



# Guam:

## Pursuing a Sustainable Energy Future

The island of Guam is located in the Pacific Ocean more than 6,000 miles west of the California coast. In the face of tropical storms, rising energy prices, and mandates for power plant retirement, Guam is increasing energy security and resilience while making significant progress on its path to 100% renewable energy. Over the past 10 years, Guam's renewable energy production has grown to serve over 11% of its power needs with more planned.

### Overview

- Land Area: **212 square miles**<sup>1</sup>
- Population: approximately **154,000 people** plus approximately **22,000 U.S. military personnel** and their families<sup>2</sup>
- Median household income (U.S. dollars, 2019): **\$58,289**<sup>3</sup> (excluding people in military housing)
- Total Fuel Consumption: **163,935,000 gallons**<sup>3</sup> (average 2017-2021)
- Percent of Fuel Use for Power Generation vs Other Uses: **70%**<sup>3</sup> (average 2017-2021)

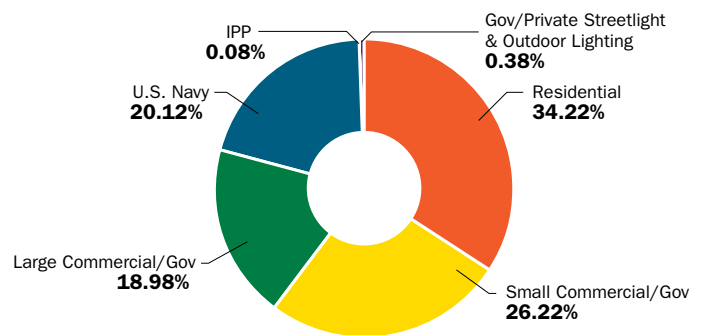
### Location



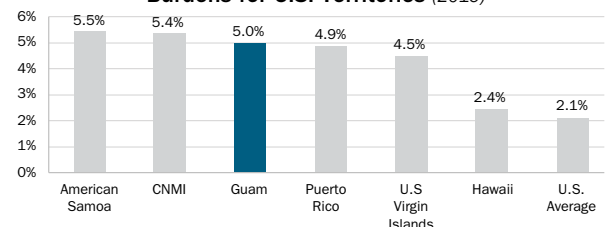
### Power Sector

Installed Capacity (2023):	<b>488 megawatts (MW)</b> <sup>3</sup>
Available Capacity (2023):	<b>272 MW</b> <sup>3</sup>
Renewable Installed Capacity (2023):	<b>85.3 MW</b> <sup>4</sup> meeting <b>11% of net sales</b> <sup>3</sup> ; <b>24 MW residential rooftop photovoltaics</b> <sup>3</sup>
Peak Demand (2023):	<b>257 MW</b> <sup>4</sup>
Total electricity sales (Year):	<b>1.4 million megawatt-hours (MWh)</b> <sup>4</sup>
Transmission and distribution losses (2020):	<b>4.9%</b> <sup>5</sup>
Average Electricity Rates (2023):	<b>\$0.378/kilowatt-hour (kWh)</b> <sup>4</sup>
Estimated average annual residential electricity spending (2019):	<b>\$2,909</b> <sup>3</sup>

2023 Energy Sales Composition (MWh)



Approximate Baseline Home Electricity Burdens for U.S. Territories (2019)



<sup>1</sup> <https://installations.militaryonesource.mil/in-depth-overview/joint-region-marianas-naval-base-guam>

<sup>2</sup> <https://www.eia.gov/state/print.php?sid=GQ>

<sup>3</sup> <https://www.nrel.gov/docs/fy24osti/88454.pdf>

<sup>4</sup> Benavente, John. April 8, 2024. University of Guam Conference on Island Sustainability. Guam Power Authority General Manager.

<sup>5</sup> [https://www.energy.gov/sites/prod/files/2020/09/f79/ETI-Energy-Snapshot-Guam\\_FY20.pdf](https://www.energy.gov/sites/prod/files/2020/09/f79/ETI-Energy-Snapshot-Guam_FY20.pdf)

## Targets

50% net electricity sales met by renewable energy by 2035—100% by 2045

### Transportation Sector

Average Gasoline Prices: <i>(\$/gallon 2019-2021)</i>	<b>\$4.31</b>
Average Diesel Prices: <i>(\$/gallon 2019-2021)</i>	<b>\$4.46</b>
Total Registered Private Vehicles:	<b>~ 810,000</b>
Electric vehicles (EVs):	<b>UNKNOWN</b>
EV Rebates Issued: <i>(since 2014)</i>	<b>64</b>
EV Chargers:	<b>4</b>

### Policies, Programs, and Incentives

- Public Law (PL) 35-46 requires 50% net electricity sales met by renewable energy by 2035 and 100% by 2045
- GPA has a multiphase Integrated Resource Plan with planned projects to get to 100% by 2045<sup>6</sup>
- Net-metering allowed—Limited to 25 kW for residential and 100 kW for nonresidential systems
- **Guam Green Growth**, a public-private partnership led by University of Guam's Center for Island Sustainability, includes working groups, an innovation hub, and an action framework to develop tangible solutions to sustainability challenges and contributes to a green economy.
- Energy efficiency rebates available through GPA and Guam Energy Office

### Challenges

- Typhoon Mawar recovery
- Energy affordability and burden
- Future load increases, military buildup, and climate change uncertainty
- Integrating variable renewable energy generation
- Aging generation assets and plant retirements
- Rotating outages and meeting demand reliably.

### Opportunities

- Leveraging the Guam100 initiative to engage stakeholders and analyze strategies for meeting 100% renewable energy mandates
- Exploring the viability of wind power and other technologies to support the energy transition
- Leveraging abundant federal grants to implement promising technologies and strategies
- Maximizing federal recovery funds to enhance grid security and resilience
- The U.S. Department of Defense is the largest single energy consumer and is investigating opportunities to invest in energy efficiency and resilience.

### Links

- Guam Power Authority (public electric utility provider): <https://www.guampowerauthority.com/>
- Guam Energy Office: <https://energy.guam.gov/>
- Guam Green Growth: <https://guamgreengrowth.org/about-2/>
- Guam100: Guam's 100% Renewable Energy Future: <https://www.nrel.gov/guam100>

<sup>6</sup> [https://admin.guampowerauthority.com/uploads/GPA\\_2022\\_Integrated\\_Resource\\_Plan\\_b16ef41f9e.pdf?updated\\_at=2022-09-20T07:24:07.680Z](https://admin.guampowerauthority.com/uploads/GPA_2022_Integrated_Resource_Plan_b16ef41f9e.pdf?updated_at=2022-09-20T07:24:07.680Z)