



**ELECTRICITY REGULATORY AUTHORITY  
DETERMINATION OF TARIFF ADJUSTMENT FACTORS FOR QUARTER  
THREE (JULY TO SEPTEMBER) 2016 TARIFF REVIEW**

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**JULY 2016  
KAMPALA, UGANDA**

## 1. INTRODUCTION

In January 2014, the Electricity Regulatory Authority (ERA) approved and published in the Uganda Gazette, the Quarterly Tariff Review Methodology. The methodology was implemented effective January 2014. The Quarterly Tariff Review Methodology provides for adjustment of the Electricity annual Base Tariffs for changes in the following:-

- (i) Inflation rate leading to Inflationary Adjustment Factor (IRAF)
- (ii) Exchange rate leading to Exchange Rate Adjustment Factor (FERAF)
- (iii) Fuel prices at the International Market leading to Fuel Price Adjustment Factor (FPAF)

The tariff review for the third quarter of 2016 (Q3 2016) has been undertaken in accordance with the approved Quarterly Tariff Review Methodology and the licences issued by the Authority to Umeme Limited, Uganda Electricity Transmission Company Limited (UETCL), and Eskom Uganda Limited.

This review has taken into account changes in; the consumer price index, exchange rate of the Uganda Shilling (Ush) against the United States Dollar (US\$), international fuel prices, and the energy generation mix from the assumptions used in the determination of the 2016 Base Tariffs as well as Umeme Limited and Eskom Uganda Limited verified investments. More specifically;

- (i) The Uganda Shilling has depreciated by 0.22% against the US Dollar, from Ush 3,357.1/US\$ in November 2015 to Ush 3,364.5/US\$ at 31<sup>st</sup> May 2016.
- (ii) The International fuel price for crude oil as at the end of May 2016 was US\$ 46.83 per barrel compared to US\$ 44.30 per barrel used in the determination of the 2016 Base Tariffs. This represents an increase in international fuel prices of 5.71%.
- (iii) Adjustment of Umeme Limited 2012 and 2013 investments that qualify for inclusion in the Regulatory Asset Base.

The detailed assumptions that form the background of the tariff review for the third quarter of 2016 are contained in the subsequent sections of this report.

## 2. ELECTRICITY END-USER 2016 BASE TARIFFS

In accordance with the Quarterly Tariff Review Methodology, the Authority at its 256<sup>th</sup> meeting held on 18<sup>th</sup> December 2015 approved the 2016 Base Tariffs shown in Table 1. The quarterly adjustment factors are applied to the approved Base Tariffs, to determine the applicable end-user (retail) tariffs for each of the quarters.

**Table 1: 2016 Base Electricity End-User Tariffs**

	End-User (Retail) Electricity Tariffs (Ush/kWh)					
	Domestic	Commercial	Medium Industrial	Large Industrial	Street-lights	Weighted average
<b>2016 Base Tariff</b>	651.0	587.0	544.9	369.4	628.4	491.7

During the determination of the Base Tariffs, the Authority approved the Base Macroeconomic Parameters for 2016, which are presented in the second column in Table 2.

**Table 2: Macroeconomic Parameters Used in Determination of 2016 Base Tariffs and the Adjustment Factors for Q3 2016**

Macroeconomic Parameters	Q1 2016	Q3 2016	%age Change Q1 to Q3 2016
	Base Parameters		
Exchange rate US\$/Ush	3,357.1	3,364.52	0.22%
Core Consumer Price Index	152.3	156.41	2.70%
US Producer Price Index	193.2	194.8	0.83%
International Price of Fuel	44.3	46.8	5.71%

**Source:** Bank of Uganda for exchange rate, Uganda Bureau of Statistics for Consumer Price Index, US Bureau of Labour Statistics for US Producer Price Index, and Organization of Petroleum Exporting Countries for International Fuel Prices.

<sup>1</sup> The Uganda Bureau of Statistics carried out a rebasing of the Consumer Price Index (CPI). The discussion on the rebased CPI figures is presented in Section 3.2.

**Note:** The exchange rate is the average rate of the buying and selling rates on the last day of the applicable month. That is November 2015 for Q1 2016, and May 2016 for Q3 2016.

The base macroeconomic factors which were the basis for the 2016 Base Tariffs (for the month of November 2015) are stated in Table 2. As of May 2016, these parameters had changed as shown in column 3 of Table 2. The detailed analysis of each of the macroeconomic factors is contained in the subsequent section.

### **3. DETERMINATION OF THE ADJUSTMENT FACTORS FOR Q3 2016**

#### **3.1 Foreign Exchange Rate Adjustment Factor (FERAF)**

The movement in the exchange rate of the Uganda Shilling against major currencies directly affects the costs for companies involved in the Electricity Supply Industry because a portion of these companies' costs is incurred in foreign currency yet the retail tariff is charged and revenue is collected in Uganda Shillings.

