



ENERGY BULLETIN

VOLUME 8, ISSUE 2 | JANUARY – DECEMBER 2022



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FOREWORD

Crude oil prices increased in the first half of the year because of supply concerns. Russia's full-scale invasion of Ukraine came during eight consecutive quarters (from the third quarter of 2020 to the second quarter of 2022) of global crude oil inventory decreases. The lower inventory was the result of withdrawals from storage to meet the demand that resulted from rising economic activity after pandemic-related restrictions eased. The spot price of Brent crude oil, a global benchmark, started the year at \$87 per barrel and increased to a high of \$123 per barrel in June before declining in the final weeks of the year.

Brent's 2022 annual average of \$101 per barrel was the highest in the past three years. The price of West Texas Intermediate (WTI) crude oil traced a similar pattern to Brent and averaged \$6 per barrel less than Brent in 2022.

Throughout 2022, global oil supply is estimated to have increased by 4.7 million b/d y-o-y to 100 million b/d, according to IEA. The Organisation of the Petroleum Exporting Countries plus Russia (OPEC+) contributed about 3 million b/d of production growth, led by Saudi Arabia's 1.6 million b/d increase in annual production, breaking its annual output record set in 2018.

According to OPEC's most recent monthly oil market report, oil demand will increase by 2.32 million barrels per day (bpd) in 2023 to reach 101.87 million bpd, with some minor upward adjustments due to China's expected better performance following its reopening from COVID-19 restrictions. The Organisation for Economic Cooperation and Development (OECD) forecasted demand for 2023 is 47.01 mn b/d while non-OECD demand is expected to average 57.68 mn b/d.

On the supply side the Energy Information Administration of the US Department of Energy expects world production to increase by 560,000 b/d to 103.19 mn b/d during 2023 above the 102.63 mn b/d level for 2022. Driven primarily by the return of China from its mandated mobility restrictions and the effects this will have on the country, the region and to a greater extent, the world.

Given the volatility associated with the Energy Sector locally, regionally and internationally, the Ministry will remain steadfast in its focus on its 2030 greening vision to negate these international market dynamics.

During 2022, our key sector, tourism continued to recover with more cruise ships, extra flights and additional airlines making inaugural visits. Indeed, electricity demand rose by 4 % to 937 Gwh in 2022 when compared to the 905 Gwh observed in 2021. All in all, the government of Barbados like many others has continued its strong drive towards a low-carbon future and accelerated investments in the renewable energy subsector to aid in the economic recovery post COVID-19.

INTRODUCTION

During 2022, WTI Crude Oil prices averaged US\$95.00 per barrel showing a 40% increase when compared to the previous average of 2021 which stood at US\$68.00 per barrel.

The data presented in this bulletin provides information on:

- Production and sales of crude oil and Natural Gas;
- Export and import figures for petroleum products;
- Petroleum pricing at both international and the local retail level;
- The amount of barrels of products consumed locally; and
- Electricity sales and Generation.
- Electricity from RE vs traditional sources
- Total energy supply

This bulletin also includes data on the oil and gas findings as well as exploration attempts onshore.

The Ministry continued its work on the 2030 vision by having a monthly reporting mechanism in place.

During 2022, the Fair Trading Commission (FTC) issued its decision on revised rates for electricity generation from renewable sources, through a feed-in-tariff mechanism for both solar and land-based wind systems including 1MW up to 10MW which remains in effect until December 31, 2023.

We hope that you will find delight in reading this issue and welcome your feedback to improving the Energy Bulletin.



TABLE 1

PRODUCTION AND SALES (BNOCL)			
PRODUCTION	2021	2022	CHANGE
CRUDE OIL (BBLs)	152,272	140,285	-11,987
NATURAL GAS (MCF)	372,946	327,720	-45,226
IMPORTED LNG (MCF)	301,159	382,642	81,483
SALES			
CRUDE OIL	163,709	141,434	-22,275
NATURAL GAS**	576,180	574,939	-1,241

** Natural Gas Sales consist of Local and Imported Sources of Supply

TABLE 2

TRADE (BBLs) (BNOCL)			
EXPORTS	2021	2022	CHANGE
CRUDE OIL	163,709	141,434	-22,275
IMPORTS			
GASOLINE	636,744	725,106	88,362
DIESEL	459,344	471,252	11,908
FUEL OIL	933,830	1,141,989	208,159
JET FUEL	981,434	1,228,138	246,704
LPG	95,739	96,078	699

The local production of crude oil decreased by 11,985 barrels in 2022, when compared to 2021 production figure of 152,272 barrels. Sales and exports of crude oil decreased by 22,275 barrels as highlighted in Table 1 and Table 2 respectively.

During 2022, there was an increase in the amount of natural gas available but a slight decrease in sales

when compared to 2021. These increases were due to more importation of liquefied natural gas (LNG) as the local production fell by more than 45,000 MCF.

Increases were also seen in gasoline, diesel and fuel oil of 88,362, 11,908 and 208,159 barrels respectively in relation to imports. Similarly, jet fuel increased by 246,704 and equally, liquefied petroleum gas increased by 699 barrels. These increases and decreases were driven primarily by local demand influenced by the opening of the economy post the COVID-19 pandemic and can be seen in Table 2.

TABLE 3

PRICING			
INTERNATIONAL CRUDE AVERAGE			
YEAR	US\$/BBL 2021	US\$/BBL 2022	CHANGE
Yearly Average West Texas	\$68.00	\$95.00	\$27.00
LOCAL RETAIL PRICES FOR PETROLEUM PRODUCTS (BDS\$/LITRE)			
	2021	2022	CHANGE
GASOLINE	\$3.79	\$4.24	\$0.45
DIESEL	\$3.04	\$3.77	\$0.73
KEROSENE	\$1.28	\$2.16	\$0.88
LIQUEFIED PETROLEUM GAS BDS\$/LB			
	2021	2022	CHANGE
100lb	\$152.43	\$167.69	\$15.26
25lb	\$43.21	\$47.02	\$3.81
22lb	\$38.19	\$41.54	\$3.35
20lb	\$34.72	\$37.77	\$3.05
TAX ADJUSTMENTS			
	2021	2022	CHANGE
VAT	17.5%	17.5%	0.0%
VAT	17.5%	47.486¢ (Gasoline) 37.000¢ (Diesel)	0.0%
ROAD TAX LEVY	40.000¢	40.000¢	0.000¢
EXCISE TAX (G) (¢/litre)	99.390¢	99.390¢	0.000¢
EXCISE TAX (D) (¢/litre)	44.027¢	44.027¢	0.000¢

Source: Ministry of Energy Small Business and Entrepreneurship

Table 3 above identifies the significant movements in petroleum prices over the two years under consideration.

On average, international crude oil prices have increased in the twelve months with an international average of US\$95.00 per barrel in 2021, compared with an average of US\$68.00 per barrel during 2021.

Locally, retail prices for gasoline increased by BDS\$0.45 per litre, diesel increased by BDS\$0.73 per litre while kerosene increased by BDS\$0.88 per litre.

Similarly, the retail price of liquefied petroleum gas (LPG) was adjusted as reflected in the preceding table. The 100lb, 25lb, 22lb and 20lb cylinders increased

by BDS \$15.26, BDS \$3.81, BDS \$3.35 and BDS \$3.05 respectively.

