GHANA WHOLESALE ELECTRICITY MARKET BULLETIN

MARKET WATCH

Monthly Market Data Analysis

ISSUE NO. 55 **1st July 2020 to 31st July 2020**

This Bulletin covers major developments in the Wholesale Electricity Market (WEM) of Ghana from 1st July, 2020 to 31st July, 2020. It analyses the performance of the key WEM indicators against their benchmarks, and examines the likely implications of any discernable trends in the market. This edition of the WEM bulletin presents the mid-year review of the 2020 GWEM.

The Electricity Market Oversight Panel (EMOP) would very much appreciate and welcome comments from readers on the Bulletin. Reasonable care has been taken to ensure the information contained in this Bulletin is accurate at the time of publication, nevertheless, any errors, omissions or inaccuracies therein are regretted.

HIGHLIGHTS OF THE MONTH

The System Peak Load continued to decrease in July 2020 from 2,950.2 MW in May 2020 and 2,870.3 MW in June 2020 to 2,652.54 MW. From June 2020 to July 2020, the System Peak Load reduced by 7.6%. The System Peak Load recorded in July 2020 was 8.3% lower than the 2,894 MW projected in the 2020 ESP. A total of 258 MW was exported to CEB, CIE and SONABEL in July 2020 at the System Peak Load. Similarly, the Ghana Peak Load decreased from 2,666.3 MW in June 2020 to 2,437.7 MW in July 2020. Also, the Ghana Peak Load recorded was 5.3% lower than the 2,574 MW projected in the 2020 ESP. The average electricity demand likewise decreased by 3.8%, from 2,278.3 MW in June 2020 to 2,191.61 MW in July 2020.

In June 2020, the average electricity supplied decreased by 3.8%, from 54.68 GWh per day in June 2020 to 52.6 GWh per day in July 2020. Consequently, the total electricity supplied decreased by 0.6%, from 1,640.39 GWh in June 2020 to 1,630.56 GWh in July 2020. Out of the total electricity supplied in July 2020, a total of 13.76 GWh was imported from CIE, while the remaining 1,616.8 GWh was generated from domestic sources. The total electricity exported to CIE, CEB and SONABEL amounted to 138.19 GWh in July 2020.

The total electricity generated from the hydroelectric power plants in July 2020 constituted 29.4%, representing a marginal reduction from the 29.4% recorded in June 2020. Thermal generation sources accounted for 69.5% of the total electricity supplied in July 2020. The electricity generated from renewable sources continued to account for 0.3% of the total electricity supply.

The water level for the Akosombo GS

Table 1. Projected and Actual Outturn of electricity demand and supply in June 2020 and July 2020.

	May 2020		April 2020	
	Projected	Actual Outturn	Projected	Actual Outturn
Total Supply (GWh)	1,685.3	1,640.4	1,674.2	1,648.3
Source by Power Plants (GWh)				
AKOSOMBO	375.0	328.1	363.0	387.7
KPONG	68.0	64.3	70.0	73.1
BUI	42.0	92.9	75.0	104.9
Sunon Asogli	275.0	346.3	266.0	250.6
TAPCO	84.0	106.3	81.0	103.8
TICO	195.0	105.7	189.0	154.6
TT1PP	27.0	6.4	32.0	36.4
CENIT	77.0	73.9	74.0	67.6
TT2PP	-	8.7	-	15.7
Amandi	71.0	-	68.0	4.6
Karpowership	268.0	267.6	259.0	238.7
AMERI	125.0	116.2	121.0	116.1
KTPP	74.0	63.9	72.0	31.8
Trojan Power	-	-	-	-
CENPOWER	-	-	-	-
AKSA	-	11.3	-	17.4
Bridge Power	-	-	-	-
BXC Solar	2.0	2.4	2.0	2.5
Safisana			-	-
VRA Solar	0.3	0.2	0.2	0.2
Genser	-	38.7	-	36.8
Meinergy	2.0	1.9	2.0	2.2
Total Generation (GWh)	1,685.3	1,634.9	1,674.2	1,644.5
Imports (GWh)	-	5.5	-	3.9
Total Supply (GWh)	1,685.3	1,640.4	1,674.2	1,648.3
Deficit/Over supply (GWh)	-	(44.9)	-	(25.9)
Ghana Coincedent Peak Load (MW)	2,724.0	2,666.3	2,763.0	2,546.4
System Coincident Peak Load (MW)	3,054.0	2,870.3	3,093.0	2,824.4

continued to rise in July 2020 at a rate of 0.045 feet per day. On the contrary, the water level for the Bui GS continued to drop at a reduced rate of 0.071 feet per day from 0.19 feet per day in June 2020.

The share of the total natural gas consumed in the total fuel mix in July 2020 reduced from 99.1% in June 2020 to 98.9%. This was as a result of an increase in the electricity generation from the AKSA power plant. Consequently, the share of the total liquid fuel consumed increased from 0.9% in June 2020 to 1.1% in July 2020.

ELECTRICITY DEMAND AND SUPPLY

Electricity Demand

There was a reduction of 7.6% in the System Peak Load, from 2,870.3 MW in June 2020 to 2,652.54 MW in July 2020. Similarly, the System Peak Load recorded in July 2020 was 8.3% lower than the 2,894 MW projected in the 2020 ESP. A total of 258 MW was exported to CEB, CIE and SONABEL at the System Peak Load in July 2020. The total electricity exported to the neighbouring countries was 19.4% lower than the 320 MW projected in the 2020 ESP. However, there was electricity import from CIE at the System Peak Load for July 2020. Also, the Ghana Peak Load reduced by 5.3%, from 2,666.3 MW in June 2020 to 2,437.7 MW in July 2020. Likewise, the Ghana Peak Load recorded in July 2020 was 5.3% lower than the 2,574 MW projected in the 2020 ESP. The hydroelectricity power plants contributed 38.9% of the System Peak Load and 39.3% of the Ghana Peak Load in July 2020 with the remaining from thermal generation sources. In July 2020, the Average electricity demand dropped by 3.8%, from 2,278.32 MW in June 2020 to 2,191.61 MW. The reduction in the average electricity demand can be associated with seasonal variations in electricity demand. However, the System Load Factor increased from 77.3% in June 2020 to 80.4% in July 2020.

