

**2023**

**ENERGY  
REPORT CARD  
BARBADOS**





# Introduction

This is the Energy Report Card (ERC) for 2023 for Barbados.

The ERC provides an overview of the energy sector performance, highlighting the following areas:

- Installed Conventional and Renewable Power Generation Capacity
- Annual Electricity Generation, from Conventional and Renewable Plants
- Other Electricity Sector Metrics, such as Losses, Consumption, and Tariffs
- Renewable Energy Targets
- Renewable Energy Resource Potential

The ERC also includes sectoral data and information on policies and regulations; workforce; training and capacity building; and related areas.

The data and information that are available in the ERC were mostly provided by the government ministries, agencies, and departments, that have responsibility for statistics and planning, in general, and the energy sector and electricity subsector including the electric utilities, in particular. The data and information collected was supplemented by desk-based research and, in instances, information was generated from calculations and analyses that were performed by the CCREEE.

## Quality Assurance

The collection and treatment of data and information that is produced for the ERC is consistent with the International Recommendations for Energy Statistics (IRES), which provides a comprehensive methodological framework for the collection, compilation, and dissemination of energy statistics in all countries irrespective of the level of development of their statistical system. The ERC is produced in accordance with these performance standards that seek, as far as is possible, to ensure the quality (i.e., objectivity, utility, and integrity) of data and information that it disseminates to the public.

The CCREEE strives for transparency on the information and methods that are used within the production of the ERC, with a view to improve understanding on how the information should be treated and to facilitate reproducibility of the information. Nevertheless, the Centre recognizes that quality may be limited by the nature and source of the data and information disseminated.

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## Acknowledgements

The CCREEE acknowledges the contributions of the Ministry of Energy and Business Development, Barbados, and thanks Mrs. Claire Best, Chief Project Analyst in the Division of Energy in the Ministry, for his supervision of the intern, Tamaira Rowe, who supported the preparation of the ERC.



## Energy Sector Summary

<b>Population</b>	267,800 (2022) [1]
<b>GDP</b>	\$ 5,517,800,000.00 [2]
<b>GDP (USD) Per Capita</b>	\$ 20,700.00 [2]
<b>Gross National Income (GNI) Per Capita (USD)</b>	\$22,870 [3]
<b>Debt as % of GDP</b>	115% [4]
<b>Human Development Index</b>	0.796 [5]
<b>National Development Plan/Overall Country Development Strategy</b>	National Strategic Plan of Barbados 2006-2025 [6]
<b>National Energy Policy</b>	Barbados National Energy Policy 2019 - 2030 [7]
<b>Renewable Energy (RE) Policy</b>	None
<b>Renewable Energy Target</b>	100% by 2030 [7]
<b>Energy Efficiency Target</b>	20% increase in energy efficiency across all sectors compared to BAU [8]
<b>Total Installed Conventional Capacity (MW)</b>	252.2 MW [11]
<b>Total Installed RE (MW)</b>	102.62 MW [11]
<b>Electricity System Losses (%)</b>	6.35% [11]

<b>Energy Use (kWh) Per Capita</b>	3,637 kWh [11]
<b>National Repository for Energy Data</b>	sieBarbados [12]
<b>Climate Change Policy</b>	National Climate Change Policy (2012) [9]
<b>Nationally Determined (NDC) Summary [8]</b>	<p>Conditional absolute emissions reductions contribution below the 2008 base year of 705Gg CO<sub>2</sub>e (2025) and 1,459Gg CO<sub>2</sub>e (2030) respectively.</p> <p>Total economy wide BAU emissions projections of 1,881Gg CO<sub>2</sub>e (2025) and 1,958Gg CO<sub>2</sub>e (2030) respectively.</p>



# Energy Sector Summary



## Energy Performance Standards/Appliance Labelling [10]

### Energy Management

- ISO 12655: 2013 Energy performance of buildings – Presentation of measured energy use of buildings
- ISO 50001:2011 Energy management systems – Requirements with guidance for use
- ISO 50002: 2014 Energy audits – Requirements with guidance for use
- ISO 50004: 2014 Energy management systems – Guidance for the implementation, maintenance and improvement of an ISO 50001 energy management system
- ISO 50015: 2014 Energy management systems – Measurement and verification of energy performance of organisations – General principles of guidance BNS
- IEC 60081: 2002-05 + Amendment 4.0: 2010-02 -Double-capped florescent lamps – Performance Requirements
- BNS IEC 60969: 2001-03 Edition 1.2 + Amendment 1 & 2 – Self-ballasted lamps for general lighting services – Performance Requirements

### Solar Energy

- IEC 61215 Crystalline silicon terrestrial photovoltaic (PV) – Design qualification and type approval
- IEC 61345 UV test for photovoltaic (PV) modules
- IEC 61646 Thin-film terrestrial photovoltaic (PV) modules
- IEC 61701 Salt mist corrosion testing of photovoltaic (PV) modules
- IEC/TS 61836:2007-21 S Edition 2.0 – Solar photovoltaic energy systems – Terms, definitions and symbols
- IEC 61853-1 Photovoltaic modules (PV) performance testing and energy rating Part 1: Irradiance and temperature performance measurements and power rating

