



Rate Setting Guidelines
for
Electricity Transmission and System Operations

PART 1 PURPOSE, SCOPE, APPLICATION AND REVISION

PURPOSE

The purpose of the guidelines is to set out the principles, methodology and processes for the approval of electricity transmission and system operations tariffs by PURC. The guidelines aim to provide PURC with the information it needs to make decisions on tariff adjustments. Finally, the guidelines provide industry participants with information to facilitate tariff application and approval processes.

SCOPE AND APPLICATION

The guidelines apply to a Public Utility licensed or authorised under any law to plan, design, develop, operate and maintain electricity transmission assets or to provide electricity transmission services or to provide system operations services in the electricity market in Ghana. In that regard, the Ghana Grid Company (GRIDCo) as per the functions of the company as contained in the National Electricity Grid Code, 2009, LI 1934 Electricity Transmission (Technical, Operational and Standards of Performance) Rules, 2008, LI 1937 Electricity Regulations, 2008 and also in fulfilment of the requirements of these Guidelines shall prepare and submit separate tariff proposals in respect of its transmission assets, operation and maintenance functions as well as its system operations functions.

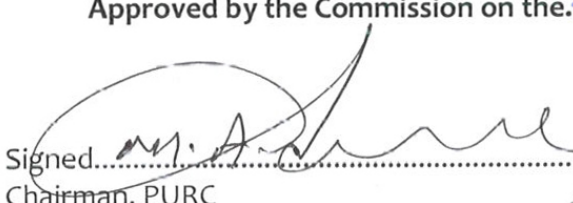
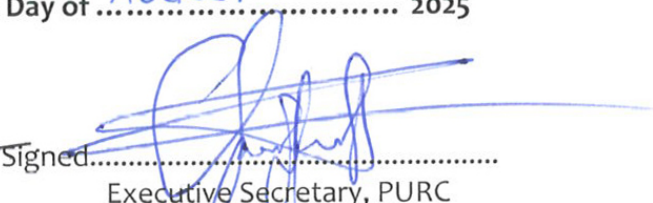
EFFECTIVE DATE, REVIEW, ADDITIONS AND AMENDMENTS

- i. These guidelines shall take effect from August 2025 and revoke all guidelines previously issued by PURC for the Electricity Transmission Utility.
- ii. PURC reserves the right to review or add to the guidelines periodically. Review or addition to the guidelines shall be done in consultation with stakeholders and in accordance with the Act.
- iii. Amendments, additions and relaxations to the guidelines may be made only with the approval of the Commission.

ENFORCEABILITY

These Guidelines are issued as an Order of the Commission and are enforceable in accordance with the Public Utilities Regulatory Commission Act, 1997 (Act 538).

Approved by the Commission on the 29TH Day of AUGUST 2025

Signed.......... Signed..........

Chairman, PURC Executive Secretary, PURC

CONTENT AND STRUCTURE OF DOCUMENT

This document issued by the Public Utilities Regulatory Commission (PURC) constitutes the approved Rate Setting Guidelines for approval of electricity transmission and system operation tariffs in Ghana. The document is organized as follows:

- Part 1 – This Part deals with the Purpose, Scope, Application and Issues relating to Revision of the Guidelines as well as Definitions and Equation Parameters.
- Part 2 - This Part sets out the Tariff Philosophy of the Rate Setting Guidelines.
- Part 3 – This part provided the Methodology for Determination of Electricity Transmission Tariffs
- Part 4 – This part sets out the Methodology for Determination of System Operations Tariffs
- Part 5 - This Part deals with Tariff Determination/Setting Process including the legal basis and minimum filing requirements underlying the Rate Setting Guidelines for Electricity Transmission and System Operations.

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**PUBLIC UTILITIES REGULATORY COMMISSION
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DEFINITIONS

Term	Definition
Asset owner	means a person who owns in whole or in part the transmission system infrastructure or any facility connected to the national interconnected transmission system.
Dispatch	Means the operating control of an integrated electric system to assign specific generating units and other sources of supply to meet the relevant demand as the load rises or falls
Electricity Transmission Utility	Means a public utility granted a licenced under section 23(5) of the Energy Commission Act, 1997 (Act 541) for the transmission of electricity throughout the country
Five-year Ghanaian Sovereign Bonds	Means outstanding Dollar-denominated bonds issued by the Republic of Ghana with maturities of five years, including locally issued Dollar-denominated bonds.
Ghanaian Credit Rating	Means a current credit rating published by Moody's, Standard & Poor's, or Fitch for the Republic of Ghana.
LIBOR	Means the London interbank offered rate administered by ICE Benchmark Administration Limited (or any other person which takes over the administration of that rate) for US Dollar deposits for a six (6) month period displayed on pages LIBOR01 or LIBOR02 of the Thomson Reuters screen (or any replacement Thomson Reuters page which displays that rate) or an equivalent interest rate should LIBOR cease to be published.
National Interconnected Transmission System	Means all electricity plant and equipment within the borders of the country that function or are operated at any voltage higher than 36 Kilovolts and any associated feeder or supply equipment that is shared for common use
Regulatory Year	Means the First Regulatory Year and any subsequent calendar year that occurs during a Regulatory Period.
Suitable Ghanaian Sovereign Bonds	Means outstanding bonds that are not Five-year Ghanaian Sovereign Bonds but are similar Dollar-denominated bonds issued by the Republic of Ghana, including locally issued Dollar-denominated bonds.
Total Transmission Revenue Requirement	Means total cost of electricity transmission including system operation cost
Transmission Service	Means the safe and reliable operation of high voltage electrical circuits, transformers and substations to ensure the cost-effective dispatch and movement of electricity from the facility of a wholesale supplier to a bulk customer or distribution company;
Transmission System	Means the national interconnected transmission system
Test Year	Means first year of PURC's Multi-Year Major Tariff Control Period

**PUBLIC UTILITIES REGULATORY COMMISSION
RATE SETTING GUIDELINES FOR ELECTRICITY TRANSMISSION AND SYSTEM OPERATIONS**

Term	Definition
System Operator	Means Electricity Transmission Utility as per L.I. 1937 and a neutral operator responsible for maintaining instantaneous balance of the NITS by controlling the dispatch of generating units to ensure that loads match resources available to the system and is effected in a safe, reliable, economic and non-discriminatory manner.

Interpretation

These Guidelines shall be interpreted in accordance with PURC Act 1997, (Act 538). Capitalized terms used but not defined shall have the meanings assigned in these Guidelines.

EQUATION PARAMETERS

Capital Expenses (Transmission)	As calculated pursuant to Section 3.6.4 & 4.6.4
Corporate Tax (Transmission)	As calculated pursuant to Section 3.9 & 4.9
Correction Factor (First)	As calculated pursuant to Section 3.10.1 & 4.10.1
Correction Factor (Second)	As calculated pursuant to Section 3.10.2 & 4.10.2
Cost of Debt	As calculated pursuant to Section 3.4.2.2
Cost of Equity	As calculated pursuant to Section 3.4.2.1
Cost of Working Capital Allowance	As calculated pursuant to section 3.8.1 & 4.8.1
Depreciation	As calculated pursuant to Section 3.5
Depreciation on Regulated Asset Base	As calculated pursuant to Sections 1.5 and 1.6.2
Disposition Proceeds	As calculated pursuant to Section 1.9.6
Mid-Year Regulated Asset Base	As calculated pursuant to Section 1.9.7
Initial Opening Regulated Asset Base	As calculated pursuant to Section 1.9.1
Opening Regulated Asset Base	As calculated pursuant to Section 1.9.2
Operating Expenses	As calculated pursuant to Sections 3.2 and 4.2
Return on Regulated Asset Base	As calculated pursuant to Sections 3.4 and 1.6.1
Target Transmission Loss Ratio	As calculated pursuant to Section 3.14
Weighted Average Cost of Capital	As calculated pursuant to Section 3.4.3
Working Capital Allowance	As calculated pursuant to Section 3.8 & 4.8

PART 2 TARIFF PHILOSOPHY

2.1 Preamble

In exercise of the powers conferred on the Public Utilities Regulatory Commission under Sections 3(a), 3(b) and 16 of the Public Utilities Regulatory Commission Act, 1997 (Act 538), these guidelines are issued to set out the principles, objectives and methodologies for the determination and approval of electricity transmission and system operation tariffs.

