



THE ELECTRICITY SUPPLY CORPORATION OF MALAWI LIMITED

ABRIDGED VERSION

OF THE

BASE TARIFF APPLICATION FOR THE FUNCTIONS

OF

TRANSMISSION, DISTRIBUTION, SYSTEM MARKET OPERATOR

AND THE SINGLE BUYER

INCLUDING BULK CUSTOMER AND END USER TARIFFS

FOR THE PERIOD 2018/2019 TO 2021/2022

SUBMITTED ON 20th APRIL 2018

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ACRONYMS AND ABBREVIATIONS

Cost of Service	The cost of electricity supply at different voltage levels
DSM	Demand Side Management
ESCOM	Electricity Supply Corporation of Malawi Limited
EGENCO	Electricity Generation Company of Malawi
ESSP	Energy Sector Support Project – World Bank Funding
HV	High Voltage Supply which is Voltage over 650 Volts
IPP	Independent Power Producer
KW	kilo Watt (1,000 Watts)
ISP	Integrated Strategic Plan
kWh	kilo Watt hour (1,000 Watt-hour)
LED	Lighting Emitting Diode
LV	Low Voltage Supply at nominal up to 250 Volts
MCA	Millennium Challenge Account
MCC	Millennium Challenge Corporation
MD ¹	Maximum Demand
MERA	Malawi Energy Regulatory Authority
MNREM	Ministry of Natural Resources, Energy and Mining
MV	Medium Voltage range from 250 Volts to 650 Volts
MW	Mega Watt (1,000kW or 1,000,000W)
MWh	Mega Watt Hour or 1,000 kW-hour
RAB	Regulatory Asset Base
RR	Revenue Requirement
SAPP	Southern African Power Pool
SB	Single Buyer
SMO	System Market Operator

¹ The highest amount of power recorded in a 30 minute period

EXECUTIVE SUMMARY

The Electricity Supply Corporation of Malawi Limited (ESCOM) is a public utility incorporated as a private company under the Companies Act (Cap 46:03) of the Laws of Malawi in 1998. The 2016 Electricity Amendment Act resulted in the unbundling of ESCOM into the Electricity Generation Company of Malawi Limited (EGENCO) and the Electricity Supply Corporation of Malawi Limited (ESCOM). The Single Buyer (SB) and System Market Operator (SMO) functions were added to existing functions in ESCOM [Transmission and Distribution functions]

ESCOM is currently Implementing the Second Base Tariff which was approved by the Malawi Energy Regulatory Authority (MERA) for the period July 2014 to June 2018. ESCOM is required to submit a new Base Tariff application to MERA once every four years for consideration and approval. This application covers the successor Third Base Tariff covering the period from July 2018 to June 2022 for each of the ESCOM functions, the Bulk Customer Supply and the End user tariffs. This base tariff has been prepared in line with the new tariff methodology, the recently concluded tariff study and cost of service Study.

The build up to the end user tariff includes the following; the power purchase cost, Transmission tariff, Distribution tariff, Single Buyer tariff, System Market Operator tariff, levies and provision for debts. The purchase cost per unit is projected to move from the current MK 29.92 to MK 65.35 per kWh and the end user tariff is projected to move from current MK73 to around MK 123 per kWh over the 2018 - 2022 Base Tariff [representing 68% tariff adjustment to end user tariff].

The main drivers of the increase in end user tariff include the increase in energy purchase costs and the change in methodology for the valuation of the Regulatory Asset Base (RAB). The current average cost of supplying a customer with electricity in Malawi is MK 126 per kWh according to the 2018 Cost of Service Study. The current tariff of MK 73 per kWh is on average 42% lower than cost of providing the and cannot support the electricity industry in Malawi in terms of increasing investment and improving customer service.

This base Tariff application has also included ESCOM plans and initiatives to contain cost escalations and these include efficient procurement of energy sources, outsourcing some services and automation/mechanization of processes, management of staff overtime, replacing ageing vehicles and demand side management initiatives.

The proposed tariff structure includes a life line tariff for domestic customers to support low income households through cross subsidies within domestic customer category and for domestic customers in general. The levels of cross subsidies for domestic customers from non-domestic have been reduced and the contribution from capacity charge towards electricity charges for MD customer has also been reduced.

This Base Tariff submission has entrenched the implementation of a cost recovery tariff which is key in ensuring financial sustainability of the business, attracting investment, increasing access to electricity and provision of quality service to customers.

1.00 ESCOM PERFORMANCE DURING THE 2014-2018 BASE TARIFF

The approved 2014-2018 Base tariff adjustment was granted prior to the unbundling of ESCOM in 2016. The unbundling process diverted some resources (financial and human) from some planned activities. Furthermore, the energy sales for the period were 18% lower than planned due to reduced hydro generation caused by prolonged drought as shown in table below.

Base Tariff Year	unit	2014	2015	206	2017	Total
Unit Sales - Actual	GWh	1,617.0	1,642.2	1,966.2	2,118.3	7,343.7
Unit Sales - Plannned	GWh	1,490.6	1,546.3	1,455.6	1,526.1	6,018.5
Difference	GWh	(126.4)	(95.9)	(510.6)	(592.2)	(1,325.2)
Difference	MK/kWh	-8%	-6%	-26%	-28%	-18%

The approved 2014-2018 Base Tariff adjustment was phased over the stated period with some of the proposed tariff adjustments being either delayed, reduced or not implemented for various reasons. The combination of factors highlighted above resulted in ESCOM not realizing the projected revues as summarized below.

