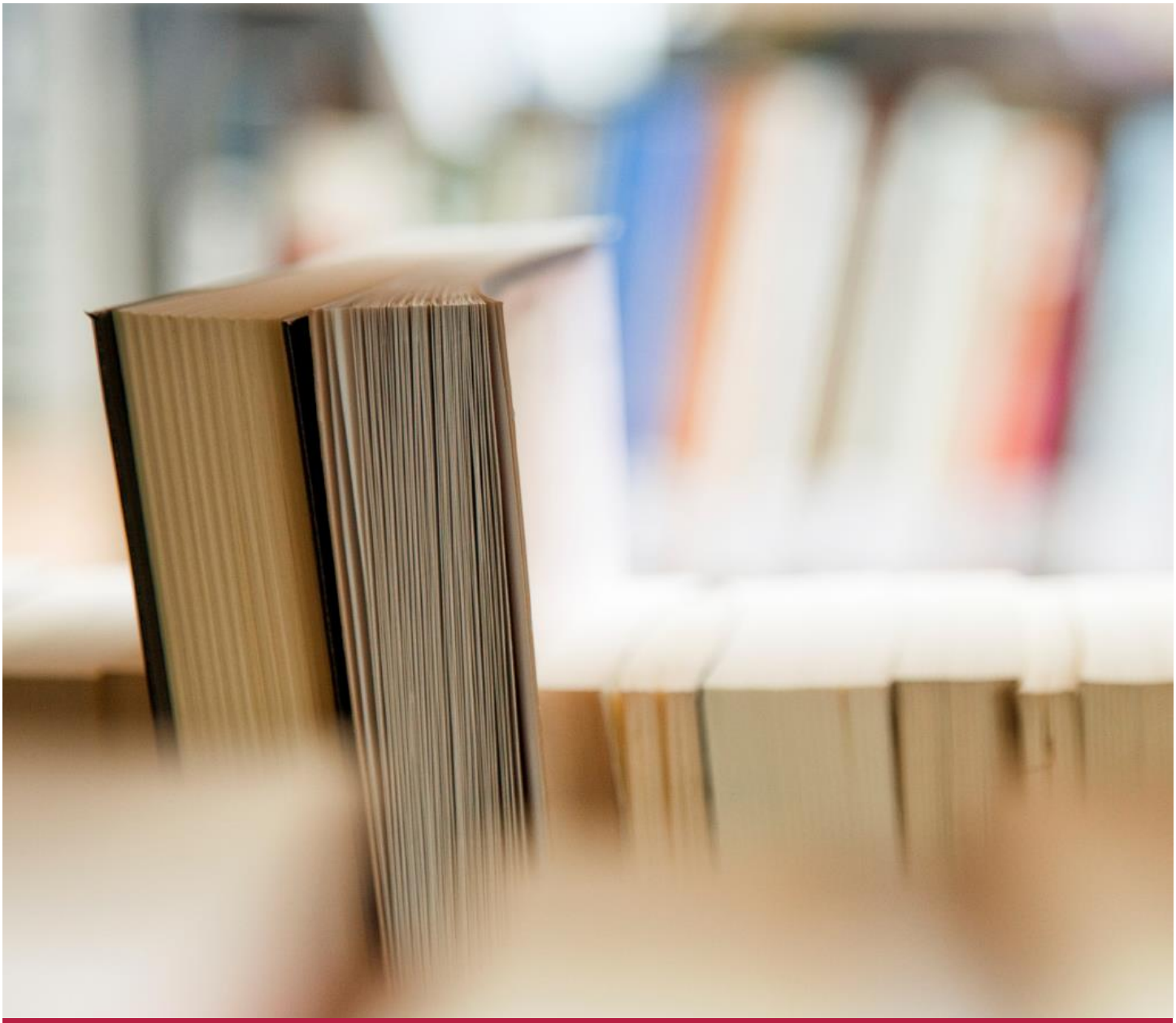


Guyana Energy Agency

Annual Report 2016

EXECUTIVE SUMMARY

Petroleum Products

A total of 5,547,048 barrels of petroleum-based products was imported in 2016 representing about 15,156 barrels per day. This represents a 10.91% increase when compared to 2015. Petroleum imports for the year were acquired at a cost, insurance and freight (CIF) value of US$333,248,345, representing a decrease of 6.18% from that of the previous year.

There were increases in the consumption of Mogas, Gasoil, Kerosene, Avjet, Fuel Oil, LPG and Avgas. Notably, consumption of Gasoil and Avjet increased by 20.19% and 51.88%, respectively.

The average cost per barrel of petroleum-based imports decreased from US$71.02 in 2015 to US$60.08 in 2016, a decrease of 15.41%. This downward trend also continued for the average unit CIF value for each petroleum product. There were decreases of 13.09%, 16.14% and 16.13% in the average unit CIF value (US$/bbl) for Mogas (gasoline), Gasoil (diesel) and Jet fuel/Kerosene respectively. In addition, the average unit CIF value for Fuel oil, Aviation Gasoline (avgas) and LPG (cooking gas) also decreased by 20.68%, 5.00% and 3.65%, respectively.

Retail prices for Mogas (gasoline), Gasoil (diesel) and Kerosene decreased during 2016 by an average of 13.08%. Specifically, average retail price for gasoline and diesel decreased by 10.15% and 12.76% respectively. Also, the average retail price for domestic kerosene declined by 17.51% while the average retail price for cooking gas (LPG) increased slightly by 2.42%.

Solar Energy

1,609 kW of solar photovoltaic capacity was documented as being the total installed capacity in Guyana producing an estimated 2,304 MWh of energy annually.

GEA's Engineers installed an additional grid-connected solar photovoltaic (PV) at the Agency's headquarters. At a cost of G$4,790,000, the new 10kW system is estimated to produce 13,167 kWh of energy annually. The new installation, when combined with the one previously installed, will result in annual savings of about G$1.6 million and will supply almost 50% of the Agency's electrical energy needs.

During 2016, GEA's Engineers installed 8 energy efficient LED solar-powered street lights.

GEA's Engineers, during the year, repaired and rehabilitated a total of 3.15 kW of solar PV equipment at 7 schools.

The Rural Energy Project, executed by the Latin American Energy Organization (OLADE) with funding from the Canadian International Development Agency (CIDA), in collaboration with the GEA, demonstrates the application of solar photovoltaic (PV) technology to enhance and accelerate the productivity of livelihood activities within three (3) rural communities in Guyana.

Following consultations and approval from the Ministry of Indigenous Peoples' Affairs, the villages of Powaikoru (Region 1), Moraikobai (Region 5) and Shulinab (Region 9) were selected as the beneficiary communities to receive solar powered freezers, solar PV Panels, solar dryers, solar water heaters and energy efficient cook stoves. Installations at Shulinab and Maraikobai have been completed and Powaikoru will be completed in 2017.

Hydropower

Hydropower Support Engineers of GEA continued to work on the design and tender documents for a 20kW hydropower project at Hosororo, Region 1. In an effort to build technical capacities in the field of hydropower development, the GEA and REETA, through consultations, in 2015, agreed on a TOR for a consultant to work alongside GEA's engineers to develop a small hydropower scheme. As part of the GEA programme to encourage and demonstrate the use of renewable sources of energy, a number of activities were completed at the Hosororo, Region 1 hydropower site. Collection and analysis of water level data and watershed delineations were also done at the Kumu site, Region 9.

GEA's Hydropower capacity was bolstered in 2016 with the addition of a German resident hydropower specialist. The hydropower specialist has since been working on the Kato hydro, and preparing preliminary assessments for a number of other hydro sites in Guyana. GEA is currently reviewing, updating and preparing tender-ready documents for the 320kW hydropower project at Kato, Region 8.

GEA assisted MPI in executing an 'Expression of Interest' (EOI) to rehabilitate the Moco-Moco Hydropower Plant. A Due Diligence exercise was completed and the decision was taken to develop the project under a Design and Build contract with support from the Sustainable Energy Programme implemented by HECI.

The Hydropower Support Engineers reviewed the application for Hydroelectric Power Licence for the rehabilitation of Tumatumari Hydroelectric Project.

Wind Energy

GEA advanced preparations and received the relevant approvals to install a wind measuring tower at Bartica, Region 7 but is awaiting clearance of the site to facilitate installation. GEA has also applied for approval to erect a wind measuring towers at Kato, Region 8 and Quarrie, Region 9.

GEA also assisted the Hinterland Electrification Company Inc. (HECI) in selection and evaluation of fifteen potential wind sites along Guyana's coast where the best four will be chosen to carry out wind measurements.

GEA continued to support MPI in advancing the development of a Wind Farm. A Confidentiality Agreement has been signed between the parties which enabled the sharing of information between the key Agencies and a Consultant. The Wind Energy Consultant has been providing support to GoG in advancing the Wind Farm development.

Bio-Energy

Engineers repaired and re-operationalized bio-digesters at Kwakwani Secondary School, Region 10 and another for a farmer in Linden.

Energy Efficiency

Engineers from GEA, with support from the Street Lighting Division, Ministry of Public Infrastructure, replaced 65 inefficient street lamps (rated at 250 watts each) with energy efficient Light Emitting Diodes (LED) Lamps rated at 100 watts and with an estimated lifespan of 11 years. The initiative will reduce the annual energy consumption by 42,705 kWh saving G$2.8 million per year with a simple payback period of 1.07 years.

During 2016, GEA completed Energy Consumption Assessments of 22 buildings and effected energy efficient lighting change-outs and installation of occupancy sensors at 6 schools.

Research

Government of Guyana commenced a review and update of Guyana's National Energy Policy and Advice on Sustainable Energy Development in Guyana. The updated policy seeks to develop a cohesive, appropriate and broad-based national energy policy to move Guyana from an economy that is inefficient in its energy use and wholly dependent on imported, market sensitive fossil fuels, to an energy efficient, low emission economy, based largely on economically efficient, indigenous energy resources. The first phase of the study includes a draft Energy Policy document and was completed in December 2016. The second phase of the study will commence in 2017 and will involve extensive stakeholder consultations towards the finalization of the National Energy Policy.

The Inter-American Development Bank supported the Government of Guyana and the Guyana Power and Light Inc. (GPL) towards the completion of an Optimal Generation expansion study for GPL. The study identified a combination of 150 to 180MW hydropower, 13 to 26 MW Wind, 6MW Solar, 15MW bagasse power and eventual conversion from HFO and LFO to Natural gas over the next 20 years. The completion of this study provided the framework for decision-making towards an optimal generation system and transition towards a green economy.

GEA provided support for the IDB-funded Arco Norte Electrical Interconnection Study which found that an electrical transmission interconnection arc between Guyana, Suriname, French Guiana and the Brazilian cities of Boa Vista and Macapá is a viable project. Most of the energy to be supplied to the interconnection grid is expected to originate from Guyana's hydropower potential. Further studies to update Guyana's hydropower inventory will have to be undertaken.

Licensing Activities

The Agency issued a total of 1,369 licences for 2016, inclusive of all categories of licences (Importing/Importing Wholesale/Wholesale, Export, Retail, Consumer Installation, Bulk Transportation Carriers, Storage). While there was significant outreach across the country (818 site visits as at end of December 2016), the site visits were 15% less than 2016 on account of the challenge of backlog of licenses earlier in 2016. However, one addition to the licensing scope of duties was the piloting of *Pop-Up* visits in areas such as Linden, Bartica and New Amsterdam, where persons were able to submit documentation to inspectors visiting the area and make payments through the bank rather than needing to visit the GEA Head Office.

National Standards for the requirements for the safe transport of Petroleum and Petroleum products by Road Tanker Wagon (RTW) GYS 512:2016 and Bulk Transportation Carrier (BTC) GYS 513:2016 Standards proposed by GEA were approved by GNBS.

Fuel Marking Programme

Under the Fuel Marking Programme, of the 14,583 total site visits conducted during the year, 2,253 sites were sampled at least once. 27 (1%) of the sites sampled at least once were found with *significant dilution (defined as more than 50%)* in at least one tank. From 2006 to 2016, the percentage of sites found with significant dilution in at least one tank has progressively decreased from 34% in 2006 to 1% in 2016.

There were 35 joint operations with Guyana Police Force (GPF), the Guyana Defence Force (GDF) and the Guyana Revenue Authority (GRA).

The Fuel Marking Programme recorded one (1) conviction in 2016. Seven (7) new prosecutions were instituted and are currently ongoing before the courts. Compensation was accepted from six (6) individuals under *Section 33A Guyana Energy Agency Act 1997* as amended by *Section 8 Guyana Energy Agency (Amendment) Act 2011*. In October 2016, one (1) appeal was dismissed for want of prosecution (GEA v. Shairaz Alli, Javed Alli). This appeal was filed in 2015 by external counsel retained at that time.

Information Dissemination

GEA participated and facilitated many information dissemination and awareness activities which enabled interaction with members of the public, students and various organizations to provide lectures, seminars, information brochures, press releases, newspaper pull-outs, radio and TV infomercials with energy conservation tips.

During 2016, GEA conducted forty-five (45) presentation to schools reaching about 3,800 students across Guyana.

GEA conducted 8 Presentation to Ministries, Agencies, Private Sector and NGOs, conducted 2 Seminars and 2 Workshops on Sustainable Energy, aired 1,200 Radio Adverts, broadcasted 168

Television adverts and 2,092 infomercials and 466 documentaries, published 161 print adverts and distributed 9,098 brochures, 2,400 booklets, and 1,180 posters.

Administration

A new base was constructed at Bartica for staff of the GEA to facilitate monitoring of fuel and ease of deployment. The checkpoint at Linden was also rehabilitated as part of the Agency's maintenance programme.

The staff of the Agency benefited from training and workshops in several areas, through the conduct of 39 training programmes benefitting 404 Officers.

1.0 Review of Activities: Energy & Energy Statistics Division

1.1 Petroleum-Based Imports

For the year 2016, the Division facilitated the importation of one hundred and sixty-eight (168) shipments of petroleum-based products on behalf of the oil companies, an increase from one hundred and twenty-one (121) shipments in the previous year. About eighty percent of the shipments in 2016 were lifted from Petrotrin, Trinidad and Tobago, eleven percent of the shipments were lifted from Staatsolie, Suriname and the remainder was sourced via third parties based in Antigua, St. Lucia and St. Croix. There were no shipments from PDVSA, Venezuela in 2016 and the last shipment received was on July 4, 2015.

