

# **PUBLIC UTILITIES REGULATORY COMMISSION**



## **Report on Nationwide Verification Exercise of Projects Submitted by Regulated Utilities in 2022-2027 Tariff Proposals**

July 2022

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## **1.0 BACKGROUND**

The Public Utilities Regulatory Commission (PURC) has established two regulatory audit units for water and electricity. The purpose of establishing these two audit units is to assist the Commission to track utilities' expenditure against their annual revenue requirement, develop and publish performance bench marks and to perform value for money analysis on capital investments and other high-end investments.

Following the establishment of these audit units, PURC, has for the first time since its establishment, undertaken a nationwide verification of projects, which were submitted to the Commission by the Volta Reiver Authority (VRA), Ghana Grid Company Limited (GRIDCo), Electricity Company of Ghana (ECG), Northern Electricity Distribution Company Limited (NEDCo) and the Ghana Water Company Limited (GWCL).

The exercise, which was conducted across the country, included, verification of contract documents at the Head and Regional Offices of VRA, GRIDCo, ECG, NEDCo and GWCL; Site visits were undertaken by Engineers and other staff of the Commission to electricity generating stations, transformer sub-stations and water treatment plants. The aim of these site visits was to ascertain the existence of these projects, the status of the projects, location of projects, time frame to completion of projects, impact of projects on consumers, funding sources as well as the terms and conditions of the funds.

The exercise was undertaken to enable the Board of the Commission take appropriate decisions on the return on capital and other policy considerations and to ensure that, only prudent costs are accepted.

## **2.0 GHANA GRID COMPANY LIMITED (GRIDCo)**

### **2.1 Northern Region**

Physical verification of the following projects was carried out in the Northern and Upper East regions

- 330kV Kintampo – Adubuliyili Transmission Line
- 330kV Kumasi – Bolgatanga Transmission Line
- Kintampo – Bolgatanga Line
- Adubuliyili Substation
- Nayagnia Substation
- Tamale and Bolgatanga 161kV substation upgrade

All above projects verified were in place and serving the purpose for which they were installed.



*330 kV Kumasi-Kintampo- Navrongo Line*



*330 kV Kumasi-Kintampo- Navrongo Line*



*Adubiyilli Substation Upgrade*



*Tamale- Bolgatanga 161kV Line upgrade*



*Kintampo – Adubiyilli 330kV Line*



*Kumasi – Bolgatanga 330kV Line*

## **2.2 Ashanti Region**

The PURC team verified the following projects:

- 330kV BSP at Anwomaso, Kumasi, 330kV Transmission Line from Anwomaso – Kintampo: At the time of the team’s visit, maintenance works was ongoing on a bay at the switchyard with no load shedding during the maintenance period.

## **3.0 NORTHERN ELECTRICITY DISTRIBUTION COMPANY (NEDCO)**

NEDCo presented five major System Improvement Projects, which were completed between 2019 and 2022 in their Tariff proposal. The team made visits to the projects sites and also inspected contract documents of the projects.

The projects include:

- Procurement and Installation of 25,000 Smart Type Prepayment meters and Accessories
- Automatic Meter Reading (AMR) and Boundary Meters
- Techiman-Abofour Line Construction Project
- Hexing System Upgrade.
- Supply and Installation of 100,000 Hexing Smart Prepaid Meters

All projects were verified by the Commission’s Team.

- The Hexing System upgrade commenced in May 2020 and was completed in May 2021 by Hexing Electrical Company Ltd. An Emergency Response System in Bolgatanga in the Upper East region is ongoing, at a cost of US\$5.9M with NEDCo’s internally generated funds. The Roll out of the software is ongoing and will cover all NEDCo operational areas.
- Installation of the Automatic Meter Reading (AMR) and Boundary meters commenced in July 2018 and was completed in May 2022 by T&D Power Solutions Limited at a cost of GHS13.97M and funded with NEDCo’s internally generated funds. The installation spans all NEDCo operational areas.
- The Techiman-Abofour Line project spans towns along Techiman-Abofour corridor. The project commenced in April 2019 and is now completed; however, the certificate of completion is yet to be issued due to ongoing materials reconciliation. The project was carried out by JV of Investrade International Company Limited & Multi Projects Electrical Engineering Limited at a cost of GHS13.3 M with NEDCo’s internally generated funds (IGF).
- Procurement and installation of the 25,000, Smart Type prepaid meters (PPMs) and Accessories commenced in February 2018 and completed in May 2022 by MBH Power and Gas Limited at a cost of GHS41.6M with NEDCo’s IGFs. The project spans the Sunyani and Techiman areas.