Electricity supply

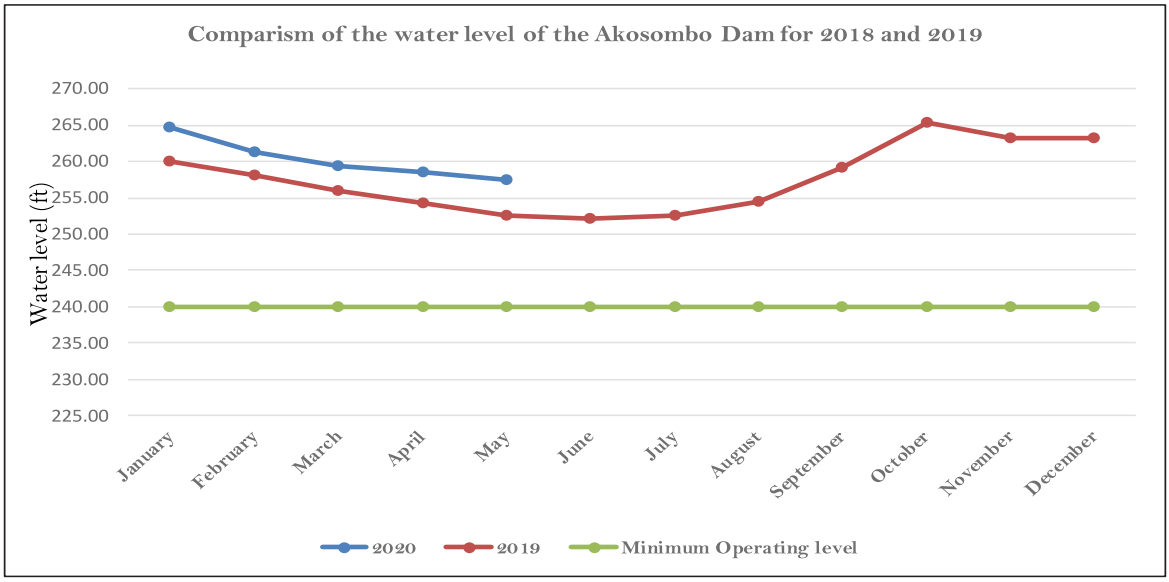
The average electricity supplied in July 2020 decreased by 3.8%, from 54.68 GWh per day in June 2020 to 52.6 GWh per day. Consequently, the total electricity supplied decreased by 0.6%, from 1,640.39 GWh in June 2020 to 1,630.56 GWh in July 2020. Of the total electricity supplied, 13.76 GWh was imported from CIE, with the remaining 1,616.8 GWh supplied from domestic sources. The total electricity exported was 138.19 GWh in July 2020, of which 39.43 GWh was supplied to CEB, 9.41 GWh to CIE and 89.34 GWh to SONABEL. The total supplied for domestic consumption reduced by 0.5%, from 1,500.24 GWh in June 2020 to 1,492.37 GWh in July 2020. The contribution of the total electricity generated from hydroelectric sources to the total electricity supplied reduced marginally from 29.6% in June 2020 to 29.4% in July 2020. The electricity generated from thermal sources accounted for 69.5% of the total electricity supplied in July 2020 which was lower than the 69.8% recorded in June 2020. The share of the electricity supplied by solar power plants continued to be 0.3% of the total electricity supply.

HYDRO DAM LEVELS

Akosombo Dam Water Level continued to increase in July 2020

The water level for the Akosombo GS continued to increase in July 2020 at a rate of 0.045 feet per day. The water level of 257.49 feet at the beginning of the year increased by 1.39 feet to 258.88 feet at the end of the month. The water level recorded at the end of the month was 6.28 feet above the water level recorded for the same period in 2019. Also, the water level recorded at the end of the month was 18.88 feet above the minimum operating level of 240 feet.

Figure 1: Month-End Water Level for Akosombo Dam from January 2019 to July 2020.



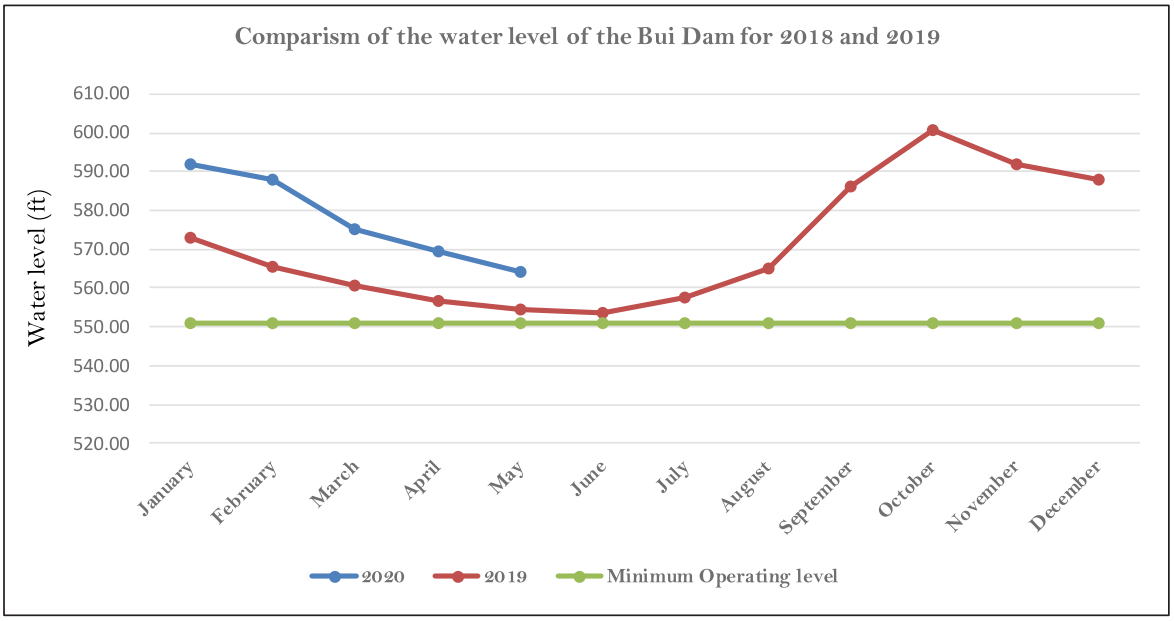
HIGHLIGHTS OF THE MONTH

Bui Dam Water Level continued to drop but at a reduced rate in July 2020

The water level for the Bui GS continued to drop in July 2020 but at a reduced rate of 0.071 feet per day from 0.099 feet per day in June 2020. The water level of 561.02 feet recorded at the beginning of the month reduced by 2.2 feet to 558.83 feet at the end of the month. The water level recorded at the end of the month was 1.23 feet above the water level recorded for the same period in 2019. Additionally, the month-end water level of the Bui GS was 7.56 feet above the minimum operating level.

Figure 2 shows the comparative end of month trajectory of the level of water in the Bui dam from January 2019 to July 2020.

Figure 2: Month-End Water Level for Bui Dam from January 2019 to July 2020



FUEL SUPPLY FOR POWER GENERATION

Natural gas imports from the West Africa Gas Pipeline Company (WAPCo) decreased in July 2020

There was a reduction of 4.3% in the average natural gas supplied by WAPCo in July 2020, from 68.23 MMSCFD in June 2020 to 65.31 MMSCFD. Also, the total natural gas supplied decreased from 2,046.95 MMSCF in June 2020 to 2,024.6 MMSCF in July 2020. The total natural gas supplied by WAPCo constituted 22.1% of the total natural gas consumed in July 2020 which was higher than the 21.3% recorded in June 2020. In the total fuel mix, the share of the total natural gas supplied increased marginally from 21.1% in June 2020 to 21.9% in July 2020.

Natural gas supply from domestic sources decreased in July 2020

The average natural gas supplied from domestic sources reduced by 7.7%, from 246.5 MMSCFD in June 2020 to 227.52 MMSCFD in July 2020. Likewise, the total natural gas supplied from domestic sources decreased from 7,394.86 MMSCF in June 2020 to 7,053.22 MMSCF in July 2020. The total natural gas supplied constituted 77.9% of total natural gas consumed in July 2020 which was lower than the 78.7% recorded in June 2020. In total fuel mix, the total natural gas supplied from domestic sources decreased from 78% in June 2020 to 77% in July 2020.