During 2022, prices continued to be adjusted monthly to allow the local retail prices to be reflective of the price movements on the international market.

During 2022, taxes on refined petroleum products were changed. The Value Added Tax (VAT) rate on gasoline and diesel remained at 17.5% until March 2022 and was then fixed at 47.486¢ per litre and 37.000¢ per litre respectively from April to December 2022. On the other hand, excise tax of 99.390¢ per litre and 44.027¢ per litre charged on gasoline and diesel respectively and the road tax levy of 40.000¢ per litre on gasoline and diesel respectively and 5.000¢ per litre on kerosene remained unchanged.



TABLE 4

CONSUMPTION AND DISTRIBUTION				
CONSUMPTION	BBLS	2021	2022	CHANGE
	GASOLINE	614,865	710,078	95,213
	DIESEL	446,441	472,590	26,149
	FUEL OIL (BL&P)	914,696	1,038,830	124,134
	FUEL OIL (OTHER)	58,076	56,559	-1,517
	JET FUEL	411,803	828,365	416,562
	KEROSENE (LOCAL)	566,799	392,305	-171,494

Source: Barbados National Oil Company Limited

During 2022, the overall use of fossil fuels has generally decreased when compared to 2021.

A total of 710,078, 472,590, 1,095,389, 828,365 and 392,305 barrels were consumed in 2022 for gasoline, diesel, fuel oil, jet fuel and kerosene respectively when compared to 614,865 446,441, 972,772, 480,805 and 566,799 barrels in 2021 for gasoline, diesel, fuel oil, jet fuel and kerosene respectively.

This increase in oil prices meant that more foreign exchange was needed to procure the products resulting in a fuel bill in 2022 of \$771,495,000 when compared to \$605,809,000 for 2021.

With the exception of jet fuel, which is considered a re-export, all other products are used locally. Since these products are driven by demand, Table 4 reflects the changes in demand in 2022 when compared to 2021.

TABLE 5

FINDINGS AND EXPLORATION				
ONSHORE		2021	2022	CHANGE
		0	0	0
OFFSHORE		2021	2022	CHANGE
		0	0	0

Source: Barbados National Oil Company Limited

Following the Ministry's attendance at the Suriname Energy Oil and Gas Summit in June 2022 and based on consultations held with consultant IHS Markit, the Ministry received approval from the Cabinet of Barbados to launch a new offshore licensing round in August 2022 in Houston, Texas with the expectation that the process would officially begin in Q4 2022. Subsequently however, the decision was taken by the Cabinet of Barbados to postpone the round until the end of Q1 2023.

During Q4 2022, amendments were made to the Offshore Petroleum suite of legislation. The amendments tabled included the removal of the "fiscal cliff" currently applied to the Additional Profits Tax and replacement with a sliding scale; the establishment of set timelines for the approval of EIAs; simplification of the prequalification process; clarification of the requirements and period for the commencement of a production licence; process for making the licensing



process more efficient; and methods for establishing new blocks and terms under which these new areas are to be licensed with provisions being made for fast-track negotiation procedures for state-to-state partnerships.

In September 2021, the Ministry awarded an Offshore Reconnaissance Licence to geophysical service company, Ocean Infinity Group, to conduct a pilot seep hunting survey offshore Barbados. In addition to proving the presence of oil or gas in a particular location, modern geochemical analysis of seeping hydrocarbons can be used to infer their geological origin and to calibrate petroleum systems models that predict hydrocarbon prospectivity across wider undrilled areas. When integrated into subsurface models, data from seeps may be used to assess hydrocarbon charge risk in exploration acreage in a way that is analogous to the use of samples collected from wells – at a fraction of the cost. The survey sought to identify and sample seabed oil seeps with a view to determining the nature and origin of oil present offshore Barbados. This survey was completed in Q2 2022 and the encouraging results which emerged will be included in the upcoming licensing round data offering provided to the oil and gas industry.

The Natural Resources Department assists the Town Planning Department with the evaluation of Environmental Impact Assessments and applications to develop land. The objective of this work is to

encourage and promote safe and sustainable land development practices.

The NRD provided comments and recommendations to the Town and Country Development Planning Office in respect of sixteen (16) applications to develop land for residential, commercial, tourism, housing, energy development and recreational purposes.

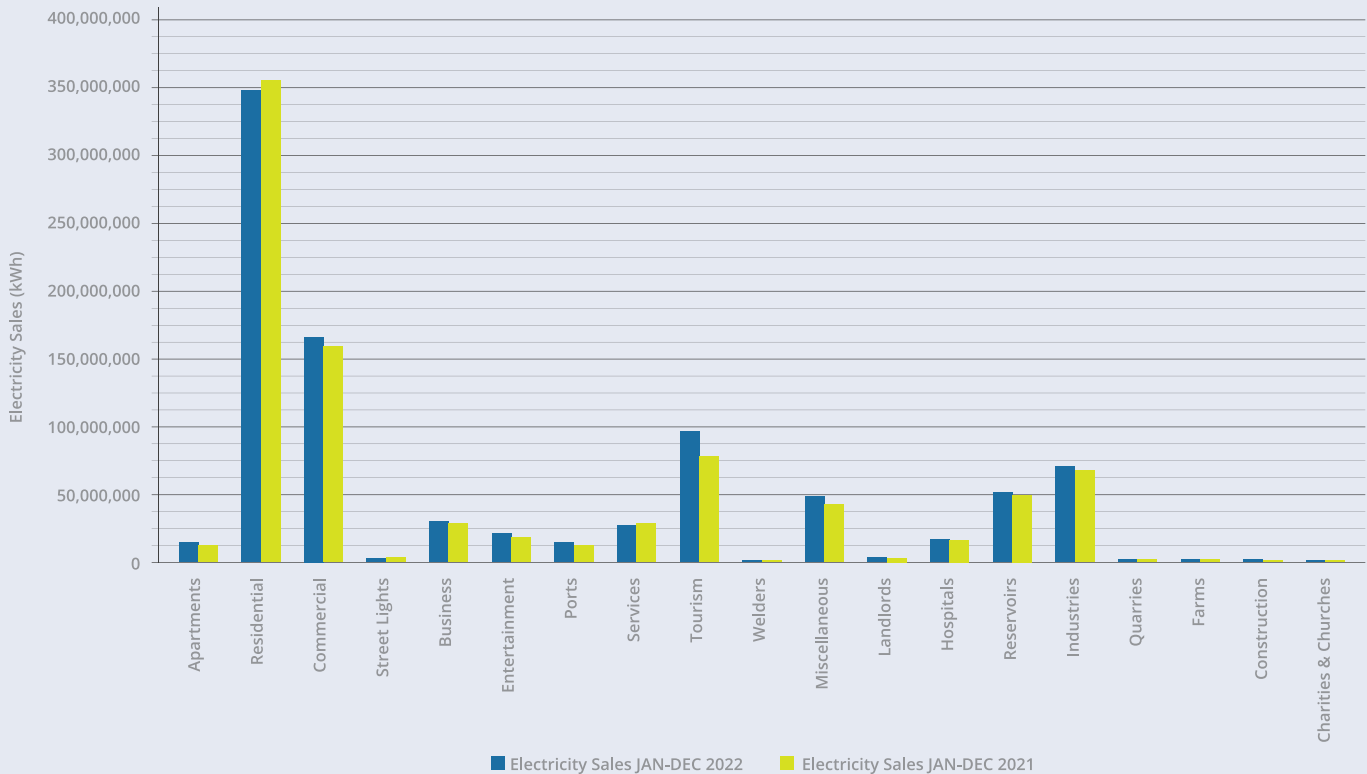
Geological, geotechnical, geophysical and geohazard investigations and surveys were conducted in order to update maps and databases and provide advice on suitable land use and development practices.

