



GHANA WHOLESALE ELECTRICITY MARKET BULLETIN

MARKET WATCH

Monthly Market Data Analysis

ISSUE NO. 10: 1st October 2016 to 31st October 2016

This Bulletin covers major developments in the Wholesale Electricity Market (WEM) of Ghana from 1st October 2016 to 31st October 2016. It analyses the performance of the key WEM indicators against their benchmarks, and examines the likely implications of any discernable trends in the market.

The Energy Commission (EC) would very much appreciate and welcome comments from readers on the Bulletin. Reasonable care has been taken to ensure that the information contained in this Bulletin is accurate at the time of publication, but nevertheless, regrets any errors, omissions or inaccuracies therein.

HIGHLIGHTS OF THE MONTH

Electricity supply increased in October 2016

Total electricity supplied to meet Ghana's requirement in October 2016 increased to 1,142.9 GWh from 1,071.3 GWh in September 2016 and 1,058.2 GWh in August 2016. The total supply was made up of 1,052 GWh from domestic generation and 90.9 GWh from imports from La Cote D'Ivoire. Even though the total supply of electricity increased substantially between October 2016 and September 2016, it was still lower than the 1,431 GWh projected under the Electricity Supply Plan (ESP) developed for the year 2016. This represented a reduction of about 20.2% between the actual outturn and projections.

The total system coincident peak load (Ghana peak generation plus import) recorded in October 2016 was 1,990.2 MW significantly up from 1,914.2 MW recorded in September 2016 and 1,867.9 MW in August 2016. The Ghana coincident peak load (domestic peak load including Valco minus export) also shot up significantly to 1,936.1 MW in October 2016 from 1,862.4 MW in September 2016. Both the actual total system and Ghana peak loads were lower than the projected system and Ghana peak loads of 2,336 MW and 2,184 MW respectively under the 2016 ESP. The results represent a total system and Ghana peak demand shortfall of 346 MW and 248 MW respectively. It is worth noting, however, that the Ghana peak load has increased by about 238 MW between July 2016 and October 2016. Table 1 shows a comparison of the projected and actual electricity demand and supply for October 2016.

Table 1 Projected and Actual Outturn of electricity supply and demand in October 2016

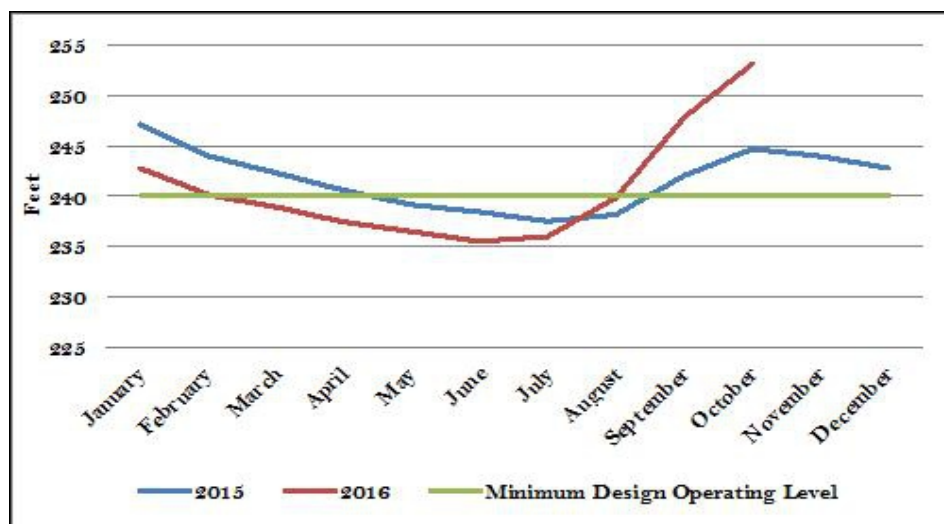
	October 2016	
	Projected	Actual Outturn
Total Demand (GWh)	1,433.0	1,142.9
Supply by Power Plant (GWh)		
Akosombo	278.0	349.2
Kpong	53.0	67.7
Bui	86.0	50.5
TAPCO	196.0	77.1
TICO	202.0	183.3
Sunon Asogli - Phase I	115.0	-
Sunon Asogli - Phase II	114.0	-
CENIT	40.0	-
TT1PP	65.0	4.2
TT2PP	-	-
MRP	-	-
KTPP	37.0	5.7
Ameri Energy	154.0	149.5
Karpowership	91.0	161.7
Trojan	-	3.0
Total Generation (GWh)	1,431.0	1,052.0
Imports (GWh)	-	90.9
Total Supply (GWh)	1,431.0	1,142.9
Deficit (GWh)	-	290.1
Reduction in Consumption		20.2%
Ghana Coincident Peak Load (MW)	2,184.0	1,936.1
System Coincident Peak Load (MW)	2,336.0	1,990.2

HIGHLIGHTS OF THE MONTH

Akosombo dam water level continues recovery beyond the minimum design operating level in October 2016

The level of the Akosombo dam rose steadily to reach 252.98 feet at the end of October 2016 compared to 247.8 feet in September 2016 and well above the minimum design operating level of 240 feet. Of significance is the fact that the water level at the end of October 2016 was higher than the level at the same time in October 2015 by about 8.22 feet. The rise in the water level points to significant improvement in the management of the lake for electricity generation. Figure 2 shows comparative end of month trajectory of the Akosombo dam from January 2015 to December 2015 and January 2016 to October 2016.

