



## **TARIFF REVIEW REPORT FOR THE THIRD QUARTER, 2018**

**JULY 2018**

**KAMPALA, UGANDA**

## **1. INTRODUCTION**

### **1.1 Background**

At the beginning of each Quarter, the Electricity Regulatory Authority ("the Authority") undertakes a Quarterly Tariff Review. The Quarterly Tariff Review is undertaken in accordance with the respective licenses issued by the Authority (to Umeme Limited, Uganda Electricity Transmission Company Limited (UETCL), and Eskom Uganda Limited) and in accordance with the Quarterly Tariff Review Methodology approved and published in the Uganda Gazette in 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); and,
- (iv) Changes in the Energy Generation Mix.

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 2018 Base Tariffs. Included in the review are also adjustments for other costs and revenue requirements as permitted under the Quarterly Tariff adjustment methodology.

More specifically;

- i. The Uganda Shilling has depreciated by 3.5% against the US Dollar, from Ush 3,634.92/US\$ in November 2017 to Ush 3,763.00/US\$ as at 31<sup>st</sup> May 2018;
- ii. The International fuel price for crude oil as at June 2018 was US\$ 74.11 per barrel compared to US\$ 60.74 per barrel used in the determination of the 2018 Base Tariffs. This represents an increase in international fuel prices by 22% from the base period;
- iii. The total Quarterly energy purchased by UETCL increased from 996.41 GWh in the first Quarter of 2017 to 1,006.65 GWh expected during the second Quarter of 2018;
- iv. The water release at the Nalubaale/Kiira generation complex is projected at 1000 Cubic meters per second (Cumecs) for the second Quarter of 2018, translating into an average generation capacity of 173.9 MW from Nalubaale/Kiira and 178.8 MW from Bujagali Energy Limited;
- v. Continued Adjustment for the Umeme Limited revenue requirement to cater for under-recovery on account of lifeline surcharge maintained (from Q2 2018) through the third Quarter of 2018; and,
- vi. Consideration of the benefits arising from the debt refinancing of the Bujagali Hydro Power Plant.

The detailed assumptions that form the basis of the Tariff Review for the third Quarter of 2018 are contained in the subsequent sections of this report.

## **1.2 Review Process**

As part of the Third Quarter of 2018 Tariff Review process, the Authority has undertaken consultations with stakeholders including; the licensees (Umeme Limited, Uganda Electricity

Transmission Company Limited, and Eskom Uganda Limited), and the media.

During the consultations, the Authority has explained to the stakeholders the drivers underlying the Tariff determination for the Third Quarter of 2018, and how the drivers have changed since determination of the Base Tariffs for 2018. The Authority has also undertaken further consultations with the Uganda Manufacturers Association (UMA) and the Ministry of Energy and Mineral Development (MEMD).

### **1.3 Purpose of this Report**

The purpose of this report is to present the results of the review of the Tariffs for the third Quarter of 2018, and to set out the determinations and the reasons informing the approved resultant Tariffs.

### **1.4 Structure of the Report**

This report is divided into six (6) sections focusing on: review of the movement in the macro-economic factors, determination of the adjustment factors for the third Quarter of 2018, review of the revenue requirement, and the resultant Tariffs.

## **2. Electricity End-User 2018 Base Tariffs**

In accordance with the Quarterly Tariff Review Methodology, the Authority at its 288<sup>th</sup> meeting held on 20<sup>th</sup> December 2017 approved the 2018 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: 2018 Base Electricity End-User Tariffs**

End-User (Retail) Electricity Tariffs (Ush/kWh)							
	Domestic	Com merci al	Medi um Indust rial	Large Industri al	Extra Large	Street- lights	Weight ed averag e
2018 Approved Base Tariffs	718.9	648.3	592.5	375.5	371.1	701.9	520.3

During the determination of the Base Tariffs, the Authority approved the Base Macroeconomic Parameters for 2018, which are presented in the second column in Table 2.

**Table 2: Macroeconomic Parameters Used in Determination of 2018 Base Tariffs and the Adjustment Parameters for Q3 2018**

Macroeconomic Parameters	Q1 2018	Q3 2018	%age Change Q1 to Q2 2018
	Base Parameters		
Exchange rate US\$/Ush	3,634.92	3,763.00	3.5%
Core Consumer Price Index (CPI)	164.15	165.1 <sup>1</sup>	0.6%
US Producer Price Index	200.7	202.7	1.0%
International Price of Fuel (US\$ per barrel)	60.74	74.11	22%

**Source:** Bank of Uganda for Exchange Rate, Uganda Bureau of Statistics for Consumer Price Index, US Bureau of Labour

<sup>1</sup> As published by Uganda Bureau of Statistics

Statistics for US Producer Price Index, and Organization of Petroleum Exporting Countries for International Fuel Prices.

**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 2017 for Q1 2018, and 31<sup>st</sup> May 2018 for the third Quarter of 2018 as published by the Bank of Uganda.

The base macroeconomic factors which were the basis for the 2018 Base Tariffs (for the month of November 2017) are stated in Table 2. As of May 2018, these parameters had changed as shown in column 4 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 THE THIRD QUARTER OF 2018**

#### **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 significant portion of these companies' costs are incurred in foreign currency yet the Retail Tariffs are charged and revenues are collected in Uganda Shillings.

During the second Quarter of 2018, the Uganda Shilling depreciated against the United States Dollar by 3.5% from the base parameters of 2018 thus leading to an increase in the Uganda Shilling equivalent of the cost incurred in foreign currency.

During the determination of the 2018 Base Retail Tariffs, the Authority approved the foreign currency content of the Operation and Maintenance (O&M) Costs of 37.68% for Eskom

Uganda Limited, 28.0% for UETCL, and 33.0% for Umeme Limited.

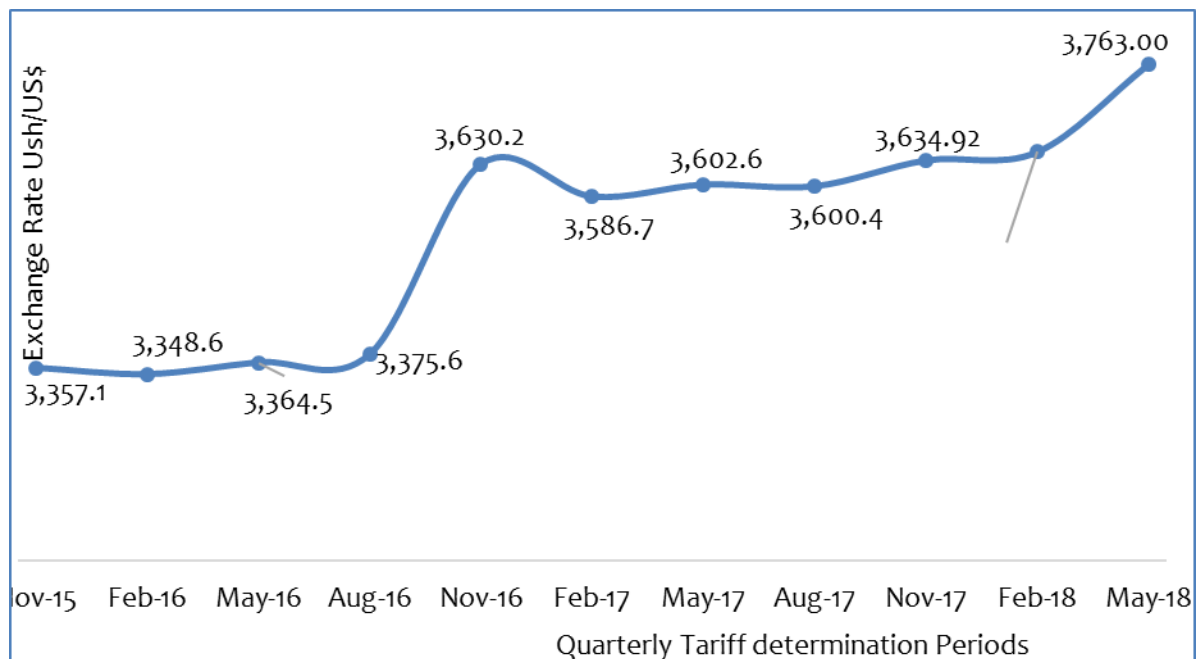
UETCL incurs over 99% of the power purchase costs in foreign currency since Power Purchase Agreements are either executed in United States Dollars or are pegged on the United States Dollar, with the exception of the Power Purchase Agreement for Kilembe Mines Limited. In addition, the investment costs for Umeme Limited including 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.

