

ELECTRICITY COMPANY OF GHANA LIMITED



PROPOSAL

FOR

ELECTRICITY DISTRIBUTION AND SUPPLY

AGGREGATE REVENUE REQUIREMENT AND TARIFF

MARCH 2022

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1 Introduction

The Electricity Company of Ghana (ECG) is the main and major Distribution Company in the Southern part of Ghana. Over the years, ECG has experienced numerous challenges including unstable macro-economic variables such as inflation and exchange rates; increase in world market prices of distribution inputs; increased cost of operations due to rapid customer growth; high cost of power procurement; etc. Additionally, the inadequacy of approved tariffs mainly the Distribution Service Charge (DSC₁) for the company over the past few years has made it difficult to survive in the mist of these challenges. The situation has had a negative impact on ECG's financial position with an urgent need for support to ensure the financial viability of ECG and ultimately the energy sector.

As required by the Commission, ECG presents its proposal for another major tariff review at the end of the current 2019-2021 regulatory period (end of June 2021). ECG has highlighted critical issues for consideration in this major tariff review proposal. It is expected that measures would be taken in due course by stakeholders including the Commission and Government by ensuring that ECG as the country's major distribution company, attains tariffs that reflect actual cost. This would help resolve some of the above-mentioned challenges faced by the company.

The proposal justifies ECG's request for the specified aggregate revenue requirement for the 5-year tariff regime, that is the regulatory period 2022 - 2026. This proposal is partly aligned to some ECG documents such as Strategy document (2021-2024), financial statements and 2021 budget.

1.1 Brief Background on Electricity Distribution and Supply Operations

The period under review marked a significant occurrence in the history of the company. This saw the implementation of Private Sector Participation (PSP) in the distribution industry of Ghana. Specifically, the Government assigned ECG's Distribution and Supply Operations to a Private Company known as Power Distribution Services Limited (PDS) on March 1, 2019. The PSP took the form of a Concession Agreement signed for a term of twenty (20) years. While ECG became the Asset Owner and a Brokerage Company known as Re-Structured ECG with a very small number of staff. This ECG-PSP was later terminated about eight (8) months after its implementation.

At the beginning of the last regulatory period, PURC had approved a new tariff effective July 1, 2019 for the Concessionaire. This approved tariff (DSC₁) showed an average reduction of 14% on the previous DSC₁ approved and gazetted in March 2018. This 2019-2020 tariff decision by PURC had been based on the separate tariff proposals by PDS and Re-Structured ECG. This is because during this period the Asset Owner was not the same as the Operator. At the termination of the PSP by

government, ECG took back the business of Distribution and Supply (ie. Asset Owner was the same as Operator) and as such continued with the implementation of the existing DSC₁ which was effective October 1, 2019 due to the Automatic Adjustment Formula (AAF).

The regulatory period encountered several government policy directives which impacted on ECG's operations and would continue to be significant interventions in the energy sector. These directives saw the implementation of the renegotiation of generation prices in the PPAs (referred to as Project Light) which is ongoing, the institutionalisation of the Cash Waterfall Mechanism (CWM) to ensure equity in the sharing of sales revenues among players in the energy market, etc.

The period under review continues to experience the devastating effect of the perilous nature of the COVID-19 pandemic. Its adverse impact on ECG's operations cannot be overemphasised. It subjected the company to low revenue collections, low revenue protection and other monitoring activities, low productivity due to GOG directives to run staff shift system, etc. The reduced level of activities due to the pandemic contributed to the non-achievement of target set to help meet benchmarks for system losses and revenue collection. The performance in system losses and revenue collection for 2021 was 29.84% and 87.01% respectively.

The regulatory period also experienced considerable outages occasioned by the pigging exercise (January 20 to March 19, 2020) on the West African Gas Pipeline. These and other outages such as the current ones being experienced stemmed from Transmission operations by the Ghana Grid Company Limited (GRIDCo) and therefore was beyond ECG's control. Additionally, some outages emanated from the company's distribution network due to both planned and unplanned outages. These outages and other technical challenges in ECG's distribution network encountered during the period resulted in the reliability performance shown in table 4.2.1.

Customer service delivery saw some improvements in terms of new connections (new service, separate meter and SHEP), replacement of aged and faulty meters, resolution of complaints lodged, etc. Customer population also grew by 10% and 8% for 2020 and 2021 respectively. The deployment of prepayment meters continued to be key in helping reduce customer debt and improve revenue collection. Currently, the percentage of credit customers to prepayment customers is about 47% to 53%.

The approved DSC₁ for the 2019-2020 regulatory period was undeniably inadequate and does not meet the actual cost of ECG's operations. The continual application of this inadequate tariff beyond the stipulated regulatory period (2019-2020) coupled with the current economic situation has worsened ECG's financial situation. ECG is currently struggling to meet the increased cost of

operations and therefore requires financial support through a full cost recovery tariff that covers distribution cost. The financial support would help ECG to ensure sustained investment for reliable and quality supply of service to our cherished customers.

1.2 Rationale/Objectives Underpinning Tariff Submission

As mentioned earlier, the inadequacy of the current DSC1 has eroded the financial viability of ECG which has had an adverse impact on the entire sector. This forms the basis of ECG’s objectives in this tariff submission for the regulatory period 2022 – 2026. ECG’s objectives therefore include the following:

- a. To propose a full cost recovery tariff that incorporates the actual cost of generation, agreed cost of transmission and particularly the DSC1 which is expected to increase considerably and gain an equitable share of an approved EUT. Also, to propose minimal increases in DSC2 to support the proposed distribution losses for the 5-year tariff regime.
- b. To propose a gradual approach to achieve a cost of service allocation within the tariff structure to avert distortions in pricing signals to some customers and the dissatisfaction of other customers who may seek cheaper supply options. Efforts must be made to eventually attain a cost of service tariff allocation which eliminates cross-subsidization and promote a non-discriminatory tariff.
- c. To propose the continuation of lifeline tariffs (exclusively 0-50 kWh) for residential customers and similarly introduce a defined threshold with a lower tariff for low-income commercial customers as the first block tariff for residential and non-residential customers respectively.
- d. To propose a two-band or block tariff for Non-Special Load Tariff (NSLT) customer groups. This is aimed at eliminating the multiple tariff bands or blocks associated with progressive tariffs. A two-band tariff rate design would be simple, easy to implement by all utilities and would be easily understood by end users. The proposed two-band tariff for residential and non-residential customer groups is shown in table 1.2.1 below.

1.2.1 Proposed Two-Block Tariff for Residential and Non-Residential Customers

Category	First Tariff Block	Second Tariff Block
Residential	Lifeline Tariff exclusively for 0-50 kWh	Tariff applicable to all non-lifeline customers
Non-Residential	Lower Tariff exclusively for a defined threshold (kWh)	Tariff applicable to all customers outside the defined threshold

- e. To propose the introduction of streetlight tariffs in the tariff structure to help account for the cost of streetlight consumption as the public light levy covers only about 30% of the actual cost of streetlight consumption.
- f. To propose the cost of reserve margin (18%) to be recovered in the tariff as this reserve margin capacity impacts the entire sector, its cost therefore needs to be considered in a manner that is appropriate for the entire sector.
- g. To propose the recovery of investment costs for projects completed, ongoing and planned for the five-year regulatory period.

1.3 Highlights of Major Issues Which Describe Structure of Tariff Submission

The structure of ECG's tariff submission is impacted by the issues discussed as follows:

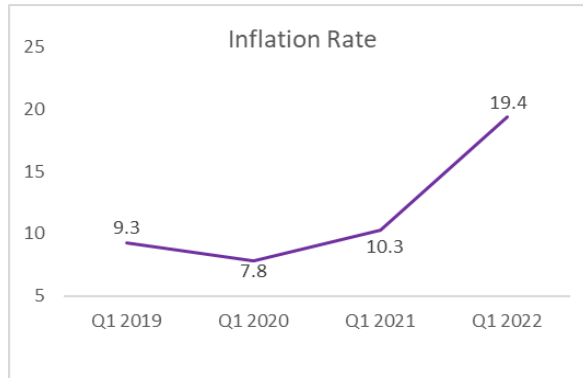
- a. **Macroeconomic Factors:** Macroeconomic variables such as inflation and exchange rates have affected ECG considerably since the last regulatory period. The Automatic Adjustment Formula (AAF) over the period did not make any compensation for the company in terms of the depreciation of the Ghana cedis (GHS). During the last regulatory period (July 2019), the only adjustment that took place was the October 2019 increase of 0.47%.

At the commencement of the last regulatory period (July 2019), inflation rate was 8% however as at the end of the first quarter 2022, the inflation rate had more than doubled to 19.4%. The unstable exchange and inflation rate has led to increased cost of both imported and local materials required by ECG to serve its customers. This phenomenon has also impacted on the cost of borrowing to finance projects. The weighted average inflation rate used in this tariff submission is approximately 7% based on the ratio of 20% and 80% for USA and Ghana respectively. The proposed 20% US inflation rate is a reflection of ECG's dependence on the dollar currency as the major currency used in about 80% of ECG's foreign transactions (material imports, project costs, etc).

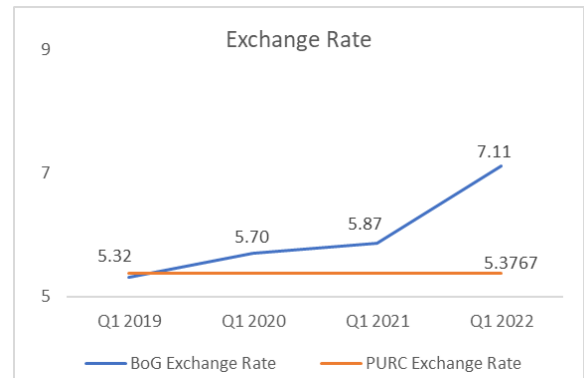
ECG bears the exchange rate risk in Power Purchase Agreements (PPAs). Similarly, in July 2019, the exchange rate in Ghana was 1 dollar to 5.05 Ghana cedis, however as at the end of the first quarter 2022, 1 dollar was equivalent to 7.11 (Bank of Ghana rate) Ghana cedis, representing an increase of about 40.8%. The market exchange rate for this same period is 7.8 as against the 7.11. Currently, the exchange rate used for the prevailing tariff is 5.3767 as against the actual paid rates (market rates) which ranged from 5.7950 to 6.3605 as at the end of December 2021. This gap in the exchange rate resulted in forex loss of GHS867.23 million in power procurement

cost to ECG at the end of 2021 as shown in table 1.3.1. Graph 1 shows the trend of the unstable macroeconomic variables (inflation and exchange) during these last few years.