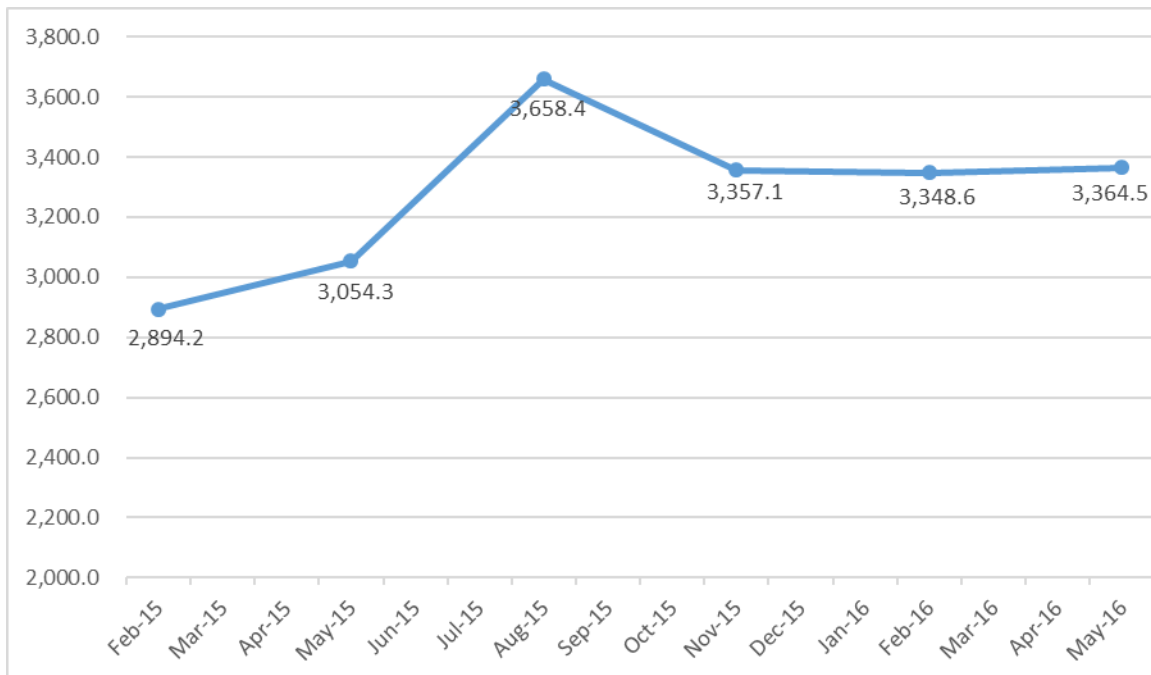
There has been an increase in the Uganda Shilling equivalent of the cost incurred in foreign currency on account of the depreciation of the Uganda Shilling against the United States Dollar during the second quarter of 2016.

During the determination of the 2016 Base Retail Tariffs, the Authority approved the foreign currency content of the Operation and Maintenance (O&M) Costs of 35.4% for Eskom Uganda Limited, 25.0% for UETCL, and 33.0% for Umeme Limited. UETCL also incurs over 99% of the power purchase costs in foreign currency. In addition, the investment costs for Umeme Limited including; the capital recovery and return on Investment are recovered in United States Dollars. Therefore, the depreciation of the Uganda Shilling against the United States Dollar increases the shilling equivalent of the electricity industry costs required in foreign currency.

Between November 2015 and May 2016, the Uganda Shilling depreciated against the United States Dollar. The exchange rate used in determination of the Q3 2016 tariffs is Ush. 3,364.52 per US\$

compared to Ush. 3,357.1<sup>2</sup> at the end of November 2015, which was used in the determination of the base tariffs. This represents a depreciation of 0.22%. The trend of the exchange rate of the Uganda Shilling against the United States Dollar is shown in Figure 1.

**Figure 1: Movement in Ush/US\$ exchange rate up to May 2016**



The effect of the international oil prices and the imports in the last six months is reported by Bank of Uganda to contribute to the depreciation of the Uganda Shilling against the United States Dollar. The likely increase by the Federal Reserve of the interest rate still poses a downward risk to the stability of Uganda's exchange rate in the next six months.

The depreciation of the Uganda Shilling has a substantial impact on Electricity Supply Industry costs and consequently the end-user tariffs. The Authority's review indicates that the depreciation of the Uganda Shilling in Q2 2016 increased the sector annualized revenue requirement by Ush 9,457 million and subsequently increased the end-

<sup>2</sup> [https://www.bou.or.ug/bou/rates\\_statistics/statistics.html](https://www.bou.or.ug/bou/rates_statistics/statistics.html)

user tariffs by a weighted average of Ush 1.38/kWh as shown in Table 3.

**Table 3: Foreign Exchange Rate Adjustment Factor (FERAF)**

	End-User (Retail) Electricity Tariffs (Ush/kWh)					
	Domestic	Commercial	Medium Industrial	Large Industrial	Street-lights	Weighted Adjustment Factor
<b>FERFAF</b>	1.92	1.59	1.68	0.93	1.69	1.38

### 3.2 Inflation Rate Adjustment Factor (IRAF)

#### 3.2.1 Rebasing of CPI by UBOS

In December 2015, Uganda Bureau of Statistics (UBOS) announced that it had revised the base year for computation of the Consumer Price Index (CPI) from 2005/06 = 100 to 2009/10 = 100. UBOS implemented the rebased CPI starting in January 2016.

Since ERA is one of the entities that make use of the CPI data in the annual as well as quarterly reviews of electricity tariffs, UBOS provided the Electricity Regulatory Authority with the new series of CPI based on the 2009/10 base year.

Following UBOS' rebasing of the CPI, ERA is also obliged to use the CPI values published by UBOS to adjust the local currency component of the Operation and Maintenance costs for Umeme Limited, ESKOM Uganda Limited, and UETCL in line with the respective tariff methodologies in the licences.

Table 4 shows the original base CPI values used when determining medium term Operation and Maintenance costs and other parameters for Umeme Limited, Eskom Uganda Limited, and UETCL on one hand and the alternative periodic CPI values as provided by UBOS to adjust for movements in purchasing power. Going forward, the ERA has implemented the rebased CPI in the tariff model.

