RESEARCH DEPARTMENT

A STUDY ON THE TRENDS IN ELECTRICITY TARIFFS IN GHANA BETWEEN 2010 AND 2020

December 2020

Table of Contents

List of Tables

List of Figures

Executive Summary

This study presents an analyses of the trends in electricity tariffs in Ghana between 2010 and 2020. The key trends examined included an analyses of electricity tariff trends for each user category; and analyses of the overall trends in end-user electricity tariffs over the study period. The study employed secondary data sourced from PURC's gazetted end-user electricity tariffs.

Findings from the study showed that over the ten-year period assessed, the Commission has engaged in 29 different tariff reviews, comprising 5 major and 24 minor reviews, using the automatic adjustment formula (AAF). These tariff reviews have resulted in 11 tariff increments, 2 tariff reductions, and 16 no changes in tariffs.

Electricity tariffs between 2010 and 2020 averaged Ghp48.2876/kwh for residential customers, Ghp76.0730/kwh for non-residential customers and Ghp70.4976/kwh for special load tariff (SLT) customers (LV, MV, HV, and Mines). Over the period, the highest rate of tariffs recorded for each customer category averaged Ghp71.34/kwh for residential customers, Ghp120.767/kwh for non-residential customers and Ghp132.9184/kwh for special load tariff customers. These high rates of tariffs, were applied in December 2015 for both residential and non-residential customers, and in October 2019 for SLT's. The highest percentage change in electricity tariffs recorded between 2010 and 2020 was an increase of 62.72% in October 2013, while the lowest of -22.083% was in March 2018, which denoted a significant decrease in tariffs.

The analysis also revealed an increasing trend in electricity tariffs across all end-user groups, with some fluctuations, which denotes percentage changes chronicled along the years. Residential tariffs have relatively lagged behind both non-residential tariffs and SLT's. This has been justified based on lower consumption levels of residential customers relative to both non-residential and SLTs. The trends also showed that between June 2010 and October 2018, tariffs for non-residential customers exceeded those of SLT customers. This trend was however reversed in July 2019, when the Commission, in considering the pre-impact of maximum demand charges, announced a major policy shift of eliminating maximum demand charges in tariffs of SLTs. This move by the Commission was to enhance competitiveness of Ghanaian industries[1]. Prior to this policy shift, electricity tariffs of SLT's exceeded that of non-residential customers.

[1] 2019-2020 Electricity and Water Major Tariff Review Decision, P.4

Careful observation from the data and graphical analysis revealed that, for all election years, end-user electricity tariffs were generally stable with no significant changes. The trends depicted no major tariff decisions when review periods coincided with election years. Additionally, there was no quarterly adjustments to tariffs during election years, although economic indicators necessary for the review of tariffs may have varied. This was observed in the trends in tariffs between March to December 2012, April to December 2016, and January to September 2020, which were all tariff review periods, within election years.

Given that the study has highlighted the specific months and years in which tariff decisions were made with their respective directions of change, it is important as a follow-up, to identify which end-user group is being affected more by these tariff changes. Thus, data on incomes, and electricity consumption coupled with expenditure patterns of different end-user groups will constitute a necessary next step to this study. This will help to identify with precision, impacts of electricity tariff adjustments on end-users, and at what point electricity tariffs would become unaffordable to end users (ability and willingness to pay study).

1.0 Introduction

The developments in a country's electricity prices are an important parameter of electricity markets. That is, the competitiveness in the industry and the increasing role of electricity in general.[2] Electricity prices are also a significant part of domestic expenditure, playing an important role in industrial competitiveness, and influencing energy consumption patterns. How electricity prices evolve overtime therefore, will help identify and rationalize its significant roles, and ultimately determine its rate of changes to inform stakeholders. In Ghana, PURC's gazetted end-user tariffs provides a solid database on electricity prices to serve this purpose.

