



Kingdom Of Lesotho



**Statistical report  
No 8: 2022**

## **2021 Energy Statistics Report**



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**Mission:** To coordinate the National Statistical System (NSS) and produce accurate, timely and reliable culturally relevant and internationally comparable statistical data for evidence-based planning, decision making, research, policy, program formulation and monitoring and evaluation to satisfy the needs of users and producers.

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## **1.0 Introduction**

“Energy statistics refers to collecting, compiling, analysing and disseminating data on commodities such as coal, crude oil, natural gas, electricity, or renewable energy sources (biomass, geothermal, wind or solar energy), when they are used for the energy, they contain” [https://en.wikipedia.org/wiki/Energy\\_statistics](https://en.wikipedia.org/wiki/Energy_statistics).

### **1.1 Coverage and scope**

The report comprises secondary data on production, consumption, imports and exports of energy commodities. Data for grid electricity was obtained from Lesotho Highlands Development Authority (LHDA), Lesotho Electricity Company (LEC) and One Power. Petroleum fuels data was from Petroleum Fund and Mission Aviation Fellowship (MAF). It also includes Liquefied Petroleum Gas (LPG).

## **2.0 Results**

Electricity data from LHDA is for the years 2017 to 2021 and electricity distribution from LEC is for the financial years 2016/2017 to 2020/2021. Electricity generation data also includes data from solar minigridd power plant of One Power from April to December 2021. Petroleum data is for the years 2017 to 2021.

## **3.0 Electricity**

Electricity is an energy carrier with a very wide range of applications. It is used in almost all kinds of human activity ranging from industrial production, household use, and agriculture, commerce for running machines, lighting and heating, (Energy Statistics manual, 2010).

### **3.1 Generated Electricity**

Electricity generation is the process of generating electric power from sources of primary energy. It is the stage prior to its delivery to end users.

The electricity supply industry in Lesotho is dominated by two state owned entities, namely the Lesotho Electricity Company (LEC), which is the monopoly transmitter, distributor and supplier of electricity, and the Lesotho Highlands Development Authority (LHDA), which is the main generator of electricity through its ‘Muela Hydro Power Station. <http://www.lewa.org.ls/sectors/default.php>

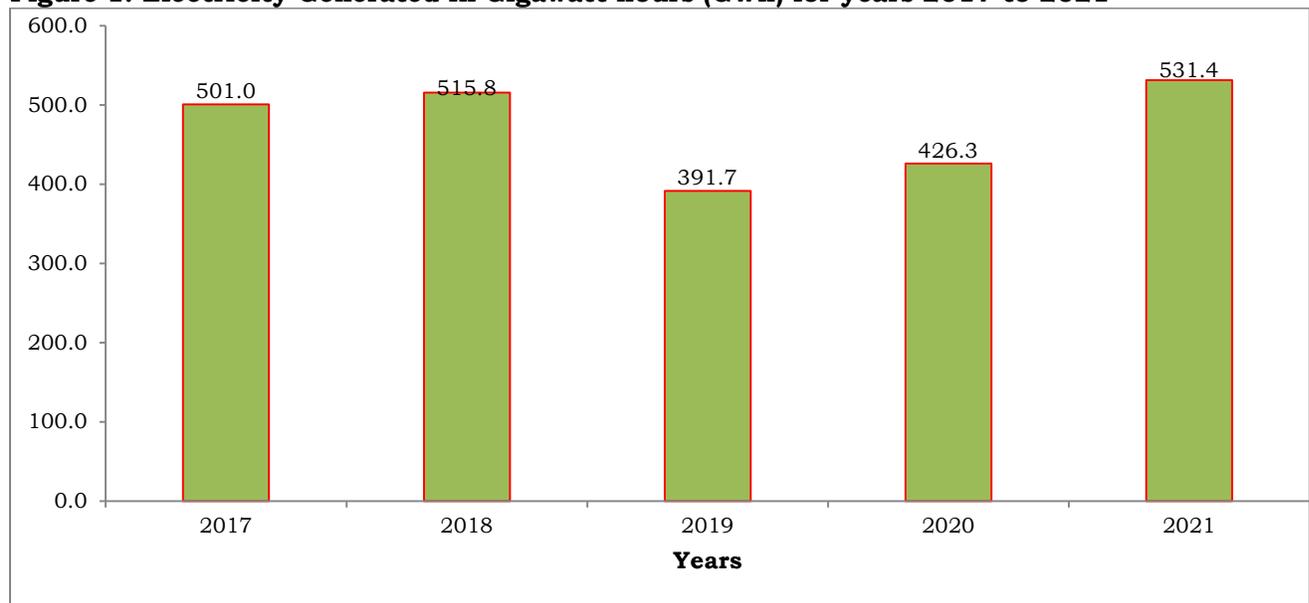
#### **3.1.1 ‘Muela Generation**

The Lesotho Highlands Development Authority (LHDA) is the main generator of electricity through its ‘Muela Hydro Power Station. The generating station is part of the Lesotho Highlands Water Project’. <http://www.lewa.org.ls/sectors/default.php>

Figure 1 illustrates electricity generated in gigawatt hours for the years 2017 to 2021. Electricity generation was highest in 2021 with 531.4 GWh followed by 515.8GWh in 2018.

About 24.7 percent increase in generated electricity was noticed from 2020 (426.3 GWh) to 2021 (531.4 GWh). The least generated electricity was in 2019 with 391.7GWh.

**Figure 1: Electricity Generated in Gigawatt hours (GWh) for years 2017 to 2021**



Source: Lesotho Highlands Development Authority

### 3.2 Solar photovoltaic minigrid generation

A mini-grid, also referred to as isolated grid, is a set of small-scale electricity generators and possibly energy storage systems interconnected to a distribution network that supplies electricity to a small and localized group of customers, operating independently from the national transmission grid. [How does a Green Mini-grid work? - Renewables in Africa.](#)

Solar mini grids generate electricity using solar photovoltaic systems connected together to provide a sustainable power output. One of the solar mini grid systems in Lesotho is that of One Power Lesotho located at Ha-Makebe in Berea district which started operating in March 2021. 1PWR is a fast-growing startup based in Lesotho whose mission is to provide affordable and reliable electricity services to off-grid villages, giving families, schools, health clinics, and local businesses the resources needed to grow and thrive. [One Power Lesotho \(1pwrafrica.com\)](#)

#### 3.2.1 One Power Lesotho Electricity generated

Powered primarily from solar energy, these mini-grids minimize the carbon footprint of energy access by optimizing engineering design of battery storage and a backup generator (powered by LPG) to ensure power flows even when the sun is down. [One Power Lesotho \(1pwrafrica.com\).](#)

Table1 depicts electricity generated in kilowatt hours from April to December 2021. In April, electricity generation by LPG was 819.4KWh. There was no electricity produced by LPG in July, October, November and December.

Solar PV system started producing in May (1,977KWh). The highest total production was in December and the lowest in April with 4,457KWh and 819.4KWh respectively. Total electricity produced was 26,919.1KWh with 25,166KWh generated by solar pv and 1,753.1KWh by LPG.