TOTAL IMPORTS (BBLS)				
January-December	Product	2015	2016	% change
	Mogas	1,267,049	1,297,874	2.43%
	Gasoil	1,984,686	2,390,887	20.47%
	Kero	84,880	86,900	2.38%
	Avjet	104,997	157,373	49.88%
	Fuel oil	1,350,054	1,407,290	4.24%
	LPG	201,449	197,754	-1.83%
	Avgas	8,381	8,970	7.04%
	Total	**5,001,497**	**5,547,048**	**10.91%**

TOTAL IMPORTS - OIL COMPANIES (BBLS)				
January-December	Product	2015	2016	% change
	Mogas	1,267,049	1,297,874	2.43%
	Gasoil	1,702,626	2,097,999	23.22%
	Kero	84,880	86,900	2.38%
	Avjet	97,427	156,511	60.64%
	Fuel oil	84,743	79,866	-5.76%
	LPG	191,878	186,754	-2.67%
	Avgas	598	1,188	98.52%
	Total	**3,429,201**	**3,907,092**	**13.94%**

The total petroleum imports recorded an overall increase of 10.91% in 2016 with a total of 5,547,048 barrels of petroleum-based products imported and an average of approximately 15,156 barrels per day. There were increases in the imports of Mogas (gasoline), Gasoil (diesel), Kerosene, Avjet (Jet Fuel), Fuel oil and Avgas (aviation gas) while imports for LPG (cooking gas) decreased during this period.

Imports for the oil companies also rose in 2016 with a total of 3,907,092 barrels of petroleum-based products imported and an average of approximately 10,675 barrels per day. There were increases in the imports of Mogas, Gasoil, Kerosene, Avjet and Avgas while imports for Fuel oil and LPG declined during this period.

1.2 Consumption of Petroleum Products

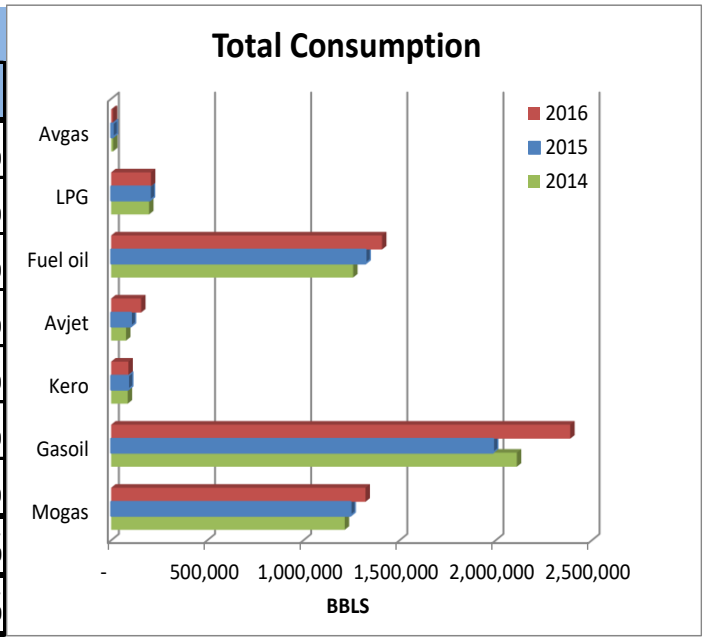
Consumption of petroleum products was generally calculated based on opening stock, closing stock and import volumes for the year.

Consumption = Opening stock + Import volumes – Closing Stock

Sales data received from Guyoil as well as consumption data from Bosai Minerals Group (Guyana) Inc. (BOSAI) were also incorporated in the calculation of total consumption.

A total of 5,580,696 barrels of petroleum-based products was consumed in 2016 with an average of 15,248 barrels per day. This represents a 12.63% increase when compared to 2015. There were also increases in the consumption of all products (gasoline, diesel, kerosene, jet fuel, fuel oil, cooking gas and aviation gasoline).

TOTAL CONSUMPTION (BBLS)					
January - December		2014	2015	2016	% change
	Mogas	1,214,868	1,244,943	1,322,842	6.26%
	Gasoil	2,110,143	1,986,647	2,387,793	20.19%
	Kero	86,023	88,031	89,746	1.95%
	Avjet	77,309	102,498	155,678	51.88%
	Fuel oil	1,258,669	1,323,033	1,408,915	6.49%
	LPG	197,121	201,454	206,648	2.58%
	Avgas	9,813	8,407	9,074	7.92%
	Total	**4,953,944**	**4,955,013**	**5,580,696**	**12.63%**
	Bpd	**13,572**	**13,575**	**15,248**	**12.32%**



The increase in gasoline consumption for 2016 can be attributed to an increase in motor vehicle ownership while the increases in LPG and Kerosene consumption suggests more use of cooking gas and kerosene. The increase in Fuel oil consumption was a result of increased activity for bauxite mining and quarrying and greater demand by GPL. Also, the increase in jet fuel consumption is reflective of increased flight travel at international airline carriers due to the large influx of visitors during the country's Golden Jubilee celebrations.

Notwithstanding a decrease in diesel fuel use from BCGI/RUSAL, there was a general increase in diesel consumption; notably at the retail level. There was also the addition of two diesel importers

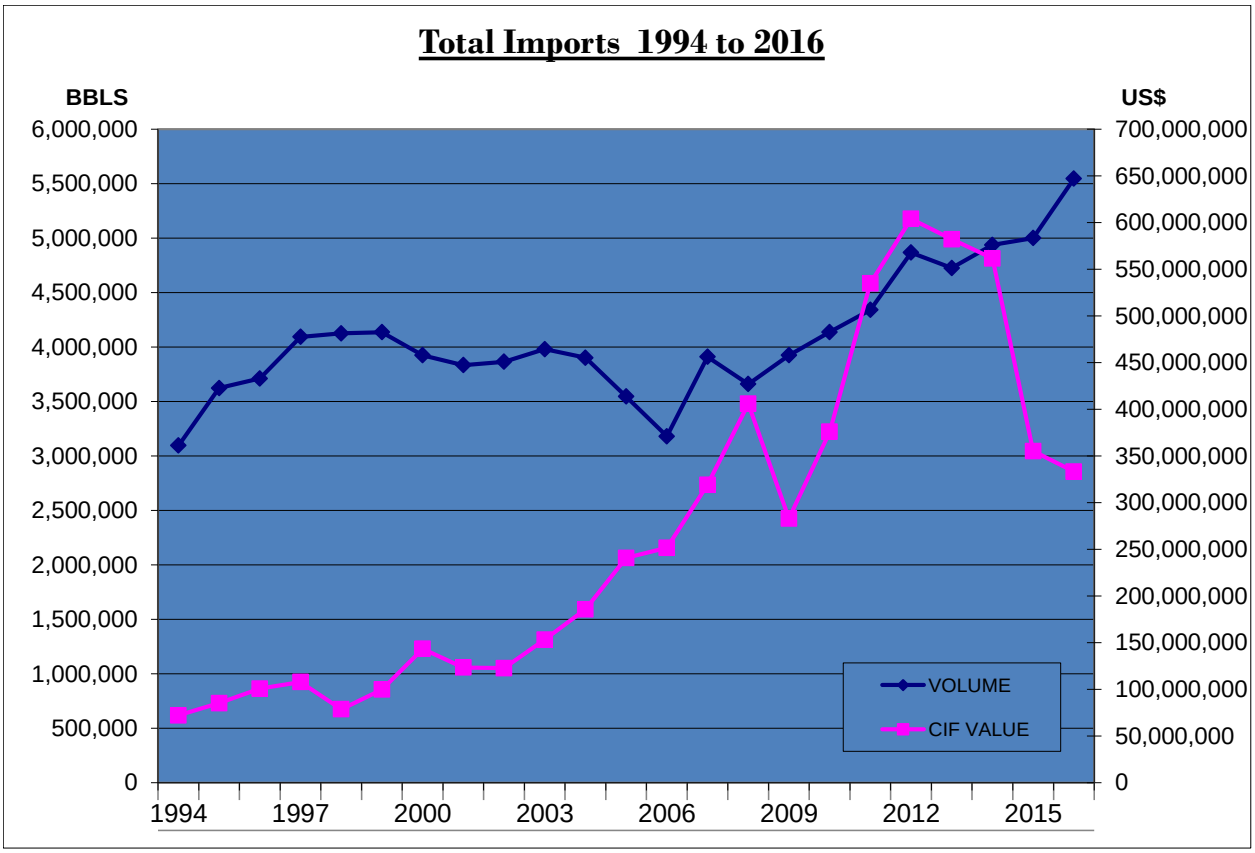
in 2016 - United Petroleum Inc. and Atlantic Fuels Inc. The increase in diesel volumes can be attributed to improved performance in the mining sector, despite a contraction in the agriculture, fishing, and forestry sector. Avgas consumption has also risen during this period, which may be indicative of mining and tourism activities in the interior.

1.3 Acquisition Cost and Retail Prices

Petroleum imports for 2016, which amounted to 5,547,048 barrels, were acquired at a cost, insurance and freight (CIF) value of US$333,248,345, representing a decrease of 6.18% from the acquisition cost in 2015.

TOTAL IMPORTS OF PETROLEUM PRODUCTS FOR PERIOD 1994 TO 2016

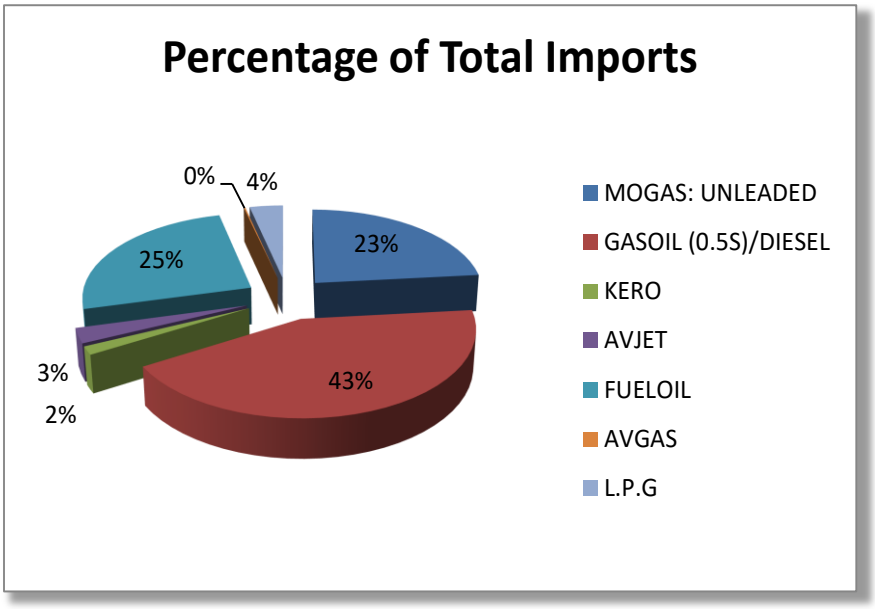
	VOLUME		CIF VALUE
	BBLS	LTRS	US$
1994	3,095,728	492,181,436	72,067,912
1995	3,624,053	576,178,402	85,161,130
1996	3,711,893	590,143,846	100,696,609
1997	4,093,677	650,842,653	107,727,233
1998	4,125,765	655,944,238	78,539,499
1999	4,137,266	657,772,751	99,704,391
2000	3,924,614	623,963,783	143,277,974
2001	3,834,651	609,660,809	123,373,521
2002	3,865,505	614,566,203	122,643,684
2003	3,980,199	632,801,092	153,193,966
2004	3,901,760	620,330,288	185,702,255
2005	3,546,069	563,779,936	240,663,147
2006	3,179,925	505,567,690	251,594,083
2007	3,910,234	621,677,546	319,122,554
2008	3,660,583	581,986,208	405,960,936
2009	3,924,723	623,981,072	282,909,993
2010	4,137,931	657,878,518	375,951,700
2011	4,341,345	690,218,765	534,982,446
2012	4,867,748	773,910,151	604,000,602
2013 (revised)	4,726,150	751,397,875	582,281,795
2014	4,938,855	785,215,261	561,633,697
2015	5,001,497	795,174,539	355,201,732
2016	5,547,048	881,279,689	333,248,345
TOTAL	**94,077,221**	**14,956,452,750**	**6,119,639,204**