This study, provides a detailed snapshot of electricity price developments in Ghana between 2010 and 2020. The significance of this is to fill the gaps in monitoring and analyzing recent electricity pricing developments in Ghana. This in turn is expected to provide insights to all stakeholders on the evolution of price regulation in Ghana over the past ten years. In achieving these, the study will specifically provide;

i. a brief historical overview of electricity pricing and reforms in Ghana, to provide some background information and put into perspective tariff adjustments and reviews assessed over the study period,
ii. the structure of Ghana's end-user electricity tariffs with associated energy consumption charges,
iii. electricity tariff trends of each end-user/customer category between 2010 and 2020,
iv. the overall trends in end-user electricity tariffs and how they have changed over the study period; and
v. Highlight key issues underlying tariff trends

2.0 Methodology and Scope of Study

This study is based on an analysis and discussion of electricity tariff developments in Ghana between 2010 and 2020. The use of secondary data was mainly employed to achieve this overall objective. The main data source used in this study was PURC's gazetted end-user electricity tariffs from June 2010 to July 2020. The tariff data frequency is primarily quarterly, although in some cases (years), the data frequency was biannual and triannual (see Tables 2 and 3). That is, the tariff data mixes quarterly, biannual, triannual, and annual data, depending on when

[2] Andrey G. Maksimov & Daria V. Shchurupova | Bernardo Spagnolo (Reviewing Editor) (2017) Forecasting of the electricity price on the day-ahead electricity market in Russia, Cogent Physics, 4:1, DOI: 10.1080/23311940.2017.1316953

and how often tariff decisions were made in a particular year. Therefore, some series in the trends will show greater stability or volatility with associated peaks and troughs depending on the extent of tariff change. This is important to consider in the interpretation of the trends in the graphical analysis in Section 4.

Other data sources consulted to enrich the study's discussions were PURC's press releases on tariffs, tariff decision papers, and some empirical literature related to tariff developments in Ghana. It is important to note that the results and analysis of this study are based on average end-user electricity tariffs for the 10-year period. Hence, every tariff figure analyzed is based on the average unit (nominal) price effectively paid by a customer category for a particular period and not based on real values. This means that the analysis and results of this study are limited by the data used and the underlying assumptions made in analyzing trends.

3.0 Brief Historical Overview of Electricity Tariffs Reform in Ghana

Electricity tariffs reform in Ghana predates some major reform initiatives in the power sector. Prior to 1997, Ghana's criteria for setting electricity tariffs was unstructured and unpredictable. As a result, costs of power utility services were not adequately covered.[3] The World Bank, in 1994, designed a tariff formula for Ghana that approximates to long run marginal cost (LRMC), which is adjusted regularly to reflect fluctuations in costs (such as exchange rate and inflation). This formula was implemented between 1994 and 1997, although the focus was on a set rate of return for the utilities rather than LRMC.[4]

In pursuance of the agreement between the World Bank and Government of Ghana to ensure that tariffs were equivalent to LRMC, the government consistently increased electricity tariffs between 1994 and 1997 without any opposition, until an increase of over 300% in May 1997.[5] This provoked intense nationwide protest with industry associations (like AGI and TUC) at the forefront. Moreover, the LRMC formula was deemed to be difficult to sustain and convoluted, given the need for more transparency in the rate-setting process.

Following the sustained tariff increments and public outcries in 1997, a draft legislation was enacted to establish an independent regulatory agency. The Public Utilities Regulatory Commission (PURC) Act (Act 538) was subsequently enacted in October 1997, establishing the PURC as the regulatory body to set tariffs and as an arbiter of disputes between power utilities and consumers.

[3] (Edjekumhene et al., 2001).
[4] ESMAP Technical Paper (2005), Ghana: Poverty and Social Impact Analysis of Electricity Tariffs
[5] (Edjekumhene et al., 2001).

Consequently, there were tariff adjustments in February 1998, September 1998, and May 2001. The Commission in July 2002 developed a Transitional Adjustment Plan for Electricity Rate Adjustment for the period 2001-2004. A key component of the Transitional Plan involved implementation of an Automatic Adjustment Formula (AAF). The main objective of the formula was to review on a quarterly basis electricity tariffs to reflect changes in factors beyond the control of utility companies (such as exchange rate, gas and crude oil prices, and inflation).