Liquid Fuel consumption increased in July 2020

The consumption of liquid fuel increased by 21.9% in July 2020, from 15,326.72 barrels in June 2020 to 18,685.16 barrels. The increase in liquid fuel consumption was due to increased generation from AKSA in July 2020. The share of the total liquid fuel consumed increased from 0.9% in June 2020 to 1.1% in July 2020. The Heavy Fuel Oil (HFO) continued to be the only liquid fuel consumed in July 2020 just as in June 2020.

HIGHLIGHTS OF THE MONTH

Plant by Plant Highlights

Electricity Generation at the Akosombo Generation Station (GS) decreased in July 2020

The Akosombo GS recorded a reduction in the average electricity supplied by 5.1%, from 10.94 GWh per day in June 2020 to 10.38 GWh per day in July 2020. Similarly, the total electricity supplied by the hydroelectric power plant decreased from 328.1 GWh in June 2020 to 375 GWh in July 2020. The total electricity supplied by Akosombo GS constituted 19.7% of the total electricity supplied in July 2020 and was 14.2% lower than the 375 GWh projected in the 2020 ESP. The Akosombo GS contributed 712.45 MW and 716.6 MW to the System Peak Load and the Ghana Peak Load respectively in July 2020. The electricity supplied by the power plant constituted 26.9% of the System Peak Load and 27.2% of the Ghana Peak Load.

Electricity supply by Kpong Generation Station (GS) decreased in July 2020

The Kpong GS witnessed a reduction of 3.2% in the average electricity supplied in July 2020, from 2.14 GWh per day in June 2020 to 2.07 GWh per day. Similarly, the total electricity supplied by the hydroelectric power plant decreased marginally by 0.02%, from 64.32 GWh in June 2020 to 64.31 GWh in July 2020. The total electricity supplied by the power plant in July 2020 was 5.4% lower than the 68 GWh projected in the 2020 ESP and constituted 3.9% of the total electricity supplied. The Kpong GS contributed 119.16 MW to the System Peak Load and 116 MW to the Ghana Peak Load, representing 4.5% and 4.4% of these respective loads in July 2020.

Electricity supply by the Bui Generation Station (GS) decreased in July 2020.

The average electricity supplied by the Bui GS reduced from 3.1 GWh per day in June 2020 to 3 GWh in July by 3.1%. On the contrary, the total electricity supplied by the Bui GS increased marginally by 0.1%, from 92.85 GWh in June 2020 to 92.95 GWh in July 2020. The increase in the total electricity supplied by the hydroelectric plant was due to a greater number of days in July than in June. The total electricity supplied by Bui GS was over a fold more than the 39 GWh projected in the 2020 ESP and constituted 5.7% of the total electricity supplied in June 2020. The Bui GS contributed 200.5 MW and 205.4 MW to the System Peak Load and the Ghana Peak Load respectively in July 2020. The total electricity supplied by the hydroelectric power plant constituted 7.6% of the System Peak Load and 7.8% of the Ghana Peak Load.

The Sunon Asogli Power Plant (SAPP) increased generation in July 2020

The average electricity supplied by the Sunon Asogli Power Plant (SAPP) increased marginally by 2.4%, from 11.54 GWh per day in June 2020 to 11.82 GWh in July 2020. Similarly, the total electricity supplied by SAPP increased by 5.8%, from 346.27 GWh in June 2020 to 366.38 GWh in July 2020. The total electricity supplied by the thermal power plant constituted 22.5% of the total electricity supplied in July 2020 and was 33.2% higher than the 275 GWh projected in the 2020 ESP. The SAPP contributed 540.2 MW to the System Peak Load and 515.2 MW to the Ghana Peak Load, representing 20.4% and 19.5% of the respective peak loads in July 2020. A total of 2,611.36 MMSCF of natural gas was consumed by the thermal power plant at an estimated heat rate of 7,895.73 Btu/kWh in July 2020 which was lower than the 8,005.7 Btu/kWh recorded in June 2020.

Ameri Energy Power Plant's generation decreased in July 2020

The Ameri Power Plant recorded a reduction in the average electricity supplied in July 2020 by 10.1%, from 3.87 GWh per day in June to 3.48 GWh per day. Also, the total electricity supplied by the thermal power plant reduced by 7.1%, from 116.15 GWh in June 2020 to 107.96 GWh in July 2020. The total electricity supplied by the thermal power plant constituted 6.6% of the total electricity supplied in July 2020. The Ameri power plant was scheduled to be offline in July 2020. The power plant contributed 146.4 MW and 143.1 MW to the System Peak Load and the Ghana Peak Load, representing 5.5% and 5.4% respectively in July 2020. The thermal power plant consumed a total of 985.47 MMSCF of natural gas at an estimated heat rate of 10,111.73 Btu/kWh which was marginally higher than the 10,108.06 Btu/kWh recorded in June 2020.

The Karpowership Power Plant's generation increased in July 2020

The Karpowership recorded an increase in the average electricity supplied in July 2020 by 2.1%, from 8.92 GWh per day in June 2020 to 9.11 GWh per day. The total electricity supplied by the powership increased by 5.5%, from 267.65 GWh in June 2020 to 282.4 GWh in July 2020. The total electricity supplied by the thermal power plant in July was 5.4% higher than the 268 GWh projected in the 2020 ESP and constituted 17.3% of the total electricity supplied. The Karpowership contributed 420.1 MW to the System Peak Load and 419.5 MW to the Ghana Peak Load, representing 15.8% and 15.9% of the peak loads respectively. The thermal power plant consumed a total of 2,021 MMSCF of natural gas at an estimated heat rate of 7,927.89 Btu/kWh which was marginally lower than the 7,951.98 Btu/kWh in June 2020.

AKSA Power Plant's generation increased in July 2020

There was an increase in the average electricity supplied by the AKSA power plant by 17.5%, from 0.38 GWh per day in June 2020 to 0.44 GWh per day in July 2020. The AKSA power plant supplied a total of 13.76 GWh in July 2020 which was 21.4% higher than the 11.33 GWh supplied in June 2020. The total electricity supplied by the power plant in July 2020 constituted 0.8% of the total electricity supplied. The thermal power plant was however scheduled to be offline in July 2020. The AKSA power plant supplied 16 MW and 15.5 MW at the System Peak Load and the Ghana Peak Load in July 2020. The total load supplied by the power plant constituted 0.6% of both peak loads. The thermal power plant consumed 18,685 barrels of HFO at an estimated heat rate of 8,216.51 Btu/kWh in July 2020, which was higher than the 8,164.23 Btu/kWh recorded in June 2020.

Takoradi International Company (TICO) generation decreased in July 2020

The average electricity supplied by the Takoradi International Company (TICO) decreased significantly by 52.3%, from 3.52 GWh per day in June 2020 to 1.68 GWh per day in July 2020. Consequently, the total electricity supplied by the thermal power plant decreased from 105.34 GWh in June 2020 to 52.09 GWh in July 2020. The total electricity supplied by the thermal power plant was 73.9% significantly lower than the 195 GWh projected in the 2020 ESP and constituted 3.2% of the total electricity supplied in July 2020. TICO supplied 112.32 MW to the System Peak Load and 113 MW to the Ghana Peak Load, representing 4.2% and 4.3% of the respective loads in July 2020. A total of 569.7 MMSCF of natural gas was consumed by TICO at an estimated

heat rate of 12,115.7 Btu/kWh in July 2020 which was higher than the 11,814.9 Btu/kWh recorded in June 2020.