### Wind Energy

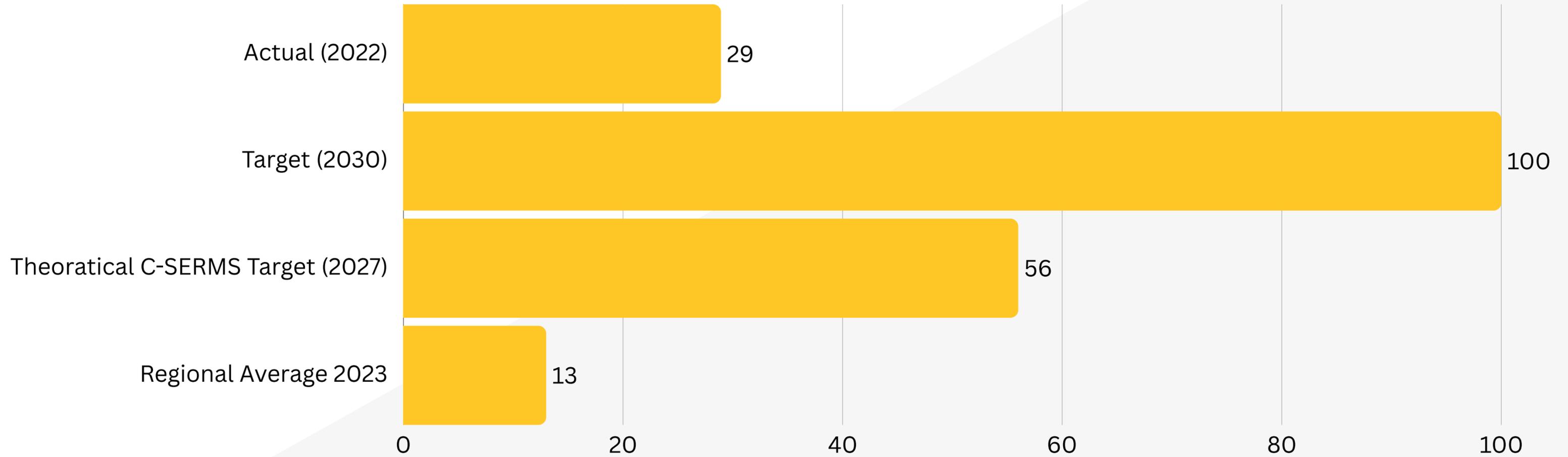
- IEC 61400-1 Wind turbines – Part 1 – Design requirements
- IEC/TS 61400-2 Wind turbines – Part 2 – Design requirements for small wind turbines
- IEC 61400-14 Wind turbines – Part 14 – Declaration of apparent sound power



# Energy Sector Performance [11] [13] [14]



## Renewable Energy Capacity Against Targets





### Independent Power Producer

None

### Electricity Regulator

Fair Trading Commission [27]

### Fuel Importers &

SOL [23]

Rubis [24]

Barbados National Oil Company [25]

- Barbados National Oilfield Services Limited (BNOSL)
- Barbados National Terminal Company Limited (BNTCL)
- Barbados National Oil Holding Company Limited (BNOHCL)

National Petroleum Corporation [25]

Harville Enterprises

### Government Ministries, Departments and Agencies

Ministry of Energy and Business Development [15]

- Division of Energy [16]

Ministry of Environment and National Beautification, Blue and Green Economy [17]

Ministry of Transport and Works [18]

- Barbados Transport Board [19]
- Transport Authority [20]
- Barbados Licensing Authority [21]

Barbados National Standards Institute [22]



### Electric Utility

Barbados Light and Power Company Limited (BLPC) [26]

### Other

Barbados Renewable Energy Association [28]