The AAF was enacted in January 2003, while the application of the first AAF took effect in October 2003. PURC has since carried out minor tariff adjustments using the AAF on a quarterly basis, while major tariff reviews are carried out every two years.

4.0 Electricity Tariff Analysis and Discussion

This section begins with a presentation on the structure/classification of Ghana's end-users of electricity with their associated energy charge levels. Understanding this structure is important as it provides clarity on the composition of end-users in tariff structures and how their associated tariff charges help to define the direction and extent of change in tariffs of each end-user. Following this section is a discussion on the trends in Ghana's end-user electricity tariffs between 2010 and 2020 taking into account; (i) an analysis of the trends in electricity tariffs for each end-user, and (ii) an analysis of the overall trends in end-user electricity tariffs over the study period. Together with a graphical trend analysis, the tariff developments are further assessed using some descriptive statistics to provide simple quantitative summaries about the data sample.

4.1 Structure of Ghana's End-User Electricity Tariffs

Ghana's end-users of electricity are grouped into six categories. These are Residential, Non-Residential, Special Load Tariff (SLT) – low voltage customers, Special Load Tariff (SLT) – medium voltage customers, Special Load Tariff (SLT) – high voltage customers, and Special Load Tariff (SLT) – high voltage (mines) customers. The electricity consumption levels associated with each customer category is presented in Table 1 below.

Table 1: Electricity End-User Category

End-User Category	Energy Consumption Levels (kWh)
Residential	0-50 51-300 301-600 600+
Non-Residential	0-100 101-300 301-600 601+
Special Load Tariff (SLT) – low voltage	Energy charge based on kwh of electricity consumed
Special Load Tariff (SLT) – medium voltage	Energy charge based on kwh of electricity consumed
Special Load Tariff (SLT) – high voltage	Energy charge based on kwh of electricity consumed
Special Load Tariff (SLT) – high voltage (mines)	Energy charge based on kwh of electricity consumed

4.1.1 Tariff Structure

The use of an increasing block tariff (IBT) structure is employed for both residential and non-residential electricity customers in electricity tariff charges. Residential customers pay electricity tariffs based on the amount of energy (kWh) consumed. These are classified into four consumption categories as detailed in Table 1 above.

4.1.2 Residential Tariffs - Life line Tariff

In August 2002, the Government of Ghana introduced a subsidy for residential customers consuming -between 0-50kWh, which was directly in line with the Ghana Poverty Reduction Strategy. This tariff bracket was to alleviate the burden on the poorest of the poor and to ensure that low income household dwellers are protected against the impact of any upward tariff adjustments.

4.1.3 Non-Residential Tariffs

This tariff bracket refers mostly to commercial entities. Tariff charges applied to non-residential customers (also classified into four consumption classes) are equally based on energy consumed.

4.1.4 Special Load Tariff (SLT)

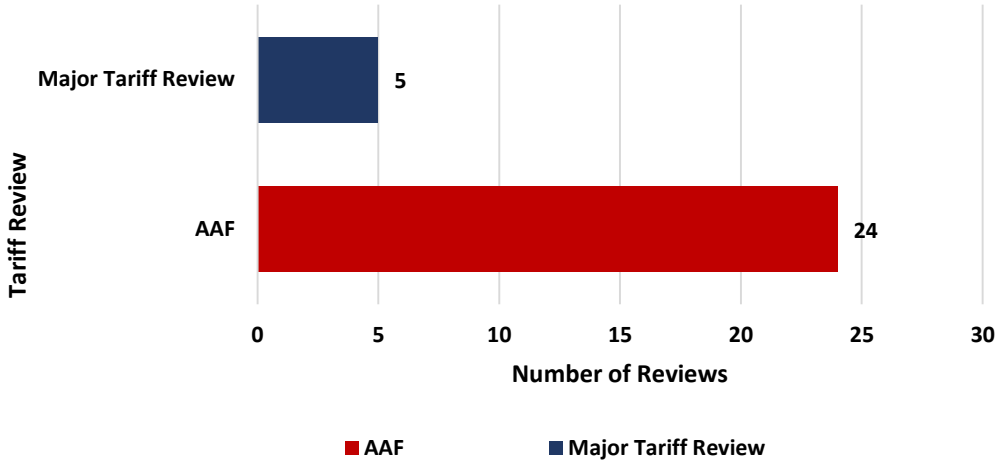
Special load tariff customers who are large energy consumers are classified into four categories; low voltage (LV), medium voltage (MV), high voltage(HV), and high voltage (Mines), (HV Mines) customers. Prior to July 2019, end-user tariffs for the special load tariff (SLTs) category incorporated a monthly fixed, demand charge denominated in cedis/kVA/month a variable energy charge denominated in cedis/kWh, and a fixed monthly service charge denominated in cedis/month. This