Takoradi Power Company (TAPCo) Plant's generation increased in July 2020

TAPCo, in July 2020 recorded an increase of 5.5% in the average electricity supplied from 3.54 GWh per day in June 2020 to 3.74 GWh. The total electricity supplied by the power plant increased by 9%, from 106.34 GWh in June 2020 to 115.87 GWh in July 2020. The total electricity supplied by the power plant constituted 7.1% of the total electricity supplied in July 2020 and was 30.6% lower than the 167 GWh projected in the 2020 ESP. The thermal power plant contributed 157.91 MW and 159 MW to the System Peak Load and the Ghana Peak Load, representing 6% of both peak loads in July 2020. The thermal power plant 827.68 MMSCF of natural gas at an estimated heat rate of 7,913.33 Btu/kWh in July 2020 which was lower than the 8,300.99 Btu/kWh projected in the 2020 ESP.

CENIT Power Plant's increased its generation in July 2020.

The CENIT power plant recorded an increase in the average electricity supplied by 4.4%, from 2.46 GWh per day in June 2020 to 2.49 GWh in July 2020. Similarly, the total electricity supplied by the CENIT power plant increased from 73.94 GWh in June 2020 to 77.16 GWh in July 2020. The total electricity supplied by the thermal power plant constituted 4.7% of the total electricity supplied in July 2020. However, the thermal power plant was scheduled to be offline in the 2020 ESP. The CENIT power plant contributed 109 MW to the System Peak Load and 108 MW to the Ghana Peak Load in July 2020. The total load supplied by the thermal power plant constituted 4.1% of both peak loads. The thermal power plant consumed a total of 804.19 MMSCF of natural gas at an estimated heat rate of 11,545.2 Btu/kWh in July 2020 which was higher than the 10,757.07 Btu/kWh in June 2020.

Tema Thermal 1 Power Plant's (TT1PP) increased generation in July 2020

The TT1PP continues its operation in July 2020 and supplied a total of 72.51 GWh. The thermal power plant's supply constituted 4.5% of the total electricity supplied in July 2020. The TT1PP was projected to be offline in the 2020 ESP. The thermal power plant contributed 108 MW and 109 MW to the System Peak Load and the Ghana Peak Load respectively, representing 4.1% of both peak loads. A total of 818.82 MMSCF of natural gas was consumed by the thermal power plant at an estimated heat rate of 12,509.55 Btu/kWh in July 2020.

Embedded Electricity Generation

Genser Power Plant's generation decreased in July 2020

The Genser power plant witnessed a marginal reduction in the average electricity supplied by 1.2%, from 1.29 GWh per day in June 2020 to 1.28 GWh per day in July 2020. On the contrary, the total electricity supplied increased by 2.1%, from 38.71 GWh in June 2020 to 39.53 GWh in July 2020. The total electricity supplied by the thermal power plant constituted 2.4% of the total electricity supplied in July 2020. The Genser power plant consumed a total of 395.39 MMSCF of natural gas at an estimated heat rate of 11,080.23 Btu/kWh in July 2020, which was lower than the 11,391.51 Btu/kWh recorded in June 2020.

Meinergy Solar generation decreased in July 2020

The Meinergy solar power plant recorded a reduction of 6% in the total electricity supplied in July 2020, from 1.89 GWh in June 2020 to 1.78 GWh. The total electricity supplied by the solar power plant was 11% lower than the 2 GWh projected in the 2020 ESP and constituted 0.1% of the total electricity supplied in July 2020.

VRA Navrongo Solar generation decreased in July 2020

The total electricity supplied by the VRA solar decreased marginally by 3.4%, from 0.22 GWh in June 2020 to 0.21 GWh in July 2020. The solar power plant supplied 30% less than the projected 0.3 GWh in the 2020 ESP. The total electricity supplied by power plant constituted 0.01% of the total electricity supplied in July 2020.

Electricity Exchange – Import increased while Export decreased in July 2020

The average electricity imported from CIE increased in July 2020 by over 100%, from 0.18 GWh per day in June 2020 to 0.44 GWh per day. Consequently, the total electricity imported increased from 5.54 GWh in June 2020 to 13.76 GWh in July 2020. The total electricity imported constituted 0.8% of the total electricity supplied in July 2020.

The average electricity export to CIE, CEB and SONABEL reduced by 4.6%, from 4.67 GWh per day in June 2020 to 4.46 GWh per day in July 2020. This was due to a reduction in the average electricity exported to CEB by 16%, from 1.51 GWh per day in June 2020 to 1.27 GWh per day in July 2020. On the contrary, the average electricity exported to CIE and SONABEL increased by 1.9% and 0.8%, from 0.298 GWh per day and 2.86 GWh per day in June 2020 to 0.304 GWh per day and 2.88 GWh per day in July 2020 respectively.

The total electricity exported to CEB, CIE, and SONABEL decreased from 140.15 GWh in June 2020 to 138.19 GWh in July 2020. The electricity exported to CEB reduced from 45.42 GWh in June 2020 to 39.43 GWh in July 2020. Export to CIE and SONABEL increased from 8.94 GWh and 85.79 GWh in June 2020 to 9.41 GWh and 89.34 GWh in July 2020 respectively.

Ghana continued to be a net exporter of electricity in July 2020.

Monthly Market Data Analysis

Figure 3a: Shares of sources of fuel in the total fuel mix for power generation

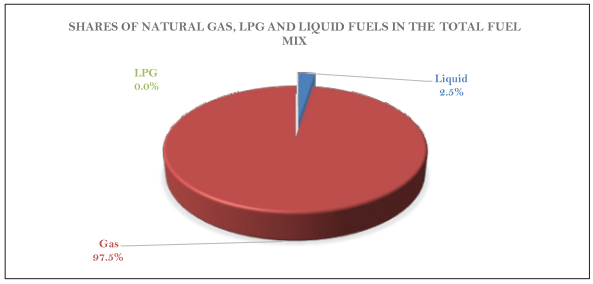


Figure 3b: Shares of fuel type in the generation fuel mix power generation

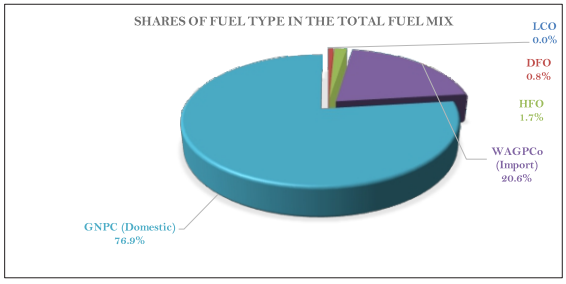


Figure 4a: Contribution of Natural Gas Supply by sources

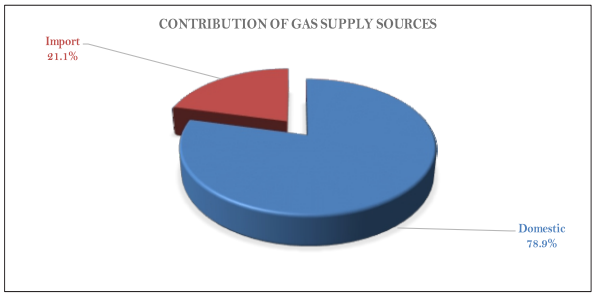
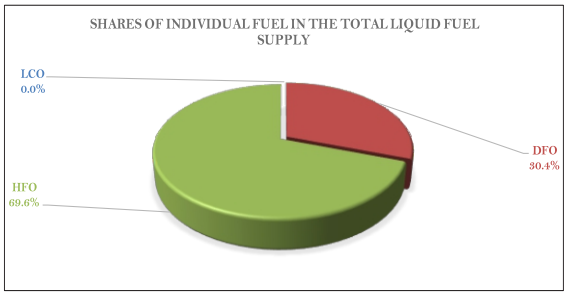