**Table 1: Electricity generated in Kilowatt hours from April to December 2021**

<b>Months</b>	<b>Kilowatt hours</b>		<b>Total</b>
	<b>Solar</b>	<b>LPG</b>	
April		819.4	819.4
May	1,977	647.4	2,624.4
June	2,848	217.7	3,065.7
July	3,186		3,186.0
August	3,037	61.5	3,098.5
September	3,147	7.1	3,154.1
October	3,230		3,230.0
November	3,284		3,284.0
December	4,457		4,457.0
<b>Total</b>	<b>25,166</b>	<b>1,753.1</b>	<b>26,919.1</b>

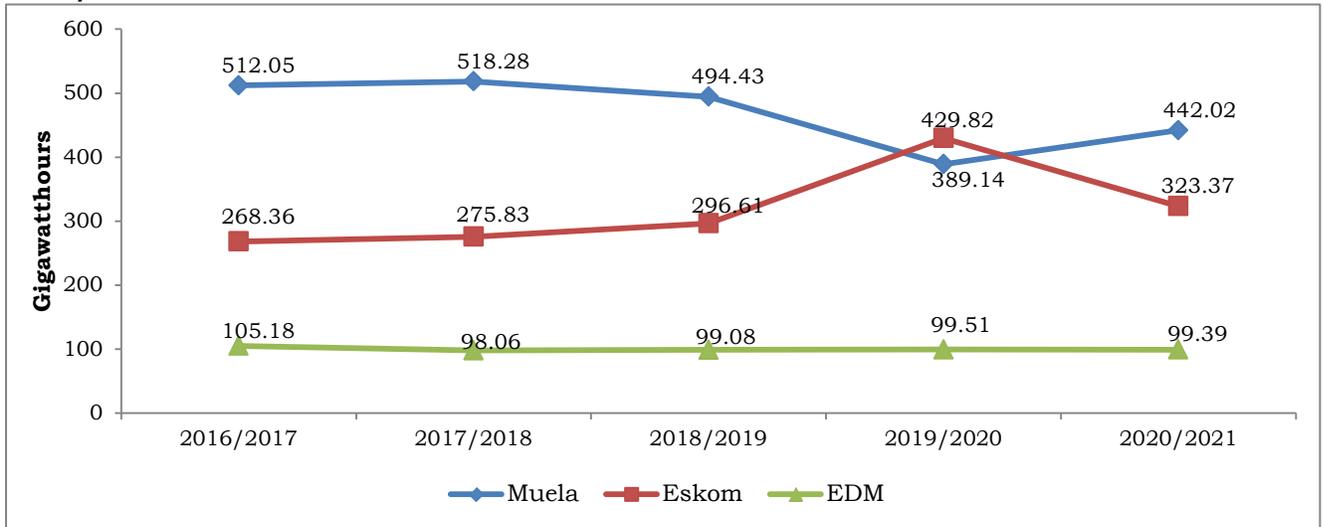
**Source: One Power Lesotho**

### **3.3 Electricity Purchased**

In order to supply its customers with electricity, LEC purchases electricity from 'Muela, Eskom and Electricidade De Mozambique (EDM).

Figure 2 displays electricity purchased in GWh from 'Muela, Eskom and EDM by LEC for the period 2016/2017 to 2020/2021. It is observed that most of the electricity was purchased from 'Muela except in 2019/2020 where most electricity was from Eskom (429.82GWh). The highest amount of electricity purchased from 'Muela was in 2016/2017 (512.05GWh) and the lowest in 2019/2020 with 389.14GWh. Highest electricity purchases from EDM were in 2016/2017 (105.18GWh) and the lowest in 2017/2018 with 98.06GWh.

**Figure 2: Electricity Purchased in GWh from 'Muela, Eskom and EDM by LEC- 2016/2017 to 2020/2021**



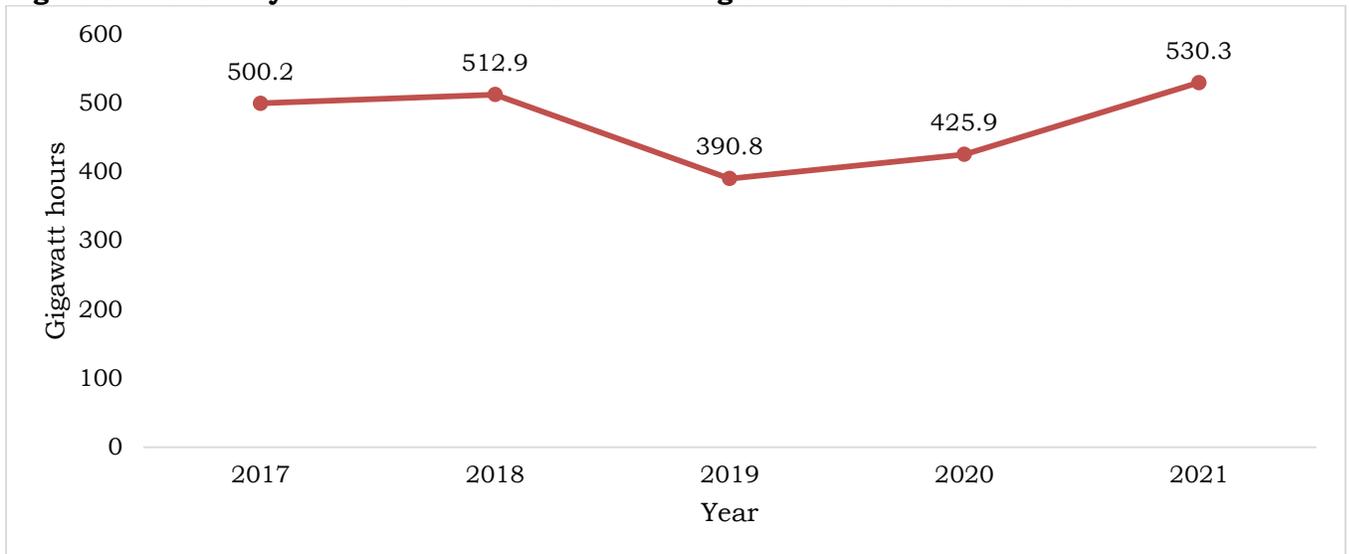
Source: Lesotho Electricity Company

### 3.4 Electricity Sales to LEC

The Lesotho Highlands Development Authority (LHDA) is a multi-phased project to provide water to the Gauteng province of South Africa and to generate hydro-electricity for Lesotho in 'Muela hydro power station. The generated electricity is then sold to LEC.

Figure 3 demonstrates Electricity sales from 'Muela to LEC in Gigawatt hours for the years 2017 to 2021. The highest sales were observed in the year 2021 with 530.3 GWh followed by 2018 with 512.9 GWh. Lowest sales were in 2019 with 390.8 GWh.

**Figure 3: Electricity Sales from 'Muela to LEC in Gigawatt hours - 2017 to 2021**



Source: Lesotho Highlands Development Authority

### 3.5 Electricity Imports and Exports

Lesotho imports electricity from Eskom and EDM to meet its high electricity demand. It also exports excess electricity produced to Eskom when electricity demand is low.

Table 2 indicates total electricity imports and exports in gigawatt hours for the years 2017 to 2021. It is observed that electricity imports were highest in 2019 with 509.3GWh. The lowest imports were recognized in 2017 with 386.9GWh. Electricity exports were highest in 2018 and lowest in 2020 with 2.9GWh and 0.5GWh respectively.

**Table 2: Total Electricity Imports and Exports in GWh- 2017 to 2021**

<b>Year</b>	<b>Total Imports (GWh)</b>	<b>Total Exports (GWh)</b>
2017	386.9	0.8
2018	396.7	2.9
2019	509.3	0.9
2020	441.8	0.5
2021	426.8	1.2
<b>Total</b>	<b>2,161.4</b>	<b>6.2</b>

Source: Lesotho Highlands Development Authority, Lesotho Electricity Company

### 3.6 Electricity Consumption

Electric energy consumption is the form of energy consumption that uses electric energy. Electric energy consumption is the actual energy demand made on existing electricity supply for transportation, residential, industrial, commercial, and other miscellaneous purposes [https://en.wikipedia.org/wiki/Electric\\_energy\\_consumption](https://en.wikipedia.org/wiki/Electric_energy_consumption)

#### 3.6.1 Electricity Tariff

Electricity tariff is the amount of money frame by the supplier for the supply of electrical energy to various types of consumers. In other words, the tariff is the methods of charging a consumer for consuming electric power. <https://circuitglobe.com/electricity-tariffs.html>.

Table 3 represents approved energy charges including consumers and electrification levies in Maloti per kilowatt-hour (M/kWh) for the years 2016/2017 to 2020/2021. In 2018/2019 the highest tariff was for General Purpose customers with M1.6608 followed by Domestic customers with M1.4782. Street lights tariff increased from 2018/2019 to 2019/2020 (M0.8325 to M0.8725) by M0.04. Industrial High Voltage and Commercial High Voltage tariffs were the same for 2018/2019, 2019/2020 and 2020/2021 with M0.2559. The same pattern is observed for Industrial Low Voltage and Commercial Low Voltage consumers with a tariff of M0.2767. Tariffs did not change for all consumer categories from 2019/2020 to 2020/2021.