was however, reviewed in the July 2019 major tariff assessment, where, the fixed monthly demand charge imposed on SLTs was embedded in the energy charge.

4.2 Trends in End-User Electricity Tariffs (2010 – 2020)

An assessment of electricity tariff developments in Ghana from 2010 through 2020 was undertaken using trend analysis. This is significant in portraying a better picture of electricity pricing behavior in Ghana over the years. The trend is visualized using a graphical trend as shown and discussed in sub-sections 4.3.1 and 4.3.2. From Figure 1, the trend period depicts a total of 29 different tariff reviews, comprising 5 major tariff reviews, and 24 minor quarterly reviews (using an Automatic Adjustment Formula).

Figure 1: Total Electricity Tariff Adjustments/Reviews between 2010 and 2020



Data Source: PURC end-user electricity tariff data

Specific months and years in which these tariff decisions were applied are presented in Tables 2 and 3. It can be inferred from Table 2 that, in 2015 for instance, a total of 4 tariff decisions were made, comprising 3 minor tariff adjustments in January, April, and July through the application of AAF, and a major tariff adjustment in December.

Table 2: Number of Monthly/Yearly Tariff Reviews between 2010 and 2020

Year	AAF (Quarterly Reviews) (Months)				Major Tariff Review (Month)	No. of Tariff Decisions made in the year
2010					June	1
2011	March	September	December			3
2012	March	June	September			3
2013					October	1
2014	January	April	July	October		4
2015	January	April	July		December	4
2016		April	July			2
2017	January	April	July			3
2018			July	October	March	3
2019				October	July	2
2020	January	April	July			3
Total						**29**

Table 3 highlights changes in tariff decisions over the 10-year period. The shaded cells in the table define the direction of change for each tariff decision. Between 2010 and 2020, there have been 11 tariff increments, 2 tariff reductions, and 16 reviews that have resulted in no change in tariff. Subsequent sections provide detailed discussions on these tariff decisions over the study period.

Table 3: Direction of Tariff Changes between 2010 and 2020

Increase		11 Tariff increments
Decrease		2 Tariff reductions
No Change		16 no changes in tariffs

Year	Months with the Direction of Change in Tariffs							
	Jan	Mar	April	June	July	Sept	Oct	Dec
2010				Increase				
2011		Decrease				Increase		Increase
2012		No change		No change		No change		
2013							Increase	
2014	Increase		Increase		No change		Increase	
2015	No change		Increase		No change			Increase
2016			No change		No change			
2017	No change		No change		No change			
2018		Decrease			No change		No change	
2019					Increase		Increase	
2020	No change		No change		No change			

4.2.1 Trends in Electricity Prices based on End-User/Customer Classification

Table 4 provides some quantitative/descriptive summaries of electricity tariffs on each end-user/customer category, while Figure 2 displays graphically the trends in electricity prices for each end-user category within the study period. The descriptive statistics displayed in Table 4 shows that electricity tariffs averaged Ghp48.2876/kWh for residential customers, Ghp76.0730/kWh for non-residential customers, and Ghp70.4976/kWh for special load tariff customers (LV, MV, HV, and Mines) between 2010 and 2020.

