EXPLANATORY NOTES TO REVISED AUTOMATIC ADJUSTMENT FORMULA FOR SETTING ELECTRICITY AND WATER TARIFFS

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1. Introduction

In July 2002, the PURC published its Proposed Transitional 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 AAF was to review quarterly, electricity tariffs to reflect changes in factors whose effects on operations were considered beyond the control of the utility companies namely the Volta River Authority (VRA) and Electricity Company of Ghana. To a very large extent, volatility in the spot price of light crude oil (LCO) on the international oil market and the Ghana Cedi-US Dollar exchange rate and their impact on electricity generation from thermal sources became the main focus of the model. Though the Commission's Proposed Transitional Plan for Electricity Rate Adjustment was designed solely for electricity, its implementation also affected water tariffs.

With respect to tariff adjustments based on the AAF, it is worth noting that though Crude Oil Prices surged during the period of implementation of the formula ((November 01, 2003-April 30, 2006), improved electricity generation from hydro sources, coupled with stability in the Cedi-US$ Exchange Rate over this period ensured that no major tariff adjustments were required. These developments led the Commission to discontinue application of the model in the second quarter of 2006. Additionally, the discontinuation of the model was to offer the utility service providers the opportunity to submit proposals to the Commission and to justify the need for any tariff adjustments. In light of foregoing, the Commission approved an average of thirty-five percent (35%) increase in both electricity and water tariffs in November 2007.

In the latter part of 2009, (November 2009) and early 2010 (January-February, 2010), the utility service providers submitted proposals to the Commission for upward review in tariffs. Consequently, the Commission, after critical analyses and evaluation of tariff proposals submitted by VRA, GRIDCo, ECG and GWCL, announced on May 31, 2010 an average increase of 89% in electricity and 36% in water tariffs effective June 01, 2010. The rationale for this upward review was to re-position the utility service providers financially to enable them address the continuing deterioration in the quality of service being delivered to consumers.

As part of the Commission's future tariff strategy which was announced concurrently with the tariff increase on May 31, 2010, electricity and water tariffs were to be reviewed periodically under an Automatic Adjustment Formula. This decision according to the Commission will help minimise the impact of long delays in approving adjustments in electricity and water tariffs. To effectively address concerns of all stakeholders, the AAF which was implemented under the Transitional Plan has been revised taking into account other variables which have been identified as having significant impact on electricity and water tariffs approved by the Commission. This paper provides insight into PURC's revised/modified Automatic Adjustment Formula, which becomes operational effective January 01, 2011 and covers the period January 01, 2011-March 31, 2011.

2. Components of Revised Automatic Tariff Adjustment Formula

In comparison with the AAF under the Commission's Transitional Plan, the revised AAF comprises six main components. These are Total Local Cost (excluding Labour Cost), Labour Cost, Depreciation and Fuel Cost. For purposes of deriving appropriate model equation, each component is represented as follows:

1. **Total Local Cost excluding Labour Cost (LoC):** This includes Bank Charges, Materials, Transport & Travel, Repairs & Maintenance, Rent, Rates & Insurance, other Operating Cost, Central Services, Medical Services, Cost of Transmission Losses, Cost of Distribution Losses, Customer Service Cost and Return on Average Revalued Net Fixed Assets

2. **Labour Cost (LaC):** This is made up of Salaries and Related Expenses

3. **Depreciation (Depn)**: This includes Depreciation directly and indirectly related to Generation/ Production, Transmission and Distribution Assets

4. **Fuel Cost (FuC)**: This covers the Cost of Light Crude Oil in the case of electricity generation from thermal sources and Water Abstraction Fee in the case of electricity generation from hydro sources

5. **Water Treatment Chemicals Cost:** This includes all Chemicals needed in the production and analysis of water including Chlorine Gas, Aluminium Sulphate etc

6. **Energy Cost.** This includes cost of electricity directly related to the production/supply of water

To facilitate application of an appropriate index or indices to each of the six cost items listed above, further classification namely, Local Cost and Foreign Cost was adopted. To this end, Total Local Cost excluding Labour Cost, Labour Cost and a proportion of Depreciation has been classified as Local Cost. Fuel Cost and the remaining portion of Depreciation have been classified as foreign.

