

Energy Snapshot

Curacao

This profile provides a snapshot of the energy landscape of Curacao, an autonomous member of the Kingdom of the Netherlands located off the coast of Venezuela. Curacao’s utility rates are approximately \$0.26 per kilowatt-hour (kWh), below the Caribbean regional average of \$0.33/kWh. Like many island nations, Curacao is highly dependent on imported fossil fuels (more than 95% of the island’s electricity is generated using petroleum-based fuels), leaving it vulnerable to global oil price fluctuations that directly impact the cost of electricity.



Curacao’s Renewable Energy Goal:
40% reduction in energy consumption by 2020⁴

Population¹	146,836
Total Area	444 sq. km
Gross Domestic Product (GDP)	\$3.128 billion U.S. dollars (USD)
Share of GDP Spent on Fuel and Imports	Electricity – 4.2% ² Total – N/A* ³
GDP Per Capita	\$15,000 USD
Urban Population Share	Unknown

*Most of Curacao’s oil imports are feedstocks for the islands large, export-focused refining operation. The net export value of petroleum products totaled 14.0% of GDP in 2012.

Electricity Sector Data

The electric utility for Curacao is the Curacao Water and Power Company, more commonly referred to as Aqualectra. The utility is the island’s only provider of water and electricity production, though regulatory changes have been discussed to permit the entry of independent power producers.⁵ The company owns the majority of the generation on the island and supplements its portfolio by contracting surplus

Government and Utility Overview

Government Authority	Ministry: Electricity Monitor, Bureau of Telecommunications and Post	
	Key Figure: Director J.D. de Canha	
Designated Institution for Renewable Energy	Electricity Monitor, Bureau of Telecommunications and Post	
Regulator	Electricity Monitor, Bureau of Telecommunications and Post	
Utility	Name: Aqualectra	Government-Owned

power from the generation plant associated with the Refineria di Korsou (RdK) oil refinery.⁶ Aqualectra also receives power from two wind farms at Tera Kora and Playa Kanoa.⁷

Curacao faces energy security issues not only due to its reliance on imported fuels but also because of the age of its generation infrastructure. Thirty megawatts (MW) of Aqualectra’s generation portfolio is beyond its expected service life and the surplus power from the RdK refinery is

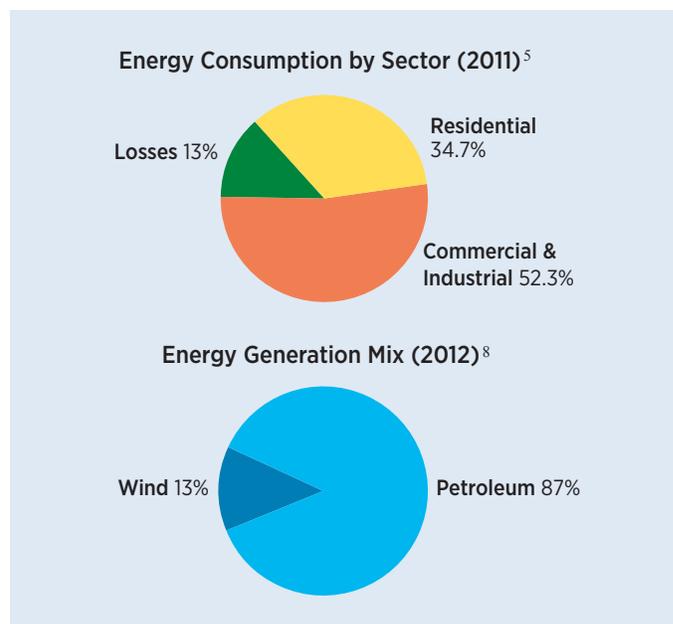
Electricity Sector Overview

Total Installed Capacity (2012)⁵	180 MW (Total) 130 MW (Aqualectra) 20 MW (RdK) 30 MW (wind farms)	
Peak Demand⁵	130 MW	
Total Generation (2011)⁵	765 gigawatt-hours	
Renewable Share (2012)⁸	13%	
Transmission & Distribution Losses (2011)⁵	13%	
Electrification Rate (2010)⁹	88.2%	
Average Electricity Tariffs (USD/kWh)¹⁰	Residential	\$0.26
	Commercial	\$0.32
	Industrial	\$0.26

subject to frequent outages. To maintain reliability, Aqualectra was forced to contract generation on a temporary basis from Aggreko International Projects; the first phase of emergency supply was for 10 MW in 2008, but by 2011 that amount had reached 44 MW.²

