



2017 ENERGY REPORT CARD

ANTIGUA AND BARBUDA

This document presents Antigua and Barbuda's Energy Report Card (ERC) for 2017, which was prepared using data and information submitted by the Member State as well as supplemental data extracted from online resources (see list of References). The ERC provides an overview of energy sector performance in Antigua and Barbuda by focusing on two priority sub-sectors: Electricity and Transportation. The ERC also includes energy efficiency, climate change, energy sector workforce, training and capacity building information, subject to the availability of data.

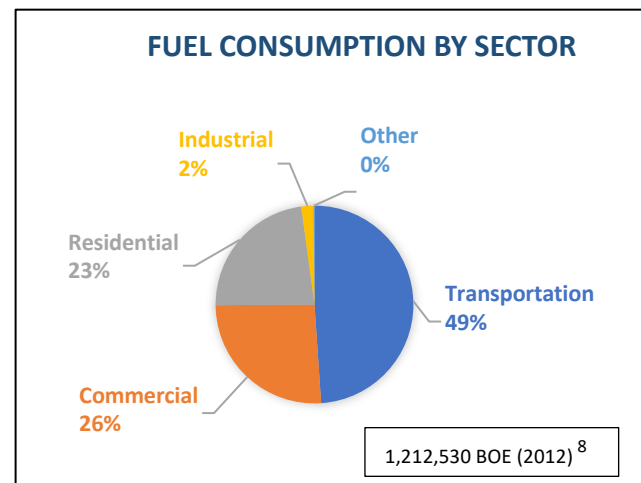
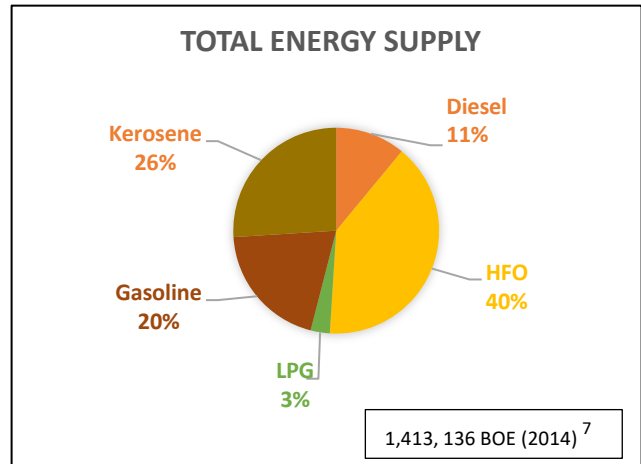
December 2018

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“AT-A-GLANCE” SUMMARY OF ANTIGUA AND BARBUDA’S ENERGY SECTOR

| KEY DATA & INFORMATION – ENERGY SECTOR IN ANTIGUA AND BARBUDA | |
|---|---|
| Population | 94,731 (2017) ¹ |
| GDP Per Capita (USD) | 26,400 (2017) ² |
| Debt as % of GDP | 86.8% (2017) ² |
| Human Development Index | 0.780 (2017) ³ |
| National Development Plan/ Overall Country Development Strategy | Yes (2009) ⁴ |
| National Energy Policy | Yes (2011) ^{5, 6} |
| Renewable Energy (RE) Policy | |
| RE Target | 15% of electricity supply from RE ^{5, 6} |
| Energy Performance Standards/ Appliance Labelling | In progress ⁵ |
| No. of Persons Employed in Energy Sector | |
| Total Oil Import (BOE) per day | 3,872 (2014) ⁷ |
| Total Oil Export (BOE) per day | 174 (2012) ⁸ |
| Total Installed Capacity (MW) | 112.2(2017) ⁵ |
| Total Installed RE (MW) | 4.2 (2017) ⁵ |
| Electricity System Losses (%) | 18% (2017) ⁵ |
| Energy Use (kWh) Per Capita | 3,484 (2017) ⁹ |
| Energy Intensity | |
| Oil Imports as % of GDP | 15.1% (2012) ⁸ |
| Climate Change Policy | |
| National Determined Contributions | Yes (2015) ¹⁰ |
| National Repository for Energy Data | West Indies Oil Company, Antigua Public Utilities Authority |



