25th October, 2019.

1. Background

The unbundling of the energy sector in 2014 led to the dissolution of the National Power Authority (NPA). From the ashes, the Electricity and Distribution Supply Authority (EDSA) and Electricity Generation and Transmission Company (EGTC) were born. The idea was to separate the functions of generation and transmission from distribution and supply of electricity, thereby leading to better efficiency and to the liquidity problems of the utility.

There has not been any review to the tariff since 2016 and the tariff has once again lost value due to exchange rate and inflation issues.

Losses, both technical and commercial are still a major concern and has still not been adequately addressed since the last tariff review. Furthermore, despite a significant migration to a pre-paid meter system, the collection ratio is still at an undesired level. This further compounds the issues at EDSA.

In May, 2019, EDSA submitted a new tariff application to EWRC, indicating amongst other things that the tariff structure is unfair and that the majority of their customer base is in the social bracket thereby causing significant loses to EDSA.

A summary of the tariff proposal from EDSA is discussed in the section below.

2. Proposed Tariff for EDSA

- Currently, the tariff band for the life line category is 0-50kwh with a tariff of SLL 560.00/kwh excluding GST. In the new tariff filing, EDSA proposed a reduction in the band to 0-25kwh with the tariff remaining at SLL 560.00/kwh.

- For customers that consume 25 kWh, their monthly expenditure will be about SLL 14,000.00 per month. However, for those customers that consumed about 50 kWh per month, assuming that their current monthly consumption remains at the same level, monthly expenditure will increase from SLL 28,000.00 per month to SLL 54,000.00 per month, which will be an increase of about 93%. These values excludes the monthly service charge and GST.

- GST remains at 15%

- For consumption above 25kwh, the new proposed tariff will be 1600/kwh.

- All domestic customers will continue to benefit from the life line tariff but up to a new threshold of 25 kWh instead of 50 kWh as it is currently.

- There is no proposed change to the service charge. It will remain the same for 2019 tariff period.
- The welders, large commercial and industrial customers, institutions and commercial customers will all see a modest increase in their tariff. The percentage increase ranges from 5% for welders to 18% for institutions.

Customer Class	Description of Charge	Units	Current	Proposed Excluding GST
			2018	2019
T1 Social Band	First **0-50kWh** per month for All T1 Residential Customers	SLL/kWh	560	
T1 Social Band	First **0-25kWh** per month for All T1 Residential Customers	SLL/kWh		560
T1 Normal Band	Consumption Exceeding **50kWh** per month for all T1 Residential Customers	SLL/kWh	1,415	
T1 Normal Band	Consumption Exceeding **25kWh** per month for all T1 Residential Customers	SLL/kWh		1,600
T2 Commercial	Commercial	SLL/kWh	1,641	1,870
T3	Institutions	SLL/kWh	1,526	1,800
T4	T4 Large Customer and Industries	SLL/kWh	1,754	1,890
T7	Welding	SLL/kWh	1,811	1,900
T5	Street Lighting	SLL/kWh		1,678
T1 SG	T1 Residential Service Charge	SLL/month	10,500	10,500
T2 SG	T2 Commercial Service Charge	SLL/month	14,115	14,115
T3 SG	T3 Institutions Service Charge	SLL/month	14,730	14,730
T4 SG	T4 Industries Service Charge	SLL/month	75,630	75,630
T7 SG	T7 Welding Service Charge	SLL/month	39,570	39,570
T5 SG	T5 Street Lighting Service Charge	SLL/month		29,460

3. EWRC's Analysis

EWRC Tariff Guidelines – approach to calculating RR aims to capture utility's actual costs of providing service see formula below:

$$RR = \mathrm{DS} + \mathrm{CR} + \mathrm{DCR} + \mathrm{OP} + \mathrm{RS} - \mathrm{ELA} - \mathrm{OR}$$

Where:
RR is the revenue requirement;
DS is the debt service obligations;
CR is cash-paid capital improvements;
DCR is the depreciation on cash-paid capital improvements;
OP is operating and maintenance expenses;
RS is any contribution to a reserve fund;
ELA an adjustment to account for excess losses;
OR is the sum total of other revenue