Figure 4b: Contribution of individual fuel in the liquid fuel supply

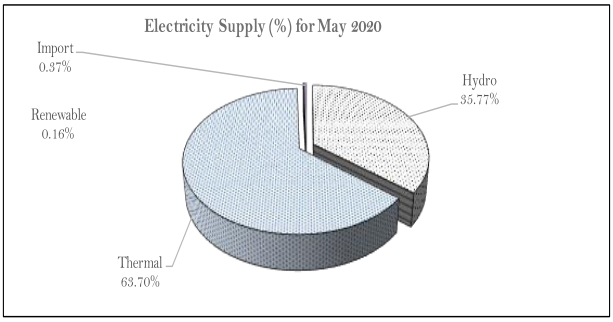


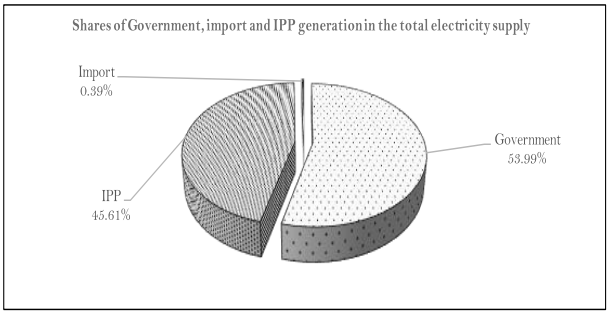
Peak Electricity Supply - May 2020			
Source of Supply	Generation at System Peak Load (MW)	Generation at Ghana Peak Load (MW)	Eleectricity Supply (GWh)
AKOSOMBO	782.69	862.66	432.88
KPONG	117.03	106.10	78.38
BUI	211.78	204.90	106.83
SEAP	433.10	342.80	262.18
TAPCO	150.96	100.25	108.90
TICO	218.67	217.13	151.32
TT1PP	104.00	-	52.27
CENIT	107.00	109.00	77.44
TT2PP	24.40	-	8.97
MRP	193.10	-	32.44
KARPOWER	311.30	414.70	251.60
AMERI	142.20	142.90	117.82
KTPP	-	-	14.64
Trojan Power	-	-	-
CENPOWER	-	-	0.72
AKSA	154.00	257.90	22.49
BXC Solar	-	-	-
Safisana	-	-	2.47
VRA Solar	-	-	-
Genser	-	-	0.24
IMPORT	-	63.00	38.59
Export to CIE at peak	2,950.23	2,821.34	2.16
Export to CEB at peak	56.00	-	6.39
Export to Sonabel	127.00	69.00	1,768.73
System Coincident Peak Load	160.00		
Ghana Coincedent Peak Load		**2,626.34**	
Total Supply			**1,760.18**

OPERATIONAL FACT SHEET

Average Monthly Flowrate (MMSCFD)	
Location	Monthly Average
Etoki	70.82
Tema WAGPCo	113.72
Aboadze WAGPCo	2.09
Aboadze GNGC	124.59
Reverse Flow	49.39

May-20			
	Beginning month (ft)	End month (ft)	Change in water level
Hydro Dam			(feet)
Akosombo	258.50	257.41	-1.09
Bui	569.55	564.01	-5.54

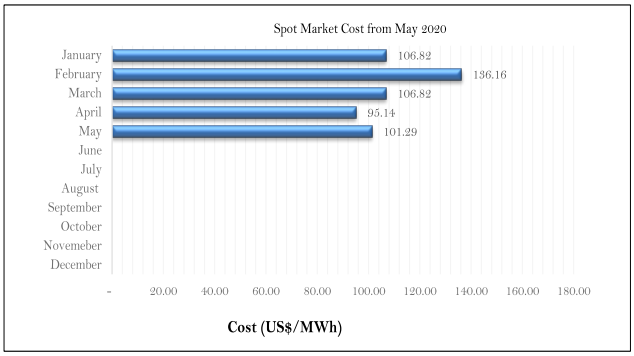


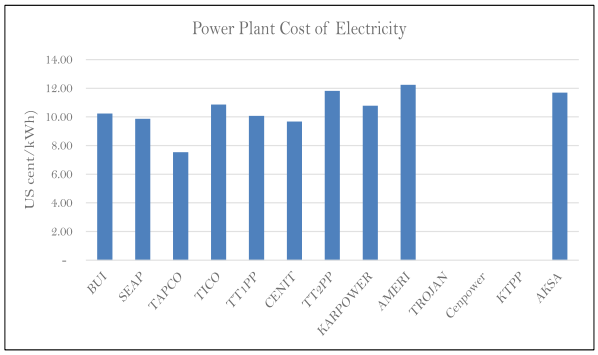


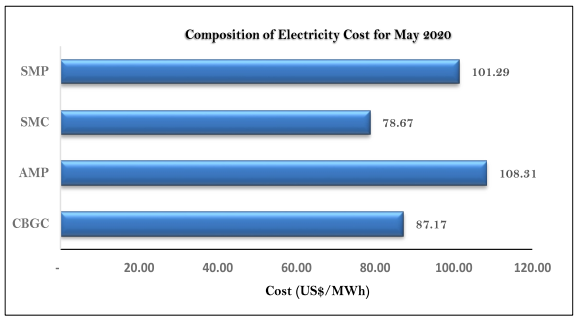
Power Plant Data May 2020							
	Installed Capacity (MW)	Plant Capacity Utilization (%)	Electricity Generation (GWh)	Natural Gas Consumption (MMBtu)	LCO Consumption (MMBtu)	DFO Consumption (MMBtu)	HFO Consumption (MMBtu)
Akosombo	1,020.00	57.04	432.88	-	-	-	-
Kpong	160.00	65.84	78.38	-	-	-	-
Bui	400.00	35.90	106.83	-	-	-	-
SEAP	560.00	62.93	262.18	2,025,074.25	-	-	-
TAPCO	330.00	44.36	108.90	903,986.39	-	-	-
TICO	340.00	59.82	151.32	1,787,830.85	-	-	-
TT1PP	126.00	55.75	52.27	642,699.75	-	-	-
CENIT	126.00	82.61	77.44	833,016.69	-	-	-
TT2PP	87.00	13.86	8.97	115,787.24	-	-	-
KARPOWER	470.00	71.95	251.60	2,011,564.74	-	-	-
AMERI	250.00	63.34	117.82	1,207,897.10	-	-	-
Cenpower	370.00	0.26	0.72	-	-	-	
TROJAN	56.00	-	-	-	-	-	-
KTPP	220.00	8.95	14.64	88,747.66	-	80,025.79	-
AKSA	360.00	8.40	22.49	-	-	-	183,616.91
Amandi	192.00	22.71	32.44	257,679.68	-	-	-
Bridge Power	-	-	-	-	-	-	-
GENSER	95.00	54.60	38.59	439,484.60	-	-	-
VRA Solar	2.50	12.85	0.24				
BXC	20.00	18.37	2.73	-	-	-	-
Meinergy	20.00	15.08	2.24	-	-	-	-
Total	**5,204.50**	45.52	**1,762.68**	**10,313,768.95**	**-**	**80,025.79**	**183,616.91**

