



**Rate Setting Guidelines**  
**for**  
**Water Production, Transmission, Distribution and Supply**

**PURPOSE, SCOPE, APPLICATION AND REVISION**

**PURPOSE**

These guidelines are issued by the Public Utilities Regulatory Commission (PURC) as part of the statutory obligations set out in the Public Utilities Regulatory Commission Act 1997, (Act 538). The Guidelines adhere to the principles of the published PURC Urban Water Rate Policy (2005) as approved by the PURC and other applicable laws of Ghana

The purpose of these guidelines is to set out the principles, methodology and processes to be applied by the PURC for:

- (a) the determination of revenue requirement for water production, transmission, distribution and supply.
- (b) setting out detailed proposals for water rates setting. PURC shall carry out its mandated functions in a balanced way and in the light of the Government of Ghana’s policies subject to its duty to act independently.

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 own or operate water production, transmission, distribution and supply assets or to provide water production, transmission, distribution and supply services in the regulated market in Ghana.

**EFFECTIVE DATE, REVIEW, ADDITIONS AND AMENDMENTS**

- i. These guidelines shall take effect from August 2025 and revoke all guidelines previously issued by PURC for water production, transmission, distribution and supply utilities.
- 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 29<sup>TH</sup> Day of AUGUST ..... 2025

Signed.....  
Chairman, PURC

Signed.....  
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 water production, transmission, distribution and supply in Ghana.

The document is organized as follows:

- Part 1 – This part describes the Tariff Philosophy and Tariff Approval process, including the legal basis and minimum filing requirements underlying the rate setting guidelines for Water Production, Transmission, Distribution and Supply.
- Part 2 - This part sets out the methodology including the formulae and principles for the determination of revenue requirements for Water Production Utility by PURC.
- Part 3 - This part sets out the methodology including the formulae and principles for the determination of revenue requirements for Water Transmission Utility by PURC.
- Part 4 - This part sets out the methodology including the formulae and principles for the determination of revenue requirements for Water Distribution and Supply Utility by PURC.

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**DEFINITIONS**

<b>Term</b>	<b>Definition</b>
<b>Act</b>	Means the Public Utilities Regulatory Commission Act, 1997 (Act 538).
<b>Annual Report</b>	Means an informational filing that sets forth updates of the projections and actual Annual Revenue Requirement and System Operation Plan made by Water Utility.
<b>Applicable Law</b>	Means (Includes) the laws of Ghana and orders, rules, regulations, directives, codes, decrees, judgments and notifications made pursuant thereto and as modified or amended from time to time.
<b>Approved Rates Methodology</b>	Means the methodology approved by PURC in its Major Tariff Review Decision.
<b>Base Year</b>	Means the year upon which an annual or multiyear tariff projection is based, which may be a historical financial year for which actual results or audited accounts are available. This may also be taken to be a combination of actual and projected results for same financial year or projection of a future financial year.
<b>Casualty</b>	Means the complete or partial destruction of property resulting from an identifiable event of a sudden, unexpected, or unusual nature including floods, storms, fires, and accidents and other events that would ordinarily be covered by property and casualty insurance.
<b>Capital Expenses</b>	Means amounts spent by Water Utility to acquire or enhance fixed assets, such as land, buildings, and major equipment. When the asset is ready to be used, the expenditure is added to rate base as a capital addition. The expenditure is then recovered through depreciation over the useful life of the asset.
<b>Capital Maintenance</b>	Means planned work carried out by Public Utility to replace and repair water supply assets to provide a base service to customers.
<b>Collection Loss Ratio</b>	Means a ratio calculated as the difference between the total amount invoiced by a Water Distribution Utility in respect of Distribution Service and/or Supply Service; and the total amount collected by the Water Distribution Utility in respect of Distribution Service and/or Supply Service provided.
<b>Commission</b>	Means the Public Utilities Regulatory Commission established under the Public Utilities Regulatory Commission Act, 1997 (Act 538).
<b>Customer</b>	Means a person who contracts to purchase a service from a public utility.
<b>Corporate Tax</b>	As stipulated in the Ghana Income Tax Act, 2015 (Act 896) and its amendments.
<b>Cost of Capital</b>	Means the minimum acceptable rate of return on capital investment. It includes both the cost of debt to the Water Utility, and the cost of equity.
<b>Cost of Debt</b>	Means the effective interest rate that Water Utility pays on its current debt to fund its operations.

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<b>Term</b>	<b>Definition</b>
<b>Cost of Equity</b>	Means the rate of return on investment that is required by Water Utility shareholders.
<b>Customer Category</b>	Means a category of End Users described by the nature of their requirements for water such as by use or demand levels, as established by PURC, and “Customer Categories” refers to all of such categories.
<b>Depreciation</b>	Means a measure of the consumption, use or wearing out of an asset over the period of its economic life. It is the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of electric plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among the causes to be given consideration are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand and requirements of public authorities.
<b>End Users</b>	Means urban water consumers that are supplied by the Ghana Water Company Limited.
<b>Grants</b>	Means Finance provided for investment or the provision of services for which no repayment is required. This includes a grant equivalent of the conversion of concessionary (soft) loans to grant and commercial loan. Infrastructure investment financed by grants is neither added to the infrastructure renewals charge nor the regulatory capital value.
<b>Indexation</b>	Means the adjustment of an economic variable so that the variable rises or falls in accordance with an index (such as the rate of inflation).
<b>Infrastructure Assets</b>	Means underground assets, such as water mains and also dams and reservoirs that last for a long time. A distinction is drawn between infrastructure and non-infrastructure assets because of the way in which the assets are managed, operated and maintained by the Public Utility.
<b>Infrastructure renewals charge</b>	Means an annual accounting provision for expenditure on the renewal of infrastructure (i.e. mainly underground) assets charged to the regulatory profit and loss account.
<b>Initial Regulated Asset Base</b>	Means the Opening RAB for Regulatory Year ‘1’ of Regulatory Control Period.
<b>Investment Programme</b>	Means Water Utility proposed investment in equipment, facilities and infrastructure with a view to improving or ensuring efficiency in provision of service to Consumers.
<b>Major Tariff Review Decision</b>	Means a written decision by PURC in response to a Major Tariff Review Proposal from the Water Utility.
<b>Major Tariff Review Determination Date</b>	Means the date on which a Major Tariff Review Decision is issued by PURC.

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<b>Term</b>	<b>Definition</b>
<b>Major Tariff Review Proposal</b>	Means a detailed submission filed by Water Utility to the Commission in accordance with Sections 16, 18, 21 and 22 of ACT 538, requesting for rates chargeable for a new service or revision of existing rates chargeable for the provision of Water Utility Distribution and / or Supply Services.
<b>Opening Regulated Asset Base (RAB), subsequent control periods</b>	Means the Opening Regulated Asset Base after the first Control Period as of the beginning of Regulatory Year '1' of the upcoming Regulatory Control Period immediately following the issuance of a Major Tariff Review Decision, which Opening Regulated Asset Base shall be based on the historical cost of the Regulated Asset Base.
<b>Operating Expenses (Opex)</b>	Means the costs incurred by the Water Utility to provide day to day water production, transmission and distribution services to its customers such as operating expenditure, repairs and maintenance expenditure, staff costs, overheads and other non-capital expenditure.
<b>Major Tariff Review Notification</b>	Means a notice to PURC, in the form specified by PURC, of a Water Utility's intention to file a Major Tariff Review Proposal.
<b>Non-infrastructure assets</b>	Means surface assets such as water treatment works, pumping stations and company laboratories, depots and workshops.
<b>Non-Revenue Water (NRW)</b>	Means volume of water treated and entering the system that does not generate income for the Water Utility.
<b>PURC</b>	Public Utilities Regulatory Commission established under the Public Utilities Regulatory Commission Act, 1997 (Act 538)
<b>PURC Rate Setting Guidelines</b>	Means the rate setting guidelines established by PURC, of which this Volume is a part.
<b>Quarterly Report</b>	Means an informational report that contains updates of the projections on actual USCPI, Exchange Rates and System Operation Plan made by the Water Utility.
<b>Regulatory Asset Base (RAB)</b>	Means the value ascribed by the PURC to the capital employed in the Water Production, Transmission and Distribution Business.
<b>Regulatory Control Period</b>	Means a number of consecutive Regulatory Years occurring during a specified period with minor periodic adjustments within the control period and major adjustments thereafter.
<b>Regulatory Quarter</b>	Means a designated consecutive three months period of operations, for which the approved tariffs shall apply.
<b>Regulatory Year</b>	Means a designated consecutive twelve months period of operations, for which the approved tariffs shall apply.
<b>Return on Debt</b>	Means the effective interest rate that Water Utility must pay on its current debt to fund its operations.

