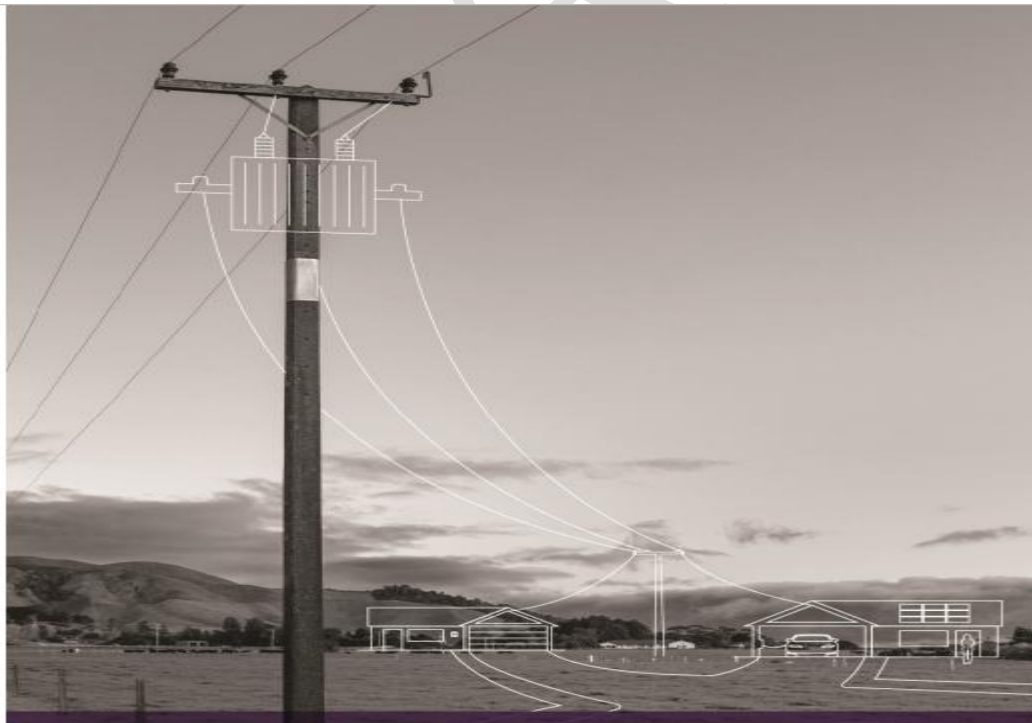




ENERGY REGULATION BOARD

CONSULTATION PAPER

DRAFT REGULATORY FRAMEWORK FOR STANDARD CONNECTION CHARGES



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1.0 INTRODUCTION

The Energy Regulation Act No. 12 of 2019 mandates the Energy Regulation Board (ERB) to determine, set and approve charges and fees in the electricity sub-sector. This includes new connection charges as well as any variation of existing charges.

The access rate for grid connected house-holds stands at 4.4 percent while an additional 7.4 percent are connected to solar home systems. At household level, an estimated 67.3 percent of households in urban areas and about 4.4 percent of households in rural areas have access to electricity, translating into 31.4 percent at national level.

As at end of December 2021, a total of about 67,000 new applications for connection to the ZESCO grid were pending as result of lack of financial resources to undertake the connections. This situation slows the drive towards increasing electricity access from the current 4.4% to 51% for rural population as envisioned by the Vision 2030.

Further, since 2005 when the cost of connection was last revised or approved by the ERB, the cost of materials used in undertaking new customer connections has significantly increased thereby inhibiting smooth and sustainable connection of new customers.

In addition to the foregoing, the process of undertaking connections and methodology of determination of connection charges is not clear. This situation presents a compelling need for the ERB to develop a standard framework that governs the regulation of new standard connection charges and the allied processes.

These guidelines provide principles that the ERB will adopt when processing applications for electricity connection fees or charges for the Electricity sub-sector.

This paper seeks to serve as a Consultation Document for the Electricity industry players and stakeholders in the development of Regulatory Guidelines that will guide both consumers and Licensees in the process of undertaking new connections, the process for approval of charges and the process of compensating consumers who pay the cost of new connections.