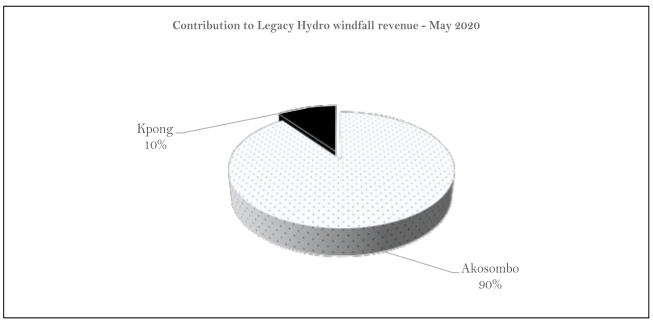
ECONOMIC FACT SHEET

		Actual	Projected	Difference
Average Market Energy Cost	US$/MWh	69.57	61.68	7.89
Average Market Capacity Charge (AMCC)	US$/MWh	38.74	41.59	(2.84)
Total Average Market Cost (TAC)	US$/MWh	108.31	103.27	5.05
System Marginal Cost (SMC)	US$/MWh	78.67	67.33	11.33
System Marginal Capacity Charge (SMCC)	US$/MWh	22.62	23.95	(1.33)
Spot Market Price (SMP)	US$/MWh	101.29	91.28	10.01
Composite Bulk Generation Charge (CBGC)	US$/MWh	87.17	87.17	-
Deviation of TAC from CBGC	US$/MWh	(21.14)	(16.10)	(5.05)
Deviation of SMP from CBGC	US$/MWh	(14.12)	(4.11)	(10.01)



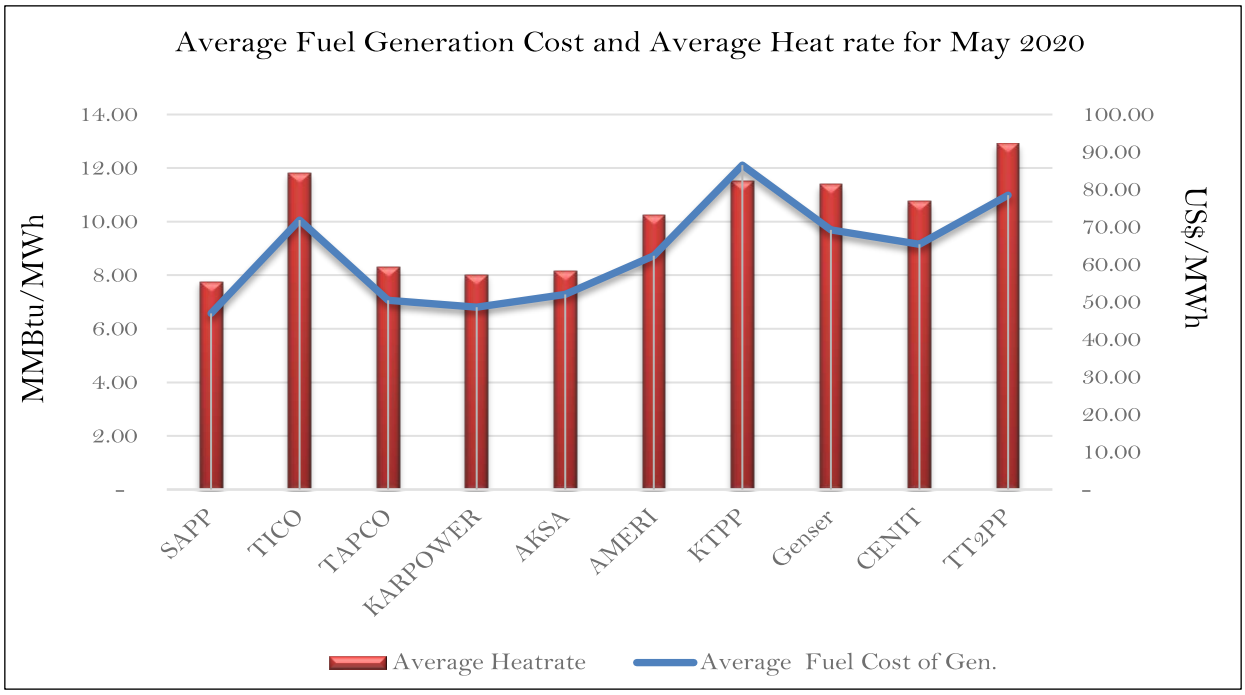






	Gazetted Natural Gas Price	Weighted average Natural Gas Price	LCO	HFO	DFO	LPG
US$/MMBTu	6.08	6.20	6.50	6.37	9.09	10.21

Average Fuel Prices		
		May-20
Fuel Type	Unit	Delivered Cost
Natural Gas	US$/MMBtu	6.08
LCO	US$/BBL	34.38
HFO	US$/Tonne	186.12
DFO	US$/Tonne	367.05
LPG	US$/Tonne	435.60



Power Plant	Capacity Utilization (%)	Average Heat rate (Btu/KWh)	Average Fuel Cost of Generation (US$/MWh)	Emission Factor (kgCO2/kWh)
Akosombo	57.04	-	-	-
Kpong	65.84	-	-	-
Bui	35.90	-	-	-
SAPP	62.93	7,723.97	46.96	0.41
TAPCO	44.36	8,300.99	50.47	0.44
TICO	59.82	11,814.90	71.83	0.63
TT1PP	55.75	12,296.94	74.77	0.65
CENIT	82.61	10,757.07	65.40	0.57
TT2PP	13.86	12,905.83	78.47	0.68
Amandi	71.95	7,944.18	48.30	0.42
KARPOWER	71.95	7,995.01	48.61	-
AMERI	63.34	10,251.97	62.33	0.54
TROJAN	-	-	-	-
KTPP	8.95	11,525.56	86.51	0.72
AKSA	8.40	8,164.23	52.01	0.64
Cenpower	0.26	-	-	-
Genser	54.60	11,388.56	69.24	0.60