The NRD visited ten (10) private residences to investigate reports of the presence of sinkholes, caves and voids and provided technical advice to the homeowners with a view to resolving the issues identified.

The Department evaluated the specifications for hydrocarbon product currently being imported into the island by the Barbados National Terminal Company Limited. These included specs for ultra-low Sulphur diesel and unleaded gasoline. Comprehensive analyses of product trends and variations were conducted for each fuel shipment and areas of concern flagged and brought to the attention of the relevant stakeholders.

CHART 1

COMPARISON OF ELECTRICITY SALES 2021-2022



Source: Barbados Light and Power

TABLE 6

GENERATION	2021	2022	CHANGE
GROSS (kwh)	923,645,149	941,724,008	18,078,859
NET GENERATION AND PURCHASED POWER (kwh)	927,756,277	1,001,159,031	73,402,754
SALES (kwh)	904,959,735	937,235,382	32,275,647
TOTAL NUMBER OF CUSTOMERS	132,165	133,315	1150
AVERAGE COST OF ELECTRICITY	50.00¢/ kwh	62.00¢/ kwh	12.00¢/kwh
CAPITAL EXPENDITURE	\$88.00M	\$72.00M	-\$16.00M

Source: Barbados Light and Power

The chart identifies the major consumer of electricity for 2021 and 2022.

when compared with 2021 which stood at 356 million kWh.

The chart indicates that residential consumers used 349 million kWh for 2022, a decrease of 7 million kWh

For 2022, the gross measure of electricity generation increased by 18,078,859 kWh. Similarly, net

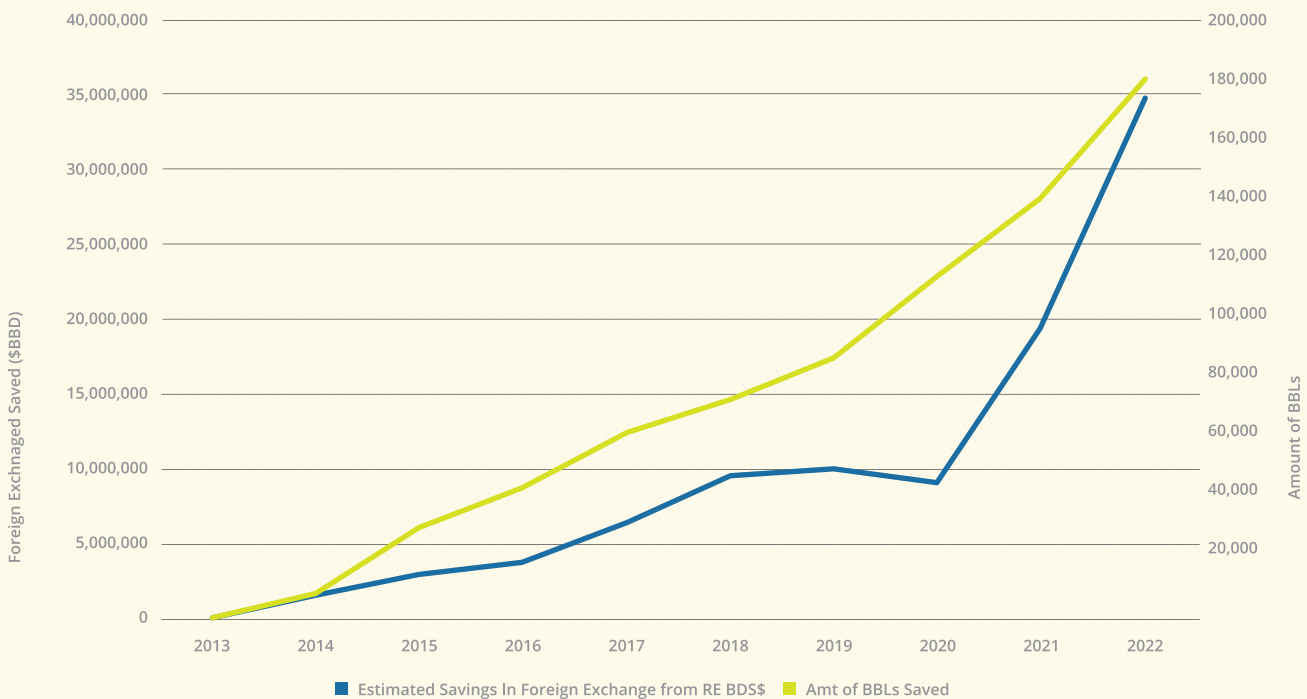
generation and sales are up by 73,402,754 kWh and 32,275,647 kWh respectively.

The Barbados Light and Power Company added 1150 customers to its service, while the average cost

of electricity increased by 12.00¢/kwh in 2022 when compared to 2021. Capital expenditure decreased by \$16M in 2022 to \$72M when compared to 2021 when \$88M was invested.

CHART 2

AMOUNT OF BBLs SAVED VS ESTIMATED SAVINGS IN FOREIGN EXCHANGE FROM RE IN BBD



Source: Ministry of Energy Small Business and Entrepreneurship

The above graph shows the foreign exchange savings and barrels of oil saved during the ten-year period illustrated.