Base Tariff Year	Unit	2014	2015	206	2017	Total
Approved Tariff	MK/kWh	42.75	56.73	64.80	65.81	
Implemented Tariff	MK/kWh	37.65	48.00	59.47	64.61	
Difference	MK/kWh	(5.10)	(8.73)	(5.33)	(1.20)	(5.10)
Energy Sold	kWh'000	1490585	1546284	1455580	1526100	6,018,549.00
Lost Revenue	kWh'000	(7,601,984)	(13,499,059)	(7,758,241)	(1,831,320)	(30,690,604)

ESCOM underperformed in some of the key result areas such as new connections targets, adherence to customer service charter commitments, implementation of investment projects and debt collection. **Government** and Quasi Government debts accounted for 61% of debt while 39% is attributed to private institutions.

ESCOM performed well in the reduction of system losses from 23% to 17.8%, prepayment metering coverage (95% of customer base) and provision of third party services outlets.

2:00 OBJECTIVES OF THE 2018-2022 BASE TARIFF REVIEW

This base tariff is intended to achieve the following objectives.

- To generate adequate revenues for procuring electricity/ power to meet current demand and future demand growth
- To improve ESCOM's operations which will lead to reduction in system losses and improved revenue collection
- To Increase access to electricity in line with government goals from the current 11% to 19% by 2022.
- To improve customer service in line with Customer service charter commitments.
- Generate adequate revenue to support investment in system operation, maintenance and growth.

3:00 MAIN ASSUMPTIONS FOR THE 2018-2022 BASE TARIFF

3.1 Revenue capping arrangement.

This Base Tariff shall be reviewed on an annual basis so as to re-align the Revenue Requirement (RR) with the assumptions made and agreed performance targets.

3.2 Treatment of the power purchase cost on the end user tariff

The power purchase cost shall be treated as a pass through cost to the end user customers which will be evaluated, negotiated and approved through the Power Purchase or Power Supply Agreements.

3.4 Treatment of the Single Buyer (SB) Working Capital

The SB minimum Working Capital shall be equivalent to three months energy purchase cost in line with the requirements of the SB Escrow account agreements with power producers.

3.5 Electricity Pricing Methodology

This Base Tariff application is based on the New Tariff Methodology pricing developed in line with the new power market.

4.00 COST CONTAINMENT MEASURES

4.1 Implementation of the Management Information System

The ESCOM has implemented Management Information System (MIS) for the purpose of improving business processes, monitoring and evaluating of costs and improving customer service.

4.2 Cost of Hiring Plant and Equipment and Motor Vehicles

ESCOM will implement a transport policy that will ensure a reduction in hiring costs and charges to an absolute minimum.

4.3 Maintenance Costs

ESCOM will contract out maintenance of fleet and replace ageing fleet which is non-economical to run. This intervention is expected to reduce maintenance cost by at least 10% as at the end of the Base Tariff period.

4.4 Staff Costs

Staff will be encouraged to take time off in lieu of overtime worked. Overtime accounts 10% of salaries and wages and ESCOM plans to reduce to 8%.

4.5 Outsourcing of work and services

ESCOM will outsource some of the construction works and services. This to include network construction and maintenance, payment collection, security and cleanings services. It is estimated that with outsourcing of construction and maintenance works will save to around MK 920 million from staff benefits. Potential savings from security and cleaning services for ESCOM offices is estimated at MK 1.98 billion at the end of the Base Tariff period. This cover the cost saving for salaries and staff benefits.

4.6 Operationalize of new service connection customers account

The customers contributions towards new service connection will be ring fenced and utilized for procuring new service connections materials.

4.27 Mechanization and Automation

ESCOM will automate some of its processes such as line construction and maintenance to save on time and improve quality. It is expected that employee productivity will increase and ESCOM will be able to meet the annual connection targets of 90,000.

4.8 Optimization of Office Use

Some of the offices will be redesigned or re-allocated to optimize office space and also save costs. Open offices will promote efficiency and productivity.

4.9 Managing energy purchase costs from IPPs

ESCOM will endeavor to enter into power purchase agreements that offer value for money to the country and end user customers.

4.10 Improved plant /system Utilization

ESCOM through Demand Side Management (DSM) and energy efficiency initiatives will improve system utilization (Load factor) and provide an alternative investment to diesel peaking plant. The resulting virtual power station of 72 MW will save ESCOM around MK 95 billion in cost of running diesels for six hours per day during this Base Tariff period.

4.11 Treatment of Fiber Optics Business

Fiber optics system is an integral part electricity business in that it supports communication, system control, and SCADA and ICT activities. ESCOM will continue to ensure that the commercial aspect of the fiber business shall not shall benefit from electricity revenues.

5:00 SALES FORECASTING

5.1 Energy Sales Forecast

The energy sales forecasting for the 2018-2022 Base Tariff period is based on a capacity constraint system for planning purposes. It is however expected that additional energy source will be added to the system during this Base Tariff period. The demand and capacity gap

will be minimized through Demand Side Management (DSM) and energy efficient savings initiatives such as use of efficient lighting and promotion of alternative energy sources such as LPG gas for cooking.

5.2 Energy Purchase Cost Forecast

The purchase cost for energy is projected to more than triple by year and the average purchase cost per kWh is projected to double over this Base Tariff review period [MK 29.92 to MK 65.35 per kWh].

The Table below shows the projected energy to be procured over the period and trajectory for the purchase costs over the base tariff period.