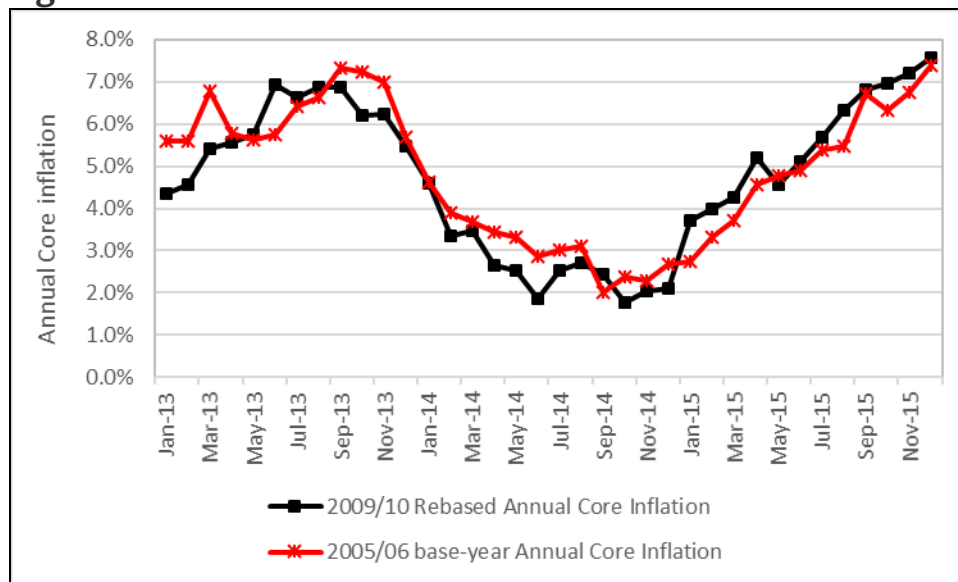
**Table 4: Original and rebased CPI figures by UBOS**

Licensee	Base year in tariff model	Old CPI (2005/06 = 100)	Rebased CPI (2009/10 = 100)
Eskom Uganda Limited	January 2015	213.95	144.25
UETCL	November 2013	208.23	139.08
Umeme Limited	February 2012	189.63	128.46
Base CPI for 2016 Base Tariffs	November 2015	227.27	152.29

Source: UBOS

Before applying the rebased values in the determination of the electricity tariffs, the ERA compared the old CPI with the rebased CPI to see if there were any significant differences that could affect the tariff values. We examined the annual core inflation series of the old CPI vis-à-vis those from the rebased CPI (Figure 2). As a result of rebasing, the share of food crops in the CPI basket dropped to 10.2 percent from 13.5 percent, while the share of core inflation increased to 82.4 percent from 81.6 percent.

**Figure 2: Annual Core Inflation**



We applied the rebased CPI on the determination of the 2016 base tariffs and confirmed that the tariffs are similar to those that were calculated using the old CPI values.

Based on the above, we conclude that the rebased CPI yields similar tariff results as the old CPI, has no material effect on the computation of the tariffs and hence was adopted for the determination of the tariffs going forward, starting with the quarter two 2016 tariffs.

Based on the rebasing exercise by UBOS and communication of the applicable rebased CPI figures for the historical months, the rebased figures, therefore, replace the old CPI figures in the adjustment of end-user tariffs for Q3 2016.

### **3.2.2 Effect of inflation on the tariff**

The inflation adjustment is applied only to the local currency component of the Operation and Maintenance costs for Eskom Uganda, UETCL, and Umeme Limited. This is based on the local currency content approved by the Authority at the time of determination of the 2016 Base Tariffs (i.e. 64.6% for Eskom, 75.0% for UETCL and 67.0% for Umeme Limited).

The IRAF is based on the composite Consumer Price Index (CPI) for the second month in the preceding quarter to which the adjustment tariff relates as published by the Uganda Bureau of Statistics. For Q3 2016, the applicable CPI is 156.41 (May 2016) representing an increase of 2.7% compared to the CPI of November 2015, of 152.29.

The United States (US) Producer Price Index (PPI) is used to adjust the Operation and Maintenance costs denominated in United States Dollars (US\$) to cater for changes in prices of imported supplies. In the period under review, the US PPI increased from 193.2 in November 2015 (Base US PPI) to 194.8 in May 2016, representing an increase of 0.83%.

The impact of the movement in inflation on the electricity retail tariffs is Ush 1.25/kWh on a weighted average basis across consumer categories as indicated in Table 5.



**Table 5: Inflation Rate Adjustment Factor (IRAF)**

	End-User (Retail) Electricity Tariffs (Ush/kWh)					
	Domestic	Commercial	Medium Industrial	Large Industrial	Street-lights	Weighted Adjustment Factor
IRAF	1.76	1.46	1.54	0.82	1.55	1.25

### 3.3 Fuel Price Adjustment Factor (FPAF)

The Fuel Price Adjustment Factor includes adjustment for changes in the International fuel prices and changes in the generation mix from the assumptions used in the determination of the Base Tariffs.

Movement in fuel prices at the International market affects the cost of generation for thermal generation plants; Jacobsen Uganda Power Plant Company Limited and Electro-Maxx Uganda Limited. This in turn affects the power purchase costs incurred by UETCL.

Similarly, the changes in the generation mix from the assumptions used in determination of the Base tariffs affect UETCL's revenue requirement.