Figure 2: Month-End Water Level for Akosombo Dam from January 2015 to October 2016



Generation of electricity from the Akosombo power station rose significantly in October 2016 compared to the preceding three months. The Akosombo power plant generated 349.2 GWh of electricity in October 2016 which was higher than the 276 GWh projected under the 2016 ESP. Electricity generation from Akosombo in October 2016 of 349.2 GWh was substantially higher than 277.2 GWh and 236.8 GWh recorded in September 2016 and August 2016 respectively. Generation in October 2016 represented an increase of 47% and 26% over the generation in August 2016 and September 2016 respectively. The Akosombo power station generated 30.1% of total electricity supplied in October 2016 up from 25.9% of total supply in September 2016. The power plant contributed 480 MW (24.1%) to meet total system maximum peak demand of 1,990.8 MW in October 2016 compared to 585 MW (30.6%) in September 2016 to meet system maximum peak demand of 1,913 MW. In October 2016 Akosombo power station contributed an elevated amount of 717 MW (30.3%) to meet the Ghana peak load of 1,936.1 MW compared to 560 MW (30%) used to meet the Ghana maximum peak demand of 1,862.4 MW recorded in September 2016.

Electricity generation from Bui Power Plant sees significant increase in October 2016 as water level rises

Electricity production from the Bui Power Plant increased significantly to 50.52 GWh in October 2016 from 31.2 GWh September 2016 and 24.8 GWh in August 2016. This represented an increase of 56.7% between October 2016 and September 2016, based on the daily average production of 1.04 GWh/day and 1.63 GWh/day in the two months respectively. The total electricity generated in October 2016 from the Bui power plant was significantly lower than the 83 GWh projected to be generated under the 2016 Electricity Supply Plan (ESP). The water level of the Bui dam continued rising to reach 585.2 feet at the end of October 2016, representing over 34.8 feet above the minimum operating level of 551 feet compared to 29.66 feet in September 2016. The Bui Power Plant generated 4.9% of total electricity supplied in October 2016 up from 2.9% and 2.3% in September 2016 and August 2016 respectively. The Bui Power Plant contributed 328 MW and 209 MW to meet total system peak load and the Ghana peak load respectively in October 2016. The contribution represents 16.5% and 10.8% respectively of total system peak load and the Ghana peak load respectively.

Sunon Asogli Power Plant did not generate electricity in October 2016

The Sunon Asogli power plant did not produce electricity in October 2016 owing to severe difficulties with natural gas supplies from Nigeria. Indeed, the power plant has not generated electricity since July 2016. The curtailment of power generation from the Sunon Asogli Power Plant (SAPP), which relies entirely on natural gas, has deprived the country about 360 MW of about capacity and 229 GWh of relatively cheaper electrical energy in October 2016 as the power plant was projected under the 2016 ESP to generate 229 GWh in October 2016. Difficulties with natural gas supply from Nigeria continue to pose a major constraint for electricity generation by power plants in Tema and Kpone Power Enclaves.

CENIT did not generate electricity in October 2016

CENIT Power Plant did not operate in October 2016, even though they were available and had fuel, because there was enough cheaper sources of generation to meet demand. As discussed earlier, generation of electricity from the cheaper hydro power plants were elevated in October 2016. CENIT did not generate electricity as against a projection to generate 40 GWh under the 2016 ESP.

HIGHLIGHTS OF THE MONTH

Electricity generation from Ameri Energy Power Plant increased substantially in October 2016

The power plant generated a total of 149.5 GWh in October 2016 compared to 104.6 GWh of electricity generation in September 2016 representing an increase of about 42.9%. It was marginally lower than the 154 GWh projected to be produced for the month of October 2016 under the 2016 ESP. The higher electricity generation in October 2016 compared to September 2016 was largely as a result of increased supply of natural gas from the Atuabo Gas Processing Plant to the Aboadze Power Enclave. Indeed, natural gas supply increased by 43.6% between September 2016 and October 2016. The Ameri Energy Power Plant contributed 220 MW to meet system peak demand of 1,990.2 MW and 192 MW to meet Ghana peak load of 1,936.1 MW. The Power Plant thus contributed 11.1% of total system peak load and 9.9% of Ghana peak load in October 2016.