Graph 1 Unstable Macroeconomic Variables



Source: Ghana Statistical Service



Source: Bank of Ghana

1.3.1 Forex Losses to ECG in 2021

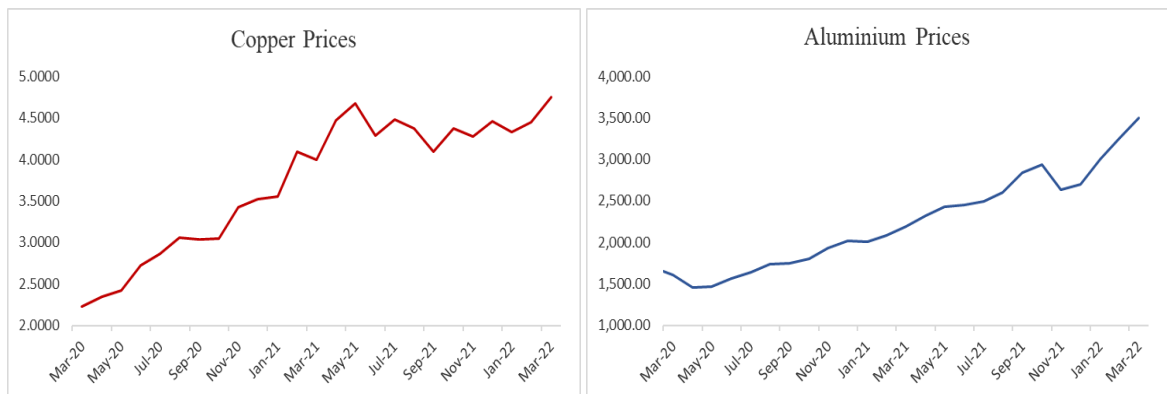
SUMMARY OF FOREIGN EXCHANGE LOSS (JAN - DEC 2021)						
No	IPP	Energy Delivered (kWh)	Total Charge (USD)	Total Charge at PURC Rate 5.3767 (GHS)	Actual Charge to be Paid 5.7950 - 6.3605 (GHS)	Forex Losses (GHS)
1	CENIT	469,165,700.00	61,259,029.91	329,371,426.12	365,788,745.19	(36,417,319.07)
2	Sunon Asogli	2,984,234,700.00	333,481,855.87	1,793,031,894.46	1,986,805,984.87	(193,774,090.41)
3	Bui Power	1,004,637,429.16	103,060,803.49	554,127,022.12	626,270,952.44	(72,143,930.31)
4	Karpowership	2,132,225,200.00	376,036,821.71	2,021,837,179.29	2,245,475,270.88	(223,638,091.60)
5	BXC	29,290,813.44	5,889,349.69	31,665,266.48	35,272,038.79	(3,606,772.31)
6	Cenpower	1,743,955,600.00	275,934,657.21	1,483,617,871.42	1,655,977,907.84	(172,360,036.42)
7	Ameri			-	-	-
8	Meinergy	26,832,880.94	4,896,034.77	26,324,510.15	29,343,732.47	(3,019,222.32)
9	Amandi	1,078,957,300.00	98,800,501.70	531,220,657.49	602,218,480.51	(70,997,823.02)
10	AKSA Energy	350,832,880.00	149,786,658.56	805,357,927.08	896,629,976.73	(91,272,049.65)
Total		9,820,132,503.54	1,409,145,712.91	7,576,553,754.60	8,443,783,089.73	(867,229,335.12)

Source of Market Exchange Rate: Monthly Average Indicative Rate (Ecobank & SCB)

The exchange rate of a dollar equivalent in Ghana cedis applied in this tariff submission ranges from 6.49 to 8.17 for the period 2022 to 2026 respectively. These projected exchange rate figures are expected to be adjusted (AAF) to reflect actual exchange rates over the five-year tariff period.

- b. Metal Prices: A major input for ECG’s operations is the procurement of equipment made up of key metals such as Aluminium and Copper. Over the last two years, world market prices for Copper and Aluminium have consistently increased at an average rate of 3.37% and 3.41% per month respectively. These are substantial increases compared to that of previous years’ monthly averages. This trend of increasing metal prices undoubtedly has a direct impact on ECG’s operations. Graph 2 below illustrates this trend.

Graph 2 World Market Prices of Metals



Source: Trading Economics

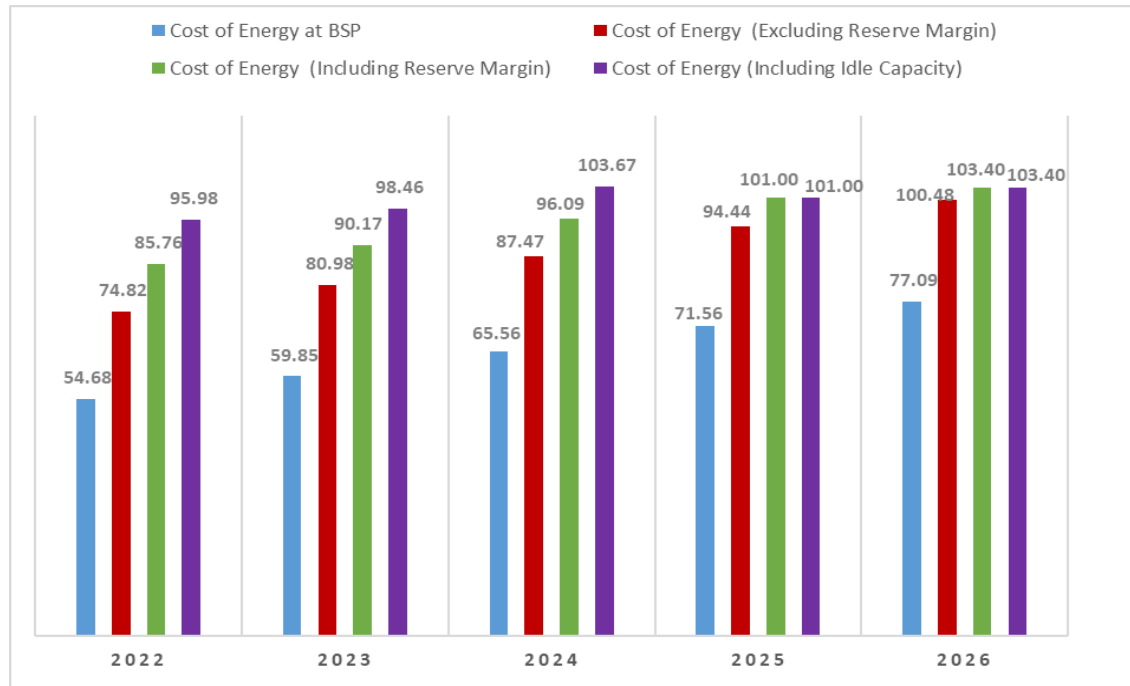
- c. Unrecovered Pass-Through Power Procurement Costs: The significance of power procurement to ECG cannot be over emphasised. As a major determinant of the company’s ability to continuously supply power to its cherished customers, ECG has signed Power Purchase Agreement (PPAs) with Independent Power Producers (IPPs). The various prices agreed with IPPs and finally approved by PURC have become a burden on the company as PURC gazetted tariffs indicate lower prices for generation as compared to actual prices in the PPAs. The result has been the huge unpaid IPP invoices in dollars with its associated forex losses. Additionally, cost associated with variations in dispatch (hydro and thermal mix) as well as generation fuel prices are not compensated through the AAF.

Reserve Margin (18%) which is also currently not considered as a pass-through cost has been a liability to ECG although the benefits of reserve margin go beyond ECG’s operational zone. The cost of reserve margin to ECG at the end December 2021 was estimated at \$164.18million for 318MW. It is estimated that during the five-year regulatory period, reserve margin would cost about \$670million.

To propose the required revenue to enable the company to pay IPPs appropriately as well as pay other debt, various scenarios of power procurement cost analysis were examined. Out of

the four levels of power procurement costs analysed, the option selected for the tariff proposal excluded the cost of reserve margin. The volume of power to be purchased from the various generation plants or IPPs during the five-year regulatory period was projected based on the estimated growth in demand. The scenarios of power procurement costs are shown in graph 3.

Graph 3 Levels of Power Procurement Costs (Ghp/KWh)



d. Structure of the Prevailing Tariff: The prevailing tariff is designed to have multiple and progressive band tariffs. This type of structure is complex and not convenient for customers and distributing utilities such as ECG. Customers find it difficult to understand their bill and are not motivated to pay their electricity bills voluntarily. On the other hand, ECG has no option but to purchase costly meters customised to align with the multiple and progressive band tariffs. ECG is therefore proposing that the multiple and progressive band tariff should be collapsed into a two-band tariff for residential and non-residential customers. The two-band tariff for residential customers would be made up of a lifeline tariff (exclusively 0-50kWh) and a flat rate for all other customers. Similarly, the two-band tariff for non-residential customers would be made up of a lifeline (an agreed threshold) tariff and a flat rate for all other non-residential customers.

e. Cost of Service Allocation within the Tariff Structure: The design of the prevailing tariff also incorporates cross-subsidization among customer categories. The cross-subsidization allows

Special Load Tariff (SLT or industrial) customers to subsidize the lower tariff allocated to residential customers. This causes distortions in price signals to these beneficiary customers. This situation turns out to be a disincentive to SLT customers as their tariff is much higher than it cost ECG to provide supply to them. Some dissatisfied SLT customers tend to look for cheaper supply options and can move to other suppliers rendering ECG's network redundant. Therefore, eventually attaining a cost of service tariff would eliminate cross-subsidization and its associated challenges.

- f. Inadequate Distribution Service Charge (DSC₁): The last regulatory period (July 2019) saw an approved tariff for a distribution business which was made up of an Asset Owner and an Operator. This July 2019 approved tariff also saw an unexpected reduction which altered historical trends significantly. That is, the approved tariff (DSC₁) showed an average reduction of 14% on the previous tariff gazetted in March 2018. The effect was a widened gap between the prevailing tariff and an actual cost recovery tariff. The current DSC₁ (16.1094GHP/KWh) is therefore extremely inadequate and does not meet ECG's distribution cost.

This wide gap has significantly impacted the tariff submission as the actual cost recovery tariff proposed is primarily higher in the first year (2022) of the five-year period. The effect of the approval of very low tariffs (DSC₁) in the past threatens subsequent and future tariff submissions and therefore appropriate steps must be taken to minimise or eliminate the gap.

