

Energy Snapshot U.S. Virgin Islands

This profile provides a snapshot of the energy landscape of the U.S. Virgin Islands (USVI)—St. Thomas, St. John, and St. Croix. The Virgin Islands archipelago makes up the northern portion of the Lesser Antilles and the western island group of the Leeward Islands, forming the border between the Atlantic Ocean and the Caribbean Sea. The 2015 electricity rates in the USVI are \$0.47 per kilowatt-hour (kWh), higher than the Caribbean regional average of \$0.33/kWh. Like many island nations, the USVI is heavily reliant on fossil fuels for electricity generation, leaving it vulnerable to global oil price fluctuations that directly impact the cost of electricity.



The U.S. Virgin Islands' Clean Energy Goals:

- Reduce fossil fuel-based energy consumption 60% by 2025
- Generate 30% of peak capacity from renewables by 2025.

Population	104,170
Total Area	1,910 square kilometers
Gross Domestic Product (GDP)	\$3.792 billion U.S. dollars (USD)
Share of GDP Spent on Fuel and Imports	Electricity ^a - 10%
GDP Per Capita	\$14,500 USD
Urban Population Share	95.5%

^aAssumes average electricity price of \$0.50/kWh and consumption of 767.4 gigawatt-hours (GWh).

Electricity Sector Data

The islands of St. Thomas and St. John are interconnected and served by one electrical grid run by the Virgin Island Water and Power Authority (WAPA), while St. Croix has a separate electrical grid in the WAPA service area.

As of late 2014, more than 1,000 distributed renewable energy systems were connected to the WAPA grid.

Government and Utility Overview

Government Authority	Ministry: Virgin Islands Energy Office	
	Key Figure: Elmo Roebuck, Jr.	
Designated Institution for Renewable Energy	Virgin Islands Energy Office	
Regulator	Virgin Islands Public Service Commission	
Utilities	Name: Virgin Islands Water and Power Authority	Independent public utility
	Serves 54,000 customers and is the sole electrical utility for the USVI	

These systems met about 10% of peak demand on St. Croix and almost 12% of the peak demand for St. John and St. Thomas. In addition, multiple utility-scale renewable energy projects, which total about 34 megawatts (MW), are under construction or approved for construction.

Electricity Sector Overview

Total Installed Capacity	118 MW (St. Croix) 198 MW (St. Thomas and St. John)	
Peak Demand	88 MW (St. Thomas and St. John) 55 MW (St. Croix)	
Total Generation	794 gigawatt-hours	
Renewable Share*	More than 10% of peak demand	
Transmission & Distribution Losses	>13% (St. Croix) 6% (St. Thomas and St. John)	
Electrification Rate		
Average Electricity Tariffs (USD/kWh)	Residential	\$0.487
	Commercial	\$0.517
	Industrial	\$0

*Data on renewable energy is changing at a rapid pace in the USVI. At the time of publication, projects completed, under construction, or approved for construction would account for more than 20% of peak demand.

Clean Energy Policy Environment

In 2009, the USVI passed Act 7075—an energy policy that focuses on reducing fuel imports, expanding fuel diversity, and increasing energy self-sufficiency. The Act specified several provisions, including:

- A utility renewable portfolio standard of 30% to encourage renewable energy development
- Net metering for distributed generation, allowing up to 20 kilowatts (kW), 100 kW, and 500 kW on residences, businesses, and government buildings, respectively, enabling customers to generate their own energy from renewable sources
- Mandatory installation of energy-efficient solar water heating systems on all new construction and government buildings by 2020.

Also in 2009, the Virgin Islands Energy Office (VIEO) appropriated \$32 million from the Recovery Act to finance rebates, grants, and loans for energy efficiency and distributed renewable energy technologies.

