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Costa Rica 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 Costa Rica

KEY POINTS

All figures have been converted into USD

Yearly sunshine (sun hours per year)

Average yearly sunshine: 300 sunny days

Total sunlight hours per year: 2400 hours

Average daily sunshine: 8 hours

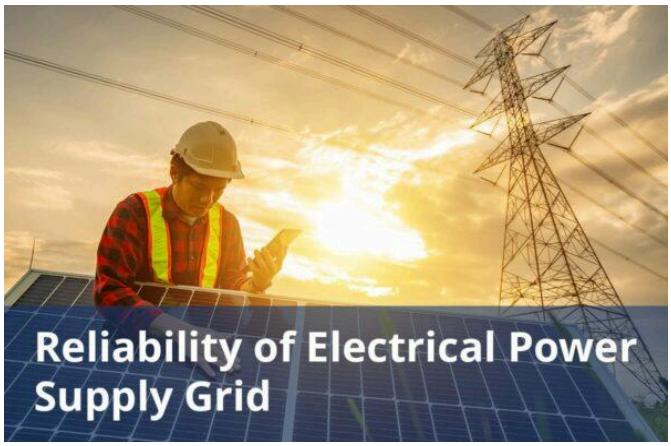
kWh per kWp installed

Conversion factor: 1 kW = 1 kWh produced per hour on average

Annual energy production from a solar panel: 1000 kWh per kW

Average cost per kWh from utility company

Electricity price per kWh:
- Residential: $0.125/kWh
- Commercial: $0.150/kWh
- Industrial: $0.100/kWh



Reliability of electrical power supply grid

System reliability factors include:
- Weather conditions
- Maintenance schedules
- Equipment quality




DETAILED INFORMATION

All figures have been converted into USD

Total solar panel production capacity (installed)

Total installed solar panels: 20 million

Average panel output: 300 watts

Total solar panel production capacity (projected)

Projected number of solar panels by 2030: 50 million

Anticipated growth rate: 10% per year

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

Average installation cost: $3.00/watt

Incentives available that can reduce costs include:
- Federal tax credit
- State rebates

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

Percentage of electricity generated by solar: 7%

Expected increase by 2030: 20%

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

Average daily solar energy availability:

- Summer: 10 hours
- Winter: 5 hours

Number of residential solar panel installations

Number of residential solar panel systems installed: 15 million

Average system size: 5 kW

Total number of solar farms (installed and projected)

Total number of solar farms: 5000

Average size per solar farm: 20 MW

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

(Not Available)

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

Current:
The current demand for solar energy in Costa Rica has been rising, especially due to recent energy challenges.
Costa Rica's solar energy generation was about 0.07% of the total energy mix in 2022, but this has been increasing.
By mid-2023, solar energy accounted for approximately 4.5% of the country's energy generation.

Projected:

Costa Rica aims to increase its solar capacity as part of its broader renewable energy goals.
While specific megawatt (MW) targets for 2030 are not always outlined in detail, ongoing policy initiatives and regulatory support indicate a clear trajectory towards substantial growth in Costa Rica solar solutions.
The country is leveraging innovations in solar technology and favorable investment conditions to achieve these goals.

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

(Not Available)

Population of the country

As of 2023, the population of Costa Rica is approximately 5.2 million people.

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

The average rent for multi-owned commercial buildings in Costa Rica varies significantly based on location and property type.
In major commercial hubs like San José and Heredia, rental rates can range from $12.00 to $20.00 per square meter per month.
The electricity price for businesses in Costa Rica is approximately $0.20 to $0.22/kWh.
The industrial water rate in Costa Rica is approximately $2.12/m³ for most usage tiers, with a fixed monthly rate of $34.38 and a service charge of $1.98.

Additional fees include a 13% value-added tax and specific charges for fire hydrant water use and water resource protection.
Renting office space in Costa Rica varies depending on the location and amenities.
For example, in San José, the rental price for a typical office space ranges from $15.00 to $19.00 per square meter per month.

A summary of the energy infrastructure

Electricity Generation:
Costa Rica's total installed electrical capacity stands at approximately 3517.7 MW, with an impressive 89% dedicated to renewable energy sources.
The country generates over 99% of its electricity from renewable sources, a trend that has remained consistent since 2015.
The energy mix is predominantly composed of hydropower, which accounts for about 72.2% of electricity generation.
This is followed by geothermal energy at 12.7%, and wind energy at 10.8%.
Solar power is also gaining traction, though it currently plays a smaller role compared to other renewables.

Transmission & Distribution:
The transmission network in Costa Rica is managed by several entities, including the state-owned Instituto Costarricense de Electricidad (ICE) and the Compañía Nacional de Fuerza y Luz (CNFL).
The backbone of the transmission system operates predominantly at high voltage levels, such as 345 kV and 765 kV.

