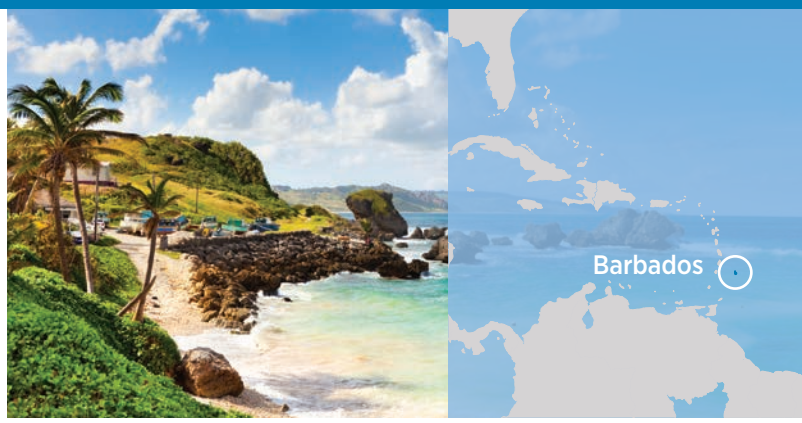
ENERGY TRANSITION INITIATIVE
Islands

Energy Snapshot
Barbados

This profile provides a snapshot of the energy landscape of Barbados, an independent nation in the Lesser Antilles island chain in the eastern Caribbean. Barbados' electricity rates are approximately $0.28 per kilowatt-hour (kWh), below the Caribbean regional average of $0.33/kWh. Though it possesses domestic oil and gas resources, Barbados is nevertheless highly dependent on imported fossil fuels; a lack of refining infrastructure dictates that the country import 100% of its petroleum products.[1] This arrangement leaves Barbados vulnerable to global oil price fluctuations that directly impact the cost of electricity.



Population[2]	289,680
Total Area	430 sq. km
Gross Domestic Product (GDP)	$7.004 billion U.S. dollars (USD)
Share of GDP Spent on Fuel and Imports	Electricity – 2.7%[3] Total –6.9%[4]
GDP Per Capita	$25,100 USD
Urban Population Share	44.4%

Barbados' Renewable Energy Goals:[5]

- 29% of electricity from renewable sources by 2029
- 22% reduction in energy consumption by 2029 compared to business as usual

Government and Utility Overview

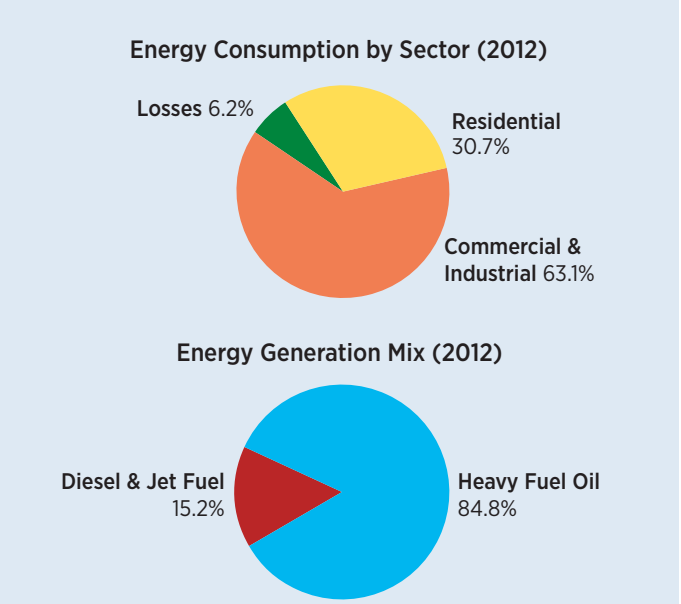
Government Authority	**Ministry:** Energy Division, Office of the Prime Minister	
	Key Figure: Senator the Honorable Darcy W. Boyce	
Designated Institution for Renewable Energy	Renewable Energy & Energy Conservation Unit, Energy Division, Office of the Prime Minister	
Regulator	Utility Regulation Department, Fair Trading Commission	
Utility	**Name:** Barbados Light & Power Company Ltd.	Mixed ownership (foreign company 80%, National Insurance Board and others 20%)[6]