	Unit	Base Year	2018/19	2019/20	2020/21	2021/22
Customer Base	No	440,000	530,000	620,000	710,000	800,000
Installed Capacity	MW	401	553	656	651	941
Total Energy Purchase / year	GWh	1,822	2,519	2,760	3,001	4,919
System Losses	%	17.8%	17.5%	16.8%	16.3%	16.0%
Energy Billed to Customers	GWh	1,481	2,079	2,297	2,513	4,132
Average Purchase Cost	MK /kWh	29.92	45.00	48.62	47.18	65.23
Purchase Cost	MK ' bn	54.5	113.38	134.18	141.58	320.86

Table 1 Growth in Customer Base and Sales forecast

6:00 TREATMENT OF HEAD OFFICE COSTS

For the purpose of this Base Tariff application, all head office costs (operational and regulatory asset base) have been allocated proportionately to the various business units of Single Buyer, System Market Operator, Transmission and Distribution Business Units.

7:00 TRANSMISSION BASE TARIFF APPLICATION LICENSEE

7.2 Functions of Transmission Licensee

The duties and functions of the Transmission licensee are to build, operate and maintain the transmission network in Malawi. The existing Transmission network system comprises of the 66 kV, 132 kV and 400 kV power lines and associated switchgear, substations, SCADA and metering equipment.

7.2 Transmission Investment Plans

MCA-M and ESSP funded projects have made substantial contribution in the financing and construction of Transmission infrastructure investment which will allow evacuation and transfer of power from power sources and main primary substation to major load centers. ESCOM Transmission plans to improve system reliability and availability of electricity supply by upgrading existing wooden structure

transmission power lines to steel structures, construct the Malawi – Mozambique interconnector to allow trading of power within the SAPP region, upgrade Nanjoka substation in Salima to support water pumping and Irrigation projects and provide transmission connection power lines for the evacuation of power from future power producers. Detailed list of projects is contained in appendix 1.

7.3 Transmission Revenue Requirement Tariff

The Revenue Requirement for Transmission is the sum for General expenses, depreciation cost, financing cost and taxation. The growth in transmission asset will result in higher regulatory asset base and depreciation cost. Fiber business will marginally contribute towards the depreciation for the transmission power lines.

<i>Transmission Revenue Requirement</i>	<i>Unit</i>	<i>2018/19</i>	<i>2019/2020</i>	<i>2020/2021</i>	<i>2021/22</i>	<i>Total</i>
General Expenses	MK '000	7,844,766	8,901,379	9,712,917	10,611,514	37,070,576
Depreciation	MK '000	10,659,416	12,460,103	13,066,522	11,525,130	47,711,172
Financing cost	MK '000	6,029,690	6,081,336	10,294,969	12,301,199	34,707,194
Taxation	MK '000	1,240,107	1,250,728	2,117,333	2,529,947	7,138,115
Total Revenue Requirement	MK '001	25,773,979	28,693,546	35,191,741	36,967,790	126,627,057
Sent out energy	kWh	2,406,121,578	2,649,226,209	2,880,826,593	4,722,108,513	12,658,282,892
Average Transmission tariff	MK/kWh	10.71	10.83	12.22	7.83	10.00

Table 2 : Transmission Revenue Requirement Tariff

The energy entering distribution system forms the basis for energy sales in the Revenue Requirement tariff model for transmission. The average transmission tariff is **MK 10.00 per kWh**.

8:00 SYSTEM MARKET OPERATOR (SMO) LICENSE BASE TARIFF APPLICATION

8.1 Functions of the SMO

The function of the System Market Operator is to provide power producers / sources a fair access to the transmission system, plan and control daily operations of the interconnected system, dispatch generation in line with the market rules, settle transactions between licensees and supervise the real time operations of the market.

8.2 SMO Revenue Requirement Base Tariff

The SMO business is mainly an office function and has limited regulatory asset base and general expenses.

REVENUE REQUIREMENT	Unit	2017/18	2018/19	2019/2020	2020/2021	Total
General Expenses	MK '000	1,224,935	1,387,499	1,522,477	1,663,552	5,798,464
Depreciation cost on head office assets	MK '000	160,965	154,526	148,088	141,649	605,228
Depreciation cost on SMO assets	MK '000	94,478	156,168	210,803	265,606	727,055
Financing Charge	MK '000	216,860	216,624	216,389	216,154	866,026
Taxation	MK '000	53,955	53,896	53,838	53,779	215,469
Revenue Requirement	MK '000	1,751,193	1,968,714	2,151,594	2,340,741	8,212,242
Energy entering distribution	kWh	2,406,121,578	2,649,226,209	2,880,826,593	4,722,108,513	12,658,282,892
Revenue Requirement Tariff	MK/KWh	0.73	0.74	0.75	0.50	0.65

Table 3 : SMO Revenue Requirement Tariff

9: 00: THE SINGLE BUYER BASE TARIFF APPLICATION

9.1 Functions of the Single Buyer (SB)

The functions of the Single Buyer are to prepare long term demand and generation forecast, rank generation and transmission projects, procure electricity from energy sources and sign Purchase Agreements (PPAs) with generation licensees.

9.2 Single Buyers Revenue Requirement Tariff

The Single Buyer has limited regulatory asset base and general expenses. The setting up and operation of the Escrow account is the main cost for the SB with a substantial working capital for settling power purchase transactions and providing payment guarantees. The financing cost for the Escrow account relates to the working capital for the SB account. The average price for the SB is MK 5.31 per kWh. The energy sales are derived from the energy billed to customers as in Table 4 above.