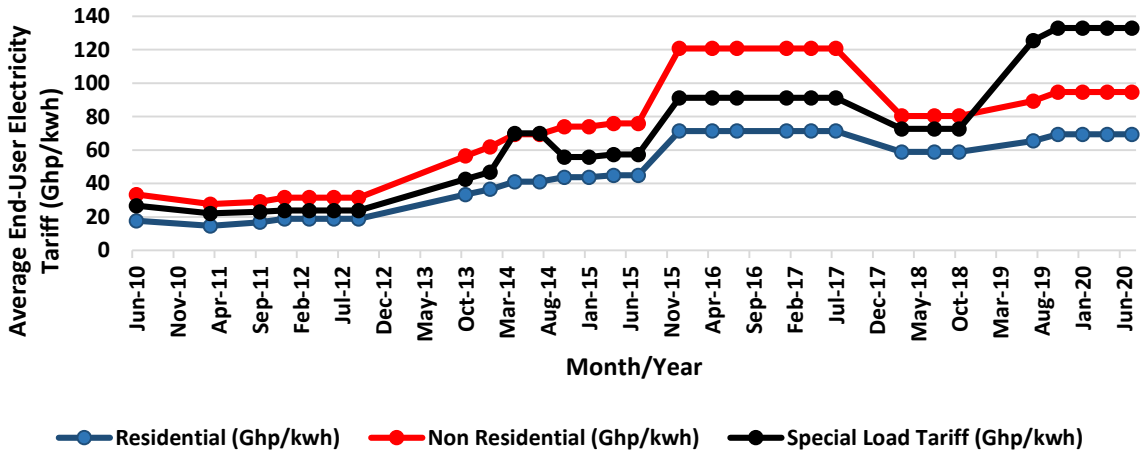
Over the period under consideration, the highest rate of tariffs recorded for each customer category averaged Ghp71.34/kWh for residential customers, Ghp120.767/kWh for non-residential customers and Ghp132.9184/kWh for special load tariff customers. These high rates of tariff were applied in December 2015 for both residential and non-residential customers and in October 2019 for SLT's.

Table 4: Descriptive Statistics of Electricity Prices per End-User OR Customer Category

End-User Electricity Tariff Indicator	Residential	Non-Residential	Special Load Tariff
Mean (Average)(Ghp/kWh)	48.28767	76.0730	70.4976
Standard Deviation(Ghp/kWh)	21.2654	31.959	37.1067
Minimum (Ghp/kWh)	14.583	27.579	22.064
Maximum (Ghp/kWh)	71.34	120.767	132.9184

Data Source: PURC end-user electricity tariff data

Figure 2: Trends in End-User Electricity Tariffs based on Consumer Category (2010 – 2020)



Data Source: PURC end-user tariff data

Table 5: Trends in End-User Electricity Tariffs based on Consumer Category (2010 – 2020)

Year	Residential (Ghp/kWh)	Non Residential (Ghp/kWh)	Special Load Tariff (Ghp/kWh)
Jun-10	17.625	33.333	26.667
Mar-11	14.583	27.579	22.064
Sep-11	16.825	29.072	23.034
Dec-11	18.8101	31.5311	23.8054
Mar-12	18.8101	31.5311	23.8054
Jun-12	18.8101	31.5311	23.8054
Sep-12	18.8101	31.5311	23.8054
Oct-13	33.3211	56.409	42.5878
Jan-14	36.5632	61.8977	46.7316
Apr-14	40.98375	69.3812	69.9013
Jul-14	40.98375	69.3812	69.9013
Oct-14	43.66165	73.9147	55.80415
Jan-15	43.66165	73.9147	55.80415
Apr-15	44.8099	75.8586	57.2718
Jul-15	44.8099	75.8586	57.2718
Dec-15	71.3375	120.767	91.1767
Apr-16	71.3375	120.767	91.1767
Jul-16	71.3375	120.767	91.1767
Jan-17	71.3375	120.767	91.1767
Apr-17	71.3375	120.767	91.1767
Jul-17	71.3375	120.767	91.1767
Mar-18	58.8534	80.341	72.656
Jul-18	58.8534	80.341	72.656
Oct-18	58.8534	80.341	72.656
Jul-19	65.4267	89.3143	125.4669
Oct-19	69.3125	94.6187	132.9184
Jan-20	69.3125	94.6187	132.9184
Apr-20	69.3125	94.6187	132.9184
Jul-20	69.3125	94.6187	132.9184

From Figure 2 (and Table 5) above, the flattening of the trend data for residential and non-residential customers between December 2015 and July 2017 is an indication that these relatively high tariffs were maintained for a considerable period (the discussion on Figure 3 throws more light on this development). Similarly, the trend data for SLT's show that between October 2019 and July 2020 the same high rates of tariff was maintained for that particular customer group. The minimum rate of tariffs established between 2010 and 2020 across all end-user groups was in March 2011.