Electricity Sector Data

Electricity in Barbados is entirely supplied by the Barbados Light and Power Company (BL&P), a vertically integrated utility that operates the thermal generation and transmission and distribution systems on the island. Though BL&P's operating license is non-exclusive and independent power producers (IPPs) are permitted under the Electric Light and Power Act, there have been no other market entrants in energy generation or delivery to date.[7] BL&P and its parent company, Light and Power Holdings, are controlled by Emera Caribbean, which also has majority ownership of regional utilities Grand Bahamas Power Company and Dominica Energy Services.[8]

Electricity Sector Overview

Total Installed Capacity (2012)[10]	239.1 megawatts (MW)	
Peak Demand	167.5 MW	
Total Generation (2012)	1,024.3 gigawatt-hours	
Renewable Share (2012)	0%	
Transmission & Distribution Losses (2012)	6.2%	
Electrification Rate (2011)[11]	98%	
Average Electricity Tariffs (USD/kWh)[3, 12]	**Residential**	$0.28
	Commercial	$0.30
	Industrial	$0.27



The regulatory regime includes regular rate cases and integrated resource planning. In addition to residential, commercial, and industrial rates, BL&P is exploring two new rate structures—a time-of-use rate and an interruptible service rate—to manage demand from large customers. Both of these rate structures were launched in 2010 as two-year pilot programs, although the pilot period has been extended due to limited uptake among potential customers.[9] Barbados has expressed interest in reducing electricity rates by displacing heavy fuel oil with natural gas via the proposed East Caribbean Gas Pipeline, which would allow for the import of natural gas from Trinidad and Tobago.[1]

Clean Energy Policy Environment

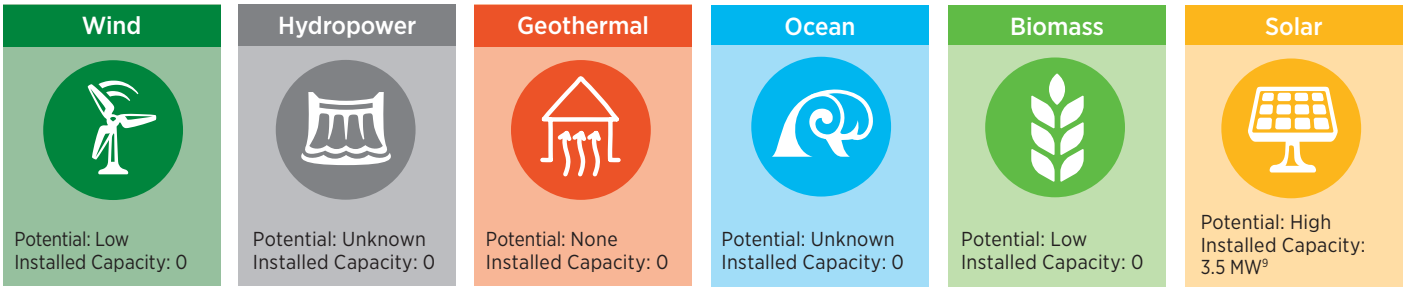
The National Energy Policy of Barbados was published in 2006 and defined a broad set of principles, including maximizing efficiency of energy use at all stages of consumption, reducing fossil fuel consumption via renewable energy, and fostering competition to reduce energy costs.[1] Despite the lack of official government adoption, this policy maintains a prominent role in Barbados' energy landscape. The Sustainable Energy Framework, which was released in June 2010 with support from the Inter-American Development Bank, analyzes potential future sustainable energy scenarios and makes a series of policy recommendations to enable that development. Of the suggested measures, several have been

Existing Policy and Regulatory Framework[13]

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[14]	●
Targets	
Renewable Energy	●
Energy Efficiency	●

● In Place ■ In Development

Renewable Energy Status and Potential[17]



implemented, including interconnection standards, authorization of IPPs, and appliance labeling standards. Other suggested changes, such as building energy efficiency standards, have not yet been adopted.

The Electric Light and Power Act of 2013 allows for the formation of IPPs and defines the licensing requirements for them to operate.[7] To foster distributed generation, the act exempts residential and non-residential renewable energy systems from licensing requirements so long as their system sizes do not exceed 5 kilowatts (kW) and 50 kW, respectively. Finally, the act explicitly delegates the power to set renewable energy generation targets to the Energy Minister without the need for further approval from the Parliament. To date, the power to raise targets has not been exercised.