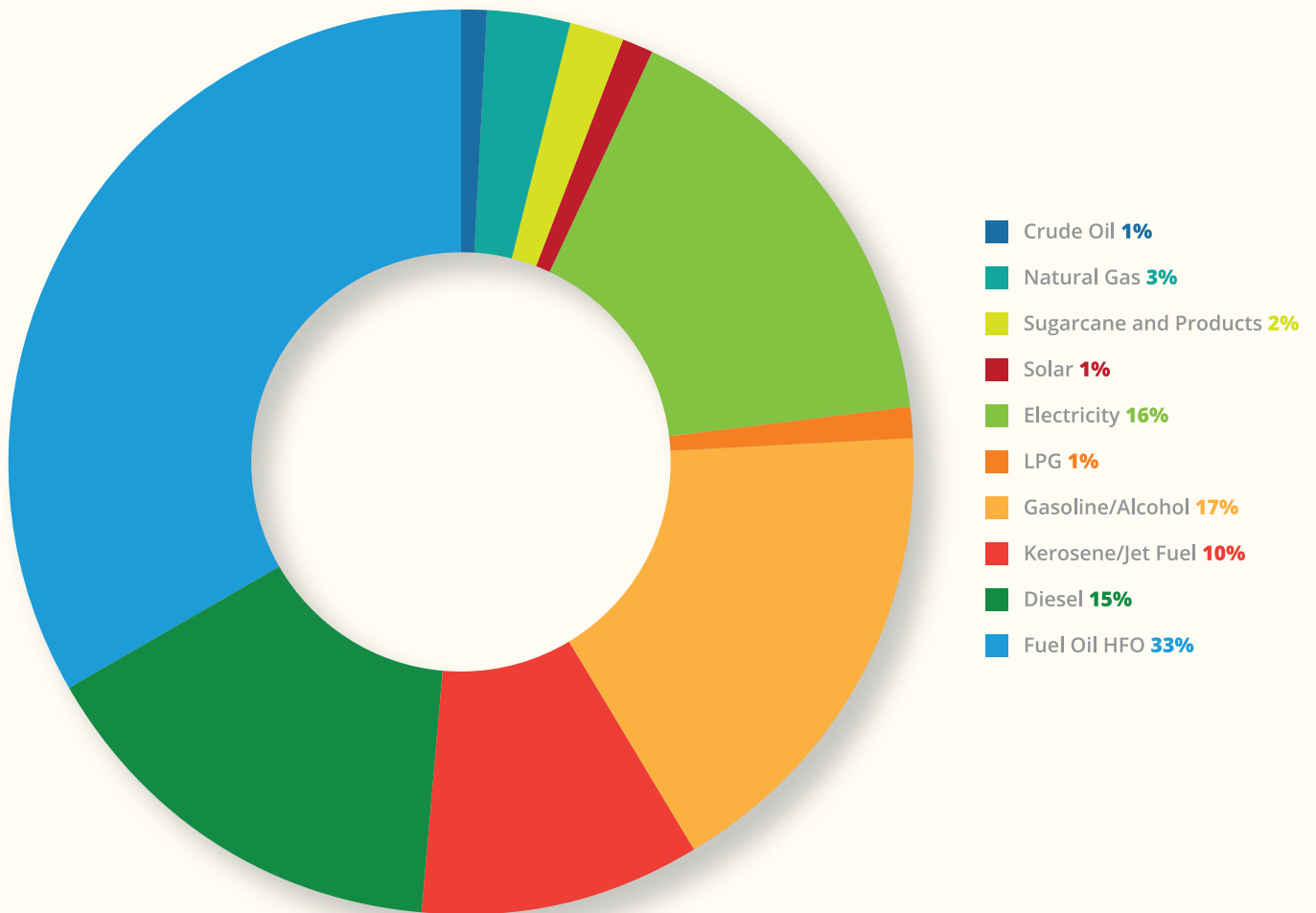
It can be seen that the total foreign exchange saved from renewable energy has increased by \$34,822,000 calculated when comparing \$178,000 saved in 2013 to \$35,000,000 in 2022. These savings are primarily

Photovoltaics (PV) uptake by Barbados Light and Power to the national grid.

The below graphs show total energy supply by source and total electricity produced vs total electricity produced from renewable energy sources respectively. What is interesting to note is the visual in relation to renewable energy production as a percentage of total electricity production depicted in chart 4.

CHART 3

PRIMARY AND SECONDARY ENERGY SUPPLY BY SOURCE 2011 TO 2022



Source: Ministry of Energy Small Business and Entrepreneurship





CHART 4

TOTAL KWH OF ELECTRICITY PRODUCED VS TOTAL KWH OF ELECTRICITY PRODUCED FROM RE SOURCES

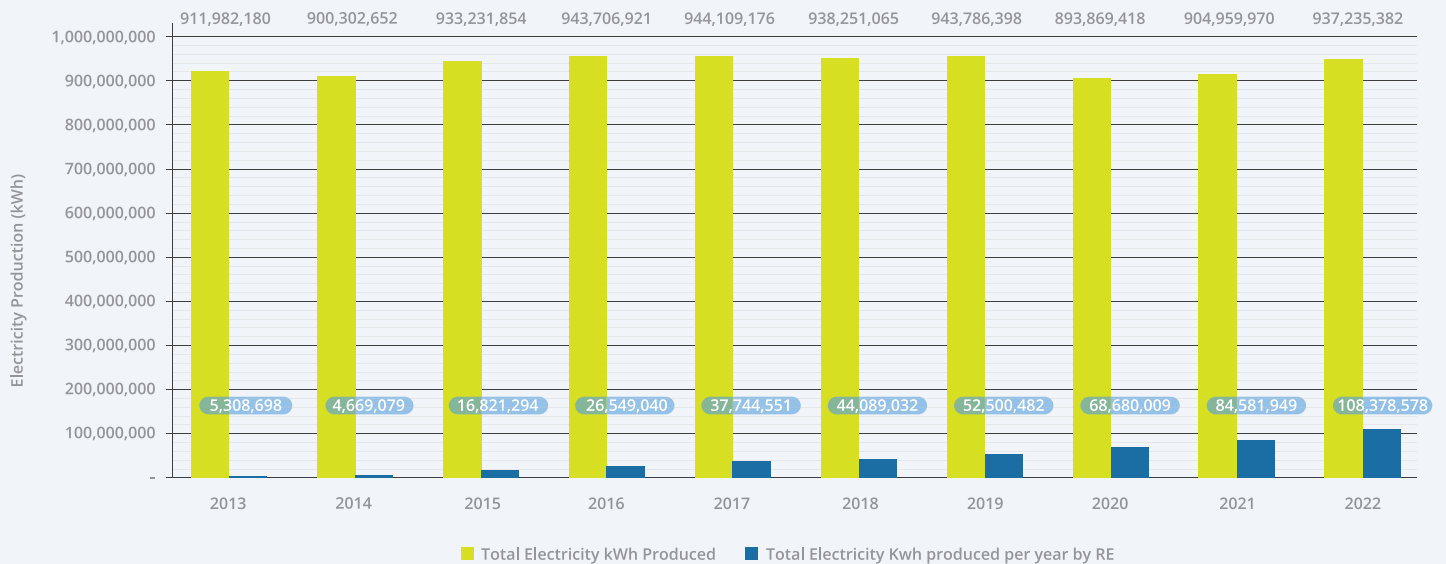
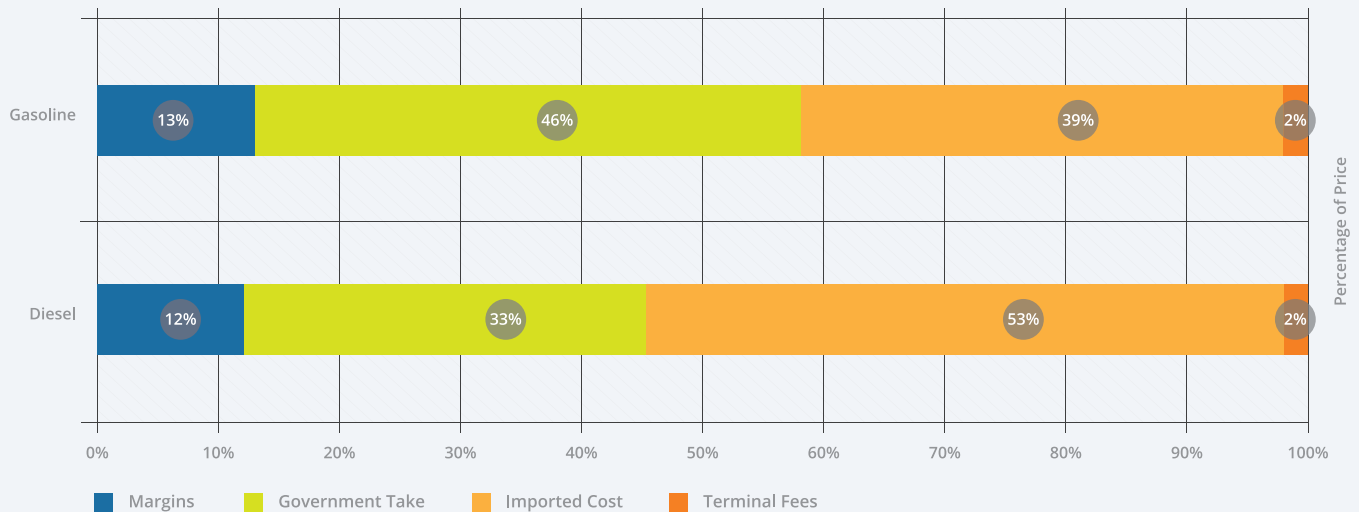


