aim to improve quality of life, increase productivity, and generate savings for their clients.



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.

REFERENCES

All References

1. <https://weather-and-climate.com/average-monthly-hours-Sunshine,Guatemala-City,Guatemala> – “On average, the total annual amount of sun is 2445 hours” Retrieved 23 July, 2024.
2. <https://globalsolaratlas.info/map?c=15.789443,-90.23335,7&r=GTM> – global solar atlas “Guatemala” Retrieved 23 July 2024.
3. <https://www.globalpetrolprices.com/Guatemala/electricity%5Fprices/> – “Guatemala electricity prices” Retrieved 23 July 2024.
4. <https://www.iaee.org/eeep/eeepexec/eeep13-1-Accursi-exsum.pdf> – “Quality Matters: Power Reliability and Grid Connection in Rural Guatemala.” Retrieved 1 August 2024.
5. <https://iaee2021online.org/download/contribution/presentation/1082/1082%5Fpresentation%5F20210604%5F100945.pdf> – “Power Reliability and Grid Connection: Evidence from Rural Guatemala” Retrieved 1 August, 2024.
6. <https://www.pv-magazine.com/2023/07/18/guatemalas-energy-auction-attracts-48-bidders/> – “Guatemala’s energy auction attracts 48 bidders” Retrieved 1 August 2024.
7. <https://www.pv-tech.org/mpc-guatemala-65mwp-solar-project-construction/> – “MPC Energy Solutions begins construction at 65MWp Guatemalan solar project” Retrieved 23 July 2024.

8. <https://www.switchcoal.org/en/countries/guatemala> – “Coal plants in Guatemala” Retrieved 1 August 2024
9. <https://www.iea.org/countries/guatemala/electricity> – “Sources of electricity generation” Retrieved 1 August 2024.
10. <https://ourworldindata.org/energy/country/guatemala> – “Guatemala: Energy Country Profile” Retrieved 1 August 2024.
11. <https://www.world-energy.org/article/41210.html> – “Enerland Will Build a 66 MWp Photovoltaic Plant in Guatemala” Retrieved 1 August 2024
12. <https://bmrenergy.com/projects/guatemala-solar/> – “BMR ENERGY’S GUATEMALA GREEN SOLAR PROJECT Strengthening Solar in Guatemala” Retrieved 1 August 2024
13. <https://www.gem.wiki/Category:Solar%5Ffarms%5Fin%5FGuatemala> – “Solar farms in Guatemala” Retrieved 1 August 2024.
14. <https://www.idbinvest.org/en/news-media/idb-invest-supports-grid-solar-energy-access-rural-communities-guatemala-and-colombia> – “IDB Invest supports off–grid solar energy access for rural communities in Guatemala and Colombia, investing in Kingo Energy” Retrieved 1 August 2024.
15. <https://www.salaryexpert.com/salary/job/solar-panel-technician/guatemala> – “Solar Panel Technician” Retrieved 1 August 2024.
16. <https://www.salaryexpert.com/salary/job/solar-engineer/guatemala> – “Solar Engineer” Retrieved 1 August 2024.
17. <https://www.worldometers.info/world-population/guatemala-population/#google%5Fvignette> – “Guatemala Population live” Retrieved 1 August 2024.
18. <https://www.realtor.com/international/gt/guatemala-city/rent/industrial-

warehouse> – “Industrial/Warehouse for Rent in Guatemala City” Retrieved 1 August 2024.
19. <https://www.travelsafe-abroad.com/cost-of-living/guatemala/guatemala-city/> – “Cost of Living in Guatemala City, Guatemala” Retrieved 1 August 2024.
20. <https://www.statista.com/outlook/fmo/insurances/non-life-insurances/property-insurance/guatemala> – “Property Insurance – Guatemala” Retrieved 1 August 2024.
21. <https://www.gem.wiki/Energy%5Fprofile:%5FGuatemala> – “Energy profile: Guatemala” Retrieved 1 August 2024.
22. <https://openinframap.org/stats/area/Guatemala> – “Power plants in Guatemala by source” Retrieved 1 August 2024.
23. <https://www.iea.org/policies/6262-the-general-law-of-electricity-ley-general-de-electricidad> – “The General Law of Electricity (Ley General de Electricidad)” Retrieved 1 August 2024.
24. <https://www.iea.org/policies/6265-incentives-law-for-the-development-of-renewable-energy-projects-ley-de-incentivos-para-el-desarrollo-de-proyectos-de-energia-renovable> – Incentives Law for the Development of Renewable Energy Projects (Ley De Incentivos Para El Desarrollo De Proyectos De Energia Renovable) “Retrieved 1 August 2024.
25. <https://www.iea.org/policies/6269-technical-standard-for-the-connection-operation-control-and-commercialization-of-the-renewable-distributed-generation-and-self-producing-users-with-excess-of-energy-net-metering-> “Technical Standard for the Connection, Operation, Control and Commercialization of the Renewable Distributed Generation – and Self-Producing Users with Excess of Energy – Net Metering” Retrieved 1 August 2024.

26. <https://profilesolar.com/locations/Guatemala/Guatemala-City/> – “Solar PV Analysis of Guatemala City, Guatemala” Retrieved 1 August 2024.
27. <https://www.pv-tech.org/mpc-guatemala-65mwp-solar-project-construction/> – “MPC Energy Solutions begins construction at 65MWp Guatemalan solar project” Retrieved July 24, 2024.
28. <https://www.gem.wiki/Green%5FSolar%5FProject%5Fsolar%5Ffarm> – “Green Solar Project solar farm” Retrieved July 24, 2024.
29. <https://www.gem.wiki/Horus%5FEnergy%5FPV%5FSolar%5FPlant> – “Horus Energy PV Solar Plant” Retrieved July 24, 2024.
30. <https://www.gem.wiki/Zacapa%5Fsolar%5Ffarm> – “Zacapa solar farm” Retrieved July 24, 2024.
31. https://www.es99999.com/acerca-de-nosotros#&gid=1116444430&pid=2 – “Joey Solar” Retrieved July 24, 2024.
32. [https://gpg.com.gt/sample-page/#](https://gpg.com.gt/sample-page/) – “Global Pro Group, S.A” Retrieved July 24, 2024.
33. <https://www.aisa.com.gt/nosotrosaisa/> – “Alternativas Inteligentes S. A.” Retrieved July 24, 2024.
34. <https://www.mpc-energysolutions.com/company/about-us> – “This is MPC Energy Solutions” Retrieved July 24, 2024.
35. <https://www.guatemala-solar.com/> – “Guatemala solar” Retrieved 31 July 2024.
36. <https://greenergyze.com/nosotros/> – “Green Energia solar” Retrieved 1 August 2024.

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