3.1. Revenue Requirement

Estimated Revenue Requirement

Tariff Application forms and EWRC analysis reflects this methodology. EDSA's proposed Revenue Requirement Form E-2 is shown below:

Component	Units (SLL)	Historical			Proposed
		2016	2017	2018	2019
Electricity Purchases	000	205,828,105	287,681,404	419,148,267	627,918,964
Operations & Maintenance	000	28,394,591	12,045,327	14,951,586	37,945,889
Commission	000	5,479,679	5,815,063	6,529,770	10,369,692
Debt Service	000				
Cash Paid Capital	000	7,489,779	181,968,064	10,291,776	344,025,995
Depreciation -- Cash Investments	000	1,946,583	5,145,067	3,211,794	1,874,703
Taxes	000				
ELA	000				(54,378,148)
Total Revenue Requirement Including Capex	000	249,140,753	492,656,942	454,135,211	967,757,096
Total Revenue Requirement Excluding Capex	000	241,650,974	310,688,878	443,843,435	621,856,398
Other revenue	000 SLL				(12,000,000)
Net Revenue Requirement Including Capex	000 SLL				955,757,096
Net Revenue Requirement Excluding Capex	000 SLL				**609,856,398**

The above is excluding GST

- EDSA proposed a total revenue requirement of SLL 676 Billion excluding capital expenditure.
- If the proposed capex of SLL 344 Billion is included in the calculations, the total revenue requirement will be SLL 968 Billion.
- There is a significant increase in the proposed electricity purchases. It will increase from about 419 Billion Leones in 2018 to approximately 628 Billion Leones. This represents an increase of 49.8%.
- There is also an increase in O&M expenses. It will increase from 15 Billion Leones in 2018 to about 38 Billion Leones in 2019. This will be an increase of approximately 153%.
- EDSA's revenue from other sources is about SLL 12 Billion.
- Also, there was no adjustment for excess losses. EWRC however, capped the losses at 30% in its analysis.
- Subtracting other income and an amount for excessive losses from the total revenue requirement, this gives us a net revenue requirement excluding capex of about 610

Billion Leones. This figure will be lower than the one proposed by EDSA. It is lower by 66 Billion Leones.

- In order to better manage the tariff increase and minimize the impact on consumers, EDSA decided to exclude cash paid capital expenses for the proposed tariff year. Consequently, the proposed tariff increase is much smaller than it would otherwise have been.

3.1.1. Debt Service Obligations (DS)

EDSA did not include any debt service obligations in its proposed revenue requirement on Form E-2.
We expect that EDSA's exclusion of debt terms, may stem—to some extent—from EDSA's uncertainty over whether it will be required to service debt on the loans from the multilateral lending banks (World Bank, etc.), or whether debt service will be assumed by the Ministry of Finance on behalf of EDSA (in which case these loans are, from EDSA's perspective, effectively grants).
Because insufficient information was provided, and EDSA did not propose a Debt Service component in the proposed revenue requirement, EWRC will not include an allowance for debt service in this tariff application. EDSA may include a request for such an allowance in a future tariff application, provided it also submits the details required.

3.1.2. Cash-paid capital improvements (CR) and Depreciation on Cash-Paid Capital Improvements (DCR)

EDSA stated on the revenue requirement form E2, a cash paid capital expenditure of about 344 Billion Leones. This was however excluded from the calculation of the Allowed Revenue requirement because the amount was not funded from internally generated funds. It has to be, for it to qualify as a component of the RR in EWRC's cash-needs-approach tariff methodology. Secondly, EDSA advised that the amount be excluded because the resultant tariff due to its inclusion will be too high for consumers to accept at this time.