Electricity generation from KTRPP slumped in October 2016

Electricity generation from the Kpone Thermal Power Plant (KTRPP) decreased appreciably to 5.7 GWh in October 2016 from 13.05 GWh in September 2016 and 9.5 GWh recorded in August 2016. It was however significantly lower than the 54.7 GWh it produced in July 2016. Electricity generation in October 2016 was also 84.6% lower than the 37 GWh projected under the 2016 ESP. The KTRPP was operated virtually as a peaking plant on 5 days in the month of October 2016. It was not scheduled to meet the system peak demand and Ghana peak load in October 2016.

Karpowership generation increase in October 2016

The Karpowership Power Plant generated 161.7 GWh in October 2016 compared to 156.1 GWh in September 2016 and 162.7 GWh in August 2016. Electricity generation in October 2016 of 161.7 GWh was significantly higher than the projected generation of 91 GWh forecasted under the 2016 ESP. The power plant contributed 14.2% of total electricity supplied in October 2016 compared to 14.6% in September 2016. The power plant contributed 230 MW to meet the total system peak demand of 1,990.2 MW and 223 MW to meet the Ghana peak load of 1,936.1 MW. Thus the Power Plant contributed about 11.6% to meet both the total system demand as well as Ghana peak load in October 2016, a slight reduction from the 12% in September 2016. The price of Heavy Fuel Oil (HFO), the fuel used in operating the power plant, increased from US\$ 245.48 per tonne in September 2016 to US\$ 264 per tonne in October 2016. The average fuel cost of electricity produced from the power plant was US cents 4.56/kWh in October 2016 and was the lowest compared to the other thermal power plants operated in October 2016.

Electricity generation from TICO dips in October 2016

The TICO Power Plant generated 183.3 GWh of electricity in October 2016 down from 203.3 GWh in September 2016 but up from 181.7 GWh in August 2016 and 169.7 GWh in July 2016. The total generation of 183.3 GWh in October 2016 was lower than the 202 GWh projected under the 2016 ESP. TICO operated largely in combined cycle mode, generating 313 MW to meet the total system peak load of 1,990.2 MW representing 15.7% of peak load in October 2016 compared to 16.3% in September and 15.7% in August 2016. It contributed 314 MW to meet the Ghana peak load of 1,936.1 MW in October 2016, representing 16.2% compared to 14% in September 2016 and 17.9% in August 2016. The TICO Power Plant operated solely on light crude oil (LCO) consuming about 277,396 barrels of the fuel to produce 183.3 GWh compared to producing 203.3 GWh with 265,485 barrels of LCO in September 2016. The higher consumption of LCO to produce lower amount of electricity in October 2016 compared to September 2016 is attributable to the fact that the power plant operated in single cycle mode, lower efficiency mode, on some days in October 2016.

TAPCO generation increased in October 2016

TAPCO generated more electricity in October 2016 than in September 2016. Electricity generation was 77.1 GWh (2.49 GWh/day) in October 2016 compared to 66.1 GWh in September 2016 (2.2 GWh/day) representing an increase of 12.9%. Electricity generation in October 2016 was significantly lower than the projected amount of 196 GWh under the 2016 ESP. TAPCO generated 6.6% of total electricity supplied in October 2016 compared to 6.2% of total electricity supplied in September 2016. All of TAPCO's electricity generation in October 2016 was from natural gas and contributed 106 MW to meet the Ghana Peak load and contributed 147 MW to meet the system peak demand. This represented 5.5% of the Ghana Peak load and 7.4% of system peak demand.

TT1PP electricity generation dipped further in October 2016

Electricity generation from the Tema Thermal 1 Power Plant (TT1PP) dipped significantly in October 2016 to 4.2 GWh from 27.7 GWh in September 2016 and 59 GWh in August 2016. The power plant was operated only in the last week of October 2016 for the fact that it was not required as cheaper sources of power were dispatched to meet demand which was subdued. The power plant operated solely on LCO consuming about 9,050 barrels of LCO. The TT1PP produced a very negligible proportion of total electricity supply in October 2016 compared to 2.5% in September 2016 and 5.6% in August 2016. It is observed that, the power plant was dispatched only to meet the total system peak which occurred on 29th October 2016. It contributed 104 MW to meet total system peak load but was not dispatched to meet the Ghana coincident peak load which occurred on 6th October 2016.

Zero natural gas supplies from WAGPP in October 2016

Just as happened in August 2016 and September 2016, there was no natural gas supplies from the West African Gas Pipeline Project (WAPP) in October 2016. The West African Gas Pipeline Company (WAGPCo) halted natural gas supplies in July 2016 leading to the complete curtailment of natural gas to the power plants in the Tema Power Enclave including Sunon Asogli Power Plant which relies solely on natural gas. The continued curtailment of natural gas from WAGPP has not only cut-off power generation from the Sunon Asogli Power Plant, but has compelled the other power plants to run on LCO when needed at a much more higher cost than when they are operated on natural gas.