2.2 Statutory Provisions

The following provisions of the PURC Act specifically require PURC, in preparing guidelines and approving rates, to take into consideration the objectives below:

Relevant Section of Act 538	Objective
16 (3) (a)	Consumer interest
16(3) (b); 3(c)	Investor / Utility interest
16(3)(c)	Assuring reasonable cost of production of the service
16(3)(d)	Assurance of the financial viability of the Public Utility
20(1)	Uniformity of prices throughout the country
20(1)(b)	Best use of natural resources
20(1)(c)	Economic development of the country
20(2)	Different rates for different consumer classes

The processes and methodologies provided in these guidelines are informed by the above objectives in satisfaction of the statutory requirements, as explained more fully below:

- **Consumer interest:** Assurance of value for money in terms of price, quality and reliability; maintaining an optimum balance between affordability and availability of service; fair apportionment of total cost of supply to various classes of consumers; provision of a minimum level of service (lifeline supply) at an affordable price to a specified category of residential customers; ensuring long term availability of service.
- **Investor/Utility interest:** Allowance for an appropriate rate of return on investments to ensure ability of the Utility company and its investors to recover operational and capital expenditure and earn a reasonable return.
- **Reasonable cost of production:** Examination of the cost of production against agreed key performance indices and efficiency benchmarks to exclude unreasonable or inefficient costs.
- **Financial viability:** Allowance for prudent costs as pass-through costs with provision for reasonable return on investment. This includes prudent power purchase costs and provision of adequate revenue for sustainability of the business.
- **Uniformity of prices and population distribution:** Allowance for a tariff structure which incorporates uniform rates for all customers within a particular category of consumers regardless of geographic location, and incorporates different rates for different consumer categories in accordance with cost of service.
- **Economic development of the country:** Allowance for “special rates” for priority consumers whose activities may enhance economic development.

2.3 Principles Underlying the Rate Setting Guidelines

These Rate Setting Guidelines are based on the following general principles.

1. Guaranteed non-discriminatory access to use of transmission infrastructure
2. Transparent information, procedures and transactions in electricity transmission services
3. Transparent information, procedures and transactions in system operations services
4. Provision of options to grid participants on a level playing field basis thereby contributing to the Commission's competition objective function

2.4 Objectives of the Rate Setting Guidelines

These Rate Setting Guidelines are intended to achieve the following objectives.

1. Use tariff as an economic instrument to ensure efficiency in the utilisation of and management of National Interconnected Transmission System (NITS)
2. Enhance financial sustainability of the electricity transmission industry
3. Foster the provision of safe and reliable electricity transmission service at fair tariffs levels
4. Separate the regulated and non-regulated business costs
5. Create necessary conditions for the attraction of needed capital to the sector, at reasonable costs, for system upgrade and efficient expansion
6. Ensure transparency and non-discriminatory tariff regime

PART 3: ANNUAL REVENUE REQUIREMENT FOR ELECTRICITY TRANSMISSION

3.1 Calculation of Annual Revenue Requirement (Transmission)

The Annual Revenue Requirement in respect of Transmission Network operations shall be estimated as of each Major Tariff Review Determination Date in accordance with the following formula:

$$\text{ARR(Trans)}_t = \text{OpEx(LegTransNAs)}_t + \text{OpEx(NewTransNIs)}_t + [\text{RnLegRAB(TransNAs)}_t + \text{DepLegRAB(TransNAs)}_t] + \text{CRP(NewTransNIs)}_t + \text{CWCA(TransNAs)}_t + \text{CorpTax(Trans)}_t + \text{K(Trans)}_t$$

Where:

ARR(Trans)_t	means Annual Revenue Requirement in respect of Transmission Network Operations commencing Regulatory Year ‘t’
$\text{OpEx(LegTransNAs)}_t$	means Operating Expenses in respect of Legacy Transmission Network Assets for Regulatory Year ‘t’ calculated in accordance with Section 0.1
$\text{OpEx(NewTransNIs)}_t$	means Operating Expenses in respect of New Transmission Network Investments calculated in accordance with Section 3.2.2
$\text{RnRAB(LegTransNAs)}_t$	means Return on Legacy Transmission Network Regulated Asset Base commencing Regulatory Year ‘t’ calculated in accordance with Section 3.3.1
$\text{DepRAB(LegTransNAs)}_t$	means Depreciation on Legacy Transmission Network Regulated Asset Base commencing Regulatory Year ‘t’ calculated in accordance with Section 3.3.2
$\text{CRP(NewTransNIs)}_t$	means Capital Recovery Payments in respect of New Investments made by Electricity Transmission Utility commencing Regulatory Year ‘t’ calculated in accordance with Section 3.7
CWCA(TransNAs)_t	means Cost of Working Capital Allowance in respect of Transmission Network Assets commencing Regulatory Year ‘t’ calculated in accordance with Section 3.8
CorpTax(Trans)_t	means Corporate Taxes in respect of Transmission Network operations commencing Regulatory Year ‘t’ calculated in accordance with Section 3.9
K(Trans)_t	means Correction Factor in respect of Transmission Network operations, calculated in respect of Regulatory Year ‘t’ in accordance with Section 3.10.1

3.2 Operating Expenses

The PURC shall determine operating expenses for both Legacy Transmission Network Assets (LegTransNAs) and New Transmission Network Investments (NewTransNIs) for First and Subsequent Regulatory Years in a Regulatory Control Period. In so doing, PURC shall disaggregate, ring fence and treat as standalone expense, human resource expense from operation and maintenance expense, customer services expense, and administration and general expense.

3.2.1 Legacy Transmission Network Assets – First Regulatory Year

Operating Expenses relating to Legacy Transmission Network Assets shall be determined with respect to First Regulatory Year in Regulatory Control Period as follows.

3.2.1.1 Human Resource Expense

For determination of human resource expense for first regulatory year in Regulatory Control Period, the Commission shall ring-fence these expenses in consultation with the Electricity Transmission Utility. Where human resource expense is projected, such projections shall be supported by relevant documentation.

3.2.1.2 Other Operating Expense

For determination of other operating expenses categorised into operation and maintenance expense, administration and general expense for the first regulatory year in Regulatory Control Period, the following methodology shall be applied.

$$\text{OpEx}_t = \text{PAETNAV} * \gamma$$

Where:

OpEx_t means first regulatory year Operating Expenses defined as Test Year of the Regulatory Control Period

PAETNAV means PURC Approved Test Year Electricity Transmission Regulatory Network Asset Value

γ means PURC Approved Operating Expense Efficiency Benchmark Percentage

3.2.2 Legacy Distribution Network Assets - Subsequent Regulatory Years

Operating expenses relating to Legacy Transmission Network Assets shall be determined with respect to subsequent regulatory years in a Regulatory Control Period as follows.

3.2.2.1 Human Resource Expense

For subsequent regulatory years in a Regulatory Control Period, the Commission shall approve human resource expense in consultation with the Electricity Transmission Utility taking into consideration all relevant documentation approved by the Board of the Electricity Transmission Utility.

3.2.2.2 Other Operating Expense

For subsequent regulatory years, the Commission shall determine other operating expenses using the following formula.

$$\text{OpEx}(\text{LegTransNAs})_{t+1} = \text{OpEx}(\text{LegTransNAs})_t + (\text{VNCLegTransNAs} * \mu)$$

Where:

$\text{OpEx}(\text{LegTransNAs})_{t+1}$ means Forecast Operating Expenses of Electricity Transmission Utility in respect of Legacy Transmission Network Assets

$\text{OpEx}(\text{LegTransNAs})_t$ means Base Year Operating Expenses of Electricity Transmission Utility in respect of Legacy Transmission Network Assets

VNCLegTransNAs means Value of Newly Commissioned Legacy Transmission Network Assets

μ means Percentage of Value of Newly Commissioned Legacy Assets Dedicated to Operating Expenses as Approved by the Commission

3.2.3 New Transmission Network Investments – First Regulatory Year

Operating Expenses such as human resource expense, operation and maintenance expense, customer services expense, administration and general expense relating to Newly Commissioned Transmission Network Investments shall be determined with respect to First Regulatory Year in a Regulatory Control Period as follows.

3.2.3.1 Human Resource Expense

PURC shall assess and approve any Human Resource Expense dedicated to operating Newly Commissioned Transmission Network Investments for first regulatory year in a Regulatory Control Period in consultation with the Electricity Transmission Utility taking into consideration all relevant documentation approved by the Board of the Electricity Transmission Utility.