The Exchange Rate had been stable from November 2016 to February 2018 compared to the prior periods. However, during the Second Quarter of 2018 (Figure 1), the Uganda Shilling depreciated to Ush 3,763.00 per US\$ compared to Ush 3,645.71 per US\$ used in the determination of the Second Quarter Tariffs and Ush 3,634.92<sup>2</sup> per US\$ used in the determination of the Base Tariffs. This represents a depreciation of 3.5%. The trend of the Exchange Rate of the Uganda Shilling against the United States Dollar is shown in Figure 1.

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

**Figure 1: Movement in Ush/US\$ Exchange Rate up to May 2018**



Like many other emerging and frontier markets, the fall in export commodity prices, low demand in key export markets, and the growing strength of the United States of America economy weakened many currencies against the United States Dollar.

According to the outlook, the higher imports compared to exports of the country will continue to have an impact on the exchange rate and exert more pressure to the Uganda Shilling thus pose an upward risk to the stability of Uganda's Exchange Rate in the medium term, that is to say the next six (6) 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 the Second Quarter of 2018 increased the sector annualized revenue requirement by Ush 47,634 Million and subsequently increased the End-User Tariffs by a weighted average of Ush 31.1/kWh as shown in Table 3.



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

	<b>End-User (Retail) Electricity Tariffs (Ush/kWh)</b>						
	<b>Domestic</b>	<b>Commercial</b>	<b>Medium Industrial</b>	<b>Large Industrial</b>	<b>Extra Large</b>	<b>Streets</b>	<b>Weighted average</b>
Foreign Exchange Rate Adjustment Factor (FERAF)	62.3	44.5	29.2	15.3	12.5	56.5	31.1

### **3.2. Inflation Rate Adjustment Factor (IRAF)**

The annual Consumer Price Index (CPI) for the month ending May 2018 was 165.07 compared to 164.15 in November 2017. According to Bank of Uganda, inflation has been contained around the Central Bank's medium target of 5 percent mainly supported by a decline in food prices. Inflation is forecast to increase gradually, as the economy strengthens with both the headline and core inflation converging to 5 percent by the second half of 2019.

#### **3.2.1 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 Limited, UETCL, and Umeme Limited. This is based on the local currency content approved by the Authority at the

time of determination of the 2018 Base Tariffs (i.e. 62.32% for Eskom, 72.0% 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 the Third Quarter of 2018, the applicable CPI is 165.1 (May 2018) representing an increase of 0.58% compared to the CPI of November 2017, of 164.15.

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 200.7 in November 2017 (Base US PPI) to 202.7 in May 2018, representing an increase of 0.99%.

The movement in the Consumer Price Index and the United States Producer Price Index increased the sector annualized revenue requirement by Ush 1,210 Million and subsequently increased the electricity Retail Tariffs by Ush 1.0/kWh on a weighted average basis across consumer categories as indicated in Table 4.

**Table 4: Inflation Rate Adjustment Factor (IRAF)**

	<b>End-User (Retail) Electricity Tariffs (Ush/kWh)</b>						
	<b>Domestic</b>	<b>Commercial</b>	<b>Medium Industrial</b>	<b>Large Industrial</b>	<b>Extra Large</b>	<b>Street lights</b>	<b>Weighted average</b>
Inflation Rate Adjustment Factor (IRAF)	2.2	1.6	1.0	0.4	0.3	2.0	1.0

### **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 the 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.

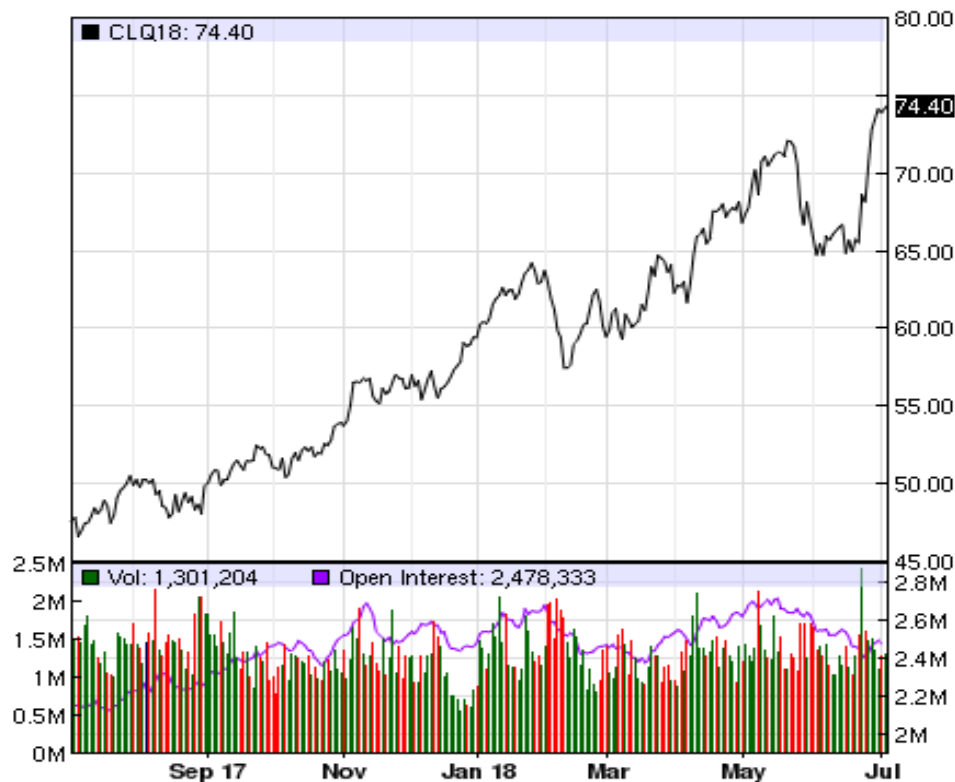
In the 2018 Base Tariffs, the cost of fuel assumed in the Tariff determination was US\$ 60.74 per barrel. According to the Organization of Petroleum Exporting Countries (OPEC); as at the end of June 2018, the International price of Heavy Fuel Oil (HFO) was US\$ 74.11 per barrel. For purposes of the Third Quarter of 2018 Tariff adjustment, the price of Heavy Fuel Oil that was used for electricity generation in Uganda, was assumed to be US\$ 551.4 per metric ton compared to Ush 452.0 per metric ton used in the 2018 Base Tariffs.