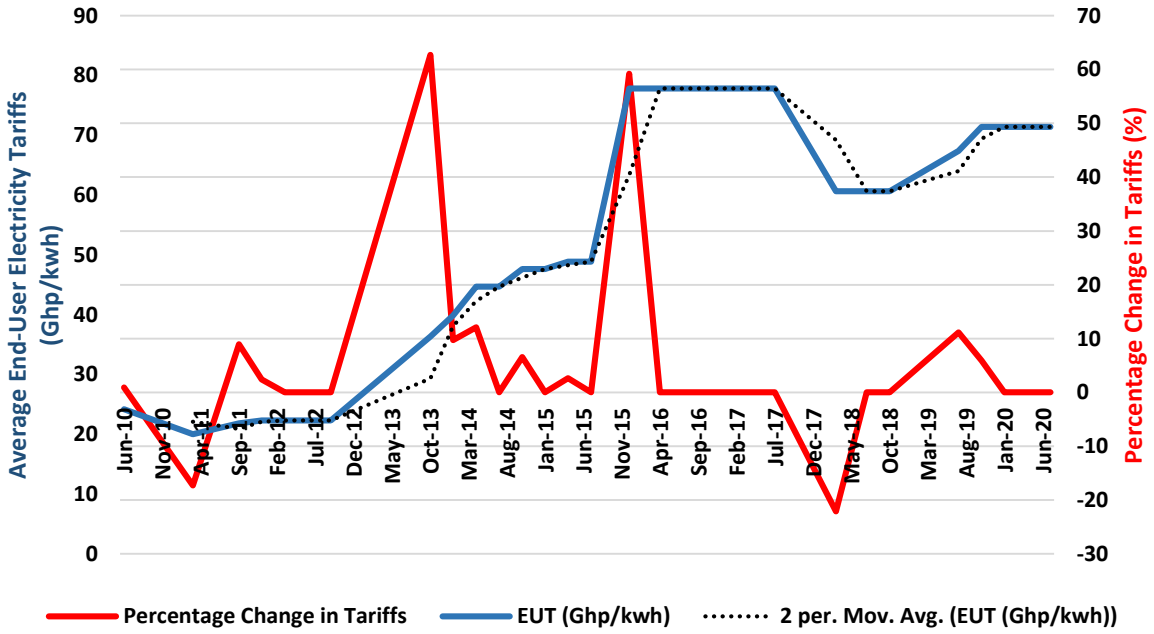
Although an increasing trend in electricity tariffs is portrayed in Figure 2 for each customer group, the data in Table 5 shows that residential tariffs have generally lagged behind non-residential tariffs and SLT's (in absolute terms). This can somehow be attributed to lower consumption levels of residential customers relative to non-residential and SLT customers.

The trends also show that between June 2010 and October 2018, tariffs for non-residential customers exceeded those of SLT customers. This is partly because of the increased cost of power supply to non-residential customers compared to SLT customers. This trend was however reversed in July 2019 when the maximum demand charge on industrial customers was reviewed in tariff billing to enhance competitiveness of Ghanaian industries.

4.2.2 Overall Trends in End-User Electricity Prices in Ghana (2010 – 2020)

Figure 3 shows the overall trends in end-user electricity prices in Ghana between 2010 and 2020. Comparable to the trends presented in Figure 2, the overall trend in end-user electricity prices have generally been upward (seen as the blue line in Figure 3), with some fluctuations over the study period.