3.2.3.2 Other Operating Expense

Other Operating Expense as categorised (excluding Human Resource Expense) for first regulatory year in Regulatory Control Period in respect of New Transmission Network Investments undertaken by Electricity Transmission Utility, shall be determined by the PURC using the following formula.

$$\text{OpEx}(\text{NewTransNIs})_t = \text{VNCTransNIs} * \mu$$

Where:

- OpEx(NewTransNIs)_t means Base Year Operation and Maintenance Expenses in respect of New Transmission Network Investments undertaken by Electricity Transmission Utility
- VNCTransNIs means Value of Newly Commissioned Transmission Network Investments undertaken by Electricity Transmission Utility
- μ means Percentage of Value of Newly Commissioned Transmission Network Investments dedicated to Operating Expenses

3.2.4 New Transmission Network Investments - Subsequent Regulatory Years

Operating expenses relating to New Transmission Network Investments shall be determined with respect to subsequent regulatory years in a Regulatory Control Period as follows.

3.2.4.1 Human Resource Expense

The Commission shall approve any Human Resource Expense dedicated to operating newly commissioned transmission network investments for subsequent regulatory years in consultation with the Electricity Transmission Utility taking into consideration all relevant documentation approved by the Board of the Electricity Transmission Utility.

3.2.4.2 Other Operating Expense

For subsequent regulatory years in a Regulatory Control Period, PURC shall determine other operating expenses of an Electricity Transmission Utility using the following formula.

$$\text{OpEx}(\text{NewTransNIs})_{t+1} = \text{OpEx}(\text{NewTransNIs})_t + (\text{VNCTransNIs} * \mu)$$

Where:

- OpEx(NewTransNIs)_{t+1} means Forecast Operation and Maintenance Expenses in respect of New Transmission Network Investments of Electricity Transmission Utility
- OpEx(NewTransNIs)_t means Base Year Operation and Maintenance Expenses in respect of New Transmission Network Investments of Electricity Transmission Utility
- VNCTransNIs means Value of Newly Commissioned Transmission Network Investments
- μ means Percentage of Value of Newly Commissioned Transmission Network Investments/Assets Dedicated to Operating Expenses

3.3 Return on Transmission Network Regulatory Asset Base

3.3.1 Legacy Network Regulatory Asset Base

The return on legacy network Regulatory Asset Base, commencing Regulatory Year (Regulatory Year ‘t’) shall be calculated as follows:

$$\text{RnRAB}(\text{LegTransNAs})_t = \text{MidYearRAB}(\text{LegTransNAs})_t * \text{WACC}$$

Where:

- RnRAB(LegTransNAs)_t means the Return on Legacy Regulated Asset Base for Regulatory Year ‘t’

MidYearRAB(LegTransNAs)_t means the Mid-Year Legacy Regulated Asset Base for Regulatory Year ‘t’ calculated pursuant to Section 3.7.3

WACC means the Weighted Average Cost of Capital calculated pursuant to Section 3.5

3.3.2 New Transmission Network Investments

The Return on New Transmission Network Investments commencing Regulatory Year ‘t’ shall be calculated as follows:

$$Rn(\text{NewTransNIs})_t = \text{MidYear}(\text{NewTransNIs})_t * \text{WACC}$$

Where:

Rn(NewTransNIs)_t means Return on New Transmission Network Investments for Regulatory Year ‘t’;

MidYear(NewTransNIs)_t means the Mid-Year New Transmission Investments for Regulatory Year ‘t’ calculated pursuant to Section 3.7.3

WACC means the Weighted Average Cost of Capital, calculated pursuant to Section 3.5

3.4 Gearing

In calculating the allowable Rate of Return on Regulatory Asset Base (RAB) for both Legacy Assets and Transmission Network Investments, the Commission shall apply its benchmark gearing level of 30% equity and 70% debt.

3.5 Allowable Rate of Return on Regulated Asset

The allowable rate of return shall be set equal to the estimated Weighted Average Cost of Capital (WACC). The PURC shall determine the post-tax WACC by taking into consideration, cost of debt and cost of equity as well as the Commission’s benchmark debt and equity ratios using the following formulae.

$$\text{WACC} = \left[\frac{E}{(D+E)} * R_e \right] + \left[\frac{D}{(D+E)} * R_d * (1-T) \right]$$

Where:

WACC means Post-tax WACC

E means Equity

D means Debt

Re means Cost of Equity

Rd means Pre-tax Cost of Debt

T means Corporate Tax Rate

3.6 Depreciation on Transmission Network Regulatory Asset Base

Depreciation shall be calculated in respect of both Legacy Transmission Network Regulatory Asset Base and Newly Commissioned Transmission Network Investments using the straight-line method of depreciation/amortisation. The depreciation on above assets and investments in respect of a Regulatory Year ‘t’ shall equal depreciation, which the Electricity Transmission Utility will recognise and approved by PURC during Regulatory Year ‘t’ with respect to the Opening Legacy Transmission Network Assets as well as Newly Commissioned Transmission Network Investments.

3.7 Regulated Asset Base

The Regulatory Asset Base which comprises Legacy Transmission Network Regulatory Asset Base and Newly Commissioned Investments of the Electricity Transmission Utility, shall at any particular point in time be revalued at its replacement cost.

3.7.1 Opening Regulatory Asset Base – First Regulatory Year

The Initial Opening Regulatory Asset Base, commencing Regulatory Year ‘1’ of the First Regulatory Control Period, shall be the Legacy Transmission Network Regulatory Asset Base and Newly Commissioned Investments by the Electricity Transmission Utility (where applicable) determined by the Commission as follows.

$$\text{OpeningRAB(Trans)}_t = \text{OpeningRAB(Trans)}_{t-1} + \text{ActCapEx(Trans)}_{t-1} - \text{ActDep(Trans)}_{t-1} - \text{ActDisp(Trans)}_{t-1}$$

Where:

- Opening RAB(Trans)_t means the Opening Regulated Asset Base for Regulatory Year ‘t’
- Opening RAB(Trans)_{t-1} means the Opening Regulated Asset Base for Regulatory Year ‘t-1’
- ActCapEx(Trans)_{t-1} means the actual Capital Expenses for Regulatory Year ‘t-1’, subject to a prudence test by PURC if actual Capital Expenses exceeds the approved Capital Expenses for such Regulatory Year, calculated in accordance with Section 3.7.4
- ActDep(Trans)_{t-1} means the actual Depreciation for Regulatory Year ‘t-1’, calculated in accordance with Section 3.6
- ActDisp(Trans)_{t-1} means the actual Disposition Proceeds for Regulatory Year ‘t-1’, calculated in accordance with Section 3.7.5

3.7.2 Opening Regulatory Asset Base – Subsequent Regulatory Year

The Electricity Transmission Utility shall provide detailed information for calculation and filing of Legacy Transmission Network Regulatory Asset Base and Newly Commissioned Investments by the Electricity Transmission Utility (where applicable) for the Subsequent Regulatory Year other than the First Regulatory Year for determination and approval by PURC.

The roll-forward for the Regulatory Asset Base shall be subject to a prudence test by PURC. The following formula shall be used to roll-forward the Regulatory Asset Base from the opening value for the first year of the previous Regulatory Period.

$$\text{OpeningRAB(Trans)}_{t+1} = \text{OpeningRAB(Trans)}_t + \text{CapEx(Trans)}_t - \text{Dep(Trans)}_t - \text{Disp(Trans)}_t$$

Where:

- OpeningRAB(Trans)_{t+1} means the Opening Regulated Asset Base for Regulatory Year ‘t+1’
- OpeningRAB(Trans)_t means the Opening Regulated Asset Base for First Regulatory Year ‘t’
- CapEx(Trans)_t means the approved Capital Expenses for First Regulatory Year ‘t’, calculated in accordance with Section 3.7.4
- Dep(Trans)_t means the Depreciation for First Regulatory Year ‘t’, calculated in accordance with Section 3.6
- Disp(Trans)_t means the Disposition Proceeds for First Regulatory Year ‘t’, calculated in accordance with Section 3.7.5.