CHART 5

RETAIL PETROLEUM PRODUCTS PRICE BREAKDOWN



Source: Ministry of Energy Small Business and Entrepreneurship

BREAKDOWN OF PRICE STRUCTURE

From the chart above the import cost and taxes are the two major elements which impacted the price structure of refined petroleum products namely gasoline and diesel for 2022.

For gasoline, the taxes and import cost are estimated at 46% and 39% respectively while margin and terminal fees estimated at 13% and 2% respectively. Diesel pricing possesses the same traits as gasoline with taxes and import costs estimated at 33% and 53% respectively while margins and terminal fees estimated at 12% and 2% respectively.



RENEWABLE ENERGY & ENERGY EFFICIENCY

Over the reporting period, an additional 22.76MW of RE capacity was added to the grid. At December 31, 2022, the cumulative RE capacity on the grid stood at 83.90MW when compared to December 31, 2021, when the cumulative RE capacity on the grid stood at 61.14MW.

Of this total capacity as at December 31, 2022, 73.91 MW was connected at the distributive level. Over the reporting period a total of 937 licenses were received under the Electric Light and Power Act 2013. These represent a cumulative capacity of 352MW of renewable energy.

The Fair Trading Commission (FTC) has extended the Feed-In-Tariff (FIT) programme for renewable energy technologies up to and including 1MW in size until June 30, 2022. This FIT which took effect on September 24, 2019, was scheduled to remain in place until December 31, 2021. The FTC took the decision to extend the FIT due to the current economic climate and the effects of the COVID-19 pandemic on the Renewable Energy sector.

The Cabinet in 2022 agreed to the recommendations of the consultancy which aimed to create a framework and workplan for developing an Energy Storage Policy for Barbados which met the tenets of the Barbados National Energy Policy and be aligned with the new utility license and licensing regimes. This policy included a decision to develop two (2) utility

scale storage pilots, one with the utility and the other within the private sector.

The scope of the study was to create a framework and work plan for developing the Energy Storage Policy in Barbados. The study quantified the indicative size and timing of potential energy storage projects that can add maximum benefit to the ratepayers in Barbados. The main objective was to develop an Energy Storage Policy that meets the tenets of the Barbados National Energy Policy (BNEP) and be aligned with the new utility license and licensing regimes.

Negotiations with the Barbados Light and Power Company (BL&PC) have resulted in the development of several utility related draft licenses. The Electric Light and Power Act provided for licensable activities namely generation, storage, transmission, distribution, and dispatch. During the reporting period the parties concluded the negotiations and the process for the issued licenses to BLPC has commenced.

The Ministry of Energy and Business in collaboration with the Fair Trading Commission has committed to the development of standard form Power Purchase Agreements (PPA) for renewable energy systems under 10MW and those over 10MW. The standard PPA will form the contract between the Independent Power Producer (IPP) and the Barbados Light and Power Company Ltd. where the IPP is the generator/seller, and the utility is the buyer of electricity. The PPAs will define the terms and conditions for the sale of electricity between the IPP and utility. These terms and conditions will include such things as start of operation, penalties, payment terms, termination clauses etc.

During 2022, the Ministry leveraged financing to develop standard power purchase agreements (PPA) for systems of 1MW to 10MW and for over 10 MW. To date several consultations between the stakeholders and the FTC were held and the Division is awaiting the final approval of the PPA from FTC.

In January 2019, the contract between the Government of Barbados and Caribbean LED Lighting

Inc. for the supply of 24,250 LED street lights to the BL&P and 3,000 LED Streetlights to the GEED was signed. The streetlights retrofit was completed in July 2021 with the installation of 25,750 fixtures which represent 88% of all streetlights and exceeded the project target of 85%.

Of these 24,250 fixtures were installed on minor and major roads by the BL&P and 1,500 on major highways and public carparks of the fixtures by GEED. It is expected that we will see a reduction of electricity consumption of 4.3 MWh per year totaling 64.5 MWh over a period of 15 years; which will see average savings in electricity bills of approximately US\$1.7 million annually. As at July 2021, there was an estimated savings of \$1,054,680 as a result of the conversion from the HPS bulbs to LED based on the interim rate the Fair Trading Commission (FTC).

Under the Renewable Energy Project, 2.4 MW of solar PV was installed on fifteen (15) public buildings in 2019; this exceeded the original target of 1.14 megawatts (MW) of renewable energy on thirteen (13) government buildings. The Ministry commenced a second phase to this project in 2020 with the installation of an additional 1.3 MW on seven (7) public buildings. As at December 2022, solar installations were completed at Oistins Post Office and Police Station, Crab Hill Police Station, Cane Garden Complex while meter connections were delayed at District 'A' Police Station, Arch Hall Fire Station and the Blackman and Gollop Primary School. The PV installations at the Queen Elizabeth Hospital were delayed due to the execution of a geotechnical study; which was imperative to inform of the type of geological characteristics located at the QEH site. The carport structure was imported in October 2022.

With respect to the Energy Efficiency Project, lightning installations were completed on fourteen (14) public buildings in 2022. Of the fifteen (15) buildings earmarked for AC installations, eight (8) were completed as at December 31, 2022.

With respect to the Electric Vehicle (EV) Pilot, a study was commissioned to analyse the efficiency and savings from the use of EV vehicles in the public sector. To solidify the efficacy of the Study, the Ministry included not only the ten (10) EVs procured under the PSSEP but also the thirty-three (33) electric buses procured under the Barbados Transport Board Project as well as the six (6) vehicles procured under the Deployment of Cleaner Fuels and Renewable Energies in Barbados Project being executed by the National Petroleum Corporation (NPC). The study which was completed in December 2021 provides a roadmap in regard to electric mobility for the public service.

To support the Study, twenty-eight data loggers were procured and installed to facilitate empirical investigations. As such, fourteen electric vehicles were outfitted with data loggers to capture real time data on the performance of these vehicles. The remaining fourteen loggers were installed in internal combustion engine vehicles from varying government agencies. These vehicles were selected based on their type and usage. The loggers were installed for a six-month period which ended in November 2021.