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<b>Term</b>	<b>Definition</b>
<b>Return on Equity</b>	Means the financial return achieved by shareholders of a Water Utility during a regulatory control period. The return is measured using revenue and cost definitions contained and are expressed as a percentage of (share) equity in the Water Utility business. The aim of the Return on equity measure is to provide an indication of the return achieved by the owners of a Water Utility licensee which can be compared to the cost of equity originally allowed revenue requirements and to the return achieved by other licensees on an equivalent basis.
<b>Revenue Requirement</b>	Means the costs pertaining to the Water Production, Transmission and Distribution which are permitted, to be recovered from the tariffs and charges determined by the Commission in accordance with the applicable Rate Setting Guidelines for Water Production, Transmission, Distribution and Supply.
<b>Risk Free Rate</b>	Means the rate of return that an investor would expect to earn on a “riskless” asset.
<b>Risk Premium</b>	Means a measure of the expected return, on top of the risk – free rate, that an investor would expect or demand to move from an investment with no risk to one with risk.
<b>Target Collection Loss Ratio</b>	Means the percentage of Collection Loss established by PURC in the relevant Major Tariff Review Decision.
<b>Tariff</b>	The schedule of rates chargeable for the services provided by a public utility
<b>Tariff Period</b>	Means a period, in a designated number of years, for which the approved tariffs shall apply.
<b>Tariff Proposal</b>	An application filed by a public utility requesting approval for new or revised rates in respect of a service it provides to consumers.
<b>Term</b>	The period beginning on the date on which the last of the Transaction Agreements are executed and delivered by the parties thereto and continuing, unless extended or terminated earlier in accordance with the provisions of the Agreement
<b>Test Year</b>	Means first year of PURC’s Multi-Year Major Tariff Control Period
<b>Volume</b>	Means this volume of the PURC Rate Setting Guidelines.
<b>Weighted Average Cost of Capital (WACC)</b>	Means the rate which the Water Utility on average is expected to pay to all its security holders to finance its assets. In other words, WACC is average of cost of equity and debt, weighted by proportions of equity and debt which an efficiently financed company can be expected to use to fund its activities.
<b>Working Capital Allowance</b>	Means the amount of cash required to meet cash needs for cover day-to-day operations between the time expenditures were made by the Water Distribution Utility to provide service and when revenue was received in return for those services. This excludes utility plant in service or the amount of funds which Water Distribution Utility needs to maintain supply inventories, meet prepayment obligations, corporate tax, etc.

**Interpretation**

This Volume shall be interpreted in accordance with Volume 1; and capitalized terms used but not defined shall have the meanings assigned in Volume 1.

**EQUATION PARAMETERS**

<b>Capital Expenses</b>	As calculated pursuant to Sections 2.7.4, 3.7.4 & 4.7.4
<b>Capital Maintenance</b>	As calculated pursuant to Section 2.6, 3.6 & 4.6
<b>Corporate Tax</b>	As calculated pursuant to Sections 2.10, 3.10 & 4.10
<b>Correction Factor</b>	As calculated pursuant to Section 4.11.1
<b>Cost of Working Capital Allowance</b>	As calculated pursuant to Sections 2.9.1, 3.9.1 & 4.9.1
<b>Disposition Proceeds</b>	As calculated pursuant to Sections 2.7.5, 3.7.5 & 4.7.5
<b>Mid-Year Regulated Asset Base</b>	As calculated pursuant to Sections 2.7.3, 3.7.3 & 4.7.3
<b>Opening Regulated Asset Base</b>	As calculated pursuant to Sections 2.7.1, 3.7.1 & 4.7.1
<b>Operating Expenses</b>	As calculated pursuant to Sections 2.1, 3.1 & 4.1
<b>Return on Regulated Asset Base</b>	As calculated pursuant to Sections 2.3, 3.3 & 4.3
<b>Target Non-Revenue Water Ratio</b>	As calculated pursuant to Section 4.18.1
<b>Target Collection Loss Ratio</b>	As calculated pursuant to Section 4.18.2
<b>Water Production Charge</b>	As calculated pursuant to Section 2.12
<b>Water Transmission Charge</b>	As calculated pursuant to Section 3.11
<b>Water Distribution Charge</b>	As calculated pursuant to Section 4.14
<b>Weighted Average Cost of Capital</b>	As calculated pursuant to Sections 2.5, 3.5 & 4.5
<b>Working Capital Allowance</b>	As calculated pursuant to Sections 2.9, 3.9 & 4.9

## PART 1 TARIFF PHILOSOPHY AND TARIFF APPROVAL PROCESS

### 1.1 Preamble

In exercise of the powers conferred by Sections 3(a), 3(b) and 16 of the Public Utilities Regulatory Commission Act, 1997 (Act 538) “the Act”, the Public Utilities Regulatory Commission (PURC) hereby issues these Guidelines to set out the principles, objectives and methodologies for the approval of water production, transmission, distribution and supply tariffs chargeable by water utilities.

PURC as an economic regulatory body is mandated by the Act to oversee the regulation of electricity, natural gas and water public utility companies. This mandate includes approval of utility rates, regulation of utility commercial operations and their quality of service, as well as promotion of competition.

### 1.2 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.

### **1.3 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 water production, transmission, distribution and supply infrastructure
2. Transparent information, procedures and transactions in water production, transmission, distribution and supply services
3. Provision of options to consumers/producers/suppliers to buy/sell water and infrastructure capacity, on a level playing field basis, thereby contributing to competition objective

### **1.4 Objectives of the Rate Setting Guidelines**

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

1. Ensure water rates are set out in accordance with Tariff Policy of the PURC
2. Set out a transparent process for determining and reviewing water rates
3. Ensure water rates reflect the full costs of operating and maintaining assets and provide a reasonable return on investment in respect of existing and future assets.
4. Use tariff as an economic instrument to ensure efficiency in the utilisation of and management of Water Production, Transmission, Distribution and Supply Systems
5. Enhance financial sustainability of the Water industry
6. Foster the provision of safe and reliable Water Services at fair tariffs levels
7. Create necessary conditions for the attraction of needed capital to the sector, at reasonable costs, for system upgrade and efficient expansion
8. Ensure transparency and non-discriminatory tariff regime

### **1.5 Tariff Approval Process**

#### **1.5.1 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.

#### **1.5.2 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.

#### **1.5.3 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.

The proposal shall be signed by the principal officer of the Utility or his authorized representative. Each page of the proposal and annexures shall be initialed by the principal officer or his authorized representative. The proposal and all requisite data shall be submitted in one package, notwithstanding the size of the package.

#### **1.5.4 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 Water System, as measured by standards of performance
  - ii. connecting new customers during the Regulatory Control Period
  - iii. reduction of losses (non-revenue and collection)
  - iv. improvements in relation to operational, technical, commercial, financial, staffing, labour, environmental and health and safety matters
  - v. efficient use of capital investments
- and shall include any additional or different priorities notified to the Utility by the PURC.

**b. Investment Plan**

An investment plan to upgrade and expand water 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, to:

- i. connect and serve new End Users
- ii. maintain or enhance the quality of technical and commercial service provided to End Users in accordance with the standards of performance
- iii. reduce non-revenue water and collection losses and
- iv. improve the information technology, operations technology, and business support processes and systems used by the Utility in the conduct of its business.

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.

The investment plan shall be approved by PURC.

**c. Corporate Data**

Corporate Statistics shall be submitted per the PURC Filing Forms.

**d. Cost of Water**

Information on cost of water purchased or to be purchased from Independent Water Producers (IWPs) 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, with evidence of the prudence of the 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) and Inflation Rate

**h. Water Supply Projections and Balancing**

The tariff proposal shall set forth projections of the quantity of water the Utility will sell to End Users along with a System Operation Plan.

**i. Non-Revenue Water**

The Utility shall submit Non-Revenue Water Ratios proposed by the Utility and approved by PURC. A Utility shall submit details of immediate prior year monthly and accumulated non-revenue water ratio as well as details and explanations of causes and/or reasons for the losses.

**j. 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.

**1.5.5 Preliminary Review**

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

**1.5.6 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.

**1.5.7 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.

**1.5.8 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.

#### **1.5.9 Decision on Rates**

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

#### **1.5.10 Publication of Rates**

PURC shall inform the Utility of the Major Tariff Review Decision and cause it to be published 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.

#### **1.5.11 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.

#### **1.5.12 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.

#### **1.5.13 Final Decision Following Petition**

A petition does not operate as a stay of implementation of a Tariff Decision. Where the outcome of a petition requires an adjustment to the Tariff Decision, PURC shall factor in the adjustment in the ensuing quarterly tariff review period.

