



PUBLIC UTILITIES REGULATORY COMMISSION

2024 First Quarter Natural Gas, Electricity & Water Tariff Decision

An In-depth Look at the Rationale
Underpinning the 2024 First Quarter
Natural Gas, Electricity and Water Tariffs

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1.0 INTRODUCTION

As part of the Public Utilities Regulatory Commission's strategy to ensure that, the real value of natural gas, electricity and water tariffs as approved by the Commission and payable by consumers at any particular point in time is maintained, the Commission has put in place guidelines as a governance framework for Quarterly Review of approved tariffs. The legal foundation and philosophy of the guidelines are enshrined in a number of statutory provisions as captured in the Public Utilities Regulatory Commission Act 1997, (Act 538). These statutory provisions as captured in the PURC Act are summarized as follows.

1. Protection of Consumer interest - Section 16 (3)(a)
2. Assurance of Investor / Utility interest- Section 16(3)(b); 3(c)
3. Assuring reasonable cost of production of the service - Section 16(3)(c)
4. Assurance of the financial viability of the Public Utility - Section 16(3)(d)
5. Uniformity of prices throughout the country - Section 20(1)
6. 6. Best use of natural resources - Section 20(1)(b)

7. Economic development of the country - Section 20(1)(c)
8. Different rates for different consumer classes - Section 20(2)

Within above legal mandates, the main objective of the Commission's Rate Setting Guidelines for Quarterly Review of Natural Gas, Electricity and Water Tariffs is to reflect the effect of changes in macroeconomic and market-driven factors in the cost of operations for the Natural Gas, Electricity and Water Utility Service Providers (USPs), as well as consumer tariffs, since the effects of these factors are beyond the control of the USPs.

Thus, pursuant to PURC's Rate Setting Guidelines for Quarterly Review of Natural Gas, Electricity and Water Tariffs, the Commission carried out a review of these utility tariffs for the First Quarter of 2024.

This decision paper highlights the results/findings in terms of the impact of changes in actual and projected key variables: Hydro-Thermal Generation Mix, Ghana Cedi-US Dollar Exchange Rate, Inflation Rate and Fuel Prices, as well as the Commission's decisions thereof for the First Quarter of 2024 to be effective April 01, 2024.

2.0 METHODOLOGY, ANALYSIS AND FINDINGS

2.1 Methodology

The methodology employed in determining the effect of the various variables involves a comparative analysis of actual and projected Hydro-Thermal Generation Mix, Ghana Cedi-US Dollar Exchange Rate, Inflation Rate and Fuel Price, which data were used in the determination of tariffs for the First Quarter 2024, tariff adjustments.

Under this framework, projections were made for exchange rate based on actual inter-bank Ghana Cedi-US Dollar selling exchange rate data from Bank of Ghana, actual inflation

rate from the Ghana Statistical Service and natural gas prices/volumes from various gas suppliers. The methodology also considered projected hydro electrical energy generation from both Akosombo and Kpong generating stations, which data was submitted by the Volta River Authority to the Electricity Market Oversight Panel (EMOP) and the PURC. The Commission also accounted for actual data in respect of above variables so as to address under and over recovery of the tariffs, which may have occurred in comparison with the previous quarter as approved by the PURC Board.

2.2 Analysis

For the purposes of determining the outcome of the 2024 First Quarter Tariffs, the above mentioned data with respect to Generation Mix (Hydro-Thermal Mix), Ghana Cedi-US Dollar Exchange Rate, Inflation Rate and Natural Gas Price, were analysed in line

with the methodological framework noted in Section 2.1 above. The selected data which were analysed are presented in Table-1.

2.2.1 Underpinning Data

The underpinning data of the 2024 First Quarter Tariff analysis are summarised and presented in Table-1.