Another high profile policy in the electricity sector is Barbados' net billing program, which is administered under the Renewable Energy Rider (RER) tariff. This program provides bill credits for excess generation at the rate of 1.6 times the current Fuel Clause Adjustment, which tracks the cost of fuel imports for electricity generation.[9] This calculation of the RER credit is intended to represent the cost of generation that the utility avoids by receiving the excess renewable generation. Individual systems can be sized no larger than 1.5 times the customer's annual usage, up to a maximum size of 150 kW. The program is limited to a cumulative capacity of 7 MW.

Energy Efficiency and Renewable Energy Projects

Barbados is a world leader in the deployment of solar water heaters, ranking fourth globally in installed capacity per capita in 2012.[11] Nationwide, the penetration of solar water heaters is roughly 40%.[1] The industry arose in the early 1970s in response to global oil crises and was aided by tax exemptions for solar water heating equipment, increased taxes on electric water heaters, and mandated use on new public housing.[15]

One prominent early showcase was an installation on the Prime Minister's residence, which drove a 70% reduction in annual gas consumption at his home. In the years since, solar water heating has had a tremendous effect on the island, both in terms of industrial development and avoided infrastructure and fuel costs. According to one estimate, the island's combined solar heating capacity is equivalent to roughly 88 MW, or over half of the island's historical peak electricity demand.[16]

Barbados has no utility-scale renewable energy capacity to date, but it has quickly added distributed solar photovoltaic (PV) capacity under the RER program. Offered on a pilot basis since 2010, the program was expanded per Fair Trading Commission (FTC) approval in August 2013. By the end of 2013, BL&P reported that 271 solar PV systems were connected to the grid with a combined capacity of 1.7 MW.[3] In the first three months of 2014, those figures rose dramatically, with the FTC reporting 424 customer subscriptions with a combined capacity of more than 3.5 MW, more than half of the 7 MW cap on total eligibility under the RER tariff.[9]

Opportunities for Clean Energy Transformation

The clean energy sector in Barbados seems primed for rapid growth in the near future. The nation is a world leader in solar water heating and is actively pursuing other ways to transition its energy system away from a dependence on imported fuels. The subscription of more than 3.5 MW of distributed generation in the first seven months of the RER program indicates that there is customer demand for more renewable energy generation. Finally, the emphasis on competitiveness in the energy markets will serve to speed the rate of adoption as initial development of the renewable energy sector progresses. An important focus area in the future will be energy efficiency, which is a vital component of Barbados' 2029 energy goals.

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.

[1] http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35232781.

[2] All information in this table is from the CIA World Factbook, unless otherwise noted; https://www.cia.gov/library/publications/the-world-factbook/geos/bb.html.

[3] http://www.blpc.com.bb/images/reports/LPH-AReport2013.pdf.

[4] http://comtrade.un.org/data/.

[5] https://sustainabledevelopment.un.org/index.php?page=view&type=1006&menu=1348&nr=233.

[6] http://www.blpc.com.bb/co-mis/our-history.html.

[7] http://www.barbadosparliament.com/htmlarea/uploaded/File/Bills/2013/Electric%20Light%20and%20Power%20Act,%202013.pdf.

[8] http://www.emera.com/en/home/affiliates/caribbean.aspx.

[9] http://www.ftc.gov.bb/library/2014_ftc_annual_report.pdf.

[10] All information in this table is from the BL&P 2013 Annual Report, unless otherwise noted; http://www.blpc.com.bb/images/reports/LPH-AReport2013.pdf.

[11] http://www.ren21.net/Portals/0/documents/Resources/GSR/2014/GSR2014_full%20report_low%20res.pdf.

[12] http://www.ftc.gov.bb/library/blip_app/2010-02-17_final_tariff_ORDER_2009_ftc_and_barbados_light_and_power_co_ltd.pdf.

[13] All information in this table is from the Caribbean Sustainable Energy Roadmap (C-SERMS), Phase 1, unless otherwise noted; http://www.worldwatch.org/system/files/nPhase%201%20C-SERMS%20Summary%20for%20Policymakers%20(1).pdf.

[14] http://gisbarbados.gov.bb/index.php?categoryid=9&p2_articleid=12135.

[15] http://energy.gov/sites/prod/files/2015/03/f20/phase3-barbados.pdf.

[16] http://www.credp.org/Data/CREDP-GIZ_Interconnection_Report_Final_Oct_2013.pdf.

[17] http://www.worldwatch.org/system/files/nPhase%201%20C-SERMS%20Summary%20for%20Policymakers%20(1).pdf.

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