The objectives of this Consultation process is to come up with an Industry wide regulatory framework that will guide stakeholders, consumers and Licensees on the regulatory requirement governing the execution of Standard Connection charges or Connection Capital Contributions.

1.1 Problem statement and current practice

One of the major challenges that ZESCO Limited is facing is failure to promptly connect new applicants for electricity. This has resulted in a high number of customers not being connected. The

backlog stood at 67,000 as at 31st December 2021. Connection Backlog refers to applicants who have paid for new connections but have not yet been connected.

Subsequently, ZESCO has been and still is unable to meet the cost of procuring the various materials and associated services required for new connections from the connection fees collected and has had to resort to sourcing external financing. The current financial position of the Corporation makes continuing with the same model untenable.

In addition to the foregoing, from a regulatory perspective, although Section 32 of the Electricity Act No.11 of 2019 clearly outlines the process for review of tariff revisions, there is no specific process provided for review of connection charges. In view of this, the review of ZESCO's application of 2022 to revise connection charges mirrored ERB's tariff review process. Further, in line with best regulatory practice, the ERB also subjected the review process to Public Hearings to ensure that stakeholders were engaged in view of the general interest over the connection charges proposed by ZESCO.

In addition the review process involved a comparison of ZESCO's proposed charges and connection fees charged by other licensees in the sector such as Rural Electrification Authority (REA), Zengamina Power Limited (ZPL) and Engie Power Corner (Engie) for benchmarking purposes.

The foregoing are further compounded by the fact that there is currently no specific Electricity Connections Policy thereby rendering this process unpredictable and without a standard approach for revision of charges nor regulatory review process.

This consultation paper therefore serves to develop a framework for a predictable regulatory review process of future applications for revision of connection charges and a basis for regulatory determinations of such applications by addressing the following specific questions:

1. How should electricity Utilities apply for revision of connection charges;
2. What standard information or data should Utilities submit to the Regulator in order to ensure a thorough review of the application;
3. How much should utilities be allowed to charge new customers for costs associated with utility connections?
4. What materials should be allowed to form part of the costs of undertaking a standard connection;
5. Should new customers be required to pay the connection charges in a lump sum at the time of application or over time?
6. How should new customers be compensated if additional customers are subsequently added to the line extension that was paid for by the first customer to request service?

1.2 Scope of works to be covered by the guidelines

Connect charges or Capital Contribution is the amount of money a customer must contribute to the Licensee to enable the Electricity distribution or supply licensee to undertake the new connection works or upgrade of exiting works.

Customer initiated work means work to construct new electricity supply assets that will form part of Licensee's network and/or work to upgrade, alter or relocate the existing Licensee's assets for any of the following reasons:

- a) the connection of a new customer to the electricity supply network;
- b) the extension of electricity supply network into new subdivisions;
- c) the upgrade of electricity supply network to meet the electrical capacity needed for the purposes of (a) or (b), or to meet the electrical capacity needs of an existing customer where their load or capacity requirements have increased; and
- d) the relocation, alteration or removal of the existing electricity supply network for an existing customer or a third party with an interest in the assets.

1.3 Situational Analysis

The country is faced with low electricity access rates standing at 32 percent for urban and 7 percent for rural areas based on the Zambia Statistical Agency (ZSA) 2020 Demographic and Health Survey report. In view of the foregoing, the National Energy Policy (NEP) of 2019 has a policy objective of increasing access to electricity through the formulation and implementation of an Integrated Electrification Pathway (IEP) that will set a baseline on the definition of electricity access, facilitate the construction of stand-alone (off-grids) as a way of increasing electricity access especially in rural areas. In addition, the Government plans to increase the Country's generation capacities as a way of increasing access and meeting the growing demand for electricity.

Meanwhile, ZESCO has been failing to make new customer connections promptly within the stipulated timeframes as provided by the Electricity Quality Standards (ZS397) as a result, the number of new customers pending to be connected has continued to rise. ZESCO cited the non-cost reflective connection charges as a reason for the failure to make new customer connections promptly. The Utility contends that there is no correlation between the standard connection fees charged to new customers and the cost of connection.