ANTIGUA AND BARBUDA’S ENERGY SECTOR PERFORMANCE AGAINST TARGETS

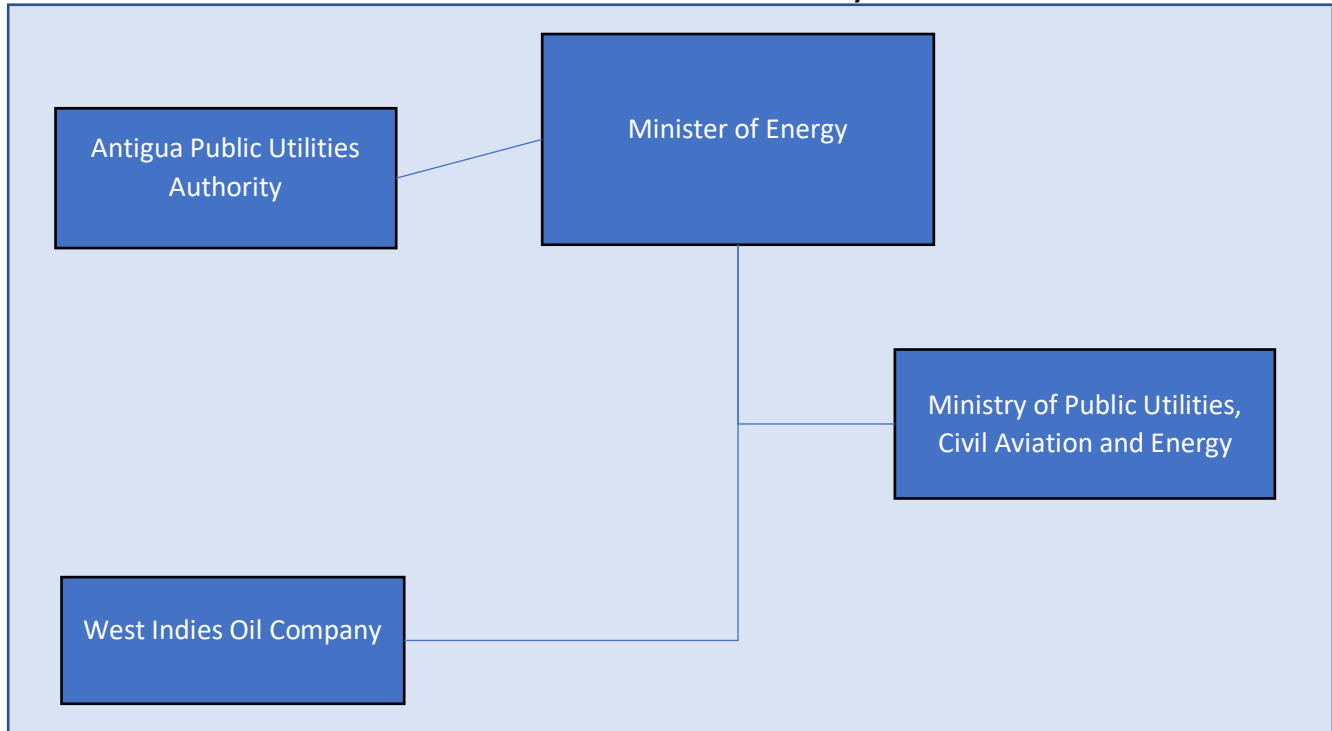
| Indicator | Base/ Current Performance (Year) | National Target | National Target (Proposed by CARICOM – CSERMS Report) ¹¹ | <u>Typical RE Oil Displacement^{12,13} Potential Annually**</u> |
|--|----------------------------------|---|---|---|
| RE as % of Installed Capacity | 4% | 15% of electricity supply by 2030 | 51% | <ul style="list-style-type: none"> 1 MW wind displaces 1,760 barrels of oil equivalent (BOE) 1 MW hydro displaces 3,300 BOE 1 MW solar displaces 1,210 BOE |
| *Energy Intensity (BTU/US\$1 Unit of output) | | 10% reduction below a 2010 baseline within 10 years | | <p>Energy Intensity (EI):</p> <ul style="list-style-type: none"> EI measures how energy benefits the economy and is calculated by taking the ratio of total primary energy use (all of the fuels and flows that a country uses to get energy) to GDP (the total money made in a country). EI indicates how effectively an economy uses their fuels and flows. |
| % Reduction in Energy Sector Emissions | | 10% reduction below 2010 baseline | | |