SB -REVENUE REQUIREMENT	Unit	2018/19	2019/2020	2020/2021	2021/22	Total
General Expenses	MK '000	5,252,774	6,007,451	6,302,116	12,615,448	30,177,789
Depreciation Cost	MK '000	2,631	2,786	2,786	2,786	10,989
Financing Cost (SB plus Head Office)	MK '000	4,515,813	5,353,141	5,657,488	12,785,606	28,312,048
Total	MK '000	9,771,218	11,363,378	11,962,390	25,403,841	58,500,826
Energy Billed to Customers	kWh	2,078,586,703	2,297,375,853	2,513,221,116	4,131,844,949	11,021,028,621
SB Tariff	MK /KWh	4.70	4.95	4.76	6.15	5.31

Table 4 : Single Buyer Revenue Requirement Tariff

9.6 Bulk Tariff

The bulk tariff covers all the costs incurred by the SB before selling the power to the Distribution licensee. This include the electricity purchase costs from all power sources.

SB BULK TARIFF	Unit	2018/19	2018/19	2018/19	2018/19	Total
Purchased energy from power plants	MK '001	113,382,367	134,181,479	141,575,703	320,863,143	710,002,692
Transmission Own Cost	MK '000	25,773,979	28,693,546	35,191,741	36,967,790	126,627,057
SMO Own cost	MK '000	1,751,193	1,968,714	2,151,594	2,340,741	8,212,242
SB's own costs	MK '000	10,798,033	12,597,511	13,272,388	28,487,178	65,155,111
Total Bulk Cost	MK '000	151,705,572	177,441,250	192,191,427	388,658,853	909,997,102
Energy Billed to Customers	kWh	2,078,586,703	2,297,375,853	2,513,221,116	4,131,844,949	11,021,028,621
Bulk Tariff	MK/kWh	72.98	77.24	76.47	94.06	82.57

Table 5 Single Buyer Bulk Tariff

The average Bulk Customer Tariff is estimated at MK 82.57 per kWh. These are mainly customers supplied at 11 kV and above.

10:00 DISTRIBUTION BASE TARIFF APPLICATION

10.1 Functions of Distribution Licensee

The function of the Distribution Licensee is to distribution and supply of electricity through the planning, construction, operation and maintenance of the distribution network. Distribution also provides customer services functions such as revenue management / billing, new connections, complaints management, retailing, and demand side management functions and business development functions. Distribution plans to increasing customer access, providing safe and reliable electricity and world class customer service. The Distribution network and associated equipment which is rated at 33 kV, 11 kV, 400 Volts and 230 Volts provides direct interface with customer installations.

10.2 Distribution Plans and Strategies

Distribution plans to connect at least 360,000 new customers, increase access rate from 11% to 19% and reduce system losses from 13% to 12% over the 2018-2022 Base Tariff period. Assets finance through the MCA -M, the Energy Sector Support Project (World Bank) and Malawi Rural Electrification fund have provided ESCOM a platform for business growth and system reliability.

In this base tariff, Distribution will implement projects on system development, rehabilitation works, Demand Side Management, new customer service centers, a national call / contact center and installation of 11 kV underground cable and associated switchgear to ease congestion. Detailed list of projects is contained in appendix 2.

Distribution will outsource some network projects and services to improve efficiency: - construction works, maintenance works, retailing, processing of new

application, on site revenue collection using banks, office security and office cleaning.

The Distribution Business unit will also streamline customer procedures / processes, mechanize and automatic construction and maintenance works, market its services / products and review of electricity capital contribution connection charges. The Distribution business unit will also invest in Demand Side Management initiatives expected to save 72 MW to bridge the gap between generation capacity. Installation of the SCADA system in Lilongwe and Mzuzu will improve the system control and restoration of power to customers. The setting up of a toll free National Call / Contact Center to improve resolution of customer complaints and installation of 11 KV underground network system in central districts of Lilongwe and Mzuzu to improve quality of supply.

Distribution Business will invest and install feeder meters to monitor system loading, system losses and take corrective measures. The installation of smart metering will provide more data about the customer / supply and allow ESCOM to serve the customer better.

10.4 Distribution System Losses and Revenue Collection enhancements

Distribution plans to reduce system losses from 13.1% to 12% and improve revenue collection efficiency through use of split prepayment metering and metering of public institutions on prepayment. With the installation and operationalization of feeder metering, Distribution will monitor and maintain losses within acceptable thresholds.

All non-maximum demand customers will be migrated to split prepayment metering by the end of the 2018-2022 Base Tariff period.

Approximately, 150 Government and quasi government institutions will be metered on maximum demand prepayment metering technology to improve collection efficiency and reduce system losses.

10.5 Distribution Revenue Requirement and Tariff

The Distribution business is characterized by high general expenses and depreciation costs representing the existing and future growth in Regulatory Asset Base and customer base. Average tariff for Distribution and Customer Service is estimated at MK 25.69 per unit as broken down in the table below.

Revenue Requirement cost	Unit	2018/19	2019/2020	2020/2021	2021/22	Total
General Expenses	MK '000	49,117,505	54,147,975	55,123,771	59,885,450	218,274,700
Depreciation Cost	MK '000	12,323,624	14,136,113	15,806,905	17,404,224	59,670,866
Financing Charge	MK '000	930,627	952,044	1,022,271	1,420,196	4,325,138
Taxation	MK '000	191,399	195,804	210,247	292,087	889,537
Revenue Requirement	MK '000	62,563,154	69,431,936	72,163,195	79,001,957	283,160,242
Energy Billed	kWh	2,078,586,703	2,297,375,853	2,513,221,116	4,131,844,949	11,021,028,621
Average tariff	MK/kWh	30.10	30.22	28.71	19.12	25.69

Table 6: Distribution Revenue Requirement and tariff

11.0 END USER TARIFF

11.1 Revenue Requirement for End User Tariff

The end user tariff revenue requirement includes revenue requirement for all Business Units, levies and a provision for bad debts.