## Policy, Legal and Regulatory (PLR) Framework

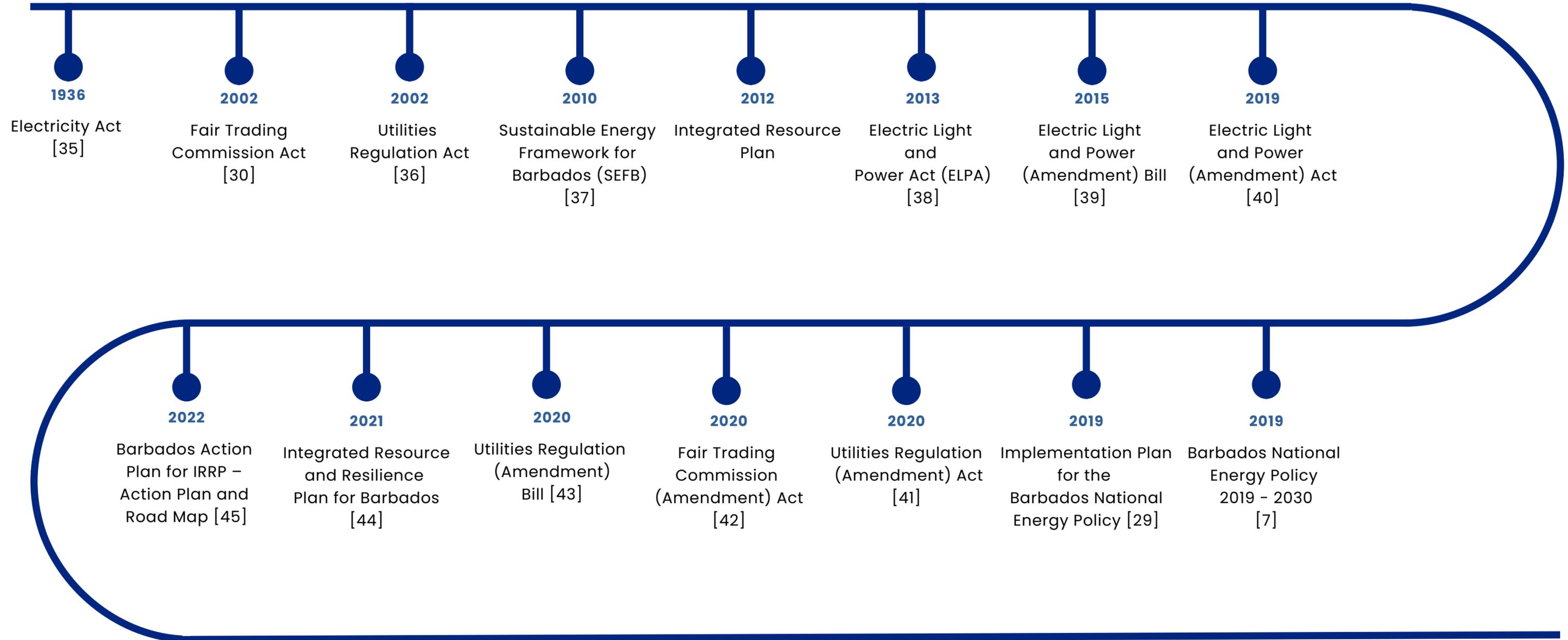


	Year	Status
<b>Energy Policy [7]</b>	2019	In Force
<b>Energy Action Plan [29]</b>	2019	In Force
<b>RE Target [7]</b>	2019	In Force
<b>EE Target [8]</b>	2021	In Force
<b>Electricity Regulator [30]</b>	2002	In Force
<b>Net Billing/Net Metering [31]</b>	2012	In Force
<b>Interconnection Policy/Standards [32]</b>	2017	In Force
<b>Feed-In-Tariff [33]</b>	2019	In Force
<b>Integrated Resource and Resilience Plan [34]</b>	2021	In Force
<b>RE/EE Act</b>		Not Established



# Policy, Legal and Regulatory (PLR) Framework

## Key Achievements: PLR Framework Timeline for Electricity Sub-Sector





# Policy, Legal and Regulatory (PLR) Framework

## Policies Relevant to the Energy Sector

Year	Name	Status	Description
2004	Barbados Sustainable Development Policy [46]	In Force	The National Sustainable Development Policy aims to guide Barbados towards sustainable development. The policy was designed to guide the development of the economic and social aspects of the country while ensuring environmental stewardship.
2007	National Strategic Plan of Barbados 2006–2025 [6]	In Force	The Barbados National Strategic Plan 2006–2025 covers six broad strategic goals, with one the goals being "Building a Green Economy–Strengthening the Physical Infrastructure and Preserving the Environment". Several renewable energy-related targets are outlined in the Strategy. Achieving the targets outlined would also make the energy sector more efficient and reliable.
2010	Sustainable Energy Framework for Barbados [37]	In Force	The Sustainable Energy Framework for Barbados aims to unlock viable investments in renewables and energy efficiency, reducing energy costs, improving energy security, and enhancing environmental sustainability. The Framework also calls for the incorporation of renewable energy into electricity generation and the promotion of renewable energy and energy efficiency.
2012	Integrated Resource Plan	In Force	
2013	Barbados Growth and Development Strategy (MGDS) 2013–2020 [48]	In Force	Establishes the need and urgency to jumpstart and sustain private sector and investment-led, productivity and export-driven growth based on an environmentally green and socially sustainable and equitable economy while radically adjusting and reforming the Barbadian economy thereby: 1) Returning the economy to a sustainable growth rate of 3 per cent while maintaining macroeconomic stability; 2) Facilitating broad based adjustments and reforms in the economy; 3) Enhancing social and human development and; 4) Enhancing energy and environmental sustainability in the context of the Green Economy.
2013	National Sustainable Energy Policy [49]	In Force	Addresses the growing concerns about the predominance of imported fossil fuels in the country's energy sector, and need for increased efficiency and sustainability of energy supply and demand.