3.7.3 Mid-Year Regulated Asset Base

The Mid-Year Regulated Asset Base as of the mid-point of each Regulatory Year shall be calculated as follows:

$$\text{MidYearRAB(Trans)}_t = \text{OpeningRAB(Trans)}_t + 0.5(\text{CapEx(Trans)}_t - \text{Dep(Trans)}_t - \text{Disp(Trans)}_t)$$

Where:

MidYearRAB(Trans) _t	means the Mid-Year Regulated Asset Base for Regulatory Year ‘t’
OpeningRAB(Trans) _t	means the Opening Regulated Asset Base for Regulatory Year ‘t’
CapEx(Trans) _t	means the Capital Expenses for Regulatory Year ‘t’, calculated in accordance with Section 3.7.4
Dep(Trans) _t	means the Depreciation for Regulatory Year ‘t’, calculated in accordance with Section 3.6
Disp(Trans) _t	means the Disposition Proceeds for Regulatory Year ‘t’, calculated in accordance with Section 3.6.5

3.7.4 Capital Expenses

Capital Expenses for each Regulatory Year occurring during first and subsequent Regulatory Years in a Regulatory Control Period shall equal the amount approved by PURC pursuant to the relevant Major Tariff Review Decision. Capital Expenses in respect of a project shall be recognized at the time of commissioning and shall include capitalized interest.

3.7.5 Disposition Proceeds

Disposition Proceeds for each Regulatory Year (Regulatory Year ‘t’) shall equal the proceeds realized by the Electricity Transmission Utility from the sale of any assets that are no longer useful in connection with the provisions of Transmission Service.

3.8 Capital Recovery Payments on New Transmission Network Investments

Capital Recovery Payments in respect of New Transmission Network Investments made by the Electricity Transmission Utility commencing Regulatory Year ‘t’ shall be the sum of Return and Depreciation on Newly Commissioned Transmission Network Investments calculated in accordance with Section 3.3.2 and Section 3.6.

3.9 Working Capital Allowance

The Working Capital Allowance commencing Regulatory Year (Regulatory Year ‘t’) shall be calculated as follows:

$$WCA(TransNAs)_t = \frac{\text{Lag(Days)}_t - \text{Lead(Days)}_t + \text{Inventory (Days)}}{365} * \text{OpEx(TransNAs)}_t$$

Where:

WCA(TransNAs) _t	means Working Capital Allowance in respect of Transmission Network Assets calculated for Regulatory Year ‘t’
Lag Days	means Average Debtor Days calculated for Regulatory Year ‘t’
Lead Days	means Average Creditor Days Calculated for regulatory Year ‘t’
OpEx(TransNAs) _t	means Sum of Operating Expenses in respect of Transmission Network Assets calculated for Regulatory Year ‘t’

3.9.1 Cost of Working Capital Allowance

The Cost of Working Capital Allowance Transmission Network Assets commencing Regulatory Year (Regulatory Year ‘t’) shall be calculated as follows:

$$CWCA(TransNAs)_t = WCA(TransNAs)_t * WACC$$

Where:

- CWCA(TransNAs)_t means Cost of Working Capital Allowance in respect of Transmission Network Assets calculated for Regulatory Year ‘t’
WCA(TransNAs)_t means Working Capital Allowance in respect of Transmission Network Assets calculated for Regulatory Year ‘t’
WACC means Weighted Average Cost of Capital calculated pursuant to Section 3.5

PURC shall ensure that the Electricity Transmission Utility observes optimal working capital allowance management practices in accordance with international standards.

Prior to or upon commencement of the Regulatory Control Period, a lead – lag study shall be undertaken to form the basis for the determination of the regulatory working capital allowance.

3.10 Corporate Tax

Corporate Tax on the transmission licence business shall be in accordance with the provisions of Applicable Ghana Revenue Tax Laws. The Corporate tax shall be treated as an expense hence incorporated into Annual Revenue Requirement and recovered from consumers through tariff. The corporate tax shall be computed using the following formula.

$$\text{CorpTax}_t = (\text{Pre-Tax WACC} - \text{Post-Tax WACC}) * \text{RAB}_{\text{ETU}}$$

Where:

- CorpTax_t means Corporate Tax
Pre-Tax WACC means Weighted Average Cost of Capital Including Corporate Tax Percentage
Post-Tax WACC means Weighted Average Cost of Capital Excluding Corporate Tax Percentage
RAB_{ETU} means PURC Approved Test Year Regulatory Asset Base of Electricity Transmission Utility

3.11 Correction of Electricity Transmission Revenue

The correction factor shall be a monetary value whereby maximum allowed revenue for Regulatory Year ‘t’ is decreased or increased by the difference between Annual Revenue Requirement and the efficient and prudent revenue requirement (actual) for the relevant Regulatory Years calculated in accordance with the methodology below.

PURC shall correct for over-recovery or under-recovery of Electricity Transmission revenue using correction factors established on the basis of actual electricity transmitted assuming PURC Target Transmission Losses as established in Section 3.11.1. Correction Factors shall be calculated using Annual and Quarterly Reports as well as other relevant data submitted to PURC by the Electricity Transmission Utility.

3.11.1 Correction Factor

The Correction Factor in respect of Regulatory Year ‘t’ shall equal zero (0) for the purposes of estimating the Annual Revenue Requirement for Regulatory Year ‘1’ and Regulatory Year ‘2’ of Regulatory Control Period, and shall be calculated as follows thereafter:

$$K(\text{Trans})_t = [(\text{AdjARR}(\text{Trans})_{t-2} - \text{ActualTRev}(\text{Trans})_{t-2})] * [(1 + \text{WACC})^2]$$

Where:

- K2(Trans)_t means the Correction Factor (Second) calculated for Regulatory Year ‘t’
Adj ARR(Trans)_{t-2} means the Adjusted Annual Revenue Requirement (Transmission) for Regulatory Year ‘t-2’ as per actual market conditions

ActualTRev(Trans)_{t-2} means the revenues Electricity Transmission Utility would have earned and collected during Regulatory Year 't-2' by charging Transmission Service Rates, calculated assuming that Electricity Transmission Utility achieved the Target Transmission Loss Ratio which were applicable to Regulatory Year 't-2' given the actual energy metered at the bulk supply points

WACC means the Weighted Average Cost of Capital calculated pursuant to Section 3.5

3.13 Casualties to the Transmission System

An Electricity Transmission Utility shall procure and maintain, in its name, property and casualty insurance over the Transmission System.

Upon the occurrence of a casualty to an asset that constitutes part of the Regulated Asset Base, the Electricity Transmission Utility shall use the proceeds of any insurance claim in respect of the casualty to repair or replace the asset, unless repair or replacement of the asset is not necessary for the continued provision of service in accordance with the terms of the Transmission Licence and the Supply Licence.

In the event that insurance proceeds are not sufficient to repair or replace the asset, the utility shall fund the repair or replacement as it would fund any other capital expense.

The portion of the value of an asset that is (i) recovered from the proceeds of any insurance claim, and (ii) used by the utility to repair or replace the asset shall remain in the Regulated Asset Base. An amount equal to the portion of any insurance proceeds not used by the utility to repair or replace the asset as a result of the circumstances contemplated, shall be removed from the Opening Regulated Asset Base.

The portion of the value of such asset that is not recovered from the proceeds of any insurance claim shall be:

- added to Operating Expenses for the Regulatory Year during which the Casualty occurred; and
- removed from the Opening Regulated Asset Base

provided, that, if such an amount would cause a material increase in the Annual Revenue Requirement (Transmission), then PURC may, in its discretion, decide that the amount shall remain in the Opening Regulated Asset Base and shall be depreciated over a period that PURC may determine.

The costs incurred by Electricity Transmission Utility to repair or replace the asset minus the amount of any insurance proceeds shall be added to Capital Expenses for the Regulatory Year during which the Casualty occurred.

3.14 Approval of Revenue Requirement

The Commission is not obliged to approve the amount for each cost element or sub-element of the revenue requirement proposed by the Electricity Transmission Utility. The Commission may allow or disallow the proposed revenue requirement based on a thorough evaluation of the proposed amount. The revenue requirement shall be allowed if it is found to be reasonable, prudent, and necessary to provide safe, reliable, and affordable service to customers. The revenue requirement may be reduced or portions disallowed based on the impact on the Utilities, customers and the economy while ensuring financial sustainability of the Utilities.