3.   Underlying Parameters of AAF Components

A number of parameters which underpin each of the seven components of the revised AAF as stated in section 2 were identified and critically evaluated. The objective of the evaluation is three-fold: First, to determine the extent to which overall, each parameter impacts projected tariffs. Second, to establish which adjustment index to be applied to each cost parameter and third, to establish which cost parameter qualifies to be classified as either local or foreign. The seven key components of the revised AAF and their underlying parameters and equations are stated below:

1. Projected Total Local Cost (excluding Labour Cost) $(LoC_{_})$ = $GT_t^{1*}(LoC_t)^*(A_1^{2*}(\alpha^3)$

2. Projected Labour Cost $(LaC_{_})$ = $(GT_t^*(LaC_t)^*(A_2^{4*}(\alpha)$

3. Projected Depreciation$(Depn_{_})$ = $GT_t^*((LDepn_t^5)^*(\alpha)+ (FDpen_t^6)^*(\square^7))$

4. Projected RoRANFA $(RoRANFA_{_})$ = $GT_t^*(RoRANFA_t)^*(\alpha)$

5. Projected Fuel Cost $(FuC_{_})$ = $(GT_t^*(FuC_t^8)^*(FP^9)^*(\square)$

6. Projected Water Treatment Chemicals Cost $(WTCC_{_})$ = $(WT_{_}^*(WTCC)^*(\square\square$

7. Projected Electricity Cost (ELC) = $WTt^*(ECF_{_})$

4.   Decision Variables

Two decision variables namely, A_1 and A_2 have been introduced as part of the new AAF. The objective of introducing both variables is to offer the Commission an opportunity to determine the regularity of adjustments to affected costs. The first of the two variables which is A_1 represents *All Other Cost excluding Labour Cost and Depreciation,* whilst A_2 represents *Labour Cost only.* Both variables assume values of 0 and 1. A value of zero (0) implies no adjustment to the affected cost. However, a value of one

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[1] Base Generation Tariff (GHp/kWh) as Approved by PURC
[2] Decision Variable for All Other Cost excluding Labour Cost, RORANFA and Depreciation
[3] Projected Average Inflation for Next Quarter Defined as CPI_{t+1}/CPI_t
[4] Decision Variable for Labour Cost
[5] Base Local Depreciation as Proportion of Generation Charge
[6] Base Foreign Depreciation as Proportion of Generation Charge
[7] Projected Average Exchange Rate Index Defined as $ExchR_{t+1}/ExChR_t$
[8] Base Fuel Cost as Proportion of Generation Charge
[9] *Projected Average LCO Index Defined as FP_{t+1}/FP_t*
[10] Base Water Tariff (GHp/m^3) as Approved by PURC
[11] Projected Special Load Tariff for (HV, MV & LV) Customer Classes (GHp/kWh)/Base Special Load Tariff for (HV, MV &LV)Customer Classes Gazetted by PURC (GHp/kWh)

(1) by either variable implies adjustment to an affected cost using either Consumer Price Index (CPI) or Ghana Cedi-US Dollar Exchange Rate.

5.   Determination of Projected Average Ghana Cedi-US Dollar Exchange Rate and Consumer Price Index

To determine the quarterly average GH¢-US$ Exchange Rate and CPI Indices applicable to the various cost parameters noted in section 2, monthly Ghana Cedi-US Dollar Exchange Rates and Consumer Price Index (CPI) were computed using two different approaches. First, the regression approach which includes Time Series Simple Regression, First Order Autoregression, 2-Month Moving Average Autoregression and 3-Month Moving Average Autoregression Models. Second, the simple moving average approach which includes 1-Month Moving Average, 2-Month Moving Average and 3-Month Moving Average Models. For purposes of our forecast, an evaluation of each model is undertaken in section 6, to determine which model(s) best estimate or forecast the Ghana Cedi-Exchange Rate and CPI.

6. Evaluation of Models Used in Forecasting Exchange Rates and Consumer Price Index (CPI)

To establish which model(s) within the two approaches noted in section 5 most accurately forecast the monthly Ghana Cedi-US$ Exchange Rate and CPI under the revised AAF, an evaluation of each model was carried out using the Cedi-US$ Exchange Rate and Consumer Price Index Data for the period January 2006-October 2010.

