Regulating Energy for Sustainable Development

1 September 2023

THE 2023-2027 ELECTRICITY BASE TARIFF DETERMINATION

1.0 INTRODUCTION

An electricity base tariff is granted to utilities to enable them finance short to medium term investments, operations, maintenance of power infrastructure for improved and sustainable service delivery. Base tariff periods vary from country to country. Malawi Energy Regulatory Authority (MERA) opted for a four-year cycle of the base tariff. This period is deemed long enough for financing costs in the power industry to have significantly changed, warranting a review of the base tariff.

Since the establishment of MERA in 2008, the Authority has granted three (3) base tariffs as follows: -

a) From 2009 to 2014 – the first base tariff where electricity tariffs were increased by 56.22%. This moved the average tariffs from K6.01/kWh to K9.39/kWh. At the end of that base tariff period in 2014, the average tariff had escalated to K31.54/kWh mainly due the Automatic Tariff Adjustment Formular (ATAF) consideration dictated by a major currency devaluation that the Reserve Bank implemented in 2012.
b) From 2014 to 2018 – the second base tariff where tariffs were increased by 37.28% and moved the tariff from K31.54/kWh to K43.24/kWh. By

the end of the tariff period, the tariff had increased to K73.23/kWh due to adjustments dictated by the ATAF, emergency power procurement from Aggreko and other considerations.

c) From 2018 to 2022 – the third base tariff where tariffs were increased by 31.8% moving the average tariff from K73.23/kWh to K95.15/kWh. By the end of this base tariff in September 2022, the average tariff had escalated to K104.46/kWh due to ATAF and implementation of some of the annual tariff tranches during that period.
d) The fourth base tariff will run from 2023 to 2027.

2.0 THE NEW (FOURTH) BASE TARIFF APPLICATION

In August 2022 MERA received a join application from the defunct Power Market Limited (PML) and Electricity Supply Corporation of Malawi (ESCOM) for the fourth four-year electricity base tariff based on the restructured electricity market, as a result of the power sector reforms that took place in 2016. The application covered generation, single buyer, system market operator, transmission, and distribution activities.

In the joint application, PML and ESCOM asked for a 99.9% tariff increase as a base tariff for the period 2022 to 2026. Following Government's decision to dissolve PML, ESCOM was asked to revise the tariff application.

A revised electricity base tariff application by ESCOM was submitted to MERA in April 2023 with a requested tariff increase of 69.7% down from 99.9%. Due to the delay experienced in concluding the base tariff review, the fourth electricity base tariff will cover the period from September 2023 to August 2027. The base tariff has been prepared in line with the tariff methodology with some exceptions and has been guided by the tariff and cost of service study.

3.0 THE BASE TARIFF REVIEW PROCESS

Following receipt of the revised base tariff application from ESCOM in April 2023, and guided by the review framework, MERA undertook a preliminary review of ESCOM's application which identified issues and gaps in the application. To ensure completeness of the submission, MERA held one-on-one meetings with both ESCOM and Electricity Generation Company of Malawi (EGENCO) in May 2023 in Blantyre. These meetings also accorded MERA the opportunity to understand and appreciate the planning processes that informed the base tariff submissions.

The final data and information validation meeting was held with ESCOM from 13th to 16th June 2023 that led to the conclusion of the abridged version of the base tariff application which was published in the print and electronic media for stakeholder and public comments over a two-week period from 15th to 29th June 2023.

From 10th to 14th July 2023, MERA undertook public hearings in Blantyre, Lilongwe and Mzuzu. During these meetings, ESCOM formally presented and justified the application and key stakeholders interrogated specific issues about the application and expressed their expectations on the proposed base tariff.

After the above steps, MERA embarked on a detailed analysis of the tariff application considering the inputs and outcomes from the review of the ESCOM Revenue Requirement Model, the tariff study and cost of service study, and comments and observations received on the application through various forms of media as well as from the public hearings.