# Policy, Legal and Regulatory (PLR) Framework

## Policies Relevant to the Energy Sector

Year	Name	Status	Description
2019	Barbados National Energy Policy [7]	In Force	The Policy provides a framework for moving from a fossil fuel-based economy to one completely based on renewable energy sources by 2030.
2019	Implementation Plan for the Barbados National Energy Policy [29]	In Force	This Plan identifies output-level measures that will accelerate full integration of renewable energy into Barbados' energy mix.
2021	Integrated Resource and Resilience Plan [44]	In Force	The Integrated Resource and Resilience Plan outlines the generation and transmission planning studies over 10 years. The IRRP attempts to provide a modern, efficient, diversified and environmentally sustainable energy sector plan for the island to coincide with the BNEP 2019-2030 timeline. The Plan assesses demand and supply-side options while assisting the Ministry responsible for energy with the tools to optimise energy services and minimise consumer electricity costs. There were three scenarios investigated in the IRRP. The scenarios were, the Least-cost Plan (LCP), the Carbon Cost internalised (CO2), and the Forced Firm Renewable Scenario with Carbon Cost internalised (FRES).
2022	Integrated Resource and Resilience Plan Action Plan [45]	In Force	The Action Plan promotes sustainable energy practices on the supply and demand side. It is encouraged that renewable energy sources be used on the supply side and energy efficiency and energy conservation be used on the demand side. This is intended to reduce the country's dependency on fossil fuels, enhance security, stabilise the energy supply, and improve the economy and environmental stability. The Plan and roadmap provided in this document coincide with the fulfilment of the BNEP 2019-2030



# Policy, Legal and Regulatory (PLR) Framework

## Legislation Relevant to the Energy Sector

Year	Name	Status	Description
1978	Electricity Act [35]	In Force	Outlines the duties of the Electrical Engineer regarding the inspection of public buildings and inspection before electric installations of public and private buildings based on the required regulations made under the Electric Light and Power Act.
1979	National Petroleum Corporation Act (Amended 1984 and 2003 [49], 2012 [50], 2017 [51])	In Force	The Act establishes the National Petroleum Corporation and its operations. The subsequent amendments allow for the National Petroleum Corporation to make better provisions for the rate charged for the supply of natural gas
1882	Storage of Petroleum Act (Last Amended 1987)[52]	In Force	This Act relates to the storage and importation of petroleum in Barbados. This includes the parameters for storage and warehouse rental, quality testing of the petroleum and rules and regulations for petroleum storage.
1978	Transport Board Act (Last Amended 2008 [53])	In Force	The Transport Board Act provides the outline for establishing a Transport Board concerned with transport and specifies their powers, duties, and related matters. The Act provides the Transport Board with an operational outline, including the powers and financial provisions.
2001	Utilities Regulation Act [54] (Amended 2020) [41]	In Force	The Utilities Regulation Act works in tandem with the Fair Trading Commission Act, which enables the Fair Trading Commission as the regulator in Barbados to investigate complaints and appeals. The Act governs the Utilities by outlining the duties of service providers and the standards of service and mandates the FTC to ensure reasonable rates.
2002	Fair Trading Commission Act (Amended 2020) [30] [42]	In Force	The Fair Trading Act empowers the Fair Trading Commissions to regulate the utilities. The FTC has the power to oversee the standard of operation and tariffs of the utilities.
2007	Offshore Petroleum Act [55]	In Force	An Act to vest in the Crown the property in petroleum in the territorial waters, exclusive economic zone and continental shelf of Barbados, and to make provision for the search for and recovery of the petroleum, and for related matters.



# Policy, Legal and Regulatory (PLR) Framework

## Legislation Relevant to the Energy Sector

Year	Name	Status	Description
2004	Offshore Petroleum Act (Taxation) Act [56] (Amended 2012) [57]	In Force	An Act to make provision for the imposition of an Offshore Petroleum Income Tax; and an Offshore Petroleum Additional Profits Tax on persons engaged in offshore activities associated with the search for, and recovery of petroleum, and for related matters.
2007	Transport Authority Act [58]	In Force	The Transport Authority Act provides for the establishment of a Transport Authority, and the functions and administration, duties, and financial resources of the Authority.
1981	Road Traffic Act (Amended 2017, 2018, 2022) [59]	In Force	The Road Traffic Act governs the law relating to road traffic, including insurance, driving licence, vehicle registration and road use.
2013	Electric Light and Power Act [38] (Amended 2015 [39] and 2019 [40])	In Force	The 2015 amendment promotes electricity generation from renewable energy by Independent Power Producers to enhance the security and reliability of the electricity supply and to provide for related matters.
2013	Offshore Petroleum Regulations [60]	In Force	Working in tandem with the Offshore Petroleum Act, the Regulations similarly give Authority to the Energy Minister to oversee the Offshore Petroleum Activities. The Regulations detail the duties and requirements for a reconnaissance licence, an exploration licence, work programmes, the process to follow for discovery, appraisal and production, operational matters, the operational procedures for environmental and health and safety obligations and decommissioning of a site.
2021	The Control of Inefficient Lighting Act [61]	In Force	The Act seeks to phase out inefficient lighting in Barbados and establishes the standard for importing electrical lights and prohibits the importation of inefficient lamps