**Table 3: Approved Energy Charges Including Consumers and Electrification Levies in Maloti per Kilowatt-hour (M/kWh) for 2016/2017–2020/2021**

<b>Customer Category</b>	<b>2016/2017</b>	<b>2017/2018</b>	<b>2018/2019</b>	<b>2019/2020</b>	<b>2020/2021</b>
Industrial HV	0.2419	0.2484	0.2559	0.2559	0.2559
Industrial LV	0.2612	0.2684	0.2767	0.2767	0.2767
Commercial HV	0.2419	0.2484	0.2559	0.2559	0.2559
Commercial LV	0.2612	0.2684	0.2767	0.2767	0.2767
General Purpose	1.5461	1.5995	1.6608	1.6608	1.6608
Domestic	1.3767	1.424	1.4782	1.4782	1.4782
Street Lighting	0.8149	0.8417	0.8325	0.8725	0.8725
Lifeline Domestic				0.7273	0.7273
Effective date	1-May-16	10-Apr-17	1-Aug-18	1-May-19	1-May-19

**Source: Lesotho Electricity and Water Authority**

### 3.6.2 LEC Consumers

LEC consumers include anyone who is supplied with electricity by LEC. They are classified into different categories depending on their electricity needs. It is important to note the number of LEC consumers and how much they consume as this can help assess the electricity demand of the country.

Table 4 presents average number of LEC consumers by sector for the period 2016/2017 to 2020/2021. Generally, Pre-paid Domestic consumers were more than any other consumers, followed by Pre-paid General-Purpose consumers. In 2019/2020, Industrial LV consumers (167) were more than Industrial HV consumers (47). Street lights connections have been the same throughout the years with 133 stand connections. The total number of consumers was higher in 2019/2020 with 259,514 consumers followed by 242,461 consumers in 2018/2019. The least total number of consumers was in 2016/2017 with 212,220 consumers.

**Table 4: Average Number of LEC Consumers by Sector for 2016/2017 to 2020/2021**

<b>Sector</b>	<b>2016/2017</b>	<b>2017/2018</b>	<b>2018/2019</b>	<b>2019/2020</b>	<b>2020/2021</b>
Domestic Consumers	5	4	4	3	3
General Purpose	24	23	23	23	23
Commercial HV	41	42	42	42	41
Commercial LV	200	192	195	199	206
Industrial HV	45	48	49	47	36
Industrial LV	172	171	171	167	166
LHDA	9	11	11	10	12
Pre-Paid Domestic	200,770	220,878	229,189	245,234	259,376
Pre-Paid General Purpose	10,821	12,166	12,644	13,656	14,698
Street Lights		133		133	133

<b>Total</b>	<b>212,220</b>	<b>233,668</b>	<b>242,461</b>	<b>259,514</b>	<b>723,774</b>
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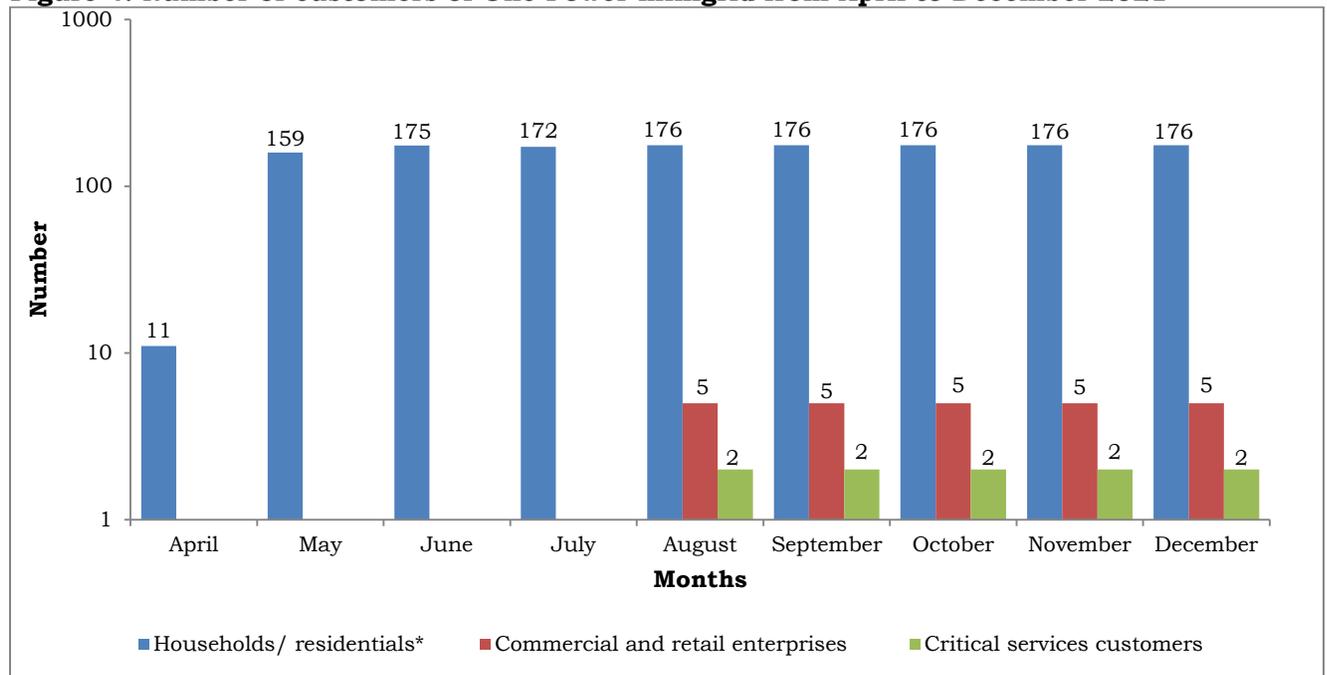
Source: Lesotho Electricity Company

### 3.6.3 Number of customers of One Power

This section comprises all customers of One Power minigrid at Ha-Makebe.

Figure 4 explains number of customers of one power minigrid from April to December 2021. It is observed that household/residential customers increased from April until they became constant from August (176). New customer categories which were connected from August are Commercial and retail enterprises (5) (e.g. phone charging businesses, grocers, hair salons, cafes and restaurants, guest houses, clinic/dispensary, office, video and satellite screening, popcorn makers, small freezers) as well as critical services customers (2) and they remained constant for the rest of the year.

**Figure 4: Number of customers of One Power minigrid from April to December 2021**



Source: One Power Lesotho

### 3.6.4 Connections

These are the actual connections made by LEC monthly. The analysis will be on connections for Domestic and General Purpose consumers.

Table 5 displays new monthly connections by LEC for the year 2020/2021. A total of 11,864 Domestic and 1,037 General Purpose consumers were connected in 2020/2021. More domestic consumers were connected in November and less in April with 1,592 consumers and 12 consumers respectively. The highest number of connections for General

purpose consumers was in the month of July (164). There were no newly connected General purpose consumers in April.

**Table 5: New Monthly Connections by LEC for 2020/2021**

<b>Months</b>	<b>Connections</b>		<b>Total</b>
	<b>Domestic</b>	<b>General Purpose</b>	
April	12		12
May	322	46	368
June	979	82	1,061
July	1,519	164	1,683
August	1,426	67	1,493
September	1,334	138	1,472
October	926	52	981
November	1,592	130	1,722
December	827	54	881
January	440	51	491
February	1,360	132	1,493
March	1,127	121	1,248
<b>Total</b>	<b>11,864</b>	<b>1,037</b>	<b>12,905</b>

**Source: Lesotho Electricity Company**

### 3.6.5 Electricity Consumed

Electricity consumed is the actual amount of electricity that is availed by LEC to its consumers. It includes electricity purchased locally and imported from other countries.