Natural gas supplies from GNGC to the Aboadze Power Enclave increase substantially in October 2016

Daily average natural gas supply from the Atuabo Gas Processing Plant to the Aboadze Power Enclave increased from 64.5 MMSCF per day in September 2016 to 74.17 MMSCF per day in October 2016. Out of the total of 2,053 MMSCF of natural gas consumed in October 2016 at the Aboadze Power Enclave, the Ameri Energy power plant and the TAPCO power plant consumed 64.2% and 35.8% respectively. The TICO power plant continued to be operated only on light crude oil (LCO) in October 2016.

Electricity imports dip in October 2016

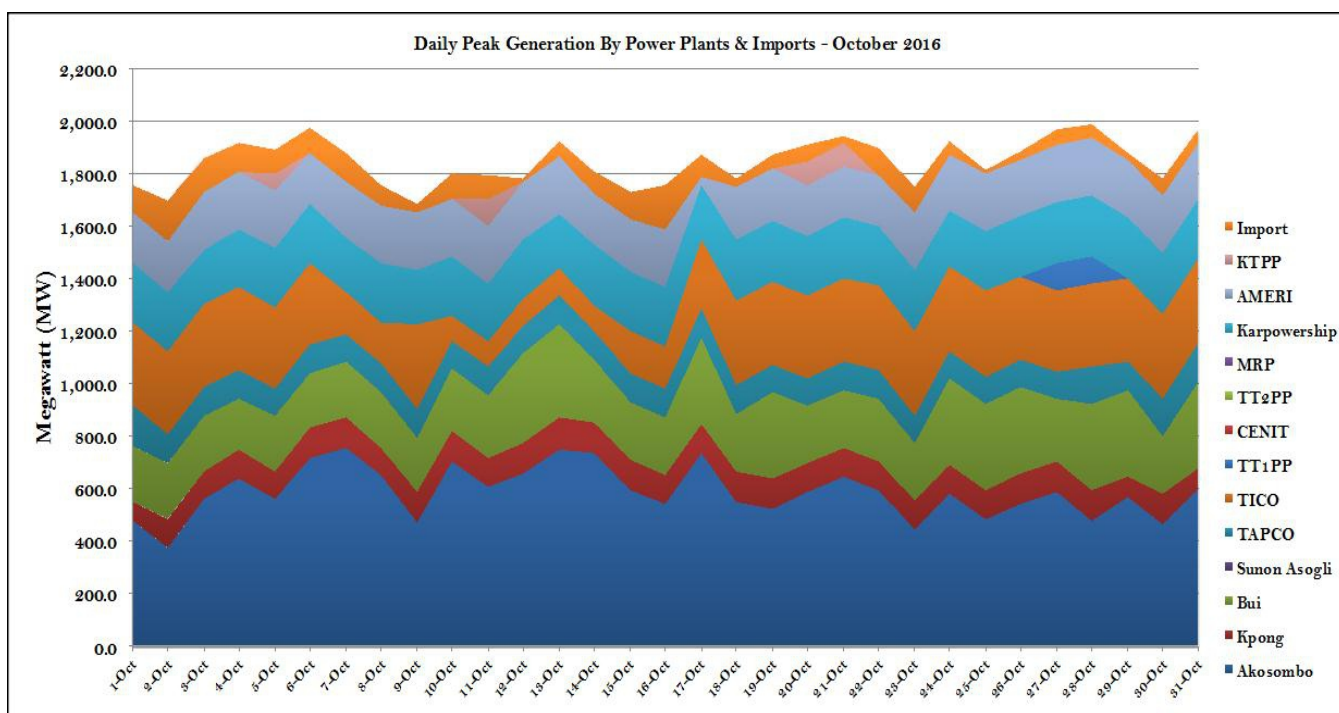
Electricity imports from La Cote D'Ivoire have increased consistently in 2016 even though it was projected, at the beginning of the year, that Ghana would be able to meet all its requirements without resorting to imports during the year. Electricity imports continued in October 2016 but lower than in September 2016. Ghana imported 90.9 GWh of electricity compared to 107.3 GWh in September 2016, 54.9 GWh in August 2016 and 38.2 GWh in July 2016. Imports in October 2016 represented a reduction of about 15.1% from September 2016 but obviously a substantial increase over August and July 2016. Of the total imports of 90.9 GWh, 19.6 GWh, representing 21.8% was exported to CEB. Electricity imports to meet daily peak demand in October 2016 ranged between 11 MW and 169 MW compared to between 7 MW and 203 MW recorded in September 2016. Imports contributed 55 MW to meet the total system peak load of 1,990.2 MW compared to 203 MW to meet total system peak load in September 2016. It also contributed 96 MW to meet the Ghana Peak Load of 1,936.1 MW in October 2016 compared to 80 MW in September 2016. The data suggests a reduction in electricity imports in October 2016 compared to September 2016.