The increase in oil prices has been attributed to regulated/controlled supply by OPEC. As shown in Figure 2, the oil prices have been on an upward trend since July 2017. According to the National Association of Securities Dealers Automated Quotations (NASDAQ), OPEC is not ready to ease up on the production caps, with top officials signaling a desire to keep the cuts in place into 2019.

**Figure 2: Trend of crude oil prices September 2017 to May 2018**

### **WTI (NYMEX) Price**

**End of day Commodity Futures Price Quotes for Crude Oil WTI (NYMEX)**



**Source:** <http://www.nasdaq.com/markets/crude-oil.aspx?timeframe=1y>

The increase in the International price of fuel used for the Third Quarter of 2018 Tariffs compared to the First Quarter of 2018 Tariffs resulted in an increase in the projected power purchase costs for UETCL from Thermal Plants in the Third Quarter of 2018. This leads to a weighted average fuel adjustment factor of Ush 6.6 /kWh for the Third Quarter of 2018 as shown in Table 5.

**Table 5: Fuel Price Adjustment Factor (FPAF)**

	<b>End-User Retail Electricity Tariffs (Ush/kWh)</b>						
	<b>Domestic</b>	<b>Commercial</b>	<b>Medium Industrial</b>	<b>Large Industrial</b>	<b>Extra Large</b>	<b>Street-lights</b>	<b>Weighted average</b>
Fuel Price Adjustment Factor (FPAF)	11.2	5.4	5.4	5.4	5.1	5.5	6.6

### **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 energy generated from the respective generation plants and the respective costs.

#### **3.4.1. Demand Assumptions**

##### **3.4.1.1. Maximum Demand**

The registered peak system demand in May 2018 (including export of 14.5 MW to Tanzania and 58.8 MW to Kenya) stood at 637.26 MW (compared to 611.97 MW for April 2018). The Uganda peak domestic demand in May 2018 stood at 568.20 MW (compared to 562.21 MW for April 2018). Shoulder peak system demand was recorded at 528.7 MW (compared to 521.17 MW for April 2018) and an off-peak maximum system demand of 430.22 MW (compared to 423.17 MW for April 2018). The lowest system load registered was 310.85 MW.

Load shedding in the month of May 2018 was recorded at 7.85 MWh as compared to 0.53 MWh in the month of April 2018. Load shedding in the month of May 2018 was due to operation of Under Frequency Relays and load relief on Transformer 3 at Mutundwe substation, when Transformer 4 had tripped.

The July 2018 demand projections put the peak system demand at 596 MW, a maximum of 551 MW during the shoulder and a maximum demand of 441 MW during the off-peak period. The July 2018 demand projections exclude additional demand from new industries expected to start production any time as per Umeme Limited's forecast.

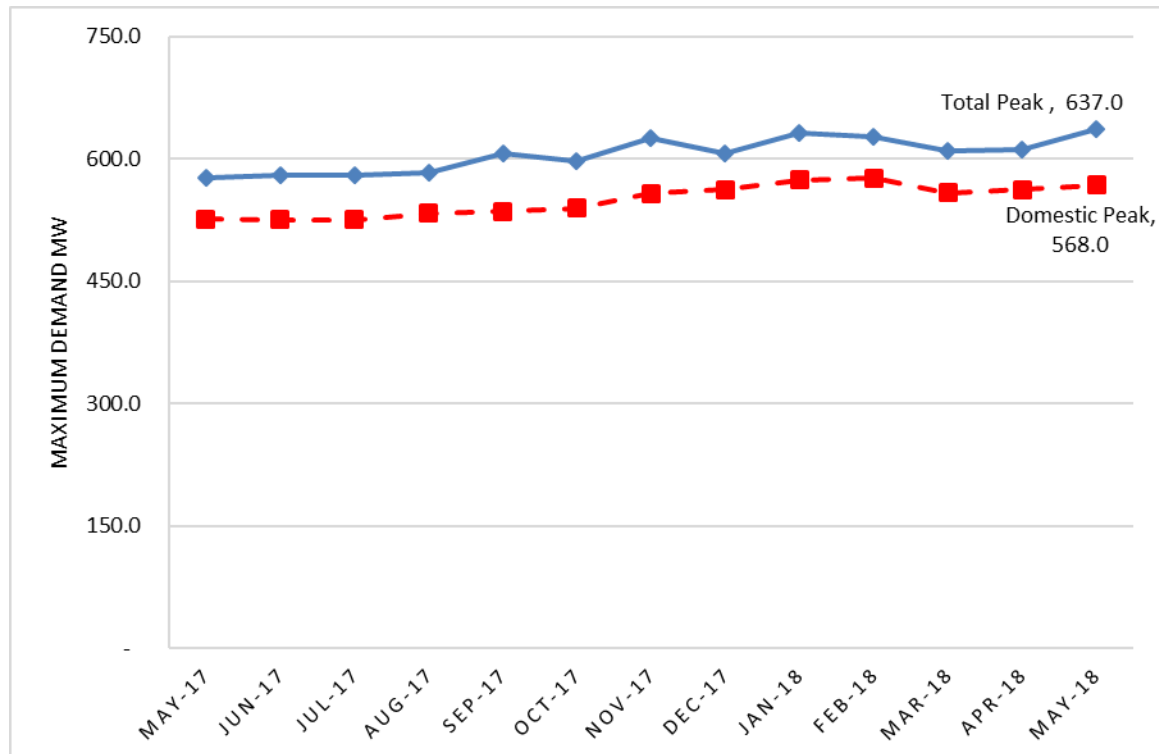
The optimization of available generation supply shall cover projected Domestic demand plus exports to Kenya, with secondary reserve capacity at about 20 MW. The reserve capacity and export to Kenya shall dwindle to about 11 MW and 30 MW, respectively at peak demand period mainly due to the low water levels.

Given the minimal available reserves for the Third Quarter of 2018, it is planned that secondary reserves shall be provided in form of thermal generation to ensure compliance with spinning reserve requirements and mitigate any supply deficit.

According to the BOU Monetary Policy Statement for June 2018, there are indications of a revival in private investment activity; as reflected by the recovery of Foreign Direct Investment, which grew by 18.5 percent in 2017 compared to a decline of 30.5 percent in 2016; improving Shilling credit extension by 10.8 percent in December 2017 compared to 7.9 percent in December 2016; and an increase of imports of raw materials and capital goods, which grew by 17.4 percent in 2017 compared to a decline of 21.1 percent in 2016. These developments, coupled with an improving global economic outlook, are expected to strengthen domestic economic activity.

The pronouncement by the Central Bank is also mirrored in the movement in the maximum demand as shown in Figure 3.