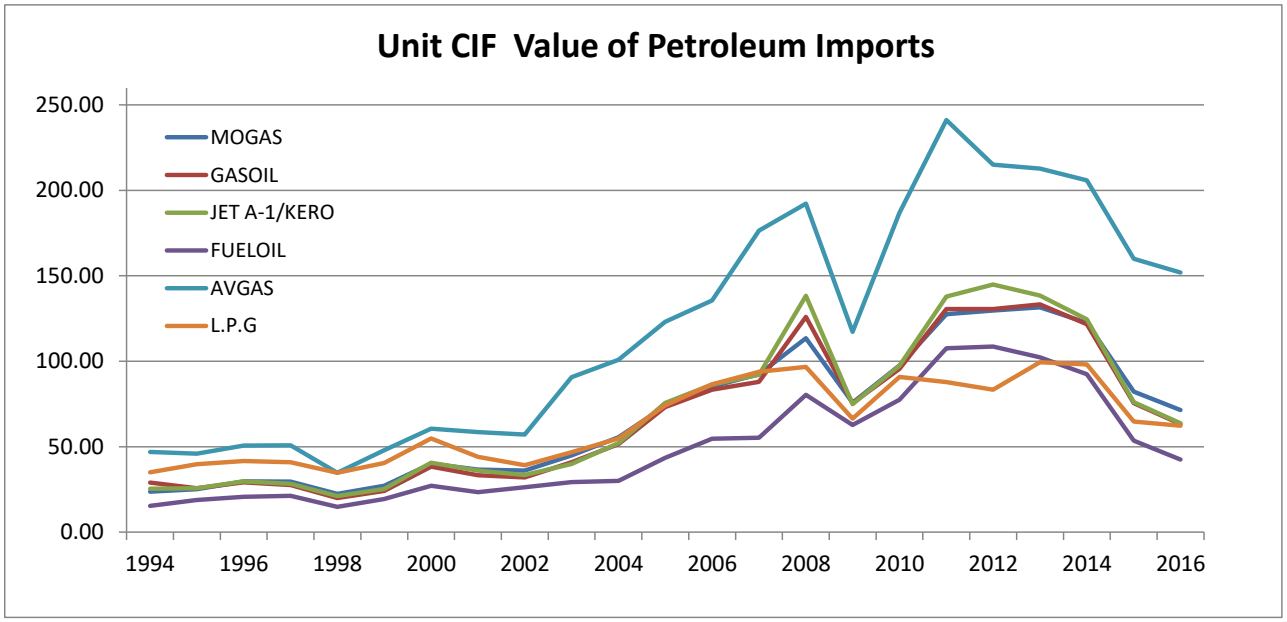
TOTAL IMPORTS BY PRODUCTS FOR THE YEAR

2016

PRODUCTS	VOLUME		C.I.F VALUE
	LTRS	BBLS	US$
MOGAS: UNLEADED	206,345,483	1,297,874	92,769,769
GASOIL (0.5S)/DIESEL	380,120,687	2,390,887	151,501,925
KERO	13,815,996	86,900	5,468,739
AVJET	25,020,301	157,373	10,104,870
FUELOIL	223,741,237	1,407,290	59,717,413
AVGAS	31,440,375	8,970	1,362,612
L.P.G	1,426,154	197,754	12,323,018
TOTAL	**881,910,233**	**5,547,048**	**333,248,345**



For 2016, Gasoil was the most imported product representing 43% of total imports and a CIF value amounting to 42% of total acquisition expense[1]. Fuel oil and Mogas followed Gasoil reflecting 25% and 23% of total imports respectively with corresponding CIF values amounting to 18% and 28% of total acquisition costs, respectively. The remaining products (Kerosene, Avjet, LPG and Avgas) constituted no more than 8% of total imports and 9% of total acquisition costs.

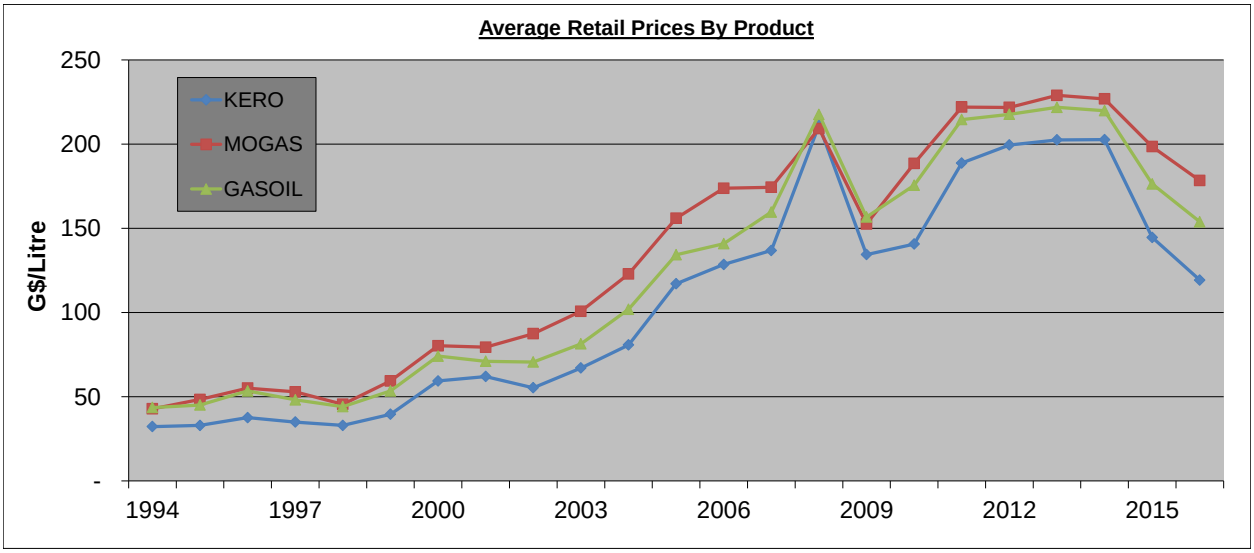


The average cost per barrel of petroleum-based imports decreased from US$71.02 in 2015 to US$60.08 in 2016, a decrease of 15.41%. This downward trend also continued for the average unit CIF value for each petroleum product. There were decreases of 13.09%, 16.14% and 16.13% in the average unit CIF value (US$/bbl) for Mogas (gasoline), Gasoil (diesel) and Jet fuel/Kerosene

[1] Gasoil CIF value was estimated for volumes used by the Trawler Association, United Petroleum Inc. and Atlantic Fuels Inc. in 2016.

respectively. In addition, the average unit CIF value for Fuel oil, Aviation Gasoline (avgas) and LPG (cooking gas) also decreased by 20.68%, 5.00% and 3.65%, respectively.

The International Energy Agency (IEA) anticipates that inventory builds for crude oil are expected in the first half of 2017; however, the withdrawals which were previously projected in the latter half in the year may be postponed until 2018 due to continuing growth in global supply. Nevertheless, this additional oil production to come on-stream when global oil inventories are at high levels might be absorbed by increased oil demand owing to positive expectations for global economic growth. This consequently reduces downward pressures on prices in the coming quarters. Import prices are predicted to range from US$75 to US$85 per barrel for the next 2 years.



Retail prices for Mogas (gasoline), Gasoil (diesel) and Kerosene decreased during 2016 by an average of 13.08%. Specifically, average retail price for gasoline and diesel decreased by 10.15% and 12.76% respectively. Also, the average retail price for domestic kerosene declined by 17.51% while the average retail price for cooking gas (LPG) increased slightly by 2.42%.

1.4 Research

1.4.1 **Energy Policy Update**

Government of Guyana commenced a review and update of Guyana's National Energy Policy and Advice on Sustainable Energy Development in Guyana. The updated policy seeks to develop a cohesive, appropriate and broad-based national energy policy to move Guyana from an economy that is inefficient in its energy use and wholly dependent on imported, market sensitive fossil fuels, to an energy efficient, low emission economy, based largely on economically efficient, indigenous energy resources. The first phase of the study includes a draft Energy Policy document and was completed in December 2016. The second phase of the study will commence in 2017 and will involve extensive stakeholder consultations towards the finalization of the National Energy Policy.

1.4.2 **Optimal Generation Expansion Study**

The Inter-American Development Bank supported the Government of Guyana and the Guyana Power and Light Inc. (GPL) towards the completion of an Optimal Generation expansion study for GPL. The study identified a combination of 150 to 180MW hydropower, 13 to 26 MW Wind, 6MW Solar, 15MW bagasse power and eventual conversion from HFO and LFO to Natural gas over the next 20 years. The completion of this study provided the framework for decision-making towards an optimal generation system and transition towards a green economy.

1.4.3 **Arco Norte Electrical Interconnection Study**

GEA provided support for the IDB-funded Arco Norte Electrical Interconnection Study which found that an electrical transmission interconnection arc between Guyana, Suriname, French Guiana and the Brazilian cities of Boa Vista and Macapá is a viable project. Most of the energy to be supplied to the interconnection grid is expected to originate from Guyana's hydropower potential. Further studies to update Guyana's hydropower inventory will have to be undertaken.

1.4.4 **PALCEE**

GEA, with support from OLADE, commenced a National Energy Efficiency Programme (PALCEE) to enhance local capacity to improve energy efficiency in Guyana, by strengthening the institutions responsible for guiding and directing the energy efficiency programmes nationwide, including laws and regulations. This would be done with the general aim of achieving sustainable energy savings, prioritizing investment needs in the energy sector and improving the country's finances to reduce carbon dioxide (CO_2) emissions.

1.4.5 **Green Bartica Initiative**

Consistent with the Government of Guyana's plans to 'Green Bartica,' and to provide sustainable, clean, reliable and affordable electrical energy to its residence, the Ministry of Public Infrastructure, with assistance from the Hinterland Electrification Company Inc. (HEC) and the Guyana Energy Agency (GEA), solicited competitive proposals from suitable firms, as an Independent Power Producer (IPP). The IPP's role will be to design and develop a generation system utilizing an appropriate renewable energy technology, or combination of technologies, under a Build Own Operate and Transfer (BOOT) structure to supply electricity to the Bartica grid under a negotiated and agreed Power Purchase Agreement. Proposals for the generation system shall utilize one or more of the following eligible renewable resources Solar energy, Wind energy, Hydropower energy, Bio-mass energy, Waste-to-energy and Tidal energy.

The Government of Guyana, through the Office of Climate Change, was seeking to implement two pilot projects under the Japan Caribbean Climate Change Partnership (J-CCCP) project. One of the projects identified is a renewable energy/energy efficiency initiative for implementation in Bartica. As such, a request was made to the GEA to have the following activities conducted:

1. Total power consumption of the Bartica Secondary School Dormitory (later revised to the Three Miles Secondary School Dormitory);
2. Estimated size and cost of a solar PV system for the Bartica Secondary Dormitory (later revised to the Three Miles Secondary School Dormitory) with and without storage
3. Total power consumption of the Bartica Hospital
4. Estimated size and cost of a solar PV system for the Bartica Hospital and any other health facilities with and without storage

A visit was conducted by Energy Engineers of the GEA at which measurements were done to complete this assessment. The reports which were presented explores the opportunities for using solar energy in combating the challenges facing conventional systems at these sites by electricity from public utility. Of significance, it was identified in each report that energy efficiency could play an active role in reducing energy costs. As such, an energy assessment was recommended and conducted prior to any consideration of a renewable energy application.

1.4.6 **Installation of Sunshine Pyranometer**

GEA's Energy Engineer installed a silicon pyranometer at the GEA's head office. A semiconductor or silicon pyranometer uses a photodiode (a device that converts light into current) to create an electrical signal from the incoming solar radiation. This device will be used for recording annual solar irradiation. The Global irradiance measurement recorded will show the amount of radiant energy (electromagnetic radiation from the sun) on a flat surface. Data obtained will also allow for the prediction on potential power and energy production that can be harvested from the Sun at specified sites. Additionally, the instrument installed allows for recording of DC Voltage and DC Current produced by PV modules, allowing the assessment of performance of solar energy installations.

1.5 Solar Energy

1.5.1 **Rehabilitation and Installation of Photovoltaic Equipment**

Throughout 2016, GEA's Engineers actively identified and repaired non-functioning solar photovoltaic installations across Guyana.

GEA has provided support to the Ministry of Education through the rehabilitation of 3,150 Watts of photovoltaic systems at Moraikobai Primary School, 58-Miles Primary School, Dredge Creek Primary School, Martindale Primary School, Kartabo Point Primary, Hackney Primary School and Abrams Creek Primary School to facilitate resumption of the IRI programmes and lighting in the schools.

Below is a summary of the various systems repaired:

Location	Facility	Installed Capacity (W)	Energy Use	GEA's Support
Region 5	Moraikobai Primary School	810	Lighting, computer and IRI Teaching Programme	Supply and installation of batteries. Repairs were also done to correct defective wiring.
Region 10	58 Miles Primary School	140	Lighting and IRI Teaching Programme	Supply and installation of solar panel, charge controller, batteries, inverter, lights and outlets.
Region 2	Abrams Creek Primary School	140	Lighting and IRI Teaching Programme	Supply and installation of solar panel, charge controller, batteries, inverter, lights and outlets.
Region 2	Dredge Creek Primary School	280	Lighting, IRI Teaching Programme, fans, TV, computer and printer	Supply and installation of solar panel, charge controller, batteries, inverter, lights and outlets.
Region 2	Hackney Primary School	500	Lighting and IRI Teaching Programme	Supply and installation of charge controller, batteries and inverter.
Region 2	Martindale Primary School	280	IRI Teaching Programme	Supply and installation of a battery.
Region 7	Kartabo Point Primary School	1,000	Lighting and IRI Teaching Programme	Supply and installation of batteries.
	TOTAL	**3,150**		

1.5.2 **Documentation of Solar PV Installations**

In an effort to track solar photovoltaic installations across Guyana, GEA has been monitoring and recording the various installations. In 2016, GEA documented 445kW of solar photovoltaic systems, including four grid-connected systems (Eureka Labs, MedLab, Nand Persaud and Company and Demerara Bank). The total documented photovoltaic systems in Guyana is 1,609 kW producing an estimated 2,304 MWh of energy annually.

1.5.3 **Follow-up Visits**

Follow-up site visits were conducted at the locations below to ensure the systems remain operational:

- USAID's IHFI (Improving Health Facility Infrastructure) project which supplied 1200W PV systems to health centers at:
    - Region 1: Kwebanna, Arakaka, Baramita
    - Region 7: Itaballi
    - Region 8: Paramakatoi and Tumatumari
    - Region 9: Aishalton and Karasabai

1.5.4 **OLADE's Rural Energy Project**

The Rural Energy Project, executed by the Latin American Energy Organization (OLADE) with funding from the Canadian International Development Agency (CIDA), in collaboration with the GEA, demonstrates the application of solar photovoltaic (PV) technology to enhance and accelerate the productivity of livelihood activities within three (3) rural communities in Guyana. This project also seeks to engage and direct corporate social responsibility (CSR) towards sustainable energy initiatives. Following consultations and approval from the Ministry of Indigenous Peoples' Affairs, the villages of Powaikoru (Region 1), Moraikobai (Region 5) and Shulinab (Region 9) were selected as the beneficiary communities to receive solar powered freezers, solar PV Panels, solar dryers, solar water heaters and energy efficient cook stoves. Installations at Shulinab and Maraikobai have been completed and Powaikoru will be completed in 2017.

