ENERGY TRANSITION INITIATIVE
Islands

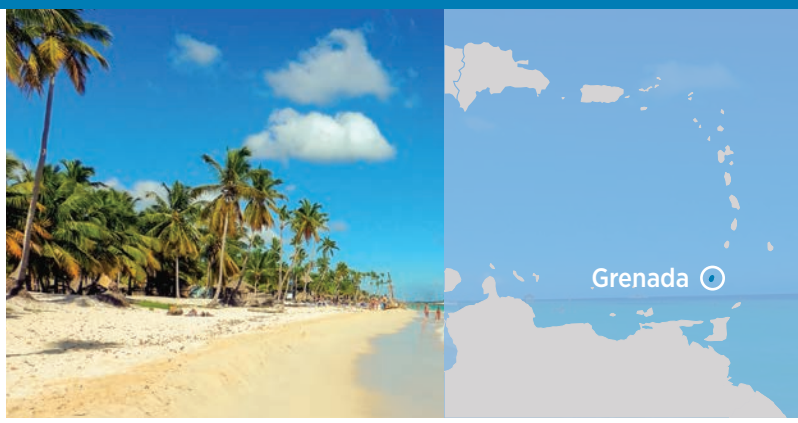
# Energy Snapshot
# Grenada

This profile provides a snapshot of the energy landscape of Grenada—a small island nation consisting of the island of Grenada and six smaller islands in the southeastern Caribbean Sea—three of which are inhabited: Grenada, Carriacou, and Petite Martinique. The 2015 electricity rates in Grenada are $0.34 per kilowatt-hour (kWh), in line with the Caribbean regional average of $0.33/kWh. Like many island nations, Grenada is almost 100% reliant on imported fossil fuels for electricity generation, leaving it vulnerable to global oil price fluctuations that directly impact the cost of electricity.

| | |
|---|---|
| **Population** | 105,552 |
| **Total Area** | 344 square kilometers |
| **Gross Domestic Product (GDP)** | $1.46 billion U.S. dollars (USD) |
| **Share of GDP Spent on Fuel and Imports** | Electricity – 13%<br>Total – 18% |
| **GDP Per Capita** | $13,800 USD |
| **Urban Population Share** | 39.1% |

## Electricity Sector Data

Grenada's electrical grid stretches across the three main inhabited islands and is served by a single electrical utility, Grenada Electricity Services Limited (GRENLEC), which has the exclusive license to generate, transmit, distribute, and sell electricity through December 31, 2073. GRENLEC has set a goal of meeting 35% of electrical consumption from renewable energy sources by 2016, independent of the energy goals set by the Government of Grenada.




### Grenada's Clean Energy Goals:

- 10% of all buildings equipped with renewable energy technologies by 2015
- 20% of all electricity and transportation energy from renewable energy sources by 2020
- 20% reduction of greenhouse gas emissions by 2020
- 100% renewable energy by 2030.

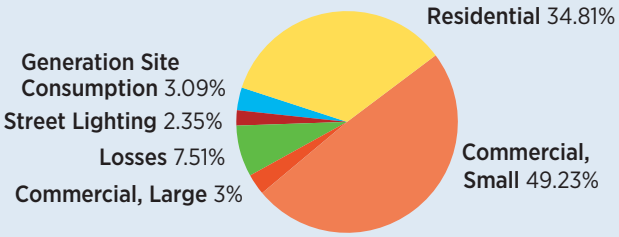
### Government and Utility Overview

| | | |
|---|---|---|
| **Government Authority** | **Ministry:** Ministry of Finance, Planning, Economic Development, Trade, Energy and Cooperatives | |
| | **Key Figure:** Timothy N.J. Antoine | |
| **Designated Institution for Renewable Energy** | Department of Energy & Sustainable Development | |
| **Regulator** | A regional regulatory authority is being developed | |
| **Utilities** | **Name:** Grenada Electricity Services Limited | Investor-owned utility |
| | Utility investors: 50% with U.S.-based WRB Enterprises; the public holds 25%; and the government, its employees, and the National Insurance Scheme Grenada hold the remaining 25%. | |

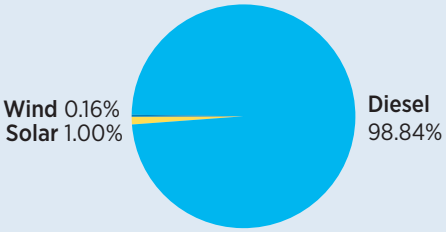
### Electricity Sector Overview

| | | |
|---|---|---|
| **Total Installed Capacity** | 48.59 megawatts (MW) | |
| **Peak Demand** | 30.2 MW | |
| **Total Generation** | 196.7 gigawatt-hours | |
| **Renewable Share** | 1.4% | |
| **Transmission & Distribution Losses** | 7.7% | |
| **Electrification Rate** | >99.5% | |
| **Average Electricity Tariffs (USD/kWh)** | **Residential** | $0.425 |
| | **Commercial** | $0.442 |
| | **Industrial** | $0.383 |

**Energy Consumption by Sector**




**Energy Generation Mix**




Nearly 99% of electricity is sourced from diesel fuel. The utility maintains an installed capacity of 48.6 MW spread across the three islands. In June 2006, Grenada became one of 13 Caribbean countries to sign the PetroCaribe Agreement with Venezuela to finance 40% of Grenada's petroleum supply for 25 years at an interest rate of 1%.

According to data from 2014, the costs of utility-scale solar in Grenada are estimated to be between $0.21/kWh and $0.44/kWh; wind costs are estimated to be between $0.05/kWh and $0.20/kWh.