6.1   Forecasting Ghana Cedi-US Dollar Exchange Rate

Results from analyses of Ghana Cedi-US$ Exchange Rate Data for the period January 2006-October 2010 using both regression and moving average approaches are presented in Figure 6.1 and Figure 6.2.

Figure 6.1-Comparison of Time Series Regression, First Order Autoregression, 2-Month Moving Average Autoregression & 3-Month Moving Average Autoregression Forecast of Ghana Cedi-US Dollar Exchange Rate with Actual Exchange Rate January 2006-October 2010
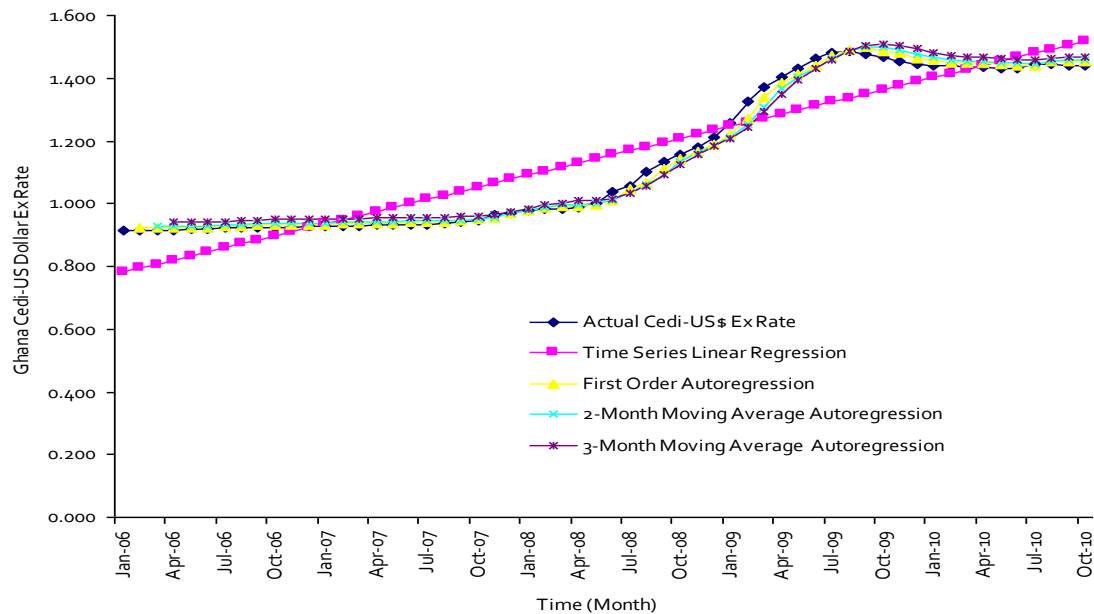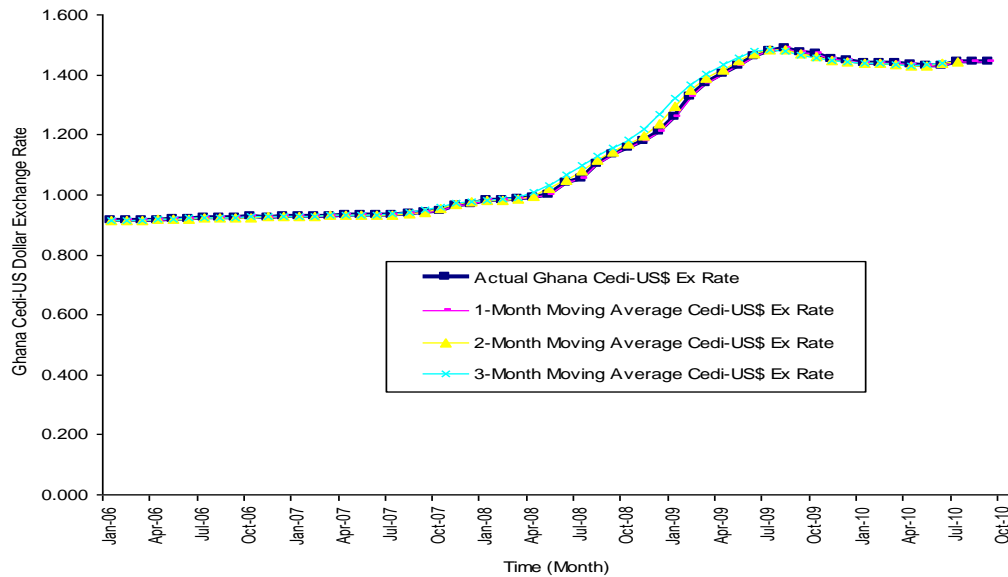