Table 6 presents electricity consumed by LEC consumers in gigawatt hours for the period 2016/2017 to 2020/2021. For Industrial HV, more electricity was consumed in the year 2017/2018 with 241.83GWh while the least was consumed in the year 2020/2021 with 175.06GWh. Electricity consumed by Pre-paid Domestic consumers has been increasing throughout the years except from 2019/2020 to 2020/2021 where it decreased by 36.23GWh. Total electricity consumed was more in 2019/2020 and less in 2016/2017 with 796.64GWh and 731.87GWh respectively. The recorded consumption for Lifeline domestic consumers was 80.13GWh in 2020/2021.

**Table 6: Electricity Consumed by LEC Consumers in Gigawatt-hours for 2016/2017 to 2020/2021**

<b>Sector</b>	<b>2016/2017</b>	<b>2017/2018</b>	<b>2018/2019</b>	<b>2019/2020</b>	<b>2020/2021</b>
Domestic Consumers	0.60	0.53	0.53	0.42	0.24
General Purpose	2.12	1.84	1.93	1.81	1.61
Commercial HV	78.68	82.95	84.02	83.31	76.52
Commercial LV	57.15	58.35	61.23	61.55	59.30
Industrial HV	212.84	241.83	231.10	215.93	175.06
Industrial LV	43.41	41.06	43.43	45.61	42.94
LHDA	7.49	7.22	7.04	7.53	6.92
Pre-Paid Domestic	239.61	247.63	258.95	285.00	248.77

Pre-Paid General Purpose	87.64	89.44	92.79	92.09	83.96
Street Lights	2.34	2.10	3.69	3.38	2.14
Lifeline					80.13
<b>Total</b>	<b>731.87</b>	<b>772.95</b>	<b>784.70</b>	<b>796.64</b>	<b>777.58</b>

Source: Lesotho Electricity Company

### 3.6.6 Economic Sectors Consumption

A sector is an area of the economy in which businesses share the same or a related product or service. Dividing an economy into different sectors allows for more in-depth analysis of the economy as a whole. <https://www.investopedia.com/terms/s/sector.asp> . This section comprises consumption of electricity by different sectors of the economy.

Table 7 shows Electricity Consumed by Economic Sectors in Megawatt hours (MWh) for the period 2017/2018 to 2020/2021. It is observed that manufacturing sector was the most consuming sector throughout the period. Its consumption decreased from 282,514.37MWh in 2019/2020 to 187,968.49MWh in 2020/2021. “Other community, social and personal services activities” consumed less electricity than all other economic sectors for all the years. For all economic sectors, most electricity was consumed in 2018/2019 with 541,931.16MWh.

**Table 7: Electricity Consumed by Economic Sectors in Megawatt hours (MWh) for 2017/2018 – 2020/2021**

<b>Economic Sectors</b>	<b>2017/2018</b>	<b>2018/2019</b>	<b>2019/2020</b>	<b>2020/2021</b>
A - Agriculture, hunting and forestry	1,445.70	1,493.56	1,456.63	969.15
C - Mining and quarrying	27,288.08	28,191.31	27,494.24	18,293.06
D - Manufacturing	280,395.97	289,676.99	282,514.37	187,968.49
E - Electricity, gas and water supply	16,422.93	16,966.53	16,547.01	11,009.41
F - Construction	1,323.43	1,367.24	1,333.43	887.19
G - Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	19,874.34	20,532.17	20,024.49	13,323.12
H - Hotels and restaurants	11,835.63	12,227.39	11,925.05	7,934.23
I - Transport, storage and communications	22,391.29	23,132.43	22,560.45	15,010.40
J - Financial intermediation	12,072.51	12,472.11	12,163.72	8,093.03
K - Real estate, renting and business activities	36,872.16	38,092.62	37,150.73	24,717.92
L - Public administration and defence; compulsory social security	9,396.30	9,707.31	9,467.29	6,298.98
M - Education	21,684.86	22,402.62	21,848.69	14,536.84
N - Health and social work	29,490.48	30,466.61	29,713.29	19,769.48
O - Other community, social and personal services activities	81.01	83.69	81.62	54.31
Q - Extraterritorial organizations and bodies	33,993.41	35,118.58	34,250.23	22,788.09
<b>Total</b>	<b>524,568.12</b>	<b>541,931.16</b>	<b>528,531.24</b>	<b>419,186.03</b>

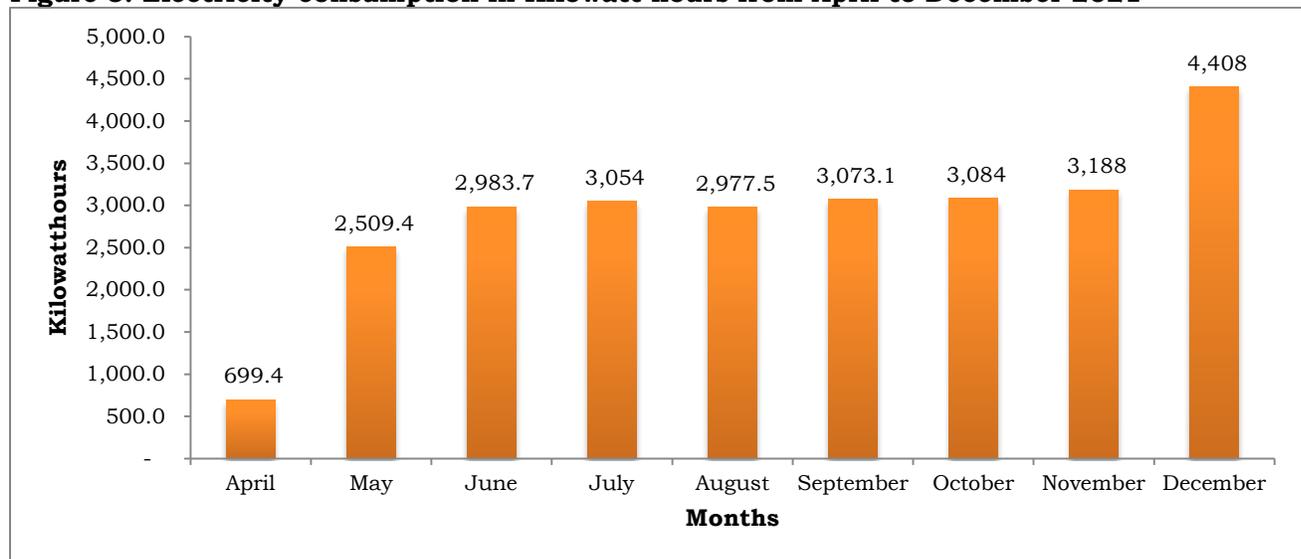
Source: Lesotho Electricity Company

### 3.6.7 Electricity Consumption of One Power

This is the amount of electricity that is sold to customers of Ha-Makebe monthly. One Power sells electricity generated from the power station to different customers near the station where the main grid does not reach. They sell at M5.00 per Kilowatt-hour

Figure 5 illustrates electricity consumption in Kilowatt hours from April to December 2021. It is observed that the highest consumption was in December with 4,408KWh while the lowest was in April with 699.4KWh.

**Figure 5: Electricity consumption in Kilowatt hours from April to December 2021**



Source: One Power Lesotho

### 3.7 Electricity Distribution

Electrical power distribution is the final stage of an electrical power system, which entails the delivery of electricity to the load. The primary role of this section is to carry the electricity from the transmission lines to the loads of individual customers. [What Is Electrical Power Distribution? » Science ABC.](#)