1.5.5 **Solar-powered LED street lights**

The first solar powered street light cost G$278,300 in 2014 while the second unit was installed at a cost of G$209,800. In 2015, GEA was able to reduce the cost to G$197,000 installed as a result of reduced prices and improved design and construction. Engineers, during 2015, installed 10 energy efficient LED solar-powered street lights along the Linden-Soesdyke Highway as a pilot/demonstration project. Regrettably, within a month of their installation, 8 of the solar panels and batteries were stolen.

In the continuing interventions/efforts to promote the use of renewable energy, Engineers from salvaged parts from the 8 stolen panels and batteries and along with spares, were able to remove and relocate them from the Linden-Soesdyke highway and install six (6) solar powered LED street lights along Thomas Street on the perimeter of the Georgetown Public Hospital.

1.5.6 **Solar PV Grid Feed-in**

GEA's Engineers installed an additional grid-connected solar photovoltaic (PV) at the Agency's headquarters located in Quamina Street, South Cummingsburg. At a cost of G$4,790,000, the new 10kW system is estimated to produce 13,167 kWh of energy annually. The new installation, when combined with the one previously installed, will result in annual savings of about G$1.6 million and will supply almost 50% of the Agency's electrical energy needs.

In October 2016, additional funds were identified by the Ministry of Finance to enhance GEA's renewable energy and energy efficiency programmes. Following a public tender process, a contract has been signed for the supply and installation of 98.5kW of grid-tied solar photovoltaic systems at schools and public buildings. This investment is expected to save about 136 MWh of energy, about G$9 million in electricity charges and avoid about 82 tons of carbon dioxide emissions each year. These installations will be completed in 2017.

1.6 Hydropower

1.6.1 **Hosororo Pico Hydro**

Hydropower Support Engineers of GEA continued to work on the design and tender documents for a 20kW hydropower project at Hosororo, Region 1.

In an effort to build technical capacities in the field of hydropower development, the GEA and REETA, through consultations, in 2015, agreed on a TOR for a consultant to work alongside GEA's engineers to develop a small hydropower scheme. The Hosororo site was once considered for development as a micro hydro facility to supply an agro-industrial project. This was done in 1985 by Terrence Fletcher and Associates Limited.

1.6.2 **Hydropower Support Engineer**

GEA's Hydropower capacity was bolstered in 2016 with the addition of a German resident hydropower engineer. The Hydropower Engineer has since been working on the Kato hydro, and preparing preliminary assessments for a number of other hydro sites in Guyana. GEA is currently reviewing, updating and preparing tender-ready documents for the 300kW hydropower project at Kato, Region 8.

1.6.3 **Moco-Moco**

GEA assisted MPI in executing an 'Expression of Interest' (EOI) to rehabilitate the Moco-Moco Hydropower Plant. A Due Diligence exercise was completed and the decision was taken to develop the project under a Design and Build contract with support from the Sustainable Energy Programme implemented by HECI.

The rehabilitation of the Moco Moco Hydropower plant is being perused and as such, it was recommended that a consultant be engaged to perform a technical review of the geological, topographical and civil works aspects of the Moco Moco Hydropower Rehabilitation Project, in order to determine the associated risks of project development and appropriate mitigation measures. Moreover, the review is expected to identify the scope of work to be performed in later phases. In this regard, a site visit was organized and conducted by a team comprising officers from the GEA, LPC, HECI and the consultant. The visit was a success with all activities planned being executed within the schedule time. Upon conclusion, it was recommended by the consultant that a more detail geological investigation should be conducted in order to reduce the risk of any possible landslide reoccurring.

1.6.4 Review of application for Hydroelectric Power Licence – Tumatumari Hydro Inc.

The Hydropower Support Engineers reviewed the application for Hydroelectric Power Licence for the rehabilitation of Tumatumari Hydroelectric Project.

The Tumatumari Hydroelectric Rehabilitation Project (THRP) is currently being sponsored by Tumatumari Hydro Inc.(THI) a limited liability company, incorporated in Guyana in 2010. In 2013, the Government of Guyana (GoG) granted THI a 50-year lease of the lands and facilities at Tumatumari for the purpose of the rehabilitation of the hydroelectric plant and the development of private sector enterprises. This hydro power plant was originally built by the Canadian B G Consolidated Gold Mining Company Limited to power its mining operations in the Potaro, and was commissioned in 1956, and operated until the company closed its operations in 1959.

GEA is awaiting the submission of further information from the prospective Developer.

Sections of the existing Tumatumari Hydroelectric Station

1.6.5 **Hydropower Site Visits**

Thirteen (13) visits were conducted at seven (7) potential hydropower sites in Guyana during the year 2016. The Table below depicts the sites visited, their location and the number of visits conducted at each site:

Name of Site	**Location**	**Number of Site Visits**
Hosororo	Region 1	5
Kaieteur	Region 8	1
Tumatumari	Region 8	1
Chenapao	Region 8	1
Moco Moco	Region 9	2
Kumu	Region 9	2
Masakanari	Region 9	1

1.7 Wind Energy

1.7.1 **Wind Speed Measurements**

GEA advanced preparations and received the relevant approvals to install a wind measuring tower at Bartica, Region 7 but is awaiting clearance of the site to facilitate installation. GEA has also applied for approval to erect a wind measuring towers at Kato, Region 8 and Quarrie, Region 9.

1.7.2 **Wind Farm**

In October 2015 Cabinet approved the establishment of an Inter-Agency Technical team comprising GEA, GPL, MPI and other technical experts as may be required to fully examine and make recommendations on a Wind Farm Proposal from the Guyana Windfarm Inc. (GWI) Cabinet further approved negotiations being entered with GWI to agree on the main financial and technical terms to be the subject of a Memorandum of Understanding (MoU) between the Government of Guyana and GWI, and a Power Purchase Agreement (PPA) between GPL and GWI. GEA worked during 2016 with MPI and GWI towards the advancement of the project.

GEA continued to support MPI in advancing the development of a Wind Farm. A Confidentiality Agreement has been signed between the parties which enabled the sharing of information between the key Agencies and a Consultant. The Wind Energy Consultant has been providing support to GoG in advancing the Wind Farm development.

1.8 Bio-Energy

1.8.1 **Biogas**

GEA's Engineers repaired and re-operationalized bio-digesters at Kwakwani Secondary School, Region 10 and another for a farmer in Linden.

1.9 Energy Efficient Street Lights

Over the last five years, GEA has been testing and reviewing Light Emitting Diode (LED) and Induction street lights.

The Guyana Energy Agency (GEA), with support from the Street Lighting Division, Ministry of Public Infrastructure, replaced 65 inefficient street lamps (rated at 250 watts each) with energy efficient Light Emitting Diodes (LED) Lamps rated at 100 watts and with an estimated lifespan of 11 years. The initiative will reduce the annual energy consumption by 42,705 kWh saving G$2.8 million per year with a simple payback period of 1.07 years.

1.10 Energy Assessments/Audits

During 2016, GEA completed Energy Consumption Assessments of 22 buildings and effected energy efficient lighting change-outs and installation of occupancy sensors at 6 schools.

Energy assessments conducted by GEA at secondary schools across Guyana have revealed that significant savings in energy could be achieved through the replacement of conventional lighting. Lighting was found to have the greatest demand for power, an average of 33%.

The Guyana Energy Agency, in its ongoing efforts to promote energy awareness and effect energy efficiency, implemented comprehensive energy saving exercises at St. Joseph's High School. This activity entails the replacement of inefficient lighting with energy efficient Light Emitted Diode (LED) lighting technology and the replacement of lighting switches with occupancy sensors. The Occupancy sensors prevent the occurrence of lights being left on in vacant rooms when the presence of motion is not detected and at nights when the school is vacant. The installation of 782 lights and 317 occupancy sensors in the schools is expected to save over 35 MWh of energy and over G$2.44 million annually. The simple payback on this investment will be 1.3 years.

GEA commenced Energy Consumption Assessments of 20 Government buildings in 2012, expanded this to private sector and schools in 2013, and continued assessments in 2014 and 2015. GEA has completed Energy Consumption Assessments of 95 buildings in the last five years along with the change-out of inefficient lighting at 34 public buildings.

1.11 Caricom Energy Month

CARICOM Energy Week (CEW) is an annual feature that is celebrated simultaneously across the Caribbean by CARICOM member states. In 2016, a decision was made by CARICOM to have the entire month of November be labelled 'Energy Month'. Hence, going forward CEW will now be CEM-CARICOM Energy Month.

Once again, Guyana and her fellow CARICOM member states simultaneously observed Energy Month from the **01st-30th NOV, 2016.** In keeping with the promotion of sustainable energy, CARICOM Energy Month (CEM) was celebrated under the theme ***"Sustainable Energy for Sustainable Development (SE4SD)"***. The Guyana Energy Agency conducted the following activities to commemorate Energy Month 2016:

- **Activity 1-**: **Publication of Energy Month Message from the Minister Responsible for Energy, Minister of Public Infrastructure, Mr. David Patterson.** This message was published in the Guyana Chronicle on November 24, 2016. It was also placed on GEA's website. Collaboration was also sought to have it placed on the following websites: GINA's, (Hinterland Electrification Company (HECI) and Ministry of Public Infrastructure (MoPI).

- **Activity 2-: Dissemination of Booklets:** Through sponsorship by the Guyana Bank for Trade and Industry (GBTI) and the Bank of Nova Scotia, two thousand booklets with energy related information were printed and distributed during Energy Month. The booklets targeted both children and adults.

- **Activity 3-: 'Express your Energy':** 'Express Your Energy' from its conception in 2012 targets Primary School Students and has always been held in Georgetown during Energy Week. This year however, GEA decided to decentralize the activity so that students of another region can benefit from the energy related knowledge that is imparted during the exercise.

Held at the Conference Centre at Latchmansingh Primary School, Region 5, on Friday November 25th 2016, the activity had sixty students (60) in attendance along with ten (10) teachers. The students and teachers represented ten Primary schools that were selected by the Regional Educational office. They hailed from: **Latchmansingh Primary, Cotton Tree Primary, Number 5 Primary, Number 8 Primary, Number 29 Primary, Lichfield Primary, Seafield Primary, Bath Primary, Woodley Park and Hope Town Primary**; and were between the ages of nine to 11 from grades four to six.

The Students conveyed their interpretation and knowledge of energy sources, sustainability, energy conservation and energy efficiency through artwork/pictorial illustrations, word search and conservation tips at different stations while being enthusiastically encouraged by their fellow team members.

In her opening remarks Ms. Gloria Davidson, Representative of the Regional Educational Office, expressed thanks to GEA for hosting the activity in Region 5. She said that "Education is extremely important and is not always obtained in a classroom, 'Express Your Energy' is an example." She went on to say that "….the Regional Education Officer and the Regional Office by extension was extremely happy that the activity was decentralized and Berbice was not forgotten". Ms. Davidson closed with a charge to both students and teachers who were present to take what they have learnt to their classrooms and fellow students as "…energy related knowledge imparted into young minds such as theirs will help in ensuring that Guyana has a secure energy future."

The activity was non-competitive in nature therefore students were not judged or ranked based on their illustrations etc. Rather, each school was awarded a Certificate of Participation while each student (and teacher) was awarded a token of appreciation as an honorary 'Energy Champion'.

- **Activity 4:- Judging of the 'My Green School' Video Competition:** In July of this year GEA launched a video competition for Secondary School students titled 'My Green School'. Featured as one of the activities to commemorate CEM 2016, 'My Green School' aims to have students of forms 1-5 make a case to promote renewable energy development and reduce the carbon footprint within their respective school. Participants

were encouraged to show opportunities for improved energy use or efficiency this year or since interacting with the Agency.
On Wednesday November 30th 2016, GEA facilitated the judging of the entries. The judging panel comprised of Representatives from GEA, Ms. Shevon Wood-Head Energy and Energy Statistics Division, who acted in the capacity of Chief Judge, Ministry of Education, Mr. Gerald Jewram-Head Science Dept. Secondary, NCERD, Ms. Petal Jetoo-Head Science Unit, Hinterland Electrification Company Inc., Mr. Trevlon Pyle-Engineer and Office of Climate Change, Mr. Gavin Bovell-Energy Consultant.

At the end of the exercise the New Amsterdam Multilateral emerged as the 1st place winner, School of the Nations was in second place and Bishops High came in 3rd.

The conferral of plaques and other prizes to the winners will take place in January 2017.

GEA's observance of 'CARICOM Energy Month' continues to be an annual feature which aids in fulfilling part of its mandate through the dissemination of information, essential to improving public awareness on sustainable energy, conservation and overall efficiency. The overarching objective being to empower Guyana's youth, and citizens as a whole, such that behavioral changes can occur thereby aiding in the country's sustainable development and the realization of the vision of a 'Green Guyana'.

1.12 Information Dissemination and Awareness Activities

Video infomercials on the "Fuel Marking Programme", "Benefits of Bio-digesters", "10 Simple Ways to Conserve Energy", "Energy Conservation Tips for the Home" were completed and were broadcasted on the local TV stations during 2016.

GEA participated and facilitated many information dissemination and awareness activities:

- Conducted 45 Sustainable Energy presentations to schools
- Conducted 8 Presentation to Ministries, Agencies, Private Sector and NGOs.
- Conducted 2 Seminars and 2 Workshops on Sustainable Energy
- Aired 1,200 Radio Adverts
- Broadcasted 168 Television adverts and 2,092 infomercials and 466 documentaries
- Published 161 print adverts
- Distributed 9,098 brochures, 2,400 booklets, and 1,180 posters.

GEA participated and facilitated many information dissemination and awareness activities which enabled interaction with members of the public, students and various organizations to provide lectures, seminars, information brochures, press releases, newspaper pull-outs, radio and TV infomercials with energy conservation tips.

School presentations are a key component of GEA's strategic plan to disseminate information. It provides secondary school students with a practical understanding of energy and energy related issues, encourage interest, and behavioral changes, in relation to energy efficiency and conservation. During 2016, GEA conducted forty-five (45) reaching about 3,800 students across Guyana. The presentations are done in the form of viewing a ten-minute documentary followed by a power point on Sustainable Energy Initiatives and Conservation Practices. Each presentation concludes with a question and answer segment where students are given the opportunity to engage GEA Officers in discussions on energy and energy related issues. Questions pertaining to the presentation are asked by GEA's representatives and students are rewarded with tokens for correct answers.