##### **1.5.13.1 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.

##### **1.5.13.2 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.

#### **1.6 Reporting Requirements**

A Utility shall submit to PURC annual and quarterly reports to PURC as provided below, describing and justifying actual investment approved by PURC.

##### **1.6.1 Annual Report**

Not later than 90 days prior to the start of each Regulatory Year, a Utility shall submit an annual report to PURC. The annual report shall include but not be limited to the following information:

- a. Updates of the projections and System Operation Plan made by the Utility
- b. Annual Revenue Requirement for a Regulatory Year, including
  - Actual Operating Expenses
  - Actual Depreciation on Regulated Asset Base
  - Actual Corporate Taxes incurred
  - Actual Revenue earned by a Utility by providing Water Supply Service
- c. Actual Performance against Target Performance achieved including Non-Revenue Water and Collection Loss Ratio

**1.6.2 Quarterly Reports**

Not later than 30 days prior to the start of each Regulatory Quarter, a Utility shall submit a quarterly report to PURC. The quarterly report shall include but not be limited to the following:

- Updates of the actual costs and performance levels of the Utility with respect to Regulatory Quarter ‘q’ which occurs during Regulatory Year ‘t’;

## PART 2: ANNUAL REVENUE REQUIREMENT- WATER PRODUCTION

### 2.1 Calculation of Annual Revenue Requirement (Water Production)

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

$$ARR(WP)_t = OpEx(LegWPAs)_t + OpEx(NewWPis)_t + [RnLegRAB(WPAs)_t + CMLegRAB(WPAs)_t] + CRP(NewWPis)_t + CWCA(WPAs)_t + CorpTax(WP)_t + IWPC_t$$

Where:

ARR(WP) <sub>t</sub>	means Annual Revenue Requirement in respect of Water Production Operations commencing Regulatory Year 't'
OpEx(LegWPAs) <sub>t</sub>	means Operating Expenses in respect of Legacy Water Production Assets for Regulatory Year 't' calculated in accordance with Section 2.2.1
OpEx(NewWPis) <sub>t</sub>	means Operating Expenses in respect of New Water Production Investments calculated in accordance with Section 2.2.2
RnRAB(LegWPAs) <sub>t</sub>	means Return on Legacy Water Production Regulated Asset Base commencing Regulatory Year 't' calculated in accordance with Section 2.3.1
CMRAB(LegWPAs) <sub>t</sub>	means Capital Maintenance on Legacy Water Production Regulated Asset Base commencing Regulatory Year 't' calculated in accordance with Section 2.6
CRP(NewWPis) <sub>t</sub>	means Capital Recovery Payments in respect of New Investments made by Water Production Utility commencing Regulatory Year 't' calculated in accordance with Section 2.6
CWCA(WPAs) <sub>t</sub>	means Cost of Working Capital Allowance in respect of Water Production Assets commencing Regulatory Year 't' calculated in accordance with Section 2.9.1
CorpTax (WP) <sub>t</sub>	means Corporate Taxes in respect of Water Production Operations commencing Regulatory Year 't' calculated in accordance with Section 2.10
IWPC <sub>t</sub>	means Independent Water Purchase Costs calculated in accordance with Section 2.11

### 2.2 Operating Expenses

The PURC shall determine operating expenses for both Legacy Water Production Assets (LegWPAs) and New Water Production Investments (NewWPis) for the first regulatory year and subsequent regulatory years in a Regulatory Control Period. The Commission shall disaggregate human resource expenses, operation and maintenance expenses, customer service expenses, and administration and general expenses, and ringfence human resource expenses as standalone expenses.

#### 2.2.1 Legacy Water Production Assets – First Regulatory year

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

##### 2.2.1.1 Human Resource Expenses

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 Water Production Utility. Where human resource expense is projected, such projections shall be supported by relevant documentation.

### **2.2.1.2 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.

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

Where:

OpEx <sub>t</sub>	means First Regulatory Control Period Operating Expenses defined as Test Year of the Regulatory Control Period
PAWPAV	means PURC Approved Test Year Water Production Asset Value
γ	means PURC Approved Operating Expense Efficiency Benchmark Percentage

### **2.2.2 Legacy Water Production Assets - Subsequent Regulatory Years**

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

#### **2.2.2.1 Human Resource Expense**

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

#### **2.2.2.2 Other Operating Expense**

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

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

Where:

OpEx(LegWPAs) <sub>t+1</sub>	means Forecast Operating Expenses of Water Production Utility in respect of Legacy Water Production Assets
OpEx(LegWPAs) <sub>t</sub>	means Base Year Operating Expenses of Water Production Utility in respect of Legacy Water Production Assets
μ	means Percentage of Value of Newly Commissioned Water Production Assets dedicated to Operating Expenses as approved by the Commission

### **2.2.3 New Water Production 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 Water Production Investments shall be determined with respect to first regulatory year in a Regulatory Control Period as follows.

#### **2.2.3.1 Human Resource Expense**

The Commission shall assess and approve human resource expense dedicated to operating Newly Commissioned Water Production Investments for first regulatory year in a Regulatory Control Period in consultation with the Water Production Utility taking into consideration all relevant documentation approved by the Board of the Water Production Utility.

#### **2.2.3.2 Other Operating Expense**

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

$$\text{OpEx(NewWPIS)}_t = \text{VNCWPIS} * \mu$$

Where:

$\text{OpEx(NewWPIS)}_t$	means Base Year Operation and Maintenance Expenses in respect of New Water Production Investments undertaken by Water Production Utility
VNCWPIS	means Value of Newly Commissioned Water Production Investments undertaken by Water Production Utility
$\mu$	means Percentage of Value of Newly Commissioned Water Production Investments dedicated to Operating Expenses as approved by the Commission

#### **2.2.4 New Water Production Investments - Subsequent Regulatory Years**

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

##### **2.2.4.1 Human Resource Expense**

The Commission shall assess and approve human resource expense dedicated to operating Newly Commissioned Water Production Investments for Subsequent Regulatory Year in Regulatory Control Period in consultation with the Water Production Utility taking into consideration all relevant documentation approved by the Board of the Water Production Utility.

##### **2.2.4.2 Other Operating Expense**

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

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

Where:

$\text{OpEx(NewWPIS)}_{t+1}$	means Forecast Operation and Maintenance Expenses in respect of New Water Production Investments of Water Production Utility
$\text{OpEx(NewWPIS)}_t$	means Base Year Operation and Maintenance Expenses in respect of New Water Production Investments of Water Production Utility
VNCWPIS	means Value of Newly Commissioned Water Production Investments
$\mu$	means Percentage of Value of Newly Commissioned Water Production Investments/Assets Dedicated to Operating Expenses as Approved by the Commission

#### **2.3 Return on Water Production Regulatory Asset Base**

##### **2.3.1 Legacy Water Production Regulatory Asset Base**

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

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

Where:

$\text{RnRAB(WPAs)}_t$	means the Return on Legacy Regulated Asset Base for Regulatory Year ‘t’
$\text{MidYearRAB(WPAs)}_t$	means the Mid-Year Legacy Regulated Asset Base for Regulatory Year ‘t’ calculated pursuant to Section 2.7.3
$\text{WACC}_t$	means the Weighted Average Cost of Capital for Regulatory Year ‘t’, calculated pursuant to Section 2.5

### 2.3.2 New Water Production Investments

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

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

Where:

$Rn(\text{NewWPIs})_t$  means Return on New Water Production Investments for Regulatory Year ‘t’

$\text{MidYear}(\text{NewWPIs})_t$  means the Mid-Year New Water Production Investments for Regulatory Year ‘t’ calculated pursuant to Section 2.7.3

$\text{WACC}_t$  means the Weighted Average Cost of Capital for Regulatory Year ‘t’, calculated pursuant to Section 2.5

### 2.4 Gearing

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

### 2.5 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.

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

Where:

WACC Means Post-tax WACC

E means Equity

D means Debt

$K_e$  means Cost of Equity

$K_d$  means Pre-tax Cost of Debt

T Means Corporate Tax Rate

### 2.6 Capital Maintenance on Water Production Regulatory Asset Base

The PURC shall calculate depreciation in respect of both Legacy Water Production Regulatory Asset Base and Newly Commissioned Water Production Investments using the straight-line method of depreciation/amortisation. The depreciation on above assets and investments shall only be applicable to GWCL’s non-infrastructure (surface) assets in respect of a Regulatory Year ‘t’, which the Water Production Utility will recognise and approved by PURC during Regulatory Year ‘t’ with respect to the Opening Legacy Water Production Assets as well as Newly Commissioned Water Production Investments. However, for GWCL’s infrastructure (underground) assets, infrastructure renewals accounting shall be applied, rather than the conventional depreciation to determine an infrastructure renewal charge to maintain the serviceability to customers of the network.

