

## Energy Snapshot Antigua and Barbuda

This profile provides a snapshot of the energy landscape of Antigua and Barbuda, an independent nation in the Leeward Islands in the eastern Caribbean Sea. Antigua and Barbuda’s utility rates are approximately \$0.37 U.S. dollars (USD) per kilowatt-hour (kWh), which is above the Caribbean regional average of \$0.33 USD/kWh. Like many island nations, Antigua and Barbuda is almost entirely reliant on imported fossil fuels, leaving it vulnerable to global oil price fluctuations that directly impact the cost of electricity.



- Antigua and Barbuda’s Renewable Energy Goals:**
- 5% of electricity from renewable sources by 2015<sup>3</sup>
  - 10% of electricity from renewable sources by 2020
  - 15% of electricity from renewable sources by 2030
  - 25% reduction in greenhouse gas emissions below 1990 value by 2020.<sup>3</sup>

<b>Population<sup>1</sup></b>	91,295
<b>Total Area</b>	443 square kilometers Antigua – 280 sq. km Barbuda – 161 sq. km
<b>Gross Domestic Product (GDP)</b>	\$1.61 billion USD
<b>Share of GDP Spent on Fuel and Imports<sup>2</sup></b>	Electricity – 4% Total – 12%
<b>GDP Per Capita</b>	\$18,400 USD
<b>Urban Population Share</b>	29.8%

### Electricity Sector Data

The Antigua Public Utilities Authority (APUA) is a government agency established under Public Utilities Act No. 10 of 1973. APUA provides electricity, water, and communication services to the islands and is regulated by the Ministry of Public Utilities, a Cabinet-level branch of the government.<sup>6</sup> APUA’s rate structure includes both a standard energy rate and a fuel variation charge to cover the fluctuating fuel costs associated with energy production. Currently the fuel

### Government and Utility Overview

<b>Government Authority</b>	<b>Ministry:</b> Ministry of Tourism, Economic Development, Investment and Energy <sup>4</sup>	
	<b>Key Figure:</b> Asot Michael	
<b>Designated Institution for Renewable Energy</b>	Ministry of Tourism, Economic Development, Investment and Energy <sup>5</sup>	
<b>Regulator</b>	Ministry of Public Utilities, Civil Aviation & Transportation	
<b>Utilities</b>	<b>Name:</b> Antigua Public Utilities Authority	Government-owned corporation

variation charge makes up more than half of the total per-kilowatt-hour cost for the residential and commercial sectors.<sup>7</sup>

The electricity sector largely relies on a single fuel supplier, the West Indies Oil Company (WIOC). In October 2013, APUA experienced temporary blackouts due to nonpayment of debts to WIOC, which had instituted a

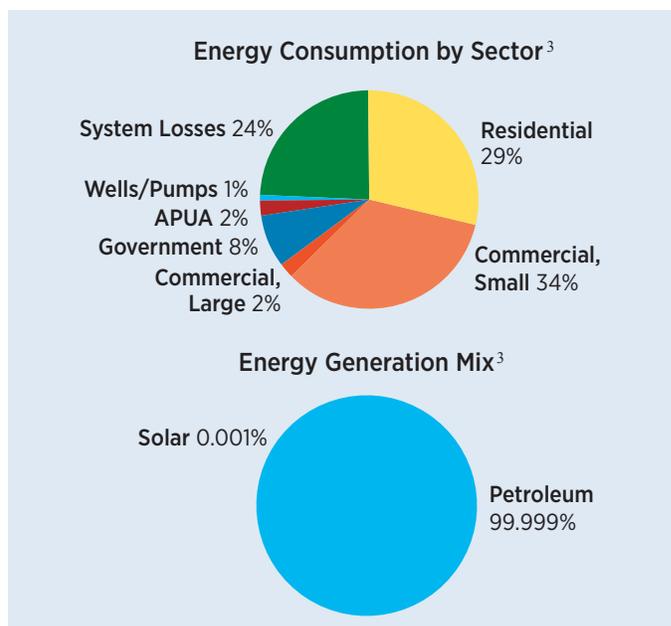
## Electricity Sector Overview

<b>Total Installed Capacity<sup>2</sup></b>	118 megawatts (MW) (Total) 40 MW (APUA) 51 MW (APUA-APC Joint Venture) 27 MW (APC)	
<b>Peak Demand<sup>2</sup></b>	50 MW	
<b>Total Generation (2012)<sup>12</sup></b>	315 gigawatt-hours	
<b>Renewable Share (2012)<sup>3</sup></b>	0.001%	
<b>Transmission &amp; Distribution Losses<sup>2</sup></b>	24%	
<b>Electrification Rate<sup>13</sup></b>	88.2%	
<b>Average Electricity Tariffs (USD/kWh)<sup>7,14</sup></b>	<b>Residential</b>	\$0.37
	<b>Commercial</b>	\$0.39

cash-before-delivery policy to protect itself from financial liabilities.<sup>8</sup> Since 1980, ownership of WIOC itself had been split between a private corporation, National Petroleum Ltd., and the Antigua government.<sup>9</sup> In April 2015, the Antigua government partnered with the government of Venezuela and a Chinese investor to acquire National Petroleum's ownership interest in WIOC. Under the terms of the deal, the Antigua government will retain a 51% share in WIOC.<sup>10</sup>