Summary of Advertisements and Brochures

Description	Year to Date	2016 Target
Number of Fuel Smuggling Ads in the Newspapers	78	70
Number of Fuel Smuggling Ads on the Radio	600	600
Number of Fuel Smuggling Ads on TV	38[2]	30
Number of Energy/Conservation ads in the Newspapers	83	55
Number of Energy Conservation ads on TV	130[3]	55
Number of Energy Conservation ads on the Radio	600	600
Number of brochures printed	3,500	5,000
Number of booklets printed	3000[4]	1,000
Number of posters printed	150	150
Number of brochures distributed	9,098	5,000
Number of booklets distributed	2,400	1,000
Number of posters distributed	1,180	150
Number of infomercials	2,092[5]	55
Number of documentaries	466[6]	50
Number of Energy Awareness Seminars	2	2
Number of Energy Awareness Workshops	2	2
Number of Presentations to Ministries and Agencies	6	6
Number of Presentations to Private Sector/NGOs	4	6
Number of Presentations to Schools	45	45
Number of Visits to GEA's Website	24,762	31,000

[2] The Learning Channel airs the 'Fuel Smuggling Documentary" free of cost at least twice per month.

[3] The Learning Channel airs the '10 Tips to Conserve Energy' free of cost at least 4 times per month. Through the IDB/HECI Project 55 adverts were aired during the month of November.

[4] GEA partnered with Scotia and GBTI to print 2000 booklets as part of Energy Month Activities

[5] CNS Channel 6 airs the animated Infomercials six (6) times per day free of cost; while the Learning Channel airs them twice per day.

[6] CNS Channel 6 and the Learning Channel airs the 10 minutes 'Sustainable Energy' documentary once per week free of cost.

2.0 Legal & Licensing Division

The Legal & Licensing Division serves to execute a primary function of the GEA through 'monitoring the performance of the energy sector in Guyana, including the production, importation, distribution and utilisation of petroleum and petroleum products' (**s. 5(2)(c) GEA Act cap 56:05**). This is exercised through the corroboration of the **Petroleum and Petroleum Products Regulations 2014** permitting the issuance of licences of the various categories (*import, wholesale, retail, bulk transportation carrier, storage, export, consumer installation*) and site and vehicle inspections to ensure safety and environmental compliance.

The total number of licences issued in 2016 was 1,369 compared to 1,351 in 2015, representing a 1% increase.

		2016													2015 YTD	Total Growth %
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD		
Importing Wholesale		1	2	2	0	1	2	1	7	2	3	3	1	25	31	-19%
	Export	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0%
Wholesale		0	0	0	0	2	0	0	3	1	0	3	0	9	16	-44%
Retail	Petrol Filling Stations	6	6	1	6	18	15	6	6	19	2	10	1	96	129	-26%
	Others	19	39	32	31	32	42	51	52	53	27	36	11	425	331	28%
Consumer Installation		2	3	3	4	6	9	16	38	9	8	41	4	143	238	-40%
Bulk Transportation Carrier	Road Tanker Wagons	13	9	5	15	13	12	10	13	13	12	25	6	146	123	19%
	Trucks	44	41	43	22	31	41	48	36	51	48	36	13	454	423	7%
	Fuel Barges	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0%
	Boats	8	8	5	1	4	11	0	11	5	1	10	6	70	58	21%
Total		93	108	91	79	107	132	133	166	153	101	164	42	1369	1351	1%

Table illustrating Licences issued from January to December 2016

In 2016, while there was significant outreach across the country (818 site visits as at end of December 2016), the site visits were 15% less than 2016 on account of the challenge of backlog of licenses earlier in 2016. However, one addition to the licensing scope of duties was the piloting of *Pop-Up* visits in areas such as Linden, Bartica and New Amsterdam, where persons were able to submit documentation to inspectors visiting the area and make payments through the bank rather than needing to visit the GEA Head Office. For 2017, such activities are expected to continue with improvement on the procedural aspect of this activity.

In keeping with the continued focus on customer service, the GEA also commenced work on the construction of its Online Submission Hub/Platform, scheduled for completion in March 2017. The objective is to create an online submission platform for applicants to facilitate the electronic uploading and submission of specific documents (in accordance with the Regulations) to facilitate ease in submission, processing and status updates for potential licence-holders without the need for persons to physically visit the GEA Office.

As a means of ensuring compliance to avoid the backlog of license holders, the penalty fee was enforced ($2,500 per week for every week the documents remain outstanding), resulting, not only in additional revenue, but adherence to the Regulations through the institution of this punitive measure.

Additionally, during 2016, Licensing Officers were able to benefit from training in LNG transport, Aviation Fuel Management and Customer Service training services, along with supervisory training for specific officers offered by Public Service Management.

Bulk Transportation Standards

National Standards for the requirements for the safe transport of Petroleum and Petroleum products by Road Tanker Wagon (RTW) GYS 512:2016 and Bulk Transportation Carrier (BTC) GYS 513:2016 Standards proposed by GEA were approved by GNBS.

3.0 Review of Activities: Fuel Marking Division

Since implementation of the Fuel Marking Programme in 2003, the Division has, in keeping with the legislative mandate, utilised a marking system to add markers to petroleum products imported by every person under an import licence or import wholesale licence for the purpose of identifying such petroleum and petroleum products as having been legitimately imported.

Legally imported fuel was bulk marked, a total of 207 bulk markings:

- 146 at the Georgetown terminals
- 52 at the Berbice terminal
- 9 at the Linden terminal.

The Authentix representative provided the following oversight functions:

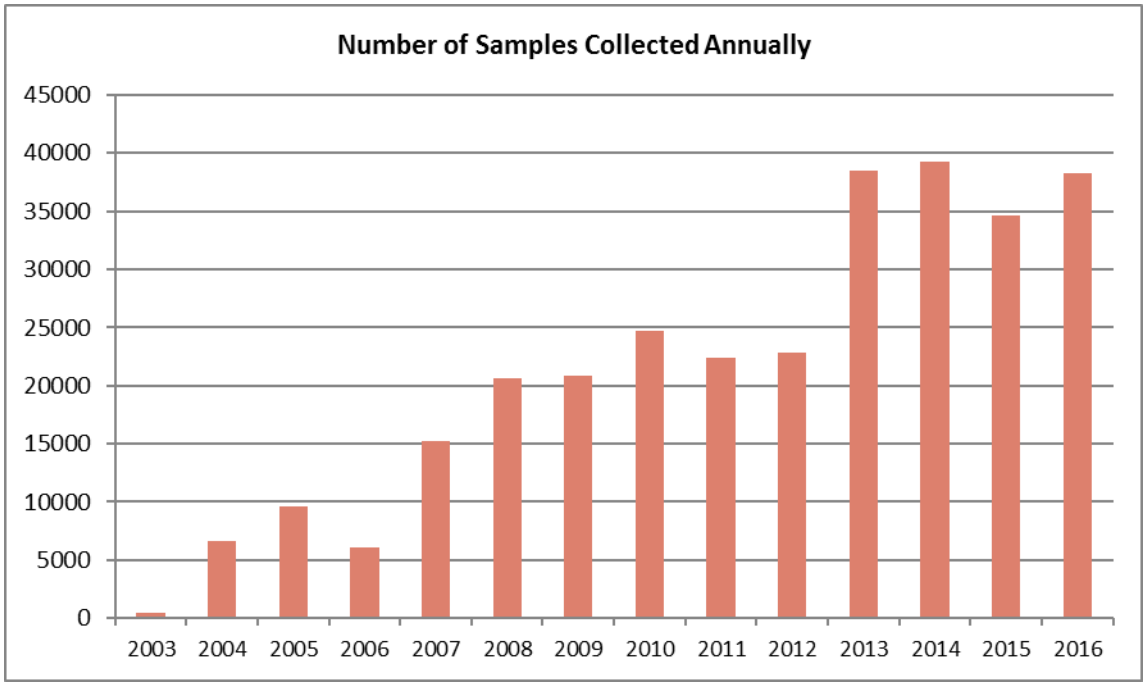
- Verifying marker concentrate received by GEA
- Supervision of the decanting of marker concentrate from drums
- Reconciling marker concentrates
- Auditing marker concentrates/ marking operations
- Assist in repairing/maintaining the injectors

Samples of petroleum and petroleum products were collected from a number of sites throughout Guyana and tests were conducted to determine the presence or proportion of the markers in the respective samples of petroleum products.

The unit continued to roll out operations in areas beyond the normal scope for maximum benefit to the Agency. The Buckhall to Aranka trail was surveyed during the course of the year along with several operations into interior hotspots for fuel activities such as in and around Lethem, Mahdia and Kwakwani. Added to this, there were more extended deployments of staff in the Pomeroon, as well as areas up the Cuyuni River. Opportunities for conducting operations along the waterways of the Demerara River and East Coast of Demerara were also utilized extensively.

3.1 Sample Analysis

The number of fuel samples collected/logged each year:



Samples collected for 2016 has improved from the preceding year by about 11% after a dip in 2015. Despite this, since 2013 sample collection has averaged approximate 37,000 samples annually while it was about 15,000 from 2003 to 2012.

An examination of the data indicates an increase by 11% in the number of samples collected. Sample collections would have been up by both categories listed i.e. by 8% at the Linden checkpoint and by 17% at the other combined areas. The GEA strategic plan target for 'samples collected' would have been met for 2016.

The table below shows the breakdown of analyses by Region. 43,161 analyses were done in 2016 compared to 34,906 analyses in 2015.

Number of Quantitative Analyses by Region 2004 – 2016													
Region	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
1	10	79	40	1,134	157	20	55	59	273	-	20	41	2
2	777	4,130	1,557	870	613	1,173	1,920	1,408	1,673	2,250	1,894	1,261	2,663
3	496	1,188	908	1,473	3,386	3,927	3,741	2,419	3,479	4,167	2,727	1,926	2,582
4	823	1,183	1,111	809	2,212	1,848	4,420	3,289	4,595	5,291	5,189	3,866	6,112
5	111	403	225	151	354	420	1,160	827	1,479	1,274	710	500	1,134
6	599	1,596	165	476	618	376	627	829	931	1,167	919	659	1,673
7	140	338	195	290	561	170	286	140	295	354	377	1,982	2,279
8	33	11	61	227	95	76	130	12	135	25	62	72	77
9	25	-	-	-	-	5	93	1	64	-	53	94	122
10	42	168	744	9,457	12,457	12,236	15,839	15,858	12,770	24,671	30,452	24,505	26,517
Total	3,056	9,096	5,006	14,887	20,453	20,251	28,271	24,842	25,694	39,199	42,403	34,906	43,161

Number of Quantitative Analyses by Region

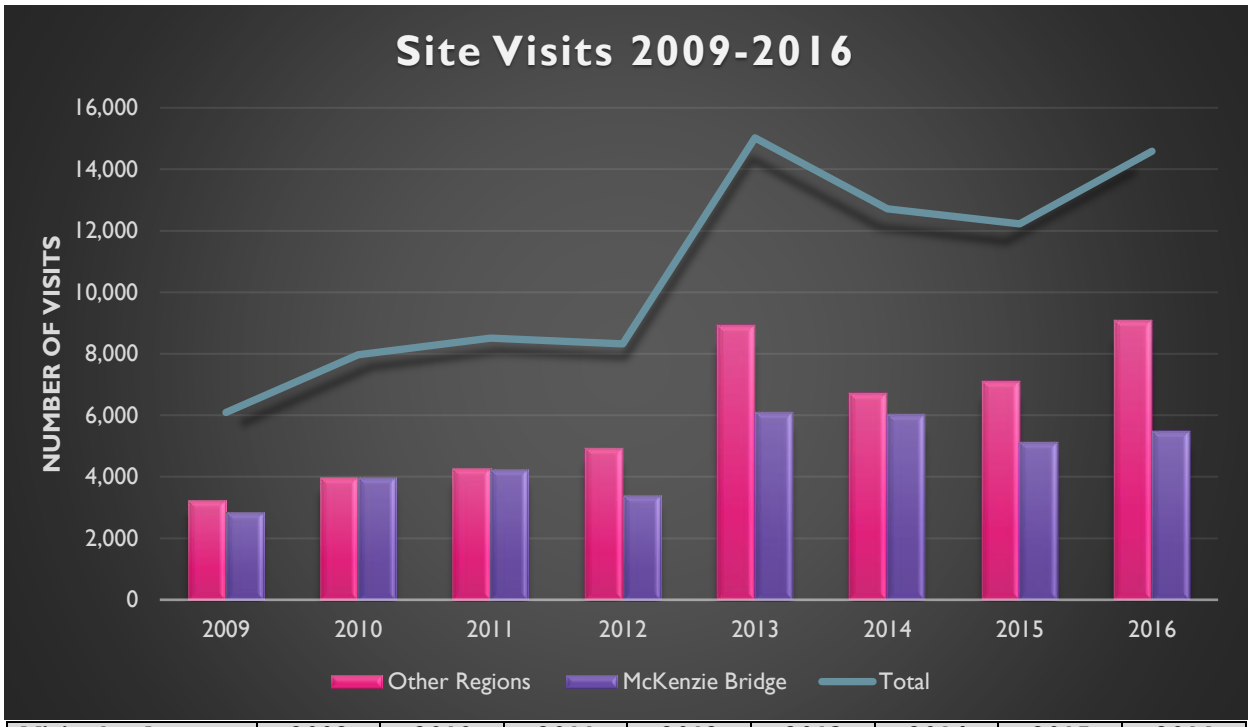
Notes:

1. Database to track analyses was installed in July, 2004. Figures were not representative of ALL samples analysed for that year.
2. Sampling for 2006 and 2007 was focused on smuggling "hot spots"
3. Sampling on a 24-hr basis commenced in 2007 at the McKenzie, Linden Bridge

Quantitative analyses conducted over the past few years would have been rigorous when compared to the preceding ones. Between 2012 and 2013 there would have been a significant increase in these types of analyses, peaking in 2014. However, as a result of several factors including shortage of laboratory supplies, there would have been a drop in 2015. Nevertheless, between 2015 and 2016 quantitative analyses would have been up again by 24%.