3.15 Target Transmission Loss Ratio

The Target Transmission Loss Ratio agreed with the Electricity Transmission Utility in respect of each Regulatory Year ‘t’ during a Regulatory Control period shall equal:

- (a) in respect of Regulatory Year 1, Provisional Baseline Aggregate Transmission Loss ratio established by PURC based on actual data from the twelve months preceding the effective implementation date of the approved tariff
- (b) in respect of Regulatory Year 2, the Approved Transmission Loss Ratio from Regulatory Year 1 (as established under section (a) above) minus [**Percentage Reduction in Transmission Loss Ratio as per Agreement Year 2**]
- (c) in respect of Regulatory Year 3, the Approved Transmission Loss Ratio from Regulatory Year 2 (as established under section (a) above) minus [**Percentage Reduction in Transmission Loss Ratio as per Agreement Year 3**]
- (d) in respect of Regulatory Year 4, the Approved Transmission Loss Ratio from Regulatory Year 3 (as established under section (a) above) minus [**Percentage Reduction in Transmission Loss Ratio as per Agreement Year 4**]
- (e) in respect of Regulatory Year 5, the Approved Transmission Loss Ratio from Regulatory Year 4 (as established under section (a) above) minus [**Percentage Reduction in Transmission Loss Ratio as per Agreement Year 5**]

provided, that, in the event that any failure to complete and commission PURC and EC Approved Investment in the Transmission System, PURC will adjust the above Target Transmission Loss Ratio on a fair and equitable basis.

3.16 Transmission Service Charges

The Commission shall determine transmission service charges to be charged by the Transmission Utility to recover its approved transmission costs.

3.16.1 Transmission Service Charge-1 (TSC-1)

PURC shall determine the cost of providing transmission grid services referred to as Transmission Service Charge-1 (TSC-1) payable by all end-use customers to the transmission utility using the following formula.

$$TSC-1_t = \frac{ARR(Trans)_t}{ETV_t}$$

Where:

- TSC-1_t Is Transmission Service Charge-1 for Regulatory Year ‘t’
- ARR(Trans)_t Is Annual Revenue Requirement in respect of Electricity Transmission Network Operations for Regulatory Year ‘t’ calculated pursuant to Section 3.1
- ETV_t Is Projected Net Electricity Transmission Volume for Regulatory Year ‘t’

3.16.1 Transmission Service Charge- 2 (TSC-2)

The Commission shall determine the cost of transmission losses payable to the relevant generator to compensate for energy lost during transmission. This cost shall be determined using the PURC benchmark electricity transmission loss ratio approved in accordance to Section 3.15. The Transmission Service Charge-2 (TSC-2) is the charge that remunerates for transmission losses shall be computed as

$$TSC-2_t = \frac{TransLossCost_t}{ETV_t}$$

Where:

TSC-2_t Is Transmission Service Charge-2 for Regulatory Year 't'
TransLossCost_t Is Electricity Transmission Loss Cost for Regulatory Year 't' calculated as a product of transmission losses (kWh) and Composite Bulk Generation Charge
ETV_t Is Projected Net Electricity Transmission Volume for Regulatory Year 't'

3.17 Quarterly Review of Transmission Tariffs

Transmission Tariffs determined as per methodology in Section 3.16 and approved by PURC will be reviewed quarterly in line with PURC's Guidelines for Quarterly Adjustment of Natural Gas, Electricity and Water Tariffs. The objective of quarterly reviews is to ensure real value of PURC approved Transmission Tariffs are maintained at any particular period of time.

PART 4: ANNUAL REVENUE REQUIREMENT FOR SYSTEM OPERATIONS

4.1 Calculation of Annual Revenue Requirement (System Operations)

The Annual Revenue Requirement in respect of System Operations shall be estimated as of each Major Tariff Review Determination Date in accordance with the following formula:

$$ARR(SO)_t = OpEx(LegSOAs)_t + OpEx(NewSOIs)_t + [RnLegRAB(SOAs)_t + DepLegRAB(SOAs)_t] + CRP(NewSOIs)_t + CWCA(SOAs)_t + CorpTax(SO)_t + K(SO)_t$$

Where:

ARR(SO) _t	means Annual Revenue Requirement in respect of System Operations commencing Regulatory Year ‘t’
OpEx(LegSOAs) _t	means Operating Expenses in respect of Legacy System Operations Assets for Regulatory Year ‘t’ calculated in accordance with Section 0.1
OpEx(NewSOIs) _t	means Operating Expenses in respect of New System Operations Investments calculated in accordance with Section 4.2.2
RnRAB(LegSOAs) _t	means Return on Legacy System Operations Regulated Asset Base commencing Regulatory Year ‘t’ calculated in accordance with Section 4.3.1
DepRAB(LegSOAs) _t	means Depreciation on Legacy System Operations Regulated Asset Base commencing Regulatory Year ‘t’ calculated in accordance with Section 4.3.2
CRP(NewSOIs) _t	means Capital Recovery Payments in respect of New Investments made by System Operator commencing Regulatory Year ‘t’ calculated in accordance with Section 4.7
CWCA(SOAs) _t	means Cost of Working Capital Allowance in respect of System Operations Assets commencing Regulatory Year ‘t’ calculated in accordance with Section 4.8
CorpTax (SO) _t	means Corporate Taxes in respect of System Operations Network operations commencing Regulatory Year ‘t’ calculated in accordance with Section 4.9
K(SO) _t	means Correction Factor in respect of System Operations, First calculated in respect of Regulatory Year ‘t’ in accordance with Section 4.10.1

4.2 Operating Expenses

Operating expenses shall be determined for both Legacy System Operations Assets (LegSOAs) and New System Operations Investments (NewSOIs) for first regulatory year and subsequent regulatory years in a Regulatory Control Period. The Commission shall disaggregate human resource expenses, operation and maintenance expenses and administration and general expenses, and ring fence human resource expenses as standalone expenses.

4.2.1 Legacy System Operations Assets – First Regulatory Year

Operating Expenses relating to Legacy System Operations Network Assets shall be determined with respect to first regulatory year in Regulatory Control Period as follows.

4.2.1.1 Human Resource Expense

For determination of human resource expense for first regulatory year in Regulatory Control Period, the Commission shall ring-fence these expenses in consultation with the System Operator. Where human resource expense is projected, the projections shall be supported by relevant documentation.

4.2.1.2 Other Operating Expense

For determination of other operating expense categorised into operation and maintenance expense, administrative and general expense for the first regulatory year in Regulatory Control Period, the following methodology shall be applied.

$$\text{OpEx}_t = \text{PASOAV} * \gamma$$

Where:

OpEx _t	means first Regulatory Control Period Operating Expenses defined as Test Year of the Regulatory Control Period
PASONAV	means PURC Approved Test Year Electricity System Operations Regulatory Asset Value
γ	means PURC Approved Operating Expense Efficiency Benchmark Percentage

4.2.2 Legacy System Operations Assets - Subsequent Regulatory Years

Operating expenses relating to Legacy System Operations Assets shall be determined with respect to subsequent regulatory years in a Regulatory Control Period as follows.

4.2.2.1 Human Resource Expense

For subsequent regulatory years in a Regulatory Control Period, the Commission shall approve human resource expense in consultation with the System Operator taking into consideration all relevant documentation approved by the Board of the System Operator.

4.2.2.2 Other Operating Expense

For subsequent regulatory years, the Commission shall determine other operating expenses using the following formula.

$$\text{OpEx}(\text{LegSOAs})_{t+1} = \text{OpEx}(\text{LegSOAs})_t + (\text{VNCLegSOAs} * \mu)$$

Where:

OpEx(LegSOAs) _{t+1}	means Forecast Operating Expenses of System Operator in respect of Legacy System Operations Assets
OpEx(LegSOAs) _t	means Base Year Operating Expenses of System Operator in respect of Legacy System Operations Assets
VNCLegSOAs	means Value of Newly Commissioned Legacy System Operations Assets
μ	means Percentage of Value of Newly Commissioned Legacy Assets Dedicated to Operating Expenses as Approved by the Commission

4.2.3 New System Operations Investments – First Regulatory Year

Operating Expenses such as human resource expense, operation and maintenance expense, customer services expense, administration and general expense relating to Newly Commissioned System Operations Investments shall be determined with respect to First Regulatory Year and Subsequent Regulatory Year in Regulatory Control Period as follows.