End User Revenue Requirement	Unit	2018/19	2019/2020	2020/2021	2021/22	Total
Purchase Cost	MK '000	113,382,367	134,181,479	141,575,703	320,863,143	710,002,692
Transmission Own Cost	MK '000	25,773,979	28,693,546	35,191,741	36,967,790	126,627,057
SMO Own Cost	MK '000	1,751,193	1,968,714	2,151,594	2,340,741	8,212,242
SB Own Cost	MK '000	10,798,033	12,597,511	13,272,388	28,487,178	65,155,111
Distribution Own Cost	MK '000	62,563,154	69,431,936	72,163,195	79,001,957	283,160,242
Subtotal 1	MK '000	214,268,727	246,873,185	264,354,622	467,660,810	1,193,157,344
MAREP Levy (4.5%)	4.50%	9,642,093	11,109,293	11,895,958	21,044,736	53,692,080
MERA Levy (1%)	1.00%	2,142,687	2,468,732	2,643,546	4,676,608	11,931,573
Total Levys		11,784,780	13,578,025	14,539,504	25,721,345	65,623,654
Subtotal 2		226,053,507	260,451,211	278,894,126	493,382,155	1,258,780,998
Bad Debts	3%	6,781,605	7,813,536	8,366,824	14,801,465	37,763,430
Grand Total with Bad Debts	MK '000	232,835,112	268,264,747	287,260,950	508,183,619	1,296,544,428

Table 7 End user or Retail revenue requirement 2018 – 2022 period

11.2: Revenue Requirement Tariff for end user customers

The Average end user tariff is MK 117.64 per kWh over the Base Tariff period. The projected tariff at the end of the Base Tariff period is MK 122.99 per kWh.

End User Tariff	Unit	2018/19	2019/2020	2020/2021	2021/22	Total
End User Revenue Requirement	MK '000	232,835,112	268,264,747	287,260,950	508,183,619	1,296,544,428
Energy Billed	kWh	2,078,586,703	2,297,375,853	2,513,221,116	4,131,844,949	11,021,028,621
End User Tariff	MK/kWh	112.02	116.77	114.30	122.99	117.64
End User Tariff	US Cents / kWh	15.2	15.9	15.6	16.7	16.0

Table 8 End User or Retail Tariff

11.3 Contribution to Retail Tariff

Energy purchases, Distribution tariff, transmission tariff and levies account for around 55%, 22%, 10% and 6% of end user tariff respectively. Effective planning and efficient procurement of energy sources will lead to value for money end user tariff.

Retail Tariff Component	RR (MK bn)	MK /kWh	US Cents / kWh	%
Purchase Cost	710.00	64.42	8.76	54.8%
Distribution Own Cost	283.16	25.69	3.50	21.8%
Transmission Own Cost	126.63	11.49	1.56	9.8%
SB Own Cost	65.16	5.91	0.80	5.0%
MAREP Levy (4.5%)	53.69	4.87	0.66	4.1%
MERA Levy (1%)	11.93	1.08	0.15	0.9%
Bad Debts	37.76	3.43	0.47	2.9%
SMO Own Cost	8.21	0.75	0.10	0.6%
Total	1,296.54	117.64	16.01	100.0%

Table 9 : Contribution to Retail price

11.5 Average Base Tariff Adjustment

The average tariff is expected to move from MK 73.23 per kWh to K 122.99 per kWh over this Base Tariff period. This represents a tariff adjustment of 60%.

Unit	Base Year	2018/19	2019/2020	2020/2021	2021/22
MK/kWh	73.23	112.02	116.77	114.30	122.99
US Cents /kWh	9.96	15.24	15.89	15.55	16.73
% Adjustment / Yr		53%	4%	-2%	8%

12:00 TARIFF STRUCTURE RECOMMENDATION

12.1 Cost of Service study

A Cost of Service Study (CoS) was conducted as part of this Base Tariff review with the support of ECA consulting. The study has established that the average prices for all the tariff categories are below the cost of service:

- The current average tariff for all power users in Malawi is around 42 % lower cost of service of MK 126 per unit.
- The current average domestic tariff is 63% below the cost of service for domestic customers of around MK 147 per unit.
- The current average tariff for small Commercial power users around 37% below cost of service of around 124 per unit.
- The current average tariff for medium to large Commercial power users (Maximum Demand) Customers average tariff is 29% below the average cost of service of MK 96 per unit.

12.2 Proposed Tariff Setting

The proposed tariff is based on full in cost reflective and cost recovery. This is the only way that the electricity industry in Malawi can invest and provide quality service to its customers and allow ESCOM to generate adequate funds to settle energy purchase costs from power sources.

Cross subsidies will still continue with the Domestic customers benefiting from non-domestic customer sector. However, the levels of cross subsidies will be reduced to minimize over burdening the non-domestic customers who may in turn pass on the same cost to the consumers through their products and services.

ESCOM has introduced a cross subsidy within the Domestic customer category by allowing the first 50 units consumed by each customer per month to be charged at a lower price and full cost recovery rate for each unit consumed over and above the first 50 units.

