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REGULATORY BRIEF

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Electricity and Water Tariffs in Ghana – Key Insights on PURC's Policy Direction Since 2022

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HIGHLIGHTS OF KEY FINDINGS

The Commission's New Policy Directions on Tariffs include:

- Re-categorization of Residential Tariff Bands
- Reversal of Cross Subsidy
- Commitment to a Quarterly Review

1. Introduction

Tariffs play an important role in optimising resource allocation and service delivery. The creation and execution of a cost-effective, fair, and long-lasting tariff structure continues to be a top and formidable concern for both publicly and privately-run utilities in emerging nations. While it is true that higher rates are necessary to reflect full cost recovery in order to maintain sustainable utility operations, it is essential to ensure that, they are socially equitable. Water and electricity are often regarded as public (shared-resource) goods. With this public-goods approach, an essential element in tariff design is ''fairness'' (or ''equity''). Fairness in price is understood differently by stakeholders in different places (Lamb et al, 2020; Neuteleers et al, 2017; Burger et al, 2019).

According to Reneses et al. (2011), properly constructed tariffs are essential for ensuring that the system is utilised as efficiently as possible in the near term and for charting long-term demand patterns. Tariffs must provide the necessary revenue to pay for all of the expenses associated with providing electricity as well as the appropriate economic signals to each user to guarantee that they make the most effective use of the service. "Tariffs are computed, not decreed", a quote from the excerpt of Ignacio Pérez-Arriaga's 2005 White Paper on Power Sector Reform, written for the Spanish Government, cautions against manipulating electricity tariffs, a regrettable habit carried out by numerous administrations (Pérez-Arriaga, 2013). The design of the electricity tariff must accomplish two key goals: first, to generate the funds required to cover the costs of the activities (Apolinário et al., 2006); and second, to provide each customer with the appropriate economic signals to encourage the best socio-economic use of electricity (Pérez-Arriaga, 2013).

Empirical evidence on the subject of utility tariffs has often focused on the theoretical regulatory concepts that must be considered while designing tariffs. These include economic sustainability or revenue sufficiency, equity or non-discrimination, economic efficiency in resource allocation, transparency, simplicity, and stability of the methodology used, consistency with each country's liberalisation and regulatory framework, and tariff additivity (Batlle, 2011; Berg and Tschirhart, 1988). The Public Utilities Regulatory Commission (PURC), since the 2022-2025 Major Tariff Review, has embarked on some key policy reviews to ensure that tariffs paid are equitable, affordable and economically sustainable.

2.0 Objective of the Policy Brief

This brief is in accordance with the Commission's mission to ensuring transparency and creation of awareness among its stakeholders. The brief therefore seeks to highlight some regulatory decisions and the rationale behind them so as to decompose all assertions of secrecy in the tariff decision making. This brief explains some of the policy decisions the Commission has undertaken since 2022..

3.0 Scope and Methodology of Study

The study is a review and an analysis of the Commission's decisions or policy changes. The analysis is centred on key changes made on tariffs and other regulatory procedures since 2022. The Commission undertook a multi-year tariff review and since then, has revised or introduced some new policy decisions to be in sync with global best practices..

4.0 New Policy Directions on Tariffs

Re-categorization of Residential Tariff Bands

Prior to 2022, residential tariff structure was segmented into four distinct tariff bands based on consumption. These are;

0 – 50 kWh

51 – 300 kWh

301 – 600 kWh

601 + kWh

Under this tariff structure, consumers who consumed less than 50 kWh were considered lifeline consumers. The objective of this structure was to offer some succour to the economically poor households whose consumption was less than 50kWh. The assumption behind this policy was that, a maximum amount of 50 kWh per a month is sufficient to provide basic electricity for poor households. However, empirical literature (Gyamfi et al, 2018) has revealed that, energy efficiency policies implemented over the years, coupled with the invention of more efficient gadgets have significantly reduced electricity wastage such that, a poor household would now require less amount of electricity to attain their basic energy needs.

The Commission was caught in the dilemma of two school of thought; first, it is argued that more poor households are likely to fall outside the lifeline tariff band, simply because they are unable to afford the very efficient electrical gadgets. This is particularly more pronounced where the households live in compound houses with shared meters. It thus suggests that, these households although economically poor, may miss out on the lifeline policy benefit. On the other hand, it is argued that some affluent households may likely benefit from the lifeline tariff policy because of their use of very efficient electrical gadgets and their energy efficiency awareness. This has necessitated a research study to inform the Commission on the impact of the Lifeline Policy on poor electricity consumers.