In the 2016 Base Tariffs, the cost of fuel assumed in the tariff determination was US\$ 44.3 per barrel. According to the Organization of Petroleum Exporting Countries (OPEC); as at end of May 2016, the international price of Heavy Fuel Oil (HFO) was US\$ 46.83 per barrel. For purposes of the Q3 2016 tariff adjustment, the price of Heavy Fuel Oil that was used for electricity generation in Uganda, was assumed to be US\$ 348.45 per metric ton for determination of the Q3 2016 tariffs.

The increase in the International price of fuel used for the Q3 2016 tariffs compared to the Q1 2016 tariffs resulted in an increase in the projected power purchase costs for UETCL from thermal plants in Q3 2016. This leads to a weighted average fuel adjustment factor of Ush 0.85 per kWh for the third quarter of 2016 as shown in Table 6.

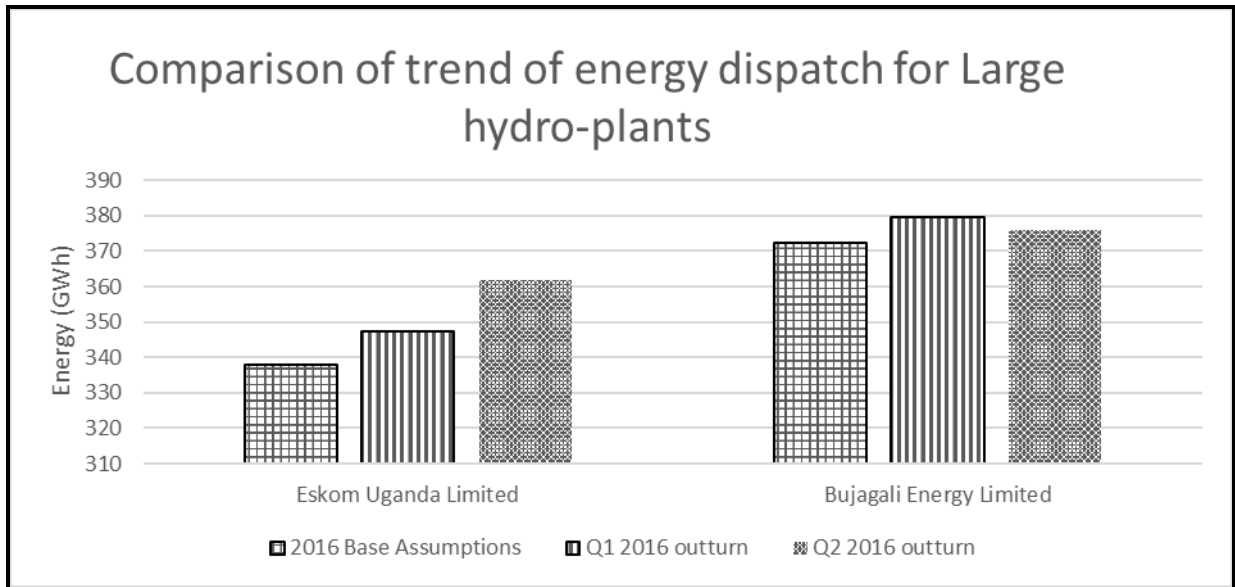
**Table 6: Fuel Price Adjustment Factor (FPAF)**

End-User (Retail) Electricity Tariffs (Ush/kWh)						
	Domestic	Commercial	Medium Industrial	Large Industrial	Street-lights	Weighted Adjustment Factor
(FPAF)	1.02	0.82	0.83	0.77	0.84	0.85

