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Guam

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Facts about Guam

- In 2023, the residential sector accounted for 34% of Guam's electricity use, the commercial sector accounted for 33%, the U.S. military for 20%, and Guam's government for 12%.
- The Guam Power Authority has about 464 megawatts of generation capacity, four-fifths of which is oil-fired generation capacity.
- Sales of diesel fuel used mostly to generate electricity make up 53% of Guam's petroleum sales. Motor gasoline accounts for 26%, jet fuel for 19%, and propane makes up most of the rest of the island's petroleum sales.
- In 2023, Guam's average residential electricity price was \$0.38 per kilowatt-hour (kWh), more than two times the average U.S. rate of \$0.16/kWh.
- Guam's renewable portfolio standard requires that 50% of the island's electricity sales come from renewables by 2035 and 100% by 2045. In 2023, renewables accounted for about 6% of Guam's electricity generation.
- Last Updated: April 17, 2025

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Population and Industry	Guam	United States	Period
Population	0.2 million	328.2 million	2019
Gross Domestic Product	\$6 billion	19,552 billion	2018
Electricity	Guam	United States	Period
Residential	NA	15.95 cents/kWh	Jan-25
Commercial	NA	12.89 cents/kWh	Jan-25
Industrial	NA	8.32 cents/kWh	Jan-25
Reserves	Guam	United States	Period
Recoverable Coal	0	273,244 million short tons	2023
Capacity	Guam	United States	Period
Total Electricity Installed Capacity	1 million kW	1,235 million kW	2023
Total Imports	Guam	United States	Period
Natural Gas Imports	0	2,928 billion cu ft	2023
Coal Imports	0	4,010 thousand short tons	2023
Total Exports	Guam	United States	Period
Natural Gas Exports	0	7,610 billion cu ft	2023
Coal Exports	0	100,208 thousand short tons	2023
Production	Guam	United States	Period
Total Energy	*	103 trillion Btu	2023
Crude Oil, NGPL, and Other Liquids	0	17,936 thousand barrels/day	2020
Coal	0	577,657 thousand short tons	2023
Total Utility-Scale Net Electricity Generation	Guam	United States	Period
Total Net Electricity Generation	2 billion kWh	4,257 billion kWh	2023
Petroleum, Natural Gas, and Coal Net Electricity Generation	2 billion kWh	2,509 billion kWh	2023
Total Electricity Generation from Renewable Sources	*	979 billion kWh	2023
» Hydroelectric	0	245 billion kWh	2023
» Other Renewables	*	734 billion kWh	2023
by Source	Guam	United States	Period
Total Energy	*	94 trillion Btu	2023
Total Petroleum Products	12 thousand barrels/day	20,010 thousand barrels/day	2022
» Motor Gasoline	1 thousand barrels/day	8,810 thousand barrels/day	2022
» Distillate Fuel	3 thousand barrels/day	4,026 thousand barrels/day	2022
» Liquefied Petroleum Gases	0	1,375 thousand barrels/day	2021
» Jet Fuel	2 thousand barrels/day	1,560 thousand barrels/day	2022
» Kerosene	0	5 thousand barrels/day	2022

» Residual Fuel	5 thousand barrels/day	329 thousand barrels/day	2022
» Other Petroleum Products	0	1,923 thousand barrels/day	2022
Natural Gas	0	32,056 billion cu ft	2023
Coal	0	535,736 thousand short tons	2023
by Source	Guam	United States	Period
Total Fossil Fuels	2 million metric tons	4,795 million metric tons	2023
Petroleum	2 million metric tons	2,258 million metric tons	2023
Natural Gas	0	1,760 million metric tons	2023
Coal	0	777 million metric tons	2023

[Notes & Sources](#)



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Analysis

Last Updated: April 17, 2025

Overview

Guam is the southernmost and largest of the Mariana Islands, located in the Pacific Ocean about 5,800 miles west of San Francisco and 1,600 miles east of Manila, Philippines.¹ The island became a U.S. territory in 1898 and is home to the indigenous Chamorro people.² Guam is close to the International Date Line. As a result, it is the first place in the United States to see each new day, which is why Guam is known as the place "Where America's Day Begins."³ Guam has no fossil energy resources and meets nearly all of its energy needs—including the fuel for generating most of its electricity—with imported petroleum products.^{4,5,6} However, Guam is aiming to increase its use of renewable energy resources for electricity generation.⁷

Guam imports petroleum products to meet almost all of its energy needs.