Table 1: Summary of Data Used in Analysis of 2024 First Quarter Electricity Tariffs

Item No.	Item Description	Unit	Q4 2023 Parameters/Assumptions Effective December 01, 2023	Q1 2024 Parameters/Assumptions Effective April 01, 2024
A	Generation Mix:			
A1	Hydro	%	31.91	34.81
A2	Thermal	%	68.09	65.19
B	Exchange Rate	GHS/USD ExRate	11.9264	12.1349
C	Inflation Rate:			
C1	Projected Annual Average	%	40.43	28.27
C2	Projected Quarterly Average	%	10.11	7.07
D	Fuel Price:			
D1	Natural Gas	US\$/MMBtu	7.6426	7.6426
D2	Heavy Fuel Oil (HFO)	US\$/MTonne	N/A	N/A

Source: PURC Data & Tariff Analysis, 2024

2.3 Findings/Results from Analysis of Data

The findings/results from analysis of data captured in Table-1 are discussed as follows

2.3.1 Hydro - Thermal Electrical Energy Generation Mix

The data presented in Table-1 with respect to Hydro-Thermal generation indicates the following:

- a) The projected hydro generation mix for First Quarter 2024 was increased to 34.81% and represents hydro generation as a percentage of total electrical energy generated from hydro and thermal sources. This represents a 2.9% increment over projections for the Fourth Quarter 2023 (existing).

- b) The projected thermal generation mix of 65.19% represents a 2.9% reduction over the Fourth Quarter 2023 projected thermal generation of 68.09%. This was as a result of the increase in 2024 projected hydro electrical energy generation, which was supplied by VRA to the regulated electricity market.

2.3.2 Ghana Cedi-US Dollar Exchange Rate

With regards to the Ghana Cedi-US Dollar Exchange Rate indicated in Table-1:

- a) The Commission applied a projected Weighted Average Ghana Cedi-US Dollar Exchange Rate of GHS12.1349/US\$1.0000.

b) The projected exchange rate for the First Quarter 2024 represents a 1.75% depreciation of the Ghana Cedi against the US Dollar over the projected Fourth Quarter 2023 Quarterly Tariff Review Exchange Rate of GHS11.9264/US\$1.0000.

2.3.3 Inflation Rate

A projected Ghana Average Annual Inflation Rate of 28.27% as indicated in Table-1, translates into a Projected Quarterly Average Inflation Rate of 7.07% as compared with the Fourth Quarter 2023 annual inflation of 40.43% which translates into quarterly average inflation rate of 10.11%. This represents a quarterly inflation variance of -3.04%.

The inflation rate variance of -3.04% was used to adjust all local costs to maintain the real value for the cost of supply affected by inflation for the First Quarter of 2024.

2.3.4 Price of Fuel - Natural Gas

Natural Gas was the primary fuel considered in determining the Fuel Recovery Charge as a component of individual power plant tariffs, which influenced the Composite Bulk Generation Tariff for the First Quarter Tariff Adjustment. Subsequently, the Commission approved a Weighted Average Cost of Gas (WACOG) of USD 7.6426/MMBtu for the First Quarter of 2024.

3.0 SUMMARY OF ELECTRICITY TARIFF RESULTS

A summary of electricity tariff results based on the various assumptions and projections noted in Section 2 are presented in Table-2.

Table 2: Summary of Electricity Tariff Results for 2024 First Quarter

Item No	Item Description	Unit	Q4 2023 Parameters/Assumptions Effective December 01, 2023	Q1 2024 Parameters/Assumptions Effective April 01, 2024
A	Generation Tariffs:			
A1	VRA Bulk Generation Charge (BGC)	GHp/kWh	42.7963	37.1827
A2	Composite Bulk Generation Charge (VRA&IPP)	GHp/kWh	103,0089	102.2886
B	Transmission Tariffs:			
B1	Transmission Service Charge Attributable to Network Business (TSC-1)	GHp/kWh	8.4987	8.3715
B2	Transmission Service Charge Attributable to Losses (TSC-2)	GHp/kWh	4.4039	4.3731
C	Distribution Tariffs:			
C1	Distribution Service Charge Attributable to Network Business (DSC-1)	GHp/kWh	18.6017	18.4135
C2	Distribution Service Charge Attributable to Losses (DSC-2)	GHp/kWh	29.6140	29.3962