3.1.3 Operating and Maintenance Expenses (OM)

EDSA's reported operating and maintenance expenses are shown in Form E-7 below. The proposal for O&M expenses are roughly 57% over the operating and maintenance expenses reported for 2018. The largest line items are staffing, direct operating costs, and repair & maintenance, which saw significant proposed increases. Training, travel costs, and insurance also see very substantial increases. According to EDSA these costs reflect what they would need to be spending to provide adequate quality of service.
Service quality and customer service will not improve without better maintenance of existing assets. New assets, if not properly maintained and operated, will malfunction, and quickly deteriorate. EWRC will therefore allow for inclusion of the entirety of EWRC's proposed operating and maintenance costs. EDSA should be prepared, however, at its next tariff application, to provide details on how funds were spent on the larger line items, and the line items showing the largest increases. Should EWRC find any of those expenditures to be imprudent or inefficient, it would disallow an equivalent amount from any future revenue requirement. EDSA should also develop and share with EWRC an asset management plan

which clearly indicates how repair and maintenance expenditure is directed as well as capital improvements and other new investment. Proposed O&M costs are shown below:

Item	Units (SLL)	Historical			Proposed
		2016	2017	2018	2019
Staff Costs	000	30,953,120	32,459,268	35,781,146	40,408,740
Vehicles and Transportation	000	3,220,522	4,548,170	4,057,320	5,958,720
Travelling Costs	000	1,133,209	1,881,110	1,802,194	8,738,733
Repairs and Maintenance	000	2,662,361	410,872	857,989	4,085,447
Information Technology	000	2,321,781	1,859,382	813,499	1,986,080
Training	000	325,342	255,832	150,186	9,991,860
Professional Fees	000	1,686,913	2,097,251	711,282	835,080
Utilities	000	141,972	308,180	195,735	1,008,789
Printing and Stationery	000	579,085	1,261,807	1,179,957	2,815,851
Communications	000	386,168	402,547	645,002	954,694
Directors Fees	000	334,826	588,916	540,166	1,105,200
Board Expenses	000	198,149	348,519	319,669	622,000
Fees (incl. fees for SLEWRC)	000	1,691,358	1,881,989	3,464,680	4,464,505
Healthy and Safety	000	640,441	1,312,580	415,285	1,836,867
Publicity and Advertisement	000	687,433	628,745	645,373	971,500
Interest and Penalties	000	300,306	-		-
Research and Surveying	000	-	-		-
Security Services	000	239,575	434,261	958,448	1,020,000
Rental Costs	000	706,354	966,337	1,238,919	1,822,207
Insurance	000	578,053	1,164,011	1,087,080	1,567,715
End of Services Provision Costs	000	8,662,943	2,207,218	1,223,509	4,242,231
Others Operating Costs	000	473,992	2,475,015	1,551,827	11,523,459
Finances Costs (non-CAPEX)	000	1,328,923	1,033,860	1,225,055	1,249,260
Direct Costs (Ops) - O&M Mainly	000	28,394,591	12,045,327	14,951,586	37,945,889
Direct Costs (Ops) Commission to Aggregators	000	5,479,679	5,815,063	6,529,770	10,369,692
Energy Purchase	000	205,828,105	287,681,404	419,148,267	627,918,964
Total O&M Cost	**000 SLL**	**298,955,201**	**364,067,664**	**499,493,945**	**783,443,482**

3.1.4 Contribution to a Reserve (RS)

EDSA did not propose any contribution to a reserve account. EWRC has therefore not included any contribution to a reserve account in its estimates of EDSA's revenue requirement.

3.1.5 Adjustment for Excess Losses (ELA)

Item	Units	Historical			Planned		
		2016	2017	2018	2019	2020	2021
Customers							
Commercial	Nos.	15,956	17,501	19,449	22,000	22,500	24,500
Industrial	Nos.	569	600	645	700	750	800
Institutions	Nos.	2,152	2,392	2735	2,750	2,900	3,000
Street Light	Nos.	9	9	9	9	9	9
Domestic	Nos.	134,531	148,768	170,067	177,000	190,000	207,000
Welders	Nos.	519	588	674	700	750	800
Total	Nos.	153,736	169,858	193,579	203,159	216,909	236,109
Billed Sales							
Commercial	kWh	20,702,084	22,754,749	27,019,457	34,036,542	41,593,091	45,290,255
Industrial	kWh	58,989,833	67,116,978	81,468,780	115,747,757	137,015,132	146,149,474
Institutions	kWh	4,189,371	3,689,146	5,838,162	8,143,885	8,588,097	8,884,239
Street Light	kWh		321,266	32,654	32,654	32,654	32,654
Domestic	kWh	109,313,105	114,714,862	141,067,384	175,176,372	233,395,957	254,278,753
Domestic Less than 25 (Part of Above)			27,054,694	32,886,413	35,344,560	51,295,678	55,885,292
Welders	kWh	574,572	570,638	656,936	768,830	820,865	893,525
Total	kWh	193,768,966	209,167,639	256,083,372	335,905,740	421,445,797	455,528,900
Collections Efficiency							
Commercial	%						
Industrial	%						
Institutions	%						
Street Light	%						
Domestic	%						
Welders	%						
Total	%		85%	79%	88%	93%	97%
Losses							
	kWh						
Technical	%	14%	14%	14%	13%	12%	11%
	kWh						
Commercial	%	24.00%	22.83%	24.41%	23.00%	20.00%	17.00%
	kWh						
Total	%	38.00%	36.83%	38.41%	36.00%	32.00%	28.00%
Adjusted Losses with Made Recovery		38.00%	33.86%	37.00%			
Purchased Electricity	kWh	311,966,904	332,689,305	416,382,809	559,445,972		