12.3 Proposed Tariff Structure

The current tariff structure will be maintained with some changes as stated below:-

- The Domestic tariff will be based on life-line to provide lower rate low income households for the first 50 units' only and much higher rate for each unit consumed over and above the first 50 units.
- The fixed charges for Maximum Demand Customers will be removed considering that there is already a Capacity Charge which is also a fixed cost.
- The share of revenue from Capacity and Demand charges toward revenue requirement from Maximum Demand customers will be reduced to around 35% from 45%. This will allow MD customers to pay less during periods of low production or off season.
- The time of use energy charges for Maximum Demand Customers will be maintained. The energy ratio of the off-peak demand to on peak demand period unit charges will be higher so as to encourage customers to utilize electricity during low demand periods and less during high electricity demand periods.

Table 9 Proposed Tariff structure

ELECTRICITY SUPPLY CORPORATION OF MALAWI LIMITED					
Tariff Code	Description	Type of Charge per month	Existing Rate (Mk)	NEW COS RR 2 Rate (Mk)	% INCREASE RR2
ET1	Domestic , Prepaid , Single Phase Supply	First 50 units	46.30	50.00	
		Each unit above 50 units	46.30	90.00	94%
ET2	Domestic , Postpaid , Single Phase supply	Fixed Charge	3,131.25	3,400.00	9%
		Unit charge per KWh	40.10	80.00	100%
ET3	Domestic , Prepaid , Three Phase Supply	Unit charge per KWh	74.95	150.00	100%
ET4	Domestic , Postpaid , Three Phase Supply	Fixed Charge	9,345.75	20,000.00	114%
		Unit charge per KWh	67.10	130.00	94%
ET5	General , Prepaid , Single Phase Supply	Unit charge per KWh	80.05	160.00	100%
ET6	General , Postpaid , Single Phase Supply	Fixed Charge	6,290.40	12,500.00	99%
		Unit charge per KWh	74.05	145.00	96%
ET7	General , Prepaid ,Three Phase Supply	Unit charge per KWh	87.40	170.00	95%
ET8	General , Postpaid , Three Phase Supply	Fixed Charge	9,345.75	20,000.00	114%
		Unit charge per KWh	83.30	165.00	98%
ET9	Maximum Demand - Low Voltage Supply (Large power for industrial users , supplied at three phase supply and metered at 400 Volts)	Fixed Charge per Month	33,819.50	N/A	
		On peak unit charge per KWh	94.95	150.00	58%
		Off peak unit Charge per KWh	26.00	35.00	35%
		Capacity Charge per kVA based on the customer's annual declared demand	4,001.45	6,000.00	50%
		Demand Charge per kVA based on actual monthly demand reading	6,475.20	9,700.00	50%
ET10	Maximum Demand - Medium Voltage Supply (Large power for industrial users , supplied at three phase supply and metered at 11 kV or 33 kV)	Fixed Charge per Month	33,819.50	N/A	
		On peak unit charge per KWh	84.55	130.00	54%
		Off peak unit Charge per KWh	23.40	32.50	39%
		Capacity Charge per kVA based on the customer's annual declared demand	3,626.05	5,600.00	54%
		Demand Charge per kVA based on actual monthly demand reading	6,140.45	9,500.00	55%
ET11	Essential Service, Prepaid, Three Phase Supply, High Current Metering	Unit charge per KWh	103.70	160.00	54%
ON peak and Off Peak Hrs for MD customers					
Off peak hrs are from Monday to Friday from 00:00 hrs to 7:00 hrs , from 12:00 hrs to 17:00 hrs and from 20:00 hrs to 24:00hrs: On peak Hrs are from Monday to Friday from 7:00 hrs to 12:00hrs and from 17:00 hrs to 20:hrs , All Saturdays , Sundays and Public holidays are Off peak hours					