- g. Cash Waterfall Mechanism: The CWM implemented in April 2020 was modelled on Utilities' percentage share of the current End User Tariff (EUT). Consequently, the DSC₁ which had experience very low increases in the past as well as recent reductions as discussed above, became a great disadvantage to the company. ECG's share of the CWM is therefore based on the current DSC₁ (16.1094GHP/KWh) which forms 23% of the current EUT. In this tariff submission, the DSC₁ is expected to increase considerably, attain the cost recovery level and gain an equitable share of an approved EUT during the 5-year period to help improve the financial status of ECG.
- h. Recovery of Investment Costs: The company undertakes regular investments to avoid the distribution effect of under critical investments. During the last regulatory period, several investment projects were ongoing. Many of these projects have been completed and commissioned accordingly. These huge investment costs required to improve service delivery have significant impact on the revenue requirements for the company. Investment costs factored in this proposal has therefore been limited to completed, ongoing and planned

(committed and most feasible) investments projects. This categorization of ECG's total capital investments incorporated in the tariff proposal for the five-year period is shown in graph 6.

2 Initiatives Undertaken Since July 2019 Tariff Review

ECG had embarked on several projects to improve service delivery to its cherished customers in all ECG operational areas before and after July 2019. Some of these projects which were before July 2019 have now been completed though others remain ongoing.

2.1 Projects Undertaken and Impact

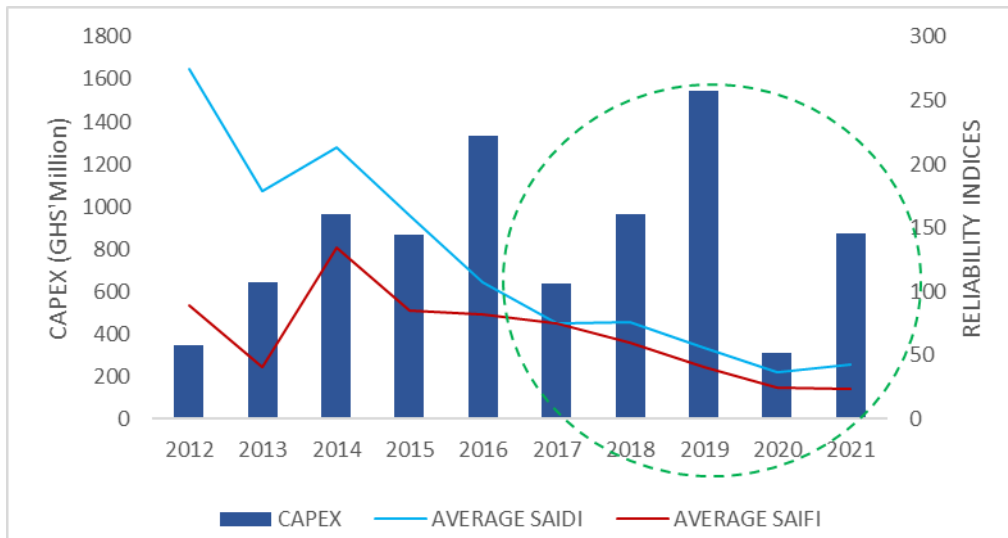
Over the years, ECG has invested heavily in maintaining, upgrading and expanding the distribution network for the supply of power to customers within ECG's distribution system. These investments are geared towards meeting not just the high demand for power supply but also to maintain high level of reliability and quality of supply to our cherished customers. Majority of these network investments were undertaken in Greater Accra region which has the highest demand for power.

During the period 2017 - 2020, ECG invested a total of USD57.63 million in the construction and upgrade of Bulk Supply Points (BSPs), primary substations and switching stations; USD66.52 million in the construction of sub-transmission networks; USD1.05 million on specialised tools for live-line work and USD3.33 million in the provision of voltage improvements in the distribution network it operates. Additionally, the company spent USD67.80 million and USD34.32 million on meters and service cables respectively.

Projects completed in 2021 include the following: USD26.03 million for sub-transmission improvement projects (construction, expansion and reinforcement of BSPs, substations, feeders and overhead lines); USD1.3 million for system improvement projects; USD1.8 million for network expansion and special grid intensification projects; and USD0.54 million for rural network expansion projects. These investments ensured the availability of reliable and quality supply of power to customers. This is illustrated in graph 4 which depicts the impact of projects undertaken on reliability.

In addition to the investments undertaken by ECG, the Government of Ghana through the rural electrification and grid extension projects invested a total of USD97 million to extend power supply to communities in Ashanti, Western, Eastern and Volta regions. ECG on its part provided technical supervision for these projects. The total investment cost of completed projects before and during the regulatory period (2019 – 2020) was USD393.12 million. Projects completed in 2021 also cost USD29.16 million.

Graph 4 Impact of CAPEX on Reliability



There are also several ongoing projects in all ECG operational regions. These includes construction of primary substations and switching stations, sub-transmission and primary distribution lines, expansion of low voltage networks etc. The total investment cost for ongoing projects was USD274.42 million as at the end of December 2021. Details of these projects are attached as separate documentations.

2.2 Compliance with Directives of the Commission

The company has often made frantic effort to comply with the Commission’s directives, policies and or regulations that govern distribution companies. During the period under review, all requests and directives from the Commission were responded to accordingly to meet ECG’s set benchmark for regulatory compliance.

Commercial complaints received from PURC on behalf of aggrieved customers were duly addressed and the commission informed accordingly. Annual submissions on reliability and regulatory data to the commission were also done accordingly. This comprises reports on outages, technical activities, maintenance activities and schedules, on-going and planned key capital projects. ECG would continue to comply with all directives of the Commission during the upcoming regulatory period.

3 Key Policy Issues for Tariff Consideration

ECG’s tariff submission makes consideration for the following:

- a. Disaggregation of DSC to reflect the implementation of the Wholesale Electricity Market (WEM): The Ministry of Energy (MoEn) through GRIDCo is working towards the

implementation of the Wholesale Electricity Market which requires that numerous power producers would be available to sell power generated to Bulk Customers (BCs) and Distribution Companies (Discos). If applicable, BCs could procure the services of Discos to wheel their contracted energy to their offtake points. It is required that the PURC disaggregates the approved DSC to spell out the values for sub-transmission voltage (33kV), medium voltage (11kV) and low voltage levels to facilitate the implementation of WEM.

- b. Separation of Distribution Network Tariff and Retail Sales Tariff: The importance of separating distribution network tariff from retail sales tariff was discussed during the last regulatory period. ECG recommends the consideration of this concept during the five-year regulatory period. It is expected that a distribution charge or tariff would be a fixed cost for customers in the event of retail sales business. Also, the distribution tariff should ideally be a cost recovery pricing for the distribution company's network.
- c. Cost of Service Pricing: Identifying cost by customer class and making true allocation has become necessary in recent times. Cross-subsidization favours residential customers whose cost of service is higher compared to industrial (SLT) customers. This phenomenon has a direct consequence on the distribution utility which is either forced into negotiating lower tariffs with the burdened SLT customers or lose such valuable customers. It is therefore imperative to have cross-subsidies between customer classes removed entirely by beginning with the gradual decrease of the margins year by year during this 5-year tariff period.
- d. Two-Block Tariff for Non-Special Load Tariff (NSLT) Customer Groups: The interpretation of the prevailing residential and non-residential tariffs, particularly under prepayment metering has become very problematic and confusing due to the progressive nature of the tariff and the presence of many blocks or bands within the customer groups. The presence of multiple block tariff which are progressive in rates makes it difficult for customers to understand their bills. This invariably becomes a deterrent to customers regarding the payment of bills.

Additionally, the implementation of a tariff which has multiple bands has led to the procurement of prepayment meters which are customised in nature and very expensive compared to the normal prepaid meters.

ECG strongly recommends that the Commission considers the two-band tariff for NSLT customers. For residential customers the first band will represent a lifeline tariff (exclusively applicable to customers with 0-50kWh consumption per month) for the vulnerable and the second band will be a tariff for all other residential customers. For commercial customers, a

well-defined threshold for low consumption customers such as tailoring shops, dress makers, barbers, etc. will be the first band or block with a lower tariff whilst all other customers would have one tariff as the second band tariff. The implementation of a two-block tariff would help customers to easily understand their bills and therefore improve the voluntary payment of bills. It would also help utilities to reduce cost of prepayment meters and their associated management as more ordinary meters could be procured at reasonable prices.

- e. Customer Contribution to Stranded Assets: ECG has also observed the effect of customer exit from its distribution grid due to the implementation of the WEM. The company is modifying its application procedures to ensure a legal requirement for customers to make a capital contribution to stranded assets or network assets that remain unutilised upon their exit. ECG therefore requests the Commission to come out with a directive or guidelines for the implementation of customer contribution to stranded assets. The current cost of stranded assets to ECG amounts to USD10.29 million as shown in table 3.1 below.

3.1 Cost of Stranded Assets

No.	Company	Demand	New Supplier	Date of Exit	Stranded Asset	Cost of Project (USD Millions)
1	Goldfields Ghana Limited (Tarkwa) - South Plant	7.5MW	VRA and then Genser	Jul-14	Relocation of the Tarkwa Atuabo BSP	0.5
2	Abosso Goldfields (Damang)	18MW	Genser	Sep-17	Construction of 33kV Akyempim Switching Station	1.3
					Provision of 25km of 33kV double circuit tower line from Akyempim to Damang	3.89
					Construction of XX bay 33kV Switching Station at Damang	2.4
					Relocation of the Tarkwa Atuabo BSP	0.7
3	Anglogold Ashanti Iduapriem	16MW	VRA	May-19	Relocation of the Tarkwa Atuabo BSP	1.5
TOTAL (USD Millions)						10.29

- f. Determination of Net Metering Tariff: The Net Metering code was passed some years ago and recommendations were made for the Utilities to implement it on a pilot basis. Following this, ECG together with the Energy Commission and some key stakeholders tested the functionality of the bi-directional meter and reviewed the code to practicalize the provisions. ECG later informed the regulators of the associated challenges and sought for support to review the code to reflect the issues raised which included the following:

- i. Energy for energy exchange mechanism. ECG had proposed a ratio of 1 : 0.6 for industrial (SLT) customers and 1 : 0.4 for residential and non-residential customers.
- ii. The annual capacity threshold to enrol customers and in general terms, the capacity caps for various Renewable Energy (RE) technologies.
- iii. Absence of a contract framework to define the conditions for entry and exit, default and penalties and more importantly provision for customers who may game its implementation. The gaming may happen through continuous over-generation and export to the grid or customers who would not export power to the grid on a permanent basis. ECG has submitted a draft contract as well as procedures for engaging customers, for the consideration of Energy Commission and PURC as the sector prepares for the implementation of the net metering scheme.

