

Energy Snapshot Guadeloupe

This profile provides a snapshot of the energy landscape of Guadeloupe, an overseas region of France located in the eastern Caribbean Sea. Guadeloupe’s utility rates are approximately \$0.18 U.S. dollars (USD) per kilowatt-hour (kWh), below the Caribbean regional average of \$0.33 USD/kWh. These low rates are enabled by French electricity regulations that equalize prices across the mainland and all overseas territories. Nevertheless, Guadeloupe’s reliance on imported fossil fuels—more than half of the island’s electricity is generated from imported petroleum-based fuels—leaves it vulnerable to significant disruptions in shipping or the availability of import facilities.

Population¹	405,739 ¹
Total Area	1,702 sq. km ²
Gross Domestic Product (GDP) (2013)	\$11.688 billion USD ³
Share of GDP Spent on Fuel and Imports	Electricity – Unknown Total – 6% ⁴
GDP Per Capita	\$28,800 USD
Urban Population Share	98.4% ⁵

Electricity Sector Data

Electricité de France (EDF) is the transmission and distribution utility in Guadeloupe and also operates a significant portion of the island’s fossil energy generation. There are also a number of Independent Power Producers (IPPs) in Guadeloupe, primarily producing renewable electricity. The electricity sector in Guadeloupe is regulated by the



Guadeloupe’s Renewable Energy Goals:

- 50% of electricity from renewable sources by 2020⁶
- 50% of primary energy from renewable sources by 2030
- 20% increase in efficiency by 2020.

Government and Utility Overview

Government Authority	Ministry: Directorate of the Environment, of the Interior and of Housing	
	Key Figure: Director Daniel Nicolas	
Designated Institution for Renewable Energy	Directorate of the Environment, of the Interior and of Housing	
Regulator	Commission for Regulation of Energy	
Utilities	Name: Electricité de France	Mixed ownership (85% French government, 15% publicly held) ⁷

Commission for Regulation of Energy (CRE), which also regulates EDF’s operations in mainland France and its other overseas territories. An important aspect of this jurisdictional overlap is that electricity rates are required to be equalized throughout France and the overseas departments, despite much higher costs of production in some overseas regions such as Guadeloupe.⁸

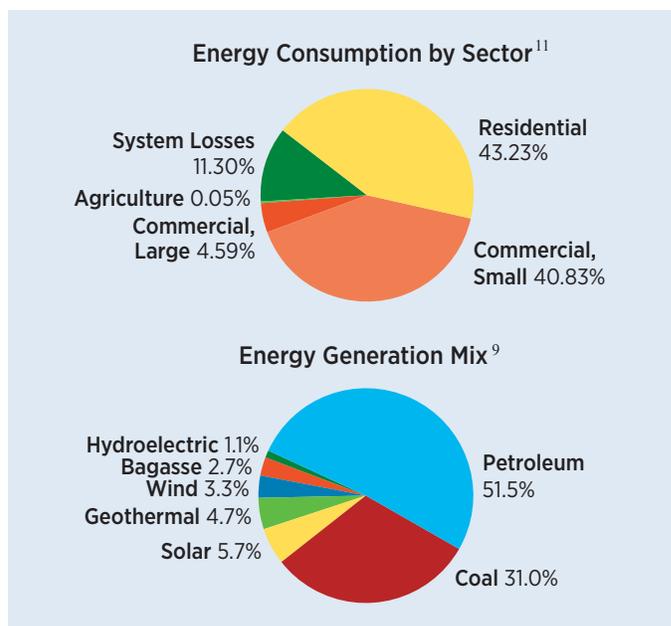
Electricity Sector Overview

Total Installed Capacity⁹	508.5 megawatts (MW)	
Peak Demand²	254 MW	
Total Generation⁹	1,729 gigawatt-hours	
Renewable Share⁹	17.45%	
Transmission & Distribution Losses¹³	6.6%	
Electrification Rate	Unknown	
Average Electricity Tariffs (USD/kWh)¹⁴	Residential	\$0.18
	Commercial	\$0.12
	Industrial	\$0.12
	Public Authorities	\$0.12
	Public Lighting	\$0.08

The electricity sector has some enabling features for renewable energy but also several obstacles. One of the biggest support mechanisms is a French law requiring the utility to purchase power from any interconnected renewable generator. However, concerns about grid stability and the variability of renewable resources led to a 1.5-MW system size cap on individual ground-mounted solar photovoltaic (PV) systems in 2010.⁹ More importantly, EDF enforces a limit on the amount of wind and solar power supplying the grid at any given instant.¹⁰ If the combined wind and solar production exceeds 30% of the system load at a given point in time, EDF's grid operators have the authority to reduce output from those resources until it is below the threshold. The 30% limit was derived from studies of EDF's operation of the electrical system in Corsica, another French overseas territory located in the Mediterranean. Resources are curtailed in the reverse order in which they began generating power. The regulation contains no provision to compensate the renewable electricity generators for their foregone energy production.