3.1 Determination of Allowable Revenues/Expenses in the Base Tariff

Prior to determining an appropriate average tariff, MERA establishes the annual and total revenues required to finance investments, operations, maintenance, and other expenses for all licensees in the electricity supply industry. In making the revenue requirement or allowable expenses determination, the Authority applies the following general rules in the tariff computation:

a) Expenses must be necessary and related to the production, transmission, and distribution and supply of electricity.
b) Expenses must be prudently incurred after careful consideration of available options. However, the least cost option must not be at the expense of quality, effectiveness, and efficiency.
c) Expenses must be incurred in the normal operations of the business. An expense that is incurred under abnormal or extraordinary circumstances may be spread over several years to match the time periods over which the benefit is derived.
d) Expenses should be incurred in an arm's length transaction and suppliers should be treated equally without prejudice.
e) Expenses on research and development (R&D), charitable donations, lobbying expenses and advertising may or may not be allowed in costs of supply.
f) The utility company shall, in its tariff increase application, highlight all transactions with subsidiaries and sister companies. Licensees should demonstrate that such transactions are necessary, reasonable and market based.
g) The applicant should demonstrate transparency when conducting transactions i.e., competitive bidding should always be practiced when procuring services and products.
h) All expenses should not be incurred at rates above market rates.

4.0 OBJECTIVES OF THE BASE TARIFF REVIEW

The objectives considered in the analysis of the ESCOM application were to:

a) Provide ring fenced revenues for the various licensees of ESCOM which fully covers costs and allow the individual licensees to operate successfully on a commercial basis and earn a fair return on their businesses.
b) Build in the base tariff self-enforcing incentives for cost control for the four-year period in from of annual operation expenditure caps and other cost control measures.
c) Encourage increased generation and power supply through promotion of efficient and value for money power procurement and new investments in the electricity sector through appropriate price signals and guarantees on investment costs recoveries.

5.0 LICENSEES AND OTHER REVENUE REQUIREMENTS CONSIDERATIONS

5.1 Energy Procurement Revenue Requirement

The planned power procurements in the fourth base tariff will be sourced from hydro, cross border supplies, Mozambique - Malawi (MO -MA) interconnector, thermal and solar. EGENCO power plants will contribute 60%, MO-MA 30%, and others 10% of the generation capacity for the country. The power purchase costs have considered revised tariffs for the EGENCO hydro and thermal power plants, interconnector, and Independent Power Producers (IPP) tariffs.

The total power purchase cost for the power supply sources for the four-year fourth base tariff period is **MK832.586 billion**. This amount comprises the units energy purchase cost at K656.244 billion; Deemed energy purchase costs at K8.704 billion; Capacity purchase costs at K150.862 billion and MO-MA Wheeling charges at K16.775 billion. The capacity purchase costs will mainly be paid to EGENCO while deemed energy costs are planned for IPPs.

With the coming in of the Mozambique-Malawi Interconnector, which is planned for the last quarter of the first year of the tariff period, ESCOM will have to pay for wheeling charges to Mozambique. This has been planned at about MK5.162 billion annually, translating to MK 16.775 billion for the four years.

5.2 Transmission Licensees Revenue Requirement

The transmission Licensee intends to spend K72 billion over the four years on Operations expenditure (opex) comprising of K19.99 billion for payroll; K10.54 billion on services, supplies, and sundries; K18.77 billion maintenance; K6.03 billion on operations; K1.40 billion as training expenses; and K15.30 billion as transmission's share of Head Office expenses. In addition to opex, the licensee plans to spend K5.558 billion on depreciation, K2.055 billion on loan/principal repayment and an estimated KK15.355 billion as return on investments. These expenses will require a total of **KK95.004 billion** as the revenue for the transmission licensee over the base tariff period from 2023 to 2027.

5.3 Single Buyer Licensee

The total Single Buyer (SB) Revenue Requirement amounts to **MK22.49 billion** as summarized in table 11 below. Out of this amount, SB operational costs (MK18.12 billion), Depreciation (MK1.30 billion), Bank Guarantee charges (MK2.22 billion) and return (MK843.82 million).

5.4 Bulk Customer Stabilization Fund

As part of measures to minimize frequent and significant tariff adjustments, the Tariff Methodology provides for the establishment of the Bulk Customer Stabilization Fund. The total revenue requirement for this purpose therefore has been estimated at **K67.260 billion** for the four years of the base tariff.