4.2.3.1 Human Resource Expense

PURC shall assess and approve any human resource expense dedicated to operating Newly Commissioned System Operations Investments for first regulatory year in Regulatory Control Period in consultation with the System Operator taking into consideration all relevant documentation approved by the Board of the System Operator.

4.2.3.2 Other Operating Expense

Other Operating Expense as categorised (excluding human resource expense) for first regulatory year in Regulatory Control Period in respect of New System Operations Investments undertaken by System Operator, shall be determined by the PURC using the following formula.

$$\text{OpEx(NewSOIs)}_t = \text{VNCSOIs} * \mu$$

Where:

- OpEx(NewSOIs)_t means Base Year Operation and Maintenance Expenses in respect of New System Operations Investments undertaken by System Operator
- VNCSOIs means Value of Newly Commissioned System Operations Investments undertaken by System Operator
- μ means Percentage of Value of Newly Commissioned System Operations Investments dedicated to Operating Expenses as approved by the Commission

4.2.4 New System Operations Investments - Subsequent Regulatory Years

Operating expenses relating to New System Operations Investments shall be determined with respect to subsequent regulatory years in a Regulatory Control Period as follows.

4.2.4.1 Human Resource Expense

The Commission shall assess and approve any human resource expense dedicated to operating newly commissioned System Operations Investments for subsequent regulatory years in consultation with the System Operator taking into consideration all relevant documentation approved by the Board of the System Operator.

4.2.4.2 Other Operating Expense

For subsequent regulatory years in Regulatory Control Period, PURC shall determine other operating expenses of a System Operator using the following formula.

$$\text{OpEx(NewSOIs)}_{t+1} = \text{OpEx(NewSOIs)}_t + (\text{VNCSOIs} * \mu)$$

Where:

- $\text{OpEx(NewSOIs)}_{t+1}$ means Forecast Operation and Maintenance Expenses in respect of New System Operations Investments of System Operator
- OpEx(NewSOIs)_t means Base Year Operation and Maintenance Expenses in respect of New System Operations Investments of System Operator
- VNCSOIs means Value of Newly Commissioned System Operations Investments
- μ means Percentage of Value of Newly Commissioned System Operations Investments/Assets Dedicated to Operating Expenses as Approved by the Commission

4.3 Return on System Operations Regulatory Asset Base

4.3.1 Legacy System Operations Regulatory Asset Base

The return on legacy system operations regulatory asset base, commencing Regulatory Year (Regulatory Year ‘t’) shall be calculated as follows:

$$\text{RnRAB(LegSOAs)}_t = \text{MidYearRAB(LegSOAs)}_t * \text{WACC}$$

Where:

- RnRAB(LegSOAs)_t means the Return on Legacy Regulated Asset Base for Regulatory Year ‘t’

MidYearRAB(LegSOAs)_t means the Mid-Year Legacy Regulated Asset Base for Regulatory Year ‘t’ calculated pursuant to Section 4.6.3

WACC means the Weighted Average Cost of Capital calculated pursuant to Section 3.5

4.3.2 New System Operations Investments

The return on new system operations investments commencing Regulatory Year ‘t’ shall be calculated as follows:

$$Rn(NewSOIs)_t = MidYear(NewSOIs)_t * WACC$$

Where:

Rn(NewSOIs)_t means Return on New System Operations Investments for Regulatory Year ‘t’

MidYear (NewSOIs)_t means the Mid-Year New System Operations Investments for Regulatory Year ‘t’ calculated pursuant to Section 4.6.3

WACC means the Weighted Average Cost of Capital calculated pursuant to Section 3.5

4.4 Gearing and Allowable Rate of Return on System Operations Regulatory Asset Base

The PURC shall apply its established Gearing and also determine the allowable Rate of Return on Legacy System Operations Regulatory Asset Base as well as New System Operations Investments as per Sections 3.4 and 3.5

4.5 Depreciation on System Operations Regulatory Asset Base

Depreciation shall be calculated in respect of both Legacy System Operations Regulatory Asset Base and Newly Commissioned System Operations Investments using the straight-line method of depreciation/amortisation. The depreciation on assets and investments in respect of a Regulatory Year ‘t’ shall equal depreciation, which the System Operator will recognise and approved by PURC during Regulatory Year ‘t’ with respect to the Opening Legacy System Operations Assets as well as Newly Commissioned System Operations Investments.

4.6 Regulated Asset Base

The Regulatory Asset Base which comprises Legacy System Operations Regulatory Asset Base and Newly Commissioned Investments of the System Operator, shall at any particular point in time be revalued at its replacement cost.

4.6.1 Initial Opening Regulatory Asset base - First Regulatory Year

The Initial Opening Regulatory Asset Base, commencing Regulatory Year ‘1’ of the First Regulatory Control Period, shall be the Legacy System Operations Regulatory Asset Base and Newly Commissioned Investments by the Electricity System Operator (where applicable) determined by the Commission as follows.

$$OpeningRAB(SO)_t = OpeningRAB(SO)_{t-1} + ActCapEx(SO)_{t-1} - ActDep(SO)_{t-1} - ActDisp(SO)_{t-1}$$

Where:

Opening RAB(SO)_t means the Opening Regulated Asset Base for Regulatory Year ‘t’

Opening RAB(SO)_{t-1} means the Opening Regulated Asset Base for Regulatory Year ‘t-1’

ActCapEx(SO)_{t-1} means the actual Capital Expenses for Regulatory Year ‘t-1’, subject to a prudence test by PURC if actual Capital Expenses exceeds the approved Capital Expenses for such Regulatory Year, calculated in accordance with Section 1.6.4

ActDep(SO)_{t-1} means the actual Depreciation for Regulatory Year ‘t-1’, calculated in accordance with Section 4.5

ActDisp(SO)_{t-1} means the actual Disposition Proceeds for Regulatory Year ‘t-1’, calculated in accordance with Section 4.6.5

4.6.2 Opening Regulatory Asset Base - Subsequent Regulatory Year

The System Operator shall provide detailed information for calculation and filing of Legacy System Operations Regulatory Asset Base and Newly Commissioned Investments by the System Operator (where applicable) for the Subsequent Regulatory Year other than the First Regulatory Year for determination and approval by PURC.

The roll-forward for the Regulatory Asset Base shall be subject to a prudence test by PURC. The following formula shall be used to roll-forward the Regulatory Asset Base from the opening value for the first year of the previous Regulatory Period.

$$\text{OpeningRAB(SO)}_{t+1} = \text{OpeningRAB(SO)}_t + \text{CapEx(SO)}_t - \text{Dep(SO)}_t - \text{Disp(SO)}_t$$

Where:

- OpeningRAB(SO)_{t+1} means the Opening Regulated Asset Base for Regulatory Year ‘t+1’
- OpeningRAB(SO)_t means the Opening Regulated Asset Base for First Regulatory Year ‘t’
- CapEx(SO)_t means the approved Capital Expenses for First Regulatory Year ‘t’, calculated in accordance with Section 4.6.4
- Dep(SO)_t means the Depreciation for First Regulatory Year ‘t’, calculated in accordance with Section 4.5
- Disp(SO)_t means the Disposition Proceeds for First Regulatory Year ‘t’, calculated in accordance with Section 4.6.5

4.6.3 Mid-Year Regulated Asset Base

The Mid-Year Regulated Asset Base as of the mid-point of each Regulatory Year shall be calculated as follows:

$$\text{MidYearRAB(SO)}_t = \text{OpeningRAB(SO)}_t + 0.5(\text{CapEx(SO)}_t - \text{Dep(SO)}_t - \text{Disp(SO)}_t)$$

Where:

- MidYearRAB(SO)_t means the Mid-Year Regulated Asset Base for Regulatory Year ‘t’
- OpeningRAB(SO)_t means the Opening Regulated Asset Base for Regulatory Year ‘t’
- CapEx(SO)_t means the Capital Expenses for Regulatory Year ‘t’, calculated in accordance with Section 4.6.4
- Dep(SO)_t means the Depreciation for Regulatory Year ‘t’, calculated in accordance with Section 4.5
- Disp(SO)_t means the Disposition Proceeds for Regulatory Year ‘t’, calculated in accordance with Section 4.6.5

4.6.4 Capital Expenses

Capital Expenses for each Regulatory Year occurring during first and subsequent regulatory years in a Regulatory Control Period shall equal the amount approved by PURC pursuant to the relevant Major Tariff Review Decision. Capital Expenses in respect of a project shall be recognized at the time of commissioning and shall include capitalized interest.