Surrounded by coral reefs, Guam sits on the southern edge of the Mariana Trench and is near the Challenger Deep, which lies nearly 7 miles below the surface of the ocean and is the deepest known place on earth. Guam, as with the other Mariana Islands, is the top of an undersea mountain, part of a volcanic subsea range stretching northwest toward Japan.^{8,9} At 36 miles long and 6 to 12 miles wide, the territory has about three times the land area of Washington, DC.^{10,11} Guam is a tropical island and a climate that is warm and humid with little variation in seasonal temperatures that range between 70oF and 90oF throughout the year. The rainy season runs from May to November and can bring devastating typhoons.^{12,13} The Category 4 Typhoon Mawar struck the northern coast of Guam in May 2023 with winds up to 140 miles per hour, was the strongest typhoon to hit Guam since 2002 and left much of the 150,000 population without power.^{14,15}

Guam has a population of about 154,000, plus about 22,000 U.S. military personnel and their families.¹⁶ Tourism and the U.S. military are the two largest contributors to Guam's economy.¹⁷ In 2024, Guam had about 740,000 visitors, which is still well below the 1.7 million visitors to the island in 2019 prior to the COVID-19 pandemic. Almost four-fifths of the island's tourists arrive from South Korea and Japan.¹⁸ U.S. military plans to relocate thousands of its personnel from Okinawa, Japan, to Guam will bring more people to the island.^{19,20} The military owns about 25% of the island and accounts for about one-fifth of Guam's energy consumption.²¹

Petroleum

Guam has no crude oil reserves, petroleum production, or refineries.^{22,23} The island's only port, located at Apra, receives all of the territory's imported petroleum products, which come primarily from Asia.^{24,25} Sales of diesel fuel—used mostly to generate electricity—make up 53% of Guam's petroleum sales. Motor gasoline accounts for 26% of petroleum sales on the island. Jet fuel accounts for 19% and propane makes up most of the rest of the island's petroleum sales.²⁶ In 2012, the Guam government set a goal to reduce petroleum consumption 20% from 2010 levels by 2020, which was met.^{27,28} To reach the goal, Guam sought to increase the efficiency of vehicles on the island, improve traffic flows, reduce vehicle miles traveled, and increase biodiesel use.²⁹

Motor gasoline and diesel fuel account for most of Guam's petroleum consumption.

Electricity

The Guam Power Authority (GPA), a public corporation overseen by the elected Consolidated Commission on Utilities (CCU) and regulated by the Guam Public Utilities Commission (PUC), provides all of Guam's electricity. GPA owns and manages the island's electric grid, which is made up of 1,839 miles of transmission and distribution lines. The utility has about 53,000 customers, with the U.S. Navy being the single largest customer, making up about 17% of revenues. GPA has 464 megawatts of generation capacity, of which over 85 megawatts are fueled by renewable sources.³⁰ In 2023, fossil fuels provided 94% of Guam's electricity generation. Renewables, primarily solar, provided the remainder.³¹

GPA continues to rebuild and expand its generating assets after an August 2015 explosion and fire at the utility's main Cabras power plant that destroyed two of the station's four generating units. In 2016, GPA received approval from regulators for a new power plant. The new Ukudu replacement power plant will have a generating capacity of 198 megawatts and can run on ultra-low sulfur diesel fuel and liquefied natural gas (LNG). The plant was scheduled to come online in 2024, but damage caused by Typhoon Mawar in 2023 delayed the plant's operating date and it came online in March 2025.^{32,33} Separately, GPA is looking to add more renewable energy generation and related battery energy storage over the next several years that will help offset the loss of the Cabras plant's generating capacity and meet its clean energy goals.³⁴ The remaining two generating units at the Cabras plant are expected to be retired by 2026.³⁵

In 2023, fossil fuels provided 94% of Guam's electricity generation, with the remainder provided by renewables.