## Clean Energy Policy Environment

Grenada's clean energy goals for increasing energy efficiency and implementing renewable energy from geothermal, wind, and solar technologies are matched by its renewable resources, which more than exceed current electric sector capacity. Several policies and programs have been implemented to help meet those goals, including:

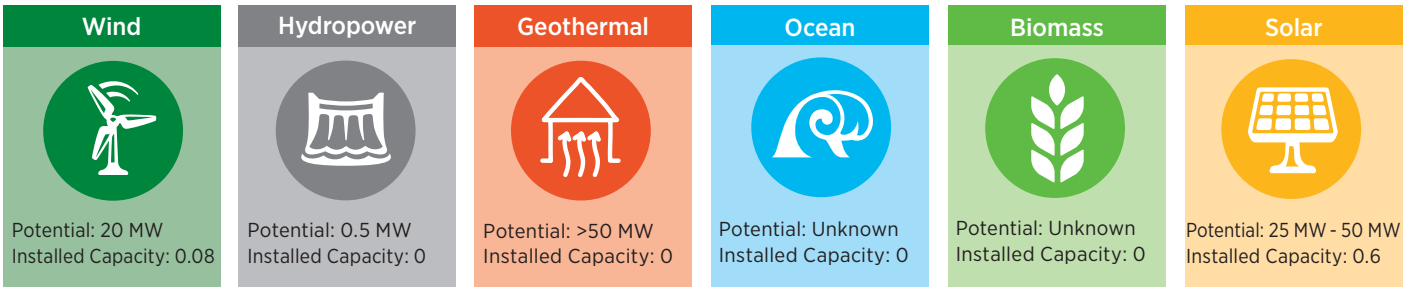
- Demand-side energy efficiency programs
- Government programs to replace incandescent lights with fluorescent lights
- The Government Energy Efficiency Program, which targets a 10% reduction in government electricity use

### Existing Policy and Regulatory Framework

| | |
|---|---|
| **Renewable Energy** | |
| Feed-in Tariff | |
| Net Metering/Billing | ● |
| Interconnection Standards | ● |
| Renewables Portfolio Standard/Quota | ■ |
| Tax Credits | ■ |
| Tax Reduction/Exemption | ● |
| Public Loans/Grants | ■ |
| Green Public Procurement | |
| **Energy Efficiency** | |
| Energy Efficiency Standards | |
| Tax Credits | |
| Tax Reduction/Exemption | |
| Public Demonstration | |
| Restrictions on Incandescent Bulbs | |
| Appliance Labeling Standards | |
| **Targets** | |
| Renewable Energy | ● |
| Energy Efficiency | |

● In Place ■ In Development

**Renewable Energy Status and Potential**




- Involvement in the Global Environment Facility's two-year Energy for Sustainable Development in Caribbean Buildings Project
- $2 million USD in 2012 from the Alliance of Small Island States-China Climate Change Adaptation Pilot Program to finance hardware, equipment, and training.

The country is also working on a National Energy Policy, aimed at improving the regulatory, institutional, and legal frameworks for electricity supply and renewable energy.

## Energy Efficiency and Renewable Energy Projects

Grenada has had success with implementing energy efficiency and renewable energy projects.

To date, GRENLEC has assessed five sites on the main island and two on Carriacou for wind farm feasibility. A wind-diesel hybrid has been discussed for Petite Martinique, but its development is on hold. Geothermal studies reveal a potential of approximately 50 MW of baseload power; two 20-MW geothermal projects have similarly stalled in development.

Solar photovoltaics (PV) have high potential on Grenada because the country's global horizontal irradiation exceeds 5 kWh/square meters per day. A 2- to 4-MW PV installation is planned, but no utility-scale solar plants are currently in operation. Currently, 40 small (less than 10 kilowatts [kW]) and a few large (more than 10 kW) PV systems are in service, totaling 492 kW.

Renewable energy and energy efficiency projects in Grenada include:

- 2007: Paradise Bay Resort 80-kW wind turbine
- 2009: Maca Bana Villas 111 panel, 10-kW solar PV system
- 2012: Fort Frederick demonstration of 1 kW of wind and 1.8 kW of solar PV
- 2013: GRENLEC's 148.5 kW of PV power at Grand Anse
- 2013: Petite Martinique 31.6-kW ground-mounted PV system (meeting 20% of the island's peak electricity demand)
- 2014: St. Andrew Anglican Secondary School 13.9-kW roof-mounted PV system.

## Opportunities for Clean Energy Transformation

GRENLEC plans to spend $150 million USD implementing renewable energy projects over the next several years. Two geothermal plants in development could meet nearly all of Grenada's electricity needs. Even partial development of geothermal, wind, and solar resources could result in high penetration of renewables onto the grid.

However, several challenges exist in regard to Grenada's energy policy and market frameworks. For example, the Electricity Supply Act has not been updated to address self-generation and distributed renewable energy. Additionally, despite GRENLEC's demonstrated interest in utility-scale renewable power under its exclusive license to generate electricity, clean energy development has yet to progress at a pace to meet Grenada's goals. Finally, support for a nascent energy efficiency industry could be more robust.

## Energy Transition Initiative

This energy snapshot was prepared to support the Energy Transition Initiative, which leverages the experiences of islands, states, and cities that have established a long-term vision for energy transformation and are successfully implementing energy efficiency and renewable energy projects to achieve established clean energy goals.

Through the initiative, the U.S. Department of Energy and its partners provide government entities and other stakeholders with a proven framework, objective guidance, and technical tools and resources for transitioning to a clean energy system/economy that relies on local resources to substantially reduce reliance on fossil fuels.

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Prepared by the National Renewable Energy Laboratory (NREL), a national laboratory of the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy; NREL is operated by the Alliance for Sustainable Energy, LLC.

DOE/GO-102015-4577 • March 2015