#### 3.7.1 Losses

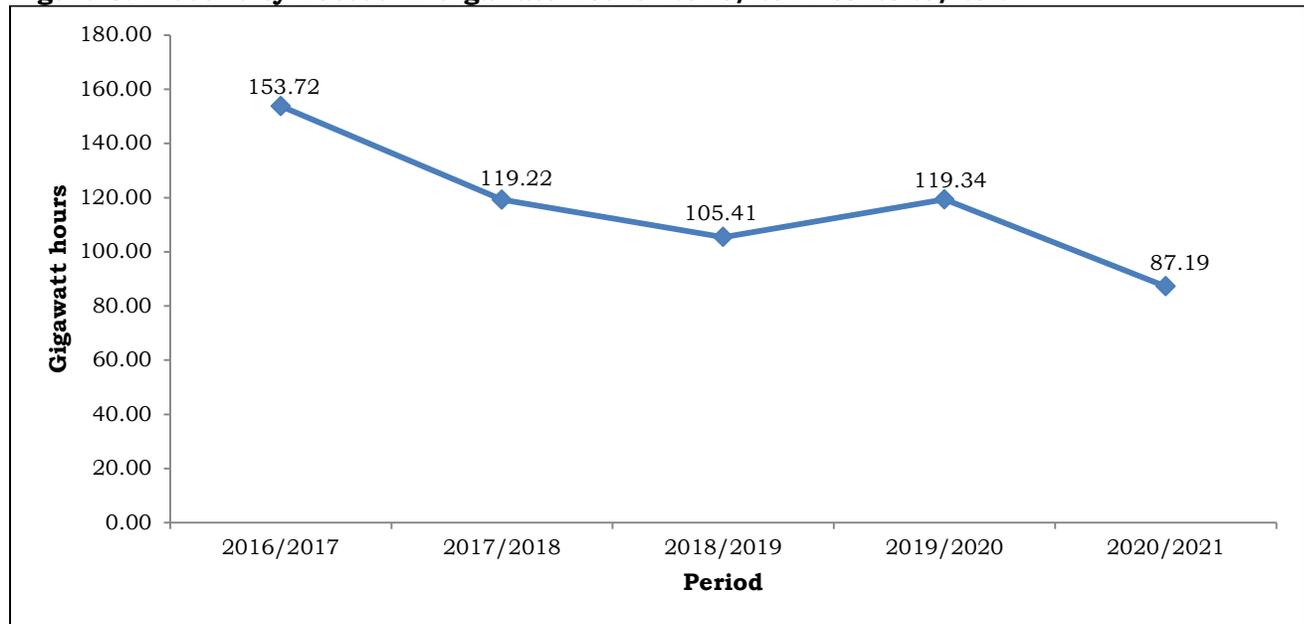
Electricity loss is a key component in measuring the efficiency and financial sustainability of the power sector. It represents the difference between the amount of electricity that enters the network and the amount that is delivered to end-users, reflecting the degree of productivity of transmission and distribution systems

[Power Lost: Sizing Electricity Losses in Transmission and Distribution Systems in Latin America and the Caribbean | Publications \(iadb.org\)](#)

Figure 6 displays electricity losses in gigawatt hours for the period 2016/2017 to 2020/2021. Quantity of electricity lost was highest in 2016/2017 with 153.72GWh. There was an increase of 13.21 percent in losses from 2018/2019 (105.41GWh) to 2019/2020

(119.34GWh). The figure also demonstrates that losses decreased by 26.94 percent from 2019/2020 to 2020/2021 (119.34GWh to 87.19GWh).

**Figure 6: Electricity Losses in Gigawatt Hours- 2016/2017 to 2020/2021**



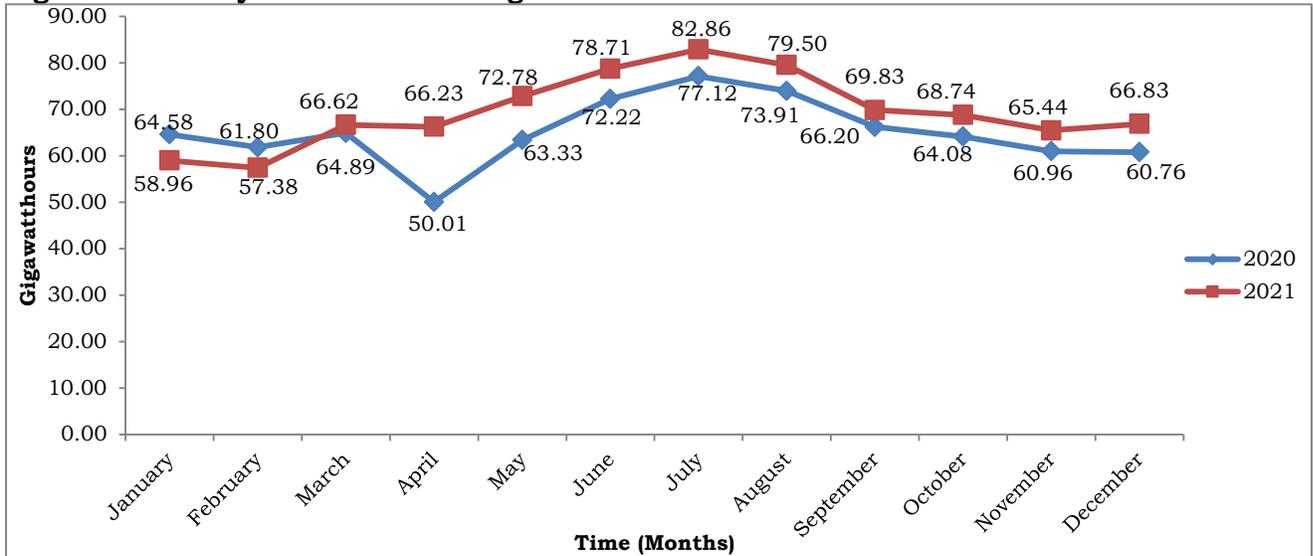
Source: Lesotho Electricity Company

### 3.7.2 Lesotho Load

“Load is the amount of electricity on the grid at any given time, as it makes its journey from the power source to all the homes, businesses and industries within a utility’s territory”, <https://www.directenergy.com/blog/what-is-electricity-load/>

Figure 7 portrays monthly load curve in gigawatt hours for the years 2020 and 2021. In all the years electricity load increased gradually from April until it reached the peak in July then started to decline again. The maximum load was 77.12GWh in 2020 and 82.86GWh in 2021. The minimum load was 50.01 GWh in April 2020 and 57.38GWh in February 2021.

**Figure 7: Monthly Load Curves in Gigawatt hours for 2020 and 2021**



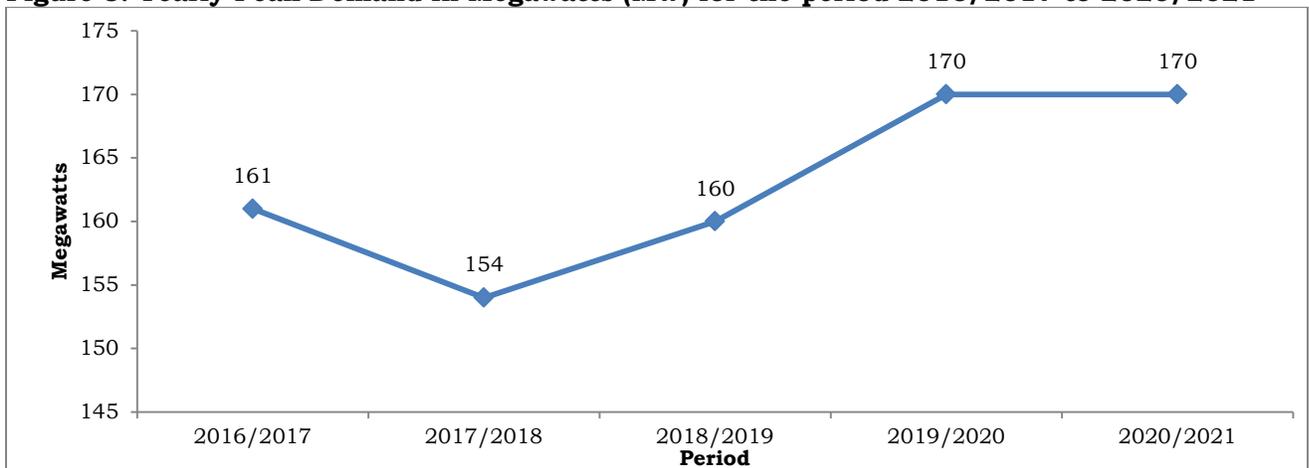
Source: Lesotho Highlands Development Authority

### 3.7.3 Peak Demand

Peak demand is when electricity usage on the network is at its highest. It is the time when everyone consumes more energy especially during very hot or cold weather. During this time most people switch their air conditioners or heaters in order to cool or warm their households, businesses etc. It can put a strain on the electricity network and lead to power outages. <https://www.ergon.com.au/network/manage-your-energy/> .