**Figure 3: Maximum Demand, May 2017 – May 2018**



**Source: UETCL System Summaries Database**

### 3.4.2. Energy Purchases by UETCL

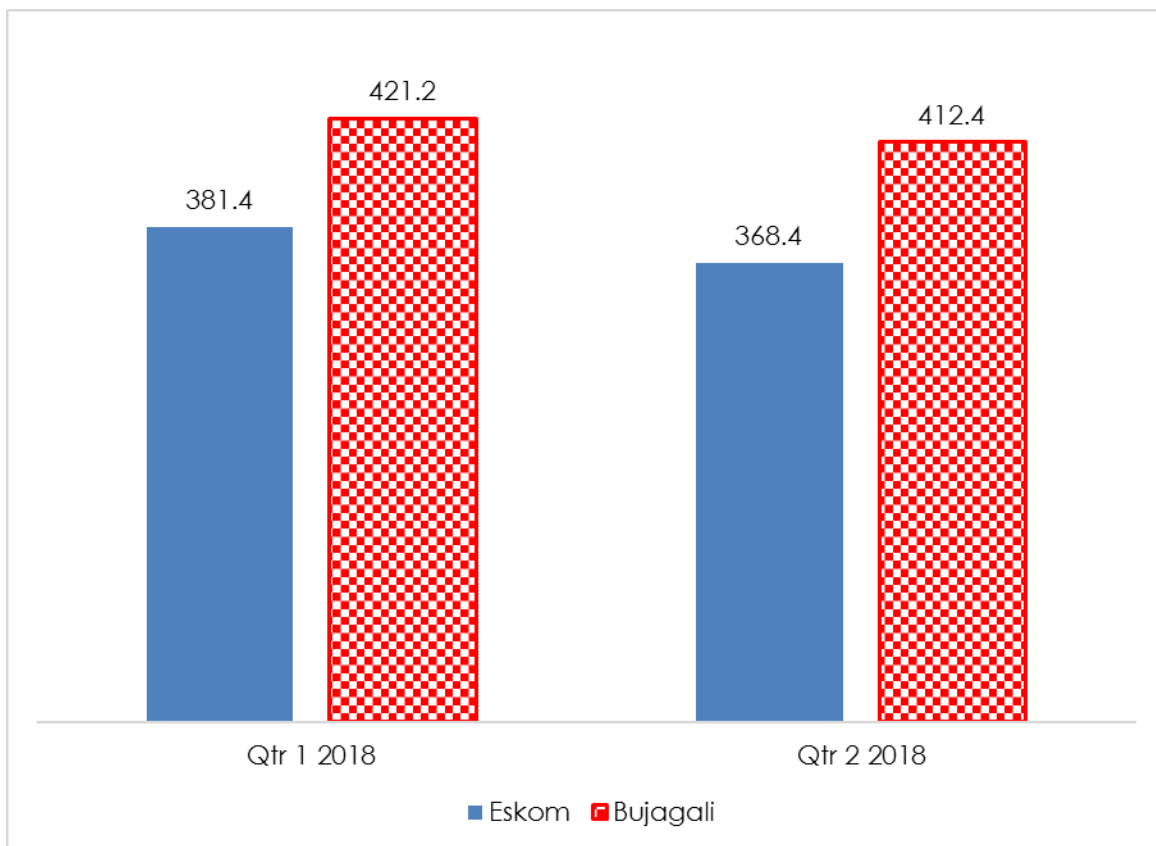
During the Fourth Quarter of 2017, UETCL purchased 910.08 GWh from the generation plants and imports. In the First Quarter of 2018, UETCL purchased 996.41 GWh, representing growth of about 9.48%.

By the end of Q2 2018, UETCL is expected to purchase 1,006.65 GWh, on account of expected increased demand from the Umeme Limited and UEDCL service territories. The support to the Western parts of Kenya is expected to reduce in the Third Quarter of 2018 on account of improved hydrology in Kenya.

Additionally, the demand is expected to grow in the later part of 2018 after commissioning of Industrial substations of UETCL and other investments geared towards unlocking the industrial demand especially in Kapeeka and Bombo Industrial Parks.

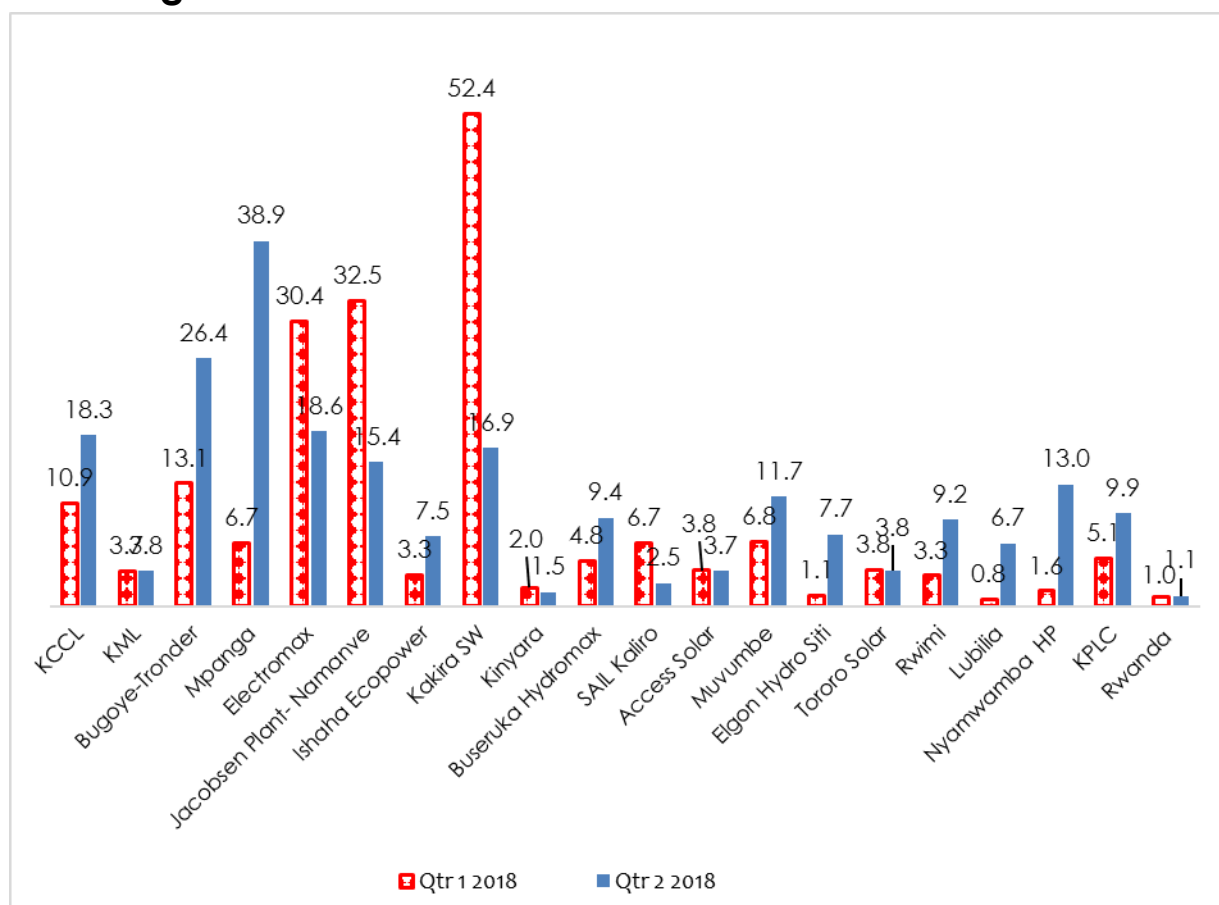
The change in the dispatch for each of the generation plants from the base assumptions is shown in Figures 4 and 5. Details of the dispatch from the respective generation plants are discussed in Annex 1.