- Supply and installation of 100,000 Hexing Smart Prepaid Meters, which commenced in July 2020 is still ongoing. A total of 80,000 smart prepaid meters have so far been installed with 50,000 meters installed by Hexing Electrical Company Limited at a cost of US\$16.02M and 30,000 meters installed by NEDCo. A total of 20,000 prepaid meters are yet to be installed. The installation is expected to cover all NEDCo operational areas and funded by the Company's IGFs.

## **4.0 GHANA WATER COMPANY LIMITED (GWCL)**

### **4.1 Northern Region**

#### *4.1.1 Production*

The following water projects were verified through documentation and site visits:

- Replacement and upgrading of 0.6km defective Raw Water Transmission pipeline at the Salaga Raw Water intake section, which commenced in January 2019 was completed in February 2019 by Otgobal-Tech Enterprise at a cost of GHS360,276.37 with GWCL internally generated funds. The project is completed and currently in use, however, final completion and commissioning certificates were not sighted by the team.
- Rehabilitation of the Dalun Raw Water pump was originally supposed to be carried out in 2018, but commenced in 2019 and completed in 2021. Rehabilitation works on the raw water pump was undertaken by the Tema Central workshop and installations undertaken by the Kumasi Workshop of GWCL at a cost of GHS 88,767.00. This was done with the company's IGF. However, commissioning and final certificate of completion for works was not ready for the team's inspection. The completed rehabilitated pump is currently in use and serving its purpose.
- Rehabilitation works on the high lift pump and IPS pumping equipment with new bearings at the Jambusie Headworks in the Upper West region has been completed and put to use. Works were carried out by the GWCL Project Team in the Region, while documentation on supply of the parts for the rehabilitation works was provided to the Team for inspection and confirmation. Inspection of relevant documents indicate that the project was successfully managed to achieve the expected results.
- Installation of three (3) Automatic Voltage Regulators (AVRs) at the Nawuni Raw Water intake section, the Dalun Headworks and Bagabaga Booster station in the Northern region, proposed by GWCL was not sighted by the Team. According to the GWCL Northern Regional Manager, the contract was awarded to Humble Company Limited at a cost of GHS 2,610,423.00 and is yet to take off due to contractual issues with the contractor. The project was supposed to have been completed in 2021.

#### 4.1.2 Transmission

- No Transmission pipeline project was proposed by GWCL in the Northern sector of the country.

#### 4.1.3 Distribution

- Installation of 22,700m (22.7km) of distribution pipelines was proposed to be laid in Wa and its environs in the Upper West region, however, documentation sighted indicate a total of 55,550m (55.5km) of pipelines laid, which length of pipeline is more than what was proposed. Pipeline works commenced in 2019 and completed in 2020. Works were carried out by the GWCL project team in the region and routinely maintained by the region's maintenance team. The Commission's team did not sight a final certificate of completion and commissioning certificate. A layout map of the pipe network was however provided.
- Installation of 51,880m (51.8km) distribution pipelines in the Tamale Metropolis in the Northern Region commenced in 2019 and was completed in 2021. This was divided into several Lots, among Twenty-Nine (29) Contractors, at a cost of GHS1,573,219.00 with GWCLs IGF. Documentation for Four contractors (BLIQIS INTERNATIONAL LTD, TAHZO GHANA LTD, OTGOBAL -TECH ENTERPRISE, MAARYIRI COMPANY LDT) covering a total length of 2,400m (2.4km) was reviewed by the team and found to be have fulfilled the necessary requirements.