1.4 Literature Review

According to the World Bank (2013) Policy Research Paper on connection charges¹, connection fees if not properly determined can be a barrier to connection to the grid especially for low income households. Therefore, keeping connection charges lower is recommended as a strategy to increasing access, however this has a negative impact on the Utility keeping low connection charges is not financially viable. The study concludes that connection charges must be kept low and recommends higher cost reflective tariffs so that a Utility recovers much of the capital costs from sale of electricity rather than upfront connection fees.

¹ Connection Charges and Electricity Access in Sub-Saharan Africa, World Bank (2013) <https://openknowledge.worldbank.org/handle/10986/15871>

In other countries such as Namibia and Kenya where connection fees are cost reflective, the utilities offer financing schemes where a new customer makes an upfront payment of between 25 – 30 percent and the remaining balance is paid over a period. Specifically, in Namibia, an extra fixed charge is included on customer bills called an energy access charge which is paid by the customer on a monthly basis. To ensure that the financial viability of the Utility is maintained, the Namibian Utility charges interest on the remaining balance of the connection fees equivalent to its WACC as approved by the Electricity Control Board (ECB). The scenario is slightly different in Kenya where such a financing facility is accessed from the Bank at an agreed interest rate.

However, in Uganda and South Africa capital costs of new connections are subsidised by the Government and the customer makes a small contribution towards the cost. It is important to state as well that in Uganda the tariffs are cost reflective.

In the context of Zambia, the residential electricity tariffs are not cost reflective as highlighted in the Cost of Service Study (CoSS) which has proposed for an upward adjustment of tariffs charged to residential consumers. In addition, ZESCO also contends that the connection fees do not adequately cover the connection costs incurred when connecting new customers therefore rendering the connection fees non-cost reflective.

2.0 LEGAL BASIS AND PROCESS FOR REVIEW OF CONNECTION CHARGES

The Energy Regulation Act, No. 12 of 2019 and Electricity Act of No. 11 of 2019 provide the legal mandate for the ERB to regulate the provision of energy products and services in Zambia. Particularly, section 4(j) and 3(i) respectively provides that the ERB has the mandate to “**determine, regulate and review charges and tariffs in the energy sector**”. Further, charges have been defined as “**prices, fees, rates, surcharges, levies, penalties, deposits, connection charges or fees, use of system charges or any other charge made for the provision of any service, commodity or product that a licensee renders in the course of carrying out its licensed activity**”. In that regard, the ERB is responsible for determining or regulating charges levied by Licensees on their customers.

Although Section 32 of the Electricity Act No.11 of 2019 outlines the review process for electricity tariffs, there are no specific guidelines provided for the review of connection charges.

The tariff review process as contained in Section 32(1) of the Electricity Act No. 11 of 2019 provides that an enterprise that intends to charge a retail tariff shall apply to the ERB in a prescribed manner and form. In addition, Section 32(2) states that the ERB shall within 14 days of receipt of a duly lodged application notify the public and thereafter call for objections or submissions from the public within 30 days.

3.0 CLASSIFICATION OF STANDARD CUSTOMER CONNECTIONS

Under the current classification connection charges are classified as either single phase (220 volts) or three phase (380 volts). Further there are separate charges for existing connection upgrades. Generally, there are three (3) connection types as defined below:

3.1 Connection charges High density, demarcated and reticulated areas

High density, demarcated and reticulated areas are defined as areas with a high customer base and has an existing distribution network. Table 1, provides a summary of the current and proposed ZESCO charges under high density, demarcated and reticulated areas.

3.2 Connection charges Customers in low density, demarcated and reticulated areas

Low density, demarcated and reticulated areas are defined as areas with a low customer base within a specific area that has an existing distribution network.

3.3 Connection charges for Un-demarcated high density areas.

Un-demarcated high density areas are defined as areas with a high population density with no electricity reticulation network.

In respect of ZESCO, the standard connection fees are determined based on the geographical area reticulation as follows:

- a) **High Density Demarcated** – this category of customers pay a flat charge for connections as these are usually in a group scheme. They are usually already serviced with distribution lines as such the connection fee charged covers the cost of a duplex cable, a meter, labour and transport for installation;
- b) **Low Density Demarcated** – similarly customers in this category pay a flat charge for a connection and the connection fee charged covers 50 percent of the cost of 2 spans, the cost of a duplex cable, a meter, labour and transport for installation; and
- c) **High Density Un-Demarcated** – customer pays a flat charge for the connection service which covers 25 percent of the cost of 1 span of 230V, the cost of a duplex cable, a meter, labour and transport for installation.