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	

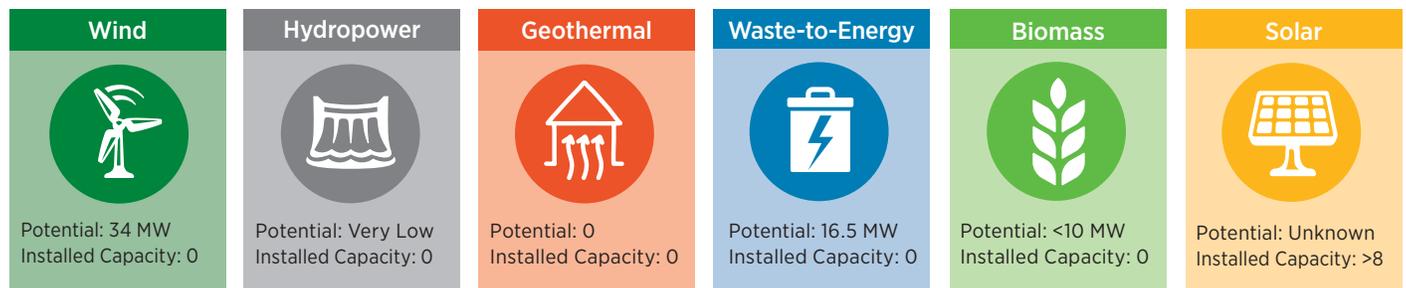
● In Place ■ In Development

In April 2014, the legislature passed Act 7586, which established the Feed-In Tariff Act, allowing residents to participate in the generation market; at that time, the net metering program had received applications that would reach the program caps.

Energy Efficiency and Renewable Energy Projects

To date, WAPA has converted six turbines from fuel oil to propane for lower fuel costs and fewer emissions. Additional conversion will be completed in early 2015, and those turbines will have the flexibility to burn propane, natural gas, or diesel.

Renewable Energy Status and Potential



The USVI's abundant solar resource (global horizontal irradiation of nearly 6 kWh/square meter-day) makes solar power economically attractive, especially as costs continue to decrease.

Wind speeds measured at a 60 meter hub height exceed 7 meters per second (m/s) on test sites on St. Croix and St. Thomas and indicate a large potential for wind electricity. The localized cost of energy from utility-scale wind projects ranges from \$0.08/kWh to \$0.14/kWh.

St. Croix has moderate potential to generate 3 MW to 5 MW of energy from biomass because the majority of the island is covered with forest. Landfill gas has an expected capacity of about the same. In addition to woody biomass utilization, a 7-MW anaerobic digester using king grass as a feedstock has signed a Power Purchase Agreement (PPA) with WAPA.

Estimates for waste-to-energy (WTE) technology range from 8 MW to 33 MW. In 2009, WAPA signed a PPA for a 33-MW plant. That project was subsequently altered to 20 MW and removed pet coke from the feedstock. In 2012, the USVI Senate voted against the project.

Additionally, the USVI has high ocean thermal potential as a result of a 40-kilometer, relatively deep ocean trench separates the northern two main islands from the southern main island.

Opportunities for Clean Energy Transformation

The USVI has sufficient renewable energy resource and energy efficiency potential to meet some or all of its current and future electricity needs. To leverage these resources, the USVI is addressing the technical barriers associated with integrating high levels of variable renewable energy generation into its isolated, relatively small electrical distribution system.

While significant progress has been made, there is room for improvement. Maintaining best practice interconnection standards over time and monitoring technology developments can facilitate maximum economically viable market penetration of renewable and distributed generation. Additionally, more energy efficiency services could be supported for WAPA customers.

USVI Renewable Energy Successes

Recent installed renewable energy projects in the USVI have decreased the fuel charge added to customers' electrical bills by 25%. These projects include:

- In April 2011, a 448-kW photovoltaic (PV) system was installed at the Cyril E. King Airport on St. Thomas, one of the largest PV systems in the Caribbean.
- In October 2011, building energy efficiency upgrades were completed on 11 schools for an energy cost-savings of \$1.3 million the first year and \$1.7 million the second year, which led the USVI government to authorize \$35 million in funding in 2013 to install lighting and water retrofits in 34 more schools.
- Close to 1,500 solar water heating and PV systems have been installed throughout the territory since February 2010, and 15 MW of distributed solar PV are either in place or under construction.



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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