**Figure 4: Energy Purchases by UETCL from Large Hydro Plants**





**Figure 5: Energy Purchases by UETCL from Small Hydros, Thermal and Co-generation Plants**



The variance between the forecast of the generation mix and the outturn for the Second Quarter of 2018 is attributed mainly to;

- (i) The changes in hydrological conditions which increased generation from Mini Hydro Power Plants.
- (ii) Reduction in generation from Co-generation Bagasse Plants on account of reduced supply of cane from out growers. The reduction in cane supply by out growers affected generation from Kakira Sugar Limited during the Second Quarter of 2018.
- (iii) Decreased dispatch from Large Hydro Power Plants and Thermal Plants to cater for increased dispatch from Mini-

Hydro Plants and reduced export to Kenya. The detailed discussion is presented in **Annex 1** to this report.

### 3.4.3. Energy Sales by UETCL

The energy purchases by UETCL are adjusted for transmission losses and sold to different distribution companies and exported. Based on the forecast, UETCL will be expected to sale 93.2 percent of the energy to Umeme Limited, export 4.7 percent of energy and the rest (2.1 percent) will be sold to the small distribution companies in the country as shown in Table 6.

**Table 6: Annualized Energy Sales by UETCL in Q1 2018 and Q3 2018**

<b>Distribution Licensee/export</b>	<b>Q1 2018 Annualized Energy Sales by UETCL (GWh)</b>	<b>%tage Sales - Q1 2018</b>	<b>Q3 2018 Annualized Energy Sales by UETCL (GWh)</b>	<b>%tage Sales – Q3 2018</b>
Umeme Limited	3500.5	92.9%	3,630.5	93.2%
UEDCL	46.8	1.2%	67.4	1.7%
KIL	5.6	0.1%	6.3	0.2%
BECS	2.8	0.1%	2.7	0.1%
PACMECS	2.1	0.1%	2.1	0.1%
KRECS	3.4	0.1%	3.8	0.1%
EXPORT	208.8	5.5%	182.0	4.7%
<b>TOTAL</b>	<b>3770.0</b>	<b>100.0%</b>	<b>3,894.9</b>	<b>100.0%</b>

In April 2018, the energy interchange between Uganda and Kenya was a net export of 11,027,895 kWh from UETCL to Kenya Power as compared to a net export of 17,688,850 kWh in February 2018.

The observed reduction in exports registered in the month of February 2018 was due to lower requests for support in April following improvement in the hydrological constraints hitherto suffered in the Western parts of Kenya.

Kenya Power faces a transmission capacity constraint limiting transfer of power from other parts to western Kenya where the dry season had caused a reduction in generation from Hydro Power Plants.

The impact of the change in the generation mix is a downward adjustment of the Electricity End-User Tariffs by a weighted average of -15.0 Ush/KWh relative to the Base Tariffs as shown in Table 7.

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

	<b>End-User (Retail) Electricity Tariffs (Ush/kWh)</b>						
	<b>Dome stic</b>	<b>Com merci al</b>	<b>Mediu m Industri al</b>	<b>Large Industr ial</b>	<b>Extra Large</b>	<b>Street lights</b>	<b>Weight ed averag e</b>
Generation Mix Adjustment Factor	(23.5)	(12.8)	(12.8)	(12.7)	(12.0)	(13.1)	(15.0)

### **3.5. Other Tariff Adjustment Factors**

#### **3.5.1. Debt Refinancing of Bujagali Energy Limited Hydro Power Plant**

The Authority at its 294<sup>th</sup> and 298<sup>th</sup> meetings approved modification of the Licence for Generation and Sale of electricity issued to Bujagali Energy Limited (BEL). The Licence

modification was subsequently issued and became effective on 18<sup>th</sup> June 2018.

Following submission of all the required documentation (by the Government of Uganda, Bujagali Energy Limited submitted a Notice of issuance to the respective lenders. Following the issuance of the Notice of Issuance, financial close was achieved nine (9) business days thereafter – 19<sup>th</sup> July 2018.

Using the debt refinancing terms, the Authority has computed and considered the benefits from refinancing as part of the Tariff review for the Third Quarter of 2018.

The impact of the Corporate Income Tax waiver is already implemented as part of the 2018 approved Tariffs. There are therefore no additional Tariff reductions expected arising from the waiver of Corporate Income Taxes for BEL.

Following refinancing, in the short term, the average monthly capacity payments payable to BEL are expected to reduce from US\$ 13.0 Million to US\$ 10.5 Million. However, for the period 2018 - 2032, the average monthly capacity payments are expected to increase from an average of US\$ 8.685 Million to an average of US\$ 10.0 Million.

During the consultative process, it was agreed that the benefits arising from the refinancing of the Bujagali Hydro Power Plant are allocated to the Extra-Large Industrial consumers.

When the short term reduction in capacity payments is allocated to the Extra-Large customer category, the End-User (Retail) Tariff for the Extra-Large Industrial users will reduce by Ush 62.5/kWh as shown in Table 8.

**Table 8: Allocation of BEL refinancing to the Extra Large Industrial customer category - Other Tariff Adjustment Factor**

	<b>End-User (Retail) Electricity Tariffs (Ush/kWh)</b>						
	<b>Domestic</b>	<b>Commercial</b>	<b>Medium Industrial</b>	<b>Large Industrial</b>	<b>Extra Large</b>	<b>Street lights</b>	<b>Weighted average</b>
	<b>Tariff Adjustment Factors (Ush/kWh) for Q3 2018</b>						
<b>Q3 2018 Other Tariff Adjustment - Ush/kWh</b>	-	-	-	-	(62.9)	-	

For the purpose of computing the total adjustment factors from the Base Tariffs, the other adjustment factor arising from the refinancing of Bujagali Energy Limited has been adjusted through the exchange rate adjustment factor.

### **3.6. Adjustment of Operation and Maintenance Costs**

#### **3.6.1. UETCL Operation and Maintenance costs for 2018**

The Authority approved the Multi-Year Tariff for UETCL for the period 2017-2019. The approved Operation and Maintenance cost for 2018 is Ush 103,830 Million and other revenue of Ush 15,484 Million. The Multi-Year Tariff and the Tariff Methodology provide that UETCL Operation and Maintenance costs shall be subject to Quarterly adjustment for changes in Exchange Rate and Consumer Price Index.

The effective Operation and Maintenance cost for UETCL for the Third Quarter of 2018 is Ush 105,305 Million (including Ush 368 Million approved for skills development).

### **3.6.2. Eskom Uganda Limited Operation and Maintenance costs for 2018**

The Authority approved the Eskom Uganda Limited Operation and Maintenance cost of Ush 26,404 Million (US\$ 9.211 Million) for the Tariff Year 2018. The Eskom Uganda Limited License No. 018 as amended as well as the 2014 approved Quarterly Tariff Adjustment Methodology provide for adjustment of Generation Operation and Maintenance cost Base parameters for changes in exchange rate and inflation as measured by the Consumer Price Index (CPI).

The effective operation and maintenance cost for Eskom Uganda for the Third Quarter of 2018 is Ush 35,717 Million (including Ush 122 Million approved for skill development).