Ideally, the design of the Low density demarcated and High density un-demarcated areas is to ensure that the customer meets 70 percent of the cost of the 400V reticulation and the full cost of supply.

Appendix I gives an overview of the nature of materials required for connection under each of the three (3) categories.

4.0 TYPES OF CAPITAL CONTRIBUTION OR CONNECTION CHARGES

The ERB recognises two typical types of connection charges or capital contributions:

- i. An up-front financial payment to a licensee that undertakes works required to provide or facilitate new or upgrade network access to licensees grid;
- ii. The transfer of ownership of connection assets to the licensee from a consumer or network user that procured and funded the installation or construction of the assets; and
- iii. A combination of the two.

5.0 DETERMINATION OF CONNECTION CHARGES OR CAPITAL CONTRIBUTION

A number of capital contribution computation methodologies in use across a number of jurisdictions have been considered. In general three methodologies are in use as follows:

5.1 The cost-revenue-test

One method of computing capital contribution amount is based on the cost-revenue test as presented in the equation below:

$$\text{Capital Contribution (CC)} = \text{ICCS} + \text{ICSN} - \text{IR}(n=X)$$

Where: ICCS = Incremental Cost Customer Specific
ICSN = Incremental Cost Shared Network
IR(n=X) = Incremental Revenue

In the case above, a capital contribution will be equivalent to the incremental costs exceeding the incremental revenue, i.e. $CC > ZMK0$.

In determining the incremental cost components of the cost-revenue-test, a distribution network service provider should:-

- a) determine the cost of each component in a fair and reasonable manner and ensure that the cost estimates are reflective of the efficient costs of performing the service.
- b) calculate the cost of each component based on the least-cost, technically acceptable standard necessary for the connection service; and
- c) where a distribution network service provider elects to perform the work to a higher standard than contemplated above then the distribution/supply network service provider must not charge the connection applicant for any cost additional to the cost of providing the service to the least technically cost acceptable standard.

A distribution network service provider should provide an option of allowing the consumer to seek an independent contractor to undertake connection services that can be provided by a third party

5.2 Pre-calculated Connection charge or capital contribution for basic and standard connections

If a distribution network service provider considers that all connection applicants receiving a particular basic or standard connection offer have substantially the same connection service and expected usage characteristics, then the distribution network service provider may charge a pre-determined capital contribution charge from each connection applicant within the class.

Where, a distribution network service provider chooses to apply a pre-calculated charge as provided above, the amount of the pre-calculated charge must be included in a distribution network service provider's basic or standard connection offers and should:

- a) Not create unreasonable cross subsidisation within the class; and
- b) be reflective of the average or typical capital contribution that would be charged to connection applicants within the class, if the cost-revenue-test was individually applied to each connection applicant's connection service.

6.0 INTERNATIONAL BEST PRACTICE ON DETERMINATION OF COST OF NEW CONNECTION CHARGES OR CAPITAL CONTRIBUTION

A review of literature, for instance a publication funded USAID by Deloitte Consulting LLP (2022), posits that there are at least three options that can be used to determine connection charges:

- a) Actual utility cost of connection
- b) Average utility cost of connection
- c) Free line extension up to a certain distance (charging the actual cost for the distance in excess of the free distance)

6.1 Actual Cost Method

In this approach, the utility charges the actual costs incurred in providing the line extension. The actual costs are determined by adding up the actual material and labor costs incurred to get the new infrastructure to the customer's premises.

6.2 Average Cost Method

Under this approach, the utility develops a standard connection charge using the average connection cost based on the applicant's distance from the grid. The average costs can be developed based on historical data (for example, the average of the last three years) and updated for future cost escalations.

A more granular approach would be to set different standard connection charges depending on the distance from a connection point. For example:

- a) A fixed charge of X for any connection within 100 meters from the nearest utility connection point.
- b) A fixed charge of 2X for connections between 100 and 200 meters.
- c) For connections beyond 200 meters, 2X plus the actual cost incurred for connections beyond 200 meters.