The reduction of the lifeline tariff band from 0 – 50 kWh to 0 – 30 kWh was based on two key objectives; first, the decision was taken in consonance with the country's policy drive on energy efficient appliances, reduction of energy losses and waste in the electricity sector. Secondly, it was taken to ensure that, the sole objective of the lifeline policy was to meet basic energy needs of the poor. Additionally, the lifeline tariff policy has now been made exclusive, a departure from the previous inclusive nature of the lifeline policy which sought to ensure that all electricity customers benefit from lower rate on the first block of electricity used. This new exclusive lifeline policy has made the lifeline tariff band exclusive to ensure that, the aim of the policy is achieved.

Reversal of Cross Subsidy in Tariffs

Historically, Ghana's tariff is structured such that, residential households pay less than the true cost of supplying them with electricity, while the non-residential and industrial sectors pay more than the true cost of their supply. This is because, the non-residential and industrial sectors are made to cross-subsidize for the true cost of supplying electricity to the residential class. Foster et al, (2020) notes that this practice has been perverse and practised in about two-thirds of developing countries across the globe. In most developing countries, electricity is considered as a social good, thus, government policies have been geared towards ensuring that, power is affordable for the poor and to some an extent, appeal to politically favoured groups.

According to IEA (2012), this practice is averse to what is being done in most developed countries where industrial consumers are made to pay lower prices for power, compared to other category of consumers. This is because, the cost of supplying power to these industrial consumers, is often lower, than the cost of supply to the residential class. Industrial customers, often use power at high voltages, eliminating the added expense of lowering the voltage for other consumers, such as residential consumers. Industrial customers are also more likely to be connected to centralised components of the electrical network, reducing transmission and distribution losses. Ayivi et al, (2022) posit that, although Small and Medium Enterprises (SME)'s growth has been a formidable part of Ghana's recent economic growth, higher electricity costs and inconsistent, inadequate power supply have swamped their operations, making the majority of SMEs unproductive and inefficient.

The reversal of the cross-subsidy was to give commercial and industrial consumers some relief in their cost of operations. Elimination of the cross-subsidies is therefore driven by the objective of rewarding productive use of energy.

Table 1: Tariff Bands and Differentials

2019				
Residential		Non-Residential		Difference
Tariff Band (kWh)	Rate (Ghp)	Tariff Band (kWh)	Rate (Ghp)	Ghp
0 - 50	30.778	0 - 100	75.321	44.543
51 - 300	61.749	101 - 300	75.321	13.572
301 - 600	80.138	301 - 600	80.149	0.011
601 +	89.042	601 +	126.46	37.418
2021				
Residential		Non-Residential		Difference
0 - 50	32.606	0 - 100	79.7943	47.1883
51 - 300	65.4161	101 - 300	79.7943	14.3782
301 - 600	84.8974	301 - 600	84.9097	0.0123
601 +	94.3304	601 +	133.9765	39.6461
2022				
Residential		Non-Residential		Difference
0 - 30	41.9065			
0 - 300	89.0422	0 - 300	83.7841	-5.2581
301 - 600	115.5595	301 - 600	89.1552	-26.4043
601 +	128.3995	601+	133.0919	4.6924
2023				
Residential		Non-Residential		Difference
0 - 30	63.4792			
0 - 300	140.5722	0 - 300	126.9145	-13.6577
301 - 600	182.4354	301 - 600	135.0506	-47.3848
601 +	202.706	601+	201.6051	-1.1009

From Table 1, it can be observed from the difference between the non-residential tariffs and the residential tariffs that, non-residential consumers were paying much more than residential consumers. The difference further widened in 2020 and 2021, after the tariffs were reviewed for the period. In 2022 however, after the implementation of the gradual reversal of the cross-subsidy policy, a downward movement in the difference between non-residential and residential tariffs for the various consumers was observed.

For instance, in 2022, non-residential consumers within the tariff band of 0 – 300kWh were paying about Ghp5/kWh less than what residential consumers within 0 – 300kWh tariff band were paying. Similarly, residential consumers within the tariff band of 301 – 600kWh, were paying about Ghp26/kWh more than non-residential consumers under same tariff band. Although non-residential consumers of the 601+ tariff band were still paying about Ghp4/kWh more than the residential consumers under same band, the margin of difference compared to tariffs in 2019 and 2021, is much smaller.