### 2.7 Regulatory Asset Base

The Regulatory Asset Base which comprises Legacy Water Production Regulatory Asset Base and Newly Commissioned Investments of the Water Production Utility, shall at any particular point in time be revalued at its replacement cost. All infrastructure (underground) assets that are funded by Grants shall be included in the Regulatory Asset Base.

**2.7.1 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 Water Production Regulatory Asset Base and Newly Commissioned Investments by the Water Production Utility (where applicable) determined by PURC as follows.

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

Where:

- Opening RAB(WP)<sub>t</sub> means the Opening Regulated Asset Base for Regulatory Year ‘t’
- Opening RAB(WP)<sub>t-1</sub> means the Opening Regulated Asset Base for Regulatory Year ‘t-1’
- ActCapEx(WP)<sub>t-1</sub> 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 2.7.4
- ActDep(WP)<sub>t-1</sub> means the actual Depreciation for Regulatory Year ‘t-1’, calculated in accordance with Section 2.6
- ActDisp(WP)<sub>t-1</sub> means the actual Disposition Proceeds for Regulatory Year ‘t-1’, calculated in accordance with Section 2.7.5
- RegulatoryDays<sub>t</sub> means the numbers of days from start of the opening RAB to the end of the Calendar Year (i.e. December 31) in Regulatory Year ‘t’

**2.7.2 Opening Regulatory Asset Base - Subsequent Regulatory Year**

The Water Production Utility shall provide detailed information for calculation and filing of Legacy Water Production Regulatory Asset Base and Newly Commissioned Investments by the Water Production 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.

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

Where:

- OpeningRAB(WP)<sub>t+1</sub> means the Opening Regulated Asset Base for Regulatory Year ‘t+1’
- OpeningRAB(WP)<sub>t</sub> means the Opening Regulated Asset Base for First Regulatory Year ‘t’
- CapEx(WP)<sub>t</sub> means the approved Capital Expenses for First Regulatory Year ‘t’, calculated in accordance with Section 2.7.4
- Dep(WP)<sub>t</sub> means the Depreciation for First Regulatory Year ‘t’, calculated in accordance with Section 2.6
- Disp(WP)<sub>t</sub> means the Disposition Proceeds for First Regulatory Year ‘t’, calculated in accordance with Section 2.7.5

**2.7.3 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:

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

Where:

MidYearRAB(WP) <sub>t</sub>	means the Mid-Year Regulated Asset Base for Regulatory Year ‘t’
OpeningRAB(WP) <sub>t</sub>	means the Opening Regulated Asset Base for Regulatory Year ‘t’
CapEx(WP) <sub>t</sub>	means the Capital Expenses for Regulatory Year ‘t’, calculated in accordance with Section 2.7.4
Dep(WP) <sub>t</sub>	means the Depreciation for Regulatory Year ‘t’, calculated in accordance with Section 2.6
Disp(WP) <sub>t</sub>	means the Disposition Proceeds for Regulatory Year ‘t’, calculated in accordance with Section 2.7.5

#### **2.7.4 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.

#### **2.7.5 Disposition Proceeds**

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

#### **2.8 Capital Recovery Payments on New Water Production Investments**

Capital Recovery Payments in respect of New Water Production Investments made by the Water Production Utility commencing Regulatory Year ‘t’ shall be the sum of Return and Depreciation on Newly Commissioned Water Production Investments calculated in accordance with Section 2.3 and Section 2.6.

#### **2.9 Working Capital Allowance**

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

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

Where:

WCA(WPAs) <sub>t</sub>	means Working Capital Allowance in respect of Water Production 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(WPAs) <sub>t</sub>	means Sum of Operating Expenses in respect of Water Production Assets calculated for Regulatory Year ‘t’

##### **2.9.1 Cost of Working Capital Allowance**

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

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

Where:

CWCA(WPAs) <sub>t</sub>	means Cost of Working Capital Allowance in respect of Water Production Assets calculated for Regulatory Year ‘t’
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WCA(WPAs) <sub>t</sub>	means Working Capital Allowance in respect of Water Production Assets calculated for Regulatory Year 't'
WACC	means Weighted Average Cost of Capital calculated pursuant to Section 2.5

PURC shall ensure that the Water Production 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.

### **2.10 Corporate Tax**

Corporate Tax on the water production 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.

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

Where:

CorpTax <sub>t</sub>	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 <sub>WPU</sub>	means PURC Approved Test Year Regulatory Asset Base of Water Production Utility

### **2.11 Independent Water Production Cost (IWPC)**

Independent Water Production Cost treated as a pass-through cost commencing Regulatory Year 't' shall be the sum of Capacity and Variable payments made in respect of water purchases from Independent Water Producers.

### **2.12 Determination of Water Production Charge**

The PURC shall determine the Water Production Charge for Regulatory Year 't' taking into consideration Annual Revenue Requirement (WP) as per Section 2.1 in and projected water production volumes using the following formula.

$$\text{WPC}_t = \frac{\text{ARR}(\text{WP})_t}{\text{WPV}_t}$$

Where:

WPC <sub>t</sub>	means Water Production Charge in respect of Regulatory Year 't'
ARR(WP) <sub>t</sub>	means Annual Revenue Requirement (Production) in respect of Regulatory Year 't' pursuant to Section 2.1
WPV <sub>t</sub>	Means Projected Water Production Volume in respect of Regulatory Year 't'

### **2.13 Casualties to the Water Production System**

A Water Production Utility shall procure and maintain, in its name, property and casualty insurance over the Distribution System.

Upon the occurrence of a casualty to an asset that constitutes part of the Regulated Asset Base, the Water Production 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 Water Production 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 (Water Production), 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.

#### **2.14 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 Water Production 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.

## PART 3: ANNUAL REVENUE REQUIREMENT- WATER TRANSMISSION

### 3.1 Calculation of Annual Revenue Requirement (Water Transmission)

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

$$\text{ARR(WT)}_t = \text{OpEx(LegWTAs)}_t + \text{OpEx(NewWTIs)} + [\text{RnLegRAB(WTAs)}_t + \text{CMLegRAB(WTAs)}_t] + \text{CRP(NewWTIs)}_t + \text{CWCA(WTAs)}_t + \text{CorpTax(WT)}_t$$

Where:

$\text{ARR(WT)}_t$	means Annual Revenue Requirement in respect of Water Transmission Operations commencing Regulatory Year 't'
$\text{OpEx(LegWTAs)}_t$	means Operating Expenses in respect of Legacy Water Transmission Assets for Regulatory Year 't' calculated in accordance with Section 3.2.1
$\text{OpEx(NewWTIs)}_t$	means Operating Expenses in respect of New Water Transmission Investments calculated in accordance with Section 3.2.2
$\text{RnRAB(LegWTAs)}_t$	means Return on Legacy Water Transmission Regulated Asset Base commencing Regulatory Year 't' calculated in accordance with Section 3.3.1
$\text{CMRAB(LegWTAs)}_t$	means Capital Maintenance on Legacy Water Transmission Regulated Asset Base commencing Regulatory Year 't' calculated in accordance with Section 3.6
$\text{CRP(NewWTIs)}_t$	means Capital Recovery Payments in respect of New Investments made by Water Transmission Utility commencing Regulatory Year 't' calculated in accordance with Section 3.8
$\text{CWCA(WTAs)}_t$	means Cost of Working Capital Allowance in respect of Water Transmission Assets commencing Regulatory Year 't' calculated in accordance with Section 3.9.1
$\text{CorpTax(WT)}_t$	means Corporate Taxes in respect of Water Transmission Operations commencing Regulatory Year 't' calculated in accordance with Section 3.10

### 3.2 Operating Expenses

The PURC shall determine operating expenses for both Legacy Water Transmission Assets (LegWTAs) and New Water Transmission Investments (NewWTIs) for the first regulatory year and subsequent regulatory years in a Regulatory Control Period. The Commission shall disaggregate human resource expenses, operation and maintenance expenses, customer service expenses, and administration and general expenses, and ring-fence human resource expenses as standalone expenses.

#### 3.2.1 Legacy Water Transmission Assets – First Regulatory year

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

##### 3.2.1.1 Human Resource Expenses

For determination of human resource expense for first regulatory year in a Regulatory Control Period, the Commission shall ring-fence these expenses in consultation with the Water 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.

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

Where:

OpEx <sub>t</sub>	means first regulatory year Operating Expenses defined as Test Year of the Regulatory Control Period
PAWTAV	means PURC Approved Test Year Water Transmission Asset Value
γ	means PURC Approved Operating Expense Efficiency Benchmark Percentage

### 3.2.2 Legacy Water Transmission Assets - Subsequent Regulatory Years

Operating expenses relating to Legacy Water Transmission 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 Water Transmission Utility taking into consideration all relevant documentation approved by the Board of the Water Transmission Utility.