To actively promote the use of electric vehicles within government, appropriate decals were designed and installed on the electric vehicles procured during the programme. The design featured the slogan Powering our future naturally as well as the Barbados' National Energy Policy (BNEP) logo and those of the funding agencies.

Detailed Ocean Energy Studies were also completed in March 2021. The overall purpose of this assignment was to undertake a wide range of technical and environmental studies, as well as related capacity building activities, to investigate the feasibility and facilitate the construction of a large-scale Ocean Energy power plant or array in Barbados. Technologies which are to be considered are Ocean Thermal Energy Conversion (OTEC), fixed Offshore Wind (OSW), and floating Offshore Wind (OSW).

A series of workshops were held with both governmental and non-governmental agencies to inform stakeholders on its key findings and recommendations emanating from the body of work. The key elements of the Ocean Energy outputs were included in an Action Plan and the Ministry will continue the necessary preparatory steps to develop and implement a competitive procurement process for ocean energy development.

Consultancies were also commissioned in Capacity Building and Institutional Strengthening; (ii) Public Education and Professional Strengthening; and (iii) Communications and Engagement Strategy for Public Awareness for Sustainable Energy Uses in Barbados.

The Capacity Building and Institutional Strengthening Consultancy, which was completed in August 2021, developed an overall capacity building and institutional strengthening strategy in the context of Barbados' National Energy Policy. A key deliverable from this consultancy was an Action Plan which seeks to strengthen all key stakeholders in the energy sector. Identifying technical, operation and resources capacity gaps which exist in the organisations, with recommendations to improve the business processes, an appropriate organisational structure with updated job descriptions and additional human resources were presented in order to facilitate the achievement of the 2030 goals.

Training programmes to address the training and education barriers were recommended in order to enhance and ensure a sustainable energy sector, with consideration given to certification, skills upgrade and internship programmes. Training cancelled under PSSEP which is now to be undertaken under the Sustainable Energy Investment programme, will commence in Quarter 1 of 2023.

The Public Education and Professional Strengthening Consultancy was completed in January 2022. The aim of this Consultancy was to improve the framework for Training, Certification and Licensing as it relates to energy services in Barbados.



The Communications and Engagement Strategy for Public Awareness for Sustainable Energy Uses in Barbados Consultancy which commenced in February 2020 developed and implemented a Comprehensive Communication and Engagement Strategy which sought to motivate persons to become energy champions in all aspects of their lives; thereby helping Barbados to accomplish its goals and position itself as an example of the energy evolution in the world. The key outputs from this consultancy included improved social media presence, Online Smart Energy Educational Catalogue which outlines various training opportunities available locally related to sustainable energy matters, a Smart Energy PODCAST Series, and the creation of the Energy Champion brand.

The two (2) major accomplishments of the communication strategy were the branding of the Samuel Jackman Prescod Institute of Technology (SJPI) as the first Energy Champion Building and the re-launching of www.SmartEnergyBarbados.com website to be the repository for the Barbados National Energy Policy 2019-2030.

Phase II of this consultancy continued in September 2021 and included public awareness campaigns to inform the public of the phase out of inefficient lamps in accordance with the Control of Inefficient Lighting Act 2021. The official launch of the Energy Smart Fund and the benefits of the fund; as well as continuance of the work undertaken in the First Phase of the consultancy. This Consultancy was completed in December 2022.

During the period in review, the Energy Smart Fund was formally launched to the public on May 24. This included a series of three webinars geared towards businesses, tourism and related services, agro-processing and manufacturing during May to June 2022. The Project Execution Unit also made presentations to the members of the Small Business Association of Barbados, Barbados Coalition of Service Industries and FundAccess to inform and synthesize them on the Fund during the second half of the year.

Notwithstanding the above presentations, to ensure the business community was aware of the

Fund, a public relations campaign was launched on the Ministry's social platforms to inform the general populace on the Fund and its components. Advertisements for Smart Fund Partners were also advertised to assist clients with the process and an online application form, and a portal were created to facilitate doing business with the Fund.

Under the Pre-investment studies for SMEs (Technical Assistance), the objective is to provide grants to finance the required pre-investment studies and pilots for EE and RE projects under the Programme. The aim is to support the development, funding and execution of projects. As at December 31, 2022, twenty (20) applications were received under the Fund with thirteen (13) applications approved totalling BBD\$217,750.00. It is anticipated that these applications will all transition to pilot projects or loans under the renewable energy and energy efficiency facility.

With respect to the EE and RE subsidised loans to businesses, the businesses may apply to FundAccess for funding up to BBD\$150,000.00 whilst for larger loans they may apply to the EGFL for loans up to BBD\$2,000,000.00. During the review period, two (2) applications totalling BBD\$2,380,000.00 were reviewed and approved. This brings the total number of approved loans to five (5) for a total of BBD\$2,962,693.22. No loan applications have been received from FundAccess to date.

Preparatory work to launch the Air-conditioning Trade-In Rebate Facility undertaken during the period to ensure all the necessary documentation has been prepared to launch the facility in the first quarter of 2023.

Under Component 2, a Structural Integrity Engineering Services Firm was contracted in November 2022. Preliminary work for the procurement process for the Consultancy Services for the Supervision of Energy Efficient and Renewable Energy Retrofits of Public Buildings was completed in 2022. The initial work for three (3) renewable energy priority projects was

prepared and is to be undertaken during the year 2023.

Work to execute the expansion of electric mobility under Sub-component 2.3 of the programme benefited from expansion of an existing contract to allow for the procurement of an additional ten (10) electric buses. The PEU continued negotiations during the year 2022 and the contract was signed in June 2022. Delays were encountered and the production of the buses is now scheduled to be completed in May 2023.

As part of the activities under Component 3, Capacity Building and Institutional Strengthening, the first draft of the concept for the Youth Apprentice Programme was prepared in October 2022. The PEU continues to structure and conceptualize this program. A meeting with the tertiary institutions and the Technical Working Group is scheduled for January 2023.

A study on "Gender Strategy for the Power Sector" was executed during the month of August 2022; the findings of the study are expected to help guide the activities under the Sustainable Energy Investment Program's Gender Studies Consultancy.

Under Complementary Studies, this activity seeks to implement comprehensive studies on sustainable energy and energy transition that are complementary to the implementation of the BNEP. The three (3) areas of study are Development of a National Energy Efficiency (EE) Action Plan for Barbados; Implementation of a plan for deployment of electric mobility and other low emissions transport; and financial institutions operating in Barbados on innovative financial models schemes for EE/RE projects.

In May 2022, the PEU commenced the work to procure a consultant to develop a National EE Action Plan for Barbados. The TOR was finalised in September 2022 after intense reviews and consideration as to the required work to be undertaken. The approval to begin the procurement process was received in December 2022, the implementation process is scheduled for the year 2023.



OUTLOOK/FORECAST FOR THE YEAR 2023

INTERNATIONAL PERSPECTIVE

As the world tries to move on from the COVID-19 pandemic, it faces an even more uncertain reality as tensions continue to escalate between the major powers, and an increasing probability of a shifting world order commences. Internationally, the economy was marked by high and escalating energy and food prices resulting in a sustained increasing rate of inflation which was fueled by severe limitations in supply to major metropolitan economies.