OPERATIONAL FACT SHEET

Peak Electricity Supply (MW) - October 2016

Source of Supply	Non-Coincident Peak Generation - Week 1	Non-Coincident Peak Generation - Week 2	Non-Coincident Peak Generation - Week 3	Non-Coincident Peak Generation - Week 4	Generation at System Coincident Peak Load of October	Generation at Ghana Coincident Peak Load of October
Akosombo	759.0	752.0	736.0	604.0	480.0	717.0
Kpong	115.0	118.0	116.0	118.0	113.0	115.0
Bui	213.0	360.0	330.0	330.0	328.0	209.0
Sunon Asogli	-	-	-	-	-	-
TAPCO	153.0	109.0	108.0	150.0	147.0	106.0
TICO	319.0	324.0	325.0	326.0	313.0	314.0
TT1PP	-	-	-	-	104.0	-
CENT	-	-	-	-	-	-
KTPP	65.0	105.0	90.0	-	-	-
TT2PP	-	-	-	-	-	-
MRP	-	-	-	-	-	-
AMERI Energy	219.6	221.3	221.0	220.7	220.0	192.1
Karpowership	225.3	227.0	230.3	230.2	230.2	223.0
Import	157.0	95.0	169.0	103.0	55.0	60.0
Trojan Power	-	-	-	-	-	-
System Coincident Peak Load	1,972.1	1,921.4	1,941.6	1,990.2	1,990.2	-
Ghana Coincident Peak Load	1,936.1	1,913.4	1,905.6	1,932.4	-	1,936.1

Daily Peak Generation By Power Plants & Imports - October 2016

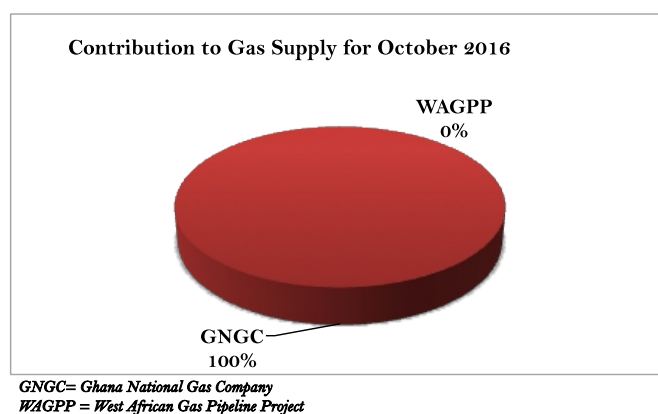
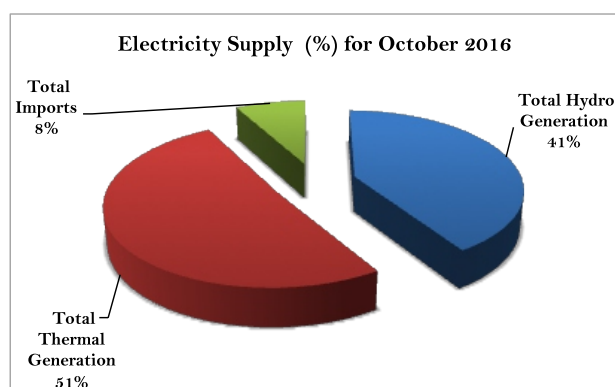


Ghana Electricity Demand for October 2016

Maximum Peak Load	MW	1,936.1
Minimum Peak Load	MW	1,656.7
Average Peak Generation	MW	1,821.8
System Base Load	MW	1,177.2
Total Electricity Consumption	GWh	1,162.1
Total Energy Imported	GWh	90.9
Load Factor (LF)	%	83.36

OPERATIONAL FACT SHEET

Weekly Electricity Supply (GWh) - October 2016					
Power Plant	Week 1	Week 2	Week 3	Week 4	Total
Akosombo	69.3	87.6	80.1	112.3	349.2
Kpong	14.0	16.5	16.3	20.9	67.7
Bui	7.8	15.1	12.7	15.0	50.5
Sunon Asogli	-	-	-	-	-
TAPCO	19.0	15.8	16.5	25.8	77.1
TICO	46.7	24.7	38.3	73.6	183.3
TT1PP	-	-	-	4.2	4.2
CENIT	-	-	-	-	-
KTPP	1.5	0.8	3.4	-	5.7
TT2PP	-	-	-	-	-
MRP	-	-	-	-	-
AMERI Energy	34.1	34.0	31.6	49.8	149.5
Karpowership	36.7	35.4	35.7	53.9	161.7
Import	28.5	22.8	21.0	18.6	90.9
Trojan Power	-	0.5	0.3	2.3	3.0
Total electricity supply including imports	257.6	253.1	255.9	376.4	1,142.9
Total domestic electricity generation	229.1	230.2	234.8	357.8	1,052.0