An alternative to charging the actual cost for that part of a connection greater than 200 meters from the connection point would be to develop a charge using a formulaic approach (e.g., number of poles used multiplied by per pole cost distribution poles plus meters of cable used multiplied by per meter cable cost etc.) to arrive at the connection charge. The per pole cost or per meter cable cost in the example would be based on the historic average cost and adjusted for future cost escalation. A formulaic approach would be more transparent and easy to understand, especially if the cost elements are standardized.

The Average Cost approach significantly reduces the administrative burden for the utility as it does not have to determine individual cost for each customer, except those beyond a specific distance.

6.3 Free Line Extension Method

In this approach, the utility does not charge an individual applicant within X meters for utility connection costs. In the short run, the utility would pay for the infrastructure itself. However, since the utility is allowed to receive a return and depreciation expense on investments that it funds, the connection costs (the book value of the infrastructure) would be included in its regulatory asset base and revenue requirement for recovery. This means that all utility customers would pay through their rates for new connections requiring infrastructure. This approach is used in some jurisdictions. Its benefit is that it makes connecting to the network affordable to more customers.

When a country is trying to increase access to electricity to more of its population and many customers have an affordability problem, the Free Line Extension method is a powerful tool to assist them in getting access to electricity without having to pay an upfront lump-sum fee for the connection costs. Although the costs are spread among all utility customers, new customers would still pay for part of the charges through their own rates. Further, these customers would similarly pay in rates for the connection costs of subsequent customers connecting to the system.

An approach can be fair if it is non-discriminatory and recovers the costs without burdening other customers. While the methods discussed are non-discriminatory, the actual cost approach is considered to be very fair as it does not lead to any burden on other customers. On the other hand, the free allowance approach does not charge anyone within the free allowance distance; hence it could be argued that customers taking a greater amount of line extension are burdening customers taking lesser amounts.

In addition to the three approaches discussed above, further possible options are in use in some jurisdictions. These include the following:

6.4 Cost sharing model

In this model, a customer pays a fraction of the total capital costs required to connect them to the grid and the other part of the costs are incurred by the distribution network operator. This model could be less costly to the consumer depending on the agreed cost sharing proportions but could have some negative impacts on the Licensees financial sustainability in the long run.

6.5 Partial subsidies model

Under this model, grants can be provided to new customers and the customer only pays a small fraction of the cost. This model is usually used to accelerate connections of low income households however, this may pose a huge burden on the Government treasury.

Table 1 presents some pros and cons of the options for connection charging methodologies

Table 1: summary of considerations / options

No	Option	Pros & cons	Other considerations
1	Full cost recovery model – consumers will pay the full cost of providing the service	<p><u>Pros</u></p> <ul style="list-style-type: none"> Financial viability of the Utility will be guaranteed and most likely connections will be done promptly. <p><u>Cons</u></p> <ul style="list-style-type: none"> The costs may not be affordable to some consumers 	<p>To assist in alleviating the huge financial burden on the consumers, a monthly payment plan can be agreed to between the Utility and the consumer. To still maintain the financial viability of the Utility, a Utility can charge a finance cost equivalent to the ERB approved WACC.</p> <p>As these assets will be part of the RAB and as required by the ZS397 Electricity Supply – Quality of Service, these fees are supposed to be refunded to the consumer based on agreed terms.</p>
2	Partial financing - consumers and the Utility share the cost, currently ZESCO's internal capital contribution policy stipulates a 70 percent. In this model the consumer will meet 70 percent of the actual cost and the balance will be borne by the Utility.	<p><u>Pros</u></p> <ul style="list-style-type: none"> Could have some negative impact on the Utility's financial viability <p><u>Cons</u></p> <ul style="list-style-type: none"> Maybe slightly affordable to consumers 	<p>The consumer can be also allowed to pay the connection fees (i.e. 70% portion) over a long period such as 12 months to assist lower the financial burden.</p> <p>As these assets will be part of the RAB and as required by the ZS397 Electricity Supply – Quality of Service, these fees are supposed to be refunded to the consumer based on agreed terms.</p>