4 Proposed Service Delivery and Efficiency Improvements During Tariff Period

It is expected that the various projects embarked upon by ECG before and during the five-year tariff period would bring about the required proportional improvements in the specific areas of implementation. Such results would greatly impact service delivery and efficiency levels.

4.1 Service Delivery and Efficiency Targets

In the bid to improve service delivery to customers as well as improvements in the overall business operations, ECG regularly sets objectives with various initiatives to execute. Continuous monitoring of activities geared towards achieving targets are put in place. Achievements are also measured to determine the level of performance and subsequently appropriate remedial actions are taken to alleviate any shortfalls. ECG would continue to deploy these and other methods to achieve the required targets.

The company’s service delivery and efficiency targets for the five-year regulatory period is derived from its strategic plan for 2021-2024. Based on the company’s mission, vision, customer value proposition and SCOT, the focus has been on three main areas namely Revenue Growth; Operational Excellence; and Customer Value as summarised in the table below.

4.1.1 Service Delivery and Efficiency Targets

Revenue Growth	Operational Excellence	Customer Value
Debt to Sales ratio of 20%	Achieve benchmarks for technical (reliability) indicators	Connect customers within 5 days after payments
Revenue increase of 98%	Achieve system loss of 20%	Provide value added services to customers
Other revenue increases by 10%	Deliver 95% of projects on time	Achieve at least 70% of customers satisfaction

With regards to revenue growth, ECG expects to achieve revenue target of 98% and a 10% increase from other revenue sources (non-tariff charges) such as reconnection fee, application fees, penalty on dishonoured cheques, administration fees on illegal connections, etc. ECG would procure more smart meters to enhance its revenue growth. ECG also intends to utilize prosecution processes to help improve revenue collection during the period.

The companies KPI's and regulatory benchmarks such as achieving project timelines, reliability indices, system loss, etc. would serve as a guide in the effort to attain efficiency in its operations.

The company is poised to provide value added services to its cherished customers and hopes to achieve at least 70% customer satisfaction during the five-year tariff period. Also, the company is in the process of reviewing its Customers Charter and would pursue measures to enhance compliance with regulatory policies and procedures in the delivery of service to customers. Some of the proposed value-added services to be delivered during the period include the following:

- Enhancement of the E-payment System (ECG Power) to benefit a wider range of customers.
- Full deployment of the Web Portal which is currently under development.
- Increase customers participation in prompt reporting of faults, suspected illegal connections and partnering with the communities to improve service delivery.
- Provision of flexible responses to service users' complaints through our call centre, social media apps and the web portal applications.
- Partnering with other players and outsourcing services to offer value for money services to customers.
- Opening of new customers service centres and private vending points in newly connected areas to ease customers payments.
- Provision of services such as premium service, consultancy, photovoltaic (PV) solar are also being considered.

4.2 Technical / Operating Performance Indicators/Indices

System availability within ECG's system currently is 99.74%. System reliability has seen consistent improvements since 2018. Both SAIDI and SAIFI have reduced consistently with SAIDI benchmarks also being achieved for 2019, 2020 and 2021. Although SAIFI has also seen significant improvements since 2018, the regulatory benchmark of six (6) for all customer classes have not been achieved till date. This is because the benchmark indices are skewed towards a relaxed benchmark on outage

duration and a more stringent requirement on outage frequency. Table 4.2.1 shows ECG’s performance over the last few years.

4.2.1 Technical / Operating Performance Indicators/Indices

CATEGORY	2018	2019	2020	2021	BENCHMARK
SAIDI					
METRO	55.93	36.9	21.95	26.63	48
URBAN	90.53	61.99	42.92	52.43	72
RURAL	100.62	79.29	51.81	56.29	144
SAIFI					
METRO	36.28	24.99	15.36	17.8	6
URBAN	72.99	47.06	26.45	27.69	6
RURAL	82.05	59.2	34.19	28.12	6
CAIDI					
METRO	1.54	1.48	1.43	1.50	8
URBAN	1.24	1.32	1.63	1.89	12
RURAL	1.23	1.34	1.52	2.00	24

To improve performance, ECG has adopted measures to help reduce the high SAIFI figures and move more rapidly towards achieving the regulatory benchmarks. These measures include the following:

- a. Adopting a more coordinated approach in executing planned maintenance works such that when any segment of the network is shut down for maintenance, all other activities that require shut down are planned and carried out at the same time.
- b. Creation of redundancy for system flexibility in the network. This is gradually being achieved as Accra now has 4 BSPs making it easier for some customers to be supplied from other BSPs when a BSP is shut down for maintenance.
- c. Undertaking system improvement projects such as increasing transformer capacities, installation of capacitor banks, automation of the systems, increasing sizes of conductors, and intensive vegetation control are ways to ensure improvement in system availability, reliability and quality of supply.

In addition to the above measures adopted, ECG has proposed to the Energy Commission a review of the benchmarks for reliability indices as shown in table 4.2.2 to help achieve a balance between outage duration and outage frequency.

4.2.2 ECG Proposed Technical Performance Indicators/Indices

INDEX	CATEGORY	PROPOSED BENCHMARK	EXISTING BENCHMARK
SAIDI	METRO	48	48
	URBAN	72	72
	RURAL	96	144
SAIFI	METRO	24	6
	URBAN	24	6
	RURAL	24	6
CAIDI	METRO	2	8
	URBAN	3	12
	RURAL	4	24

4.3 Financial Performance Indicators/Indices

ECG's financial performance indicators for the last five years is shown in table 4.3.1 below.

4.3.1 ECG's Financial Performance Indicators

No.	Description	Figures in GHS Million					CARG
		2017	2018	2019	2020	2021	
1	Net Sales	6,177	5,856	7,249	6,869	7,710	0.045
2	Power Purchase	4,498	6,593	8,003	8,823	9,520	0.162
3	Transmission Cost	555	387	206	904	1,014	0.128
4	Gross Profit	397	(1,954)	(695)	2,972	674	0.112
5	Net Operating Profit	(497)	(2,266)	(1,466)	181	(1,782)	0.291
6	ANFA	15,131	17,465	19,651	20,461	22,568	0.083
7	ROR on ANFA % (using profit)	(410.00)	(12.97)	(7.46)	0.88	(7.90)	0.140
8	Current Asset	4,582	3,493	6,085	10,216	9,454	0.156
9	Current Liability	7,159	8,503	12,500	16,431	18,808	0.213
10	Stock	80	192	176	212	222	0.226
11	Current Ratio : 1	0.64	0.41	0.49	0.62	0.50	(0.05)
12	Gross Profit Profit Margin (%)	6.38	(33.08)	(9.59)	43.27	8.74	0.063
13	Net Profit Margin(%)	(8.05)	(38.70)	(20.22)	2.64	(23.11)	0.235

Power purchases cost increased significantly from GHS4,498 million in 2017 to GHS9,520 million in 2021, while net sales revenue increased slightly from GHS6,177 million to GHS7,710 million during the same period. Transmission cost increased significantly during same period registering CAGR of

12.8%. The CAGR for power purchases costs recorded is 16.2%, while net sales showed a marginal CAGR of 4.5%. This reflects the direct impact of high purchases and transmission cost on the company's finances. It also confirms that PURC gazetted tariffs over these periods have been inadequate and does not meet the actual cost of distribution.

A net profit after tax of GHS181 million was recorded in 2020. This was partly due to GoG payments to IPPs and fuel suppliers on behalf of ECG. The net profit margin deteriorated from -8.05% in 2017 to -23.11% in 2021. This was largely due to PURC's approved bulk generation charge which have remained lower than the PPAs prices.

The poor profitability performance of the company has resulted in a negative rate of return (ROR) on the Average Net Fixed Asset (ANFA) during the past five-year period. This was against the backdrop of a 10% ROR (USD) required to attract requisite investment in the distribution network.

Total assets increased from GHS15,131 million in 2017 to GHS22,568 million in 2021 representing a CAGR of 8.3%. The increase in assets was due to investments made in the distribution network and the revaluation during the period. The current ratio worsened by 4.7% during the period from 0.64:1 in 2017 to 0.50:1 in 2021. This is again due to the high cost of power purchases which far exceeds the sales revenue leading to huge power purchase payables which are not fully recovered through tariffs.

The above notwithstanding, ECG successfully contracted a GHS600 million medium term loan from Financial Institutions in 2020, in addition to the traditional Subsidiary loans granted by Donor Institutions.

Since April 2020, Government through ECG adopted and continue to use the CWM arrangement for paying all stakeholders in the electricity distribution value chain. By this arrangement, ECG is strictly limited to its share of 23% of the net tariff revenue collections. This has had severe implications on the Company's cashflow.

It is worth noting that payments made by Government directly to IPPs and fuel suppliers on behalf of ECG is currently being used first to offset Government's indebtedness to ECG and the balance as other Government grants.

Finally, macroeconomic factors (exchange rates, inflation and interest rates), cost of reserve margin and idle capacity, variable fuel prices, etc. continue to impact negatively on the company's financial situation. Ultimately, these factors increase ECG's operational costs far beyond the PURC approved tariff thus making the company unprofitable.

5 Key Challenges Likely to Impact Service Delivery

Inadequate tariffs cause financial constraints for the company hindering efforts to make significant investments to improve the system. It is hoped that the Commission would approve the proposed cost recovery tariff to address the financial deficit and enable ECG to undertake the required investments to improve service delivery. Other challenges affecting the company includes the following.

- High levels of distribution losses due to theft.
- Inadequate revenue due to the non-payment of bills by rural communities and some residential compound house facilities.
- Indiscriminate installation of unauthorized meters into ECG's network.
- Movable commercial properties with meters.
- Unauthorised transfer of meters.
- Unstable Communication signals within the Telecommunication network on the smart meters.
- High data communication cost.
- Indiscriminate installation of streetlights/Public lighting systems within communities.
- Interference of vegetation with the network.
- Bird activity such as landing and taking off or building nests on pylons of power lines.
- Non-availability of an automated monitoring system to manage works in progress.
- Non-availability of critical construction materials to undertake load balancing and system improvement.
- Inadequate resources to execute maintenance charts.
- Inaccessible or non-manageable areas.