5.5 Revenue Requirements of System and Market Operator (SMO)

The revenue requirement for the System and Market Operator (SMO) licensee covers Operational Expenditure, Capital Expenditure and Capital Projects planned for, in the next four (4) years. The total revenue requirement for SMO is therefore **MK41.17 billion.**

5.6 Bulk Revenue Requirement

The revenue requirement to cover bulk costs comprises power purchase costs and revenue requirements for all licensees excluding the distribution licensee. The total bulk revenue requirement for the base tariff period from 2023 to 2027 is **K1.054 trillion** as presented in the table below: -

The bulk tariff revenue requirement comprises power purchase costs and revenue requirements for all licensees excluding the Distribution licensee. The average bulk tariff is **MK90.83/kWh** based on annual bulk revenue requirements. Annual bulk tariffs are calculated at K70.48/kWh (2023/24); K96.01/kWh (2023/2025); K97.27/kWh (2025/2026); and K99.55/kWh for the final year of the base tariff (K2026/2027).

5.7 Distribution Licensee Revenue Requirement and Tariff

The total Revenue Requirement for the **Distribution Licensee (DL) is MK551.602 billion** composed of MK360.48 billion OPEX, MK42.06 billion Depreciation, MK17.86 billion Principal Repayment, and MK131.69 billion

Return on Asset as summarized in the table below. On the basis of annual energy billed customers and DL's own revenue requirement, the average distribution tariff is K55.34/kWh.

5.8 Levies and Tariff

The Energy Laws require that ESCOM pays Malawi Rural Electrification Program (MAREP) Levy as well as the Malawi Energy Regulatory Authority (MERA) Levy. The Laws have stipulated these levies at 4.5% and 1.0% of the tariff, respectively. In the 2023-2027 base tariff, a provision of K88.335 **billion** has been made for ESCOM to be able to remit these levies to the Authority over the four years.

5.9 Provision for Bad Debts

In the fourth base tariff, ESCOM is expected to finalise migration of all customers from the post-paid to the pre-paid metering system. Currently, most domestic customers have already been migrated to pre-paid metering. However, most Maximum Demand customers are yet to be migrated. A provision of 1.5% has therefore been made throughout the tariff period to cater for bad debts from post-paid customers. This will translate into about K25.416 billion as provision for bad debts over the tariff period. Based on the amount of energy that is projected to be billed to customers, this translates into K2.53/kWh as the average tariff for bad debts for the period to 2027.

6.0 SUMMARY OF REVENUE REQUIREMENT COMPONENTS

The table below provides a summary of the revenue requirements for all licensees and other cost requirements. In total, for the four years of the 2023-27 base tariff period, ESCOM will require **K1.720 trillion** to accomplish its planned activities.

Table 1: Summary of Total Revenue Requirement for ESCOM

Summary	Unit	Base Year	2023/24	2024/25	2025/26	2026/27	Total
Energy Purchase Costs	MK '000	-	76,709,985	192,386,470	193,237,828	193,909,891	656,244,174
Energy Purchase Costs - Deemed En	MK '000	2,176,065	2,176,065	2,176,065	2,176,065	2,176,065	8,704,261
Capacity Purchase Costs	MK '000	-	35,477,556	36,931,059	38,451,128	40,002,739	150,862,481
Wheeling charges	MK '000	-	1,290,424	5,161,696	5,161,696	5,161,696	16,775,510
Transmission Own Cost	MK '000	19,595,732	21,745,503	22,534,397	23,888,556	26,836,309	95,004,765
SMO Own cost	MK '000	4,939,445	9,185,343	9,911,219	10,261,123	11,807,801	41,165,486
SB Own Cost	MK '000	3,205,767	3,831,658	4,532,440	4,862,497	5,249,711	18,476,307
Stabilization Costs	MK '000	-	9,348,962	19,109,794	19,307,413	19,492,719	67,258,888
Total Bulk Cost	**MK '000**	**29,917,009**	**159,765,495**	**292,743,140**	**297,346,305**	**304,636,932**	**1,054,491,873**
Energy Entering Distribution	**kWh**	**1,925,196,551**	**2,266,774,670**	**3,049,223,103**	**3,056,994,228**	**3,060,215,508**	**11,433,207,509**
Distribution Own Costs	MK '000	82,646,111	103,010,259	131,680,831	152,436,362	164,475,139	551,602,592
Sub-Total 3: Bulk plus Distributio	**MK '000**	**112,563,121**	**262,775,754**	**424,423,972**	**449,782,667**	**469,112,071**	**1,606,094,464**
Levies (5.5%)	MK '000	-	14,452,666	23,343,318	24,738,047	25,801,164	88,335,196
Bad Debts (1.5%)	MK '000	-	4,158,426	6,716,509	7,117,811	7,423,699	25,416,445
Grand Total	**MK '000**	**112,563,121**	**281,386,847**	**454,483,799**	**481,638,524**	**502,336,934**	**1,719,846,105**