The removal of the cross-subsidy became more obvious in the 2023 tariffs where the marginal

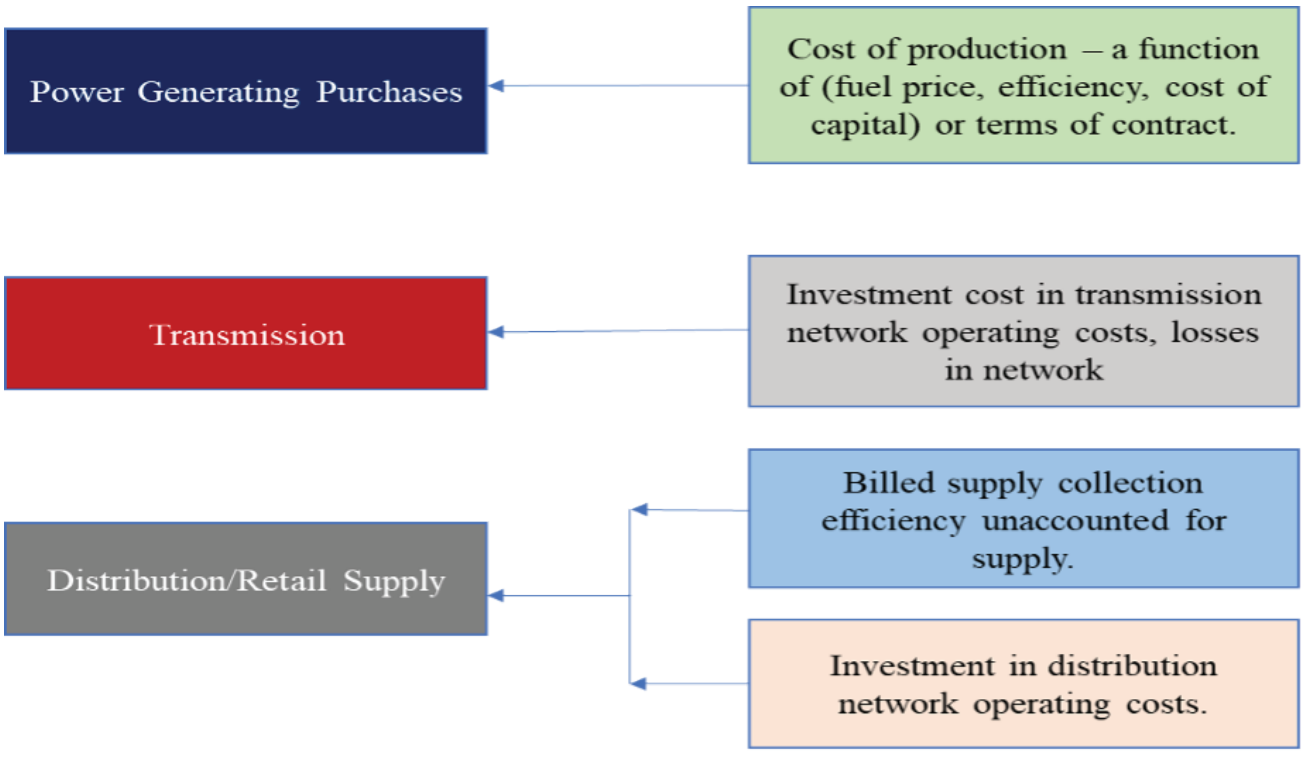
difference between non-residential tariffs and residential tariffs widened. From Table 1, the first non-lifeline residential consumers within 0 -300kWh tariff band were paying Ghp13.7/kWh more than the first non-residential consumer category (0 – 300kWh), representing a significant 159.7% increase from the marginal difference in 2022. Similarly, non-residential consumers within the tariff band of 301-600kWh in 2023 were paying Ghp47.4/kWh less than residential consumers within a similar band. This represents 79.5% increase on the 2022 marginal difference between non-residential and residential consumers. These adjustments by the Commission further shows the Commission's commitment towards ensuring a favourable climate for business entities to thrive, while also ensuring that, tariffs are cost reflective to keep the utilities afloat in business.

Commitment to a Quarterly Review

After the major tariff review window in 2022, the Commission made a solemn commitment to begin the process of adjusting tariffs to reflect changes in the various macroeconomic variables such as inflation and exchange rate, together with changes in the generation mix and fuel prices. In the current setup therefore, the Commission has two key tariff windows for review; the major tariff review with a regulatory period of 3 years and the quarterly tariff reviews (QTR), which is undertaken every three months.