3.2 Analysis by Site

14,583 site visits were recorded during 2016. Summary of site visits from 2009 to 2016 is illustrated below:



Visits by Area	2009	2010	2011	2012	2013	2014	2015	2016
Other Regions	3,242	3,975	4,276	4,922	8,917	6,701	7,097	9,095
McKenzie Bridge	2,849	3,994	4,239	3,401	6,105	6,015	5,130	5,488
Total	6,091	7,969	8,515	8,323	15,022	12,716	12,227	14,583

For the last few years there has generally been a dip in site visits conducted by the Inspection Unit especially since 2013. The persisted turnover of several inspectors each year would have contributed to these declines – in 2016 alone there was a turnover of 4 representing almost one fifth of the complement. Nonetheless, over the last 2 years there would have been an uptake in the visits by 19%. Notably as well is that the 'site visited' target specified in the GEA's strategic plan would have been met for 2016.

Observations as well for the last two years would have shown that the Linden checkpoint and the other areas combined would have recorded increases in site visits by 7% and 28% respectively. Traffic at the Linden checkpoint would have definitely declined from its peak in 2013.

Of the 14,583 total site visits conducted during the year, 2,253 sites were sampled at least once.

27 (1%) of the sites sampled at least once were found with *significant dilution (defined as more than 50%)* in at least one tank. From 2006 to 2016, the percentage of sites found with significant dilution in at least one tank has progressively decreased from 34% in 2006 to 1% in 2016.

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
No. of Sites samples at least once	573	763	656	566	592	1,202	1,313	1,179	1,648	2,146	2,200	1,446	2,253
No. of Sites found with significant dilution in at least 1 tank	72	240	220	128	57	73	45	21	13	35	51	37	27
% of Sites found with significant dilution in at least 1 tank	13%	31%	34%	23%	10%	6%	3%	2%	1%	2%	2%	3%	1%

3.3 Analysis of Test Results

The *"Test Results" (Quantitative Analyses)* refer to the percentage of marker concentrate detected when the sample was analysed. A "correctly marked" sample should be at 100%. The results of samples analyses over the years are categorized in the following four ranges:

0 to 50% : Significant dilution
51 to 70% : Some dilution
71 to 90% : Suspected dilution
91% and more : Legal

The table below shows that during the assessment phase (2003), 12% of the samples analysed were found to be significantly diluted. This decreased to 6% in the post-assessment phase and throughout 2004. From 2005 to 2007, the testing strategy was focused on areas with a high incidence of illegal activity. For this three-year period, the percentage of significantly diluted samples fluctuated from 9% to 15% and then to 8%. It is believed that this fluctuation was a direct result of the strategy used for sampling and would have a direct relationship with the number of samples analysed and the focus on areas with a high incidence of smuggling. The year 2008 can be characterized as a mixture of focused, planned and random sampling. The percentage of samples found with significant dilution was maintained at 3% in 2009. The year 2010 set another record with significant dilution reported as 2%, indicative of sustained reduction in the percentage of significantly diluted samples analysed. In 2011 and again in 2012, *significant levels of adulteration (defined as more than 50%)* were detected in only 1% of the samples analysed. With the analysis of 64% more samples in 2013, 1% of the samples analysed were found to be significantly diluted. Significant levels of adulteration were detected in only 2% of the samples analysed in 2014 and 2015 and less than 1% in 2016. The number of sites found with significant dilution in at least one tank remained relatively unchanged since 2010.

Test Results (Quantitative Analyses)	*03 Dec 2003 (Assessment Phase)*		*27 Jan 2004 (Post-Assessment)*		*2004*		*2005*		*2006*		*2007*		*2008*	
0 – 50%	42	12%	28	6%	196	6%	855	9%	764	15%	1,169	8%	593	3%
51 – 70%	59	17%	32	7%	275	9%	1,234	14%	223	4%	343	2%	254	1%
71 – 90%	67	19%	89	19%	475	16%	2,576	28%	928	19%	8,204	55%	8,593	42%
91%	188	53%	329	69%	2,110	69%	4,431	49%	3,091	62%	5,171	35%	11,013	54%
Total	356	100%	478	100%	3,056	100%	9,096	100%	5,006	100%	14,887	100%	20,453	100%

Test Results (Quantitative Analyses)	*2009*		*2010*		*2011*		*2012*		*2013*		*2014*		*2015*	
0 – 50%	701	3%	511	2%	167	1%	259	1%	303	1%	186	<1%	141	<1%
51 – 70%	767	4%	372	2%	164	1%	128	1%	137	1%	46	<1%	74	<1%
71 – 90%	12,654	62%	10,834	45%	10,990	49%	10,491	49%	29,734	79%	30,440	76%	25,003	76%
91%	6,129	30%	12,612	52%	11,171	49%	11,867	49%	7,252	19%	9,270	23%	7,675	23%
Total	20,251	100%	24,329	100%	22,492	100%	22,745	100%	37,426	100%	39,942	100%	32,893	100%

Test Results (Quantitative Analyses)	*2016*	
0 – 50%	357	<1%
51 – 70%	73	<1%
71 – 90%	30,322	78%
91%	8,141	21%
Total	38,893	100%

Qualitative Analyses 2004-2016												
2004	***2005***	***2006***	***2007***	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	***2014***	***2015***	***2016***
35	375	1,825	1,180	307	887	1,259	113	452	710	961	1,215	1,266

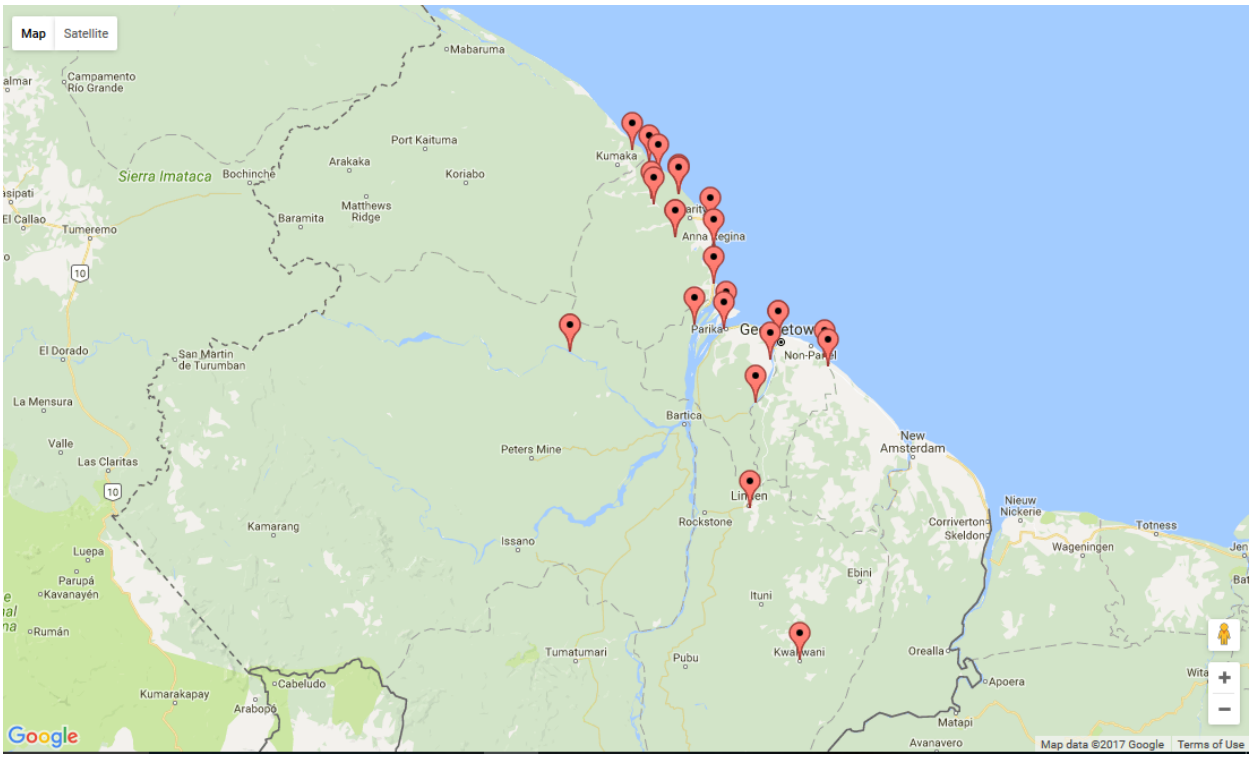
Analyses of a qualitative nature have been stepped up in circumstances where there would have been needed testing for duty-free markers. These types of analyses have been increasing over the years in tandem with the qualitative analyses. The GEA strategic plan target for samples tested would have been met for the year.

3.4 Incidents of Illegal Fuel

The incidents recorded in 2016 by the inspection unit have been the lowest in four years. However, there were a number of prolific ones with personalities previously believed to have been into fuel smuggling being implicated. In one case a service station owner on the Essequibo Coast would have been fingered in an incident.

Annual Incidents Recorded by Month 2009 – 2016													
Year	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Total*
2009	1	3	3	1	6	4	7	6	6	4	3	2	46
2010	6	2	3	3	5	3	6	3	2	2	3	10	48
2011	7	0	2	3	1	1	2	1	1	2	1	0	21
2012	1	0	0	0	0	3	0	3	1	1	2	2	13
2013	1	2	3	3	7	2	3	2	6	0	3	4	35
2014	2	2	1	3	2	1	0	3	2	3	11	21	51
2015	14	1	0	2	1	4	5	1	2	2	1	4	37
2016	3	2	2	2	3	3	4	2	5	1	0	0	27

Locations of Incidents Recorded in 2016:



Joint Operations

The GEA continues to conduct increasing number of joint operations with the Guyana Police Force (GPF), the Guyana Defence Force (GDF) and the Guyana Revenue Authority (GRA). The successes with these agencies have been noted and the expectation is that the work will continue with them in the future.

Month	2016				2015				2014			
	GPF	*GDF*	*GRA*	*Total*	*GPF*	*GDF*	*GRA*	*Total*	*GPF*	*GDF*	*GRA*	*Total*
Jan	2	2	2	6	1	-	1	2	-	-	-	0
Feb	1	2	3	6	1	-	-	1	1	-	3	4
Mar	1	1	-	2	1	-	1	2	1	-	-	1
Apr	0	0	0	0	-	1	-	1	-	-	-	0
May	0	1	3	4	-	-	-	0	1	-	-	1
Jun	3	0	1	4	-	-	1	1	-	-	-	0
Jul	2	1	-	3	-	2	5	7	-	1	-	1
Aug	2	2	1	5	-	-	1	1	1	-	-	1
Sep	1	1	1	3	-	-	-	0	-	1	-	1
Oct	1	-	-	1	-	1	4	5	4	-	1	5
Nov	1	-	-	1	-	-	4	4	4	2	1	7
Dec	-	-	-	0	-	1	2	3	-	1	5	6
Total	**14**	**10**	**11**	**35**	**3**	**5**	**19**	**27**	**12**	**5**	**10**	**27**

3.5 Quantity of Illegal Fuel Seized

2016 recorded the most fuel seized in six years.

The table below compares the volume (UK gallons) of illegal fuel seized from 2005 to 2016:

Total Fuel Seized Annually (UK GAL) 2005 – 2015											
2005	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
3,011	8,001	21,793	33,560	33,443	21,242	10,272.6	6,004	2,931	3,785	6,199.5	19,721

3.6 Volume Analysis

An additional metric to evaluate the performance of the Fuel Marking programme is a measure of gasoline, diesel and kerosene consumption (except for large duty-free consumers). For the oil companies, it is estimated that 3,847,334 barrels of petroleum-based products were sold in 2016 with an average of 10,512 barrels per day. This represents a 14.56% increase when compared to 2015[7]. There were increases in the consumption of gasoline, diesel, kerosene, jet fuel, cooking gas and aviation gasoline while consumption of fuel oil declined for the year.

TOTAL CONSUMPTION - OIL COMPANIES (BBLS)					
January - December		2014	2015	2016	% change
	Mogas	1,214,868	1,244,943	1,322,842	6.26%
	Gasoil	1,734,780	1,654,201	2,000,821	20.95%
	Kero	86,023	88,031	89,746	1.95%
	Avjet	77,166	94,927	154,816	63.09%
	Fuel oil	80,997	83,775	82,874	-1.08%
	LPG	187,526	191,853	194,943	1.61%
	Avgas	4,236	625	1,291	106.50%
	Total	**3,385,595**	**3,358,356**	**3,847,334**	**14.56%**
	Bpd	**9,276**	**9,201**	**10,512**	**14.25%**

The growth in gasoline consumption for 2016 can be attributed to an increase in motor vehicle ownership while the minor increase in kerosene consumption suggests some level of sustained use as a fuel for lighting and cooking. Additionally, the increase in diesel consumption can be attributed to improved performance in the mining sector. It may also presumably result from decreased availability of smuggled fuel due to the success of the monitoring and enforcement activities of the Fuel Marking Programme.

[7] Gasoil and Fuel oil purchased locally by GPL from the oil companies were discounted to avoid double counting.

3.7 Prosecutions

For the year 2016, the Fuel Marking Programme recorded 1 conviction (GEA v. Martin Persaud).

During 2016, seven (7) new prosecutions were instituted and are currently ongoing before the courts.

Compensation was accepted from six (6) individuals under *Section 33A Guyana Energy Agency Act 1997* as amended by *Section 8 Guyana Energy Agency (Amendment) Act 2011*.

In October 2016, one (1) appeal was dismissed for want of prosecution (GEA v. Shairaz Alli, Javed Alli). This appeal was filed in 2015 by external counsel retained at that time. No new civil matters were initiated or brought against the GEA during 2016.

In August 2016, Ms. Thandiwe Benn, GEA's In-house prosecuting counsel proceeded on 'no pay' leave to commence reading for her Masters Programme. Accordingly, in response to advertised Expressions of Interest for the conducting of litigation for any new and ongoing matters on behalf of GEA, the GEA retained the services of Ms. Natasha Vieira and Mrs. Terreen Haynes-Anthony as external counsel commencing September 2016. This agreement has been executed for a period of thirteen months.