#### 3.2.2.2 Other Operating Expense

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

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

Where:

OpEx(LegWTAs) <sub>t+1</sub>	means Forecast Operating Expenses of Water Transmission Utility in respect of Legacy Water Transmission Assets
OpEx(LegWTAs) <sub>t</sub>	means Base Year Operating Expenses of Water Transmission Utility in respect of Legacy Water Transmission Assets
μ	means Percentage of Value of Newly Commissioned Water Transmission Assets dedicated to Operating Expenses as approved by the Commission

### 3.2.3 New Water Transmission 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 Water Transmission Investments shall be determined with respect to first regulatory year in a Regulatory Control Period as follows.

#### 3.2.3.1 Human Resource Expense

The Commission shall assess and approve human resource expense dedicated to operating Newly Commissioned Water Transmission Investments for first regulatory year in a Regulatory Control Period in consultation with the Water Transmission Utility taking into consideration all relevant documentation approved by the Board of the Water Transmission Utility.

#### 3.2.3.2 Other Operating Expense

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

$$\text{OpEx}(\text{NewWTIs})_t = \text{VNCWTIs} * \mu$$

Where:

$\text{OpEx}(\text{NewWTIs})_t$  means Base Year Operation and Maintenance Expenses in respect of New Water Transmission Investments undertaken by Water Transmission Utility  
 $\text{VNCWTIs}$  means Value of Newly Commissioned Water Transmission Investments undertaken by Water Production Utility  
 $\mu$  means Percentage of Value of Newly Commissioned Water Transmission Investments dedicated to Operating Expenses as approved by the Commission

### **3.2.4 New Water Transmission Investments - Subsequent Regulatory Years**

Operating expenses relating to New Water Transmission 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 assess and approve human resource expense dedicated to operating Newly Commissioned Water Transmission Investments for subsequent regulatory years in consultation with the Water Transmission Utility taking into consideration all relevant documentation approved by the Board of the Water 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 a Water Transmission Utility using the following formula.

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

Where:

$\text{OpEx}(\text{NewWTIs})_{t+1}$  means Forecast Operation and Maintenance Expenses in respect of New Water Production Investments of Water Transmission Utility  
 $\text{OpEx}(\text{NewWTIs})_t$  means Base Year Operation and Maintenance Expenses in respect of New Water Production Investments of Water Transmission Utility  
 $\text{VNCWTIs}$  means Value of Newly Commissioned Water Transmission Investments  
 $\mu$  means Percentage of Value of Newly Commissioned Water Transmission Investments/Assets Dedicated to Operating Expenses as Approved by the Commission

### **3.3 Return on Water Transmission Regulatory Asset Base**

#### **3.3.1 Legacy Water Transmission Regulatory Asset Base**

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

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

Where:

$\text{RnRAB}(\text{WTAs})_t$  means the Return on Legacy Regulated Asset Base for Regulatory Year ‘t’  
 $\text{MidYearRAB}(\text{WTAs})_t$  means the Mid-Year Legacy Regulated Asset Base for Regulatory Year ‘t’ calculated pursuant to Section 3.7.3  
 $\text{WACC}_t$  means the Weighted Average Cost of Capital for Regulatory Year ‘t’, calculated pursuant to Section 3.5

### **3.3.2 New Water Transmission Investments**

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

$$Rn(\text{NewWTIs})_t = \text{MidYear}(\text{NewWTIs})_t * WACC_t$$

Where:

$Rn(\text{NewWTIs})_t$  means Return on New Water Transmission Investments for Regulatory Year ‘t’

$\text{MidYear}(\text{NewWTIs})_t$  means the Mid-Year New Water Transmission Investments for Regulatory Year ‘t’ calculated pursuant to Section 3.7.3

$WACC_t$  means the Weighted Average Cost of Capital for Regulatory Year ‘t’, 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 New Water Transmission 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.

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

Where:

WACC Means Post-tax WACC

E means Equity

D means Debt

$K_e$  means Cost of Equity

$K_d$  means Pre-tax Cost of Debt

T Means Corporate Tax Rate

### **3.6 Capital Maintenance on Water Transmission Regulatory Asset Base**

The PURC shall calculate depreciation in respect of both Legacy Water Transmission Regulatory Asset Base and Newly Commissioned Water Transmission Investments using the straight-line method of depreciation/amortisation. The depreciation on above assets and investments shall only be applicable to GWCL’s non-infrastructure (surface) assets in respect of a Regulatory Year ‘t’, which the Water Transmission Utility will recognise and approved by PURC during Regulatory Year ‘t’ with respect to the Opening Legacy Water Transmission Assets as well as Newly Commissioned Water Transmission Investments. However, for GWCL’s infrastructure (underground) assets, infrastructure renewals accounting shall be applied, rather than the conventional depreciation to determine an infrastructure renewal charge to maintain the serviceability to customers of the network.

### **3.7 Regulatory Asset Base**

The Regulatory Asset Base which comprises Legacy Water Transmission Regulatory Asset Base and Newly Commissioned Investments of the Water Transmission Utility, shall at any particular point in time be revalued at its replacement cost. All infrastructure (underground) assets that are funded by Grants shall be included in the Regulatory Asset Base.

**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 Water Transmission Regulatory Asset Base and Newly Commissioned Investments by the Water Transmission Utility (where applicable) determined by PURC as follows.

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

Where:

- Opening RAB(WT)<sub>t</sub> means the Opening Regulated Asset Base for Regulatory Year ‘t’
- Opening RAB(WT)<sub>t-1</sub> means the Opening Regulated Asset Base for Regulatory Year ‘t-1’
- ActCapEx(WT)<sub>t-1</sub> 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(WT)<sub>t-1</sub> means the actual Depreciation for Regulatory Year ‘t-1’, calculated in accordance with Section 3.6
- ActDisp(WT)<sub>t-1</sub> means the actual Disposition Proceeds for Regulatory Year ‘t-1’, calculated in accordance with Section 3.7.5
- RegulatoryDays<sub>t</sub> means the numbers of days from start of the opening RAB to the end of the Calendar Year (i.e. December 31) in Regulatory Year ‘t’

**3.7.2 Opening Regulatory Asset Base - Subsequent Regulatory Year**

The Water Transmission Utility shall provide detailed information for calculation and filing of Legacy Water Transmission Regulatory Asset Base and Newly Commissioned Investments by the Water 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.

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

Where:

- OpeningRAB(WT)<sub>t+1</sub> means the Opening Regulated Asset Base for Regulatory Year ‘t+1’
- OpeningRAB(WT)<sub>t</sub> means the Opening Regulated Asset Base for First Regulatory Year ‘t’
- CapEx(WT)<sub>t</sub> means the approved Capital Expenses for First Regulatory Year ‘t’, calculated in accordance with Section 3.7.4
- Dep(WT)<sub>t</sub> means the Depreciation for First Regulatory Year ‘t’, calculated in accordance with Section 3.6
- Disp(WT)<sub>t</sub> 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:

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

Where:

MidYearRAB(WT) <sub>t</sub>	means the Mid-Year Regulated Asset Base for Regulatory Year ‘t’
OpeningRAB(WT) <sub>t</sub>	means the Opening Regulated Asset Base for Regulatory Year ‘t’
CapEx(WT) <sub>t</sub>	means the Capital Expenses for Regulatory Year ‘t’, calculated in accordance with Section 3.7.4
Dep(WT) <sub>t</sub>	means the Depreciation for Regulatory Year ‘t’, calculated in accordance with Section 3.6
Disp(WT) <sub>t</sub>	means the Disposition Proceeds for Regulatory Year ‘t’, calculated in accordance with Section 3.7.5

### **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 Water Transmission Utility from the sale of any assets that are no longer useful in connection with the provisions of Water Production Service determined as of the relevant Major Tariff Review Determination Date.

### **3.8 Capital Recovery Payments on New Water Transmission Investments**

Capital Recovery Payments in respect of New Water Transmission Investments made by the Water Transmission Utility commencing Regulatory Year ‘t’ shall be the sum of Return and Depreciation on Newly Commissioned Water Transmission Investments calculated in accordance with Section 2.3 and Section 2.6.

### **3.9 Working Capital Allowance**

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

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

Where:

WCA(WTAs) <sub>t</sub>	means Working Capital Allowance in respect of Water Production 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(WTAs) <sub>t</sub>	means Sum of Operating Expenses in respect of Water Transmission Assets calculated for Regulatory Year ‘t’

#### **3.9.1 Cost of Working Capital Allowance**

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

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

Where:

CWCA(WTAs) <sub>t</sub>	means Cost of Working Capital Allowance in respect of Water Transmission Assets calculated for Regulatory Year ‘t’
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WCA(WTAs) <sub>t</sub>	means Working Capital Allowance in respect of Water Transmission Assets calculated for Regulatory Year 't'
WACC	means Weighted Average Cost of Capital calculated pursuant to Section 3.5

PURC shall ensure that the Water 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 water production 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.