- EDSA also assumed a combined technical and commercial losses of approximately 36%. This represents a loss of about 201,400,549.92 kWh.
- A collection efficiency of 88% is also assumed by EDSA. This represents about 42,965,450 kWh lost from the billed sales.

- When you combine the collection loss and the technical and non-technical losses, EDSA is expected to lose about 244,366,000 kWh.
- At an average proposed price of $ 0.18, the loss is approximately 8 million dollars (244,366,000 kWh*0.18).
- The weighted average tariff of SLL 1659.60 or $0.18/kwh would have been sufficient to almost eliminate the deficit provided the collection ratio was close to 100%
- EDSA's collection ratio at 88% means that instead of receiving as revenue SLL 1659 or 0.18/kwh, EDSA is effectively getting an average tariff SLL 1451 or 0.16 /kwh and losing $ 0.02 for every kwh sold.
- If EDSA improves on its collection ratio or efficiency, it would mean that for every 1% improvement in the collection ratio, EDSA will recover an additional SLL 6.05 Billion Leones.
- An increase in tariff will not solve all of EDSA's problems. A lot of effort should also go towards reducing the losses, both technical and commercial and also improve on the collection ratio.

3.1.6 Other Revenue

EDSA did not report other revenue, but does have revenue from connection fees. Because EWRC did not have other data, "other revenue" was taken from EDSA's income statement for 2017, totalling about SLL 12,000,000,000.

4. Public Engagement

SLEWRC conducted a public hearing following the tariff application submitted by EDSA in accordance with section 45 of the SLEWRC Act 2011 which gives the commission the authority to approve rate for electricity and water services and sub-section 3 also makes provision for consumers and utilities to be affected by any review or rate change be given the opportunity to be heard, after which the commission shall take into account any representation made before a final rate(s) is approved.
During the public hearing held, several questions and concerns were raised. The concerns raised during the hearing are as follows:

1. A representative from the consumer Protection Agency stated that if there is going to be an increase in the tariff, it should be a positive change and that the change should ensure consumers' right is not trampled on, like it has been in the past years. He also informed the audience that consumers are not adverse to reasonable increase in the tariff condition, and this he says includes the provision for meters which is currently a public nuisance and that EDSA should ensure stringent action is taken for stolen meters by ensuring that all stolen meters are disabled to prevent its use by another person(s), the moment it is reported stolen, as that will minimise the theft rate of meters in the country. In addition, he also expressed his dissatisfaction about the lack of customer care service from EDSA's front desk which he said are not client oriented and that they are in the habit of responding to consumers harshly. Furthermore, he inquired why Orange money is requesting for additional fee when paying for electricity service through them. In conclusion, he stated that taking into consideration

the importance of electricity, consumers are willing to pay for the service if the lapses highlighted are adhered to and addressed as soon-as-possible.