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Figure 6.2- Comparison of 1-Month Moving Average, 2-Month Moving Average & 3-Month Moving Average Forecast Results of Ghana Cedi-US Dollar Exchange Rate with Actual Exchange Rate January 2006-October 2010

6.1.1 Cedi-US$ Exchange Rate Forecast Error & Projections

To ascertain the reliability of the models used in forecasting the Cedi-US$ Exchange Rate shown in Figure 6-1 and 6-2 forecast error analyses was carried out. The objective of the test is to determine on the basis of mean squared error results, which of the two models namely regression analysis (Times Series Simple Regression, First Order Autoregression, 2-Month Moving Average Autoregression and 3-Month Moving Average Autoregression) and moving average technique (1-Month Moving Average, 2-Month Moving Average and 3-Month Moving Average) provide a more accurate forecast of the Ghana Cedi-US$ Exchange Rate, and which forecast results can be used as the Exchange Rate index in the revised AAF.

Table 6-1   Comparison of Ghana Cedi-US$ Exchange Rate Forecast Error Using Regression & Simple Moving Average Models

Model	MAD[12]	MSE[13]	MAPE[14]	Remark
Time Series Simple Regression (TSSR)	0.0758	0.0077	6.9045	Not Highly Recommended
First Order Autoregression (FOA)	0.0128	0.0003	1.0749	Most Highly Recommended
2-Month Moving Average Autoregression (2-MMAA)	0.0189	0.0006	1.5838	Recommended
3-Month Moving Average Autoregression (3-MMAA)	0.0280	0.0010	2.3979	Least Recommended
1-Month Moving Average (1-MMA)	0.0116	0.0004	0.9505	Highly Recommended
2-Month Moving Average (2-MMA)	0.0175	0.0008	1.4240	Partially Recommended
3-Month Moving Average (3-MMA)	0.2320	0.0014	1.8862	Not Recommended

The results presented in Table 6-1 suggest that on the basis of mean squared error measure, First Order Autoregression is the most highly recommended model and the most reliable regression analysis tools for forecasting Ghana Cedi-US$ Exchange Rate. Similar trend is also noted for the 1-Month Moving Average in terms of simple moving average approach. However, comparison of projected Average Ghana Cedi-US$ Exchange Rate for the period November 2010-January 2011, using both regression and simple moving average techniques shown in Table 6-2 identifies 2-Month Moving Average Model as having the highest level of reliability in forecasting the Cedi-US$ Exchange Rate.

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[12] Mean Absolute Deviation
[13] Mean Square Error
[14] Mean Average Percentage Error

Table 6-2   Comparison of Projected Average Ghana Cedi-US$ Exchange Rate Using Regression & Simple Moving Average Models

Time (Month)/Model	TSSR	FOA	2-MMAA	3-MMAA	1-MMA	2-MMA	3-MMA
Nov-2010	1.5307	1.4501	1.4566	1.4684	1.4418	1.4407	1.4416
Dec-2010	1.5437	1.4607	1.4640	1.4768	1.4395	1.4401	1.4410
Jan-2011	1.5566	1.4714	1.4763	1.4884	1.4418	1.4404	1.4407
Feb-2011	1.6989	1.4821	1.4862	1.5048	1.4395	1.4402	1.4411
March-2011	1.7119	1.4928	1.4973	1.5179	1.4418	1.4403	1.4409
Average Cedi-US$ Ex Rate Jan-March 2011	1.6558	1.4821	1.4866	1.5037	1.44103	1.4403	1.4409

6.2   Forecasting Ghana's Consumer Price Index

Similar to the Ghana-US$ Exchange Rate forecast, regression and moving average models were also employed to forecast Ghana's Consumer Price Index using Consumer Price Index data for the period January 2006-October 2010. The results from these analyses are presented in Figure 6-3 and Figure 6-4.