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

Where:

CorpTax <sub>t</sub>	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 <sub>WTU</sub>	means PURC Approved Test Year Regulatory Asset Base of Water Transmission Utility

### **3.11 Determination of Water Transmission Charge**

The PURC shall determine the Water Transmission Charge for Regulatory Year 't' taking into consideration Annual Revenue Requirement (WT) as per Section 3.1 in and projected water transmission volumes using the following formula.

$$\text{WTC}_t = \frac{\text{ARR}(\text{WT})_t}{\text{WTV}_t}$$

Where:

WTC <sub>t</sub>	means Water Transmission Charge in respect of Regulatory Year 't'
ARR(WT) <sub>t</sub>	means Annual Revenue Requirement (Transmission) in respect of Regulatory Year 't' pursuant to Section 3.1
WTV <sub>t</sub>	Means Projected Water Transmission Volume in respect of Regulatory Year 't'

### **3.12 Casualties to the Water Transmission System**

A Water Transmission Utility shall procure and maintain, in its name, property and casualty insurance over the Distribution System.

Upon the occurrence of a casualty to an asset that constitutes part of the Regulated Asset Base, the Water 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 Water Production 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 (Water 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.

### **3.13 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 Water 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.

## PART 4: ANNUAL REVENUE REQUIREMENT- WATER DISTRIBUTION AND SUPPLY

### 4.1 Calculation of Annual Revenue Requirement (Water Distribution)

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

$$ARR(WD)_t = OpEx(LegWDAs)_t + OpEx(NewWDIs)_t + [RnLegRAB(WDAs)_t + CMLegRAB(WDAs)_t] + CRP(NewWDIs)_t + CWCA(WDAs)_t + CorpTax(WD)_t + K1(WD)_t + K2(WD)_t$$

Where:

$ARR(WD)_t$	means Annual Revenue Requirement in respect of Water Distribution Operations commencing Regulatory Year 't'
$OpEx(LegWDAs)_t$	means Operating Expenses in respect of Legacy Water Distribution Assets for Regulatory Year 't' calculated in accordance with Section 4.2.1
$OpEx(NewWDIs)_t$	means Operating Expenses in respect of New Water Distribution Investments calculated in accordance with Section 4.2.2
$RnRAB(LegWDAs)_t$	means Return on Legacy Water Distribution Regulated Asset Base commencing Regulatory Year 't' calculated in accordance with Section 4.3.1
$CMRAB(LegWDAs)_t$	means Capital Maintenance on Legacy Water Distribution Regulated Asset Base commencing Regulatory Year 't' calculated in accordance with Section 4.6
$CRP(NewWDIs)_t$	means Capital Recovery Payments in respect of New Investments made by Water Distribution Utility commencing Regulatory Year 't' calculated in accordance with Section 4.8
$CWCA(WDAs)_t$	means Cost of Working Capital Allowance in respect of Water Distribution Assets commencing Regulatory Year 't' calculated in accordance with Section 4.9.1
$CorpTax(WD)_t$	means Corporate Taxes in respect of Water Distribution Operations commencing Regulatory Year 't' calculated in accordance with Section 4.10
$K(WD)_t$	means Correction Factor in respect of Water Distribution Operations calculated in respect of Regulatory Year 't' in accordance with Section 4.11

### 4.2 Operating Expenses

The PURC shall determine operating expenses for both Legacy Water Distribution Assets (LegWDAs) and New Water Distribution Investments (NewWDIs) for the first regulatory year and subsequent regulatory years in a Regulatory Control Period. The Commission shall disaggregate human resource expenses, operation and maintenance expenses, customer service expenses, and administration and general expenses, and ringfence human resource expenses as standalone expenses.

#### 4.2.1 Legacy Water Distribution Assets – First Regulatory year

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

##### 4.2.1.1 Human Resource Expenses

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

#### 4.2.1.2 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.

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

Where:

OpEx <sub>t</sub>	means first regulatory year operating expenses defined as Test Year of the Regulatory Control Period
PAWDAV	means PURC Approved Test Year Water Distribution Asset Value
γ	means PURC Approved Operating Expense Efficiency Benchmark Percentage

#### 4.2.2 Legacy Water Distribution Assets - Subsequent Regulatory Years

Operating expenses relating to Legacy Water Distribution 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 Water Distribution Utility taking into consideration all relevant documentation approved by the Board of the Water Distribution Utility.

##### 4.2.2.2 Other Operating Expense

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

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

Where:

OpEx(LegWDAs) <sub>t+1</sub>	means Forecast Operating Expenses of Water Distribution Utility in respect of Legacy Water Distribution Assets
OpEx(LegWDAs) <sub>t</sub>	means Base Year Operating Expenses of Water Distribution Utility in respect of Legacy Water Distribution Assets
μ	means Percentage of Value of Newly Commissioned Water Distribution Assets dedicated to Operating Expenses as approved by the Commission

#### 4.2.3 New Water Distribution 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 Water Distribution Investments shall be determined with respect to first regulatory year in a Regulatory Control Period as follows.

##### 4.2.3.1 Human Resource Expense

The Commission shall assess and approve human resource expense dedicated to operating Newly Commissioned Water Distribution Investments for first regulatory year in a Regulatory Control Period in consultation with the Water Distribution Utility taking into consideration all relevant documentation approved by the Board of the Water Distribution Utility.

##### 4.2.3.2 Other Operating Expense

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

$$\text{OpEx}(\text{NewWDIs})_t = \text{VNCWDIs} * \mu$$

Where:

- $\text{OpEx}(\text{NewWDIs})_t$  means Base Year Operation and Maintenance Expenses in respect of New Water Distribution Investments undertaken by Water Distribution Utility
- $\text{VNCWDIs}$  means Value of Newly Commissioned Water Distribution Investments undertaken by Water Production Utility
- $\mu$  means Percentage of Value of Newly Commissioned Water Distribution Investments dedicated to Operating Expenses as approved by the Commission

#### **4.2.4 New Water Distribution Investments - Subsequent Regulatory Years**

Operating expenses relating to New Water Distribution 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 human resource expense dedicated to operating Newly Commissioned Water Distribution Investments for subsequent regulatory years in consultation with the Water Distribution Utility taking into consideration all relevant documentation approved by the Board of the Water Distribution Utility.

##### **4.2.4.2 Other Operating Expense**

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

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

Where:

- $\text{OpEx}(\text{NewWDIs})_{t+1}$  means Forecast Operation and Maintenance Expenses in respect of New Water Distribution Investments of Water Distribution Utility
- $\text{OpEx}(\text{NewWDIs})_t$  means Base Year Operation and Maintenance Expenses in respect of New Water Distribution Investments of Water Distribution Utility
- $\text{VNCWDIs}$  means Value of Newly Commissioned Water Distribution Investments
- $\mu$  means Percentage of Value of Newly Commissioned Water Distribution Investments/Assets Dedicated to Operating Expenses as Approved by the Commission

#### **4.3 Return on Water Distribution Regulatory Asset Base**

##### **4.3.1 Legacy Water Distribution Regulatory Asset Base**

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

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

Where:

- $\text{RnRAB}(\text{WDAs})_t$  means the Return on Legacy Regulated Asset Base for Regulatory Year ‘t’
- $\text{MidYearRAB}(\text{WDAs})_t$  means the Mid-Year Legacy Regulated Asset Base for Regulatory Year ‘t’ calculated pursuant to Section 4.7.3
- $\text{WACC}_t$  means the Weighted Average Cost of Capital for Regulatory Year ‘t’, calculated pursuant to Section 4.5

**4.3.2 New Water Distribution Investments**

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

$$Rn(\text{NewWDIs})_t = \text{MidYear}(\text{NewWDIs})_t * WACC_t$$

Where:

- $Rn(\text{NewWDIs})_t$  means Return on New Water Transmission Investments for Regulatory Year ‘t’
- $\text{MidYear}(\text{NewWDIs})_t$  means the Mid-Year New Water Transmission Investments for Regulatory Year ‘t’ calculated pursuant to Section 4.7.3
- $WACC_t$  means the Weighted Average Cost of Capital for Regulatory Year ‘t’, calculated pursuant to Section 4.5

**4.4 Gearing**

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

**4.5 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.

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

Where:

- WACC Means Post-tax WACC
- E means Equity
- D means Debt
- $K_e$  means Cost of Equity
- $K_d$  means Pre-tax Cost of Debt
- T Means Corporate Tax Rate

**4.6 Capital Maintenance on Water Distribution Regulatory Asset Base**

The PURC shall calculate depreciation in respect of both Legacy Water Distribution Regulatory Asset Base and Newly Commissioned Water Distribution Investments using the straight-line method of depreciation/amortisation. The depreciation on above assets and investments shall only be applicable to GWCL’s non-infrastructure (surface) assets in respect of a Regulatory Year ‘t’, which the Water Distribution Utility will recognise and approved by PURC during Regulatory Year ‘t’ with respect to the Opening Legacy Water Distribution Assets as well as Newly Commissioned Water Distribution Investments. However, for GWCL’s infrastructure (underground) assets, infrastructure renewals accounting shall be applied, rather than the conventional depreciation to determine an infrastructure renewal charge to maintain the serviceability to customers of the network.