4.6.5 Disposition Proceeds

Disposition Proceeds for each Regulatory Year (Regulatory Year ‘t’) shall equal the proceeds realized by the System Operator from the sale of any assets that are no longer useful in connection with the provisions of Transmission Service determined as of the relevant Major Tariff Review Determination Date.

4.7 Capital Recovery Payments on New System Operations Investments

Capital Recovery Payments in respect of New System Operations Investments made by the System Operator commencing Regulatory Year ‘t’ shall be the sum of Return and Depreciation on Newly Commissioned System Operations Investments calculated in accordance with Section 4.3 and Section 4.5.

4.8 Working Capital Allowance

The Working Capital Allowance commencing Regulatory Year (Regulatory Year ‘t’) shall be calculated as follows:

$$WCA(SO)_t = \frac{\text{Lag(Days)}_t - \text{Lead(Days)}_t + \text{Inventory (Days)}}{365} * \text{OpEx(SO)}_t$$

Where:

WCA(SO)_t means Working Capital Allowance in respect of System Operations Assets calculated for Regulatory Year ‘t’

Lag Days means Average Debtor Days calculated for Regulatory Year ‘t’

Lead Days means Average Creditor Days Calculated for regulatory Year ‘t’

OpEx(SO)_t means Sum of Operating Expenses in respect of System Operations Assets calculated for Regulatory Year ‘t’

4.8.1 Cost of Working Capital Allowance

The Cost of Working Capital Allowance System Operations Assets commencing Regulatory Year (Regulatory Year ‘t’) shall be calculated as follows:

$$CWCA(SO)_t = WCA(SO)_t * WACC$$

Where:

CWCA(SO)_t means Cost of Working Capital Allowance in respect of System Operations Assets calculated for Regulatory Year ‘t’

WCA(SO)_t means Working Capital Allowance in respect of System Operations Assets calculated for Regulatory Year ‘t’

WACC means Weighted Average Cost of Capital calculated pursuant to Section 3.5

PURC shall ensure that the System Operator observes optimal working capital allowance management practices in accordance with international standards.

Prior to or upon commencement of the Regulatory Control Period, a lead – lag study shall be undertaken to form the basis for the determination of the regulatory working capital allowance.

4.9 Corporate Tax

Corporate Tax on the system operations licence business shall be in accordance with the provisions of Applicable Ghana Revenue Tax Laws. The Corporate tax shall be treated as an expense hence incorporated into Annual Revenue Requirement and recovered from consumers through tariff. The corporate tax shall be computed using the following formula.

$$\text{CorpTax}_t = (\text{Pre-Tax WACC} - \text{Post-Tax WACC}) * \text{RAB}_{\text{ESO}}$$

Where:

CorpTax_t means Corporate Tax
 Pre-Tax WACC means Weighted Average Cost of Capital Including Corporate Tax Percentage
 Post-Tax WACC means Weighted Average Cost of Capital Excluding Corporate Tax Percentage
 RAB_{ESO} means PURC Approved Test Year Regulatory Asset Base of Electricity System Operator

4.10 Correction of System Operations Revenue

The correction factor shall be a monetary value whereby maximum allowed revenue for Regulatory Year ‘t’ is decreased or increased by the difference between Annual Revenue Requirement and the adjusted efficient and prudent revenue requirement according to information specified in Section 4.11 for the relevant Regulatory Years calculated in accordance with the methodology below.

PURC shall correct for over-recovery or under-recovery of System Operations revenue using correction factors established on the basis of actual electricity to be transmitted as well as variation in costs, as established in Sections 4.10.1 and 4.10.2. Correction Factors shall be calculated using Annual and Quarterly Reports as well as other relevant data submitted to PURC by System Operator in accordance with Section 4.11.

4.10.1 Correction Factor

The Correction Factor in respect of Regulatory Year ‘t’ shall equal zero (0) for the purposes of estimating the Annual Revenue Requirement (System Operations) for Regulatory Year ‘1’ and Regulatory Year ‘2’ of Regulatory Control Period, and shall be calculated as follows thereafter:

$$K(SO)_t = [(AdjARR(SO)_{t-2} - ActualTRev(SO)_{t-2})] * [(1 + WACC)^2]$$

Where:

K(SO)_t means the Correction Factor (Second) calculated for Regulatory Year ‘t’
 Adj ARR(SO)_{t-2} means the Annual Revenue Requirement (System Operator) for Regulatory Year ‘t-2’ as per actual market conditions
 ActualTRev(SO)_{t-2} means the revenues System Operator would have earned and collected during Regulatory Year ‘t-2’ by charging System Operator Rates, calculated assuming that Electricity Transmission Utility achieved the Target Transmission Loss Ratio that were applicable to Regulatory Year ‘t-2’ given the actual energy metered at the bulk supply points
 K1(SO)_{t-1} means the Correction Factor (First) that applied during Regulatory Year ‘t-1’;
 WACC means the Weighted Average Cost of Capital calculated in respect of Regulatory Year ‘t-1’ pursuant to Section 3.5

4.11 System Operation Charges

The Commission shall determine system operation charges payable by all end-use customers to the transmission utility using the following formula.

$$SOC_t = \frac{ARR(SO)_t}{ETV_t}$$

Where:

SOC_t Is System Operation Charge for Regulatory Year ‘t’

ARR(SO) _t	Is Annual Revenue Requirement in respect of System Operations for Regulatory Year ‘t’ calculated pursuant to Section 4.1
ETV _t	Is Projected Net Electricity Transmission Volume for Regulatory Year ‘t’

4.12 Casualties to the System Operations System

A System Operator shall procure and maintain, in its name, property and casualty insurance over the System Operations System.

Upon the occurrence of a casualty to an asset that constitutes part of the Regulated Asset Base, the System Operator shall use the proceeds of any insurance claim in respect of such casualty to repair or replace the asset, unless repair or replacement of the asset is not necessary for the continued provision of service in accordance with the terms of the System Operations Licence.

In the event that insurance proceeds are not sufficient to repair or replace the asset, the Utility shall fund the repair or replacement as it would fund any other capital expense.

The portion of the value of an asset that is (i) recovered from the proceeds of any insurance claim, and (ii) used by the utility to repair or replace the asset shall remain in the Regulated Asset Base. An amount equal to the portion of any insurance proceeds not used by the utility to repair or replace the asset as a result of the circumstances contemplated, shall be removed from the Opening Regulated Asset Base.

The portion of the value of such asset that is not recovered from the proceeds of any insurance claim shall be:

- added to Operating Expenses for the regulatory year during which the casualty occurred; and
- removed from the Opening Regulated Asset Base

provided, that, if such an amount would cause a material increase in the Annual Revenue Requirement (System Operations), then PURC may, in its discretion, decide that the amount shall remain in the Opening Regulated Asset Base and shall be depreciated over a period that PURC may determine.

The costs incurred by System Operator to repair or replace the asset minus the amount of any insurance proceeds shall be added to Capital Expenses for the Regulatory Year during which the Casualty occurred.

4.13 Approval of Revenue Requirement

The Commission is not obliged to approve the amount for each cost element or sub-element of the revenue requirement proposed by the System Operator. The Commission may allow or disallow the proposed revenue requirement based on a thorough evaluation of the proposed amount. The revenue requirement shall be allowed if it is found to be reasonable, prudent, and necessary to provide safe, reliable, and affordable service to customers. The revenue requirement may be reduced or portions disallowed based on the impact on the Utilities, customers and the economy while ensuring financial sustainability of the Utilities.

PART 5 TARIFF DETERMINATION/SETTING PROCESS

5.1 Filing Requirements for Major Tariff Review

The submission of a Major Tariff Review Proposal by a Public Utility to PURC shall be within the timeframe specified in this Section.

5.2 Pre-filing Major Tariff Review Notification

The Utility shall serve a pre-filing notification to PURC at least 60 days prior to the start of each Regulatory Control Period.

5.3 Filing of Major Tariff Review Proposal

Within 14 days after serving a pre-filing notification, the Utility shall file its Major Tariff Review Proposal with PURC in accordance with the Filing Forms.