Figure 6.3-Comparison of Time Series Regression, First Order Autoregression, 2-Month Moving Average Autoregression & 3-Month Moving Average Autoregression Forecast Results of Ghana's Consumer Price Index (CPI) with Actual CPI January 2006-October 2010
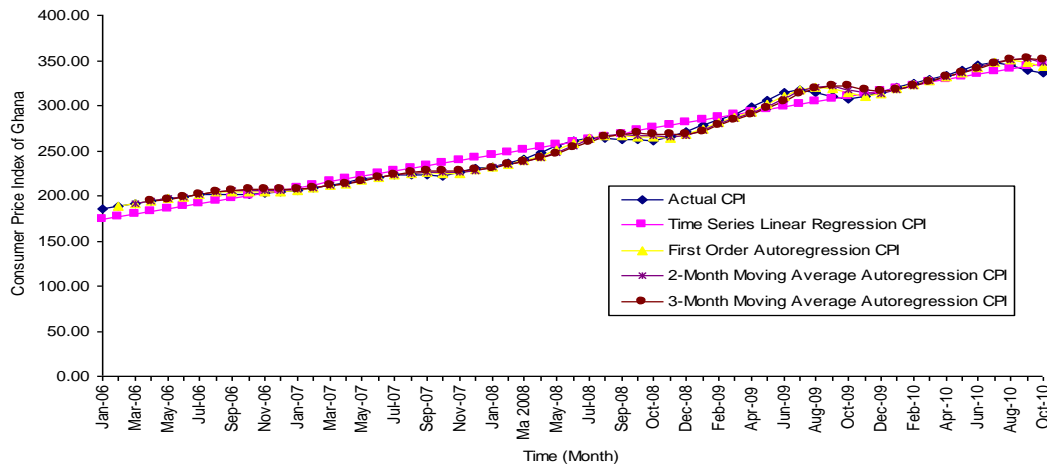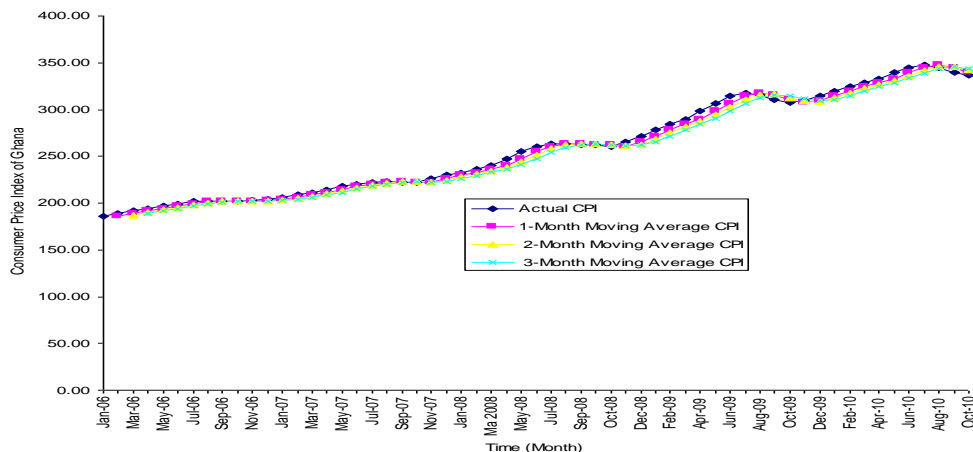

Figure 6.4-Comparison of 1-Month Moving Average, 2-Month Moving Average & 3-Month Moving Average Forecast Consumer Price Index (CPI) with Actual CPI January 2006-October 2010

6.2.1   Consumer Price Index Forecast Error & Projections

For purposes of determining which model under both regression and moving average techniques best forecast the Consumer Price Index, forecast error analyses similar to one carried out on the Ghana Cedi-

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US$ Exchange Rate forecast were undertaken. Both techniques (regression and simple moving average) were also employed to project the monthly Consumer Price Index for November 2010-March 2011. These results are presented in Table 6-3 and Table 6-4.