TRANSACTIONS IN THE GHANA WHOLESALE ELECTRICITY MARKET IN JUNE 2020

2.1. ELECTRICITY DEMAND

2.1.1. System Demand Overview

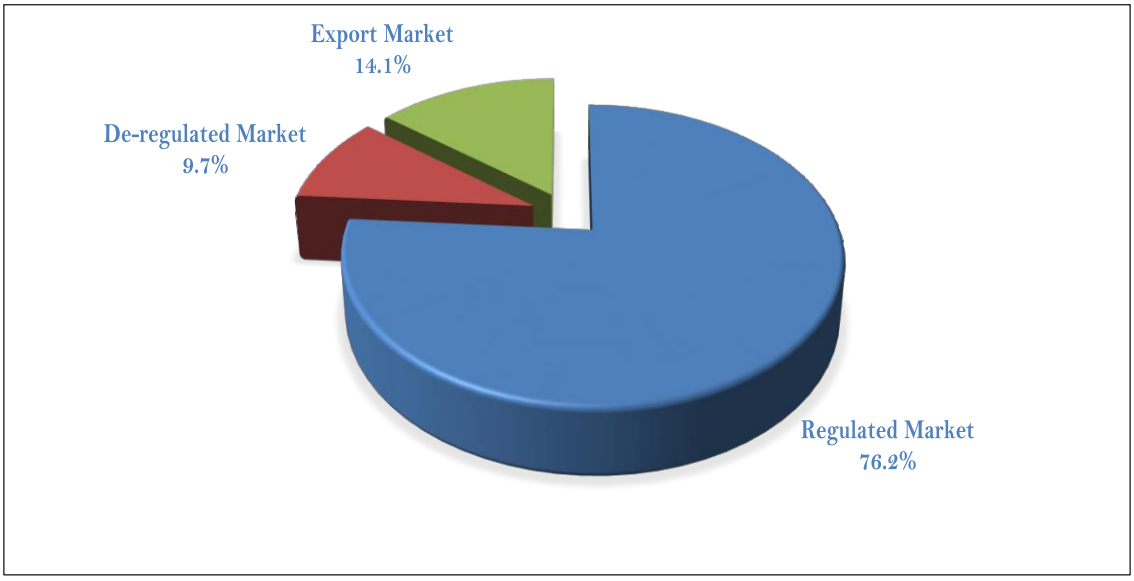
The System Peak Load of 2,652.54 MW recorded in July 2020 constituted domestic and export demand but no import from CIE. The System Peak Load recorded in July 2020 was 8.3% lower than the 2,894 MW projected in the 2020 ESP. The average electricity demand of 2,191.6 MW was 3.3% higher than the 2,122.7 MW projected in the 2020 ESP.

In July 2020, the electricity generated from hydroelectric power plants constituted 38.9% of the System Peak Load, representing 1,032.11 MW. This was augmented with 1,620.43 MW from thermal generation sources, representing 61.1% of the System Peak Load recorded in July 2020.

There was a reduction of 5.3% in the Ghana Peak Load of 2,437.7 MW recorded in July 2020, from 2,574 MW projected in the 2020 ESP.

The total electricity consumed in the Ghana Wholesale Electricity Market (GWEM) in May 2020 was 1,492.42 GWh. The total electricity consumed in May 2020 was 4.5% lower than the 1,562.96 GWh projected in the 2020 ESP. Out of the total electricity consumed in July 2020, The Regulated Market accounted for 76.2%, the De-Regulated Market accounted for 9.7% and 14.1% for the Export Market.
Figure 2.1 shows the shares of electricity according to the type of market.

Figure 2.1: Shares of the electricity consumed in the various market in May 2020

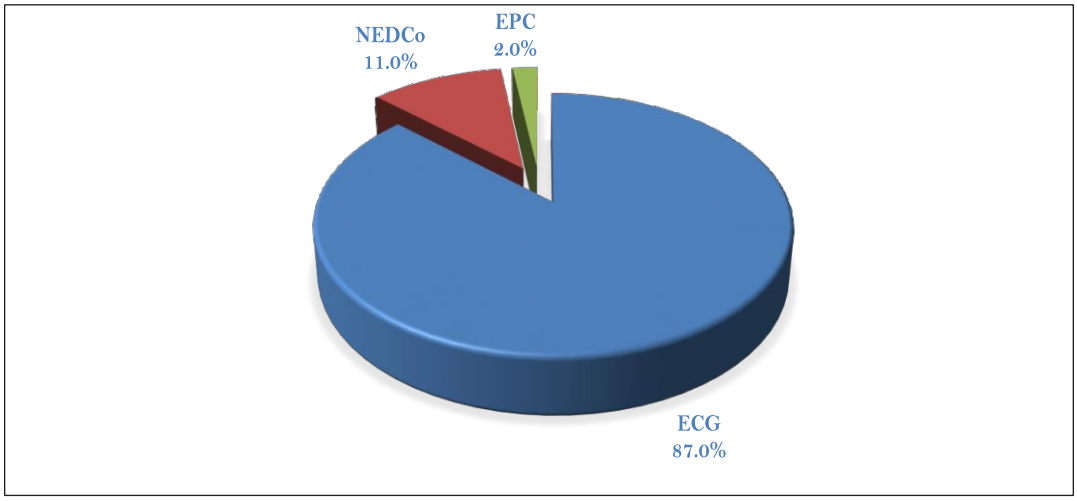


2.2.2 Regulated Market Demand

The Distribution Companies namely, Electricity Company of Ghana (ECG), Northern Electricity Distribution Company (NEDCo) and Enclave Power Company (EPC) are the primary players in the Regulated Market. The collective average electricity demand for the Regulated Market was 1,528.36 MW in July 2020, which was 3.5% higher than the 1,477 MW projected in the 2020 ESP.

The total electricity consumed in the Regulated Market was 1,528.36 GWh in July 2020 which was 3.5% higher than the 1,477 GWh projected in the 2020 ESP. The total electricity consumed in the Regulated Market in July 2020 constituted 76.2% of the total electricity consumed. The ECG in July 2020 consumed a total of 988.87 GWh, which was 3.3% higher than the 957.21 GWh projected in the 2020 ESP. The total electricity consumed by ECG constituted 87% of the total electricity consumed in the Regulated Market and 66.3% of the total electricity consumed in the GWEM. NEDCo recorded a total consumption of 125.09 GWh in July 2020, which was 5.5% higher than the 118.57 GWh projected in the 2020 ESP. NEDCo's consumption constituted 11% and 8.3% of the total electricity consumed in the Regulated Market and the GWEM respectively. Lastly, the EPC consumed a total of 23.14 GWh in July 2020, representing 2% of the total electricity consumed in the Regulated Market. The total electricity consumed by EPC was 2.7% lower than the 23.78 GWh projected in the 2020 ESP and constituted 1.5% of the total consumption for July 2020. Figure 2 shows the shares of electricity consumed by the Distribution Companies in the Regulated Market in July 2020.

Figure 2: Shares of the electricity consumed by the Distribution Companies in July 2020.



2.2.3 De-regulated Market Demand

The De-Regulated Market in Ghana is made up of Bulk Customers whose consumption is above a threshold determined by the Energy Commission and also purchase electricity directly from wholesale suppliers for their own consumption and are granted permits by the Energy Commission to do so. The Bulk Customers operating in the De-Regulated Market include mining companies and large industrial customers. It is important to note that some Bulk Customers within the distribution networks purchase their needs from the Distribution Companies.

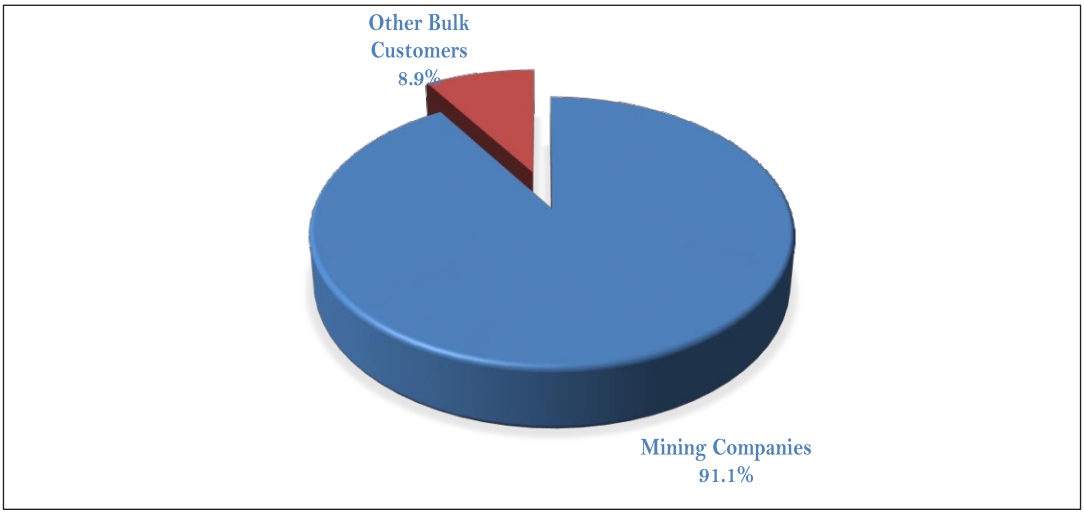
The Bulk Customers in July 2020 recorded an average electricity demand of 194.56 MW, which was 6.7% lower than the 208.44 GWh projected in the 2020 ESP. The electricity demand for the Mining Companies continued to constitute 91% of the total electricity demand of the Bulk Customers. The remaining 9% electricity demand of the Bulk Customers is by other Non-Mining Companies (Other Bulk Customers).