5.1 Metering Including Prepayment Metering

Meter failure continues to impact on revenue and customer convenience. A total of 533,908 and 319,817 meters were replaced in 2019 and 2020 respectively. The projected number for meter replacement in 2021 was 289,846. A total of 151,878 meters were installed representing 52.4%.

The corporate metering strategy is to improve customer convenience through timely service connections; prompt resolution of metering related complaints; establishing boundary and distribution transformer metering to segregate purchases, sales and losses per administrative districts and regions; embarking on a program to replace obsolete and faulty meters; and completing metering projects within cost and time.

The value chain activities to ensure these targets are enhanced include meter testing, sealing, meter allocations, prompt processing of third-party claims and enforcement of use of the Commercial Management System (CMS) to update and resolve all field orders.

The introduction of prepayment metering was based on the desire to improve cash flows and manage our debtors. As at the end of December 2021, the total active customer population was 4,290,148 made up of 2,002,967 post-paid customers and 2,287,181 prepayment customers. It is expected that most post-paid meters within the urban and metropolitan areas will gradually be replaced with prepayment meters.

The ongoing Meter Management System (MMS) project which began in 2019 under MIDA is expected to improve metering programmes considerably. The system shall have enough capability for scalability to cover entire ECG operational areas and providing a joint infrastructure for a prepayment system based on Standard Transfer Specification (STS); Advanced Metering Infrastructure (AMI) system with head-ends for real time access to Smart Meters; and Meter Data Management System (MDMS) that interfaces with all metering systems. A full-blown MMS once deployed is expected to deliver for ECG a centralized End-to-End Meter Management System that will support the following:

- Management of all prepayment systems by ECG with support from the vendor.
- Ease in accessing metering data across all meter types.
- Better visibility on quality of field work done by 3rd party contractors.
- Adequate and prompt information on what is happening on our network such as outage frequency and duration, percentage losses, load growth, forecasting etc.
- Prompt access to accurate, electronic and Realtime metering data.
- Prepayment vending
- Improve Energy Accounting for loss reduction and performances.

The anticipated successful completion duration of the above project is end of 2022. It is expected that at the inception of the MMS, some of the challenges associated with metering would be eliminated entirely.

5.2 Energy Audit

Before 2012 the energy audit mechanism used by ECG was the meters at the Bulk Supply Points (BSP) which served as check meters for verification of energy purchased through GRIDCo. In addition to this, Distribution Transformer (DT) metering were added to check the consumption at various distribution point. ECG has also instituted mechanisms and systems to adequately account

for all the energy that is purchased including joint meter readings at the generation point of Power Plants.

ECG is in the process of deploying an upstream software to enhance monitoring of ECG's contracted Power Plants and the Transmission Network. ECG has currently widened the reach of secondary (Distribution) transformer metering across its operational areas and added feeder metering to properly account for energy sales and the potential high loss in the distribution network. With the distribution transformer metering together with its associated software system, areas of high losses could easily be identified and necessary interventions provided to address the loss levels in the distribution system. Current activities geared towards improving energy accounting include:

- Rerouting of concealed service tails.
- Survey to identify any unmetered company premises including substation service loads.
- Continuous regularization of unauthorized connections and simplifying procedures for the provision of new service connections to consumers.
- Regular mapping and capturing of SHEP meters under the Commercial Loss Reduction Task Force to account for energy consumed under the government SHEP projects.
- Monitor the status of work done and update metering status on the Primary Substations.
- Installation of meters at the Primary Substation in Tema region commenced in January 2021 with a total of fifty-six (56) energy meters installed.
- A total of 6,787 Distribution Transformer meters have been installed as at the end of December 2021 at the LV side of (11/0.415kV) or (33/0.415kV) distribution transformers.
- Installation of boundary meters in all regions and selected Districts are ongoing.

5.3 Theft of Power, Cables and Equipment

Power theft has been a serious issue to be handled by the company as it has resulted in huge loss of revenue to ECG over the years. Although the company has been taking several measures to curb the situation, much remains to be done as culprits continue to indulge in illegal connections.

Some of the initiatives taken to deal with illegal connections includes the auditing of large customers (monthly consumption of 1,000KWh and above) meter installations or connections; auditing of meter installations or connections in concentrated and scattered areas; attending to informant referrals; and auditing of payment systems and vending platforms to address system abuses and fraud.

A total of 157.26 GWh with a corresponding amount of GHS 178.44 million was recovered during the period 2019 to 2021. Total meters monitored to identify the illegalities within the distribution network was 572,980, resulting in the identification of 12,416 illegal connections as shown in table 5.3.1.

5.3.1 Theft of Power

Year	Meters Monitored	Illegal Connections Identified	Anomalies Identified	Total Units Recovered (GWh)	Total Amount Recovered (GHS Millions)
2019	314,985	3,155	12,512	40.8	46.56
2020	122,288	2,838	7,911	54.38	57.92
2021	135,707	6,423	8,727	62.08	73.96
Total	572,980	12,416	29,150	157.26	178.44

Out of the total number of 12,416 customers that engaged in power theft, 1,047 culprits have been referred to the legal directorate for prosecution.

In addition to power theft ECG has had to deal with theft of copper from distribution transformers, utility poles, transformer oil from energised transformers, underground cables, overhead conductors, etc. These criminal acts have several adverse consequences including the obvious economic impact, service disruptions and possible danger to ECG personnel, the public and persons involved in the theft.

The following measures to mitigate the impacts of theft on the company’s operations are being deployed:

- Working with scrap dealers and law enforcement officials.
- Fencing, warnings signs, adequate lighting of installations, patrolling and intrusion detection for deterrence.
- Expansion of the Advance Metering Infrastructure (AMI) to remotely monitor the loads and consumption of high consuming Non-Special Load Tariff (NSLT) for early detection of theft.

5.4 Loss Control-Technical and Commercial

System losses continues to be a major hurdle for ECG. Though various mechanisms have been put in place to reduce losses, the company has not been able to achieve the Commission’s benchmark.

The company's system losses as at the end of 2021 was 29.84%, made up of 10.55% technical losses and 19.29% commercial losses.

A comprehensive means to tackle system loss reduction by the company has been through the measurement and determination of the levels of technical and commercial losses as well as identifying the areas and distribution network levels where the losses occur.

With technical losses, ECG periodically undertakes technical loss study to determine the exact level of technical losses and where the chunk of the losses occur in the distribution network. Studies have revealed that more than 50% of the technical losses occur in the low voltage distribution networks. ECG is therefore putting in place a system to annually measure the level of technical losses using meters installed in the sub-transmission and distribution networks. This would also help assess the impact of the various projects undertaken to achieve reduction in technical losses.

ECG has embarked on several projects geared towards system loss reduction across all operational areas of the company. Some of the projects to reduce technical losses include the upgrade of under sized conductors; transformer injections to reduce the length of long LV networks; upgrading of long rural and peri-urban primary distribution feeders from 11 kV to 33 kV; metering of distribution transformer, sub-transmission and primary distribution feeders for energy accounting.

Prepaid energy meters have also been installed in major theft prone areas. Unmetered premises are also being metered to measure consumption for billing. Replacements of faulty meters and old electro-mechanic meters with smart prepayment meters is on course.

Discrepancies in meter reading and metering are also being addressed. ECG would also continue to supervise third party contractors in the installation of distribution transformer metering, feeder metering, boundary metering and rerouting of concealed service tails. Customers are also being linked to distribution transformers to help improve energy accounting.

There is also regular monitoring of meter installations and billing systems to unearth illegalities and system abuse. To properly account for streetlight consumption, the company counts, captures, tags and updates streetlight installations across all our operational regions. In addition, all streetlights will be linked to transformers in the operational districts as part of the energy accounting process.

5.5 Availability/Reliability of Supply - Quality of Service

The availability and reliability of supply is a key strategic objective to be achieved by ECG in carrying out its mandate. Although this objective has been achieved at some periods in one way or another,

more action is required to be taken by the company to sustain these gains as discussed under section 4.2. Some circumstances contributing to low quality of supply include overloaded networks, third party damages, theft, vegetation overgrowth, etc. Several efforts are underway to address these challenges.

Additionally, ECG has made considerable investment in network reliability in the last few years, some of these projects are ongoing (refer to 2.1 projects undertaken). These initiatives have yielded the desired improvement in network reliability in the specific locations where projects were undertaken. However, the challenges encountered by other players in the sector such as generation shortfall and transmission failures are beyond the company's control and often impact heavily on the availability and reliability of power supply to our customers.

During the 2019 - 2020 regulatory period, major incidents upstream such as the pigging exercise carried out by WAGP, disruptions in supply of gas and faults in the NITS compelled the company to carry out unplanned outages to the inconvenience of customers. Similarly, the recent works being carried out by GRIDCo has also resulted in power outages which had not been planned by the company. The company is collaborating with key players in the industry to find appropriate measures to mitigate such incidents in the future. The company also encountered power outages in its distribution network which were due to both planned and unplanned outages.

5.6 Suppressed Demand

The phenomenon of suppressed demand is one that makes planning for capital investment very daunting. This is so because, the assumptions that underpins decisions and costing of capital projects could be thrown out of gear with the existence of suppressed demand in a distribution utility's network. The challenge is how to play the balancing act of arriving at an optimum situation that would neither result in excessive redundant capacities nor consumption of installed capacities almost at the time of commissioning.

Within ECG's operating areas, there is a significant level of suppressed demand. Low voltages often cause a level of suppressed demand in the distribution network. Suppressed demand cannot be eliminated but can be minimized. This can be achieved through network expansion, upgrades and system quality improvements. These involve addition of feeders and distribution transformers to the distribution networks and undertaking voltage improvement projects.

To effectively address the level of suppressed demand, requires a study to determine the current level of suppressed demand in the distribution system. The plan for such a study is on hold due to

unavailability of funds. ECG is also considering the introduction of modern mechanisms to help properly identify rapidly growing centres timeously to help keep pace with customer consumption.

5.7 Management Information System Including E-Payment

The implementation of the Commercial Management System (CMS), Pentaho and the Business Intelligence (BI) to host all commercial activities and management reports across all ECG operational areas over the last five years has led to the consolidation of ECG's reporting processing. These systems facilitate the extraction of data for analyses for quick management decisions making. Most of the generic data requirements from our major stakeholders and regulators are embedded in these systems for easy access and benchmarking.