### **3.6.3. 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 the Third Quarter of 2018, the annualized revenue requirement increased from Ush 1,690,610 Million in the Second Quarter of 2018 to Ush 1,754,983 Million in the Third Quarter of 2018. The contribution of each of the adjustment factors to the movement in the annualized revenue requirement is shown in Table 9.

**Table 9: IMPACT OF PARAMETERS ON REVENUE REQUIREMENT**

<b>Adjustment Factor parameter</b>	<b>Impact on Annualized Revenue Requirement – Ush Million</b>	<b>%age change from Q1 2018 Annualized Revenue Requirement</b>
Exchange Rate	47,634	3.0%

Inflation - CPI	1,201	0.1%
US PPI	696	0.0%
Fuel Prices	12,116	0.8%
Impact of BEL refinancing	(95,711)	-6.0%
Generation Mix and Umeme Under-recovery	84,034	5.2%
Export Sales	14,402	0.9%
<b>TOTAL</b>	<b>64,373</b>	<b>4.0%</b>
Annual Sales to Umeme, Q2 2018	3,500	
Annual Sales to Umeme, Q3 2018	3,631	
<b>%age Change</b>	<b>3.71%</b>	

Increase in the US PPI led to an increase in the annualized revenue requirement by Ush 696 Million. An increase in the local CPI between November 2017 and May 2018 increased the annualized revenue requirement by Ush 1,210 Million.

The depreciation of the Uganda Shilling against the United States Dollar led to an increase in the annualized revenue requirement by Ush 47,634 Million while an increase in fuel prices led to an increase in annualized revenue requirement by Ush 12,116 Million.

Similarly, changes in the generation mix led to an increase in the annualized revenue requirement of Ush 84,034 Million from the costs of the second Quarter of 2018.

The overall effect of adjustments included in determination of Tariffs for the Third Quarter of 2018 is an increase in the annualized revenue requirement of the electricity industry by Ush 64,373 Million from the First Quarter of 2018 levels.

### 3.7. Overall Tariff Adjustment Factor

The applicable Tariff adjustment for the Third Quarter of 2018 is the sum of the Exchange Rate Adjustment Factor, Inflation Adjustment Factor and Fuel Price Adjustment Factor. The adjustment factors for the Third Quarter of 2018 are as shown in Table 10.

**Table 10: Total Tariff Adjustment Factors for Third Quarter, 2018**

	<b>Tariff Adjustment Factors (Ush/kWh)</b>						
	<b>Domestic</b>	<b>Commercial</b>	<b>Medium Industrial</b>	<b>Large Industrial</b>	<b>Extra Large</b>	<b>Street lights</b>	<b>Weighted average</b>
Inflation Rate Adjustment Factor (IRAF)	2.2	1.6	1.0	0.4	0.3	2.0	1.0
Exchange Rate Adjustment Factor (FERFAF)	62.3	44.5	29.2	15.3	(50.4)	56.5	15.1
<b>Total Fuel Price Adjustment Factor (FPAF)</b>	<b>(12.3)</b>	<b>(7.4)</b>	<b>(7.4)</b>	<b>(7.4)</b>	<b>(6.9)</b>	<b>(7.6)</b>	<b>(8.4)</b>
Fuel Price Adjustment Factor	11.2	5.4	5.4	5.3	5.1	5.5	6.6
Energy Mix Adjustment factor	(23.5)	(12.8)	(12.8)	(12.7)	(12.0)	(13.1)	(15.0)
<b>Total Tariff Adjustment</b>	<b>52.2</b>	<b>38.7</b>	<b>22.8</b>	<b>8.3</b>	<b>(57.0)</b>	<b>50.9</b>	<b>7.7</b>

For the purpose of computing the total adjustment factors, the other adjustment arising from the refinancing of Bujagali Energy Limited has been adjustment through the exchange rate adjustment factor under the Extra-Large Industrial consumers.



## 4. REVENUE REQUIREMENT, TARIFF AND SUBSIDY IMPLICATIONS

### 4.1. Revenue Requirement Implications

The annualized revenue requirement for the Electricity Industry is shown in Table 11.

**Table 11: Summary of Revenue Requirement**

	Eskom Generation				Transmission				Other power purchases	Export revenues	Distribution			
	Total	Asset related	O&M	Lease fee	Total	Asset related	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	US\$ mill
Q1 2018	68,682	22,701	35,167	10,814	139,348	-	103,830	35,518	1,020,031	128,456	591,005	418,799	166,071	6,136
Q2 2018	68,840	22,768	35,226	10,846	140,058	-	104,005	36,053	1,030,214	223,658	592,923	420,042	166,728	6,154
Q3 2018	70,409	23,498	35,717	11,195	136,302	-	105,305	30,997	946,828	114,054	609,630	433,556	169,722	6,352

In the determination of Tariffs for the Third Quarter of 2018, the annualized revenue requirement for Eskom Uganda Limited is projected to increase to US\$ 70,409 Million, from US\$ 68,840 Million in the Second Quarter of 2018. 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 affecting the investment-related costs and foreign currency content of the Operation and Maintenance costs.

Due to the changes in the generation mix mainly attributed to the reduced dispatch from Co-generation Plants (Bagase) and Thermal Generation Plants, capacity plants (Eskom and Bujagali) on account of increased dispatch from Mini-hydros and increase in the International oil prices in the Second

Quarter of 2018, the annualized power acquisition costs (excluding the capacity payments to all thermal generators) decreased from Ush 1,030,214 Million in the Second Quarter of 2018 to Ush 946,828 Million in the Third Quarter of 2018.

The reduction is on account of reduction in the capacity price for Bujagali Energy Limited following the conclusion of the debt refinancing.

The annualized revenue requirement for Umeme Limited has increased from Ush 592,923 Million provided for in the Tariff for the Second Quarter of 2018 to Ush 609,630 Million in the Third Quarter of 2018, mainly on account of depreciation of the Uganda Shilling against the United States Dollar.

There was an increase in the Operation and Maintenance cost component of Umeme Limited on account of adjustment for Consumer Price Index for the local content of the Operation and Maintenance Costs, and depreciation of the Uganda Shilling for the foreign currency content of the Operation and Maintenance costs.

The increase in the annualized asset-related costs from Ush 420,042 Million in the Second Quarter of 2018 to Ush 433,556 Million in the Third Quarter of 2018 was mainly on account of the depreciation of the Uganda Shilling against the United States Dollar.

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

The Capacity Price for Eskom (U) Limited will increase from Ush 54,010 per MW per hour in the Second Quarter of 2018 to Ush 55,241 per MW per hour in the Third Quarter of 2018 as shown in Table 12. 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 during the period under review.