Clean Energy Policy Environment

In 2009, Curacao developed an energy policy document, which sets out general guidance and governing principles for further study of energy issues.⁴ It suggests the goal of reducing energy consumption by 40% by 2020 and encourages the investigation of combining wind power with storage to provide 100% of the island's energy needs. In 2011, the government published a policy document for the regulation of the electricity sector, which elaborated on the ideas outlined in the 2009 energy policy.⁶ This later document encouraged the licensing of independent power producers to increase competition and lower cost in the generation sector while maintaining Aqualectra's monopoly on distribution. It also encouraged the elimination of import taxes on renewable energy generation equipment and the creation of a tax credit for the installation of those systems.

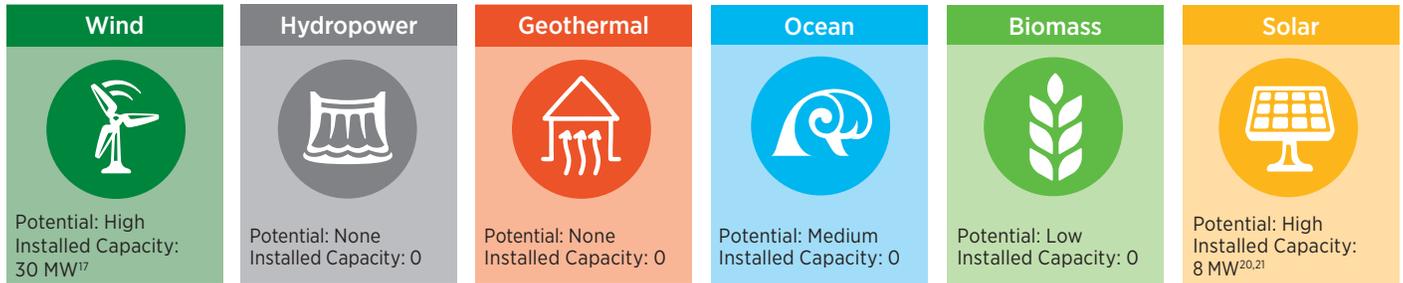


Existing Policy and Regulatory Framework¹³

Renewable Energy	
Feed-in Tariff ¹²	In Place
Net Metering/Billing ¹⁴	In Development
Interconnection Standards ¹¹	In Place
Renewables Portfolio Standard/Quota	In Development
Tax Credits ⁶	In Development
Tax Reduction/Exemption ⁶	In Development
Public Loans/Grants ⁶	In Development
Green Public Procurement	In Development
Energy Efficiency	
Energy Efficiency Standards	In Development
Tax Credits	In Development
Tax Reduction/Exemption	In Development
Public Demonstration	In Development
Restrictions on Incandescent Bulbs	In Development
Appliance Labeling Standards	In Development
Targets	
Renewable Energy	In Development
Energy Efficiency	In Development

● In Place ■ In Development

Renewable Energy Status and Potential⁵



In 2011, Curacao launched a net metering program for distributed wind and solar generation systems.¹¹ Residential systems smaller than 10 kilowatts (kW) and commercial systems smaller than 100 kW were eligible to participate. At the same time, large commercial customers could apply for a feed-in tariff for systems up to 1 MW in size.

On Jan. 1, 2015, the net metering regime was replaced with a feed-in tariff on all residential and commercial installations.¹² The compensation rate is roughly \$0.18/kWh for energy exported to the grid. The change also included fixed monthly charges of roughly \$9/kW for residential systems and \$18/kW for commercial systems, which have been described as a “sun tax” and have provoked lawsuits from the renewable energy sector.¹³