Antigua and Barbuda's generation resources are owned primarily by APUA, with the remainder owned by the sole independent power producer (IPP) currently in operation—Antigua Power Company Limited (APC); other IPPs are allowed but none exist to date. APC's generation fleet can supply power at lower cost than APUA's due to the higher efficiency of its units, so it provides the majority of electricity generated for sale by APUA.<sup>11</sup>

To take advantage of their differing roles and responsibilities, APUA and APC have a joint venture to develop additional oil-fired generation. Additionally, APUA has an agreement in place to take control of APC's 27-MW Black Pine facility in 2018, which would significantly increase the capacity and reliability of APUA's resources.

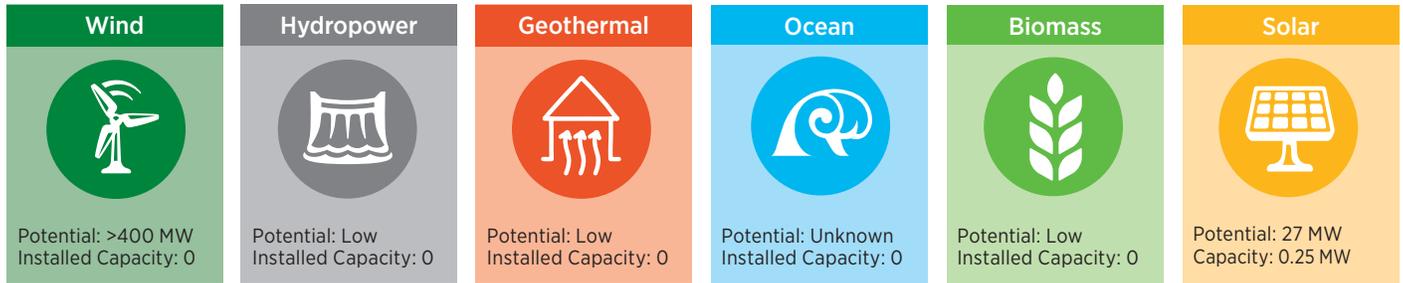


## Existing Policy and Regulatory Framework<sup>3</sup>

Renewable Energy	
Feed-in Tariff <sup>16</sup>	■
Net Metering/Billing <sup>15</sup>	●
Interconnection Standards <sup>17</sup>	●
Renewables Portfolio Standard/Quota	
Tax Credits	
Tax Reduction/Exemption	
Public Loans/Grants <sup>16</sup>	■
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



## Clean Energy Policy Environment

Antigua and Barbuda published a draft of its National Energy Policy in December 2010, with the dual goals of reducing energy costs by diversifying away from fossil fuels and driving development of new technologies and sectors. Among the suggested steps were improving land use designations to enable more renewable facilities, changing regulations to permit customer-sited distributed generation, and increasing energy efficiency by implementing new building codes.<sup>2</sup> The National Energy Policy provided high-level direction and delegated details of implementation and timelines to the Sustainable Energy Action Plan.

The Sustainable Energy Action Plan, released in 2013, specifies necessary government institutions, possible enabling policies, prioritization of efforts, and a budget to evaluate the feasibility of those policies. Given the nation's limited experience with renewable energy, a large portion of Antigua and Barbuda's Sustainable Energy Action Plan focuses on the need to increase public awareness and technical capacity. It also clarifies the government's internal goal of reducing public sector energy consumption and expenditures by 30% by 2020.<sup>3</sup>

One area where policy has been implemented is in the area of distributed generation. APUA has established both interconnection standards and a net billing program, under which excess generation from renewable energy systems is credited to customers at the utility's avoided cost of generation.<sup>15</sup>

## Energy Efficiency and Renewable Energy Projects

Despite the abundant wind and solar resources in Antigua and Barbuda, the installed capacity of those technologies remains low. Solar installations to date total under 300 kW,<sup>18</sup> and include a 3-kilowatt (kW) system built in 2010<sup>3</sup> and a 25-kW

array on the government building housing the Ministries of Tourism and Education.<sup>19</sup> To encourage development, the utility has established interconnection standards for distributed renewable generators under 50 kW, including a simplified track for inverter-based systems under 5 kW.<sup>17</sup> A utility-scale 3-MW photovoltaic project is being developed for the newly built terminal at VC Bird International Airport.<sup>20</sup>