Figure 3: Overall Trends in End-User Electricity Tariffs (Ghp/kWh) between 2010 – 2020



Data Source: PURC end-user tariff data

The trend line which is a moving average (shown as the dotted black line in Figure 3) helps us to identify and validate this trend direction over the 10-year period. For instance, the continuous rising moving average in the trends (on end-user

tariffs) between June 2010 and December 2015 indicates that electricity tariffs were in a steady upward trend over the period, hence a gradual increase in the price of electricity from Ghp24.19/kWh in June 2010 to a peak of Ghp77.8109/kWh in December 2015. Despite flattening of the trends between December 2015 and July 2017, and a subsequent fall in electricity prices in March 2018, the trend largely resumed an uptrend between October 2018 and July 2020. Overall, electricity prices in Ghana have increased steadily between 2010 and 2020 with spikes in 2013 and 2015.

The trends also depict fluctuations in electricity prices, which is represented as the percentage changes in tariffs (seen as the red line in Figure 3) over the 10-year period. The percentage change in electricity tariffs is an indication of the rate of change in 'present' tariff relative to end-user tariff in the previous quarter. Thus, electricity tariffs imposed in October 2013 (Ghp36.3437/kWh) represented a significant positive change of 62.72% in relation to previous end-user tariff of Ghp22.3349/kWh in September 2012. This was the highest percentage change in electricity tariffs recorded between 2010 and 2020. The lowest percentage change of -22.083% in March 2018, denotes a significant decrease in the rate of tariffs recorded within the period.

There was no major tariff adjustment between November, 2003 and April, 2006. This was because of a stable Ghana Cedi-US$ exchange rate, good rainfall pattern, which improved generation from hydro sources and relatively stable crude oil prices. These developments led the Commission to discontinue application of the AAF in the second quarter of 2006. Discontinuation of the formula was to offer utility service providers the opportunity to submit proposals to the Commission and to justify the need for any tariff adjustments. However, due to adverse changes in macroeconomic indicators as well as escalating world crude oil prices in 2010, the Commission announced the re-introduction of the AAF in June 2010. This took place during a major tariff review, resulting in electricity price increases of 89%. The re-introduction of the formula was to reduce the financial burden on consumers, associated with one-time tariff adjustments and at the same time, ensure the financial viability of utility service providers. Based on this premise, the Commission applied the AAF in March 2011, resulting in a significant dip in electricity tariffs of 17.26%.

Average end-user electricity tariffs (AEUT) between December 2011 and September 2012 consistently recorded similar values of Ghp22.3349/kWh despite quarterly application of the AAF to adjust electricity prices. This average rate was maintained for the most part of 2012 with no significant changes in electricity tariffs. Subsequently, amajor tariff review undertaken in October 2013, resulted in a sharp increase in electricity tariffs to an average rate of Ghp36.3437/kWh.

This upsurge validates the steep percentage increase in tariffs of 62.72% between September 2012 and October 2013 as depicted by the red line in Figure 3.

The increased tariff in October 2013 was further deepened in January 2014 by an increase in electricity tariffs of 9.73% (average EUT of Ghp39.879/kWh) using the AAF. This increase in tariffs was predicated on shielding existing electricity tariffs against depreciation of the Ghanaian cedi, inflation, and demand variation. Further, minor tariff reviews in 2014 resulted in electricity tariffs increasing to an average of Ghp44.7003/kWh in April 2014, representing a percentage increase of 12.09%. Due to challenges in electricity supply in 2014, this rate was maintained for the third quarter (July 2014) AAF application. Electricity tariffs, were however, increased by 6.54% (Ghp47.6237/kwh) in October 2014 to help ameliorate the impact of the nation's dependence on crude oil in the generation mix. Moreover, there were significant challenges with electricity supply emanating from the erratic nature of gas delivery from the West African Gas Pipeline in Nigeria coupled with low volumes of water both in the Akosombo and Kpong Hydro Electric Dams during the year.