Clean Energy Policy Environment

Clean energy policy in Guadeloupe is guided by two major documents: the Regional Plan for Renewable Energy and the Rational Use of Energy (PRERURE) and the Regional

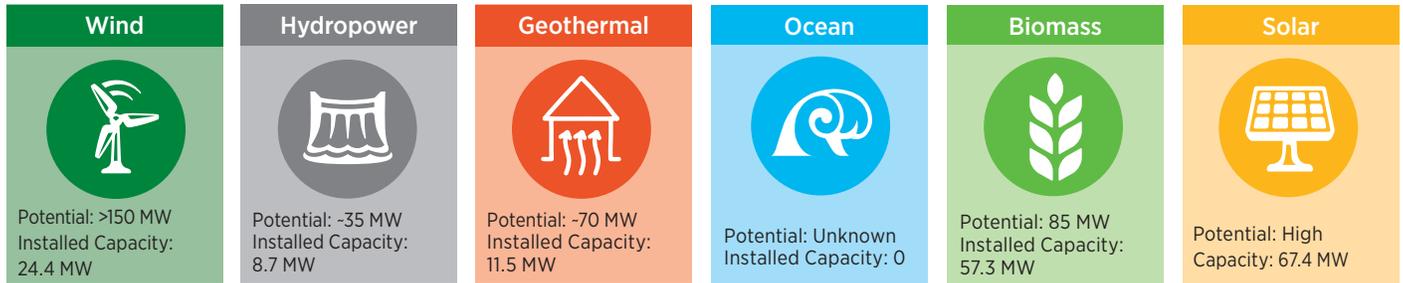


Existing Policy and Regulatory Framework

Renewable Energy	
Feed-in Tariff ²⁰	●
Net Metering/Billing	
Interconnection Standards	
Renewables Portfolio Standard/Quota	
Tax Credits ²¹	●
Tax Reduction/Exemption	
Public Loans/Grants	
Green Public Procurement	
Energy Efficiency	
Energy Efficiency Standards ¹⁷	●
Tax Credits ²²	●
Tax Reduction/Exemption	
Public Demonstration	
Restrictions on Incandescent Bulbs ¹⁰	●
Appliance Labeling Standards ⁹	●
Targets	
Renewable Energy	●
Energy Efficiency	●

● In Place ■ In Development

Renewable Energy Status and Potential⁹



Climate, Air and Energy Scheme (SRCAE). PRERURE was first published in 2007 and subsequently updated in 2012, with the goal of establishing a comprehensive suite of policy recommendations for various energy sectors.¹⁵ These recommendations included inspections of large air conditioners, mandatory integration of solar water heating on new homes, and the creation of a solar and wind commission to manage matters related to variable electrical sources. PRERURE also established the island's goal to obtain 50% of electricity from renewable resources by 2020 and 50% of all primary energy from renewables by 2030. The SRCAE is a broader document that includes the additional topics of local air pollutants and greenhouse gas emissions; it adopts the PRERURE in whole in its discussion of policy options for the energy sector.¹⁶

One of the concrete measures to evolve from the development of the PRERURE and SRCAE was the Thermal Regulation of Guadeloupe, which encompasses a suite of energy efficiency measures for buildings.¹⁷ The program includes energy consumption standards for new buildings, mandatory energy efficiency certifications that must be renewed every three to 10 years, and feasibility studies of energy conservation alternatives for buildings larger than 1,000 square meters. There are also significant programs to encourage uptake of solar water heaters¹⁸ and efficient air conditioning systems.¹⁹

Energy Efficiency and Renewable Energy Projects

Guadeloupe has a large portfolio of renewable generating capacity, with 112.8 MW installed as of 2013. It also has a diverse portfolio, both in terms of generation types and facility ownership. EDF Energie Nouvelles, the renewable project development arm of EDF, is active in solar and wind projects but there are many other independent facility operators of varying sizes: BP Solar, Tenesol, and Alinea Solar in PV²⁴; AEROWATT and SEC in wind²⁵; and Geothermie Boulliant in geothermal.⁹ In addition to these fully renewable resources,

Albioma operates a 56.5-MW generating facility, which uses bagasse as a feedstock after the sugarcane harvest but can also use coal as a fuel.⁹

Given the already high penetration of renewable resources and the island's 30% cap on solar and wind generation, companies are investigating innovative solutions to support increased integration renewables onto the grid. One innovative program in this area is EDF's Project "Millener," which offers to install appliance-connected energy controls or home energy storage systems (for customers who own PV systems). The newly installed assets will be controlled by EDF but aim to create energy savings for customers while at the same time developing demand response and grid stabilization capabilities. EDF-run "Millener" projects have been underway since 2011 in the French islands of Corsica and La Reunion. Guadeloupe's program began in 2012.²⁶