Studies have shown high wind and solar resource potential in Antigua and Barbuda, with the most prominent example being the estimated 400 MW of wind energy potential in the Highlands region of Barbuda. That estimate is nearly three times the country's total energy consumption and has the added benefit of minimal visual impact due to its distance from population centers.<sup>11</sup> In addition, Antigua and Barbuda's Environmental Division has conducted pre-feasibility studies of a 10-MW pumped-hydro system at St. Philips to provide energy storage and balancing in support of a proposed 18-MW wind farm at Crabbs Peninsula.<sup>18</sup>

## Opportunities for Clean Energy Transformation

Antigua and Barbuda has significant untapped renewable energy and energy efficiency potential. Realizing the benefits from this potential will require additional policy and program efforts. The Sustainable Energy Action Plan is a prime example; it provides a menu of possible policies and links those policies to target outcomes, but requires future work to sufficiently specify these programs for implementation. Another case is the large wind energy potential on Barbuda, which could easily satisfy the local energy needs—the island is currently served by a 7.2-MW diesel power plant.<sup>21</sup> Interconnections to nearby islands could increase the potential benefits from this wind resource and spread them to other parts of the country as well.

## 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.



<sup>1</sup> All information in this table is from the CIA World Factbook, unless otherwise noted; <https://www.cia.gov/library/publications/the-world-factbook/geos/ac.html>.

<sup>2</sup> [http://www.ab.gov.ag/pdf/draft\\_nep\\_december\\_2010\\_edition.pdf](http://www.ab.gov.ag/pdf/draft_nep_december_2010_edition.pdf).

<sup>3</sup> [http://www.oas.org/en/sedi/dsd/Energy/Doc/EAP\\_AntiguaBarbuda\\_web.pdf](http://www.oas.org/en/sedi/dsd/Energy/Doc/EAP_AntiguaBarbuda_web.pdf).

<sup>4</sup> [http://www.ab.gov.ag/article\\_details.php?id=307&category=66](http://www.ab.gov.ag/article_details.php?id=307&category=66).

<sup>5</sup> [http://www.ab.gov.ag/article\\_details.php?id=5043&category=38](http://www.ab.gov.ag/article_details.php?id=5043&category=38).

<sup>6</sup> <http://www.apua.ag/about-us/>.

<sup>7</sup> <http://www.apua.ag/resource-centre/rates/> <http://www.apua.ag/wp-content/uploads/2015/02/Reduction-in-fuel-variation.pdf>.

<sup>8</sup> <http://caribtimes.com/2013/10/10/failure-to-pay-wioc-reason-for-island-wide-power-outage/#.VQxGglXF9AY>.

<sup>9</sup> <http://westindiesoil.com/about-us/#legacy>.

<sup>10</sup> <http://www.laht.com/article.asp?ArticleId=2381831&CategoryId=14092>.

<sup>11</sup> [http://www.credp.org/Data/CREDP-GIZ\\_Interconnection\\_Report\\_Final\\_Oct\\_2013.pdf](http://www.credp.org/Data/CREDP-GIZ_Interconnection_Report_Final_Oct_2013.pdf).

<sup>12</sup> <http://www.eia.gov/cfapps/ipdbproject/iedindex3.cm?tid=2&pid=alltypes&aid=12&cid=AC,&syid=2008&eyid=2012&unit=BKWH>.

<sup>13</sup> <http://data.worldbank.org/indicator/EG.ELC.ACCS.ZS>.

<sup>14</sup> <http://www.apua.ag/resource-centre/rates/>.

<sup>15</sup> <http://www.apua.ag/wp-content/uploads/2015/03/EPR-Interconnection-Policy.pdf>.

<sup>16</sup> <http://abl.p.gov.ag/the-renewable-energy-act-2015-by-hon-asot-michael/>.

<sup>17</sup> <http://www.apua.ag/interconnection-policy/>.

<sup>18</sup> <http://www.environmentdivision.info/news.php/news/61/group/15>.

<sup>19</sup> <http://antiguaobserver.com/govt-installs-solar-energy-system-on-ministry-buildings/>.

<sup>20</sup> <http://antiguaobserver.com/plans-afoot-to-reduce-airports-dependence-on-apua/>.

<sup>21</sup> [http://www.caricom.org/jsp/community\\_organs/energy\\_programme/interim\\_worldbank\\_report\\_gifs.pdf](http://www.caricom.org/jsp/community_organs/energy_programme/interim_worldbank_report_gifs.pdf).