4.0 Review of Activities: Administration and Human Resource Division

At the beginning of 2016, the Agency had a staff complement of ninety-three (93) employees and ended the year with ninety-five (95) employees.

The following 4 positions were filled during the year:

- 2 Drivers
- 2 Inspectors

The following 3 new positions were filled during the year:

- 1 Deputy CEO
- 1 Inspector
- 1 Hydropower Expert

Resignation was received from:

- 1 Inspector

The services of persons who filled the following positions were terminated:

- 3 Inspectors

Regrettably, during 2016, one of the Agency's long-serving Driver passed away.

The following promotions were effected:

- 1 Head of Division, Legal & Licensing Division
- 1 Head of Division, Energy & Energy Statistics Division

The Agency employed 1 part-time Cleaner for its base and outpost at Linden.

A new base was constructed at Bartica for staff of the GEA to facilitate monitoring of fuel and ease of deployment. The checkpoint at Linden was also rehabilitated as part of the Agency's maintenance programme.

4.1 Professional Development

		Actual Training for 2016	Target for 2016
Organize and install suitable capacity building and professional development programmes to provide employees with requisite knowledge and skills.	Number of training programmes	39	20
	Number of Officers trained	404	100

Training Summary

	Dates	Facilitator	Aim	Participants	Cost
1	January – June 2016	IPED	Enhance officers Knowledge in the area of Project Management	Yasoda Matabadal, Leon DeSouza, Brian Constatine, Dolwin Khan, Ryhan Stephens, Everard Rampersad, Rehana Alli, Maurice Cave	$568,960
	January – June 2016	IPED	Enhance officers Knowledge in the area of Administration	Geneva Cumbermack	$55,000
2	January – March, 2016	Computer World	Enhance Officers skills with regards to the various MS Office Applications and Graphic Software	Nominee Ram, Abdul Alli, Nelta Dainty, Coleen Fletcher, Deonarine Punwasi, Joslyn Nesbitt & Taiwo Wilson- Williams	$210,000
3	January – March 2016	Carlos Rebero	To ensure field staff are provided with the necessary skill to operate and function effectively & Safely on the job	Cindy Williams, Doron Julien, Earicka Richards, John Rawlins, Nikita Shung, O'Neal Hoopkinson, Quasen Nedd, Ramish Amyan, Ryan Dowden, Steffon George, Vijay Husseain, Dale London, Dhanomattie Shyamraj, Abigail Bijader, Nikita Drakes, Rowena Wray, Crystal Perreira, Devindra Moteeram, Dolwin Khan, Winston Setal, & Brian Constantine	$105,000
4	February 2016	T. Benn – Legal Officer, GEA	To ensure all field staff are aware of the various aspects of the petroleum and petroleum products regulations of 2014.	Crystal Bascom, Janella Charles, Nikita Drakes, Telisha Joseph, Devindra Moteeram, Shareefa Munusammy, Crystal Perreira, Joshua Ramlall, Christhina Seepersaud, Amanda Singh, Mark Thomas, Rowena Wilson – Wray, Simeon Butcher, Doron Charles-Julien, Ryan	Free

				Dowden, Dwayne Edwards, Paul Fraser, O'neal Hopkinson, Vijay Husseain, Shamica Isaacs, Nicholae Leacock, Mowshani Lekhraj, Quasen Nedd, Bernard Rodrigues, John Rawlins, Nikita Shung, George Steffon, Cindy Williams, Rolin Wilson	
5	March 11,2016	K. Mattai	To provide an overview to the LLD staff on the various regulations that govern the issuing of License in relation to petroleum and petroleum products.	S. Daniel, D. Boodhoo, J. Croker, D. London, A. Bijader S. Shyamraj	Free
6	March 2016	GIZ, REETA - CARICOM Sect	METEONORM 7.1 & PV Sol 7.5	L. DeSouza, B. Constantine & D. Khan	Free
7	March 22, 2016	OLADE	Monitoring & Evaluation of Renewable Energy	L. DeSouza, K. Samaroo, D. Khan & S. Wood	Free
8	March 29, 2016	T. Benn – Legal Officer, GEA	Statement Writing	Ramish Amyan, Devon Brummell, Simeon Butcher, Doron Charles-Julien, Ryan, Dowden, Dwayne Edwards, Paul Fraser, Vijay Hussain, Shamica Isaacs, Nicholae Leacock, Quasen Nedd, Earicka Richards, John Rwalins, Nikita Shung, George Steffon, Adrian Webster, Cindy Williams, & Rolin Wilson	Free
9	April 8, 2016	GRPA	Hygiene for Men	Thirteen (13) Employees attended	$15,000
10	April 11, 2016	GRPA	Hygiene for women	Ten (10) Employees attended	$15,000
11	April 15, 2016	GFS	Fire Marshal Training	Lisa Nassy, Dale London, Ivan Walters,	$30,000

				Irene Campbell, Amanda Singh & Abdul Alli	
12	April 19, 2016	L. Green – Labour Officer, Ministry of Social Protection	To provide information and clarification on the operation of a OSH committee	Narisa Major, Thandiwe Benn, Murice Cave, Winston Setal, John Rawlins, Steve Merai and Dhanomattie Shymaraj	Free
13	April 22, 2016	Red Cross	First Aid Health & Safety Talk	Sixteen (16) Employees Attended	Free
14	April 27-28, 2016	UNEP, OLADE & MIEU	VII Latin America & the Caribbean Energy Efficient Seminar	Shevon Wood	Free
15	April 27, 2016	GAAP	Maximizing Momentum in the Office	Nominee Ram and Steve Merai	$30,000
16	April 28, 2016	Ms. Kala Seegopaul – Training Consultant	Improving the services of the Customer Care Professional	Ramish Amyan, Abigail Bijader, Devon Brummell, Simeon Butcher, Doron Charles-Julien, Ryan Dowden, Dwayne Edwards, Paul Fraser, O'neal Hopkinson, Vijay Husseain, Shamica Isaacs, Nicholae Leacock, Dale London, Quasen Nedd, Earicka Richards, John Rawlins, Nikita Shung, Dhanomatie Shyamraj, George Steffon, Adrian,Webster, Cindy Williams, Rolin Wilson, Deochand Boodhoo, Shanamay Daniels	$120,000
17	April 29, 2016	GRPA	Stress and Suicide	Twenty (20) employees attended	$20,000
18	May 4, 2016	Arjune Deally	To provide clarity on Question/concerns/ Suggestions inspectors may have in the execution of field visits.	Ramish Amyan, Devon Brummell, Simeon Butcher, Doron Charles-Julien, Ryan Dowden, Dwayne Edwards, Paul Fraser, O'neal Hopkinson, Vijay Husseain, Shamica Isaacs, Nicholae Leacock, Quasen Nedd, Earicka Richards, John	Free

				Rawlins, Nikita Shung, George Steffon, Adrian Webster, Cindy, Williams, Rolin Wilson, Bernard Rodrigues	
19	June-Aug, 2016	Computer World	Advance Computer Studies	Ms. Devica Sukhnandan	$35,000
20	June 2016 – Aug, 2016	Computer World	Secretarial Studies	Mrs. Nominee Ram	$35,000
21	June-July, 2016	Red Cross	To prepare the employees to respond to and reduce accidents and prevent further injuries should any emergency arises while on or off the job.	Crystal Bascom, Ron Bynoe, Marlon Croal, Nikita Drakes, Narisa Major, Devindra Moteeram, Shareefa Munusammy, Crystal Perreira, Amanda Singh, Rowena Wilson – Wray, Dhanomatie Shyamraj and Shamica Isaacs	$189,000
22	June 21, 2016	Ministry of Public Health	Health Fair - Aimed at assisting our employees to take a basic health check and to promote awareness about their health and well-being.	Sixty five (65) employees attended	$107,764
23	June 27-July 8, 2016	National Library	To enhance the skillset of the Registry Staff in the following areas: -Organizing -Cataloguing -Documenting -Care and maintenance of documents	Ms. Farida Mahatoo	Free
24	June 27– July 31, 2016	Mr. Featherstone - Intelliguard Specialist Security Service In. (ISSSI)	Intelligence Gathering Level III	Paul Fraser, Quasen Nedd, Ramish Amyan, Nikita Shung, Devon Brummel and Simeon Butcher	$320,000
25	July 11-13, 2016	Aviation Training	Aviation Fuel Handling	Fifteen (15) Participants	USD7,150
26	July 19, 2016	National Procurement and Tender Administration Board in	Level 1 one day sensitization Training Workshop on Public Procurement	Mrs. Seema Greene	Free

		collaboration with the CARIFORUM - EU Economic Partnership Agreement			
27	July 27, 2016	GNBS in collaboration with the Georgetown Chamber of Commerce and Industry (GCCI)	Benefits of Implementing the ISO 9001:2015 Quality Management System.	Ms. Yota Burgess & William Holder	Free
28	July 27-29, 2016	Government Technical Institute (GTI)	Understanding and troubleshooting Basic Mechanical and Auto Electrical issues.	Mr. Mervyn McGregor, Mr. Robert Nazir, Mr. Adrian Bascom, Mr. Ramkarran Kissoon, Mr. Galburn Williams, Mr. Rawl Sam, and Mr. Alec Yhan	$180,650
29	August 16-19, 2016	Public Service Ministry	Principles of Supervisory Management – Module I	Shevon Wood, Taiwo Wilson-Williams, Leon DeSouza, Maurice Cave, Quasen Nedd, Ryan Dowden	Free
30	September 1, 2016	Guyana Fire Service	Fire Safety	Arjune Deally, Ramish Amya, Crystal Bascom, Devindra Moteeram, Crystal Perreira, Terance Ram, Nominee Ram, Joshua Ramlall, Amanda Sing, Shareefa Munusammy, Rowena Wilson - Wray	$40,000
31	September 16, 2016	GRPA	Sexual Harassment and Mental Health	Forty Five (45) Staff Attended	$115,840
32	October 9-12, 2016	European Union	EU-Caribbean Sustainable Energy Confrence	Tobias Dertmann and Dolwin Khan	Free
33	October 10, 2016	Ms. Kala Seegopaul – Training Consultant	Improving the services of the Customer Care Professional	Abdul Alli, Tracy Brammer, Maurice Cave, NeltaDainty, Coleen Fletcher, Gaitri Khemraj, Monica King, Joslyn Nesbitt, Deonarine Punwasi, Terance Ram,	$120,000

				WinstonSetal, Devica Sukhnandan, Angela Trotman	
34	October 19, 2016	Ms. Kala Seegopaul – Training Consultant	Improving the services of the Customer Care Professional	Mrs. Gaile Perimo-Best, Mrs. Seema Greene,Ms. Shevon Wood, Ms. Kiran Mattai, Ms. Yasoda Matabadal, Mr. William Holder, Mrs. Taiwo Wilson-Williams	$80,000
35	October 25-28, 2016.	LNG & DDL	Safety and Handling of LNG	Mr. Winston Setal, Mr. Deochand Boodhoo, Dale London and Quasen Nedd	Free
36	October 3-7, 2016	OLADE (Mexico)	PALCEE Training to strengthen the institutional framework for the development of energy efficiency and gathering and organising the efforts that various institutions make in a specific country.	Ms. Shevon Wood and Mr. Leon DeSouza	Austria Development Cooperation &OLADE
37	November 4, 2016	The World Bank	Procurement Training	Seema Greene	Free
38	November 15, 2016	Organization of American States (OAS)	Caribbean Water Energy Dialogue	Winston Setal	Free
39	November 28, 2016	OLADE	National Gender & Energy Workshop	Dr. Mahender Sharma, Gayle Best, Leon DeSouza, Brian Constantine, Dolwin Khan, Kenny Samaroo, Winston Setal	Free
40	Jan 2017	Carnegie	Cookery and Decor	Farida Rampersaud, Joy Duke, Colette Nurse, Irene Campbell	30,000
41	Dec 2016-Jan 2017	Carlos Ruberio		Field Staff	
42	December 2016	Computer World	Basic Computer, email	Farida Rampersaud, Joy Duke, Colette Nurse, Irene Campbell	35,000

4.2 Administration and Infrastructural Enhancement

During the year, the Division facilitated the procurement of goods and services based on the budget and workplan.

ANNUAL PRESENTATION TO STAFF (2015 YEAR IN REVIEW)

On Monday January 18th, 2016 the Guyana Energy Agency (GEA) hosted its annual Presentation Exercise for all staff of the Agency at Cara Lodge, Quamina Street South Cummingsburg. The aim of this activity was to inform staff of the Agency's accomplishments in the previous year. It also allowed for staff to familiarize themselves with the activities conducted by each Division.

The Presenters were GEA's Engineers (5), Communications Officer, Economist, Legal and Liscensing Departments, Accounts Department, Human Resource and Administrative Department and the Marking Section. Each Presenter conducted a 5-8 minutes power point presentation of their accomplishments for 2015and projections for 2016.

In addition to the presentations, staff with 15 years and over service were also honoured during the exercise. Of the eight staff honoured Ms. Monica King was the longest serving employee with 39 years of service. Employees received their awards from the Hon. Minister of Public Infrastructure Mr. David Patterson.

5.0 Review of Activities: Finance Division

The activities of GEA are financed from Government subventions and from revenue generation. Revenue was generated by the Agency from administrative fees (Agency Fees) for the marking and handling of fuel and from the issuance of licences to import, sell, store and transport petroleum and petroleum products.

A number of audit exercises were performed for the year 2016. Monthly reviews of key areas within the Agency, mainly in the Accounts Division, have continuously improved in the areas of efficiency and effectiveness.

Appendix: Legislation, Mandate and Overview of the Divisions

Legislation

The GEA, a body corporate, was established in 1997 by the **Guyana Energy Agency Act 1997 (Act No. 31 of 1997)**. The GEA Act has been amended over the years to foster harmonization, increased monitoring, better regulation and greater enforcement in the energy sector.