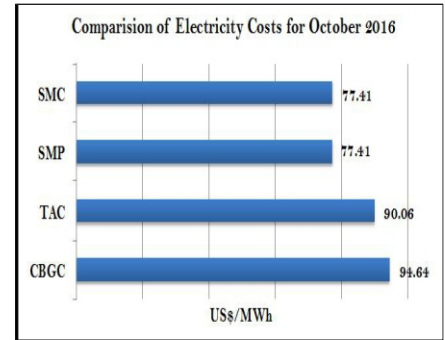


Average Gas Flow (MMSCFD) - October 2016					
Location	Week 1	Week 2	Week 3	Week 4	Monthly Average
Etoki	-	-	-	-	-
Tema	-	-	-	-	-
Aboadze	77.14	73.74	71.56	75.17	75.17

Water Level (ft) - October 2016					Change in water level
Hydro Dam	Week 1	Week 2	Week 3	Week 4	(feet)
Akosombo	247.8	250.0	251.5	253.0	5.2
Bui	580.7	583.6	584.6	585.2	4.5
Akosombo Minimum Design Operating Level	240.0	240.0	240.0	240.0	
Akosombo Maximum Level	278.0	278.0	278.0	278.0	

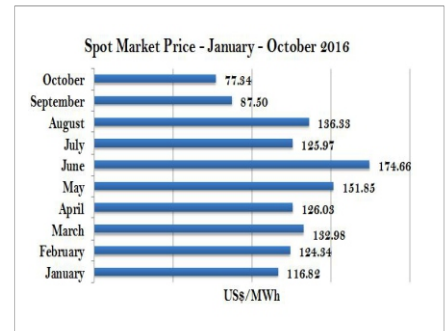
ECONOMIC FACT SHEET

Month at a Glance				
	Units	October 2016	September 2016	Change
Average Market Energy Cost	US\$/MWh	71.34	78.49	(7.15)
Average Market Capacity Charge (AMCC)	US\$/MWh	18.72	25.25	(6.53)
Total Average Market Cost (TAC)	US\$/MWh	90.06	103.75	(13.69)
System Marginal Cost (SMC)	US\$/MWh	77.41	107.69	(30.28)
System Marginal Capacity Charge (SMCC)	US\$/MWh	-	28.64	(28.64)
Spot Market Price (SMP)	US\$/MWh	77.41	136.33	(58.92)
Composite Bulk Generation Charge (CBGC)	US\$/MWh	94.64	94.64	(0.00)
Deviation of TAC from CBGC	US\$/MWh	4.57	(9.11)	13.68
Deviation of SMP from CBGC	US\$/MWh	17.23	(41.69)	58.92



CBGC = Composite Bulk Generation Charge, SMC = System Marginal Cost, SMP = Spot Market Price

Power Plant	Maximum Non-Coincident Peak Generation (MW)	Plant Utilisation Factor (%)	Electricity Generation (GWh)	Gas Consumption (MMBTU)	LCO Consumption (MMBTU)	HFO Consumption (MMBTU)
Akosombo	604.00	77.7%	349.23	-	-	-
Kpong	118.00	77.1%	67.71	-	-	-
Sunon Asogli	-	-	-	-	-	-
Bui	360.00	18.9%	50.51	-	-	-
Trojan Power	45.60	9.0%	3.04	-	-	-
TAPCO	153.00	67.7%	77.06	854,289.46	-	-
TT1PP	-	-	4.22	-	47,882.16	-
TICO	326.00	75.6%	183.33	-	1,467,674.22	-
MRP	-	-	-	-	-	-
CENIT	-	-	-	-	-	-
KTPP	105.00	7.2%	5.65	-	-	-
TT2PP	-	-	-	-	-	-
AMERI Energy	221.30	90.8%	149.50	1,529,050.55	-	-
Imports	169.00	72.3%	90.92	-	-	-
Karpowership	230.30	94.4%	161.74	-	-	1,267,659.70
Total	2,332.20		1,142.91	2,383,340.01	1,515,556.38	1,267,659.70



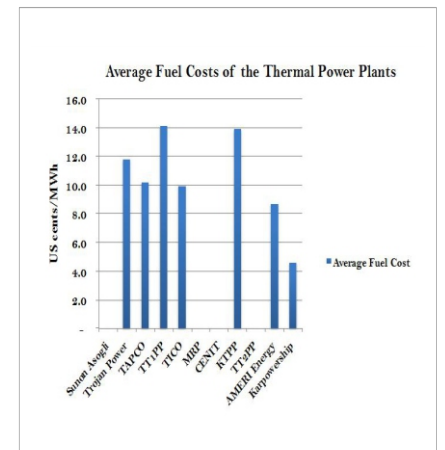
Spot Market Price = SRMC of Energy + SRMC of Capacity

	October 2016	September 2016	Change
Total Thermal Power Plants Fuel Cost	US\$ 48,187,783.45	58,579,440.34	(10,391,656.89)
Average Thermal Power Plants Fuel Cost	US\$/MWh 71.34	78.49	(7.15)