APPENDIX 1 TRANSMISSION PROJECTS / INVESTMENTS

NEW TRANSMISSION NETWORK PROJECTS		Cost	Funding	Comment	2018/19	2019/20	2020/21	2021/22
T1	400 kV, Phombeya-Nkhoma	MK '000	Grant	MCA - Full project cost	43,920,742			
T3	Bwengu substation 132/66/33KV	MK '000	Grant	MCA - Full project cost	1,993,299			
T4	Bunda substation 132/66KV	MK '000	Grant	MCA - Full project cost	1,993,299			
T5	Chintheche rehabilitation and extension	MK '000	Grant	MCA - Full project cost	1,900,103			
T6	Chintheche-Luwinga 132KV OHL 80	MK '000	Grant	MCA - Full project cost	7,369,204			
T8	Luwinga-Bwengu 132KV OHL 50	MK '000	Grant	MCA - Full project cost	4,605,753			
T9	Bunda-Nkhoma 132kv OHL 32 km	MK '000	Grant	MCA - Full project cost	2,947,682			
T10	Lilongwe 66KV OHL ring 31 km	MK '000	Grant	MCA - Full project cost	2,151,457			
T11	New Bwengu-Bwengu 66kVOHL 1.6 km	MK '000	Grant	MCA - Full project cost	111,043			
T17	LLC 66/33	MK '000	Grant	MCA - Full project cost	1,453,672			
T18	BWENGU 66/33	MK '000	Grant	MCA - Full project cost	1,453,672			
T7	Golomoti 132/33/11 KV (50 MVA)	MK '000	Grant	ESSP - Full Project cost	1,724,386			
T19	Fundis Cross Substation works - World Bank funded	MK '000	Grant	ESSP - Full Project cost	2,389,854			
T23	NCC SCADA	MK '000	Grant	MCA - Full project cost	9,121,350			
T2	400 kV, Mozambique - Malawi Interconnector	MK '000	ESCOM	ESSP - Full Project cost			57,862,200	
T14	Karonga substation (66/33)	MK '000	Grant	ESSP - Full Project cost	1,453,672			
T15	Kang'oma substation (66/11)	MK '000	Grant	ESSP - Full Project cost	1,154,827			
T16	Kauma 66/11 KV (15 VA)	MK '000	Grant	ESSP - Full Project cost	1,444,073			
T20	Nkula 66/33 kv Substation upgrade - World Bank	MK '000	Grant	ESSP - Full Project cost	1,413,753			
T21	Dwangwa 132/33/11 kv substation - World Bank financed	MK '000	Grant	ESSP - Full Project cost	2,130,530			
T22	Katoto 66/11 KV Substation	MK '000	Grant	ESSP - Full Project cost	2,221,813			
T24	Inter BU metering - ESSP	MK '000	ESCOM	Ready for IPPs	158,495		9,555	
T25	Check MD Meters for IPPs	MK '000	ESCOM	Ready for IPPs	28,665	17,199	11,466	5,733
T26	66 kV Concrete overhead power lines rehab	MK '000	ESCOM	Escom Financing	1,050,000	4,120,000.00	2,700,000	
T27	Protection system upgrade	MK '000	ESCOM	Escom Financing	1,200,000			
T28	Radio and Communication Equipment	MK '001	ESCOM	Escom Financing	1,655,330			
T29	Phombeya 200MVA Transformer & Associated Switchgear	MK '000	ESCOM	Escom Financing			5,145,000	
T30	Nanjoka Substation Upgrade	MK '000	ESCOM	Escom Financing		4,094,012		
T31	New Blantyre Substation	MK '000	ESCOM	Escom Financing			11,833,500	
T32	Eastern Backbone 132kV (central – North)	MK '000	ESCOM	Escom Financing				43,365,000
T33	Chintheche 20 MVar Voltage Compesation	MK '000	ESCOM	Escom Financing	1,911,000			
T34	66 /33 KV Substation at Nsanama	MK '000	ESCOM	Escom Financing		1,470,000.00		
T35	Chinyama 15 MVar Voltage Compesation	MK '000	ESCOM	Escom Financing				
T36	66 KV Mbongozi Hydro IPP Interconnection	MK '000	ESCOM	Escom Financing			5,000,000	
T37	66 KV Nkhota-kota Solar IPP Interconnection	MK '000	ESCOM	Escom Financing -for transmission connector		900,000.00		
T38	132 KV Salima Solar IPP Interconnection	MK '000	ESCOM	Escom Financing -for transmission connector	1,200,000.00			
T39	132 KV Golomoti Solar IPP Interconnection	MK '000	ESCOM	Escom Financing -for transmission connector	1,000,000.00			
T40	132 KV Kanengo Solar IPP Interconnection	MK '000	ESCOM	Escom Financing -for transmission connector	900,000.00			
T41	Reserve IPP	MK '000	ESCOM	Escom Financing -for transmission connector				3,000,000
T42	Phombeya – Zomba – New Blantyre 132kV	MK '000	ESCOM					
T43	Provision for MCA grant funded project to be completed by ESCOM	MK '000	ESCOM	10% of MCA projects	8,313,551			
Additional Assets - Annual								
Total ESCOM-funded		MK '000		ESCOM funding	17,417,042	10,601,211	82,561,721	46,370,733
Total grant-funded		MK '000		MCA & ESSP projects	84,640,630	-	-	-
CUMMULATIVE					102,057,672	112,658,884	195,220,605	241,591,338