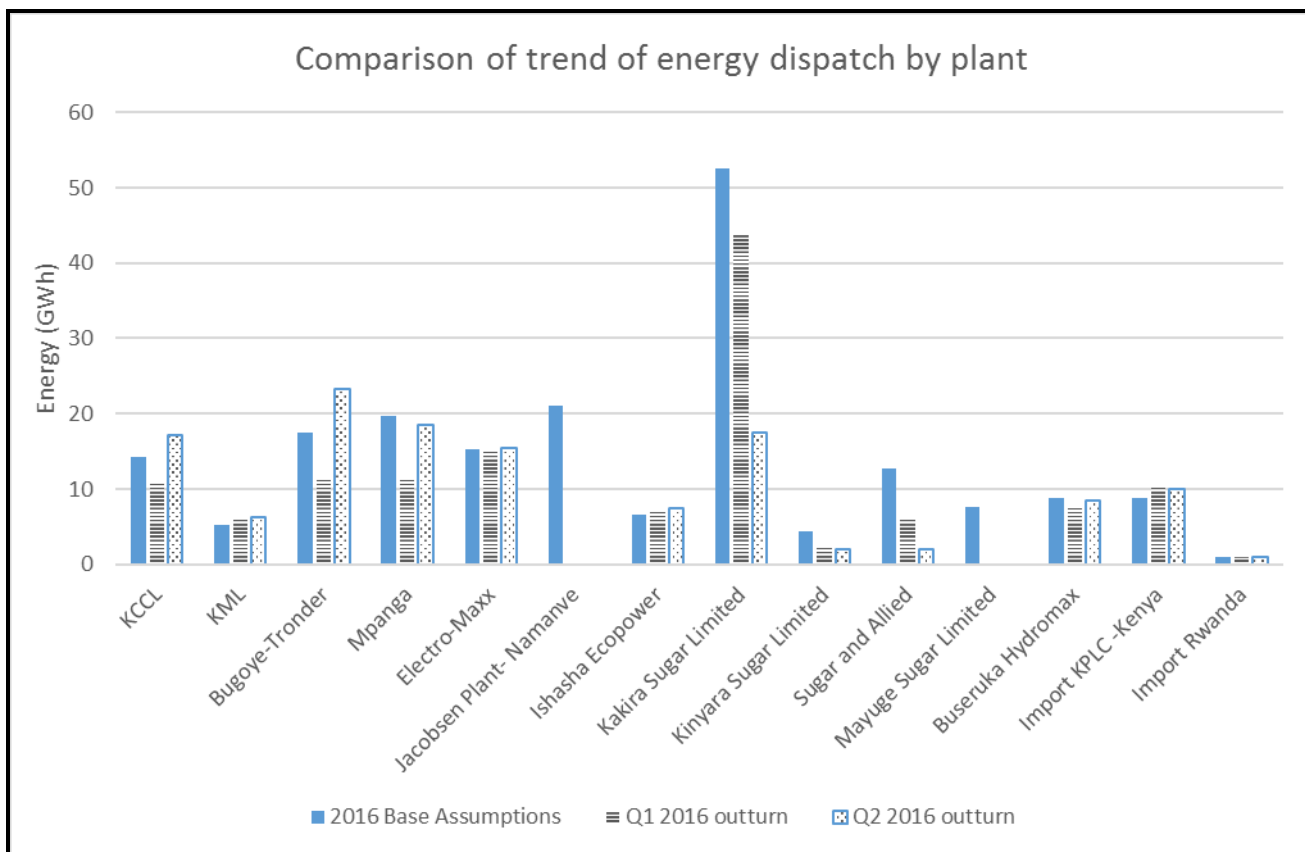
### 3.4 Generation Mix

The fuel adjustment factor includes the adjustment for changes in the dispatch of the generation plants or the generation mix relative to the assumptions made in the determination of the Base Tariffs. The changes in the generation mix affect the generation from the respective generation plants and the respective costs. The change in the dispatch for each of the generation plants from the base assumptions is shown in Figure 3. Details of the generation plants are presented in Annex 1.

**Figure 3: Energy Purchases by UETCL from Large hydro plants**



**Figure 4: Energy Purchases by UETCL from Small Hydros, Thermal and Co-generation plants**



The variance between the forecast in the generation mix and the outturn for Q2 2016 is attributed mainly to;

- (i) The changes in hydrological conditions which affected generation from mini hydro power plants.
- (ii) The reduced generation from co-generation bagasse plants on account of reduced supply of cane from out growers.
- (iii) Increased dispatch from large hydro power plants to bridge the deficit created by reduced dispatch from mini-hydro plants and co-generation bagasse.

The detailed discussion is presented in **Annex 1** to this report.

The impact of the change in the generation mix is a downward adjustment of the electricity end-user tariffs by a weighted average of negative Ush 23.80/KWh relative to the Base Tariffs as shown in Table 7.

**Table 7: Generation Mix/Dispatch Adjustment Factor**

	End-User (Retail) Electricity Tariffs (Ush/kWh)					
	Domestic	Commercial	Medium Industrial	Large Industrial	Street-lights	Weighted Adjustment Factor
<b>Generation Mix</b>	(28.68)	(23.18)	(23.37)	(21.63)	(23.70)	(23.80)

### 3.5 Other Adjustments

#### 3.5.1 Umeme Limited Investments for 2012 and 2013

The Authority on 18<sup>th</sup> December 2015 considered and approved Investments for Umeme Limited of US\$ 25,219,101 for 2012 and US\$ 39,491,406 for 2013. In the second quarter of 2016, Management implemented the decision of the Authority. In the third quarter of 2016, Management has continued to implement the 2012 and 2013 investment decision in the determination of the Distribution Price for the third quarter of 2016.

#### 3.5.2 Power Supply Price (PSP) reconciliation

Umeme Limited requested that the Power Supply Price reconciliation be considered in the subsequent tariff reviews by the Authority following a decision by the Authority to defer the reconciliation on account of failure by Umeme Limited to submit the required justification and information to aid decision making.

The ERA has held meetings with Umeme Limited, and brought to the attention of the company the limitations of the submitted data and the clarification needed, including but not limited to the following;

- a) The data submitted for the years before 2013 was not in the prescribed format as contained in the letter by the Electricity Regulatory Authority of 9<sup>th</sup> December 2015.
- b) Umeme Limited has not submitted in the prescribed format the revenue data requested vide the ERA letter of 1<sup>st</sup> September 2015.
- c) Umeme Limited was requested to submit clarification regarding customers that are on prepayment metering and consume below the lifeline units over a period of time i.e. if balances of energy not consumed are accrued, and for what period.
- d) Umeme Limited was requested to provide clarification in respect of prepaid energy units that are carried over from one month to another and how these are treated in computation of energy loss and company revenue.

Umeme Limited has not submitted the requested information and clarification. On the basis of the above, the PSP reconciliation has not been considered in the determination of the retail tariff for the third quarter of 2016.

### **3.6 Impact of Adjustment and other factors on the revenue requirement**

On the basis of the foregoing discussion of adjustment factors considered in the tariff for Q3 2016, the impact of each of the factors on the revenue requirement for the electricity industry is discussed and shown in Table 8.