Some of the government regulations surrounding solar panel production

Costa Rica has established a regulatory framework to support the production and deployment of solar panels.
The regulations are designed to ensure the safety, efficiency and environmental sustainability of solar energy systems.
Key regulations include standards for the installation and maintenance of solar panels, guidelines for connecting solar systems to the national grid and requirements for the recycling and disposal of end-of-life solar panels.

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

Feed-in Tariff Program:
Costa Rica implemented a feed-in tariff program to encourage solar energy adoption allowing small-scale producers to sell excess electricity to the grid.

Net Metering:
The government introduced net metering regulations enabling consumers with solar panels to offset their electricity consumption with the energy they produce.

Tax Incentives:
Costa Rica offers tax exemptions on imported solar equipment and components to reduce the cost of solar installations.

National Energy Plan:
The government's National Energy Plan 2015-2030 includes targets for increasing solar energy capacity and promoting distributed generation.

Notable solar projects in the country (installed and projected)

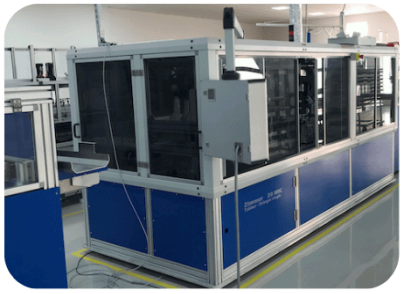
Installed:
- Juanilama Solar Park:
Capacity: 5 MW, Location: Guanacaste Province, Details: One of the first large-scale solar projects in Costa Rica, operational since 2012.
- Pocosol Solar Park:
Capacity: 20 MW, Location: Alajuela Province, Details: This project has been operational since 2017 and contributes significantly to the national grid.
- Miravalles Solar Park:
Capacity: 1 MW, Location: Guanacaste Province, Details: This solar park is part of a hybrid renewable energy project that includes geothermal energy.

Projected:
- Cañas Solar Park:
Capacity: 50 MW, Location: Guanacaste Province, Details: Expected to be operational by 2025, this project aims to significantly increase Costa Rica's solar capacity.

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

Enertiva: Enertiva is a leading company specializing in the design, installation and maintenance of solar energy systems for residential, commercial and industrial clients.
They have been instrumental in numerous solar projects across Costa Rica, providing comprehensive solutions that include photovoltaic systems, solar water heating and energy efficiency services.

Solar Costa Rica: Solar Costa Rica focuses on providing high-quality solar panel installations and energy solutions for both residential and commercial sectors.



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. Vacations Costa Rica. (2023). Best Time to Visit Weather. Retrieved June 29, 2024, from <https://www.vacationscostarica.com/best-time-to-visit-weather/>
2. Solargis. (2024). Solar Resource Map of Costa Rica. Retrieved June 29, 2024, from <https://solargis.com/maps-and-gis-data/download/costa-rica>

3. Global Petrol Prices. (2023). Costa Rica Electricity Prices. Retrieved June 29, 2024, from <https://www.globalpetrolprices.com/Costa-Rica/electricity%5Fprices/>
4. World Bank. (2024). Access to electricity (% of population) – Costa Rica. Retrieved June 29, 2024, from <https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS?locations=CR>
5. Global Climate Scope. (2022). Costa Rica. Retrieved June 29, 2024, from [https://www.global-climatescope.org/markets/cr/](https://www.global-climatescope.org/markets/costa-rica)
6. Tico Times. (2024). Costa Rica to Boost Clean Energy Capacity via Solar, Wind, Biomass. Retrieved June 29, 2024, from <https://ticotimes.net/2024/03/08/costa-rica-to-boost-clean-energy-capacity-via-solar-wind-biomass>
7. Trade. (2023). Costa Rica Solar Energy Products. Retrieved June 29, 2024, from <https://www.trade.gov/country-commercial-guides/costa-rica-solar-energy-products>
8. Smart Water Magazine. (2024).Costa Rica Implements Electricity Rationing Amid Severe Drought. Retrieved June 29, 2024, from <https://smartwatermagazine.com/news/smart-water-magazine/costa-rica-implements-electricity-rationing-amid-severe-drought>
9. Clean Tech Law. (2023). New Regulation in Costa Rica. Retrieved June 29, 2024, from <https://cleantechlaw.com/2020/05/new-regulation-in-costa-rica-would-reduce-obstacles-to-generate-electricity-with-solar-energy/>
10. Blackridge Research (2024). Costa Rica Solar Power Market. Retrieved June 29, 2024, from <https://www.blackridgeresearch.com/reports/costa-rica-solar-power-market>