Figure 8 demonstrates yearly peak demand in Megawatts for the period 2016/2017 to 2020/2021. The highest peak demand was recorded in 2019/2020 (170MW) and remained constant in 2020/2021. The lowest peak demand was observed in 2017/2018 with 154MW.

**Figure 8: Yearly Peak Demand in Megawatts (MW) for the period 2016/2017 to 2020/2021**



Source: Lesotho Electricity Company

## 4.0 Petroleum Fuel

Petroleum, also known as crude oil, is a naturally occurring, yellowish-black liquid found in geological formations. It is commonly refined into various fuels and chemicals. <https://en.wikipedia.org/wiki/Petroleum>.

### 4.1 Petroleum Fuel Costs

Lesotho does not produce any crude oil, or any fossil fuel which makes it over dependent on imported fossil fuels. Petroleum fuels imported include both 93 and 95 Unleaded Petrol (ULP), Diesel 50ppm and Illuminating Paraffin (IP).

Petroleum fuel costs per litre in Maloti for the years 2020 and 2021 are shown in table 8. Generally, costs of Diesel 50ppm were higher than all other petroleum fuels costs whereas those of Illuminating Paraffin were lower. In 2020 the highest costs of petroleum fuels were observed in January with M12.50 (Unleaded petrol 93), M12.75 (Unleaded petrol 95), M13.75 (Diesel 50ppm) and M9.10 (Illuminating Paraffin) respectively. Petroleum fuel costs were highest in October and November 2021 with M16.60 (Unleaded petrol 93), M16.80 (Unleaded petrol 95), M16.65 (Diesel 50ppm) and M12.10 for Illuminating paraffin.

**Table 8: Petroleum Fuel Costs per Litre in Maloti for 2020 and 2021**

Months	2020				2021			
	ULP 93	ULP 95	Diesel 50 ppm	IP	ULP 93	ULP 95	Diesel 50 ppm	IP
January	12.50	12.75	13.75	9.10	11.10	11.20	11.60	7.05
February	12.40	12.55	13.30	8.80	12.05	12.15	12.30	7.65
March	12.30	12.45	12.95	8.30	12.07	12.80	12.95	8.25
April	9.30	9.40	10.90	5.85	13.60	13.75	13.40	9.45
May	8.20	8.30	9.10	3.90	13.35	13.50	13.15	9.40
June	9.85	10.10	10.40	5.45	14.25	14.35	14.25	9.90
July	11.40	11.60	11.95	6.85	15.10	15.25	14.75	10.40
August	11.20	11.35	12.00	6.85	14.90	15.05	14.45	10.20
September	11.60	11.70	11.85	6.75	15.35	15.50	15.25	11.00
October	11.10	11.20	10.90	6.05	16.60	16.80	16.65	12.10
November	10.80	10.90	10.95	6.35	16.60	16.80	16.65	12.10
December	10.70	10.80	11.10	6.60	16.35	16.55	16.65	12.00
<b>Average</b>	<b>10.95</b>	<b>11.09</b>	<b>11.60</b>	<b>6.74</b>	<b>14.28</b>	<b>14.48</b>	<b>14.34</b>	<b>9.96</b>

Source: Department of Energy

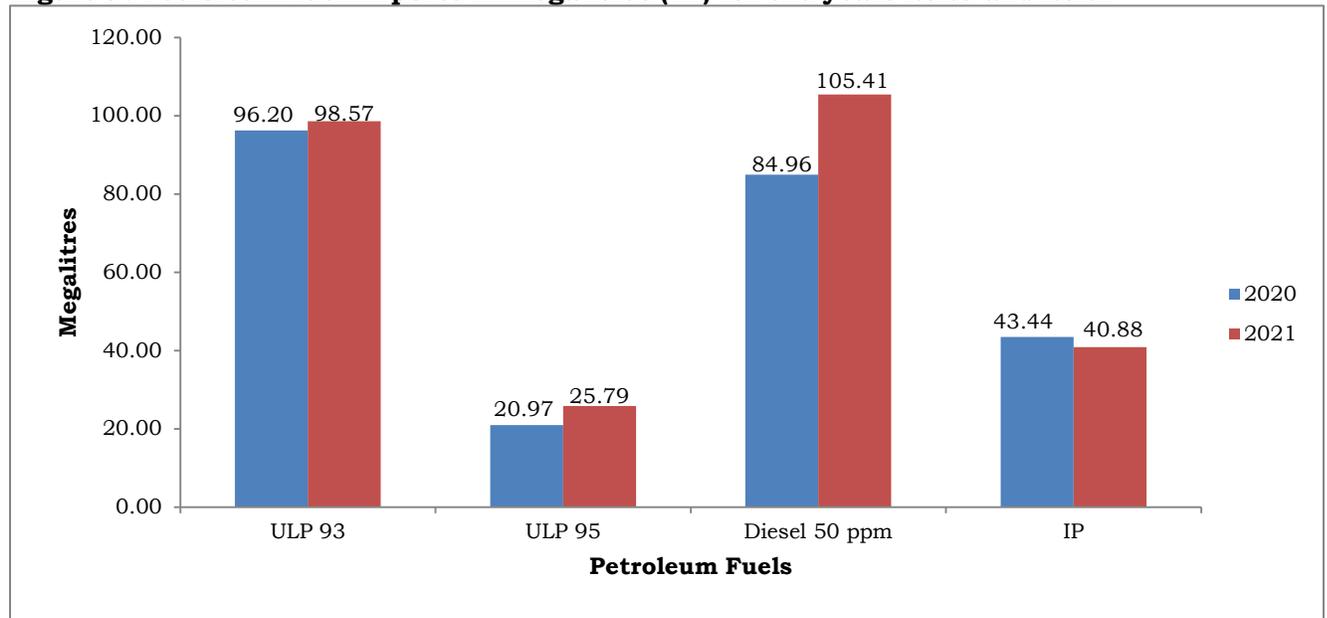
### 4.2 Petroleum Fuel Imports

All Lesotho's imported oil products come from South Africa, with three multi-national companies operating in Lesotho in that field, as they import and store the products in bulk storage facilities before they redistribute them throughout the country. [https://energypedia.info/wiki/Lesotho\\_Energy\\_Situation](https://energypedia.info/wiki/Lesotho_Energy_Situation)

Figure 9 depicts petroleum fuel imports in Megalitres (Ml) for the years 2020 and 2021. The figure displays that more Unleaded petrol 93 was imported in 2021 (98.57Ml) than in 2020

(96.20ML). Imports of Diesel 50ppm were highest in 2021 with 105.41ML. Illuminating paraffin imports dropped from 2020 to 2021 (43.44ML to 40.88ML).

**Figure 9: Petroleum fuel imports in Megalitres (Ml) for the years 2020 and 2021**



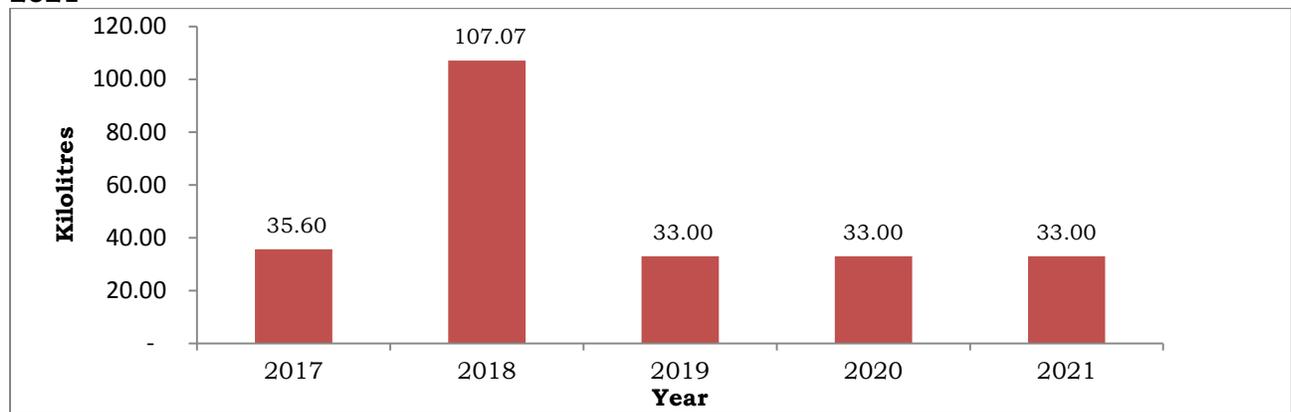
Source: Department of Energy

### 4.3 Aviation Gasoline Imports

Avgas (aviation gasoline) is an aviation fuel used in aircraft with spark-ignited internal combustion engines. The most commonly used fuels for commercial aviation are Jet A and Jet A-1, which are produced to a standardized international specification. <https://en.wikipedia.org/wiki/Avgas>

Figure 10 demonstrates aviation gasoline imports by Mission Aviation Fellowship in kilolitres for the years 2017 to 2021. Avgas imports were highest in 2018 with 107.07Kl. It is also observed that the least imports were recorded from 2019 to 2021 (33.00Kl).