**Table 8: IMPACT OF PARAMETERS ON REVENUE REQUIREMENT**

<b>Adjustment Factor parameter</b>	<b>Impact on Revenue Requirement –Ush Million</b>	<b>%age change from Q2 2016 Revenue Requirement</b>
Exchange Rate	9,063	0.7%
Inflation - CPI	1,014	0.1%
US PPI	(29)	0.0%
Fuel Prices	5,394	0.4%
Generation Mix	(10,339)	-0.8%
Deemed Energy	(9,188)	-0.7%
Export Sales	(5,975)	-0.5%
<b>TOTAL</b>	<b>(10,061)</b>	<b>-0.8%</b>
Annual Sales to Umeme Q2 2016	3,094	
Annual Sales to Umeme Q3 2016	3,154	
<b>%age Change</b>	<b>1.9%</b>	

The overall effect of adjustments included in determination of tariffs for Q3 2016 is a reduction in the annualized revenue requirement of the electricity industry by Ush 10,061 million from the Q2 2016 levels.

Changes in the generation mix had the largest impact on the annualized revenue requirement leading to a reduction of Ush 10,339 million from the costs of quarter two 2016. The depreciation of the Uganda Shilling against the United States Dollar led to an increase in the annualized revenue requirement by Ush 9,063 million while an increase in fuel prices led to an increase in annualized revenue requirement by USh 5,394 million.

On the other hand, increase in the US PPI led to a reduction in the annualized revenue requirement by Ush 29 million, while increase in the local CPI between February 2016 and May 2016 increased the annualized revenue requirement by Ush 1,014 million.

### 3.7 Overall Tariff Adjustment Factor

The applicable tariff adjustment for Q3 2016 is the sum of the Exchange Rate Adjustment Factor, Inflation Adjustment Factor and Fuel Price Adjustment Factor. The adjustment factors for Q3 2016 are as shown in Table 9.

**Table 9: Total Tariff Adjustment Factors Q3 2016**

	End-User (Retail) Electricity Tariffs (Ush/kWh)					
	Domestic	Commercial	Medium Industrial	Large Industrial	Street-lights	Weighted average
2016 Base Tariff	651.0	587.0	544.9	369.4	628.4	491.7
Q2 2016 Approved Tariff	640.2	578.3	536.1	361.1	619.5	484.6
	<b>Tariff Adjustment Factors (Ush/kWh) for Q3 2016</b>					
Inflation Rate Adjustment Factor (IRAF)	1.8	1.5	1.5	0.8	1.6	1.2
Exchange Rate Adjustment Factor (FERFAF)	1.9	1.6	1.7	0.9	1.7	1.4
Fuel Price Adjustment Factor (FPAF) – (a + b)	(28.7)	(23.2)	(23.4)	(21.6)	(23.7)	(23.8)
(a) Fuel Price Adjustment Factor	1.0	0.8	0.8	0.8	0.8	0.8
(b) Energy Mix Adjustment factor	(29.7)	(24.0)	(24.2)	(22.4)	(24.5)	(24.6)
<b>Total Tariff Adjustment</b>	(25.0)	(20.1)	(20.2)	<b>(19.9)</b>	<b>(20.4)</b>	(21.2)
<b>Approved Q3 2016 Tariff</b>	<b>626.0</b>	<b>566.9</b>	<b>524.7</b>	<b>349.5</b>	<b>608.0</b>	472.4
Percentage Change from Q2 2016	-2.2%	-2.0%	-2.1%	-3.2%	-1.9%	-2.5%

### 3.8 Demand Assumptions

During the first quarter of 2016, UETCL purchased 860.02 GWh from the generation plants. In the second quarter of 2016, UETCL purchased 866.64 GWh, representing growth of about 1%.

In terms of capacity, the registered total peak demand including exports in May 2016 was 561 MW compared to 560 MW in February 2016. However, the domestic peak demand excluding exports was registered to be 515 MW in February 2016 compared to 522 MW in July 2016. According to Bank of Uganda, domestic demand was constrained by economic growth for the financial year 2015/16 and estimated to reduce from an earlier projection of 5.0% to 4.6%.

We, however, note an increase in exports especially to Kenya as a result of a requirement from the Kenya Power and Lighting Company Limited to stabilize its network.

## 4 REVENUE REQUIREMENT, TARIFF AND SUBSIDY IMPLICATIONS

### 4.1 Revenue Requirement Implications

The annualized revenue requirement for the electricity industry is shown in Table 10.

**Table 10: Summary of Revenue Requirement**

	Eskom Generation				Transmission			Other power purchases	Export revenues	Distribution			
	Total	Asset related	O&M	Lease fee	Total	O&M	Levies & Funds	Total	Total	Total	Asset related	O&M	Lease fee
	US\$ mill	US\$ mill	US\$ mill	US\$ mill	US\$ mill	US\$ mill	US\$ mill	US\$ mill	US\$ mill	US\$ mill	US\$ mill	US\$ mill	US\$ mill
Q2 2016	47,968	10,687	28,675	8,605	100,550	68,395	32,155	692,085	68,069	490,622	339,245	145,804	5,573
Q3 2016	48,207	10,738	28,823	8,646	100,602	68,806	31,795	685,584	74,397	493,099	340,863	146,636	5,599

In the determination of tariffs for Q3 2016, the annualized revenue requirement for Eskom Uganda Limited is projected to increase to Ush 48,207 million in Q3 2016 from Ush 47,968 million in Q2 2016. The increase is largely driven by;

- (i) Adjustment for Consumer Price Index leading to an increase in the local content of the Operation and Maintenance costs, and



- (ii) Depreciation of the Uganda Shilling against the United States Dollar leading to increase in the Uganda Shilling equivalent asset-related costs.