# Policy, Legal and Regulatory (PLR) Framework

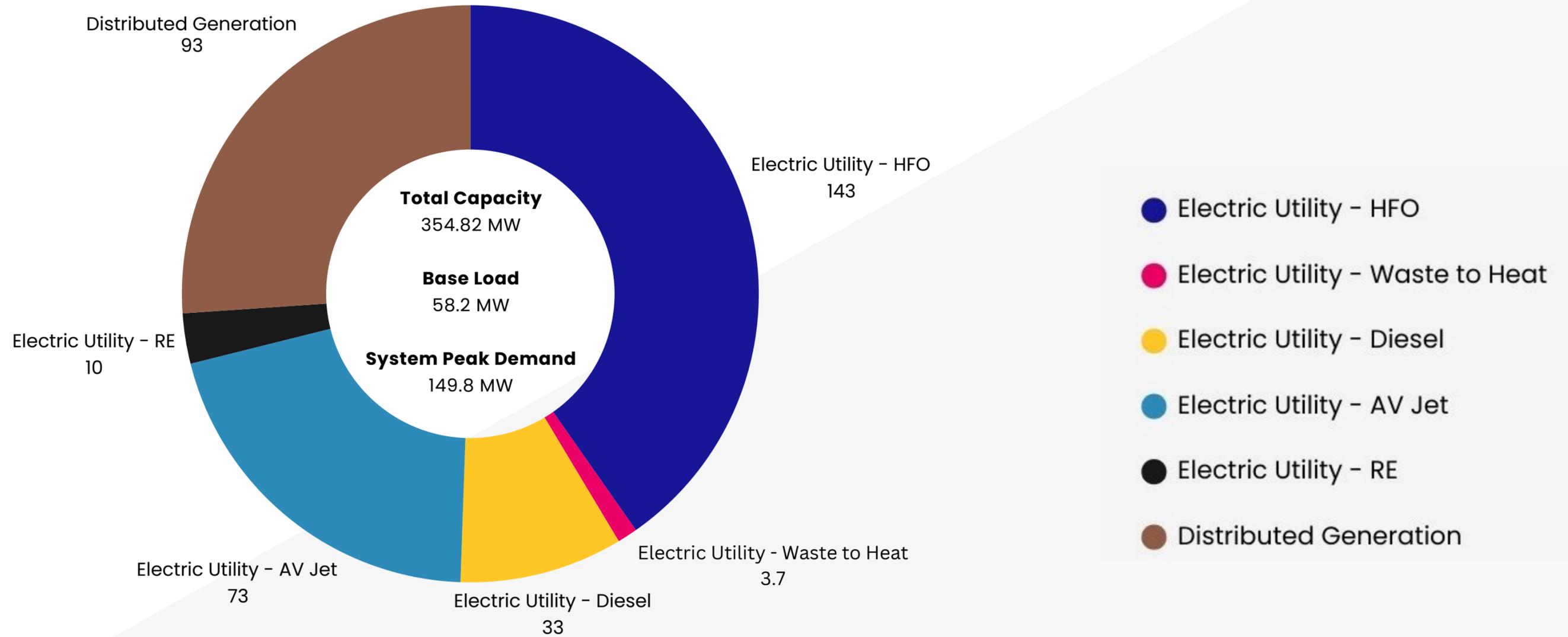
## Renewable Energy and Energy Efficiency Incentives

Year	Name	Status	Description
2015	Excise Tax Act [62]	In Force	Allows for a reduced rate of excise duty on natural gas, hybrid, solar powered and electric vehicles
2015	Income Tax Act (Amended 2013 [63] and 2015 [64])	In Force	The 2013 amendment included tax holidays or deductions for individuals or corporations who develop, manufacturer, install, receive training, or undertake research in renewable energy systems and energy-efficient products. The 2015 amendment also included tax deductions for individuals who expend resources to conduct energy audits or electrical retrofitting to produce electricity from sources other than fossil fuels .
2007	Customs Act [65] (Amended 2019) [66]	In Force	The Customs Act outlines the administration to operate at the air and seaports and customs tariffs. The Act includes but is not limited to the application of tariffs for products imported and exported in Barbados, the process of cargo movement in and out of Barbados, the clearance of cargo and prohibited items.
2019	Customs Tariff Act (Amendment) [67]	In Force	The Customs Tariff Act states that items and machinery used for the generation of renewable energy and energy conservation were eligible for conditional duty exemptions. The 2019 amendment include: <ul style="list-style-type: none"><li>• exemptions of renewable energy systems from the 20 % import duty,</li><li>• conditional duty exemptions on items designed to produce power, heat, light, or electricity through the utilization of renewable sources of electricity, and</li><li>• 5 % import duty on LED light bulbs</li></ul>