Energy Efficiency and Renewable Energy Projects

Curacao features two of the oldest but most productive wind energy installations in the Caribbean. The first installation, a 12-turbine, 3-MW facility, was placed in service at Tera Kora in 1993.¹⁵ This was followed by an 18-turbine, 9-MW installation at Playa Kanoa in 2000. Since Curacao features some of the best wind energy resources in the Caribbean, annual capacity factors reached as high as 61% at Playa Kanoa in 2002.¹⁶ To better utilize these excellent wind resources, a renewable project developer, NuCapital, purchased both sites and repowered them, replacing the existing generators with five 3-MW Vestas turbines at each site. The combined 30 MW between the two sites was formally commissioned in July

2012 and is expected to provide roughly 20% of the island’s energy generation.¹⁷ A second installation at Tera Kora is planned to come online by 2016, adding another 16.5 MW of wind capacity to Curacao’s total.¹⁸

Curacao does not have any utility-scale solar installations to date but has seen a large number of distributed solar installations, including installations larger than 700 kW at both the Parera Naval Base and the Central Bank of Curacao and Sint Maarten.¹⁹ In the first year of the net metering program, applications were submitted for 5 MW of distributed solar capacity, with the total interconnected capacity reaching 8 MW by February 2014.^{20,21}

Opportunities for Clean Energy Transformation

Curacao’s long history with wind energy has provided it with valuable experience in integrating variable energy resources into the electrical system while also demonstrating the value of avoiding petroleum-based electricity generation. An expansion of renewable generation capacity could increase those benefits, particularly in light of the condition of the island’s thermal generation fleet. With the decision to make electricity generation more competitive, utility-scale renewable generation is on a competitive footing, although the fees on distributed generators may discourage the adoption of those technologies. In addition, Curacao has the opportunity to undertake concrete actions in energy efficiency that will enable it to reach its energy consumption reduction target of 40% by 2020.

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

² <http://www.aqualectra.com/images/stories/IUHNv%20FS%20Consolidated%20Dec%2031%202010%20-%20%20%209%20April%202014.pdf>.

³ https://atlas.media.mit.edu/en/explore/tree_map/hs/export/cuw/all/show/2012/.

⁴ http://clingendael.info/publications/2009/20090626_ciep_curacao_dejong.pdf.

⁵ http://www.cepal.org/portofspain/noticias/paginas/4/51434/lcarw2_Curacao.pdf.

⁶ http://www.btnp.org/PDF/Beleidsnota_energie_4_februari_2011_Engels.pdf.

⁷ <http://www.nucapitalsvcs.com/index.php/projects>.

⁸ [http://www.sids2014.org/content/documents/599National%20Report%20Curacao%202014%20Sustainable%20Development%20FINAL%20\(July%202014\).pdf](http://www.sids2014.org/content/documents/599National%20Report%20Curacao%202014%20Sustainable%20Development%20FINAL%20(July%202014).pdf).

⁹ <http://data.worldbank.org/indicator/EG.ELC.ACCS.ZS>.

¹⁰ http://www.aqualectra.com/images/stories/Mrt_TARIFFS%20VALID%20AS%20OF%20MARCH%20%201st%20%202015.pdf.

¹¹ http://www.btnp.org/PDF/Beleidsnota_Kleinschalige_Duurzame_Stroomvoorziening_7_november_2011.pdf.

¹² http://www.btnp.org/images/stories/pdf/electriciteit/14_100MR_teruglevertarievenDuurzaamOpgewekteElectriciteit2015.pdf.

¹³ <http://curacaochronicle.com/local/feed-in-tariff-energy-remains/>.

¹⁴ <http://www.aqualectra.com/en/green-energy>.

¹⁵ <http://www.caricom.org/jsp/projects/credp/Aqualectra%20presentation.pdf>.

¹⁶ http://www.credp.org/Data/CAWEI_Wind_Survey_Report.pdf.

¹⁷ <http://nucapitalsvcs.com/index.php/projects/29-playa-kanoa-and-tera-kora-curacao>.

¹⁸ <http://www.aspiravi.be/en/our-projects/wind-onshore/curacao/tera-kora-ii>.

¹⁹ <http://www.ecoenergycuracao.net/en/about-us>.

²⁰ <http://www.ecoenergycuracao.net/blog/aqualectra-bevindt-zich-op-een-kruispunt>.

²¹ <http://www.amigoe.com/napa/napa/167571-explosieve-groei-zonne-energie-op-curacao>.