5.4 Content of Major Tariff Review Proposal

A Utility shall submit the following information to PURC together with its tariff proposal.

a. Business Plan

A business plan that describes the Utility's proposed plan and priorities for the operation of its business during the upcoming Regulatory Control Period. The business plan may be in any format deemed suitable by the Utility but shall contain a list of its priority focus areas during the upcoming Regulatory Control Period. Such priorities may include:

- i. Improving performance of the Transmission System, as measured by the standards of performance
- ii. Reduction of transmission losses
- iii. Improvements in relation to operational, technical, commercial, financial, staffing, labour, environmental and health and safety matters
- iv. the efficient use of capital investments

and shall include any additional or different priorities notified to the Electricity Transmission Utility and System Operator by PURC.

b. Investment Plan

An Investment Plan to upgrade and expand transmission assets and facilities, with a view to improving the efficiency and/or performance of the Utility. The investment plan shall include cost-benefit analyses and payback periods informing the plan. It shall include complete details of construction, financing and other activities to be executed by the Utility during the tariff period. PURC shall review the investment plan to determine whether to allow or disallow such investments in the determination of the Utility's revenue requirement.

A Utility shall also submit details of actual investments to be made during each year of the tariff period, actual transfer of assets from Capital Work in Progress (CWIP) to Gross Fixed Assets in Operation (GFAIO) to enable PURC to make the necessary adjustments to relevant components.

c. Corporate Data

Corporate Statistics shall be submitted per the PURC Filing Forms.

d. Cost of Transmission

Information on cost of transmission of the power including associated cost of losses to the Utility.

e. Initial Regulated Asset Base

The Utility's calculation of the Initial Regulated Asset Base for the upcoming Regulatory Control Period, with the details necessary to enable PURC to verify the Utility's calculation.

f. Annual Revenue Requirement

The Utility's calculation of Annual Revenue Requirement for each Regulatory Year occurring during the upcoming Regulatory Control Period. This shall include a calculation in respect of each such Regulatory Year of:

- i. Operating Expenses
- ii. Return on Regulated Asset Base
- iii. Depreciation on Regulated Asset Base
- iv. Working Capital Allowance
- v. Corporate Taxes

and all of the related components, with the detail necessary for PURC to verify the calculation by the Utility of the Annual Revenue Requirement.

g. Economic and Financial Data

The following Economic and Financial Data shall also be submitted with the tariff proposal

- a) Estimates of the Capital Expenses, Operating Expenses, Return on Regulated Asset Base, Depreciation on Regulated Asset Base, Working Capital Allowance, and Corporate Taxes contained in the tariff proposal.
- b) Projections of the Exchange Rate (Dollars)
- c) Projections of Inflation Rate

h. Capacity and Energy Projections, Balancing, and Priority Dispatch

The tariff proposal shall set forth projections of the quantity of capacity and energy the Utility will dispatch in line with the System Operation Plan.

i. Transmission Loss Ratios

The Utility shall submit Transmission Loss Ratios proposed by the Utility and approved by PURC.

j. Other Technical Data

A Utility shall also submit the following data to the PURC:

1. Demand and Supply Forecasts
2. Asset register
3. Power factor, voltage and frequency compliance at Bulk Supply Points
4. Other information that may be relevant for the administration of these guidelines.

k. Electricity Supply Plan

A Utility shall submit a 5-year Electricity Supply Plan by electricity generation companies by month, by power plant and by fuel type which is appropriate for annual or multi-year tariff review. PURC shall review in consultation with stakeholders during tariff hearings, the Electricity Supply Plan annually and make recommendations for revision over the remaining years of the plan.

l. Revenue Requirement Cost Data

The revenue requirement of a Utility shall be determined using cost data submitted by the Utility. The Utility may also be required to submit additional data and information as and when required. Costs deemed by PURC as imprudent costs shall not be included in determination of the revenue requirement.

5.5 Preliminary Review

Upon receipt of a Major Tariff Review Proposal, PURC shall review it for compliance with the Filing Forms and information requirements.

5.6 Rejection and Re-filing

PURC shall accept or reject the proposal and notify the Utility of its comments or reasons for rejection. Where a proposal is rejected, Utility shall within fourteen (14) calendar days of receipt of the notification, respond to the reasons for rejection and file a revised proposal.

5.7 Publication and Hearings

Where PURC accepts the filing of a proposal, it shall direct a Utility to publish a summary of the proposal in the print media and carry out public education on the contents of the proposal. The publication and public education shall commence at least 7 days before any stakeholder hearings or engagements are held on the proposal.

PURC shall give stakeholders the opportunity to comment on the proposal through practicable measures. In respect of each proposal accepted by PURC, PURC shall publish an Order stating the measures to be used, which may include a call for papers, public hearings and stakeholder engagements.

5.8 Formal Review of Major Tariff Proposal

Where PURC accepts the filing of a proposal it shall commence a formal investigation of the proposal submitted and determine whether any expenditure incurred or to be incurred by the Utility is justified and reasonable in order to determine the reasonableness of the proposal.

The investigation of a proposal shall be by way of Formal Hearing. Matters to be investigated at a Formal Hearing on a Major Tariff Review Proposal shall include:

- investment plan
- cost of capital
- depreciation
- operating expenses
- working capital
- corporate tax
- any other component of the cost of service.

5.9 Decision on Rates

Within 30 days of acceptance of a Major Tariff Review Proposal, PURC shall issue a Major Tariff Review Decision.

5.10 Publication of Rates

PURC shall inform the Utility of the Major Tariff Review Decision and publish the decision in the Gazette and print media.

In the event that PURC fails to issue a Major Tariff Review Decision by the date required by these guidelines, then the Rates in effect immediately prior to the deadline for the issuance of the Major Tariff Review Decision shall be adjusted each quarter by the Consumer Price Index published by the Ghana Statistical Service and shall remain in effect until the date PURC issues a Major Tariff Review Decision.

5.11 Petition for Review of Major Tariff Review Decision

Upon publication of a Major Tariff Review Decision, a Utility may if aggrieved by the decision, file a petition with PURC requesting a review of the decision. The petition shall be filed within ten (10) days following the date of publication of the Major Tariff Review Decision. A petition shall be heard by way of Formal Hearing and the Panel shall comprise both external experts and Commissioners of PURC in accordance with the Formal Hearing Rules. The Panel shall submit recommendations to the Commission for its final decision.

A petition shall be resolved within twenty-eight (28) working days from its filing, following which all administrative remedies are exhausted.

5.12 Communication

At the time of filing its Major Tariff Review Proposal, a Utility shall simultaneously file with PURC its plans for undertaking public communication exercises prior to and following the Major Tariff Review Decision on key issues raised in its Major Tariff Review Proposal and the Major Tariff Review Decision.

5.13 Pre-Tariff Approval Communication

As part of its pre-Major Tariff Review Decision communication plans, a Utility shall utilize electronic, print and other media to sensitise consumers on key issues raised in its proposal including reasons and justification for the proposal.

5.14 Post-Tariff Approval Communication

As part of its post-Major Tariff Review Decision communication plans, a Utility shall engage consumers on the approved tariffs and planned application of tariff revenues to address or improve the quality of service delivery.

APPENDIX - Principles for Accounting for Depreciation

The Depreciation on Regulated Asset Base shall be calculated using the straight line method of depreciation/amortisation and the following useful asset life and depreciation rates.

Category	Description	Useful Life (Years)	Depreciation Rate
Transmission	Transformers	40	2.50%
Transmission	Switchgear	20	5.00%
Transmission	Capacitor Banks	5	20.00%
Transmission	Reactors	40	2.50%
Transmission	SVC	10	10.00%
Transmission	Auxiliary Power Supply	15	6.67%
Transmission	Civil	40	2.50%
Transmission	Buildings	40	2.50%
Transmission	SCADA Hardware	10	10.00%
Transmission	SCADA Software	5	20.00%
Transmission	Communication	4	25.00%
Transmission	Protection Relays and Meters	10	10.00%
Transmission	Instrument Transformers	20	5.00%
Transmission	Lightning Arrestors	15	6.67%
Transmission	Towers	40	2.50%
Transmission	Tower Fittings and Accessories	15	6.67%
Transmission	Conductor/ Skywire	30	3.33%
Transmission	OPGW	15	6.67%
Transport	Specialized Vehicles	10	10.00%
Transport	Other Vehicles	5	20.00%
Computer Software	IT Equipment	4	25.00%
Land	Freehold	0	0.00%
Land	Leasehold	36	2.78%