The GEA falls under the purview of the Prime Minister as the Minister responsible for energy and electricity. GEA's organization structure consists of a Board of Directors, Chief Executive Officer, Deputy Chief Executive Officer, Secretariat and the following five Divisions:

i) Energy & Energy Statistics Division,

ii) Legal & Licensing Division,

iii) Fuel Marking Division,

iv) Administration/Human Resource Division, and

v) Finance Division.

The GEA's organization structure was revised during 2010 to accommodate the following new positions: Energy Economist, Energy Engineer, Hydropower Support Engineer, Licensing Administrator, Internal Auditor, Public Communications Officer, Human Resource Officer, [additional] Legal Officer, Field Operations Coordinator, Senior Investigator and Investigator.

The mandate and activities of the Guyana Energy Agency (GEA) are governed by the following legislation:

- Guyana Energy Agency Act 1997,
- Energy Sector (Harmonisation of Laws) Act 2002,
- Guyana Energy Agency (Amendment) Act 2004,
- Guyana Energy Agency (Amendment) Act 2005,
- Guyana Energy Agency (Amendment) Act 2011,
- Petroleum and Petroleum Products Regulations 2014,
- Hydroelectric Power Act and Regulations 1956,
- Hydroelectric Power (Amendment) Act 1988,
- Electricity Sector Reform Act 1999,

- Public Utilities Commission Act 1999,
- Electricity Sector Reform (Amendment) Act 2010, and
- Public Utilities Commission (Amendment) Act 2010.

The GEA Act of 1997 established the Guyana Energy Agency (GEA) as a body corporate. On March 31, 2004 the **GEA (Amendment) Act 2004** was assented to and published in an Extraordinary Issue of the *Official Gazette* which made provisions for the implementation of the fuel marking system, creation of offences and also for the grant and issue of the various classes of licences, viz- Import Licence; Wholesale Licence; Importing Wholesale Licence; Retail Licence; Bulk Transportation Carrier Licence; Storage Licence; and Consumer Installation Licence.

The core functions listed in section 5 of the principal Act are:

- to advise and make recommendations to the Minister regarding any measures necessary to secure the efficient management of energy and the source of energy in the public interest and to develop and encourage the development and utilisation of sources of energy other than sources presently in use;
- to develop a national energy policy and secure its implementation;
- to carry out research into all sources of energy including those sources presently used in Guyana for the generation of energy, and securing more efficient utilization of energy and sources of energy;
- to monitor the performance of the energy sector in Guyana, including the production, importation, distribution and utilization of petroleum and petroleum products;
- to disseminate information relating to energy management, including energy conservation and the development and utilization of alternative sources of energy;
- to grant and issue licences relating to petroleum and petroleum products, including import licences, wholesale licences, importing wholesale licences, retail licences, bulk transportation carrier licences, storage licences and consumer installation licences;
- to utilise a marking system to add markers to petroleum and petroleum products imported by every person under an import licence or import wholesale licence for the purpose of identifying such petroleum and petroleum products as having been legitimately imported;
- to take samples of petroleum and petroleum products from any person at random throughout Guyana and carry out tests and examinations to determine the presence or level of the markers in the samples of the petroleum and petroleum products;
- to perform the necessary tests to determine whether the marker(s) is (are) in the required proportion and any further test necessary to determine whether the petroleum

and petroleum products have been lawfully obtained, stored, possessed, offered for sale, blended or mixed with any substance that is not approved;

- to prosecute in the Magistrates' Courts persons who are in possession of petroleum and petroleum products bearing no markers or at a concentration contrary to that required;
- to prosecute in the Magistrates' Courts persons who import petroleum and petroleum products without an import licence or wholesale import licence;
- to prosecute in the Magistrates' Courts persons who purchase, obtain, store, possess, offer for sale, sell, distribute, transport or otherwise deal with illegal petroleum.

Section 6 of the Act further outlines several advisory functions of the Agency:

- to study and keep under review matters relating to the exploration for, production, recovery, processing, transmission, transportation, distribution, sale, purchase, exchange and disposal of energy and sources of energy;
- to report thereon to the Minister and recommend to the Minister such measures as the Agency considers necessary or in the public interest for the control, supervision, conservation, use and marketing and development of energy and sources of energy;
- to prepare studies and reports at the request of the Minister on any matter relating to energy or any source of energy, including research into alternative sources of energy, or the application of such research, and to recommend to the Minister the making of such arrangements as the Agency considers desirable for cooperation with governmental or other agencies in or outside Guyana in respect of matters relating to energy and sources of energy;
- to advise the Minister or assigned authority on matters relating to the administration and discharge of the functions of the *Electricity Sector Reform Act 1999*.

The Fuel Marking Programme was charged with the responsibility of ensuring that all gasoline, diesel and kerosene are properly marked at a known concentration at all legitimate import points and also collecting and testing samples of fuel from various parts of the country including wholesalers, retailers, distributors, transporters, commercial consumers and any person in possession of fuel for the relevant marker(s).

Energy & Energy Statistics Division

The Division's duties and responsibilities are:

- to ensure that petroleum products are readily available in the country;
- to manage the purchase and importation of petroleum and petroleum products;
- to facilitate payment arrangements between the Oil Companies, the Bank of Guyana and other petroleum importers;
- to collaborate with sector agencies on energy and related matters;
- to develop Guyana's Energy Policy and revise as necessary;
- to study and review matters relating to the exploration for, production, recovery, processing, transmission, transportation, distribution, sale, purchase, exchange and disposal of energy and sources of energy within and outside Guyana;
- to prepare studies and reports at the request of the Minister on any matter relating to energy;
- to develop and execute projects relating to alternative sources of energy;
- to update the country's energy data with respect to acquisition prices, wholesale prices and retail prices;
- to prepare and analyse energy demand and supply data;
- to supply petroleum information and analysis of the relevant energy data as required;
- to supply the **CEIS** and **OLADE** databases with energy information.

Legal & Licensing Division

The Division's duties and responsibilities are:

- to inspect all sites, motor vehicles, machinery and equipment for which a licence may be required under the Regulations;
- to grant/issue the relevant licences pertaining to-
    - importation of petroleum or petroleum products;
    - bulk transportation of petroleum or petroleum products;
    - storage of petroleum or petroleum products;
    - wholesale of petroleum or petroleum products;
    - retail of petroleum or petroleum products;
    - storage and own-use of petroleum or petroleum products.

- to suspend, cancel, cease licences in accordance with the regulations made under the **Guyana Energy Agency Act 1997** as amended by the **Guyana Energy Agency (Amendment) Acts 2004, 2005 and 2011;**
- to ensure that files for prosecution are completed promptly and dispatched to the Office of the Director of Public Prosecutions for advice;
- to oversee and coordinate the assignment of cases for prosecution;
- to prosecute in the Magistrates' Courts persons who are in possession of petroleum and petroleum products bearing no markers or at a concentration contrary to that required;
- to prosecute in the Magistrates' Courts persons who import petroleum and petroleum products without an import licence or wholesale import licence;
- to prosecute in the Magistrates' Courts persons who purchase, obtain, store, possess, offer for sale, sell, distribute, transport or otherwise deal with petroleum without the relevant licence (s);
- to coordinate the representation of the Agency in civil litigation;
- to prepare Amendments to the Legislation as required and work in collaboration with the Drafting Department of the Ministry of Legal Affairs regarding same;
- to provide management with the necessary legal guidance in execution of the Agency's overall mandate and in relation to other stakeholder agencies, where necessary.

Fuel Marking Division

The Division's duties and responsibilities are:

- to utilise the respective marking system to add markers to petroleum and petroleum products imported by every person under an import licence or import wholesale licence for the purpose of identifying such petroleum and petroleum products as having been legitimately imported, whether domestic or duty-free;
- to add the relevant covert proprietary chemical markers to petroleum and petroleum products at the concentration determined by the Minister by notice in the Gazette;
- to maintain the integrity of the marking system;
- to test the accuracy and monitor the effectiveness of the marking system;
- to take samples of petroleum and petroleum products from any site at random throughout Guyana and carry out tests and examinations to determine the presence or level of the markers in the samples of the petroleum and petroleum products;

- to perform the necessary laboratory tests to determine whether the marker(s) is (are) in the required proportion;
- to determine the composition and grade of petroleum and petroleum products and determine whether same have been blended or mixed with any substance that is not approved;
- to give testimonial evidence in the prosecution of offences under the Act;
- to provide, through the Analyst's Certificate, expert/scientific evidence as proof of the legality of petroleum and petroleum products.

Administration and Human Resource Division

The Division's duties and responsibilities are:

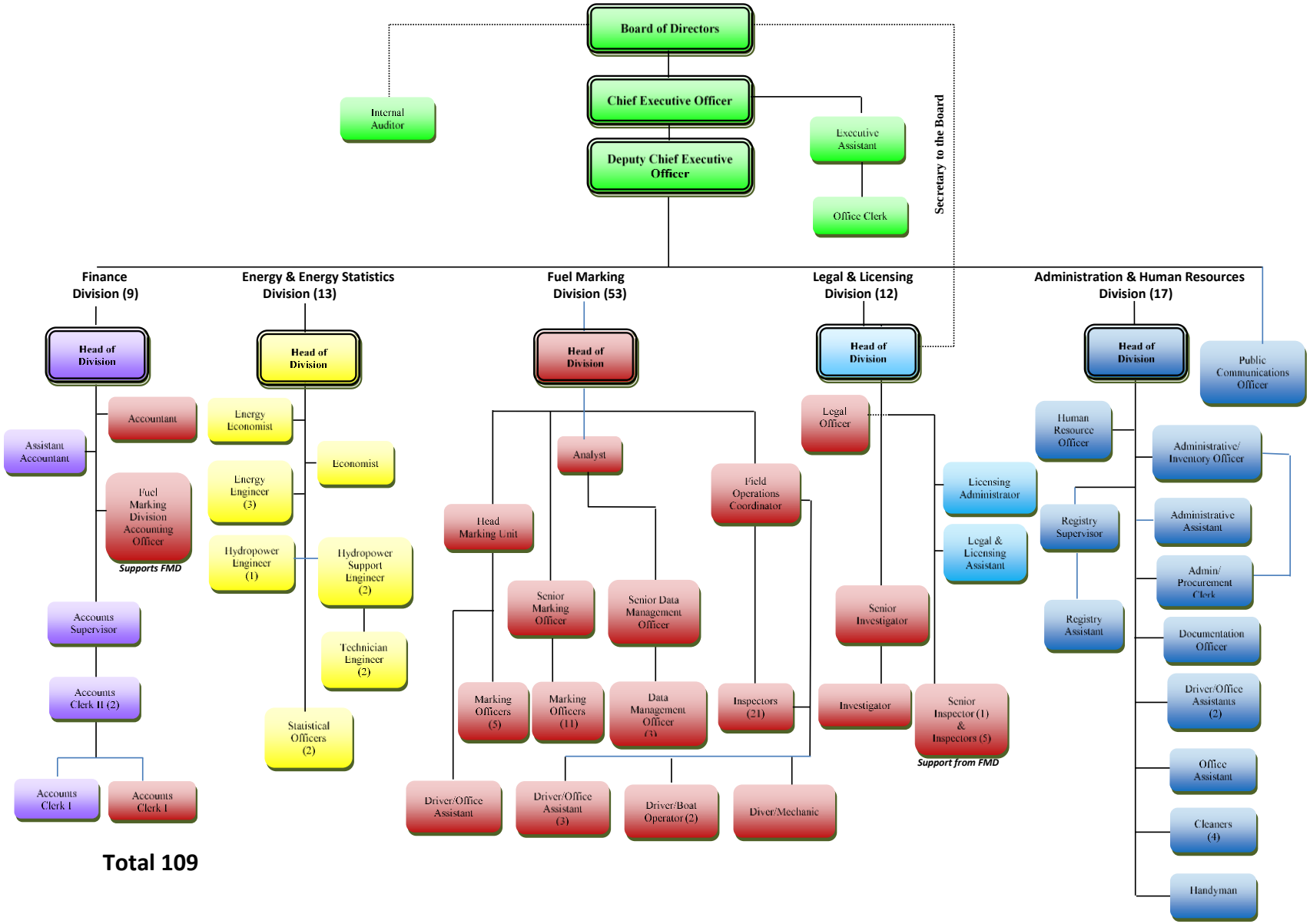
- to maintain and update the Agency's personnel files and other records;
- to aid in the recruitment, selection, replacement and continuous professional development of staff;
- to address staff concerns related to wages and salary administration, contract negotiation and separation procedures;
- to improve staff morale through cogent policies and remuneration;
- to manage and maintain the Group Pension, Group Life, Medical and National Insurance Schemes while ensuring that claims, benefits and queries are processed expeditiously and to the satisfaction of the staff;
- to handle all grievance procedures with the objective of reaching mutually acceptable solutions;
- to ensure that office supplies, equipment, and vehicles are adequately provided and maintained;
- to ensure that the Agency's edifices, facilities and compound are kept clean and properly utilized and maintained;
- to monitor the security services for reliability and adequacy in the execution of their duties;
- to develop and enforce the Agency's Policy Manual and Disciplinary Code;
- to provide general support services to the officers of the Agency in the execution of their duties;
- to ensure adherence to health and safety regulations in the work environment;
- to manage the procurement, receipt and issue of stationery, stocks, office equipment and assets of the Agency and monitor use of same to prevent abuse of the Agency's resources.

Finance Division

The Finance Division is tasked with the responsibilities of the day to day management of the Agency's financial resources. The Division's duties and responsibilities are:

- to advise management on the Agency's financial matters, and where necessary, other agencies;
- to manage and maintain the Agency's income and expense accounts and all other accounting records;
- to prepare the Agency's financial statements;
- to prepare the Agency's budget documents;
- to prepare monthly wages and salaries and other allowances;
- to process payments;
- to ensure that goods and services procured by the Agency are so procured in compliance with the **Procurement Act** and other relevant guidelines;
- to verify the accuracy of bills and receipts provided and investigate suspicious or fraudulent bills/receipts;
- to maintain and update the Agency's asset register.

ORGANISATIONAL STRUCTURE FOR THE GUYANA ENERGY AGENCY



Total 109