*Rehabilitated pump at the Dalun intake,  
Tamale*



*Rehabilitated non- return valves at Headworks –  
UWR*



*Portions of rehabilitated Transmission pipeline at Salaga*



*Rehabilitated pumps at Jabusie Headworks – UWR*

## **4.2 Ashanti Region**

Verification was undertaken for the following projects:

- Installation of actuator valves at the Barekese Water Treatment Plant and Achiase booster station: The project installed 154 pairs of inlet/outlet actuator valves at the Barekese Water Treatment Plant and Achiase Booster Station. The GWCL team provided the team with payment and acceptance certificates. The contracts are managed from the Head Office and thus, the region did not have the contract documents.
- 73,600m of distribution pipelines constructed in Ashanti North: The project installed 73,600m of distribution pipelines in the Ashanti North operational area with GWCL providing the PURC team with payment and acceptance certificates. The contracts are, however, managed from GWCL Head Office, thus the region does not have any contract documents.
- 2000m of distribution pipelines constructed in Ashanti South: The project installed 2000m of distribution pipelines in the Ashanti North operational area with GWCL providing the PURC team with payment and acceptance certificates. The contracts are, however, managed from the Head Office, thus the region does not have any contract documents.

## **4.3 Brong Ahafo/Bono Region**

- Replacement of 4No. Water Pumps at Berekum: The project installed four water pumps valves at the Berekum Water Treatment Plant. The pumps were verified to be in place with GWCL providing the team with payment and acceptance certificates. It was noted that, all contracts were managed from GWCL Head Office.
- Repair works on walls of reinforced concrete sedimentation tanks at Abesim headworks: The project involved repair works on walls of reinforced concrete sedimentation tanks at Abesim

headworks. Payment and acceptance certificates were provided by GWCL, whereas all contracts were managed from the Head Office.

- Construction of the Kintampo BSP: The verification team noted that, this project has been completed and is in use.

#### **4.4 Central and Western Regions**

Water projects in the Western, Greater Accra and Central Regions were verified by the team. Physical verification of the projects indicates that, all projects mentioned in the multi-year tariff proposal for GWCL were traced and found to have been executed with the exception of two projects, which are yet to be completed. These are the installation of twelve (12) Filtrate valves at the Daboase Treatment Plant, where six of the valves have been installed with the remaining six valves on site but yet to be installed. The reason for the late installation was attributed to the Contractor, who needs to rectify a faulty pipe line before the valves could be installed.

Secondly, the Inchaban – Essipong – Kojokrom transmission line is also yet to be completed as the project is being affected by right of way issues as well as other road construction constraints.

- One major observation is the lack of proper documentation on the part of GWCL. Getting documentation to back the projects was a big challenge as the regional offices of GWCL claimed most of the documents relating to the projects were at the Head Office. The Head office was unable to provide most of the documentation in relation to the projects.

#### **5.0 VRA, GRIDCO AND ECG – CENTRAL AND WESTERN REGIONS**

The team visited GRIDCo and VRA at Takoradi to inspect the 330KV Aboadze-Prestea Line, Takoradi Thermal Power Station (TTPS) Gas Interconnection Upgrade, Weather Protection Enclosure and Rust Control works. The team noted the following during the exercise:

- The team could not verify the completion dates for the following projects because ECG could not provide the supporting documents:
  - Cape Coast Bulk Supply Point (BSP)
  - Saltpond BSP
- ECG did not produce any recent inspection/maintenance reports and documentation on insurance.
- Reconstruction of the Daboase and Awaso Substations into Indoor Substation was completed except fencing of the substation.
- The Supervisory Control and Data Acquisition (SCADA) System at the Cape Coast BSP is not fully completed. The team sighted smaller screens being used for the SCADA systems. ECG however informed the team that, a larger screen will be fixed to facilitate work.