Source: PURC Data & Tariff Analysis, 2024

3.1 Bulk Generation Charge

Projecting for First Quarter 2024, VRA Bulk Generation Tariff decreased from GHp42.7963/kWh to GHp37.1827/kWh while the Composite Bulk Generation Tariff (VRA&IPP) reduced from GHp103.0089/kWh to GHp102.2886/kWh representing a 13.12% reduction in VRA Bulk Generation Tariff and 0.7% decrease in Composite Bulk Generation Charge respectively. The reductions in VRA and the Composite Bulk Generation Charge is as a result of the Hydro-Thermal Generation Mix, Weighted Average Cost of Gas (WACOG) and the Ghana Cedi-US Dollar Exchange Rate. A breakdown of the components of the Composite Bulk Generation Charge for First Quarter of 2024 is presented in Table-3.

Table 3: Summary of First Quarter 2024 Average Electrical Energy Generation by Power Plant and Tariffs

Item Description	Q3 2023 Quarterly Tariff Review Effective September 01, 2023		Q1 2024 Quarterly Tariff Review Effective April 01, 2024	
	Projected Electrical Energy (GWh)	Approved Tariff (GHp/kWh)	Projected Electrical Energy (GWh)	Approved Tariff (GHp/kWh)
VRA Plants				
VRA-Hydro:				
Akosombo	1,489	24.1008	1,639	24.5222
Kpong	161	49.4085	161	50.2724
Sub-Total VRA Hydro	1,651		1,801	
VRA-Thermal:				
TAPCo	324	107.2344	204	109.1093
AMERI	21	117.5977	-	119.6539
TT1PP	14	123.3387	14	125.4953
KTPP	37	122.0911	28	124.2259
Sub-Total VRA Thermal	396		246	
VRA-Renewable:				
Solar (Navrongo)	1	148.9814	1	151.5863
Solar (Lawra/Kaleo)	3	107.3373	3	109.2140
Sub-Total VRA Renewable	4		4	
Total VRA Electrical Energy/ VRA Composite Bulk Generation Tariff	2,051		2,051	
IPPs:				
Sunon Asogli Phase I	246	146.2014	246	148.7577
Sunon Asogli Phase II	479	141.0354	479	143.5014
Karpowership	864	140.7392	864	143.2000
AKSA	16	129.6069	16	131.8730
CENIT	213	135.6333	213	138.0049
Cenpower	613	154.2919	613	156.9897
Early Power	83	156.7030	83	159.4430
Amandi (Twin City)	342	138.7808	342	141.2073
Bui Power	249	122.1260	249	124.2613
BPA Solar Farm	6	122.1260	6	124.2613
BXC Solar	7	240.1636	7	244.3627
Meienergy Solar	6	216.1415	6	219.9206
Safisana Plant	0.1	208.7113	0.1	212.3606
Sub-Total IPPs	3,123		3,123	
Total Electrical Energy/ VRA+IPPs Composite Bulk Generation Charge	5,174		5,174	
Composite Bulk Generation Charge		103.0089		102.2886
Composite Bulk Generation Fixed Charge		48.0761		48.8900
Composite Bulk Generation Energy Charge		54.9328		53.3986
Exchange Rate		11.9264		12.1349
Weighted Average Cost of Gas		7.6426		7.6426

Source: PURC Data & Tariff Analysis, 2024

3.2 Transmission Service Charge

The Transmission Tariff attributable to the network business (TSC-1) decreased marginally from GHp8.4987/kWh to GHp8.3715/kWh representing a 1.5% decrease, while that of losses (TSC-2) decreased from GHp4.4039/kWh to GHp4.3731/kWh representing a 0.70% reduction. The change in TSC-1 is as a result of the upward movement in Ghana Cedi-US Dollar exchange rate and the reduction in projected inflation rate, while the change in TSC-2 is due to reduction in the Composite Bulk Generation Charge.

3.3 Distribution Service Charge

With respect to Distribution Service Charge (DSC) for the First Quarter of 2024, the tariff attributable to the network business (DSC-1) decreased from GHp18.6017/kWh to GHp18.4135/kWh representing a 1.01% decrease while losses (DSC-2) decreased from GHp29.6140/kWh to GHp29.3962/kWh representing a 0.74% decline. The change in DSC-1 is as a result of upward movement in Ghana Cedi-US Dollar exchange rate and a reduction in inflation rate.