Due to the changes in the generation mix mainly attributed to the reduction in dispatch from Kakira Sugar Works being compensated by capacity plants (Eskom and Bujagali), and increase in the International oil prices in Q2 2016, the annualized power acquisition costs (excluding the capacity payments to all thermal generators) reduced from Ush 692,085 million in Q2 2016 to Ush 685,584 million in Q3 2016.

The annualized revenue requirement for Umeme Limited has increased from Ush 490,622 million provided for in the tariff for Q2 2016 to Ush 493,099 million in Q3 of 2016, mainly on account of adjustment for Consumer Price Index for the local content of the Operation and Maintenance Costs. There was an increase in the annualized asset-related costs from Ush 339,245 million in Q2 2016 to Ush 340,863 million in Q3 2016 on account of the depreciation of the Uganda Shilling against the United States Dollar during the second quarter of 2016.

#### **4.1.1 Capacity Price for Eskom (U) Limited**

The Capacity Price for Eskom (U) Limited will increase from Ush 41,207 per MW per hour in Q2 2016 to Ush 41,413 per MW per hour in Q3 2016 as shown in Table 11. The increase is attributed to increased costs on account of adjustment of local content Operation and Maintenance costs for Consumer Price Index, and depreciation of the Uganda Shilling against the United States Dollar affecting the Investment-related costs.

**Table 11: Eskom Capacity Price for Q3 2016**

	Average Capacity Price	Total costs	Investment component	Capital recovery charges	Return on investment	Net accumulated investment	Income taxes payable	O&M component	USH-portion of O&M	US\$-portion of O&M	Concession fee
	CP y, q	USh mill	IN y, q	CR y	RT y	NI y	TX y	OM y, q=1	LOM y, q	EOM y, q	LP y, q=1
	Ushs/ MW		USh mill	US\$ thous	US\$ thous	US\$ thous	US\$ thous	Ush mill	Ush mill	Ush mill	US\$ thous
Q2 2016	41,207	47,968	10,687	964	1,559	12,992	668	28,675	15,804	9,393	8,605
Q3 2016	41,413	48,207	10,738	964	1,559	12,992	668	28,823	15,906	9,438	8,646

#### 4.1.2 Bulk Supply Tariff (BST)

The annualized bulk supply costs have reduced from Ush 854,141 million in Q2 2016 to Ush 844,751 million in Q3 2016. As a result, the Bulk Supply Tariffs have reduced from Ush 354.0/kWh, Ush 272.3/kWh, and Ush 165.6/kWh at Peak, Shoulder and Off-peak periods respectively, to Ush 340.5/kWh, Ush 261.9/kWh, and Ush 159.2/kWh for the respective Time of Use periods in Q3 2016, as shown in Table 12.

**Table 12: BULK SUPPLY COSTS AND RESULTANT BULK SUPPLY TARIFFS (BST)**

	Peak price	Shoulder price	Off-peak price	Sales to distributors	Total costs	Power Purchase Costs	Transmission costs	Total O&M component	Other
	USh/kWh	USh/kWh	USh/kWh	GWh	USh mill	USh mill	USh mill	Ush mill	Ush mill
Q2 2016	354.0	272.3	165.6	3,094	954,691	854,141	100,550	68,395	32,155
Q3 2016	340.5	261.9	159.2	3,154	945,353	844,751	100,602	68,806	31,795

The reduction in the Bulk Supply Tariff is on account of increased dispatch of capacity plants<sup>3</sup>. The annualized bulk supply costs decreased by 1.1% between Q2 2016 and Q3 2016 and the sales to distributors increased by 1.95% over the same period, leading to reduction in the Bulk Supply Tariff.

## 5 RETAIL TARIFFS

In accordance with Amendment No. 2 of the Umeme Limited Licence No. 48 for Supply of electricity, the retail tariff charges for electric service shall be subject to and liable for automatic fuel cost adjustment, foreign exchange rate fluctuation adjustment, and an automatic adjustment for inflation that will be calculated in accordance with such formulae as determined by the Authority.

<sup>3</sup> Increased dispatch from capacity plants reduces the weighted average unit cost of generation given that more energy is dispatched at proportionately lower (to zero) unit cost.

The quarterly adjustment factors and the resulting end-user tariffs across the customer categories for Q3 2016 are as shown in Table 13.

**Table 13: Q3 2016 Adjustment Factors and resultant End-User Tariffs**

	End-User (Retail) Electricity Tariffs (Ush/kWh)					
	Domestic	Commercial	Medium Industrial	Large Industrial	Street-lights	Weighted average
2016 Base Tariff	651.0	587.0	544.9	369.4	628.4	491.7
Q2 2016 Approved Tariff	640.2	578.3	536.1	361.1	619.5	484.6
	Tariff Adjustment Factors (Ush/kWh) for Q3 2016					
Inflation Rate Adjustment Factor (IRAF)	1.8	1.5	1.5	0.8	1.6	1.2
Exchange Rate Adjustment Factor (FERFAF)	1.9	1.6	1.7	0.9	1.7	1.4
Fuel Price Adjustment Factor (FPAF) – (a + b)	(28.7)	(23.2)	(23.4)	(21.6)	(23.7)	(23.8)
(a) Fuel Price Adjustment Factor	1.0	0.8	0.8	0.8	0.8	0.8
(b) Energy Mix Adjustment factor	(29.7)	(24.0)	(24.2)	(22.4)	(24.5)	(24.6)
<b>Total Tariff Adjustment</b>	<b>(25.0)</b>	<b>(20.1)</b>	<b>(20.2)</b>	<b>(19.9)</b>	<b>(20.4)</b>	<b>(21.2)</b>
<b>Approved Q3 2016 Tariff</b>	<b>626.0</b>	<b>566.9</b>	<b>524.7</b>	<b>349.5</b>	<b>608.0</b>	<b>472.4</b>
Percentage Change from Q2 2016	-2.2%	-2.0%	-2.1%	-3.2%	-1.9%	-2.5%