The major challenges are the unstable network facilities, the huge cost of maintaining the ICT infrastructure systems and the over dependency on third party telecommunication network systems. Some of the systems rolled out to enhance our services include the following:

- ECG mobile application (ECG Power) developed to enable users with smart prepaid meter or post-paid meters to purchase credit and make bill payments at their convenience using handheld devices like the mobile phone. The application also permits customers to track purchases, payments, and consumption.
- ECG web portal for online application of service connections.
- Mobility application for remote readings for post-paid customers.
- Monthly SMS alert for post-paid bills.
- Electronic distribution of post-paid bills (especially for all high consuming customers).

The hustle of having to queue and the difficulty of purchasing credit at odd hours has been minimised. ECG is also negotiating with the banks to enable customers to make payments with their debit cards.

5.8 Billing and Collection

ECG has taken steps to shorten the averaged days to billing and delivery of credit bills by decoupling meter reading from bill delivery. This project has been piloted in Accra regions and would be rolled over to other regions accordingly.

Customer billing is centralized whiles printing, distribution of bills and revenue collection is decentralised. As at the end of December 2021, the Company's customer profile was 1,853 for SLT, 604,505 for non-residential and 3,683,654 representing residential customers.

The new service connections during the last few years were 175,360, 399,138 and 165,732 for 2019, 2020 and 2021 respectively. This was partly attributable to the capturing of SHEP meters across ECG operational areas to improve billing and collection targets. 99.8% of the new connections were NSLT while the remaining 0.2% were SLT customers. 64% of the NSLT customers are on prepaid meters while the remaining 36% are on credit meters.

To improve billing accuracy for high consuming NSLT customers, the automatic meter reading (AMR) system has been installed for this category of customers. Meter Reading Contractors undertake readings of customer meters except SLT and NSLT high consuming customers metered on AMR as these meters are read remotely. The billing accuracy target of 98% was not achieved due to non-accessibility of meters, high communication failure rates of prepaid meters, illegal transfer of meters, stolen meters, faulty meters, etc.

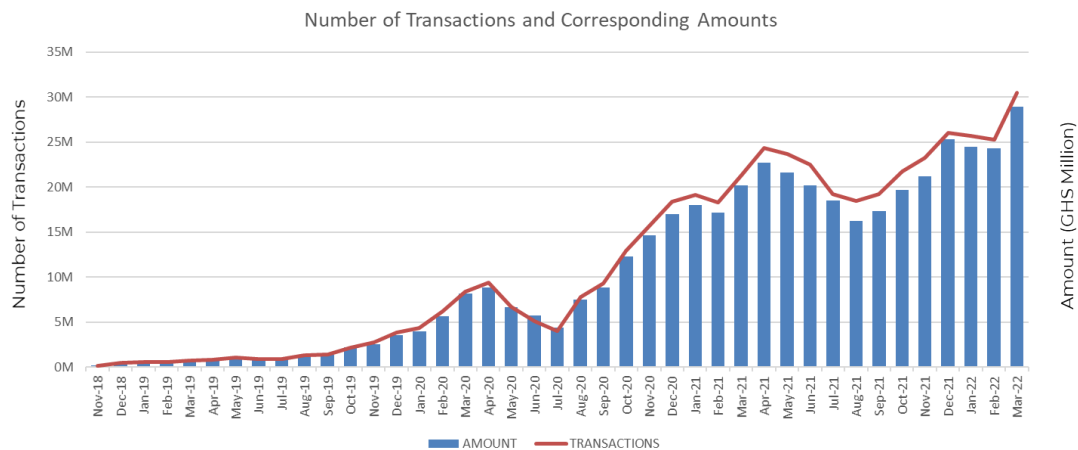
ECG's revenue-sales ratio for private customers were 119%, 84% and 87% for 2019, 2020 and 2021 respectively. The impact of the increase in the new connections during the period (notably in 2020) was largely minimal due to the low tariff band which majority of these customers belong. Thus, the 128% increase in new connections for 2020 yielded a minimal increase of 8% sales revenue over the 2019 figure.

Generally, revenue collection was negatively impacted by the enforcement of COVID-19 directives of the company which included non-disconnection of customers especially residential customers, staff shift system in adherence to social distancing protocols, etc.

Revenue collection is undertaken by the company and third parties. The company has taken measures to monitor and improve revenue collection in all operational areas such as setting revenue collection targets for regions, improving billing accuracy, continuation of the deployment of prepayment meters, etc.

Additionally, the company launched the ECG Power, a mobile application for ease of payment of credit bills and smart prepaid meters. The mobile application also provides customer consumption information and balances. As at the end of the first quarter of 2022, the total number of customer transactions on this platform was 9.29 million with a corresponding amount of GHS436.03 million signifying customer confidence in the E-payment system as shown in graph 5.

Graph 5 E-Payment System - ECG Power (ECG Mobile App)



5.9 Organisational Reform & Restructuring

The ECG-PSP era led to the creation of two companies mainly Re-structured ECG and Power Distribution Services (PDS). However, at the termination of the PSP, the two companies merged resulting in the reform of ECG’s organisational structure. With the reform, two new directorates namely Energy Trading and Energy Consulting and Telco Business were added to the company’s organisational structure.

To improve ECG’s communication activities, the company recently found it necessary to upgrade its Public Relations division to a directorate called the Communications directorate. This brings to three (3), the number of new directorates added to the company’s existing structure during the last regulatory period.

5.10 Customer Complaints & Dispute Resolution

The Customer Satisfaction Index (CSI) recorded for 2019 was 63.05% as against the industry’s benchmark rate ranging from 70% to 75%. The quality of service over the last three years has improved significantly due to the various social media channels made available to customers as well as the quick response time from our outsourced call centres. Due to the COVID-19 pandemic, the study on CSI could not be carried out in 2020. The CSI recorded in 2021 was 63.80%. ECG’s Strategy document (2021-2024) projects a CSI of 70% which is dependent on the quality of services offered.

The company has taken measures to improve the quality and level of service delivery rendered to its cherished customers. Some of the initiatives taken to improve customer complaints and dispute resolution include:

- To build, maintain and manage a healthy relationship with our SLT and Strategic Important Customers (SICs) for 100% retention.
- To provide an exclusive business environment and lounges for our SLT (SIC) customers.
- To deploy mystery shoppers to help identify staff misconduct including extortions from customers.
- Multilingual IVR system is also operational with Chat room to enhance our social media platform.

5.11 Resolution of Court Cases

Court Case involving ECG are mainly related to unpaid electricity bills, disputed bills, wrongful disconnection, right of way issues, etc.

Currently, there are at least 100 cases before the court in all ECG operational areas for the recovery of monies from customers who have failed, refused, or neglected to settle their indebtedness to the company. Cases involving disputed bills and other matters involving aggrieved customers are about twelve (12) in number. There are also about eleven (11) cases related to right of way and land issues. These cases are currently on-going and have not been closed or resolved.

The setting up of utility court in 2011 to prosecute cases involving electricity theft has also helped deter customers from engaging in such activities.

5.12 Government and Public Sector Debts

Overall, it is undeniable that government recently made some payments to defray its MDAs, streetlighting shortfalls, lifeline subsidies and GWCL debts. However, the full amount granted as COVID-19 relief by the government is yet to be settled. It is expected that the Government will continue to honour its debt obligations to keep ECG afloat.

Governments indebtedness to ECG in the last few years were GHS1.015 billion, GHS1.375 and GHS1.840 billion in 2019, 2020 and 2021 respectively. The components of Government bills are MDAs, GWCL, Subsidies, Streetlight shortfall, Utility Relief granted to all customers from July 2016 to June 2019 and Covid-19 Relief. Government indebtedness to ECG was offset with payments made by the Ministry of Finance (MoF) to Fuel Suppliers, VRA and IPP's. The Cross Debt Clearing House (CDCH) agreed position in 2009 was used as the opening balance for rolling-over bills and payments to arrive at the Net Debt Position yearly. Over the years, Government has made the following payments on behalf of ECG:

- In 2019, Government paid a total amount of GHS4,592.29 million out of which an amount of GHS1,840.88 million was paid to fuel suppliers and GHS2,751.41 million to IPPs.
- In 2020, Government paid a total amount of GHS5,925.75 million out of which an amount of GHS1,597.10 million was paid to fuel suppliers and GHS4,328.65 million to IPPs.
- In 2021, Government paid a total amount of GHS6,243.79 million out of which an amount of GHS1,230.06 million was paid to fuel suppliers and GHS5,013.74 million to IPPs.

The various Government payments were reconciled with stakeholders in the electricity value chain and applied to reduce Government indebtedness. The total amount paid by Government under this arrangement was more than Government's indebtedness and the balance was treated accordingly as Other Government Equity.

5.13 Bad & Doubtful Debts

Over the past 10 years no bad debt has been approved by the Board even though the necessary provisions were made in the budgets. The total provision for bad and doubtful debts increased year on year in the last few years. These were GHS58.51 million, GHS276.50 million and an estimated GHS290.33 million for 2019, 2020 and 2021 respectively. This is based on the company policy on provision for bad and doubtful debts.

The unrecoverable debt comprises of debt due to demolished structures, debt examined under the ECG's debt recovery process and fixed charge debt due to long periods of disconnection. Majority of these bad debt emanates from demolished structures due to road constructions, relocation of slums, removal of temporary structures, illegal transfer and removal of meters by unscrupulous customers (mostly SHEP areas).

ECG regularly engages Districts and Municipal Assemblies to ensure that information on demolishing exercises, road constructions, etc. are communicated to ECG in good time to avoid this problem.

5.14 Surcharge & Subsidies

Largely, subsidies expected to be paid by the Government on behalf of subsidized customers are always in arrears thereby negatively affecting the financial health of the company. The total lifeline subsidy for 2019, 2020 and 2021 were GHS33.16 million, GHS55.05 million and GHS82.42 million respectively. The total power factor surcharge for 2019, 2020 and 2021 were also GHS16.65 million, GHS18.61 million and GHS20.24 million respectively.

5.15 Government Grants

During the period under review, the company did not directly receive government grants.

5.16 Access to Finance and Repayment of Financing Costs

Until recently, ECG's main external financing came from Government subsidiary loans. Other external financing included contracted loans from the following: Chirano facility, Western Diamond loan, MoF/Calbank loan and BXC facility. In 2020, ECG further contracted a commercial loan of GHS600 million from Financial Institutions to improve service delivery and purchase prepayment meters. Currently, these loans are being serviced from tariff revenues.

5.17 Tariff Structure and Rates Design

The current tariff structure and rate design inhibits ease of implementation and customer understanding due to the multiple bands and progressive rates. Other characteristics of the current tariff structure include its discriminatory or cross-subsidisation nature causing distortions in pricing signals to some category of customers as well as displeasure among SLT customers. It also excludes a streetlight tariff which has become a concern to be addressed in a new tariff structure.