3.4 Impact of Changes in Composite Bulk Generation Charge, Transmission Service Charge and Distribution Service Charge on Projected Revenue Requirement

Changes in the aforementioned four key variables and its impact on the Composite Bulk Generation Charge, Transmission Service Charge-1 and Distribution Service Charge-1 on Revenue Requirement, hence End User Tariffs is indicated in Table-4.

Table 4: Summary of Effect of Key Variables on Projected Revenue Requirement for First Quarter 2024

Type of Effect	Impact of Effect	Monetary Value (MGHS)
Generation Mix Effect	Over-Recovery	(113.09)
GHS - US Dollar Exchange Rate Effect	Under-Recovery	82.45
Natural Gas Effect	No-Recovery	-
Inflation Rate Effect	Over-Recovery	(14.31)
Total Monetary Effect	Over-Recovery	(44.95)

Source: PURC Data Analysis, 2024

3.4.1 Generation Mix Effect

Revenue gap analysis reveals a reduction in total revenue requirement by GHS113.09 million resulting from increase in projected hydro electrical energy allocation for 2024 First Quarter beyond the base projected for Fourth Quarter 2023, while holding the Ghana Cedi-US Dollar Exchange, Inflation Rate, and Natural Gas Price constant.

3.4.2 Exchange Rate Effect

With regards to Ghana Cedi-US Dollar Exchange Rate effect, holding Generation Mix, Inflation Rate and Natural Gas Price constant at Fourth Quarter 2023 Approved

values, revenue gap analysis indicates a GHS82.45 million increase in revenue requirement resulting from a 1.75% depreciation in value of the projected Ghana Cedi-US Dollar Exchange Rate.

3.4.3 Inflation Rate Effect

Holding the Ghana Cedi-US Dollar Exchange Rate, Generation Mix, and Natural Gas Price constant, the revenue gap analysis reveals a **GHS14.31** million decrease in revenue requirement resulting from a drop in the projected quarterly Inflation Rate from 10.11% to an average Inflation Rate of 7.07%.

3.4.4 Natural Gas Price Effect

In terms of Natural Gas Price effect, Revenue gap analysis indicates no impact on the revenue requirement due to no change in the projected WACOG of USD 7.6426/MMBtu, while keeping the Ghana Cedi-US Dollar Exchange, Inflation Rate, and Generation Mix effect constant.

3.5 Combined Effect of Generation Mix, Ghana Cedi-US Dollar Exchange, Inflation Rate and Natural Gas Price on Electricity Tariffs Payable by Consumers

Overall, the 2024 First Quarter Tariff analysis indicates that the Hydro-Thermal Generation Mix, Ghana Cedi-US Dollar Exchange Rate, Inflation Rate, and Natural Gas Price all had impacts on end user tariffs. The combination of these four effects resulted in a revenue surplus of GHS44.95 million available to consumers over the First Quarter of 2024. This surplus was used to undertake varying tariff adjustments across the electricity customer categories coupled with a restructuring of the rate structure, details of which are presented in Section 5.

4.0 SUMMARY OF WATER TARIFF RESULTS

Similar to Electricity, the Commission undertook a quarterly review of water tariffs by taking into consideration the Ghana Cedi-US Dollar exchange rate, inflation rate and cost of electricity as key variables impacting on revenue requirement, hence water tariffs payable by consumers for the first quarter of 2024.

The effect of changes in each of the aforementioned variables on water tariffs payable by consumers are presented in the following section.

4.1 Combined Effect of Cost of Electricity, Ghana Cedi-US Dollar Exchange and Inflation Rate on Water Tariffs Payable by Consumers

With regards to electricity price effect, the revenue gap analysis indicates no change in revenue requirement due to no change in projected electricity cost for the first quarter of 2024. Concerning the Ghana Cedi-US Dollar exchange rate effect, there was a slight increase in revenue requirement as a result of a 1.75% depreciation of the Ghana Cedi against the US Dollar over the projected fourth quarter 2023 quarter tariff review exchange rate of GHS11.9264/US\$1.0000. Projected inflation rate on the other hand, decreased from 40.43%, which was used for the fourth quarter of 2023 to 28.27% for first quarter of 2024, leading to a reduction in revenue requirement. The combined effect of the Ghana Cedi-US Dollar exchange rate, inflation rate and electricity cost assumptions on revenue requirement for 2024 first quarter was very minimal. Consequently, the Commission approved a no change in water tariffs for all categories of water customers for the first quarter of 2024.