*The energy efficiency target for CARICOM is 33% reduction in energy intensity by 2027, compared to a reference of Average Annual Energy Intensity of ~13,000 BTU per USD of GDP in 2015.¹¹

**Based on capacity factors of 0.32 for wind. 0.6 for hydro and 0.22 for solar.¹²

KEY ENERGY SECTOR STAKEHOLDERS: ANTIGUA AND BARBUDA

Governance Structure for the Electricity Sector⁵



Other key electricity stakeholders include^{5,14}:

- Ministry of Finance & Corporate Governance
- Ministry of Works
- Department of the Environment
- Antigua Power Company
- PDV Caribe Antigua and Barbuda Ltd
- Antigua and Barbuda Bureau of Standards
- Development Control Authority

Key Stakeholders: Road Transportation Sub-sector¹⁴:

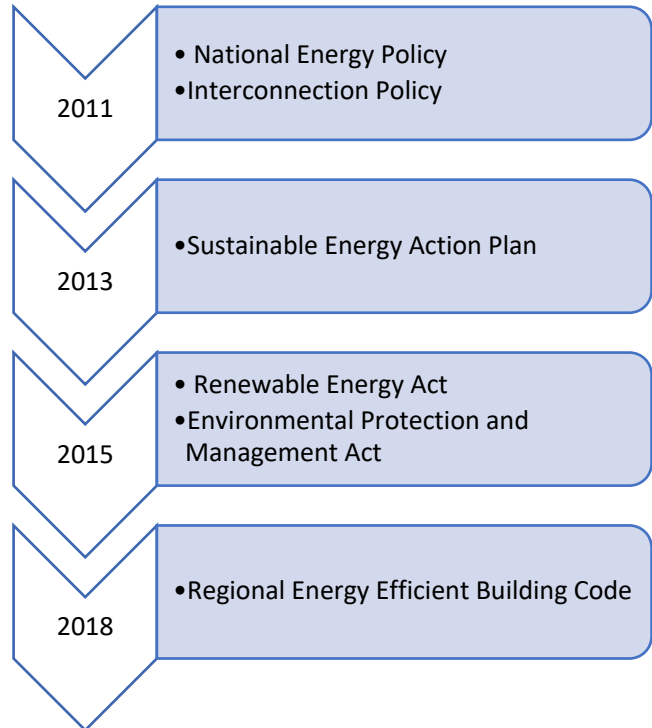
- Ministry of Public Utilities, Civil Aviation and Energy
- Antigua and Barbuda Transport Board (transportation regulator)
- West Indies Oil Company
- Sol Antigua and Barbuda

POLICY, LEGAL AND REGULATORY FRAMEWORK: ANTIGUA AND BARBUDA

Electricity Sector: Policy, Legal and Regulatory (PLR) Framework^{5, 8, 11, 16}

| | | |
|---|--|---|
| ✓ | Finalized Energy Policy and Energy Action Plan | ● |
| ✓ | RE Target | ● |
| ✓ | EE Target | ● |
| ✓ | Electricity Regulator | ● |
| ✓ | Net billing/Net metering | ● |
| ✓ | Interconnection Policy/Standards | ● |
| ✗ | Feed-in-tariff | ● |
| ✓ | RE/EE Act | ● |
| | | |

Key Achievements: PLR Framework Timeline for the Electricity Sector^{5, 8}



Policies and Legislation Relevant to the Transportation Sector

| | |
|-------------------------------------|--|
| Policies | <ul style="list-style-type: none"> National Energy Policy Sustainable Energy Action Plan |
| Legislation & Regulation | <ul style="list-style-type: none"> The Vehicles and Road Traffic Act The Transport Board (Amendment) Regulations, 2013 |