Table 6-3　　Comparison of Consumer Price Index Forecast Error Using Regression Analysis & Simple Average Technique

Model	MAD[15]	MSE[16]	MAPE[17]	Remark
Time Series Simple Regression (TSSR)	7.007	69.712	2.856	Not Highly Recommended
First Order Autoregression (FOA)	2.419	10.335	0.881	Most Highly Recommended
2-Month Moving Average Autoregression (2-MMAA)	3.4000	20.770	1.230	Recommended
3-Month Moving Average Autoregression (3-MMAA)	4.279	31.858	1.547	Partially Recommended
1-Month Moving Average (1-MMA)	3.467	16.803	1.289	Highly Recommended
2-Month Moving Average (2-MMA)	4.971	35.586	1.849	Least Recommended
3-Month Moving Average (3-MMA)	6.392	59.133	2.364	Not Recommended

Similar to results obtained in section 6.1.1 (Cedi-US$ Exchange Rate Forecast Error & Projections), comparison of Ghana's Consumer Price Index Forecast Error under both regression methods and simple average techniques suggests that on the basis of mean squared error results presented in Table 6-3, First Order Autoregression emerges with highest predictive power for forecasting monthly Consumer Price Index. However, results from projections of the CPI presented in Table 6-4 indicate that projections beyond one month remain static or unchanged.

Table 6-4　　Comparison of Projected Average Consumer Price Index of Ghana Using Regression & Simple Moving Average Models (November 2010-March 2011)

Time (Month)/Model	TSSR	FOA	2-MMAA	3-MMAA	1-MMA	2-MMA	3-MMA
Nov-2010	349.25	339.95	343.60	347.99	336.43	338.05	340.32
Dec-2010	352.23	343.51	345.59	349.06	336.43	337.24	338.80
Jan-2011	382.01	347.09	350.24	352.27	336.43	337.64	338.52
Feb-2011	384.99	350.70	353.62	357.66	336.43	337.44	339.21
March-2011	387.97	354.35	357.69	360.96	336.43	337.54	338.84
Average Cedi-US$ Ex Rate Jan-March 2011	384.99	350.71	353.85	356.96	336.43	337.54	338.86

7.　　Revised Automatic Adjustment Formula for Setting Generation Tariff

By definition, Generation Tariff is the cost recovery price of electric power purchased by Distribution Companies (Discos) and Bulk Customers from Generation Companies. The revised equation for determination of generation tariff for each power plant takes the following form:

$$GT_{t+i}=GT_t*(LoC_t)*(A_1*(\alpha\pm\rho_2)+(GT_t*(LaC_t)*(A_2*(\alpha\pm\rho_2))+(GT_t*(FuC_t)*(FP)*(\boxed{}\pm\rho_1)+GT_t*((LDepn_t)*(\alpha\pm\rho_2))+(FDpen_t)*(\boxed{}\pm\rho_1))+(GT_t*(RoRNFA_t)*(\alpha\pm\rho_2))$$

Where:

GT$_{t+i}$　　　　Projected Generation Tariff/Charge (GHp/kWh) for Next Quarter

GT$_t$　　　　Base Generation Tariff/Charge (GHp/kWh) as Gazetted by PURC (June 01, 2010)

LoC$_t$　　　　Base Total Local Cost (excluding Labour Cost, Depreciation & RoRNFA) as Proportion of Generation Charge

LaC$_t$　　　　BaseLabour Cost as Proportion of Generation Charge

FuC$_t$　　　　Base Fuel/Water Cost as Proportion of Generation Charge

FP　　　　*Projected Average LCO Index Defined as FP_t/FP_t*

LDepn$_t$　　　　Base Local Depreciation as Proportion of Generation Charge

FDepn$_t$　　　　Base Foreign Depreciation as Proportion of Generation Charge

RoRNFA$_t$　　　　Base Return on Re-valued Net Fixed Assets as Proportion of Generation Charge

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[15] Mean Absolute Deviation
[16] Mean Square Error
[17] Mean Average Percentage Error
[18] FP_{t+1} is Defined as Projected Average LCO Price for the Next Quarter; FP_t is Defined as Base Average LCO Price

α Projected Average Inflation for Next Quarter Defined as CPI_{t}/CPI_{t}[19]