5.0 ELECTRICITY AND WATER TARIFF ADJUSTMENT FOR FIRST QUARTER, 2024

In light of results from analysis of data discussed in previous sections for electricity and water, the Commission made the following decisions.

1. The Commission undertook targeted adjustments in electricity tariffs across various customer categories in addition to restructuring of the existing rate structure. Consequently, the following tariff adjustments will be witnessed by consumers:
 - a. Residential customers consuming 300 kWh and above will experience an average reduction in electricity tariffs of 6.56%.
 - b. Non-Residential customers consuming 300 kWh and above will also experience an average reduction of 4.98% in electricity tariffs.
 - c. SLT-LV customers electricity tariffs will be reduced by 4.88%.
 - d. SLT-MV and SLT-HV customers including Steel Companies were merged into a single customer category (SLT-MV/HV), with the same tariff. Customers in these categories will experience either no movement or a decrease/increase in existing tariffs.
2. The Commission also approved **no increase** in water tariffs for all GWCL customer categories.

The Commission will continue to implement the Quarterly Tariff Review Mechanism, per its Rate Setting Guidelines for Quarterly Review of Natural Gas, Electricity and Water Tariffs, monitor the operations of the Utility Service Providers to ensure value for money and quality of service delivery. Furthermore, the Commission encourages Utility Service Providers to double their efforts in revenue collection in order to address the financial difficulties, which bedevil Utility Service Providers.

**APPENDIX 1:
APPROVED ELECTRICITY TARIFFS EFFECTIVE APRIL 01, 2024**

CUSTOMER CLASS	APPROVED TARIFF (GHp/kWh)
Residential 0-30 0-300 300+ Service Charge for Lifeliners Service Charge for Other Residential Consumers	63.4792 140.5722 185.7432 213.0000 1073.0886
Non-Residential 0-300 300+ Service Charge	126.9145 157.7242 1242.8245
SLT-LV Energy Charge (GHp/kWh) Service Charge (GHp/month)	191.0709 50000.00
SLT-MV/HV Energy Charge (GHp/kWh) Service Charge (GHp/month)	152.5176 50000.00
SLT-HV Mines Energy Charge (GHp/kWh) Service Charge (GHp/month)	399.8573 50000.00

**APPENDIX 2:
APPROVED WATER TARIFFS EFFECTIVE APRIL 01, 2024**

TARIFF CATEGORY		APPROVED TARIFF
(a)	Residential 0-5m ³ (Exclusive) - GHp/1000 Litres Above 5 m ³ - GHp/1000 Litres Service Charge - GHp/Month	474.0121 838.6282 1000.00
(b)	Non-Residential Service Charge - GHp/1000 Litres - GHp/Month	1418.7957 2000.00
(c)	Commercial Service Charge - GHp/1000 Litres - GHp/Month	2538.3116 2000.00
(d)	Industrial Service Charge - GHp/1000 Litres - GHp/Month	2538.3116 25000.00
(e)	Public Institutions/Government Departments Service Charge - GHp/1000 Litres - GHp/Month	1218.3896 2000.00
(f)	Public Stand Pipes Service Charge - GHp/1000 Litres - GHp/Month	567.8769 2000.00
(g)	Bottled Water and Drinks Service Charge - GHp/1000 Litres - GHp/Month	2538.3116 25000.00
(h)	Sachet Water Producers Service Charge - GHp/1000 Litres - GHp/Month	2233.7143 10000.00
(i)	Bulk Supply Service Charge - GHp/1000 Litres - GHp/Month	804.8378 5000.00
(j)	Ports and Harbours Service Charge - GHp/1000 Litres - GHp/Month	3320.1116 50000.00

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