# Electricity and Energy Efficiency [11] [13] [14]

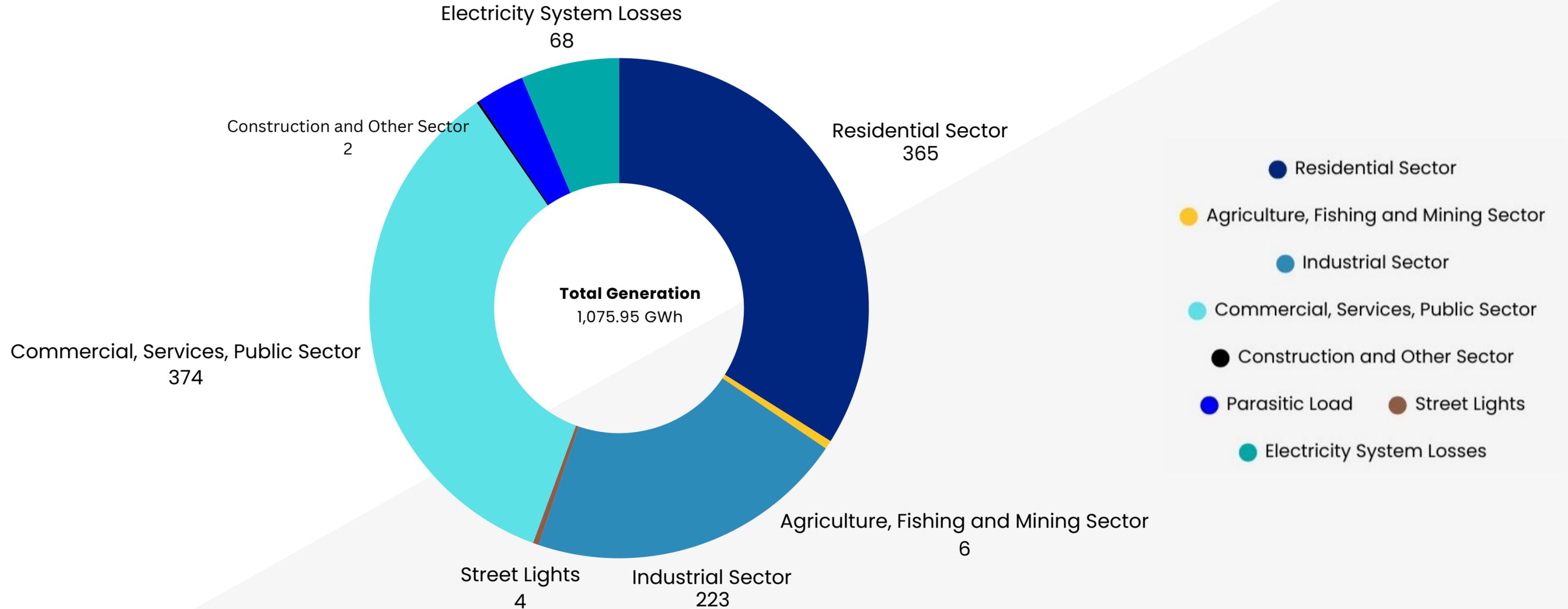
## Installed Capacity (MW)





# Electricity and Energy Efficiency [11] [13] [14]

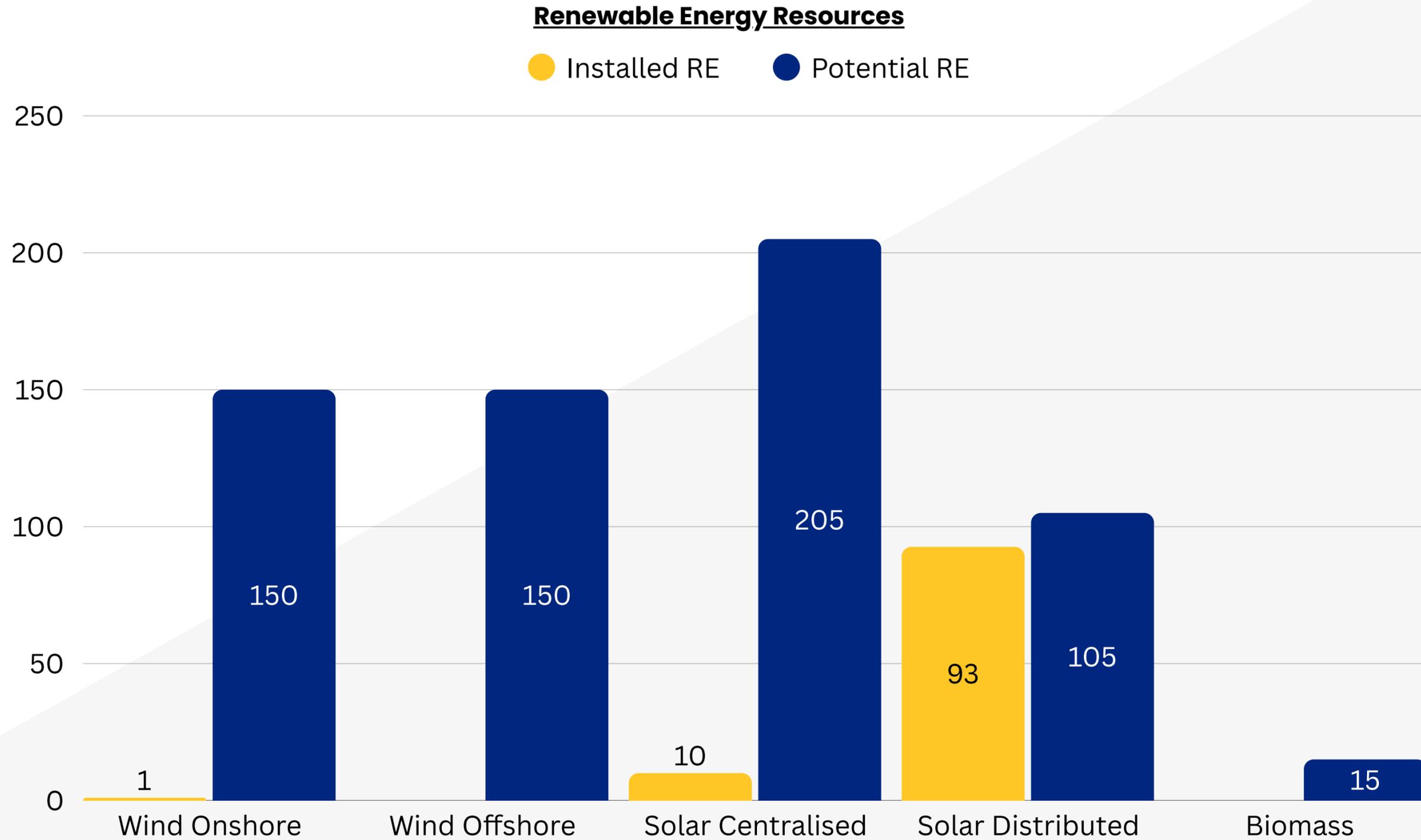
## Energy Generation (GWh)