**Figure 10: Aviation Gasoline Imports by Mission Aviation Fellowship in Kilolitres - 2017 to 2021**



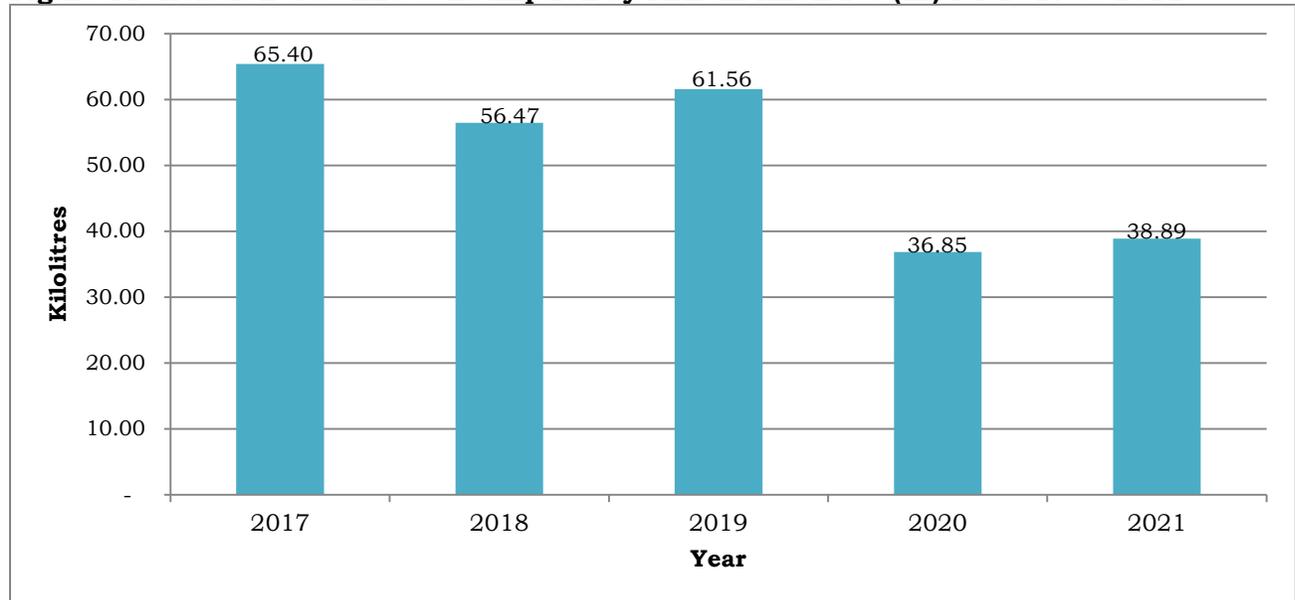
Source: Mission Aviation Fellowship

#### 4.4 Aviation Gasoline Consumption

Fuel consumption numbers depend upon a lot of factors including flight takeoff weight, flight time, cruising altitude and the like [Fuel Consumption of Popular Aircraft – All I Know About Aviation \(alliknowaviation.com\)](#)

The aviation gasoline consumption by MAF in kilolitres for the years 2017 to 2021 is illustrated in figure 11. It shows that most of the gasoline was consumed in 2017 (65.40Kl) and less in 2020 (36.85Kl). Gasoline consumption increased from 2020 to 2021 by 5.5 percent (36.85Kl to 38.89Kl).

**Figure 11: Aviation Gasoline Consumption by MAF in Kilolitres (Kl) for 2017 to 2021**



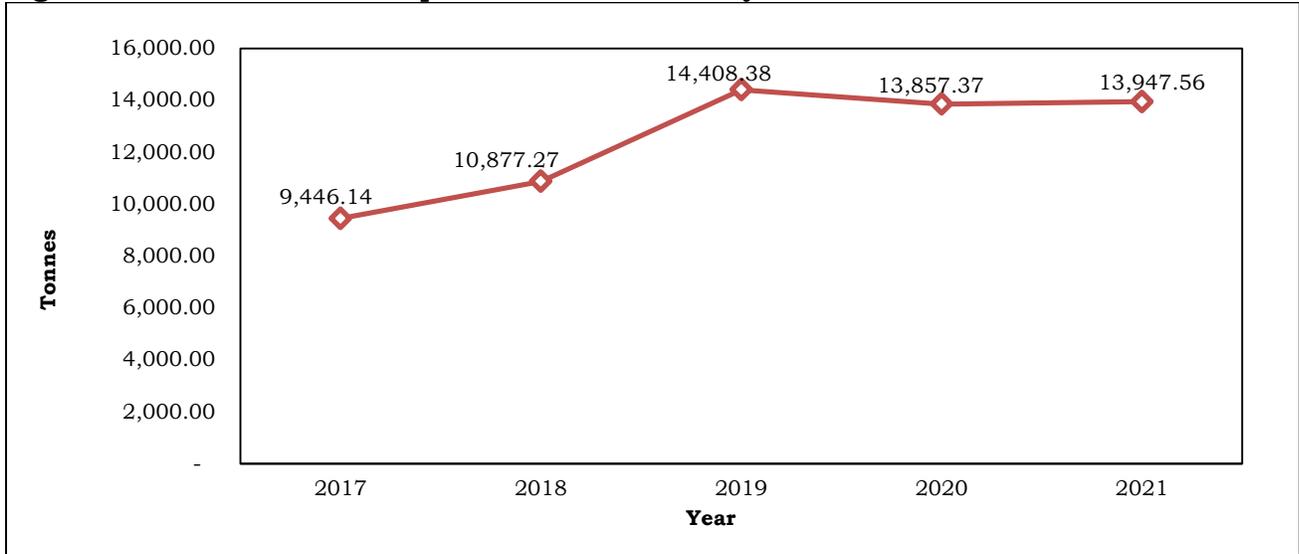
Source: Mission Aviation Fellowship

#### 4.5 Liquefied Petroleum Gas

Liquefied petroleum gas (LPG, LP gas, or condensate) is a fuel gas made of petrol which contains a flammable mixture of hydrocarbon gases, most commonly propane, butane, and propylene. [https://en.wikipedia.org/wiki/Liquefied\\_petroleum\\_gas](https://en.wikipedia.org/wiki/Liquefied_petroleum_gas).

Figure 12 displays volumes of LPG imports in tonnes for the years 2017 to 2021. It is demonstrated that an increase in LPG imports was observed from 2017 to 2019 where it reached a maximum of 14,408.38 tonnes in the latter year. The recorded LPG imports were 13,947.56 tonnes in 2021.

**Figure 12: Volumes of LPG Imports in tonnes for the years 2017 to 2021**



## 5.0 Summary

Electricity generation from Muela was highest in 2021 with 531.4 GWh. About 24.7 percent increase in generated electricity was noticed from 2020 (426.3 GWh) to 2021 (531.4 GWh). Total electricity produced by One Power minigrid was 26,919.1KWh with 25,166KWh generated by solar pv and 1,753.1KWh by LPG. The highest amount of electricity purchased from Muela was in 2016/2017 (512.05GWh) and the highest amount purchased from Eskom was 429.82GWh in 2019/2020. There were 183 customers of One Power from August to December 2021 and customers buy electricity at the rate of M5 per kilowatt hour. Electricity losses from LEC decreased by 26.94 percent from 2019/2020 to 2020/2021 (119.34GWh to 87.19GWh). The recorded peak demand by LEC was 170 megawatts in 2019/2020 and 2020/2021.