The international markets in 2022 observed an unprecedented push by central banks to increase their stock of gold within their reserves. Indeed, the financial markets reported that central banks' demand for gold totalled 1,136 tons in 2022 worth

US\$70 billion, the highest level of buying in 55 years. Geopolitical uncertainty and high inflation were cited as key reasons for holding gold. Purchases were primarily from emerging market banks, including Turkey and China.

The International Monetary Fund (IMF) in its annual 'World Economic Outlook' for 2023 indicated that global economic growth was projected to fall from an estimated 3.4% in 2022 to 2.9% in 2023. The forecast by the IMF for 2023 was stated to be 0.2 percentage points higher than projected in October 2022 but below the historical average of 3.8%. The rise in central bank rates to fight inflation continues to be a burden on economic activity. Global inflation is expected to fall from 8.8% in 2022 to 6.6% in 2023, although still above pre-pandemic period levels of 3.5%.

According to OPEC's most recent monthly oil market report, oil demand will increase by 2.32 million barrels per day (bpd) in 2023 to reach 101.87 million bpd, with some minor upward adjustments due to China's expected better performance following its reopening from COVID-19 restrictions. The Organisation for Economic Cooperation and Development (OECD) forecasted demand for 2023 is 47.01 mn b/d while non-OECD demand is expected to average 57.68 mn b/d.

On the supply side the Energy Information Administration of the US Department of Energy expects world production to increase by 560,000 b/d to 103.19 mn b/d during 2023 above the 102.63 mn b/d level for 2022. driven primarily by the return of China from its mandated mobility restrictions and the effects this will have on the country, the region and to a greater extent, the world.

The US dollar has a significant impact on the value in the petroleum market as it is the currency which is used to exchange for petroleum products. This decades old institution has been impacted in a major way with the Brazil, Russia, India, China and South Africa (BRICS) group of nations seeking to expand its membership to include other resource rich countries. In addition, the BRICS are seeking to establish its own financial framework and payment system which may see the dollar losing significant ground as a reserve currency. This presents a significant unknown and by extension uncertainty in the international oil and gas market where some studies indicate that a liquidity shock in the BRICS may result in a significant increasing impact on oil prices.

2023 is anticipated to be characterised by uncertainty and as such oil and gas prices may demonstrate elevation in volatility for some petroleum products. As a consequence, projected West Texas Intermediate (WTI) crude oil prices for 2023 may fall between US \$77.00 and US \$110.00 per barrel. In the case of natural gas Henry Hub prices per MMBTU are projected to range between US\$2.00 to US\$5.00. The long-run average equilibrium price of the WTI crude oil price has been estimated at US \$56.00 per barrel while for natural gas the long-run average equilibrium price is estimated to be US\$4.00 per MMBTU. It is likely that during 2023, oil and gas could trade for the most part above and around the long-run equilibrium level.

LOCAL PERSPECTIVE

The annualized volatilities of the key fuels imported into Barbados are as follows:

	Price Volatilities for 2023
Diesel	30.821%
Gasoline	32.426%
Fuel Oil	27.315%
Jet Fuel	28.282%
LPG	36.437%
Natural Gas	60.890%
Crude Oil	29.489%

The monthly Fuel Clause Adjustment (FCA) is expected to be impacted in the same way as in the case of crude oil hence the assumptions which applied above are applied here. The Fuel Clause Adjustment is projected to fall between 21.390 cents/kWh to 47.702 cents/kWh, as the annualized variation in the Fuel Clause Adjustment is estimated to be 34%. The long-term equilibrium FCA is estimated at 22.2648 cents per kWh. It is anticipated that the Fuel Clause Adjustment is expected to register above the long-term equilibrium price for most of 2023.

Electricity consumption during 2022 increased to 937 GWh which represented an increase of 4%. The increase in electricity consumption is largely owed to a 22% increase in consumption in the tourism sector. Electricity consumption in 2023 is likely to continue to increase as the Barbadian economy recovers during the year. Therefore, total electricity consumption for Barbados is expected to fall between 933 GWh and 955 GWh for 2023. Consequently, Barbadian households and businesses are projected to spend between \$199 and \$455 million on fuel for electricity production during 2023.

In 2022 a total of 84 MW of renewable energy was connected to the national grid. During 2023 connections are expected to be constrained by the technical limits of the grid and the degree to which storage can be added. In a scenario where the technical limits of the grid are not addressed and the annual capacity factor for renewable energy sold to grid remains around 14%, the current trend for distributed (i.e. IPPs) installed capacity is projected to be 80 MW to 97 MW resulting in just around 11% to 13% of the forecast electricity demand being derived from renewable energy.

However, if the technical limits of the grid are addressed and the annual capacity factor improves to 17%, it is projected that 17% to 20% of the electricity demand will be derived from renewable energy based on distributed capacity range between 107 MW and 125 MW. The above forecast will be impacted by the system's efficiency, the placement of the system and curtailment of energy by the utility.

During 2023, it is projected that the Barbadian consumers of gasoline, given the current price

structure, will pay a retail price of between BDS \$ 3.68 per litre and BDS \$5.62 per litre. In the case of diesel it is projected that consumers will pay a retail price of between BDS \$3.05 per litre and BDS \$4.97 per litre. It is further projected that kerosene consumers will pay a retail price of BDS \$1.16 per litre on the low end and an estimated maximum of \$2.577 per litre. With respect to LPG, it is projected that wholesale and retail prices of between BDS \$87.08, BDS \$26.87, BDS \$23.81, BDS \$21.65 and BDS \$153.07, BDS \$43.37, BDS \$38.33 and BDS \$34.84 for the 100lb, 25lb, 22lb and 20lb respectively.

The Table below summarises the preceding paragraph by showing the projected average wholesale and retail prices for gasoline, diesel, kerosene and LPG for 2023.

TABLE 7

TABLE SHOWING AVERAGE PROJECTIONS FOR 2023		
PRODUCT	HIGH	LOW
Gasoline	\$5.62	\$3.68
Diesel	\$4.97	\$3.05
Kerosene	\$2.57	\$1.16
LPG		
100lbs	\$153.07	\$87.08
25lbs	\$43.37	\$26.87
22lbs	\$38.33	\$23.81
20lbs	\$34.84	\$21.65



BARBADOS LIGHT & POWER 2022: A YEAR IN REVIEW

At the Barbados Light & Power Company (BLPC), we progressed on innovative projects in 2022 that are moving our country toward greater energy independence and a cleaner energy future in alignment with the Government of Barbados' National Energy Policy (BNEP).

This transition from high-carbon to low-carbon generation sources will result in reduced carbon emissions and stabilized energy costs for customers, and help stem the flow of foreign exchange for fuel imports.

Early in 2022, there was a strong focus on the sharp rise in global oil prices which, in turn, affected

customers' monthly bills through the Fuel Clause Adjustment (FCA). We continued to support customers through this challenging time with energy-saving suggestions and payment plans for those who needed them, and we were both pleased and relieved to see a lessening in the cost of oil by mid-year.

June 2022 saw the commissioning of the Company's Clean Energy Bridge (CEB), a 33-megawatt medium speed diesel plant. The CEB has operated reliably since commissioning, and its high efficiency is resulting in lower fuel costs to customers. The plant is critical to our progress toward 100% renewable energy (RE) as a bridging solution designed to maintain a reliable supply of electricity to the national grid while the transition to 100% electrification takes place over the next several years.