β Projected Average Exchange Rate Index for Next Quarter Defined as $ExchR_{t}/ExChR_{t}$[20]

A_1 Decision Variable for All Other Cost excluding Labour Cost, RORANFA and Depreciation

A_2 Decision Variable for Labour Cost

ρ_1 Exchange Rate Over/Under Recovery Adjustment Factor Defined as $(AAExChR_t - BExchR_t)/ BExchR_t$

ρ_2 CPI Over/Under Recovery Adjustment Factor Defined as $(AACPI_t - BCPI_t)/BCPI_t$

8. Bulk Generation Charge

By definition, Bulk Generation Charge is the average cost recovery price of electrical power purchased by Electricity Distribution Companies (Discos) from the Volta River Authority. The equation for computing the Bulk Generation Charge is stated below:

$$BGC_{t+1} = GM_t(HyGT_{t+1} \pm \rho_3 + TapGT_{t+1} + TicGT_{t+1} + Tem1GT_{t+1} + Tem2GT_{t+1} + AsogGT_{t+1} + ImP_{t+1})$$

Where:

BGC_{t+1} is projected Bulk Generation Charge for Next Quarter[21]; GM_t is defined as projected proportion of each plant's electricity generation in total generation mix

$HyGT_t$, $TapGT_t$, $TicGT_t$, $Tema1GT_t$, $Tema2GT_t$ and $AsogGT_t$ represent projected Hydro, TAPCO, TICO, Tema 1, Tema 2, and Asogli generation tariffs; ImP_t represents projected electricity import price. ρ_3 represents Generation Mix Over/Under Recovery Adjustment Factor Defined as $(GT_t*(BGenMix_t - AGenMix_t)$

9. Revised Automatic Adjustment Formula for Setting Transmission Service Charge

Transmission Service Charge, by definition is the price charged by the Ghana Grid Company (GRIDCo) for the use of the transmission network by Distribution companies (Discos) and Bulk Customers. Under the Commission's revised Automatic Tariff Adjustment regime, TSC will be determined using the following equation.

$$TSC_{t+1} = TSC_t*(LoC_t)*(A_1*(\alpha \pm \rho_2)) + (TSC_t*(LaC_t)*(A_2*(\alpha \pm \rho_2))) + TSC_t*((LDepn_t)*(\alpha \pm \rho_2) + (FDpen_t)*(\beta \pm \rho_1)) + (TSC_t*(RoRNFA_t)*(\alpha \pm \rho_2)$$

Where:

TSC_{t+1} Projected Transmission Service Charge (GHp/kWh) for Next Quarter

TSC_t Base Transmission Service Charge (GHp/kWh) (PURC Gazetted TSC)

LoC_t Base Total Local Cost (excluding Labour Cost, Depreciation & RoRNFA) as Proportion of Transmission Service Charge

LaC_t Base Labour Cost as Proportion of Transmission Service Charge

$LDepn_t$ Base Local Depreciation as Proportion of Transmission Service Charge

$FDepn_t$ Base Foreign Depreciation as Proportion of Transmission Service Charge

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[19] CPI_{t+1} is Defined as Projected Average Consumer Price Index for the Next Quarter; CPI_t is Defined as Base Average Consumer Price Index

[20] $ExchR_{t+11}$ is Defined as Projected Average Ghana Cedi-US Dollar Exchange Rate for the Next Quarter; $ExChR_t$ is Defined as Base Average Ghana Cedi-US Dollar Exchange Rate

[21] BGC includes Both Energy Charge and Capacity Charge

RoRNFA   Base Return on Re-valued Net Fixed Assets as Proportion of Transmission Service Charge

The definition of α, ⷺ, A_1, A_2, ρ_1 and ρ_2 which are common to determination of Generation Tariff, Transmission Service Charge and Distribution Service Charge and Average Water Tariff under the AAF is provided in section 7.