Rate Design: Rate design could be simplified, easy to implement and easily understood by customers by removing the several Increasing Block Tariffs (IBT) for NSLT customers (residential and non-residential) and replace it with just two tariff blocks as explained below.

- Residential (Group A) - First tariff block is seen as a mitigating measure of affordability which must be maintained. That is a lifeline tariff exclusively applicable to residential low-income earners with consumption of 0-50 kWh per month.
- Residential (Group B) - Second tariff block would be applicable to all other residential customers who may be referred to as non-lifeline customers.
- Non-Residential (Group A) - First tariff block would be a lower tariff applicable to non-residential (commercial) low consumption customers. This requires a defined threshold in terms of kWh for this category of customers.
- Non-Residential (Group B) - Second tariff block would be applicable to non-residential customers outside the defined threshold.

The existence of lifeline tariff results in cross-subsidization between tariff categories with the greatest adverse impact on SLT customers which consequently affects ECG's ability to retain these

SLT customers. However, it appears to be difficult to practically eliminate all cross-subsidies and therefore a gradual process could begin now.

Tariff Structure: The concept of customer categories has a very relevant impact on tariff structure. Ideally, customer categories depict the electricity usage and corresponding cost level of specific group category. The current categories include residential, non-residential (commercial), industrial LV, industrial MV, industrial HV and HV mines. This however excludes streetlight and as such streetlight is being proposed to be considered in the tariff groups.

A study by Ministry of Energy (MoEn) shows that streetlight consumption is about 6% of total ECG sales. It is important to determine its corresponding charge or cost by applying the appropriate tariff indicated in the tariff groups. Currently, public light levies constitute just 30% of the cost of streetlight consumption. The estimated annual consumption for streetlight is 534.65GWh. The equivalent cost of this energy consumption applying the current EUT is about GHS468.38 million. Using the rate for public lighting levies which ECG retains 60% this would translate into about GHS140.51 million. The shortfall therefore is about GHS327.87 million. The question then is, which is the appropriate tariff to apply in determining the cost of streetlight consumption? Therefore, the introduction of streetlight tariffs in the tariff structure is imperative as it would help to fully account for the cost of streetlight consumption.

The last regulatory period also saw changes to the components of the tariff structure by the removal of maximum demand charge. A restoration of this charge at a considerable rate would help ECG recover some fixed cost that are unrelated to energy consumption without burdening customers.

Elsewhere, time-of-use electricity tariffs are applied in a tariff structure. However, giving ECG's current metering devices, it does not seem appropriate to introduce time-of-use electricity tariffs in the tariff structure for now. In the near future, time discriminating tariffs (such as time-of-day tariffs) may be considered when ECG can install systems and metering equipment that support the required time discrimination.

5.18 Introduction of Wholesale Electricity Market

The implementation of the Wholesale Electricity Market (WEM) is expected to be fully rolled out by April 2023. This implies that the Energy & Capacity Markets, Ancillary Services Market and Settlement activities shall be in place by this date. Currently, the Energy Market is partially under implementation whilst ECG looks forward to the implementation of Ancillary Service and Capacity Markets as well as the related settlement which are mandatory components of the WEM.

A key point is the effect of bilateral contracts on Dispatch which sometimes creates revenue gaps due to the dispatch of plants which have not been contracted by parties but in some instances offer a technically feasible operation of the NITS. In such instances, contracting parties may be left with capacity payments to honour because its contracted plants may not be dispatched in favour of other plants.

Additionally, the lapses in the Grid Code which ECG had recommended for review include a relook at the variable cost as a basis for Merit Order Dispatch of power plants. This is because in a situation where capacity charges are not set within similar values, the use of variable cost to prioritize dispatch operation may be flawed. Therefore, in a situation where capacity charges are varied, it is recommended that a multiple use of variable cost, fixed cost and total charge should form the basis for merit order dispatch. This would imply that plants which have very low capacity charges but operate in simple cycle mode will have a fair level of dispatch because their total charge may be one of the lowest in the sector. ECG wishes to bring this to the attention of the regulators on the way forward.

- **Procurement of Online Monitoring Software:** In preparation towards the implementation of the WEM, ECG is currently arranging to procure an online monitoring software to monitor particularly upstream activities of the Power Sector. This is to ensure that efficiency and transparency is achieved in the procurement, transmission and receipt of power at the ECG Bulk Supply Points (BSPs). This would help ECG to obtain information for the review of invoices and monitoring of PPAs timeously. The online monitoring system is being designed to provide ECG with access to its contracted plants and NITS. This is envisaged to bring significant savings to ECG.
- **Reporting Requirements:** Under the WEM, GRIDCo is required to provide ECG with detailed information and data on all incidences that may occur on the transmission grid. An agreed detailed reporting format has been sent to GRIDCo and discussed with regulators and EMOP. Energy Commission has adopted same format in its correspondence to GRIDCo and other stakeholders. ECG currently awaits GRIDCo to provide such information as and when incidences occur.
- **Stranded Assets & Captive Generation:** The issue of stranded assets & Captive generation continues to be a concern to ECG in view of WEM. This is because the reduction of the threshold for bulk consumers (now 500kVA and above) by the Energy Commission has compelled SLT customers (who subsidise other consumer categories in the tariff structure) to

flee. Therefore, the usual behaviour of customers to explore cheaper options of electricity (close substitutes) would worsen ECG's revenue position. Currently, captive generators who are largely not regulated can supply these customers, denying the utility of critical revenue.

ECG recommends the provision to recover the cost of stranded asset in the pricing of electricity considering the threshold for bulk customers. Additionally, the provision of rules and guidelines for captive generators is imperative for the sector.

5.19 Wholesale Market Bulk Customers Embedded in Distribution Network

As Ghana is working towards implementing the WEM, the issue of bulk customers and the applicable tariff to specific industries will require major attention. Currently, ECG has twenty-eight (28) BCs who may negotiate their own tariff. The move to WEM will mean major activity in this regard and customers will be exploring this aspect of the power industry. For this proposal, ECG wishes to present its current list of bulk customers with their forecasted Demand & Energy Consumptions as well as the expected revenue for the tariff period. The tables, 5.19.1a and 5.19.1b present the detailed data on ECG's expectation of revenues from bulk customers.

5.19.1a Wholesale Market Bulk Customers Embedded in Distribution Network

PROJECTION FOR BULK CUSTOMER ENERGY AND DEMAND 2022 - 2026										
No.	Name Of Customer	2021 (Actual)			2022			2023		
		Total kWh	Max. kVA	Total Charge/ GHS	Total kWh	Projected Max. Demand/ kVA	Total Charge/ GHS	Total kWh	Projected Max. Demand/ kVA	Total Charge/ GHS
Steel Companies										
1	B5 Plus Company Ltd	112,495,206	22,705	60,263,682	120,369,871	24,294	64,482,140	128,795,762	25,995	68,995,890
2	Fabrimetal Ghana Limited	71,169,206	14,169	38,125,344	76,151,050	15,161	40,794,118	81,481,624	16,222	43,649,706
3	Ferro Fabric Manufacturing	84,119,815	16,639	45,062,985	90,008,202	17,804	48,217,394	96,308,776	19,050	51,592,611
4	Sentuo Steel Ltd	125,434,300	42,153	67,195,155	134,214,701	45,104	71,898,815	143,609,730	48,261	76,931,732
5	Tema Steel Company	28,960,083	14,742	15,513,917	30,987,289	15,774	16,599,891	33,156,399	16,878	17,761,883
6	West African Forgings Ltd.	14,698,834	6,866	7,874,165	15,727,752	7,347	8,425,357	16,828,695	7,861	9,015,132
7	Star Steel Company Ltd	44,156,360	12,270	23,654,562	47,247,305	13,129	25,310,381	50,554,617	14,048	27,082,108
8	RGJB Plus Steel Ltd (Ghana Steels)	5,244,741	1,298	2,809,608	5,611,873	1,389	3,006,280	6,004,704	1,486	3,216,720
9	Rider Iron & Steel Ghana Limited	1,136,811	6,356	608,990	1,216,388	6,801	651,619	1,301,535	7,277	697,232
	SUB - TOTAL FOR STEEL COMPANIES	487,415,357	119,363	261,108,407	521,534,432	127,718	279,385,995	558,041,842	136,658	298,943,015
Mining Companies										
10	Chirano Gold Mines Ltd	140,660,143	22,586	98,462,100	150,506,353	24,167	112,879,765	161,041,798	25,858	128,833,438
11	GMC	6,380,780	1,556	5,742,702	6,827,435	1,665	6,144,691	7,305,355	1,781	6,574,820
	Anglogold Ashanti Iduapriem									
	SUB-TOTAL FOR MINING COMPANIES	147,040,923	21,003	104,204,802	157,333,788	22,473	119,024,456	168,347,153	24,047	135,408,258
Manufacturing Companies										
12	Olam Ghana Ltd	19,620,780	3,133	14,952,015	20,994,235	3,352	15,115,849	22,463,831	3,587	17,072,512
13	Sentuo Ceramics	35,373,800	6,712	25,469,136	37,849,966	7,181	27,251,976	40,499,464	7,684	30,779,592
14	Nixin Paper Mill Ghana Ltd	20,656,421	4,600	12,393,853	22,102,370	4,922	14,587,565	23,649,536	5,266	16,554,675
15	Sunda Ghana Limited (Group Incl. Homepro)	15,806,992	3,476	9,484,195	16,913,481	3,720	11,162,898	18,097,423	3,980	12,668,198
16	Printex Ltd	7,991,488	1,420	5,753,871	8,550,892	1,520	6,156,642	9,149,455	1,626	6,953,586
17	Kablemetal Manufacturing (Nexans)	2,206,784	1,142	1,588,884	2,361,259	1,222	1,700,106	2,526,547	1,307	1,920,176
18	Kasapreko Company Ltd (Royal Crown Packaging)	1,465,824	771	1,055,393	1,568,432	825	1,129,271	1,678,222	883	1,275,449
	SUB-TOTAL FOR MANUFACTURING COMPANIES	103,122,089	18,491	70,697,348	110,340,635	19,785	77,104,306	118,064,480	21,170	87,224,187
Cement Companies										
19	Ghacem Ltd (Tema)	83,228,644	14,842	63,253,769	89,054,649	15,881	67,681,533	95,288,475	16,993	76,230,780
20	Ghacem Ltd (Western)	60,003,425	20,598	45,602,603	64,203,665	22,040	48,794,785	68,697,922	23,583	54,958,337
21	DIAMOND CEMENT/Western Diamond	21,125,800	6,085	16,055,608	22,604,606	6,511	17,179,501	24,186,928	6,966	19,349,543
22	Unicem Cement Gh.LTD. AMOAF0 DETIEM	13,272,325	2,549	10,086,967	14,201,388	2,728	10,793,055	15,195,485	2,918	12,156,388
23	Green View (Dangote Cement)	1,900,374	862	1,444,285	2,033,401	922	1,545,384	2,175,739	987	1,740,591
24	WAN HENG GH LTD (Sol Cement)	28,416,189	5,577	21,596,304	30,405,322	5,967	23,108,045	32,533,695	6,385	26,026,956
	SUB-TOTAL FOR CEMENT COMPANIES	207,946,758	43,946	158,039,536	222,503,031	47,022	169,102,303	238,078,243	50,314	190,462,594
Food and Beverages Company										
25	Kasapreko 1	6,872,900	1,553	5,085,946	7,354,003	1,662	5,441,962	7,868,783	1,778	6,137,651
26	Pioneer Food Cannery Ltd	9,301,830	2,259	6,883,354	9,952,958	2,417	7,365,189	10,649,665	2,587	8,306,739
27	Nestle Ghana Limited	16,966,740	2,708	11,876,718	18,154,412	2,897	13,434,265	19,425,220	3,100	15,151,672
28	Fan Milk Ltd Accra	18,249,890	3,199	13,139,921	19,527,382	3,423	14,450,263	20,894,299	3,662	16,297,553
	SUB-TOTAL FOR BEVERAGE COMPANIES	51,391,360	8,456	36,985,939	54,988,755	9,047	40,691,679	58,837,968	9,681	45,893,615
	GRAND TOTAL	996,916,487	211,258	631,036,032	1,066,700,641	226,046	685,308,740	1,141,369,686	241,870	757,931,669