Opportunities for Clean Energy Transformation

Guadeloupe has IPP experience in renewable energy project development, an ambitious policy framework, and a well-seasoned utility partner in EDF. The major obstacle preventing further uptake of renewable electricity generation is the cap on variable generation at 30% of instantaneous system load. By enforcing this cap without providing compensation mechanisms for curtailment, this policy causes solar and wind projects to become less financially viable as more systems are added. Increasing solar and wind generation beyond the 30% limit may require detailed technical studies of grid stability or the implementation of enhanced grid controls that integrate energy storage. Nevertheless, there is additional untapped potential to generate power from other renewable resources such as geothermal and biomass. Given the island's goal of achieving a 50% renewable contribution to primary energy needs by 2030, Guadeloupe will also need to support significant future clean energy development in the building and transportation sectors.

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://www.insee.fr/fr/ppp/bases-de-donnees/donnees-detaillees/estim-pop/estim-pop-reg-sexe-gca-1975-2013.xls>.

² <http://www.france.fr/en/regions-and-cities/geography-french-overseas-territories.html>.

³ <http://www.insee.fr/fr/ppp/bases-de-donnees/donnees-detaillees/pib-va-reg-base-2010/PIB-regionaux-provisoires-2013.xls>.

⁴ http://www.insee.fr/fr/themes/document.asp?reg_id=26&ref_id=20101&page=ae_bilan/aes76ga/aes76ga_04.htm.

⁵ <https://data.un.org/CountryProfile.aspx?crName=Guadeloupe>.

⁶ <http://www.guadeloupe-energie.gp/politique-energetique/strategie-regionale-2/vers-lautonomie-energetique-de-la-guadeloupe>.

⁷ <http://shareholders-and-investors.edf.com/edf-share/shareholding-structure-42691.html>.

⁸ <http://www.cre.fr/operateurs/service-public-de-l-electricite-cspc/mecanisme>.

⁹ http://www.guadeloupe-energie.gp/wp-content/uploads/Public_Energie_BILAN-2013-dv.pdf.

¹⁰ <http://guadeloupe.edf.com/producteurs/le-raccordement-producteurs/le-plafond-des-30-89758.html>.

¹¹ http://www.developpement-durable.gouv.fr/IMG/pdf/Ref_-_Bilan_energetique_France_2012.pdf.

¹² <http://sei.edf.com/fichiers/fckeditor/Commun/SEI/corp/BilanPrevisionnel/EDF-SEI-Bilan-previsionnel-2014-Guadeloupe.pdf>.

¹³ <http://sei.edf.com/fichiers/fckeditor/Commun/SEI/corp/BilanPrevisionnel/Bilan-previsionnel-guadeloupe-juillet-2013.pdf>.

¹⁴ <http://guadeloupe.edf.com/particuliers/ma-relation-au-quotidien-avec-edf/les-tarifs-d-edf-49623.html>.

¹⁵ http://www.guadeloupe-energie.gp/wp-content/uploads/PRERURE_Guadeloupe_sept2012-1.pdf.

¹⁶ http://www.guadeloupe-energie.gp/wp-content/uploads/Rapport_SRCAE_Adooption_201112.pdf.

¹⁷ <http://www.guadeloupe-energie.gp/batiment/reglementation-thermique-guadeloupe>.

¹⁸ <http://www.guadeloupe-energie.gp/equipement/eau-chaude-solaire>.

¹⁹ <http://www.guadeloupe-energie.gp/equipement/efficacite-energetique-de-la-climatisation>.

²⁰ <http://www.ppa.org.fj/wp-content/uploads/2014/07/1630-Blacktip-Consulting-Blistering-in-the-sun-v1-2-Final.pdf>.

²¹ <https://books.google.com/s?id=UEYPBwAAQBAJ&pg=PA52&dq=solar+feed+in+tariif+overseas+departments&hl=en&sa=X&ei=ZzcOVdGdCMqZgwTg8IAQ&ved=0CDEQ6AEwAA#v=onepage&q&f=false>.

²² http://www.developpement-durable.gouv.fr/IMG/pdf/Guide_Ademe_aides_financieres_2015.pdf.

²³ <http://guadeloupe.edf.com/particuliers/agir-plus/nos-conseils/eclairage/choisir-vos-lampes-288354.html>.

²⁴ <http://www.guadeloupe.developpement-durable.gouv.fr/energie-photovoltaique-a595.html>.

²⁵ <http://www.guadeloupe.developpement-durable.gouv.fr/energie-eolienne-a594.html>.

²⁶ <http://guadeloupe.edf.com/edf-archipel-guadeloupe/accueil/le-projet-millener/pourquoi-millener-y-85623.html>.

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**ENERGY
TRANSITION
INITIATIVE**

Islands

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