11. World Bank. (2023). Population of Costa Rica. Retrieved June 29, 2024, from <https://data.worldbank.org/indicator/SP.POP.TOTL?locations=CR>
12. Real Estate. (2024). Costa Rica Rental Properties. Retrieved June 29, 2024, from <https://www.re.cr/en/costa-rica-rental-properties/commercial>
13. Global Petrol Prices. (2023). Costa Rica Electricity Prices. Retrieved June 29, 2024, from <https://www.globalpetrolprices.com/Costa-Rica/electricity%5Fprices/>
14. Costa Rica. (2023). Water Rates. Retrieved June 29, 2024, from https://www.costarica.com/business/water-rates <https://www.costarica.com/business/water-rates>
15. Properties in Costa Rica. (2023). Office Space. Retrieved June 29, 2024, from <https://www.propertiesincostarica.com/office%5Fspace.html>
16. Delphos. (2023). Costa Rica Renewables. Retrieved June 29, 2024, from <https://delphos.co/costa-rica-renewables/>
17. OECD. (2014). Electricity Markets in Latin America: Regional Integration and Competition Issues. Retrieved June 29, 2024, from <https://one.oecd.org/document/DAF/COMP/LACF%282014%2926/en/pdf>
18. Trade. (2023). Costa Ricas Renewable Energy. Retrieved June 29, 2024, from <https://www.trade.gov/market-intelligence/costa-ricas-renewable-energy>
19. Minae. (2023). OECD Environmental Performance Reviews Costa Rica. Retrieved June 29, 2024, from[https://minae.go.cr/organizacion/vicegestionestrategica/SEPLASA/OECD_Environmental_Performance_Reviews_CostaRica_2023.pdf](https://minae.go.cr/organizacion/vicegestionestrategica/SEPLASA/OECD%5FEnvironmental%5FPerformance%5FReviews%5FCostaRica%5F2023.pdf)

20. Pv Magazine. (2023). Feed in Tariffs in America – Costa Rica. Retrieved June 29, 2024, from <https://www.pv-magazine.com/features/archive/solar-incentives-and-fits/feed-in-tariffs-in-america/#costa%5Frica>
21. IEA. (2023). Costa Rica Regulation on Net Metering Technical Standard for Planning Operation and Access to National Grid. Retrieved June 29, 2024, from <https://www.iea.org/policies/6145-costa-rica-regulation-on-net-metering-technical-standard-for-planning-operation-and-access-to-national-grid>
22. Tico Times. (2023). Costa Rica Upholds Tax Breaks for Electric Cars Solar Panels Retrieved June 29, 2024, from <https://ticotimes.net/2019/07/08/costa-rica-upholds-tax-breaks-for-electric-cars-solar-panels>
23. IEA. (2023). VII National Energy Plan of Costa Rica 2015-2030\. Retrieved June 29, 2024, from <https://www.iea.org/policies/6238-vii-national-energy-plan-of-costa-rica-2015-2030>
24. Costa Rican Times. (2024). Costa Ricas Green Power Surge. Retrieved June 29, from <https://www.costaricantimes.com/costa-ricas-green-power-surge-a-539-million-leap-into-renewable-energy/77300>
25. World Future Council. (2023). Scenario %100 Renewable Energy in Costa Rica, Summary for Policy-Makers. Retrieved June 29, 2024, from <https://www.worldfuturecouncil.org/wp-content/uploads/2020/06/wfc%5Fcostarica-100-re-summary%5FFINAl1.pdf>
26. Science Info. (2023). Costa Rica Largest Solar Park. Retrieved June 29, 2024, from <https://scienceinfo.net/costa-ricas-largest-solar-park-comes-into-operation.html>
27. Tico Times. (2019). Costa Rica Inaugurates Countrys Larest Solar Park. Retrieved June 29, 2024, from

<https://ticotimes.net/2019/03/31/costa-rica-inaugurates-countrys-largest-solar-park>
28. Constructorameco. (2024). Miravalles Solar Energy Project. Retrieved June 29, 2024, from <https://en.constructorameco.com/portfolio-item/miravalles-solar-energy-project/>
29. Power Technology. (2023). CR Solar1 50 Solar PV Park, Costa Rica. Retrieved June 29, 2024, from <https://www.power-technology.com/marketdata/cr-solar1-50-solar-pv-park-costa-rica/>
30. The Costa Rica News. (2019). The Largest Solar Park in Costa Rica is Being Built in San Carlos. Retrieved June 29, 2024, from <https://thecostaricanews.com/the-largest-solar-park-in-costa-rica-is-being-built-in-san-carlos/>
31. Costa Rican American Connection. (2023). Guanacaste Home Costa Ricas Largest Solar Park. Retrieved June 29, 2024, from [https://www.costarican-american-connection.com/guanacaste-home-costa-ricas-largest-solar-park](https://costahomesconnect.com/)
32. Enertiva. (2023). Services. Retrieved June 29, 2024, from <https://enertiva.com/#servicios>
33. CR Solar. (2023). Who We Are. Retrieved June 29, 2024, from <https://crsolarsolutions.com/who-we-are/>
34. ISEA Solar. (2023). ISEA Solar. Retrieved June 29, 2024, from <https://www.iseasolar.com/>
35. Green Energy. (2023). Green Energy. Retrieved June 29, 2024, from <https://greenenergy.cr/en/home/>

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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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