Climate Change Framework - Antigua and Barbuda

| | |
|---|---|
| Climate Change Policy | |
| National Determined Contributions | Yes (2015) ¹⁰ |
| Emissions Reduction Target | Conditional mitigation target for energy sector: By 2030, achieve an energy matrix with 50 MW of electricity from renewable sources both on and off-grid in the public and private sectors. ¹⁰ |
| Priority Sectors for NDC | Energy, Health, Tourism, Agriculture, Waste, Water, Transportation, Forestry and Land Use Change. ¹⁰ |
| National Communications (NC) to the UNFCCC | NC1 submitted in 2001, NC2 in 2011, NC3 in 2016 ¹⁵ |
| Greenhouse Gas (GHG) Inventory | Yes |

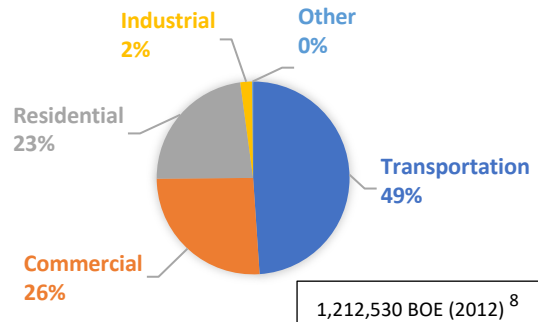
ELECTRICITY SUBSECTOR & ENERGY EFFICIENCY: ANTIGUA AND BARBUDA

KEY DATA & INFORMATION

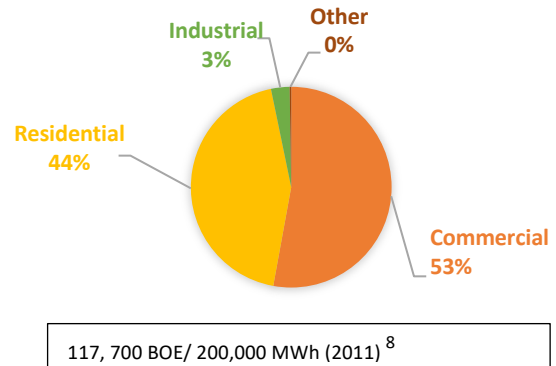
CONVENTIONAL ENERGY

| | |
|--|-----------------------------|
| 1. Fuel Consumption – Electricity Subsector (BOE) | 167,535 (2012) ⁸ |
| 2. Total Installed Capacity (MW) | 112.2 (2017) ⁵ |
| 3. Installed Conventional Capacity – Electric Utility (MW) | 30 (2017) ⁵ |
| 4. Installed Conventional Capacity – IPPs (MW) | 78 (2018) ⁵ |
| 5. Base Load (MW) | 30 (2017) ⁵ |
| 6. System Peak Demand (MW) | 50 (2017) ⁵ |
| 7. Total Generation (MWh) | 330,000 (2017) ⁵ |
| 8. Total Sales (MWh) | 270,000 (2017) ⁵ |
| 9. Total Number of Customers | 38,000 (2017) ⁵ |
| RENEWABLE ENERGY | |
| 10. Total Installed RE Capacity (MW) | 4.2 (2017) ⁵ |
| 11. RE Capacity – Electric Utility (MW) | |
| 12. RE Capacity – IPPs (MW) | |
| 13. RE as % of Total Installed Generating Capacity | 3.74% |
| 14. RE Target | 15% by 2030 ⁵ |
| TARIFFS | |
| 15. Residential Tariff (US\$/kWh) | 0.37 ¹⁶ |
| 16. Commercial (US\$/kWh) | 0.39 ¹⁶ |
| 17. Industrial/Large Power (US\$/kWh) | |
| 18. Street Lights (US\$/kWh) | |
| EFFICIENCY | |
| 19. Electricity System Heat Rate | |
| 20. Electricity System Losses (%) | 18 ⁵ |
| 21. Energy Use (kWh) Per Capita | 3,484 (2017) |
| 22. Energy intensity index (EII) BTU/US\$1 Unit of output | |
| 23. EE Target | |
| MANAGEMENT OF ENERGY DATA/KNOWLEDGE | |
| 24. Name of Energy Knowledge Management System | |
| 25. Name of Energy Data Management System | |

FUEL CONSUMPTION BY SECTOR



ELECTRICITY USE/SALES BY SECTOR



Additional consumption not reflected in the APUA's sales comes from its water and telecommunications divisions as well as government consumption. Together these account for around 10 percent of consumption (NREL, 2015).

