



PUBLICATION

POWER TARIFF

AUGUST 2002 – MARCH 2003

PUBLIC UTILITIES REGULATORY COMMISSION (PURC) PUBLICATION OF ELECTRICITY TARIFFS

In accordance with the statutory duty to publish rates approved by the Public Utilities Regulatory Commission under Section 19 of the Public Utilities Regulatory Commission Act, 1997 (Act 538) this publication is made this 18th day of July 2002.

1. 1. The Volta River Authority (VRA) shall charge the rates provided for in the First Schedule hereto as Bulk Supply Tariff (BST) to take effect from 1st August 2002 and 1st March 2003 respectively as stipulated in the said First Schedule.
2. 2. The Electricity Company, Ghana (ECG) Limited and Northern Electricity Department (NED) of the Volta River Authority (VRA), shall charge the rates provided for in the Second Schedule hereto as Distribution Service Charge (DSC) to take effect from 1st August 2002 and 1st March 2003 respectively as stipulated in the said Second Schedule.
3. 3. The Electricity Company, Ghana (ECG) Limited and Northern Electricity Department (NED) of the Volta River Authority (VRA) shall charge the detailed tariffs stipulated in the Third Schedule hereto as End-User Tariffs to take effect from 1st August 2002 and 1st March 2003 respectively.
4. 4. The projections used in the computation of the rates approved are provided for in the Fourth Schedule.
5. 5. Subject to paragraph 6, the rates approved shall not be exceeded and shall remain in force until they are changed by the Public Utilities Regulatory Commission.

6. 6. Until the next major tariff review at the end of 2004, electricity tariffs shall be adjusted as per the automatic adjustment (indexation) formula provided in the Fifth Schedule.
7. 7. The rates approved by the Public Utilities Regulatory Commission which took effect from May 1, 2001 for VRA, ECG and NED as published in Gazette No. 19, of April 27, 2001 are hereby accordingly revoked and replaced with the following:

DEFINITIONS

BST	..	Bulk Supply Tariff
DSC	..	Distribution Service Charge
SLT-LV	..	Special Load Tariff-Low Voltage
SLT-MV	..	Special Load Tariff-Medium Voltage
SLT-HV	..	Special Load Tariff-High Voltage
KWh	..	Kilowatt-Hour
KVA	..	Kilovolt-Ampere

FIRST SCHEDULE

Tariff Category	Effective August 1, 2002	Effective March 1, 2003
BST (Cedis/kWh)	359	412

SECOND SCHEDULE

Tariff Category	Effective August 1, 2002	Effective March 1, 2003
DSC (Cedis/kWh)	264	285

THIRD SCHEDULE

Tariff Category	Effective August 1, 2002	Effective March 1, 2003
<i>Residential*</i>		
0-50 (Exclusive "Lifeline" Block Charge)	14,000	18,000
51-300	400	550
300+	960	960
<i>Non-Residential</i>		
0-300	750	800
300+	980	980
Service Charge (Cedis/month)	20,000	20,000

Tariff Category	Effective August 1, 2002	Effective March 1, 2003
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SLT-LV		
Max. Demand (Cedis/kVA/month)	130,000	135,000
Energy Charge (Cedis/kWh)	360	380
Service Charge (Cedis/month)	60,000	60,000
SLT-MV		
Max. Demand (Cedis/kVA/month)	82,000	92,000
Energy Charge (Cedis/kWh)	350	360
Service Charge (Cedis/month)	60,000	60,000
SLT-HV		
Max. Demand (Cedis/kVA/month)	74,000	84,000
Energy Charge (Cedis/kWh)	340	350
Service Charge (Cedis/month)	60,000	60,000

FOURTH SCHEDULE

PROJECTIONS USED IN TARIFF COMPUTATION

Variable	Year 2002	Year 2003
<i>Average Inflation Rate</i>	16%	10%
<i>Average Exchange Rate</i>	US1\$ = ₵ 8,000	US1\$ = ₵ 8,500
<i>Generation Mix</i>	Hydro 50% Thermal 50%	Hydro 50% Thermal 50%
<i>Light Crude Oil Price</i>	26 US\$/bbl	26 US\$/bbl

- * - All consumption above 50 units will not benefit from the subsidized and exclusive “lifeline” block charge.
- Consumption above 50 units and up to 300 units will attract a tariff of ₵400 per unit for total units consumed.
- Consumption above 300 units will attract a tariff of ₵400 per unit for the first 300 units and ₵960 per unit for consumption above 300 units.

FIFTH SCHEDULE

Electricity Tariff Adjustment (Indexation) Formula:

The **Adjusted Variable Energy Price** is computed as follows:

$$P = P_0 \left\{ \alpha \frac{FP}{FP_0} + \beta \frac{CPI}{CPI_0} \right\} \text{----- (1)}$$

where:

- P = Adjusted Variable Energy Price,
P₀ = Base Thermal Variable Energy Price:
Oil Fired Simple Cycle Plant = 4.61 cents/kWh.
Oil Fired Combined Cycle Plant = 3.03 cents/kWh.