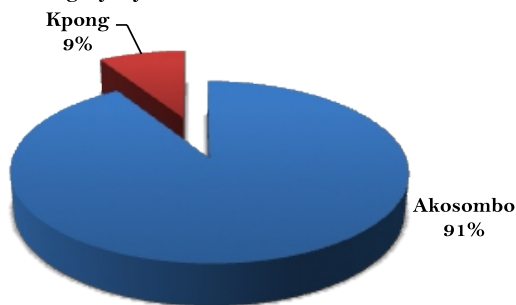
Legacy Hydro Windfall Revenue for October 2016				
Power Plant	Average Cost (US\$/MWh)	Average SMP (US\$/MWh)	Difference (US\$/MWh)	Windfall Revenue (US\$)
Akosombo	33.10	77.41	44.31	15,475,102.41
Kpong	59.20	77.41	18.21	1,472,991.81
Total				16,948,094.21

SMP = Spot Market Price

Average Fuel Prices		
Fuel Type	Unit	Delivered Cost
Natural Gas	US\$/MMBTU	8.73
LCO	US\$/BBL	67.55
HFO	US\$/Tonne	264.00
DFO	US\$/Tonne	445.36



Contribution to Legacy Hydro Windfall Revenue - October 2016



1. Natural Gas dominates fuel consumption mix for thermal electricity generation in October 2016

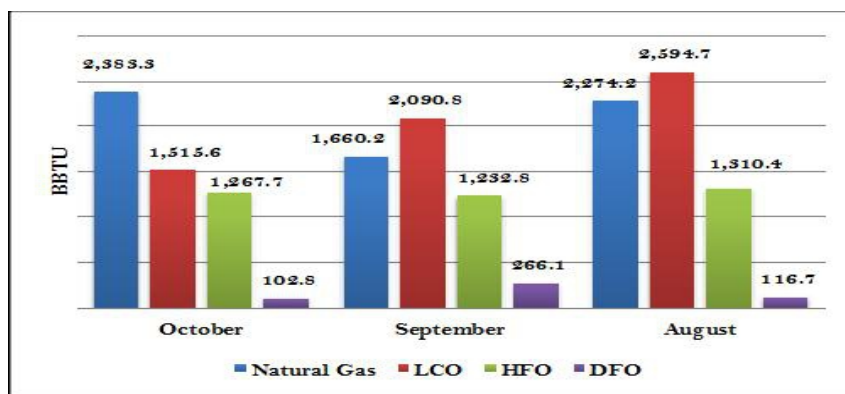
Of the total electricity supplied in October 2016, 50.3% was generated by the thermal power plants up from 34.3% in September 2016. A total of 5,269 BBTU of fuel was used by thermal power plants for electricity generation in October 2016, of which natural gas contributed 45.2% followed by light crude oil (LCO) with 28.8%, then HFO with 24.1% and DFO with 2%. This was a departure from the dominance of LCO in the previous months of August and September 2016 when LCO consumption contributed 41.6% and 31.6% respectively in the thermal power fuel mix. As a result of the continuous curtailment of natural gas supply from the West African Gas Pipeline Project (WAGPP) in October 2016, there was no natural gas supply to the power plants in the Tema Power Enclave. All the natural gas supply in October 2016 was therefore from GNGC to the Aboadze Power Enclave averaging 75.2 MMSCF per day compared to an average of 64.5 MMSCF per day in September 2016. Even though natural gas supplied in October 2016 was more than in September 2016, it was less than enough to operate all the power plants in the Aboadze Power Enclave. Out of the total gas supply of 2,052.9 MMSCF (2,383.3 Billion BTU) in October 2016 to the Aboadze Power Enclave, about 64.2% was consumed by the Ameri Energy power plant and the rest (35.8%) was consumed by the TAPCO power plant. In October 2016, the TICO power plant operated solely on LCO owing to inadequate supply of natural gas to the Aboadze Power Enclave.

Light crude oil (LCO) continued to be an important fuel for electricity generation in October 2016 accounting for 28.8% of thermal fuel mix. Most (96.8%) of total LCO used in electricity generation in October 2016 was consumed within the Aboadze Power Enclave by the TICO power plant and the rest (3.2%) was consumed in the Tema Power Enclave by TT1PP power plants. This was significantly different from the situation in September 2016 when 54% of LCO was consumed in the Aboadze Power Enclave with the Tema Power Enclave accounting for 44%.

All the Heavy Fuel Oil (HFO) of about 1,268 BBTU (209,877 BBLs) consumed in October 2016 for electricity generation was used by the Karpowership power plant that is located in the Tema Port. HFO consumption by the Karpowership power plant has remained fairly constant averaging about 1,270 BBTU per month from August 2016 to October 2016.