As the country's electricity provider, BLPC is committed to grid modernization and, in 2022, we continued to make prudent infrastructure investments to ensure grid stability and ongoing reliability while enabling renewable energy sources to the grid.

Thanks to the efforts and commitment of our teams, 2022 saw our best reliability numbers to-date. We incorporated what we learned in 2021 to the year's Hurricane Season preparations and were ready to respond swiftly, effectively and safely to storm threats.

Later in the year, the Fair Trading Commission held its long-awaited hearing on our October 2021 rate filing, enabling individuals and organizations including the Barbados Renewable Energy Association and the Barbados Association for Retired Persons to ask myriad questions of BLPC's leaders in an effort to help the Commission in its deliberations. The public hearing provided BLPC with an opportunity to share more information about our filing and the reasons for it, including the need for continued investments to ensure a reliable and safe electricity supply to serve the island's customers today, and meet the country's future energy demands. We await the outcome and the FTC's Decision of that rate review in 2023.

As always, BLPC and our community-minded employees remained committed to giving back throughout 2022. Our 'Support a Family' initiative saw employees identify and assist families across the country, and Light & Power matched employees' generosity with the provision of essential groceries and other needs. Investing in Barbados' youth is central to our social responsibility program, and we never refuse an opportunity to spread safety knowledge!

When the chance arose to provide safety demonstrations to children at summer camps across the country, our Linemen and other team members jumped at the opportunity to share their considerable safety knowledge. And as the Holiday Season approached, we embarked on 'Brighten Your Christmas – 12 Days of Giving', an employee-led initiative that supported families, schools, organisations and communities in each parish of our island as well as the Precious Touch Foundation and the Barbados Prison Fellowship.

Most outstanding for us, 2022 was a year of safe performance for our team. We met stringent safety objectives for the year, and our targets are even more challenging for 2023 as we make steady progress toward our ultimate goal of world-class safety performance.

In looking ahead to 2023 and beyond, we understand the role we play in achieving the country's renewable energy goals, and we commit to continuing to put measures in place to support the targets set out in Barbados' Nation Energy Policy. With the unwavering commitment of our employees, we will continue to work collaboratively in partnership with Government, our regulator and all stakeholders to deliver safe, reliable and increasingly renewable electricity service every moment of every day in today's changing environment.



SOL (BARBADOS) LIMITED 2022

As the Caribbean's leading provider of energy solutions, Sol recognizes its unique position to not only champion Barbados' sustainable energy goals but also to play an active role in realizing those goals.

Sol is committed to doing our part to support Barbados' national sustainable energy goals outlined in the Barbados National Energy Policy, chiefly becoming a 100% renewable energy and carbon neutral island-state by 2030. In this regard, Sol's mission is two-fold: i) to offset our own energy output across our network of Sol Barbados sites and ii) to transform Barbados' energy landscape through the provision of sustainable, cost-effective renewable and low-carbon energy solutions. Towards both ends, the launch of our transformative renewable energy arm, Sol Ecolution, set in motion a number of innovative projects that will advance our internal and external energy goals.

Guided by the Government of Barbados' SDG (Sustainable Development Goal) target of net zero emissions by 2030 and by Parkland's (Sol's parent company) goal of a 40% reduction in greenhouse gas emissions per site by 2030, Sol was inspired to initiate its process of site "Solarization", which entails the installation of photovoltaic (PV) panels that generate solar energy to sell to the grid.

Currently, eight of our Sol Barbados service stations, including Sol Airport, Esso Worthing and Sol Warrens, are solarized. At present PV installations are ongoing at one site (Esso Paynes Bay) and this year, we will commence installations at four more sites – Sol Wildey, Sol Oistins, Holborn Depot and Spring Garden Office.

Sol Ecolution's outward focus is to facilitate the integration of low-carbon and renewable energy solutions for our clients' operations. Through Sol Ecolution's full-service offering, we undertake commercial and utility-scale projects from their inception at the project planning phase through to execution and post-completion phases.

One such project on the horizon is Sol Ecolution's partnership with Blue Circle Energy (BC Energy), an experienced renewable energy project developer focused on the Barbados market. In collaboration, Sol Ecolution is overseeing the construction of BC Energy's portfolio of "Community Solar Gardens", 33 modern solar energy plants located across Barbados' 11 parishes. Community Solar Gardens are designed to produce 23MW of total generation capacity that will help to power around 4,000 homes.

Another key feature of Community Solar Gardens is the 30% domestic ownership component. Sol and BC Energy embrace this requirement, recognizing that a sustainable energy future necessitates local involvement including the democratization of energy generation asset ownership. Currently, we are exploring investment opportunities with several local parties including Sol Barbados employees, local pension funds, credit unions and cooperatives.

These partnerships exemplify the collaborative efforts needed to achieve Barbados' sustainable energy future. Sol believes that a national energy transition is achievable with the endorsement of all relevant actors – government, private sector, energy providers, and the wider community.

To learn more about Sol's journey to a sustainable energy future, local and regional projects and our full-service offering visit www.solecolution.com.



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MISSION STATEMENT

To foster development within the energy sector through innovation and workable partnerships which promote a strong economy and a healthy environment.

The Ministry of Energy and Business was renamed in 2022 and is responsible for natural resource development; renewable energy; the Barbados National Oil Company Limited; the Barbados National Terminal Company limited and National Petroleum Corporation.

The Energy Division is charged with the responsibility of but not limited to:

- Promoting and fostering partnerships that facilitate innovative and competitive energy markets
- Developing a regulatory and an enabling environment that encourages investment in the energy sector
- Contributing to the competitiveness and economic growth of Barbados by ensuring affordable access to energy
- Ensuring fair pricing and access of all Barbadians to energy
- Promoting fiscal and monetary policies that contribute positively to the increased development of the energy sector
- Diversifying the energy production and supply mix by increasing the production and use of renewable energy sources and energy efficiency technologies
- Promoting the economic and environmentally sustainable production and use of energy resources in Barbados

FREQUENTLY ASKED QUESTIONS AND ANSWERS

QUESTIONS ▶▶

- 1 When was the last price adjustment?
- 2 On what basis is the local retail price of petroleum products adjusted?
- 3 What is the relationship between crude oil and refined petroleum products?
- 4 How many barrels of gasoline and diesel on average does Barbados consume?
- 5 Is Government still committed to offshore exploration?
- 6 Can I continue to expect monthly local retail price adjustments in the immediate future?

ANSWERS

- 1 Last price adjustment was on March 6, 2023.
- 2 The adjustment is based primarily on invoices submitted to the Energy Division by the importers of the products.
- 3 Crude Oil is the raw material used in deriving petroleum products. Therefore if the price of Crude Oil is high then the derivatives coming from it would have to be costly.
- 4 Barbados consumes about 500,000 and 750,000 barrels of diesel and gasoline respectively on average yearly.
- 5 Yes, Government remains committed to offshore Oil and Gas exploration.
- 6 With the volatility surrounding Crude Oil local retail price adjustments will occur to reflect prices on the international market in keeping with the policy of the Government.



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