Petroleum fuel costs were highest in October and November 2021 with M16.60 (Unleaded petrol 93), M16.80 (Unleaded petrol 95), M16.65 (Diesel 50ppm) and M12.10 for Illuminating paraffin. The highest imported petroleum fuel in 2021 was Diesel 50ppm with 105.41 megalitres. Aviation fuel consumption was highest in 2017 with 65.40 kilolitres. The highest recorded value of LPG imports was 14,408.38 tonnes in 2019.

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## ANNEX

**Table 1: Electricity Generation and Sales to LEC in Gigawatt hours – 2017 to 2021**

Year	Generation	Sales to LEC
2017	501.0	500.2
2018	515.8	512.9
2019	391.7	390.8
2020	426.3	425.9
2021	531.4	530.3

Source: Lesotho Highlands Development Authority

**Table 2: Electricity Purchases by LEC in GWh from 'Muela, Eskom and EDM**

GWh	Muela	Eskom	EDM	Total
2016/2017	512.05	268.36	105.18	885.59
2017/2018	518.28	275.83	98.06	892.17
2018/2019	494.43	296.61	99.08	890.11
2019/2020	389.14	429.82	99.51	918.47
2020/2021	442.02	323.37	99.39	864.78

Source: Lesotho Electricity Company

**Table 3: Number of customers of One Power minigrid from April to December 2021**

Customer category	Months								
	April	May	June	July	August	September	October	November	December
Households/ residential*	11	159	175	172	176	176	176	176	176
Commercial and retail enterprises					5	5	5	5	5
Critical services customers					2	2	2	2	2
<b>Total</b>	<b>11</b>	<b>159</b>	<b>164</b>	<b>179</b>	<b>183</b>	<b>183</b>	<b>183</b>	<b>183</b>	<b>183</b>

Source: One Power Lesotho

**Table 4: New LEC Monthly Connections for 2020/2021**

Months	Connections			Total
	Domestic	General Purpose	Connections from other categories	
April	12	-		12
May	322	46		368
June	979	82		1,061
July	1,519	164		1,683
August	1,426	67		1,493
September	1,334	138		1,472
October	926	52	3	981
November	1,592	130		1,722
December	827	54		881
January	440	51		491
February	1,360	132	1	1,493
March	1,127	121		1,248
<b>Total</b>	<b>11,864</b>	<b>1,037</b>	<b>4</b>	<b>12,905</b>

Source: Lesotho Electricity Company

**Table 5: Electricity consumption in Kilowatt hours from April to December 2021**

<b>Months</b>	<b>Sales</b>
April	699.4
May	2,509.4
June	2,983.7
July	3,054
August	2,977.5
September	3,073.1
October	3,084
November	3,188
December	4,408
<b>Total</b>	<b>25,977.1</b>

**Source: One Power Lesotho**

**Table 6: Distribution losses in Gigawatt hours for 2016/2017 to 2020/2021**

<b>Period</b>	<b>2016/2017</b>	<b>2017/2018</b>	<b>2018/2019</b>	<b>2019/2020</b>	<b>2020/2021</b>
Gigawatt hours	153.72	119.22	105.41	119.34	87.19

**Source: Lesotho Electricity Company**

**Table 7: Lesotho Electricity Load for 2020 and 2021**

<b>Months</b>	<b>Gigawatt hours</b>	
	<b>2020</b>	<b>2021</b>
January	64.58	58.96
February	61.80	57.38
March	64.89	66.62
April	50.01	66.23
May	63.33	72.78
June	72.22	78.71
July	77.12	82.86
August	73.91	79.50
September	66.20	69.83
October	64.08	68.74
November	60.96	65.44
December	60.76	66.83
<b>Total</b>	<b>779.87</b>	<b>833.88</b>

**Source: Lesotho Highlands Development Authority**

**Table 8: Yearly Peak Demand in Megawatts (MW), 2016/2017 to 2020/2021**

<b>Period</b>	<b>2016/2017</b>	<b>2017/2018</b>	<b>2018/2019</b>	<b>2019/2020</b>	<b>2020/2021</b>
Peak Demand	161	154	160	170	170

**Source: Lesotho Electricity Company**

**Table 9: Petroleum fuel imports in Megalitres (Ml) for the years 2020 and 2021**

Months	Megalitres									
	ULP 93		ULP 95		Diesel 50ppm		IP		Total	
	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021
January	10.09	6.52	1.94	1.49	9.39	6.27	2.14	2.187	23.56	16.47
February	8.54	6.77	1.91	1.70	9.14	7.15	1.76	1.88	21.35	17.50
March	9.04	8.76	2.37	2.39	9.22	9.09	2.41	2.796	23.04	23.03
April	3.66	7.91	0.79	2.37	2.57	8.58	6.32	3.138	13.34	22.00
May	7.48	8.64	1.81	2.27	5.46	8.66	6.50	4.804	21.24	24.38
June	8.05	8.52	1.81	2.23	7.50	9.11	6.80	6.274	24.15	26.13
July	8.00	8.11	1.73	2.17	7.69	8.60	6.76	5.961	24.18	24.84
August	7.75	8.53	1.74	2.09	7.90	9.71	4.52	4.829	21.91	25.16
September	7.24	8.28	1.96	2.20	8.22	9.16	2.34	2.745	19.76	22.39
October	7.98	8.14	1.96	1.98	8.59	9.07	1.84	2.175	20.37	21.37
November	8.16	8.19	2.28	2.29	9.10	10.44	2.03	1.918	21.57	22.83
December	10.21	10.21	2.62	2.62	9.58	9.58	2.17	2.17	24.57	24.57
<b>Total</b>	<b>96.20</b>	<b>98.57</b>	<b>20.97</b>	<b>25.79</b>	<b>84.96</b>	<b>105.41</b>	<b>43.44</b>	<b>40.877</b>	<b>245.57</b>	<b>270.65</b>

Source: Department of Energy

**Table 10: Avgas imports in Kilolitres by MAF- 2017 to 2021**

Fuel type	2017	2018	2019	2020	2021
Avgas	35.60	107.07	33.00	33.00	33.00

Source: Mission Aviation Fellowship

**Table 11: Aviation Fuel Consumption in Kilolitres by MAF – 2017 to 2021**

Period	2017	2018	2019	2020	2021
Kilolitres	65.40	56.47	61.56	36.85	38.89

Source: Mission Aviation Fellowship

**Table 12: Volumes of LPG Imports in tonnes – 2017 to 2021**

<b>Months</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>Total</b>
January	662.41	955.64	1,253.59	1,123.08	1,107.49	5,102.21
February	617.34	819.23	941.72	1,236.39	1,133.32	4,747.99
March	631.99	980.38	1,308.41	1,106.90	1,251.77	5,279.46
April	823.15	1,007.61	1,187.20	1,413.39	1,057.19	5,488.53
May	653.18	819.80	1,283.14	977.19	1,129.64	4,862.95
June	840.40	973.01	1,198.74	1,147.87	1,133.19	5,293.21
July	794.64	1,071.94	1,100.84	1,104.79	1,063.78	5,135.99
August	1,054.89	905.28	1,376.48	1,231.23	1,420.73	5,988.61
September	909.93	912.31	1,174.45	1,036.11	993.12	5,025.91
October	799.33	878.19	1,061.89	982.91	1,033.73	4,756.04
November	611.79	739.26	1,181.90	1,100.00	1,019.44	4,652.39
December	1,047.10	814.63	1,340.04	1,397.51	1,604.16	6,203.44
<b>Total</b>	<b>9,446.14</b>	<b>10,877.27</b>	<b>14,408.38</b>	<b>13,857.37</b>	<b>13,947.56</b>	<b>62,536.72</b>