No	NEW DISTRIBUTION INVESTMENTS			2018/19	2019/20	2020/21	2021/22
D1	Lilongwe & Mzuzu Peri-urban (ESSP)	MK '000	Loan Finacing from WB	2,130,529			
D2	Peri-urban - Center and North (World Bank financed)	MK '000	Loan Finacing from WB	2,584,127			
D3	Advance Metering Infrastructure (AMI) - ESSP	MK '001	Loan Finacing from WB	1,516,775			
D4	11 km underground cable rehabilitation for Blantyre	MK '000	Loan Finacing from WB	1,273,789			
D5	33 KV Nkhatabay - Mzuzu reinforcement (15 km)	MK '000	Loan Finacing from WB	300,000			
D6	MZUZU SONDA 33/11KV S/S	MK '000	Grand Financing from MCA	1,154,827			
D7	Telegraph Hill -Sonda - Katoto - Luwinga	MK '000	Grand Financing from MCA	643,500			
D8	Karonga - Songwe	MK '000	Grand Financing from MCA	536,250			
D9	New City Center (33/11)	MK '000	Grand Financing from WB	1,453,672			
D10	AREA 25 33/11	MK '000	Grand Financing from WB	1,154,827			
D11	Marep 8 & 9	MK '000	Grand Financing from MAREP	18,000,000	6,000,000		
D12	Peri Urban Mzuzu & Lilongwe	MK '000	ESCOM financing	3,894,765			
D13	Dzenza - KIA 11 KV (12 km)	MK '000	ESCOM financing	120,000			
D14	Area 49 Substation	MK '000	ESCOM financing	2,940,000			
D15	4 km Underground cable for LL	MK '000	ESCOM financing		308,797		
D16	Mzuzu City 11kV Upgrade	MK '000	ESCOM financing		578,995		
D17	Malosa Substation	MK '000	ESCOM financing	2,940,000			
D18	Bangwe substation 33/11 KV Substation upgrade - World Bank	MK '000	ESCOM financing	901,399			
D19	Central & Northern Region SCADA	MK '000	ESCOM financing	4,950,000			-
D20	Southern Region SCADA	MK '000	ESCOM financing	2,940,000			
D21	Electrification (360,000 new connections)	MK '000	ESCOM financing	19,800,000	19,800,000	22,770,000	22,770,000
D23	Smart Metering	MK '000	ESCOM financing			2,500,000	
D24	Lilongwe 33kV Ring	MK '000	ESCOM financing		882,000	1,305,000	
D25	15 km Underground cable for LL	MK '000	ESCOM financing			1,157,990.32	578,995
D26	MD prepayment metering	MK '000	ESCOM financing	2,500,000	2,500,000		
D27	Prepayment Meter migration and repositioning	MK '000	ESCOM financing	5,000,000			
D28	Nkula - Chileka 33 KV	MK '000	ESCOM financing		600,000		
D29	General system reinforcements	MK '000	ESCOM financing	7,500,000	8,250,000	9,075,000	9,982,500
D30	System Development	MK '002	ESCOM financing	2,500,000	2,750,000	3,025,000	3,327,500
D31	Sengabay Substation	MK '000	ESCOM financing	2,940,000			
D32	Relocation of powelines and services in major cities to pave way for developments	MK '000	ESCOM financing	100,000	100,000	100,000	1,000,000.00
D33	Chipata - Mchinji cross boarder	MK '000	ESCOM financing	650,000			
D34	33 KV Mulanje mini hydro IPP (8 MW)	MK '000	ESCOM financing	105,000			
D35	33 KV Waste to Energy - Blantyre 10 MW IPP	MK '000	ESCOM financing	45,000			
D36	33 KV Kanengo Solar (20 MW with storage)	MK '000	ESCOM financing	50,000			
D38	DSM – (LED bulbs)	MK '000	ESCOM financing - Direct Expenses	1,050,000	1,050,000	1,050,000	1,050,000
D22	Accelerate Electrification	MK '000	ESCOM financing - Direct Expenses	2,600,000	2,600,000	2,600,000	2,600,000
D39	DSM – LED tubes (3.6 Million)	MK '000	ESCOM financing - Direct Expenses	1,125,000	1,125,000	1,125,000	1,125,000
	Added Cumulative						
	ESCOM Funded			66,779,985	102,549,778	142,482,768	180,141,763
	Grand Funded			23,844,474	29,844,474	29,844,474	29,844,474
	TOTAL			90,624,460	132,394,252	172,327,243	209,986,238

Appendix 2 : Distribution Investments / projects

ANNEX 4: HEAD OFFICE INVESTMENTS

HEAD OFFICE ASSEST				Funding
HO1	Furniture and Computers	MK '000	Managed by Head Office but shared	ESCOM
HO2	Vehicles	MK '000	Managed by Head Office	ESCOM
HO3	Single Buyer Plexos software	MK '000	Purely Single Buyer	ESCOM
HO4	Call Center and SCADA equipment	MK '000	Purely Distribution	ESCOM
HO5	ICT equipment and network assets	MK '000	Managed by Head Office but shared	ESCOM
HO6	Security Cameras	MK '000	Managed by Head Office but shared	ESCOM
HO7	Tools and test equipment - Distribution	MK '000	Purely Distribution	ESCOM
HO8	Tools and test equipment - Transmission	MK '000	Purely Transmission	ESCOM
HO9	Plant and automation equipment - Distribution	MK '000	Purely Distribution	ESCOM
HO10	Plant and automation equipment - Transmission	MK '000	Purely Transmission	ESCOM
HO11	EMIS and related projects	MK '000	Purely managed at Head Office- but shared	Grant
HO12	EMIS and related projects	MK '000	Purely managed at Head Office- but shared	ESCOM
HO13	Land & Buildings	MK'000	Managed at Head Office but shared	ESCOM
HO14	Office Equipment	MK'000	Managed at Head Office but shared	ESCOM
HO15	Motor Vehicles	MK'000	Managed at Head Office but shared	ESCOM
HO16	Working capital (General stores, transport, oil/fuel)	MK'000	Managed at Head Office but shared	ESCOM
HO17	Construction of new ESCOM House Offices	MK '000	Purely Head Office but shared	ESCOM
HO18	New Mzuzu ESCOM Office	MK '000	Managed by Head office but for Distribution	ESCOM
HO19	5 Staff Houses at Nhoma S/S	MK '000	Managed by Head office but for Transmisison	ESCOM
HO20	5 Staff Houses at Phombeya S/S	MK '000	Managed by Head office but for Transmisison	ESCOM
HO21	Warehouse - delivery and collection	MK '000	Purely Head Office but shared	ESCOM
HO22	New National Call Center and SCADA Building in Lilongwe	MK '000	Purely Distribution but managed by Head Office	ESCOM
HO23	Rehabilitation of Mangochi Cottage	MK '000	Purely Head Office but shared	ESCOM
HO24	Rehabilitation of Lilongwe Transformer Workshop	MK '000	Purely Distribution but managed by Head Office	ESCOM
HO25	New Office Building at Power Station - (Transmission and Distribution)	MK '000	Managed by Head office but for Transmisison	ESCOM
HO26	Golomoti	MK '000	Purely Distribution but managed by Head Office	ESCOM
HO27	Renovation and Branding of existing customer care offices	MK '000	Purely Distribution but managed by Head Office	ESCOM
HO28	New Nchalo Office	MK '000	Purely Distribution but managed by Head Office	ESCOM
HO29	New Dwangwa Office	MK '000	Purely Distribution but managed by Head Office	ESCOM