**4.7 Regulatory Asset Base**

The Regulatory Asset Base which comprises Legacy Water Distribution Regulatory Asset Base and Newly Commissioned Investments of the Water Distribution Utility, shall at any particular point in time be revalued at its replacement cost. All infrastructure (underground) assets that are funded by Grants shall be included in the Regulatory Asset Base.

**4.7.1 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 Water Distribution Regulatory Asset Base and Newly Commissioned Investments by the Water Distribution Utility (where applicable) determined by PURC as follows.

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

Where:

- Opening RAB(WD)<sub>t</sub> means the Opening Regulated Asset Base for Regulatory Year ‘t’
- Opening RAB(WD)<sub>t-1</sub> means the Opening Regulated Asset Base for Regulatory Year ‘t-1’
- ActCapEx(WD)<sub>t-1</sub> 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 4.7.4
- ActDep(WD)<sub>t-1</sub> means the actual Depreciation for Regulatory Year ‘t-1’, calculated in accordance with Section 4.6
- ActDisp(WD)<sub>t-1</sub> means the actual Disposition Proceeds for Regulatory Year ‘t-1’, calculated in accordance with Section 4.7.5
- RegulatoryDays<sub>t</sub> means the numbers of days from start of the opening RAB to the end of the Calendar Year (i.e. December 31) in Regulatory Year ‘t’

**4.7.2 Opening Regulatory Asset Base - Subsequent Regulatory Year**

The Water Distribution Utility shall provide detailed information for calculation and filing of Legacy Water Distribution Regulatory Asset Base and Newly Commissioned Investments by the Water Distribution 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.

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

Where:

- OpeningRAB(WD)<sub>t+1</sub> means the Opening Regulated Asset Base for Regulatory Year ‘t+1’
- OpeningRAB(WD)<sub>t</sub> means the Opening Regulated Asset Base for First Regulatory Year ‘t’
- CapEx(WD)<sub>t</sub> means the approved Capital Expenses for First Regulatory Year ‘t’, calculated in accordance with Section 4.7.4
- Dep(WD)<sub>t</sub> means the Depreciation for First Regulatory Year ‘t’, calculated in accordance with Section 4.6
- Disp(WD)<sub>t</sub> means the Disposition Proceeds for First Regulatory Year ‘t’, calculated in accordance with Section 4.7.5

**4.7.3 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:

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

Where:

MidYearRAB(WD) <sub>t</sub>	means the Mid-Year Regulated Asset Base for Regulatory Year ‘t’
OpeningRAB(WD) <sub>t</sub>	means the Opening Regulated Asset Base for Regulatory Year ‘t’
CapEx(WD) <sub>t</sub>	means the Capital Expenses for Regulatory Year ‘t’, calculated in accordance with Section 4.7.4
Dep(WD) <sub>t</sub>	means the Depreciation for Regulatory Year ‘t’, calculated in accordance with Section 4.6
Disp(WD) <sub>t</sub>	means the Disposition Proceeds for Regulatory Year ‘t’, calculated in accordance with Section 4.7.5

#### **4.7.4 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.

#### **4.7.5 Disposition Proceeds**

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

#### **4.8 Capital Recovery Payments on New Water Distribution Investments**

Capital Recovery Payments in respect of New Water Distribution Investments made by the Water Distribution Utility commencing Regulatory Year ‘t’ shall be the sum of Return and Depreciation on Newly Commissioned Water Distribution Investments calculated in accordance with Section 2.3 and Section 2.6.

#### **4.9 Working Capital Allowance**

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

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

Where:

WCA(WDAs) <sub>t</sub>	means Working Capital Allowance in respect of Water Production 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(WDAs) <sub>t</sub>	means Sum of Operating Expenses in respect of Water Distribution Assets calculated for Regulatory Year ‘t’

##### **4.9.1 Cost of Working Capital Allowance**

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

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

Where:

CWCA(WDAs) <sub>t</sub>	means Cost of Working Capital Allowance in respect of Water Distribution Assets calculated for Regulatory Year ‘t’
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WCA(WDAs)<sub>t</sub> means Working Capital Allowance in respect of Water Distribution Assets calculated for Regulatory Year ‘t’  
WACC means Weighted Average Cost of Capital calculated pursuant to Section 4.5

PURC shall ensure that the Water Distribution 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.

#### **4.10 Corporate Tax**

Corporate Tax on the water distribution 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.

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

Where:

CorpTax<sub>t</sub> 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<sub>WDU</sub> means PURC Approved Test Year Regulatory Asset Base of Water Distribution Utility

#### **4.11 Correction of Water Distribution 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 Approved 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 Water Distribution revenue using correction factors established on the basis of actual water sold, as well as variation in costs, and actual billing data (billed water consumption and number of customers) assuming PURC Target Non-Revenue Water Losses as established in Section 4.11.1. Correction Factors shall be calculated using Annual and Quarterly Reports as well as other relevant data submitted to PURC by Water Distribution Utility.

##### **4.11.1 Correction Factor**

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

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

Where:

K(WD)<sub>t</sub> means the Correction Factor calculated for Regulatory Year ‘t’

Actual ARR(WD)<sub>t-2</sub> means the Annual Revenue Requirement (Water Distribution) for Regulatory Year ‘t-2’, calculated as per market conditions

ActualTRev(WD)<sub>t-2</sub> means the revenues Water Distribution Utility would have earned and collected during Regulatory Year ‘t-2’ by charging Water Distribution Rates, calculated assuming that Water Distribution Utility achieved the Target Non-Revenue Water

Ratio and Target Collection Loss Ratio that were applicable to Regulatory Year 't-2' given the actual water metered at the bulk supply points

WACC means the Weighted Average Cost of Capital calculated pursuant to Section 4.5

#### **4.12 Casualties to the Water Distribution System**

A Water Distribution Utility shall procure and maintain, in its name, property and casualty insurance over the Distribution System.

Upon the occurrence of a casualty to an asset that constitutes part of the Regulated Asset Base, the Water Distribution 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 Water Distribution 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 (Water Distribution), 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.

#### **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 Water Distribution 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.

#### **4.14 Determination of Water Distribution Charge**

The PURC shall determine the Water Distribution Charge for Regulatory Year 't' taking into consideration Annual Revenue Requirement (WD) as per Section 4.1 in and projected water distribution volumes using the following formula.

$$WDC_t = \frac{ARR(WD)_t}{WSV_t}$$

Where:

WDC <sub>t</sub>	means Water Distribution Charge in respect of Regulatory Year ‘t
ARR(WD) <sub>t</sub>	means Annual Revenue Requirement (Water Distribution) in respect of Regulatory Year ‘t’ pursuant to Section 4.1
WSV <sub>t</sub>	Means Projected Water Sales Volume in respect of Regulatory Year ‘t’ taking into consideration PURC Benchmark Non-Revenue Water Loss Ratio

#### 4.15 Water Production Purchase Cost

The Water Production Purchase Cost shall be treated as a pass-through. For purposes of determining Revenue Requirement of a Water Distribution Utility, the following formula shall be employed in the calculation of Water Purchase Cost.

$$WPPC_t = \sum_{t=1}^n WCVp_t$$

Where:

WPPC <sub>t</sub>	Means Water Production Purchase Cost for Regulatory Year ‘t’
nmy	Means the number of years in a Regulatory Control Period
WCVp <sub>t</sub>	Means the Water Capacity & Variable Payment for Regulatory Year ‘t’, which equals the sum of: <ul style="list-style-type: none"> <li>(i) the Water Capacity &amp; Variable Charges (as agreed with the Water Production Utility) payable under the respective Water Production Purchase Agreements in respect of Regulatory Year ‘t’</li> <li>(ii) the sum of any capacity charges and/or variable charges payable to the Water Production Utility in respect of Regulatory Year ‘t’</li> </ul>

#### 4.16 Total Cost of Water to End -Use Customers

The following formula shall be employed in the determination of Total Cost of Water Supply to End-Use Customers/Consumers by a Water Distribution Utility.