7.0 REGULATORY CONSIDERATION FOR CONNECTION CHARGING METHODOLOGY

The ERB will be guided by the following regulatory considerations in recommending a connection charging methodology:

- i. *Cost recovery.* The connection charges to the customer must recover the cost of the connections without government subsidies;
- ii. *Cost reflectiveness.* The charges should recover costs to a given customer, without cross subsidies among customer classes or within a customer class. The actual cost approach reflects costs most accurately and will not result in cross subsidies. On the other hand, there will likely be some cross subsidies with the 'free line extension allowance' approach as customers taking service at different distances from a connection point are treated the same;
- iii. *Ease of utility administration:* Some approaches are easier to administer than others. For example, the free allowance approach is much easier to administer as the utility does not have to estimate costs, record actual costs, or send and collect bills for every new customer who is within the free allowance distance;
- iv. *Ease of customer understanding:* Some approaches are easier for customers to understand than others. The computation of the connection fees must be transparent and understandable to consumers;
- v. *Fairness:* there must be no discrimination between customers or classes of customers that are in similar circumstances. Similar customers or classes of customers must bear the same connection charges. The Cost of connection must be based on reasonable costs of materials and other allied costs. Further, it is important for Licensees to consider proportional capital refunds (compensations) of capital contributions to existing customers if there are late joiners to the network for which they made full payments for; and
- vi. *Sustainability of fees:* the fees must provide the Utility with sufficient revenues to be able to undertake the connection in the most cost effective manner.

In formulating these principles the ERB aims at striking a balance to ensure the fees that will be determined using this methodology ensure that the Licensee is able to meet the cost of connecting new customers to their network in a sustainable manner whilst ensuring that the charges are affordable to the customers.

8.0 IMPACT OF CONNECTION CHARGES ON LICENSEE'S REVENUE REQUIREMENT

As a regulatory principle, assets funded by consumers and or by Grants from cooperating partners or Government subsidies shall not form part of the Regulatory Asset Base (RAB) on which a return is

computed. Therefore, to prevent customers from being charged twice for the same assets (cost pancaking) , it is noted that the ERB will make adjustment to the Licensee's Asset Base when determining the revenue requirement as follows:-

- i. Assets that have not been funded by the Licensee (e.g. customer funded assets) shall be deducted from the asset base when determining the Return on Assets for the determination of the revenue requirement;
- ii. On-going (e.g. monthly) connection charges to recover any remaining capital costs will not result in any adjustments (reason is that connection assets have been removed from asset base).

9.0 OWNERSHIP OF CONNECTION ASSETS

The Licensee will own all of the connection assets and network service assets that have been funded by capital contribution regardless of whether the capital contribution is made by the network user as a financial payment or as a contributed asset or both.

10.0 DISPUTE OVER CAPITAL CONTRIBUTION

Capital contributions or cost of new connections and network upgrade works will be valued at their market quoted costs. However, where disputes occur over the amount of the capital contribution, such disputes will be resolved with reference to prevailing market rates for connection materials and shall be dealt with in line with the ERB's complaint handling procedures.

11.0 REGULATORY REVIEW OF APPLICATIONS FOR CAPITAL CONTRIBUTION OR CONNECTION CHARGES

In order to ensure financial sustainability of Licensees, the Utility's shall be allowed to file for annual reviews of connection charges.

As general rule, the review, process and or approval of connection charges shall be guided by the provisions of the Electricity Act No. 11 of 2019. The provisions of the Act shall be complemented by these guidelines.

Specifically, as regards, the information requirements, timing and submission of applications for approval of the proposed or revised connection charges the ERB recommends that Licensees shall submit to the ERB an application to revise or approve the initial connection charges in line with the provision below:

- i. A licensee shall apply to the Board for revision of, or approval of initial, connection charges pursuant to these Guidelines or Rules and the Electricity Act No.11 of 2019 and the Energy Regulation Act No. 12 of 2019;

- ii. The application under sub rule (1) shall be made at least ninety (90) days prior to the applicability of the proposed charges;
- iii. The proposed connection charges review applications shall be prepared by licensees in accordance with the connection charges revision application template prescribed in these guidelines or rules as prepared by the Board; and
- iv. The licensee shall submit a complete connection charges application accompanied with supporting documents and other information necessary to comply with the requirements of these Rules.