7.0 THE 2023-2027 ELECTRICITY BASE TARIFF DETERMINATION

7.1 Determination of the End User Tariff

Based on the total revenue requirement calculation for the tariff period at **K1.720** trillion (Table 1), coupled with estimation for the energy that will be billed to end user customers at **9.928 billion** units (Table 2), the **average** end user tariff is **K157.50/kWh**. At the current average tariff of K104.46/kWh, this translates into an average tariff increase of **50.8%**. The Authority believes that granting this tariff adjustment, will enable the power sector to realize enough revenues for investments, system maintenance, operations, and other appropriate costs, thereby improve and sustain provision of services to customers.

Table 2: Estimation of Energy to be billed to customers

Energy Flows	Units	Base Year	2023/24	2024/25	2025/26	2026/27	Total
Energy Entering Transmission	kWh	1,857,692,623	2,396,167,727	3,216,480,067	3,221,279,482	3,221,279,482	12,055,206,757
Transmission System Losses	%	*5.90%*	*5.40%*	*5.20%*	*5.10%*	*5.00%*	
Transmission System Losses	kWh	(109,603,865)	(129,393,057)	(167,256,963)	(164,285,254)	(161,063,974)	(621,999,248)
Energy Sent to Distribution from Transmission	**kWh**	**1,925,196,551**	**2,266,774,670**	**3,049,223,103**	**3,056,994,228**	**3,060,215,508**	**11,433,207,509**
Energy Sent Directly to Distribution from IPPs		92,665,075	57,073,486	42,396,151	36,711,755	36,711,755	172,893,147
Total Energy Sent to Distribution	**kWh**	**2,017,861,626**	**2,323,848,156**	**3,091,619,254**	**3,093,705,983**	**3,096,927,263**	**11,606,100,656**
Distribution System Losses	%	*16.30%*	*16.00%*	*15.00%*	*14.00%*	*13.00%*	
Distribution System Losses	*kWh*	*(328,911,445)*	*(371,815,705)*	*(463,742,888)*	*(433,118,838)*	*(402,600,544)*	*(1,671,277,975)*
ESCOM Own Use [Station Supplies + Offices]	*kWh*	*(1,473,039)*	*(1,696,409)*	*(1,696,409)*	*(1,696,409)*	*(1,696,409)*	*(6,785,637)*
Energy Billed to customers	**kWh**	**1,687,477,142**	**1,950,336,042**	**2,626,179,957**	**2,658,890,736**	**2,692,630,309**	**9,928,037,044**

7.2 Annual Tariffs

To minimize the tariff burden on customers, MERA resolved that the determined average tariff of K157.50/kWh be split and segmented into four annual tranches as follows:

Table 3: Approved Annual and Average Tariffs in 2023/2027

Item	Unit	Base Year	2023/24	2024/25	2025/26	2026/27	Total/Average
End User Tariff	MK/kWh	104.46	123.26	142.98	160.14	174.55	157.50
Percentage Change	**%**	**-**	**18.00**	**16.00**	**12.00**	**9.00**	**50.8**

The first tranche of 18% adjustment will be implemented with effect from **1st September 2023.**

The overall approved average tariff increase is 50.8% as indicated in the table above. This means that if the whole 50.8% increase were to be implemented at once, tariffs would immediately move from K104.46/kWh to K157.50/kWh. However, since the tariff adjustment will be split over the four years, the annual tranches add up to 55% which is higher than the 50.8%. The reason for this difference is that when implementing annual tranches, especially from second year onwards, the adjustment is made on an already increased tariff implemented in the previous year. This approach has a cumulative effect on the overall tariff increase for the four-year period.

7.3 Individual Licensees Tariff Components and Adjustments

Table 4 below provides a summary of tariff components for individual licensees and other cost items as well as the annual adjustments for the same.