Guam's residential electricity costs, including fuel surcharges, are more than two times higher than the U.S. average, although Guam's residential electricity rates are typically the lowest among the nearby Pacific islands.^{36,37} Because petroleum products generate nearly all of Guam's electricity, GPA imposes a fuel surcharge, the Levelized Energy Adjustment Clause, that can be adjusted every six months to reflect changes in petroleum costs. Guam's legislature in mid-2022 authorized \$100 a month in credits on power customers' utility bills to help partially offset the high rates in 2023. In February 2025, GPA announced that it is seeking legislative approval to reduce the LEAC due to lower power costs as demand for petroleum decreases with the retirement of less efficient generators and the addition of the new natural gas-fired plant.^{38,39,40,41}

GPA had about 53,000 electricity customers in 2023.⁴² The residential sector was the largest consumer of electricity in 2023 and accounted for 34% of the island's electricity use. The commercial sector, which includes hotels, restaurants, and private office buildings, accounted for 33%. The U.S. Navy accounted for 20% of electricity use and the Guam government accounted for 12%.⁴³

Renewable energy

In 2008, Guam's legislature enacted a renewable energy portfolio standard (RPS) goal for renewable sources to generate 8% of the island's electricity sales by the end of 2020. The renewable goal would increase to 10% of electricity sales by 2025 and to 25% by 2035.⁴⁴ In 2019, Guam's legislature updated the voluntary standard so renewables would provide 50% of the island's electricity sales by 2035 and 100% by 2045. The RPS recognizes solar, wind, biomass, wave energy, and ocean thermal energy as acceptable renewable sources to meet the standard.^{45,46} In 2023, renewables accounted for about 6% of Guam's electricity generation.⁴⁷

Guam's Renewable Portfolio Standard aims to have 100% of its electricity sales generated by renewables by 2045.

In 2015, Guam's first commercial solar PV facility—the 26-megawatt Dandan solar farm with more than 120,000 solar panels—began operating.⁴⁸ The facility can generate enough electricity to serve an estimated 10,000 homes.⁴⁹ The 60-megawatt Mangilao solar farm came online in 2022, but a second 40-megawatt solar farm was delayed and then cancelled by the GPA in March 2025.^{50,51} In 2024, under its Phase IV bidding round, GPA received five bids totaling over 330 megawatts of new renewable generating capacity with battery storage systems.⁵²

Guam has substantial wind power potential but also has unique wind turbine siting issues. The island is seismically active and is in the Pacific's Typhoon Alley, so wind turbines must be engineered to withstand both earthquakes and typhoon-force winds. Wind turbine siting must also consider impacts on military facilities, endangered species, and other local environmental concerns. Another challenge is maintaining reliability of the island's small electric grid given the variability of wind power.^{53,54} As a result, there is little wind generation in Guam. However, in early 2016 GPA inaugurated a wind pilot project—a single 275-kilowatt turbine in the Cotal region of Yona—that can generate enough power for 50 homes.^{55,56} The 233-foot-tall wind turbine can be lowered when a strong storm approaches.⁵⁷ Several potential wind energy sites have been identified by the GPA and the U.S. Department of Interior announced a call for interest.^{58,59} However, in January 2025, the federal government temporarily withdrew all federal offshore areas from leasing for wind energy development.⁶⁰

GPA offers net metering and pays its customers for surplus power they generate from small-scale solar, wind, and other customer-sited renewable generation installations. The surplus power is distributed on the island's grid. All new net metering systems connected to the grid after June 2020 are required to have energy storage batteries with at least one hour of storage capacity to improve the reliability of electricity supplies.^{61,62}

Natural gas

Guam has no natural gas reserves and does not produce or use natural gas.^{63,64} In March 2025, GPA began operating the 198-megawatt Ukudu power plant that is capable of burning either imported ultra-low sulfur diesel fuel or LNG that is regasified to generate electricity. The plant will switch to LNG once the necessary infrastructure is completed.^{65,66} The new plant will enable the utility to comply with U.S. federal environmental requirements to release fewer greenhouse emissions while using either fuel.^{67,68}

Coal

Guam has no coal reserves and does not produce or use coal.^{69,70}

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