To enable electricity service providers raise adequate funds for maintenance of the distribution network, the Commission increased electricity tariffs by 2.63% (Ghp48.8762/kWh) in the second quarter (April) of 2015. This rate was maintained for the third quarter (July) of 2015, after which electricity prices rose sharply to an average of Ghp77.8109/kWh in December 2015 after a major tariff review. This represented an increase of 59.2% in electricity tariffs, which is the second highest rate of change in tariffs between 2010 and 2020. This rate of increase is demonstrated in Figure 3 by the steepness of the percentage change trend between July 2015 and December 2015. The upsurge was predicated on the increasing dependency of the country on thermal generation with significant implications on the cost of electricity generation and supply by electricity utilities.

Minor tariff reviews undertaken between April 2016 and July 2017 resulted in a general stabilization of electricity tariffs with no significant changes over that period. This is confirmed in Figure 3 by a flattening of both the EUT trend line and percentage change line between the period. Electricity tariff reductions across all end-user groups was approved by the Commission in March 2018 after a major tariff review. With this approval by the Commission, residential customers enjoyed a 17.5% reduction, whiles non-residential customers enjoyed a 30% reduction in tariffs. The reduction was largely occasioned by increases in gas supply and the prudent management of utilities' costs utilities, leading to drastic reduction in operational costs.

Tariffs should have been marginally adjusted upwards in the third quarter of 2018, due to exchange rate fluctuations; however, the fluctuations were spikes in the cedi-to-dollar exchange rate, hence there was the need to monitor the movements over subsequent quarters to establish the true trend, which will inform decisions of the Commission.

In July 2019, the Commission approved an 11.17% increase in electricity tariffs for the recovery of revenue requirement for the regulated electricity market. Electricity tariffs were further increased by 5.94% in October 2019 after a minor tariff adjustment. This increase was predicated on movements in key determining factors for computing the AAF, namely Ghana Cedi/USDollar exchange rate, inflation rate, Crude oil and natural gas prices gas and the thermal-hydro generation mix.

Three minor quarterly reviews (January, April, and July), undertaken in 2020, have largely seen no changes in electricity tariffs. Ideally, tariffs for these quarters should have indicated an upward adjustment based on exchange rate movements and inflation. However, the low cost of hydro generation, resulted in some over-recoveries of the actual cost associated with generation, thereby nullifying the effect of exchange rate fluctuations and inflation on tariffs.

5.0 Conclusion

This study analysed trends in the end-user electricity tariffs in Ghana between 2010 and 2020. Specifically, the study examined overall trends in end-user electricity tariffs as well as the trends for each end-user group. The use of secondary data, in particular PURC's gazetted end-user tariffs was employed in the study's analyses. The following key results emerged from the analyses.

The overall trend is that, end-user electricity prices have generally been upward, with some fluctuations over the study period. Over the period under review, twenty-nine (29) different tariff reviews, comprising 5 major and 24 minor quarterly tariff reviews (with the application of Automatic Adjustment Formula) were undertaken. These reviews have resulted in 11 tariff increments, 2 tariff reductions, and 16 no changes in electricity tariffs.

Electricity tariffs averaged Ghp48.2876/kWh for residential customers, Ghp76.0730/kWh for non-residential customers, and Ghp70.4976/kWh for special load tariff customers (LV, MV, HV, and Mines). Over the same period, the highest rate of tariffs recorded for each customer category shows Ghp71.34/kWh for residential customers, Ghp120.767/kWh for non-residential customers and Ghp132.9184/kWh for special load tariff customers. These rates of tariffs were applied in December 2015 for both residential and non-residential customers, and

in October 2019 for SLT's. It can be inferred from available data and plotted trends that no major tariff decisions were taken when review periods, coincided with election years.

6.0 Recommendation

Given that this study has highlighted key issues underlying electricity tariff trends in Ghana, and their respective directions of change, it is recommended that as a follow-up to this study, the Commission should undertake research to identify which end-user group(s) is heavily impacted by these tariff adjustments and the effect it has on the identified class of customers. Subsequently, field data on income levels and proportion spent on electricity, levels of electricity consumed and expenditure patterns of different end-user groups will constitute a necessary next step to this study. This will enable the Commission to identify with precision, impact of electricity tariff adjustments on end-users, and at what point electricity tariffs could become unaffordable to consumers. Results of this study will enable the Commission to take necessary steps to address any negative impact of tariff adjustments on consumers.