2. The chairman of the committee on energy in parliament, stated that the public relations wing at EDSA should be capacitated and strengthened both in Freetown and in the provinces to be able to handle customer enquiries and concerns as well as to provide relevant information to the public. He further stated that EDSA still faces problems in evacuating power from Kingtom to the East of Freetown thus necessitating the use of Karpower. He hoped that if the tariff is approved, EDSA should be able to enhance their ability to evacuate power from Kingtom to the rest Freetown. Also, he recommended that EDSA should be working closely with the Junior or intermediate staff to effectively achieve their goals as EDSA was not set up by government to maximise profit but to at least break-even to reduce financial load on government.
3. A representative from the Ataya Base Energy Group stated that the group has been working closely with the Ministry of Energy and that they assist the Ministry in service delivery by reporting on various issues affecting energy services as well as acting as link between the various communities from which they had reported a total of 873 cases but had only received positive response for 175 cases, which is a concern that the group wishes to be addressed and their efforts acknowledged.

4. Another participant enquired about the action plans EDSA has put in place to avoid persistent power-outages now the raining seasoning is coming to an end.

5. What are the guidelines and formulae EDSA uses to determine the various customer classes?

6. What are EDSA's plan to fill the gap created now that Karpower is no more and what is the current status of Bunbuna 11?

7. How does EDSA provide surge protection now that we are in month of heavy thunder and lightning?

Responses

1. Every stolen meter reported to EDSA is deactivated and replaced. EDSA will only deactivate meters that are reported for by a registered customer. And again, no money should be given for Orange Money transactions other than the amount stated on the receipts. He advised that customer should report any additional fee charged aside from the amount stated on the receipt.

2. EDSA highlighted some of the major plans currently in place to implement improvement as well as the impact they will have on customers and service delivery upon the approval of the tariff. Hence, the approval of the tariff will improve on its operations, provide consistent energy, ensure customer satisfaction and positively impact on its ability to meet set key performance indicators. The Deputy Director-General assured the audience that EDSA will institute prudent commercial practices to improve its overall financial performance through the replacement of faulty or Non-STS meters, migrating from post-paid and installing new meters and electrifying new communities; and

will implement loss reduction plan to reduce losses from 36% by the end of 2019 to 29% by the end of 2020 through effective auditing initiatives, technical improvement and improved information technology.

3. The Deputy Director-General advised the Ataya Base Group to forward all compliants to the customer call centre so that they would be promptly addressed.

4. EDSA's Deputy DG informed the audience that there is an ongoing project to complete the rehabilitation of all sub-stations to reduce the frequency of power-outage due to a single fault in the system and after the tariff approval and all the transformers would be surge protected.

5. The different category of customer class is determined based on the application submitted by the customer in accordance to his/her electricity Consumption.

6. EDSA's Deputy Director-General stated that Karpower was removed for two reasons: to undergo maintenance; and because Bumbuna 2 is generating enough energy during the raining season that rendered the need to keep Karpower on shores, impractical; however, Karpower will be on shore effective 1st December, 2019 to continue providing electricity services. And again, Bumbuna 11 is under the purview of the Ministry of Energy and power.

5. Conclusion:

After a careful review and analysis of the data, EWRC made the following determination:

- Allows the proposed increase in operating and maintenance costs (OM)
- Does not include any allocation for a reserve fund
- Allows for inclusion of the costs of 30% losses (combined technical and non-technical), in the revenue requirement calculation. The excess losses of 6% is disallowed and put back into the billed energy sales.
- Subtracts other revenue attributable to connection fees.
- Collection ratio accepted at 88%
- By adjusting for excessive losses and subtracting the revenue from other sources from the revenue requirement submitted by EDSA, SLEWRC was able to reduce the proposed revenue requirement of about 676 billion Leones to an allowed amount of approximately 610 billion Leones. This is significant as it will lead to a significantly smaller deficit than it otherwise would have been.

6. Recommendation:

After careful and extended review and analysis of the revenue requirement and its components, and also taking into consideration comments and questions raised during the public hearing held on October 24, 2019, the SLEWRC team would like to recommend to the Commissioners to approve the proposed tariff submitted by EDSA, as shown below:

Customer Class	Description of Charge	Units	Proposed Excluding GST
			2019
T1 Social Band	First **0-25kWh** per month for All T1 Residential Customers	SLL/kWh	560
T1 Normal Band	Consumption Exceeding **25kWh** per month for all T1 Residential Customers	SLL/kWh	1600
T2 Commercial	Commercial	SLL/kWh	1870
T3	Institutions	SLL/kWh	1800
T4	T4 Large Customer and Industries	SLL/kWh	1890
T7	Welding	SLL/kWh	1900
T5	Street Lighting	SLL/kWh	1678
	Service Charge		
T1 SG	T1 Residential Service Charge	SLL/month	10500
T2 SG	T2 Commercial Service Charge	SLL/month	14115
T3 SG	T3 Institutions Service Charge	SLL/month	14730
T4 SG	T4 Industries Service Charge	SLL/month	75630
T7 SG	T7 Welding Service Charge	SLL/month	39570
T5 SG	T5 Street Lighting Service Charge	SLL/month	29460

With this option:

- The anticipated revenue as a result of the proposed tariff adjustment, will increase by **SLL 56,902,515,522**.
- If no tariff increase is approved, the expected revenue would be **SLL 539,703,916,070**
- If the new tariff proposal is approved, the expected revenue would be **SLL 596,606,431,592**. This represents an increase of **SLL 56,902,515,522** which is about a **10.5%** increase.
- However, with the revenue requirement of **SLL 609,856,398,000** and a collection ratio of **88%**, the actual revenue collected will be **SLL 525,013,659,801**.
- Losses, both technical and commercial, capped at **30%**.
- The deficit will be **SLL 84,842,738,199** which is approximately **$9,426,971** using an exchange rate of SLL 9000/$ as shown in the table below.
- GST remains at 15%
- Service charge for each customer category remains unchanged.

Deficit Calculation when Losses Capped at 30% adjusted					
Customer Category	**Original Billed Energy**	**Weighted Average**	**New Billed Energy**	**Proposed Tariff**	**Expected Revenue from Proposed tariff (Le 000)**
Commercial	34,036,542	3,421,613	37,458,155	1,870	70,046,751
Industrial	115,747,457	11,635,819	127,383,276	1,890	240,754,392
Institutions	8,143,885	818,686	8,962,571	1,800	16,132,627
Street Light	32,654	3,283	35,937	1,678	60,302
Domestic	139,831,812	14,056,963	153,888,775	1,600	246,222,040
Domestic Less than 25 (Part of Above)	35,344,560	3,553,105	38,897,665	560	21,782,693
Welders	768,831	77,289	846,120	1,900	1,607,628
Total	**333,905,741**	**33,566,758**	**367,472,499**		596,606,432
					-
Collection Efficiency @88%					**525,013,660**
Net Revenue Requirement					**609,856,398**
Deficit					**84,842,738**
Deficit in USD @ SLL 9,000/US$ 1					**$ 9,426,971**

It is important to note that the tariffs proposed by EDSA will leave EDSA with a substantial revenue shortfall. We expect that this is because EDSA has in mind a gradual transition to cost-recovery tariffs.

EWRC will require for EDSA's subsequent tariff applications an indicative plan of how it sees its tariffs evolving over time and moving toward full cost-recovery levels.

An increase in tariff will not solve all of EDSA's problems. A lot of effort should also go towards reducing the losses, both technical and commercial and also improve on the collection ratio.

7. General Recommendations to EDSA

- EDSA should invest in load or consumption limiters or other technology that would improve the targeting of the social subsidy. This would eliminate the need for everyone to benefit from the social tariff.
- Speed up the migration to prepaid meters from post-paid.
- EDSA should come up with a plan to address the shortage of meters. Faulty meters should be replaced in a timely manner and new customers should be provided with meters within a reasonable time after accepting their payments for a new service.
- Before the approved tariff goes into effect, EDSA should engage in a public campaign (radio, TV, newspapers, etc.) with consumers explaining the tariff structure and what improvement in service they should expect.
- Develop robust, verifiable and measurable techniques of how to significantly reduce technical and commercial losses.

- Undertake a comprehensive study into the system losses and how reduction of system losses can lead to improvement of overall utility performance
- Develop and submit plans on improving the collection efficiency of EDSA.
- Capital investment plan for the next 3 to 5 years.
- Investments from internally generated funds. This should be submitted every 3 months.
- EDSA should provide data on a **monthly** basis to enable the Commission to perform research on tariffs and other issues:
    - Purchased energy from each IPP and average purchase price.
    - Billed energy for each customer class and associated tariff.
    - Subsidies from government and how it is applied.