10.   Revised Automatic Formula for Setting Distribution Service Charge

Distribution Service Charge, by definition is the price paid by customers for the supply of electrical power. It includes Bulk Generation Charge (BGC), Transmission Service Charge (TSC) and Distribution Added Value (DAV). The revised AAF for computing the Distribution Service Charge is stated below.

$$DSC_{t+1}=DSC_t*(LoC_t)*(A_1*(\alpha\pm\rho_2))+(DSC_t*(LaC_t)*(A_2*(\alpha\pm\rho_2))+DSC_t*((LDepn_t)*(\alpha\pm\rho_2)+(FDpen_t)*(ⷺ\pm\rho_1))+(DSC_t*(RoRNFA_t)*(\alpha\pm\rho_2)$$

Where:

DSC$_{t+1}$ Projected Distribution Service Charge (GHp/kWh) for Next Quarter

DSC$_t$ Base Distribution Service Charge (GHp/kWh) as Gazetted by PURC (June 01, 2010)

LoC$_t$ Base Total Local Cost (excluding Labour Cost, Depreciation & RoRNFA) as Proportion of Distribution Service Charge

LaC$_t$ BaseLabour Cost as Proportion of Distribution Service Charge

LDepn$_t$ Base Local Depreciation as Proportion of Distribution Service Charge

FDepn$_t$ Base Foreign Depreciation as Proportion of Distribution Service Charge

RoRNFA$_t$ Base Return on Re-valued Net Fixed Assets as Proportion of Distribution Service Charge

Similar to explanation on Transmission Service Charge α, ⷺ, A_1, A_2, ρ_1 and ρ_2 are defined in section 7.

11.   Revised Automatic Adjustment Formula for Setting Water Tariff

By definition, Water Tariff is the price paid by Consumers for the supply of portable water by the Ghana Water Company Limited (GWCL). PURC's water tariff is broken down into three components. These are: (1) energy component on the basis that energy can be considered a special item and not subject to indexation; (2) non-energy component-operational costs; (3) capacity component for capital recovery, hence the revised AAF for computing Water Tariff is as follows:

WT$_{t+1}$=WT$_t$*(LoC$_t$)*(A$_1$*(α±ρ_2))+(WT$_t$*(LaC$_t$)*(A$_1$*(α±ρ_2))+(WT$_t$*ECF)+(WT$_t$*(WTCC)*ⷺ±ρ_1)+WT$_t$*((LDepn$_t$)*(α±ρ_2)+(FDpen$_t$)*(ⷺ±ρⷺ))+(WT$_t$*(RoRNFA$_t$)*(α±ρ_2)

Where:

WT$_{t+1}$ Projected Average Water Tariff (GHp/m³)

WT$_t$ Base Average Water Tariff (GHp/ m³) as Gazetted by PURC (June 01, 2010)

LoC$_t$ Base Total Local Cost (excluding Labour Cost, Energy Cost, Depreciation & RoRNFA) as Proportion of Average Water Tariff

LaC$_t$ BaseLabour Cost as Proportion of Average Water Tariff

ECF   Projected Electricity Cost Factor for Next Quarter Defined as PWEC$_{t+1}$[22]/PWEC$_t$[23]

WTCC$_t$ Base Water Treatment Chemicals Cost as Proportion of Average Water Tariff

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[22] Projected Weighted Electricity Cost
[23] Base Weighted Electricity Cost

LDepn	Base Local Depreciation as Proportion of Average Water Tariff
FDepn	Base Foreign Depreciation as Proportion of Average Water Tariff
RoRNFA	Base Return on Re-valued Net Fixed Assets as Proportion of Average Water Tariff

The terms α, β, A_1, A_2, ρ_1 and ρ_2 are defined in section 7.

12.   Trigger Conditions

Under the revised Automatic Adjustment Formula, two issues are critical for setting trigger conditions for adjustments in electricity and water tariffs. First is the integrity of the Commission's tariff decision process. Second is the volume of electricity/water generated or produced, transmitted and distributed by VRA, GRIDCo, ECG and GWCL. With regard to both issues, it is recommended that no specific trigger conditions are set and which conditions will have to be met before adjustments in tariffs are effected and passed on to consumers and utility service providers. Instead, results from quarterly analyses/computations taking cognisance of all the variables embedded in the computation of Generation Tariff, Transmission Service Charge, Distribution Service Charge and Water Tariff after critical analyses and deliberations by Commissioners should be passed on to consumers and utility service providers whether these adjustments are significant or not. This position will prevent a build up of adjustments in tariffs over time.