In October 2016, the consumption of Distillate Fuel Oil (DFO) saw a significant decrease over consumption in September 2016 primarily because of the decreased electricity generation by the KTPP power plant. Of the total amount of 102.8 billion BTU (BBTU) of DFO consumed for electricity generation in October 2016, 68.3% was consumed by KTPP compared to 58.1% in September 2016 and Trojan Power plant consumed 31.2% in October 2016 compared to 41.3% in September 2016, while the rest was used as start-up fuel by TICO power plant and TT1PP who used LCO as the main fuel for power generation. Figure 1.1 shows a summary of fuel consumption for electricity generation by the thermal power plants in from August to October 2016.

Figure 1.1 Comparative fuel consumption for thermal electricity generation from August 2016 to October 2016



Generally, natural gas and LCO have been the dominant fuels for electricity generation by the thermal power plants over the three-month period from August to October 2016 with natural gas providing on the average 37.7% of the fuel mix followed by LCO with 36.6%, HFO with 22.8% and then DFO with 3%.

2. Increased hydro generation shore up power supply in October 2016

Electricity generation from the hydro power plant were increased substantially to shore up electricity supply in October 2016. In October 2016 hydro power generation contributed 40.9% of the total electricity supply of 1,142.9 GWh compared to hydro contribution of 34.3% of total supply of 1,071 GWh in September 2016. Also, imports declined in October 2016 contributing 7.8% to total supply compared to 10% in September 2016. It, indeed, makes reasonable economic sense to increase hydro generation and backing down on imports because the cost of hydro generation is, on the average, lower than electricity imported from La Cote D'Ivoire of US cents 12.2 per kWh. Besides the lower cost of generation, hydro electricity availability has been enhanced due to the elevated level of the Akosombo and Bui hydro dams. Both hydro power stations are currently operating well above their minimum operating levels.

3. Electricity Demand Side Management (DSM) initiative – Energy Commission to pilot 35,000 Timer Switches to reduce electricity demand in Ghana

The Energy Commission is importing a total of 35,000 pieces of Timer Switches (TS) to be deployed, on pilot- basis, to manage electricity demand in the country. The TS are programmable gadgets/ devices that are used to cut-off electrical loads/ appliances for specified periods so that they do not consume power. While they can be used for several appliances, the EC programme is targeted at refrigeration appliances. The pilot project will focus on households and some commercial facilities such as restaurants and hotels.

Besides its capability to reduce peak demand, a major benefit of the use is its ability to reduce electricity consumption and therefore the bill of the user. For example, a household using the TS during the six-hour peak period will not only reduce the peak demand by about 200 W, which is the average capacity of a refrigerator, but it will also reduce electricity consumption by about 1.2 kWh daily. Thus a household that uses a TS will shave off 1.2 kWh daily, which at the current electricity tariff of GHp/kWh 33.56, will result in savings in monthly bill of GHS147 per year. In the case of non-residential/commercial customers who are on a higher tariff brackets the savings are estimated at GHS423.9 per year.

4. Energy Commission begins study on impact of load shedding on the economy

A key mandate of the EC is to develop plans for ensuring that all consumers of energy are able to have access to all the energy they require. In addition, the EC is to advise the government on matters of energy policy. The EC has over the years since its inception strived to play its role diligently and has prepared several documents in this light. The EC continues to review developments in the energy sector and to provide the relevant advice and direction in all aspects of the country's energy delivery. Owing to the recent electricity supply difficulties which led to prolonged load shedding, it is being postulated that the Ghanaian economy might have suffered significantly with deleterious impacts on all aspects of socio-economic and industries in particular. In order to establish the veracity of this claim, the EC commenced a comprehensive study, beginning in October 2016, with the aim of establishing the impacts of the load shedding on the economy. The study is expected to be completed in December 2016. The study is being carried out nationwide and is covering all categories of electricity consumers including households, commerce and service and industries. The sample sizes for the various categories of consumers by sector are shown in Table 4.1.

Table 4.1 Breakdown of sample size by sector

Economic Activity	Sample Size
Residential	900
Commerce/Service:	232
<i>Hotels</i>	70
<i>Restuarants</i>	60
<i>Shopping Malls. Supermarkets, Shops</i>	102
Industries	250

Acronyms

Btu = British Thermal Units

DFO = Distillate Fuel Oil

DSM = Demand Side Management

ECG= Electricity Company of Ghana

HFO = Heavy Fuel Oil

GHp = Ghana Pesewa

IPP – Independent Power Producer

kWh = Kilo-watt hours

LI = Legislative Instrument

MW – Megawatt

MWh = Mega-watt hours

VRA – Volta River Authority

CBGC = Composite Bulk Generation Charge (gazetted by the PURC)

EC = Energy Commission

ESP – Electricity Supply Plan

GoG = Government of Ghana

GWh = Giga-watt Hours

KTPP = Kpone Thermal Power Plant

LCO = Light Crude Oil

MoP = Ministry of Power

MMscf = Million Standard Cubic Feet

TS = Timer Switches

For any enquiries please contact the:

EMOP Administrator, EMOP Secretariat, Energy Commission, Accra.

Telephone: +233-302813756/7/9; Or email: marketoversightpanel@energycom.gov.gh