Consumption for the Construction and Other Sector for 2022 was 1,712.88 MWh.



## Electricity and Energy Efficiency [11] [13] [14]





# Electricity and Energy Efficiency

## Electricity Tariffs [11]

Rate Class		US\$	
<b>Domestic</b>	Customer Charge	1-150	\$ 3.00
		151 -500	\$ 5.00
		Over 500	\$ 7.00
	Base Energy Charge	1-150	\$ 0.07
		Next 350	\$ 0.09
		Next 1,000	\$ 0.10
		Over 1,500	\$ 0.11
	Fuel Charge	All kWh, per kWh	FCA
	Customer Charge	1-150	\$ 4.00
		151 -500	\$ 5.50
Over 500		\$ 7.00	
<b>General</b>	Base Energy Charge	1-100	\$ 0.09
		Next 4000	\$ 0.11
		Next 1,000	\$ 0.13
		Over 1,500	\$ 0.14
Fuel Charge	All kWh, per kWh	FCA	
<b>Secondary Voltage Power</b>	Customer Charge	Each service	\$ 10.00
	Demand Charge	Per kVAh	\$ 12.00
	Base Charge	All kWh, per kWh	\$ 0.07
	Fuel Charge	All kWh, per kWh	FCA

Rate Class		US\$	
<b>Large Power</b>	Customer Charge	Each Service	\$ 150.00
	Demand Charge	Per kVA	\$ 11.00
	Base Energy Charge	All kWh	\$ 0.06
	Fuel Charge	All kWh, per kWh	FCA
<b>Street Lights</b>	Customer Charge	Each 50W HPS light	\$ 3.52
		Each 70W HPS light	\$ 3.86
		Each 100W HPS light	\$ 4.29
	Fuel Charge	50 W HPS (25 kWh/month)	25 x FCA
		70 W HPS (33 kWh/month)	33 x FCA
		100 W HPS (43 kWh / month)	43 x FCA