In accordance with the Public Utilities Regulatory Commission Act, 1997 (Act 538), the Commission has the mandate to conduct a multi-year major tariff review to examine and approve tariffs. Under this window of tariff review, the process often commences with the receipt of proposals from the various Utility Service Providers detailing the various costs or investments for the period under consideration. The Commission subjects these proposed costs to strict assessment and validation, analysing them in pots. First, as operating cost (OPEX), which consists of Operation & Maintenance costs, General Administration and Human Resources. The second pot of analysis is the Capital Expenditure (CAPEX), which is used to fund investment in utility infrastructure. The Commission is cognisant of the fact that the tariff arrived at, must ensure it caters for return on capital, (i.e. loan interest & return on equity (i.e. profit)), and return of capital, (i.e. depreciation of infrastructure). The various costs of the service providers along the value chain are depicted in the figure below.

Table 1: Cost Components of Electricity Value Chain



The general philosophy of the Commission in analysing the costs as presented by the various utilities is to ensure that, the utilities are viable, while making tariffs affordable at the same time. Thus, after the 2022-2025 major multi-year tariff review, the Commission has committed to ensuring that, tariffs are adjusted on quarterly basis to reflect the movement of the economic indicators. Under the quarterly tariff adjustment regime, the Commission's underlying policy is to create a balance of keeping the lights on, without unnecessarily burdening the consumer. To this end, the Commission considers, four key factors in its analysis of the QTR;

i. exchange rate,

ii. inflation,

iii. cost of natural gas and

iv. energy mix (hydro-thermal mix).

In order for the Commission to arrive at the best cost-reflective tariffs, the Commission often considers differences in the values of these variables as at the last adjustment and projected for the next quarter, i.e., actual values for the prevailing quarter plus a forecast of the next quarter.

The power sector is heavily dependent on fossil fuels for electricity generation with about 42% of the country's electricity being generated from fossil fuels (Gas/Crude oil), which is a foreign exchange indexed commodity and subject to the volatility associated with the exchange rate. It is however worth noting that, electricity consumers pay for electricity in the domestic currency (Ghana Cedis), leading to an asymmetry between the currencies of revenue collection and the cost of inputs for generation, transmission and distribution. These economic factors are exogenous and cannot be controlled by the Commission or the utilities. The risk however, is typically borne by the utility producers directly or indirectly, exposing them to foreign exchange risk. The adjustments are therefore undertaken to ensure that these economic indicators do not pose any adverse effect on the operations of the utilities.

On the hydro-thermal mix analysis, the dynamics are such that when there is more generation from the hydro sources (mainly Akosombo and Kpong generation stations), the cost is cheaper. This is because the Akosombo and Kpong power stations are legacy hydros, that generate at cheaper rates compared to generation from thermal sources. Thus, the greater the contribution of power from these two sources to the generation mix, the cheaper the cost of power generation, which is expected to reflect in the tariffs. It must, however, be noted that the utilization of the legacy hydro is supervised by the Electricity Market Oversight Panel (EMOP) in accordance with Electricity Regulations 2008, (L.I.1937). It is therefore the EMOP, which determines how much of generation from the legacy hydro can be allocated to the regulated market. The legacy hydro is strategically allocated between the following category of players in the electricity market:

- Ghana Water Limited
- Valco
- Export Market
- Distribution Companies (Regulated Market)
- Bulk Customers (mines and other industries)

Depending on the projected electricity supply from the legacy hydro, a percentage is allocated for the regulated market by EMOP, which the Commission would use to determine the regulated tariffs. Given that, available electricity supply from the legacy hydro fluctuates, the percentage available for the regulated market also fluctuates and accordingly impacts on the tariffs.

5.0 Regulatory Actions by Commission

In light of the above policy decisions by the Commission, there have been a number of actions taken in order to promote transparency, fairness, delivery of quality services and the promotion of public engagement.

Establishment of Regulatory Auditing Units

Since 2022, the Commission has instituted Regulatory Auditing Units for continuous quality of service monitoring. This caters for both water and electricity sectors where officers from the Commission, on a regular basis, conduct audits on the facilities and operations of the service providers. The goal is to ensure that, service providers have made the necessary investments as provided in their proposals and approved by the Commission.

Institution of Consumer Clinics

The Commission has also instituted Consumer Clinics, which are held at regional levels with various utilities to resolve consumer complaints and explain the many procedures involved in complaint resolution. The goal of this programme is to provide a forum where customers could voice their grievances to their service providers in the presence of the regulator, with the expectation that their concerns would be addressed.