Notwithstanding the provisions of sub rule (4), an application for revision of connection charges or approval of initial charges shall, at least, be accompanied by the following information:

- (i) Signed cover letter:
- (ii) registered name of the applicant;
- (iii) full address of the applicant to which communications in the matter will be sent;
- (iv) full name, title and contact information of the applicant's chief executive officer or authorized person;
- (v) verifiable reference of an applicant's license by ERB (or a preceding Authority) to provide a regulated service; and
- (vi) a succinct statement of the regulatory action being requested.

Further, the license shall also submit the following:

- a. implementation status of conditions contained in the previous order issued to the applicant, if any;
- b. business plan which provides in detail the applicant's strategic objectives and implementation plan;
- c. audited financial statements, covering the past three financial years and the most recent interim financial statements prior to the date of the application;
- d. statement explaining how the proposed adjustment of the current tariff will benefit customers;
- e. financial implications to the applicant if the requested changes in tariff are not approved. These may include ability of the applicant to pay for its creditors, to meet contractual financial obligations, to service its debt; to cover all the fixed costs; and to spend on capital investment projects;
- f. an affirmation that states that all contractual agreements that may have impact on the proposed tariffs have been included in the application; and
- g. any other information required by the Board or such as considered to be relevant for the review of the application; and
- h. The application submitted shall be in both hard copy and electronic form including a workable and unlocked MS Excel Model that demonstrates how the proposed charges have been calculated.

In case of any inconsistency on the information provided the hard copy shall prevail. When the application is not in compliance with the requirements under this rule, the Authority shall refer back or reject the application.

11.2 Standard Cost Data

Licensees shall prepare a cost data book covering broad specifications of various items and materials as well as man-hours of various categories of labour needed to connect customers or upgrading of existing connections. The cost data shall be based on the actual cost of materials used for connections and shall be for the financial year immediately preceding the year in which the estimate is to be prepared.

The cost data book shall specify the methodology of preparing the estimates and the cost data book shall be the basis of making the initial estimate for laying of electric line and/or erection of electrical plant for extending supply to the applicant.

The Licensee shall publish such cost data book and make available its copies to the general public on demand.

12.0 PAYMENT OF CAPITAL CONTRIBUTION OR CONNECTION CHARGES AND COMPENSATION

12.1 Full lump-sum payment plan

Where a consumer is willing and able to make a lump-sum or full payment for a connection or upgrade of existing connection, the utility shall accept the payment and connect the consumer within 20 days of payment.

12.2 Staggered payment plan

To improve affordability to customers, another feature that can be considered is to allow new customers to pay the connection charge over a specific period (e.g., 12 months) instead of having to pay an upfront lump sum charge. It would spread out the payments over the allowed period, albeit with interest charges added. The interest charges would be approved by the utility regulator. This payment plan approach can be combined with any of the methods for assessing connection charges: actual cost, average cost or free allowance. In the case of a free allowance, the payment plan only covers costs associated with service beyond the allowance.

In order to mitigate the high cost of connections and facilitate access to electricity, the ERB recommends a staggered payment plan for a period not exceeding 12 months for consumers who have no financial capacity to make full payment at once. In addition, Utilities should connect customers upon payment of 50 percent of the approved connection charge.

The ERB recommends that licensees be allowed to enter into a payment plan of up to 12 months. Conversely, the parties may agree on a fixed instalment payment plan.

The illustration of the 50% payment plan is presented in the formula below showing the computation of the monthly installments a customer would be expected to make within the stipulated 12 month payment schedule.

$$M_i = (T_i - IP) / 12$$

Where:

M_i = Monthly Installments

T_i = Total cost of Initial connection cost

IP = Initial down payment

12 = 12 month period of initial down payments

12.3 Compensation for initial or first applicants

It is common practice that after a utility connects and charges customers that apply for connection first, additional customers join the line and apply for connections later. This development calls for fairness and by necessity the customers joining later should pay a connection charge and those who joined before, get a refund. If this does not happen, the newest customers would be classic "free riders." This mechanism can be carried out in one of two ways:

- i. The original customers pay the cost of connecting but receive a partial refund as additional customers join at a later point in time. Depending on the cost of connection and the number of customers in that locality, such an approach could be given a definite time line (e.g., ten years from inception). This approach has the advantage of eliminating the need to estimate how many additional customers will connect in the future and at what point in time, in favor of using known and measurable data;
- ii. The alternate approach would be to estimate potential future customer additions and provide a discount on the connection charges to the customers joining first. The mechanism involves estimating future additions and timing of customers and the estimates may or may not come true. But the benefit is that early customers get a lower upfront connection charge, making it more affordable.