**Table 12: Eskom Capacity Price for Q3 2018**

	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	Foreign currency portion	Concession fee
			IN y, q	CR y	RT y	NI y	TX y		OM y, q=1	LOM y, q	EC y	LP y, q=1
	CP y,q	USh mill	USh mill	US\$ thous	US\$ thous	US\$ thous	US\$ thous		Ush mill	Ush mill	portion	US\$ thous
	Ushs/ MW											
Q1 2018	53,886		22,701	3,971	1,576	13,131	675		35,167	18,842		10,814
Q2 2018	54,010		22,768	3,971	1,576	13,131	675		35,226	18,864		10,846
Q3 2018	55,241		23,498	3,971	1,576	13,131	675		35,717	18,947		11,195

#### 4.1.2. Bulk Supply Tariff (BST)

The annualized bulk supply costs have reduced from Ush 1,017,519 Million in the First Quarter of 2018 to Ush 997,303 Million in the Third Quarter of 2018. The annualized export revenue by UETCL has reduced by Ush 109,604 Million from Ush 223,658 Million in the Second Quarter of 2018 to Ush 114,054 Million in the Third Quarter of 2018. The sales to Umeme Limited have increased from 3,500.05 GWh used in the determination of the First Quarter of 2018 Tariffs to 3,630.5 GWh in the Third Quarter of 2018. As a result, the Bulk Supply Tariffs have reduced from Ush 376.5/kWh, Ush 289.6/kWh, and Ush 185.4/kWh at Peak, Shoulder and Off-peak periods, respectively, to Ush 300.3/kWh, Ush 231.0/kWh, and Ush 148.0/kWh for the respective Time of Use periods in the Third Quarter of 2018, as shown in Table 13.

**Table 13: BULK SUPPLY COSTS AND RESULTANT BULK SUPPLY TARIFFS (BST)**

Bulk Supply Tariff (Ush/kWh)			
	Peak	Shoulder	Off-Peak
<b>Q1 2018</b>	376.5	289.6	185.4
<b>Q2 2018</b>	301.8	232.1	148.8

<b>Q3 2018</b>	300.3	231.0	148.0
<b>Percentage decrease</b>	-0.5%	-0.5%	-0.6%

## 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.

The Quarterly adjustment factors and the resulting End-User Tariffs across the customer categories for the Third Quarter of 2018 are as shown in Table 14.

**Table 14: Q3 2018 Adjustment Factors and resultant End-User Tariffs**

	<b>End-User (Retail) Electricity Tariffs (Ush/kWh)</b>					
	<b>Dome stic</b>	<b>Com merci al</b>	<b>Medium Industrial</b>	<b>Large Industrial</b>	<b>Extra Large</b>	<b>Street lights</b>
	<b>2017 Base Tariffs - Ush /kWh</b>					
Average	718.9	648.3	592.5	375.5	371.1	701.9
Peak		839.6	766.2	497.1	491.8	
Shoulder		646.3	589.8	382.6	378.5	
Off-Peak		401.4	366.1	247.7	246.5	
	<b>Tariff Adjustment Factors (Ush/kWh) for Q3 2018</b>					
Inflation Rate Adjustment Factor (IRAF)	2.2	1.6	1.0	0.4	0.3	2.0
Exchange Rate Adjustment Factor (FERFAF)	62.3	44.5	29.2	15.3	(50.4)	56.5
<b>Total Fuel Price Adjustment Factor (FPAF)</b>	<b>(12.3)</b>	<b>(7.4)</b>	<b>(7.4)</b>	<b>(7.4)</b>	<b>(6.9)</b>	<b>(7.6)</b>
Fuel Price Adjustment Factor	11.2	5.4	5.4	5.3	5.1	5.5

Energy Mix Adjustment Factor	(23.5)	(12.8)	(12.8)	(12.7)	(12.0)	(13.1)
<b>Total Tariff Adjustment</b>	<b>52.2</b>	<b>38.7</b>	<b>22.8</b>	<b>8.3</b>	<b>(57.0)</b>	<b>50.9</b>
<b>Approved Q3 2018 End-User Tariff in Ush/kWh</b>						
Average	771.1	687.0	615.3	383.8	314.1	752.8
Peak		878.2	789.0	505.4	434.8	
Shoulder		684.9	612.6	390.9	321.6	
Off-Peak		440.1	388.9	256.0	189.6	

The resultant Tariff at the different Time of Use periods is shown below:

Capacity Price	55,241	Ush/MW per hour				
	Peak	Shoulder	Off-Peak			
Bulk Supply Tariff - Ush/kWh	300.3	231.0	148.0			
End-User (Retail) Electricity Tariffs (Ush/kWh)						
	Domestic	Commercial	Medium Industrial	Large Industrial	Extra Large	Street lights
2018 Base Tariffs - Ush /kWh						
Average	718.9	648.3	592.5	375.5	371.1	701.9
Peak		839.6	766.2	497.1	491.8	
Shoulder		646.3	589.8	382.6	378.5	
Off-Peak		401.4	366.1	247.7	246.5	
	Tariff Adjustment Factors (Ush/kWh) for Q3 2018					
Total Tariff Adjustment	52.2	38.7	22.8	8.3	(57.0)	50.9
Approved Q3 2018 End-User Tariff in Ush/kWh						
Average	771.1	687.0	615.3	383.8	314.1	752.8
Peak		878.3	789.0	505.4	434.8	
Shoulder		685.0	612.6	390.9	321.5	
Off-Peak		440.1	388.9	256.0	189.5	
Approved Q3 2018 End-User Tariff in US Cents/kWh						
Average	20.5	18.3	16.4	10.2	8.3	20.0
Peak		23.3	21.0	13.4	11.6	
Shoulder		18.2	16.3	10.4	8.5	
Off-Peak		11.7	10.3	6.8	5.0	

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

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### **1. Eskom Uganda Limited**

During the month of June 2018, the allowed water release for the Eskom complex translated into a flat hourly average of 173.9 MW. For the month of July 2018, the allowed water release shall remain unchanged. The Directorate of Water Resources Management (DWRM) responded to Eskom's application and allowed water release to be maintained at the same level up to 15<sup>th</sup> May 2019. The accumulated short releases shall be used in July and the plant shall supply 4,189 MWh per day (equivalent to a flat hourly average of 174.5 MW), which shall be optimized to yield a maximum of 280.1 MW.

For the Third Quarter of 2018, Eskom Uganda Limited is expected to generate and sell 368.37 GWh to UETCL and as such, the annualized power purchase costs for Eskom Uganda Limited are expected to increase slightly from Ush 68.8 Billion in the Second Quarter of 2018 to Ush 70.41 Billion. The increase is mainly on account of the inflationary adjustment and depreciation of the Shilling against the United States Dollar during the Second Quarter of 2018.

### **2. Bujagali Energy Limited**

Units 1, 2, 3, 4 and 5 shall be shut down on 6<sup>th</sup>, 9<sup>th</sup>, 11<sup>th</sup>, 13<sup>th</sup> and 15<sup>th</sup> July 2018, respectively, to carry out scheduled tests on the generators and unit transformers. Unit 1 shall also be shut down for annual maintenance from 23<sup>rd</sup> July into the new month. During the period when a generator shall be shut down at the plant, the available capacity from the plant shall be at 204 MW and it shall supply up to 4,272.06 MWh per day. For the other

periods during the month, the plant shall be fully available at 250 MW and shall supply up to 4,480.95 MWh per day.

The annualized costs associated with power purchase from BEL are expected to reduce to Ush 507 Billion from Ush 605 Billion used in the review of the Second Quarter Tariffs and Ush 603.68 Billion used in the determination of the Base Tariffs.

### **3. Kilembe Mines (Mobuku 1)**

Mobuku 1 Hydropower Plant whose operations during the year reverted to Kilembe Mines Limited (formerly Tibet Hima Limited) has an installed capacity of 5 MW. The improved hydrology in the country has enabled the power plant to generate at an average of 2 MW. The plant is expected to generate 3.77 GWh in the Second Quarter of 2018 compared to 6.6 GWh assumed in the determination of the 2018 Base Tariffs. It is expected that the power plant will generate 3.77 GWh in the Third Quarter of 2018.