Establishment of the Public Utilities Regulatory Information System

The Commission also established the Public Utilities Regulatory Information System (PURIS) (on the PURC Website) to share information on key benchmarks and relevant data. PURIS is a tool designed to provide information on the performance and operation of public utilities to the general public. The objective of this initiative is to improve regulatory transparency and guarantee public utility regulatory information is easily accessible. On a quarterly basis, PURIS releases the utilities' results in comparison with the regulatory benchmarks.

Publication of the Ghana Utility Performance Index

The Ghana Utility Performance Index (GUPI) is an aggregated performance index that evaluates the performance of electricity and water utilities across the Commission's operational regions by comparing the utility's regional performance to a set of scoring criteria developed in response to key regulatory indicators. GUPI was created using eleven indicators for electricity and twelve indications for water. The GUPI is part of the Commission's regulatory endeavour to promote a strong, competitive, and efficient utility sector.

Institution of Regulatory and Board Briefs

The Commission, additionally, has instituted Regulatory and Board Briefs as key mediums of communicating some burning topics within its regulatory sector. In its attempt to ensure there is scientific basis or empirical evidence to its decisions, the Policy Briefs are used to provide researched policy guidance, rationale to certain policy directions or question or evaluate some trending sector developments in order to appropriately position the Commission against any wave. The Board Briefs on the other hand are internal researched communications that provide key recommendations to the Board of the Commission on some regulatory policies.

6.0 Conclusion and Recommendations

The Commission takes cognizance of some of the best practices as enumerated by the 2022 Electricity Regulatory Index (ERI) and is therefore committed to implementing decisions that promotes accountability, transparency, open access to information, stakeholder participation, etc. This brief further entrenches the position of the Commission by highlighting most of its key decisions.

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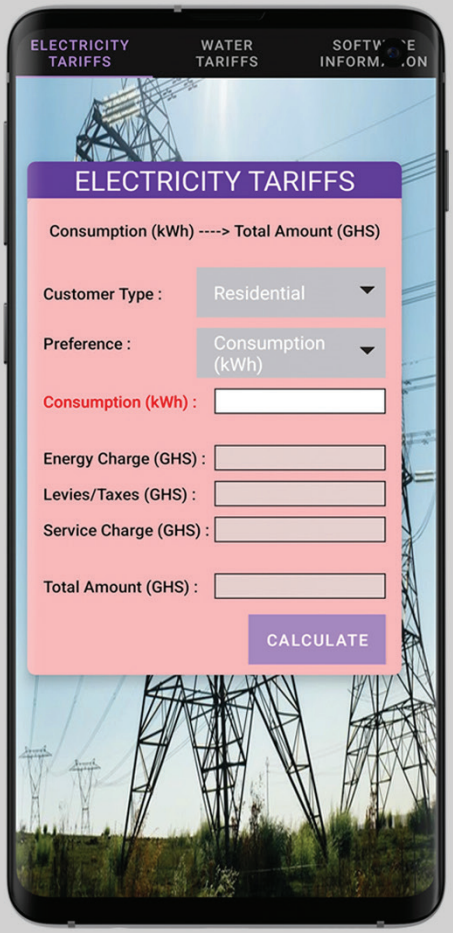

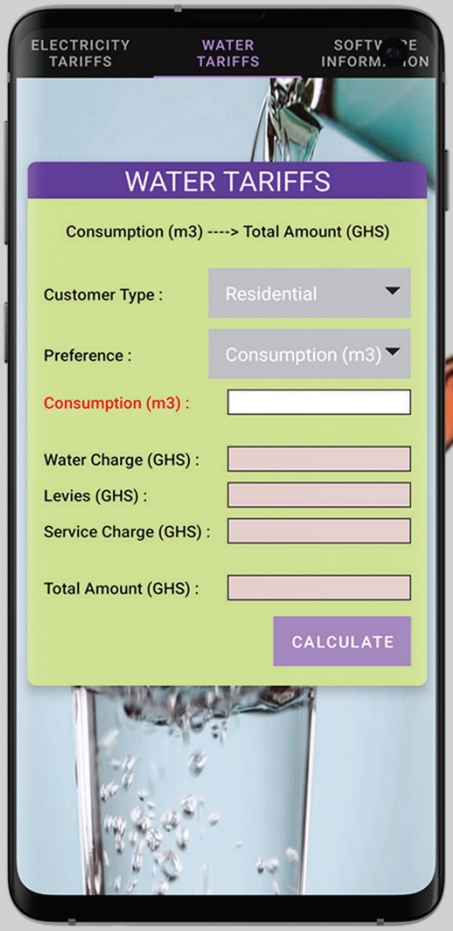

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