12.4 Annual review of cost of connection charges

The ERB recommends that Utilities should undertake annual reviews of connection charges in line with prevailing market conditions and submit applications for revision of the charges to the ERB at least 3 months prior to the planned implementation of new or proposed connection charges.

12.5 Failure to Connect

If a distribution licensee fails to supply electricity within the periods specified in the conditions of supply, it shall be liable to pay a penalty as may be prescribed by the ERB.

12.6 Cost build up on connection Charges

The ERB recommends that Utilities should provide a clear and segmented break down of all costs of Connection charges to Consumers upon a customer submitting an application for connection.

The ERB recognises the following materials required for new connection or variation of standard connections and allowable in determining and approval of connection charges: Table 3 illustrates the cost build up.

Table 3: Connection materials

No	Item		Estimated cost
1	Duplex Cable	A	
2	Meter	B	
3	Overhead line	C	
4	Core Cable	D	
5	Labour costs	E	
6	Transport	F	
7	Administration costs	G	
Total Cost of Connection		A + B +C+D+E+F+G	

13.0 CONSULTATION PROCESS AND TIME-LINE

This paper is meant for stakeholder consultations on the proposed Regulatory framework for standard connection charges.

All written submissions/comments should be sent to **The Director General of the ERB by 30th April, 2023**. Hard copies of the Consultation may be obtained from the ERB offices in Lusaka, Kitwe, Livingstone and Chinsali.

For more details on the Consultation Paper, please visit the ERB website on www.erb.org.zm

We safeguard your interests

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Appendix I: Specific material requirements and works for standard connections

Service Category	Description	Nature of requirements for standard connections		
		a). High density demarcated	b). Low density demarcated	c). High density un-demarcated
New Connection	1 Phase Overhead	30m Duplex +1 Phase Meter	2 Spans 230V Overhead Line+ Cost of 30m Duplex + 1 Phase Meter	1 Span 230V Overhead Line+ 30m of Duplex + 1 Phase Meter
	3 Phase Overhead	60m Duplex + 3 Phase Meter	Duplex + 1 Phase Meter	50m of 400V overhead line + 60m of Duplex + 3 Phase Meter
	1 Phase Underground	30m of Single 16mmsq Cable + 1 Phase Meter	2 Spans of 400V	1 span of 230V overhead line + 30m of 16mmsq 2 Core Cable + 1 Phase Meter
	3 Phase Underground	30m of 3 Phase 16mmsq Cable + 3 Phase Meter	Overhead Line + 3 Phase Service	1 span of 400V Overhead Line + 30m of 16mmsq 4 Core Cable + 3 Phase Meter
Upgrading	1 Phase Overhead to 3 Phase Overhead	30m Duplex + 3 Phase Meter	30m Duplex + 3 Phase meter	1 Span from 230V to 400V Overhead Line + 30m Duplex + 3 Phase Meter
	1 Phase Overhead to 3 Phase Underground	30m of 3 Phase 16mmsq Cable + 3 Phase Meter	30m of 16mmsq 4 Core Cable + 3 Phase Meter	1 Span from 230V to 400V Overhead Line + 30m of 16mmsq 4 Core Cable + 3 Phase Meter
	1 Phase Underground to 3 Phase Underground	30m of Single 16mmsq Cable + 3 Phase Meters	30m of 16mmsq 2 Core Cable + 3 Phase Meter	30m of Single Phase 16mmsq Cable + 3 Phase Meter
	3 Phase Overhead to 3 Phase Underground	30m of 3 Phase 16mmsq Cable	30m of 16mmsq 4 Core Cable	30m of 16mmsq 4 Core Cable

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