Table 4: Summary of Tariff Components

Tariff Category	Unit	Base Year	2023/24	2024/25	2025/26	2026/27	Average
Power Purchase Cost	MK/kWh	46.05	50.45	75.92	76.50	77.15	70.01
Wheeling charges Tariff	MK/kWh	-	0.57	1.69	1.69	1.69	1.41
Transmission Tariff	MK/kWh	11.05	9.59	7.39	7.81	8.77	8.39
SMO Tariff	MK/kWh	1.04	4.05	3.25	3.36	3.86	3.63
SB Tariff	MK/kWh	2.74	1.69	1.49	1.59	1.72	1.62
Stabilization Fund Tariff	MK/kWh	-	4.12	6.27	6.32	6.37	5.77
Distribution Tariff	MK/kWh	33.15	52.82	50.14	57.33	61.08	55.34
Levies	MK/kWh	6.82	7.41	8.89	9.30	9.58	8.80
Bad Debts	MK/kWh	3.61	2.13	2.56	2.68	2.76	2.53
Total End User Tariff	**MK/kWh**	**104.46**	**123.26**	**142.98**	**160.14**	**174.55**	**157.50**
Percentage Change	**%**	**-**	**18**	**16**	**12**	**9**	**50.8**

8.0 COST ITEMS CONSIDERED TO REDUCE TARIFF ADJUSTMENT

Below are some of the factors whose consideration resulted into reduction in the recommended average tariff increase from the ESCOM submitted proposal of 69.7% down to **50.8%**:

a) **The Exchange Rate**

In its application, ESCOM assumed an exchange rate of MK1,500/US$. However, Management recommends for use of the existing official exchange rate and that any effects on tariffs coming from drastic changes in the exchange rate, will be taken care of through the normal ATAF process and/or use of the Stabilization Fund. Thus, MERA has applied the official exchange rate of K1095.32/US$.

b) **Bad Debts**

ESCOM had put bad debts at 3% which was on the higher side considering that about 95% of its customers have been migrated to prepaid meters. However, there is still a larger proportion of Maximum Demand Customers who are being metered on postpaid basis, especially public institutions, that have historically failed to settle their electricity bills. ESCOM has put some of the MD customers on prepaid meters which are yet to be commissioned.

c) **Power Procurement Costs**

ESCOM double counted capacity procurement costs (MK150 billion) as a portion of the total power purchase costs. This has been accordingly adjusted to removing the double counted power procurement costs.

9.0 IMPLEMENTATION ARRNGEMENTS FOR THE PROPOSED TARIFFS

9.1 Base Tariff Implementation Monitoring

To ensure smooth implementation of the 2023-2027 base tariff, the Authority will intensify monitoring of ESCOM's performance based on the agreed Key Performance Indicators (KPIs). The KPIs consist of the newly formulated ones as well as the existing ones which have been used in the previous base tariffs. The KPIs focus on technical as well as financial/economic aspects and have further been attached to individual licensees within ESCOM and separate ones for EGENCO.

Performance on the KPIs on quality of service to be achieved in the new base tariff period, shall form part of licensing conditions for the utility. Non-compliance on these KPI targets will attract penalties under the base tariff.

9.2 Other Base Tariff Implementation Measures

In addition to the licensees' requirements to perform on the agreed KPIs, the following implementation arrangements will be required to be fulfilled by the utilities: -

a) ESCOM to open and operationalize the Bulk Customer Transactions and Stabilization Account within the first three months of coming into effect of the new base tariff. ESCOM will have to officially report to the Authority after the account has been opened and operationalized.
b) All licensees in ESCOM are to open and operationalize individual operating accounts within the first three months of the new base tariff where finances will have to be managed and accounted for by such individual licensees.
c) ESCOM to be submitting quarterly and annual performance reports on the agreed KPIs highlighting achievements, challenges, and solutions to those challenges.
d) ESCOM to submit a schedule of project implementation and specifically report to the Authority on implementation progress on a quarterly basis.
e) ESCOM to be regularly submitting specific data requirements on a quarterly basis where applicable on the following parameters:
    i. Amount of electricity (kWh) injected into the transmission network and further into the distribution network.
    ii. Number of electricity units sold to, and revenues realized from its customers by customer category and broken down into monthly figures.
    iii. Number of new connections on the grid.

MERA will be providing annual updates on the electricity licensees' performance against the Key Performance Indicators (KPIs).