## **ANNEX 1: ENERGY DISPATCH AND GENERATION MIX**

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### **a) Energy purchase**

In Q2 2016, Uganda Electricity Transmission Company Limited purchased 866.64 GWh compared to 860.02 GWh for Q1 2016. This represents an increase in energy purchase of approximately 1%. The base energy purchase that was projected for Q2 2016 was 905.7 GWh. This represents a shortfall of 4.3% on the actual outturn for the sales. This less than anticipated demand can be attributed to a slowdown in economic activity in the country.

### **b) Mini Hydro Generation**

The total generation from mini hydro plants increased from 54.02 GWh in Q1 2016 to 81.03 GWh in Q2 2016. These mini hydro plants include Mpanga, Bugoye, Kasese Cobalt Company Limited, Kilembe Mines Limited, Eco Power and Hydromax. This increase in generation is mainly attributed to the improved hydrology in the country following the rainy season that started in late March up to early June 2016.

### **c) Large Hydro Generation**

Bujagali Power plant generated less energy in Q2 2016 compared to Q1 2016. This reduction in generation was attributed to annual maintenance by the plant where two units were shutdown, one in April and another in June 2016. Nonetheless, Eskom Uganda Limited increased its generation to compensate for the shortfall.

The generation from Bujagali Energy Limited is expected to remain low while the company conducts the maintenance for the remaining units of the plant in the third quarter of 2016.

### **d) Co-generation**

In Q2 2016, the Kakira co-generation Plant reduced their generation by up to 60% compared to Q1 of 2016. The reduction was as a result of

plant shutdown from May to mid-June 2016 for annual maintenance. The plant is however expected to increase generation to full capacity in the third quarter of 2016. The plant is projected to generate 52.6 GWh in the third quarter of 2016 as assumed in the determination of the 2016 base retail tariffs.

During the same period, the Kaliro-based SAIL generation plant generated only 1.96 GWh compared to the 6.28 GWh in Q2 2016. This reduction is associated with a reduction in supply of cane given that the company mainly relies on out growers. We note that a general challenge of sugar cane supply among cogeneration plants is likely to affect energy generation given the increasing competition for cane among sugar manufacturers.

#### **e) Thermal Generation**

Electro-Maxx power plant generated 15.3 GWh in Q2 2016, this is in line with the Authority decision to dispatch the HFO plants; Jacobsen and Electro-Maxx at a minimum of 15 GWh each in the respective quarters of 2016. Jacobsen Power Plant, however, did not dispatch any energy in this quarter. The zero dispatch of this plant is as a result of the licensing challenges that the plant is yet to iron out. This is, however expected to be resolved within Q3 2016.

We expect that in quarter three of 2016, the minimum capacity dispatch at 7 MW or 15 GWh will be maintained.

#### **f) Imported Power**

In Q2 2016, the actual energy imported by UETCL was 10.9 GWh. This is generally close to the baseline projected import of 9.7 GWh which was generally intended for system stability across Kenya and Uganda or tie line capacity. Table A1 shows the energy purchases by UETCL from the respective plants.

**Table A1: Energy Purchases by UETCL**

Generation Plant	Energy (GWh)	Cost (Ush Bn)	Energy (GWh)	Cost (Ush Bn)	Energy (GWh)	Cost (Ush Bn)
	<b>2016 Base Assumptions</b>		<b>Q1 2016 outturn</b>		<b>Q2 2016 outturn</b>	
Eskom Uganda Limited	337.8	12.0	347.3	12.1	361.7	12.2
Bujagali Energy Limited	372.4	139.5	379.7	138.7	375.9	138.0
KCCL	14.2	2.7	11.0	2.0	17.2	3.1
KML	5.3	0.5	6.1	0.5	6.3	0.6
Bugoye-Tronder	17.5	5.1	11.2	3.2	23.3	6.7
Mpanga	19.7	6.0	11.3	3.4	18.5	5.6
Electro-Maxx	15.3	8.7	15.3	6.6	15.5	7.0
Jacobsen Plant-Namanve	21.0	11.4	-	-	-	-
Ishasha Ecopower	6.6	1.6	7.0	1.9	7.4	1.9
Kakira Sugar Limited	52.6	16.9	43.8	13.9	17.6	5.3
Kinyara Sugar Limited	4.4	1.2	2.2	0.6	2.1	0.6
Sugar and Allied	12.8	4.1	6.3	2.0	2.0	0.6
Mayuge Sugar Limited	7.6	2.4	-	-	-	-
Buseruka Hydromax	8.8	2.8	7.4	2.5	8.4	2.6
Import KPLC -Kenya	8.8	8.0	10.5	5.1	10.0	4.6
Import Rwanda	0.9	0.3	0.9	0.3	1.0	0.3
<b>Total</b>	<b>905.7</b>	<b>223.0</b>	<b>860.0</b>	<b>192.8</b>	<b>866.6</b>	<b>188.9</b>

## Document Quality Control Process

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