Based on the forecast, the power purchase costs of Kilembe Mines Limited (KML) are expected to reduce from Ush 0.58 Billion used in the determination of the Base Tariffs to Ush 0.33 Billion in the Third Quarter of 2018. The Tariff of KML is denominated in Uganda Shillings and therefore the power purchase costs are not subjected to changes in the Exchange Rates.

### **4. Bugoye Hydro (Mobuku 2)**

In the month of July 2018, the plant is expected to supply a flat hourly average of 7.47 MW. During the Third Quarter of 2018, Bugoye is expected to generate 26.37 GWh at a cost of Ush 13,796 Million.

### **5. Ishasha - Eco Power Uganda Limited**

In the month of July 2018, the plant is expected to supply a flat hourly average of 2.5 MW depending on river flow levels.

During the Third Quarter of 2018, Eco Power is expected to generate 7.47 GWh at a cost of Ush 1,968 Million.

#### **6. Africa EMS Mpanga Ltd (18 MW)**

During the First Quarter of 2018, Uganda experienced unfavorable hydrology conditions making the plant dispatch less than 1 MW on some days. However, in the Second Quarter, the hydrology improved and the company is expected to generate 38.8 GWh. The conditions are expected to remain favorable through the Third Quarter of 2018 thus the company is expected to generate 38.8 GWh in Q3 2018.

The power purchase costs are expected to increase from the estimated Ush 3,902 Million in the Base Tariffs of 2018 to Ush 9,412.29 Million in the Third Quarter of 2018. The increase is mainly on account of increased generation.

#### **7. Jacobsen Namanve**

The Plant's availability declaration is up to 1,194.24 MWh per day, which translates into an hourly average of 49.76 MW. The plant normally supplies up to 168 MWh per day, which shall translate into an hourly average of 7 MW.

Jacobsen Uganda Power Plant Company Limited is expected to generate 15.38 GWh in the Third Quarter of 2018 at a cost of Ush 10,029 Million. The increase is on account of increase in International Fuel Prices.

#### **8. Electro-Maxx**

The Plant availability declaration is up to 806 MWh per day, which translates into an hourly average of ~33.6 MW. The plant shall supply upto 168 MWh per day, which shall translate into an hourly average of 7 MW in the month of July 2018.



Electro- Maxx is expected to generate 15.38 GWh in the Third Quarter of 2018 at a cost of Ush 13,557 Million. The increase is on account of increase in International Fuel Prices.

#### **9. Kakira Sugar Limited**

The Plant resumed full production on 22<sup>nd</sup> June 2018, supplying up to 25 MW, after completing annual maintenance works. The plant is expected to supply upto 25 MW, in the month of July 2018.

During the Third Quarter of 2018, Kakira is expected to generate 16.90 GWh at a cost of Ush 5,835.86 Million.

#### **10. Kinyara Sugar Works**

The Plant is expected to produce a flat hourly average of 2.2 MW in the month of July 2018.

During the Third Quarter of 2018, Kinyara is expected to generate 1.51 GWh at a cost of Ush 444.59 Million.

#### **11. Sugar and Allied Industries Limited (SAIL)**

SAIL Co-generation is expected to produce 4 MW depending on the availability of the interconnecting distribution grid.

During the Third Quarter of 2018, SAIL is expected to generate 2.48 GWh at a cost of Ush 863.6 Million.

#### **12. Kabalega Mini-Hydro Plant (Hydro-Max Buseruka)**

The Plant is expected to supply 4 MW depending on river flow levels and availability of the interconnecting distribution grid.

During the Third Quarter of 2018, Hydro-max is expected to generate 9.44 GWh at a cost of Ush 3,259.8 Million.

#### **13. KCCL (Mobuku 3)**

The plant is projected to supply an hourly average of 5.72 MW depending on river flow levels.

During the third Quarter of 2018, KCCL is expected to generate 18.26 GWh at a cost of Ush 3,584.13 Million.

#### **14. Access Uganda Solar Limited**

The plant is expected to produce an average of 37 MWh per day in the month of July 2018. The Solar plant production in shoulder period is expected to achieve a maximum of 7.3 MW.

During the Third Quarter of 2018, Access Uganda Solar Limited is expected to generate 3.74 GWh at a cost of Ush 1,548 Million.

#### **15. Muvumbe Hydro Power Plant**

The Plant is expected to supply an hourly average of 4 MW, depending on river flow levels and availability of the interconnecting distribution grid.

During the Third Quarter of 2018, Muvumbe Hydro Power Plant is expected to generate 11.66 GWh at a cost of Ush 4,128.78 Million.

#### **16. Siti 1 Hydro Power Plant**

The Plant is expected to supply an hourly average of 3.5 MW, depending on river flow levels and the availability of the interconnecting distribution grid.

During the Third Quarter of 2018, the Siti 1 Hydro Power Plant is expected to generate 7.67 GWh at a cost of Ush 2,886.2 Million.

#### **17. Tororo Solar North**

The Plant is expected to produce an average of 53.35 MWh per day in the month of July 2018. The Solar plant production in shoulder period is expected to achieve a maximum of 7.1 MW.

During the Third Quarter of 2018, Tororo Solar North is expected to generate 3.84 GWh at a cost of Ush 1,589.49 Million.

#### **18. Rwimi Hydro Power Plant**

The Mini-Hydro Plant is expected to supply an hourly average of 1.5 MW depending on river flow levels and availability of the interconnecting distribution grid.

During the Third Quarter of 2018, Rwimi is expected to generate 9.21 GWh at cost of Ush 3,396.4 Million.

### **19. Nyamwamba Hydro Power Plant**

The Mini-Hydro Plant is expected to supply an hourly average of 4.5 MW depending on river flow levels.

During the Third Quarter of 2018, Nyamwamba Hydro Power Plant is expected to generate 12.96 GWh at a cost of Ush 4,145.3 Million.

### **20. Lubilia Hydro Power Plant**

The Mini-Hydro Plant is expected to supply an hourly average of 2.5 MW depending on river flow levels and availability of the interconnecting distribution grid.

During the Third Quarter of 2018, Lubilia Hydro Power Plant is expected to generate 6.71 GWh at a cost of Ush 2,439.9 Million.

### **21. Nkusi Hydro Power Plant**

The Mini-Hydro power plant (9.6 MW) is newly commissioned and achieved commercial operations in June 2018. It is expected to supply an hourly average of 5 MW in the month of July 2018.

### **22. Import and Export of Power**

UETCL exports and imports power from Kenya and Rwanda mainly for tie-line flow and not for commercial purposes.

Since 2017, the Western parts of Kenya have been experiencing drought that adversely affected generation from hydro power plants. As a result, Kenya requested UETCL for power support. The export by UETCL to Kenya has reduced from 29.43 GWh used in the determination of the 2018 Base Tariffs to the estimated outturn for Q2, 2018 of 24 GWh.

In the Third Quarter of 2018, the hydrological conditions in Kenya are expected to improve and it is projected that UETCL

will export 24 GWh during the period and earn revenue of Ush 47.37 Billion.

In respect to power import, UETCL is expected to maintain the import levels for the tie-line flow of 3.8 GWh for both Kenya and Rwanda, at a cost of 2.658 Billion.