- Levelized Energy Price **for natural gas fired thermal plant = 2.9cents/kWh.**
- FP = Fuel Price (For liquid fuels, the reference fuel is Bonny Crude Oil)
- FP₀ = Base Fuel Price (**20 US \$/bbl + a premium of 2.0 US \$/bbl**) = **22 US \$/bbl**
- CPI = % change in the Consumer Price Index of USA
- CPI₀ = % change in the Base Consumer Price Index of USA = **2.00 %**
- α = Annual Fuel coefficient.
- β = Annual CPI coefficient.

The Annual Fuel and CPI coefficients are defined in the table below.

Table of Fuel Coefficients for computing P.

COEFFICIENTS	CRUDE OIL	NATURAL GAS
FUEL COEFFICIENT (α)	0.89	0.89
CPI COEFFICIENT (β)	0.11	0.11

Upon **attainment of economic efficient tariff**, the fuel adjustment formula would be triggered in accordance with the following mathematical relationship:

Fuel Price Change = (30 ± 1.5) US \$/bbl

ii. Calculation of Adjusted Weighted Average Cost of Generation, BGC_{ADJUST}:

The **Adjusted Weighted Average Cost of Bulk Generation Charge, BGC_{ADJUST}**, is computed as follows:

$$\text{BGC}_{\text{ADJUST}} \text{ (Cents/kWh)} = [(X_1 H_C + X_2 P_2 + X_3 P_3) + nK]$$

where :

- X₁ = Percentage of Hydro contribution in the Generation Mix
- X₂ = Percentage of Simple Cycle thermal energy in the Total Generation Mix
- X₃ = Percentage of Combined Cycle thermal energy in the Total Generation Mix
- H_C = Hydro Cost (**cents/kWh**) determined by PURC
- P₂ = Adjusted Variable Energy Price (**cents/kWh**) of a Simple Cycle Plant (calculated from equation 1 above).
- P₃ = Adjusted Variable Energy Price (**cents/kWh**) of a Combined cycle plant (calculated from equation 1 above)
- K = System Capacity Price (**12.20 US \$/kW-month = 1.67 cents/kWh**)
- n = Effective percentage **thermal capacity** contribution to system demand.

iii. Conversion of BGC_{ADJUST}, in cents/kWh, to cedis/kWh:

Since the Bulk Generation Charge (Adjusted) is computed in **cents/kWh**, PURC will use **Bank of Ghana's average exchange rate projection for the next period**, to effect the conversion from **cents/kWh** to **cedis/kWh** using the following relationship:

$$\text{BGC}_{\text{(ADJUST)}} \text{ (Cedis/kWh)} = \frac{\text{BGC}_{\text{(ADJUST)}} \text{ (Cents/kWh)} \times \text{EXCH}_t}{100}$$

where:

BGC_{ADJUST} (Cents/kWh) = Adjusted Bulk Generation Charge
EXCH_t = Average Cedi-to-US \$ exchange rate in the next period (as projected by the Bank of Ghana)

Calculate:

$$\mathbf{BST = BGC_{(ADJUST)} + TSC}$$

Where:

BST = Bulk Supply Tariff (cedis/kWh)
TSC = Transmission Service Charge (cedis/kWh)

For TSC, the PURC Benchmark = 0.9 Cents/kWh

Convert TSC in Cents/kWh to Cedis/kWh using the following relationship:

$$\mathbf{TSC (Cedis/kWh) = \frac{TSC (Cents/kWh) \times EXCH_t}{100}}$$

iv. iv. Correction of Distribution Service Charge (DSC) for depreciation/appreciation of cedi against the US Dollar

Use the following formula:

$$\mathbf{DSC_t = DSC_{t-1} \times \frac{EXCH_t}{EXCH_{t-1}}}$$

where:

DSC_t = Distribution Service Charge (in cedis/kWh) for next period, t.

DSC_{t-1} = Distribution Service Charge (in cedis/kWh) for previous period

EXCH_t = Average Exchange Rate (cedis to US dollars), for next period (as projected by the Bank of Ghana)

EXCH_{t-1} = Average Exchange Rate (cedis to US dollars), used by PURC for previous period

v. v. End-User Tariff Determination:

Calculate EUT using the following mathematical formula:

$$\mathbf{EUT (cedis/kWh) = BST (cedis/kWh) + DSC (cedis/kWh)}$$

where:

EUT = Average End-User Tariff, in cedis/kWh.

vi. Trigger Condition for Automatic Adjustment of Tariff: On Quarterly Basis

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A.E. Quayson
Commissioner, Public Utilities Regulatory Commission

GRACE A. ORLEANS (MRS.)	Commissioner	_____
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