In July 2020, the Bulk Customers consumed a total of 144.75 GWh of electricity which constituted 9.7% of the total electricity consumed. The total electricity consumed by the Bulk Customers was 6.7% lower than the 155.08 GWh projected in the 2020 ESP.

The Mining Companies consumed a total of 131.83 GWh in July 2020. This total was 2.9% lower than the 135.72 GWh projected in the 2020 ESP and constituted 8.8% of the total electricity consumed in July 2020. Also, the total electricity consumed by the Mining Companies constituted 91.1% of the total electricity consumed by the Bulk Customers. The total electricity consumed by the Other Bulk Customers was 12.92 GWh which was 3.5% lower than the 19.36 GWh projected in the 2020 ESP. The total electricity consumed by the Other Bulk Customers constituted 0.9% of the total electricity consumed and 8.9% of the total electricity consumed by Bulk Customers in July 2020.

The Other Bulk Customers consumed a total of 13.13 GWh in May 2020, which was 33% lower than the 19.58 GWh projected in the 2020 ESP. The total electricity consumed by the Other Bulk Customers constituted 9% of the total electricity consumed by Bulk Customers. Figure 2.3 shows the shares of electricity consumed by customer category in the De-Regulated Market in May 2020.

Figure 2.3: Shares of the electricity consumed by customer category in the De-Regulated Market



2.2.4 Export Market Demand

Ghana exports electricity on contractual arrangements to its neighbouring countries: Togo and Benin through Communauté Electrique du Bénin (CEB) and Burkina Faso through La Société Nationale d'Electricité du Burkina (SONABEL). In addition, there is a power exchange arrangement with Compagnie Ivoirienne d'Electricité (CIE) of La Côte d'Ivoire. Electricity supply to the VALCO aluminum smelter plant, located in Tema, is also considered as part of the export market.

Average electricity Export in July 2020 was recorded at 283.03 MW, which was 11.7% lower than the 320.46 MW projected in the 2020 ESP. The total electricity demand of the neighbouring countries constituted 70% of the total export demand, with VALCO's demand accounting for the remaining 30%.

In the Export Market, a total of 210.56 GWh of electricity was consumed in July 2020. The total electricity consumed in the Export Market constituted 14.1% of the total electricity consumed in July 2020 and was 11.7% lower than the 238.42 GWh projected in the 2020 ESP.

2.3 ELECTRICITY SUPPLY

Electricity supplies in the GWEM are traded via the Bilateral Contract Market (BCM) and the Spot Market. 1,574.14 GWh of electricity was traded in the GWEM in July 2020. Of this total, 1,190.32 GWh was traded in the Bilateral Contract Market (BCM), representing 75.6% of the total and was 24.4% higher than the 1,190.32 GWh projected in the 2020 ESP. On the Spot Market, a total of 383.81 GWh of electricity was traded, representing 24.4% of the total electricity traded in July 2020 and was 13.4% lower than the 443 GWh projected in the 2020 ESP.

2.3.1 Electricity Supply to the Regulated Market

The electricity needs of the Regulated Market were met from both the Bilateral Contract Market and the Spot Market.

A total of 1,199.37 GWh of electricity was purchased by the Regulated Market from the BCM and the Spot Market in July 2020. Out of this total, 959.49 GWh was purchased through the BCM, representing 80% of the total. The remaining 238.35 GWh, representing 20% was purchased through the Spot Market in July 2020.

The ECG purchased a total of 834.32 GWh of electricity from the BCM, representing 70% of the total electricity traded in the BCM in July 2020. 207.36 GWh of electricity was also purchased by the ECG in the Spot Market to augment the supply from the BCM. This total electricity represented 54.4% of the total electricity traded in the Spot Market.

NEDCo in July 2020, purchased a total of 131.94 GWh of electricity in the GWEM. Of this total, 105.55 GWh was purchased through the BCM, which constituted 8.9% of the total electricity traded in the BCM. The remaining 26.22 GWh was supplied to NEDCo through the Spot Market, this represents 6.9% of the total electricity traded in the Spot Market in July 2020.

The EPC purchased a total of 24.41 GWh of electricity in the GWEM in July 2020, of which 4.77 GWh and 19.64 GWh was supplied through the Spot Market Price and BCM.

2.3.2 Electricity Supply to the De-Regulated Market

The total electricity traded by the Bulk Customers in July 2020 was 152.68 GWh. Out of this total, 144.44 GWh was purchased through the BCM, which represent 12.1% of the total electricity traded in the BCM. A total of 8.24 GWh was purchased by the Bulk Customers through the Spot Market, representing 2.1% of the total electricity traded in the Spot Market.

2.3.3 Electricity Supply to the Export Market

The Export Market purchased a total of 222.09 GWh in the GWEM in July 2020. Of this total, 137.23 GWh was purchased through the Spot Market, representing 35.8% of the total electricity traded in the Spot Market. The remaining 84.86 GWh was supplied through the BCM in July 2020.

Acronyms

AGPP = Atuabu Gas Processing Plant
CBGC = Composite Bulk Generation Charge
DFO = Distillate Fuel Oil
ECG = Electricity Company of Ghana
ESP – Electricity Supply Plan
GHp = Ghana Pesewa
GWh = Giga-watt Hours
KTPP = Kpone Thermal Power Plant
MRP = Mine Reserve Plant
LCO = Light Crude Oil
LTA = Long Term Average
MMscf = Million Standard Cubic Feet
NITS = National Interconnected Transmission System
SAPP = Sunon Asogli Power Plant
SNEP = Strategic National Energy Plan
TT2PP = Tema Thermal 2 Power Plant
VRA = Volta River Authority
WAGP = West African Gas Pipeline
Btu = British Thermal Units
CUF = Capacity Utilization Factor
EC = Energy Commission
EMOP = Electricity Market Oversight Panel
FPSO = Floating Production, Storage and Offloading
GNGC = Ghana National Gas Company
HFO = Heavy Fuel Oil
kWh = Kilo-watt hours
LEAP = Long-range Energy Alternative Planning
LI = Legislative Instrument
MW = Megawatt
MWh = Mega-watt hours
PV = Photovoltaic
SMP = System Marginal Price
TEN = Tweneboa, Enyenra, Ntomme
TT2PP = Tema Thermal 2 Power Plant
WAGPCo – West African Gas Pipeline Company
WEM = Wholesale Electricity Market

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