## **6.0 ELECTRICITY COMPANY OF GHANA (ECG)**

### **6.1 Ashanti Strategic Business Unit (SBU)**

- Sub-transmission improvement projects involving construction, expansion, reinforcement of BSP, substation, feeders and overhead lines including the construction of 33kV and 2x20MVA primary substation at Ejisu substation, was completed in 2017. The project was however, not operationalized until 2020 as a result of right of way (RoW) issues on the incoming and outgoing circuits, and redesign of the Ejisu switching station into a substation with 2 x 20MVA power transformers. The ECG team could not provide contract documents, but explained the project was commenced and managed from the Projects Office in Accra, before the creation of the Ashanti SBU in 2016. ECG provided evidence of compensation payments made in 2020 to resolve RoW issues and copies of contracts for minor modifications at the substation.
- Network interconnection circuits (33kV Tower Lines, 33/11kV Overhead Lines & Underground Cables) & the dedicated supply of power to Customers including the construction of 33kV double circuit transmission lines to link the Ejisu substation to the Kuntunase switching station, and 33kV double circuit transmission lines to link the Kumasi station D to the Kuntunase switching station in the Ashanti Region was also completed in 2017 but could not be operationalized until 2020 due to Right of Way (ROW) issues on the lines. Contract documents could not be provided by ECG, however, it was noted that, the project was commenced and managed from the Projects Office in Accra prior to the creation of the Ashanti SBU in 2016. Evidence of compensation payments made in 2020 to resolve ROW issues was presented by ECG.
- Rural Projects in which network extensions and intensification in rural operational areas with the installation of 33kV and 11kV circuits together with pole mounted transformers in Ashanti, Volta, Eastern and Western Regions was undertaken and completed in the Bosome Freho district in Ashanti Region. Details of contract documents could not be provided by ECG. It was noted that, these projects, were commenced and managed from the Projects Office in Accra by the Rural Projects Directorate (RPD). The team verified the projects from the commissioning test reports and final acceptance certificates and found them to be in place.

## **7.0 ENCLAVE POWER COMPANY LIMITED (EPCL)**

The team visited EPC project sites at Dawa for data collection and observed the following:

- EPC provided invoices to back all project costs except for staff accommodation projects in Dawa and the multipurpose block and warehouse projects in Tema
- There were no certificates nor documentation to back the dates of completion and commissioning

- No final certificates of completion were observed during the exercise
- EPC uses a combined asset, all risk policy as per an insurance policy submitted to the Team
- EPC did not submit any recent inspection/maintenance reports.
- The Team noted that Feeders 72F5 and 72F6 were created as a result of a break-off from Feeder 72F4 with associated termination and decommissioning works to improve voltages on the feeders.

## **8.0 VOLTA RIVER AUTHORITY (VRA)**

The Team visited VRA sites and observed the following:

- Refencing of Tema Thermal Power Station (TTPS)-T1, which was submitted in 2020 and verified 2021
- Supply of unit power transformer for TT1PS (Submitted – 2020, verified – 2022)
- Power Connection from GRIDCo to VRA’s Gas Regulating and Metering Station in Tema. Project was submitted in 2021 and verified in 2022
- Relocation of AMERI power plant to Kumasi. Project was submitted in 2021 but yet to be verified
- Kpone Thermal Power Plant (KTPP) outstanding works. Project was submitted in 2021 and verification is ongoing

VRA did not however produce any recent inspection/maintenance reports and the team had no physical inspection activity on the “Asset valuation for T3”. Instead, VRA uses an all-asset inclusive insurance policy, which made it difficult to determine the sum assured for each of the projects separately.

There is still works-in-progress on the following projects:

- The 161 kV Volta-Achimota-Mallam stretch. The Achimota-Mallam stretch is yet to be completed
- Relocation of AMERI power plant to Kumasi
- KTPP outstanding works

The team recommends that the Commission should confirm the cost of the various projects in EPC, for which, supporting data may not be available from an asset valuation report. These projects include:

- Staff accommodation project in Dawa for EPC
- Multipurpose block in Tema for EPC
- Warehouse projects in Tema for EPC