##### 4.16.1 Cost of Water Supplied by Water Distribution Utility to End-Use Customers or Consumers

Where a Water Distribution Utility is engaged in the supply or sale of water to End-Use Customers, the total cost to such End-Use Customers shall be determined as follows:

$$TC_{EUT} = \frac{WPPC_t + TSCost_t + DSCost_t + SuppCost_t}{(1-TCLR_t)}$$

Where:

TC <sub>EUT</sub>	means Total Cost of Water Supply to End Use Customers in respect of Regulatory Year ‘t
WPPC <sub>t</sub>	means Water Production Purchase Cost in respect of Regulatory Year ‘t’ pursuant to Section 4.13
TSCost <sub>t</sub>	Means Water Transmission Service Cost which shall be equal to the Annual Revenue Requirement (Transmission) in respect of Regulatory Year ‘t’
DSCost <sub>t</sub>	means Distribution Service Cost, which shall be equal to the Annual Revenue Requirement (Distribution) in respect of Regulatory Year ‘t’ minus any Water Distribution Utility (Retail Sale/ Supply) revenues from wheeling services in respect of Regulatory Year ‘t’
SuppCost <sub>t</sub>	means the Supply Cost which shall be equal to the Annual Revenue Requirement (Retail Sale/ Supply) revenues in respect of Regulatory Year ‘t’

$TCLR_t$  means the Target Collection Loss Ratio in respect of Regulatory Year ‘t’

#### 4.16.2 Determination of End-User Tariffs

The PURC shall, having determined total cost of water supply, translate such cost into rates payable by End-Use Customers or Consumers taking into consideration the total cost of water supply as per Section 4.14.1 and projected water sales volumes for Regulatory Year ‘t’ using the following formula.

$$A_{EUT} = \frac{TC_{EUT}}{WSV_t}$$

Where:

$A_{EUT}$  means Average End User Tariffs in respect of Regulatory Year ‘t’

$TC_{EUT}$  means Total Cost of Water Supply to End Use Customers in respect of Regulatory Year ‘t’

$WSV_t$  Means Projected Water Sales Volume in respect of Regulatory Year ‘t’ taking into consideration PURC Benchmark Non-Revenue Water Loss Ratio

The Commission shall design and determine rates for each of the water customer categories taking into consideration the number of customers and water consumption levels of the customer categories as well as economic, financial and social factors.

#### 4.17 Quarterly Review of End User Tariffs

End User Tariffs determined as per methodology in Section 4.14.2 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 overall objective of this quarterly review is to ensure real value of PURC approved End User Tariffs are maintained at any particular period of time.

#### 4.18 Negotiated and Approved Regulatory Efficiency Targets, Rewards and Penalties

The Water Utility shall negotiate and agree with PURC efficiency targets, rewards and penalties to be achieved for each Year of a Regulatory Control Period. The negotiated and agreed efficiency targets, rewards and penalties shall be approved by the PURC which shall serve as performance benchmarks and incorporated in determination of tariffs.

##### 4.18.1 Target Non-Revenue Water Ratio

The Target Non-Revenue Loss Ratio agreed with the Water Distribution Utility (Retail Sale/Supply) in respect of each Regulatory Year ‘t’ during the Initial Regulatory Control period shall equal:

- (a) in respect of Regulatory Year 1, provisional baseline aggregate Non-Revenue Water 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 Aggregate Non-Revenue Water Loss Ratio from Regulatory Year 1 (as established under section (a) above) minus [**Percentage Reduction in Non-Revenue Loss Water Ratio as per Agreement Year 2**]
- (c) in respect of Regulatory Year 3, the Approved Non-Revenue Water Loss Ratio from Regulatory Year 2 (as established under section (a) above) minus [**Percentage Reduction in Non-Revenue Water Loss Ratio as per Agreement Year 3**]
- (d) in respect of Regulatory Year 4, the Approved Non-Revenue Loss Ratio from Regulatory Year 3 and (as established under section (a) above) minus [**Percentage Reduction in Non-Revenue Water Loss Ratio as per Agreement Year 4**]

- (e) in respect of Regulatory Year 5, the Approved | Non-Revenue Loss Ratio from Regulatory Year 4 (as established under section (a) above) minus **[Percentage Reduction in Non-Revenue Water Loss Ratio as per Agreement Year 5]**

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

#### **4.16.2 Target Collection Loss Ratio**

The Target Collection Loss Ratio in respect of each Regulatory Year ‘t’ during the Initial Regulatory Control period shall equal

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

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

**PUBLIC UTILITIES REGULATORY COMMISSION**  
**RATE SETTING GUIDELINES FOR WATER PRODUCTION, TRANSMISSION, DISTRIBUTION AND SUPPLY**

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.

Asset Group	Asset Type	Depreciation Rates	Useful Life
Land and Building (LBD)	Land	0.10%	1000
Land and Building (LBD)	Office Building	2.50%	40
Land and Building (LBD)	Residential Property	2.50%	40
Civil Structures and Headworks (CSH)	Screening	2.50%	40
Civil Structures and Headworks (CSH)	Settlement	2.50%	40
Civil Structures and Headworks (CSH)	Aerator	2.50%	40
Civil Structures and Headworks (CSH)	Clarifier	6.67%	15
Civil Structures and Headworks (CSH)	Filter (Pressure)	2.50%	40
Civil Structures and Headworks (CSH)	Filter (RGF)	2.50%	40
Civil Structures and Headworks (CSH)	Chemical Dosing	6.67%	15
Civil Structures and Headworks (CSH)	Storage ClearWater	2.50%	40
Civil Structures and Headworks (CSH)	Storage RawWater	2.50%	40
Civil Structures and Headworks (CSH)	Storage_Other	2.50%	40
Civil Structures and Headworks (CSH)	Dam Concrete	1.33%	75
Civil Structures and Headworks (CSH)	Dam Earth	1.33%	75
Civil Structures and Headworks (CSH)	RI w/o weir	1.33%	75
Civil Structures and Headworks (CSH)	Pumping Station	6.67%	15
Civil Structures and Headworks (CSH)	Interstage Pumping	6.67%	15
Civil Structures and Headworks (CSH)	Filter (RGF)	2.50%	40
Civil Structures and Headworks (CSH)	RI with weir	1.33%	75
Main, Tanks and Pipelines (MTP)	Storage_Other	2.50%	40
Main, Tanks and Pipelines (MTP)	Pipelines_Distrib	5.00%	20
Main, Tanks and Pipelines (MTP)	Pipelines_RawTransm	2.00%	50
Main, Tanks and Pipelines (MTP)	Pipelines_TreatTransm	2.00%	50
Boreholes (Boh)	BH	2.50%	40
Machines & Equipment	Calculator Cash And Type	33.33%	3
Machines & Equipment	Communication Equipment	20.00%	5
Machines & Equipment	Computer And Peripherals	33.33%	3
Machines & Equipment	Computer Servers And Software	20.00%	5
Machines & Equipment	Domestic Furniture	10.00%	10
Machines & Equipment	Fridge And Air Conditioner	20.00%	5
Machines & Equipment	Office Furniture	10.00%	10
Machines & Equipment	Photocopier And Stencil	33.33%	3
Metering Equipment and Instruments (MEI)	Pumping Station	6.67%	15
Workshop, Machinery and Equipment (WME)	Workshop instruments	20.00%	5
Workshop, Machinery and Equipment (WME)	Workshop equipment	20.00%	5
Workshop, Machinery and Equipment (WME)	Fixed machines	6.67%	15
Electro-Mechanical Equipment (EME)	Chemical Dosing	6.67%	15
Electro-Mechanical Equipment (EME)	Filter (Pressure)	2.50%	40
Electro-Mechanical Equipment (EME)	Filter (RGF)	2.50%	40
Electro-Mechanical Equipment (EME)	Fixed machines	6.67%	15
Electro-Mechanical Equipment (EME)	Interstage Pumping	6.67%	15
Electro-Mechanical Equipment (EME)	Pumping Station	6.67%	15
Electro-Mechanical Equipment (EME)	RI w/o weir	1.33%	75
Electro-Mechanical Equipment (EME)	RI with weir	1.33%	75
Electro-Mechanical Equipment (EME)	Screening	2.50%	40
Laboratory and Dosing Equipment (LDE)	Chemical Dosing	6.67%	15
Laboratory and Dosing Equipment (LDE)	Filter (RGF)	2.50%	40
Transportation	Heavy Duty Vehicle	12.50	8
Transportation	Light Duty Vehicle	20.00	5
Transportation	Specialised Vehicle	10.00	10