# Projects in the Pipeline

## Programmes

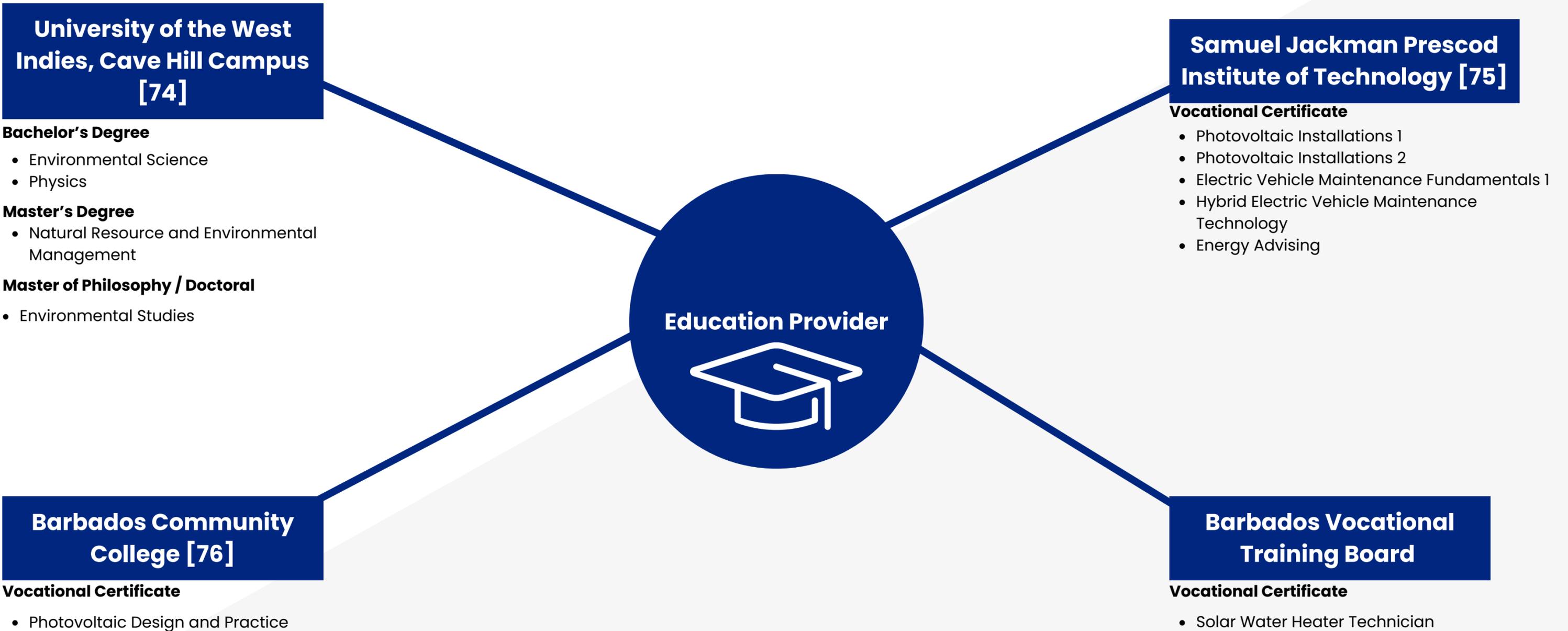
Programme Name	Executing Agencies	Implementing Partner	Funding Awards	Funding Source
Sustainable Energy Investment Program (SMART FUND II) [68] [69]	Ministry of Energy and Business Development		\$11,120,000 - Co-financing \$3,318,995 - GEF Project Grant \$ 14,438,995 - Total	Inter-American Development Bank
Deployment of Cleaner Fuels and Renewable Energies in Barbados [70]	Ministry of Energy and Business Development			Inter-American Development Bank
Public Sector Smart Energy (PSSE) Program [71]	Ministry of Energy and Business Development		Loan - \$24,664,000 Co-finance - \$7,664,000 Grant - \$17,000,000	Inter-American Development Bank
Support for the Design of Carbon Neutral Strategies in the Context of Energy Transition in Barbados [72]	Ministry of Energy and Business Development		NDC Pipeline Accelerator Multidonor Trust Fund (ACL): US\$100,000.00 OC Strategic Development Program for Infrastructure (INF): US\$300,000.00 Total: US\$400,000.00	Inter-American Development Bank
Accelerating the transition to electromobility in Barbados [73]	Inter-American Development Bank		\$450,000.00	Inter-American Development Bank

### Energy Efficiency Projects and Renewable Energy Projects

There were no Energy Efficiency Projects or Renewable Energy Projects reported for 2023.



# Tertiary Programmes Offered





# Climate Change Framework

<b>Climate Change Policy</b>	National Climate Change Policy (2012) [9]
<b>Nationally Determined Contributions Summary [8]</b>	<p>Total absolute emissions in the base year (2008) have been restated at 2,123Gg CO<sub>2</sub>e. The 2015 NDC inventory stated emissions at 1,816Gg CO<sub>2</sub>e.</p> <ul style="list-style-type: none"> <li>• The absolute emissions reductions resulting from this 2021 NDC update conditional contribution below the 2008 base year are 705Gg CO<sub>2</sub>e (2025) and 1,459Gg CO<sub>2</sub>e (2030) respectively.</li> <li>• Total economy wide BAU emissions projections are 1,881Gg CO<sub>2</sub>e (2025) and 1,958Gg CO<sub>2</sub>e (2030) respectively.</li> </ul>
<b>Emissions Reduction Target [8]</b>	<p>2025</p> <ul style="list-style-type: none"> <li>• 20% reduction relative to business-as-usual emissions scenario in 2025 without international support (unconditional).</li> <li>• 35% reduction relative to the business-as-usual emissions scenario in 2025 conditional upon international support.</li> </ul> <p>2030</p> <ul style="list-style-type: none"> <li>• 35% reduction relative to business-as-usual emissions scenario in 2030 without international support (unconditional).</li> <li>• 70% reduction relative to business-as-usual emissions scenario in 2030 conditional upon international support.</li> </ul>
<b>Priority Sectors for NDC [8]</b>	<ul style="list-style-type: none"> <li>• Energy, including transport</li> <li>• Agriculture</li> <li>• Industrial Processes and Product Use,</li> <li>• Land-use Land Use Change and Forestry</li> <li>• Waste</li> </ul>
<b>National Communications (NC) to the UNFCCC</b>	Barbados' First National Communication to the United Nations Convention on Climate Change (2001) [77]
	Barbados' Second National Communication Under the United Nations Framework Convention on Climate Change (2018) [78]



# Climate Change Framework



Summary of Barbados' Greenhouse Gas Sources by Sector and Gas (Gg) for 2010 [78]

Categories	Emissions (Gg CO Equivalent)			
	Carbon Dioxide (CO <sub>2</sub> )	Methane (CH <sub>4</sub> )	Nitrous Oxide (N <sub>2</sub> O)	Nitrous Oxide (N <sub>2</sub> O)
<b>Energy (excluding Domestic Transport)</b>	1441	15	4	
<b>Industrial Processes</b>	101			67
<b>Agriculture</b>	0	35	24	
<b>Waste</b>		288	7	
<b>LULUCF</b>	-51			



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