| RE Resource | Installed Capacity (MW) | Year Commissioned |
|--------------|-------------------------|-------------------|
| Wind | | |
| Solar | 4.2 | |
| Hydro | | |
| Geothermal | | |
| Biomass/ WTE | | |
| Total | 4.2 | |

RE as % of installed Power Capacity = 3.74%

| RE Resource Potentials | Potential Capacity (MW) ¹⁶ | Assessment Conducted? |
|------------------------|---------------------------------------|-----------------------|
| Wind | >400 | |
| Solar | 27 | |
| Hydro | | |
| Geothermal | | |
| Biomass/ WTE | | |
| Total | >427 MW | |

TRANSPORTATION SUBSECTOR: ANTIGUA AND BARBUDA

| Key Transportation Data and Information | |
|---|---|
| Fuel Consumption, Transportation (BOE) | 595,315 ⁸ |
| Energy-related transportation targets? | 50% improvement in transport efficiency in 15 years ¹¹ |
| Sustainable /Alternative fuels used? | |
| Total Imports for Alternative Fuels | |
| Conventional Vehicle Stock/Vehicle Registration | 17,344 (2017) ⁵ |
| Trucks | |
| Cars | |
| Buses | |
| Hybrid vehicle stock? | |
| Electric vehicle stock | |
| Fuel Quality Standards? | |

| Breakdown of Fuel Use in the Transportation Sector | | |
|--|----------------|------------------------------|
| | Quantity (BOE) | Type of Fuel/s ⁵ |
| Road | | Diesel, Gasoline, Bio-diesel |
| Railway | | N/A |
| Aviation | | Jet fuel |
| Marine | | Gasoline, Diesel, Kerosene |

WORKFORCE: ENERGY SECTOR, ANTIGUA AND BARBUDA

Number of Persons Employed in the Energy Sector

| NAME OF ENTITY | PRIVATE OR PUBLIC? | NUMBER OF PERSONS EMPLOYED | BREAKDOWN BY GENDER AND EMPLOYMENT LEVEL | |
|----------------|--------------------|----------------------------|---|---|
| | | | Females: | Males: |
| | | | Managerial Level: Supervisor: Technical: Administrative: | Managerial Level: Supervisor: Technical: Administrative: |
| | | | | |
| | | | | |

Number of Persons Trained in the Energy Sector in 2017

| NAME OF ENTITY | PRIVATE OR PUBLIC? | NUMBER OF PERSONS TRAINED | BREAKDOWN BY GENDER AND EMPLOYMENT LEVEL | |
|---|--------------------|---------------------------|---|--|
| | | | Females: | Males: |
| Antigua and Barbuda Bureau of Standards | | 14 ⁵ | 10 Managerial Level: Supervisor: Technical: Administrative: | 4 Managerial Level: Supervisor: Technical: Administrative: |
| Development Control Authority | | 4 ⁵ | 4 Managerial Level: Supervisor: Technical: Administrative: | 4 Managerial Level: Supervisor: Technical: Administrative: |
| | | | | |
| | | | | |

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- ⁵ Ministry of Public Utilities, Civil Aviation, Transport and Energy (Focal Point: Mr. Edson Joseph). (2017). *CARIFORUM Energy Report Card Input Data 2017 (Information provided for Antigua and Barbuda)*.
- ⁶ Government of the Commonwealth of Antigua and Barbuda. (2011). *National Energy Policy*. Retrieved from <http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/laws/8481.pdf>
- ⁷ International Renewable Energy Agency IRENA, Abu Dhabi. (2016). *Renewable Readiness Assessment: Antigua and Barbuda*. Retrieved from https://www.irena.org//media/Files/IRENA/Agency/Publication/2016/IRENA_RRA_Antigua_and_Barbuda_2016.pdf
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- ¹² Ministry of Science, Energy, Technology and Mining. (2013). *Grid Impact Analysis and Assessment for Increased Penetration of Renewable Energy into the Jamaican Electricity Grid*. Retrieved from https://www.mset.gov.jm/sites/default/files/pdf/Grid%20Impact%20Analysis%20for%20Renewable%20Energy%20Penetration_2.pdf
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