5.19.1b Wholesale Market Bulk Customers Embedded in Distribution Network

PROJECTION FOR OF BULK CUSTOMER ENERGY AND DEMAND 2022 - 2026										
No.	Name Of Customer	2024			2025			2026		
		Total kWh	Projected Max. Demand/ kVA	Total Charge/ GHS	Total kWh	Projected Max. Demand/ kVA	Total Charge/ GHS	Total kWh	Projected Max. Demand/ kVA	Total Charge/ GHS
Steel Companies										
1	B5 Plus Company Ltd	137,811,465	27,815	73,825,602	147,458,268	29,762	78,993,394	157,780,346	31,845	84,522,932
2	Fabrimetal Ghana Limited	87,185,338	17,358	46,705,185	93,288,311	18,573	49,974,548	99,818,493	19,873	53,472,767
3	Ferro Fabric Manufacturing	103,050,391	20,384	55,204,094	110,263,918	21,811	59,068,381	117,982,392	23,338	63,203,168
4	Sentuo Steel Ltd	153,662,411	51,640	82,316,954	164,418,780	55,254	88,079,140	175,928,095	59,122	94,244,680
5	Tema Steel Company	35,477,347	18,059	19,005,215	37,960,761	19,323	20,335,580	40,618,015	20,676	21,759,071
6	West African Forgings Ltd.	18,006,704	8,411	9,646,191	19,267,173	9,000	10,321,425	20,615,875	9,630	11,043,924
7	Star Steel Company Ltd	54,093,440	15,031	28,977,856	57,879,981	16,083	31,006,306	61,931,579	17,209	33,176,747
8	RGJB Plus Steel Ltd (Ghana Steels)	6,425,033	1,590	3,441,890	6,874,786	1,701	3,682,823	7,356,021	1,821	3,940,620
9	Rider Iron & Steel Ghana Limited	1,392,642	7,786	746,038	1,490,127	8,331	798,261	1,594,436	8,914	854,139
	SUB - TOTAL FOR STEEL COMPANIES	597,104,771	146,225	319,869,026	638,902,105	156,460	342,259,858	683,625,252	167,413	366,218,048
Mining Companies										
10	Chirano Gold Mines Ltd	172,314,724	27,668	146,467,515	184,376,755	29,605	165,939,079	197,283,127	31,677	177,554,815
11	GMC Anglogold Ashanti Iduapriem	7,816,730	1,906	7,035,057	8,363,901	2,040	7,527,511	8,949,374	2,182	8,054,437
	SUB-TOTAL FOR MINING COMPANIES	180,131,454	25,730	153,502,572	192,740,656	27,531	173,466,590	206,232,501	29,458	185,609,251
Manufacturing Companies										
12	Olam Ghana Ltd	24,036,299	3,838	18,267,587	25,718,840	4,107	20,575,072	27,519,159	4,394	23,391,285
13	Sentuo Ceramics	43,334,426	8,222	32,934,164	46,367,836	8,798	37,094,269	49,613,584	9,413	42,171,547
14	Nixin Paper Mill Ghana Ltd	25,305,004	5,635	18,978,753	27,076,354	6,029	21,661,083	28,971,699	6,451	24,625,944
15	Sunda Ghana Limited (Group Incl. Homepro)	19,364,245	4,259	14,523,184	20,719,742	4,557	16,575,794	22,170,124	4,876	18,844,605
16	Printex Ltd	9,789,917	1,740	7,440,337	10,475,211	1,862	8,380,169	11,208,475	1,992	9,527,204
17	Kablemetal Manufacturing (Nexans)	2,703,405	1,399	2,054,588	2,892,644	1,497	2,314,115	3,095,129	1,602	2,630,859
18	Kasapreko Company Ltd (Royal Crown Packaging)	1,795,697	945	1,364,730	1,921,396	1,011	1,537,117	2,055,894	1,081	1,747,510
	SUB-TOTAL FOR MANUFACTURING COMPANIES	126,328,993	22,652	95,563,342	135,172,023	24,238	108,137,618	144,634,065	25,934	122,938,955
Cement Companies										
19	Ghacem Ltd (Tema)	101,958,668	18,182	81,078,368	109,095,774	19,455	86,753,795	116,732,479	20,817	92,826,502
20	Ghacem Ltd (Western)	73,506,776	25,233	58,453,424	78,652,250	27,000	62,545,105	84,157,908	28,890	66,923,204
21	DIAMOND CEMENT/Western Diamond	25,880,013	7,454	21,600,294	27,691,614	7,976	23,112,257	29,630,027	8,534	24,730,056
22	Unicem Cement Gh.LTD. AMOAFODIEM	16,259,169	3,123	12,930,126	17,397,311	3,341	13,835,177	18,615,122	3,575	14,803,581
23	Green View (Dangote Cement)	2,328,040	1,056	1,852,093	2,491,003	1,130	1,981,681	2,665,373	1,209	2,120,340
24	WAN HENG GH LTD (Sol Cement)	34,811,053	6,832	29,054,140	37,247,827	7,310	31,087,872	39,855,175	7,822	33,263,964
	SUB-TOTAL FOR CEMENT COMPANIES	254,743,720	53,836	204,968,445	272,575,780	57,604	219,315,886	291,656,085	61,636	234,667,647
Food and Beverages Company										
25	Kasapreko 1	8,419,598	1,903	6,567,286	9,008,970	2,036	7,387,355	9,639,598	2,179	8,482,846
26	Pioneer Food Cannery Ltd	11,395,142	2,768	8,888,211	12,192,802	2,962	9,998,097	13,046,298	3,169	11,480,742
27	Nestle Ghana Limited	20,784,986	3,317	16,212,289	22,239,935	3,549	18,236,747	23,796,730	3,798	20,941,123
28	Fan Milk Ltd Accra	22,356,900	3,919	17,438,382	23,921,883	4,193	19,615,944	25,596,415	4,486	22,524,845
	SUB-TOTAL FOR BEVERAGE COMPANIES	62,956,626	10,358	49,106,168	67,363,589	11,084	55,238,143	72,079,041	11,859	63,429,556
	GRAND TOTAL	1,221,265,564	258,801	823,009,554	1,306,754,153	276,917	898,418,095	1,398,226,944	296,301	972,863,456

5.20 Embedded Generators and Interconnection

ECG currently has four operational renewable energy power plants which are directly connected to the distribution grid. These are:

- 20MW BXC solar farm at Gomoa Onyeadze in the Central Region
- 20MW Meinergy Solar Farm at Winneba in the Central Region
- 0.1MW Safisana Biowaste facility at Ashaiman in the Greater Accra Region.
- 0.03MW Tsatsadu Mini-Hydro Power plant at Tsatsadu in the Volta Region, which is also owned by the Bui Power Authority

5.20.1 Embedded Generators and Interconnection

Name of Plant	Capacity (MW)	Energy (GWh)					Comments
		2022	2023	2024	2025	2026	
BXC Ghana Limited	20	36.5	36.5	36.5	36.5	36.5	PPA operational
Meinergy Technology Limited	20	36.5	36.5	36.5	36.5	36.5	PPA operational
Safisana Company Limited	0.1	0.69	0.69	0.69	0.69	0.69	PPA operational
Tsatsadu Mini-Hydro Power Plant	0.03	0.29	0.29	0.29	0.29	0.29	Capacity and output of plant is included in the Bui PPA and has the same tariff

5.21 Power Procurement from Independent Power Producers and Renewable Energy Generators

Power procurement is in the interest of Power Quality (Voltage, frequency Control, etc) and supply security of the sector. ECG has factored in the generation plan, provisions for reserve margin as determined by the system operator (GRIDCo) and ratified by the EMOP for consideration by the Commission.

5.21.1 Projected Annual Energy Dispatch of Power Plants (2022-2026)

Name of Plant	Tested Capacity MW	Projected Annual Energy (GWh)					Comments
		2022	2023	2024	2025	2026	
Tapco	330	135	135	135	135	135	
Sunon Asogli I	200	1,077	1,077	1,077	1,077	1,077	
Sunon Asogli II	360	2,100	2100	2100	2100	2100	
Bui Hydro Power	200	1030	1030	1030	1030	1030	
Genit Energy	110	0	0	0	0	0	
Karpowership Ghana Company Limited	450	1,714	2,841	3,863	3,863	3,863	
AKSA Enerji	332	0	0	0	0	0	ECG awaits PURC determination on issue of CPI, fuel transport charge etc.
Cenpower Generation Company Limited	325	2,847	2,847	2,847	2,847	2,847	
Amandi Energy	202	1,752	1,752	1,752	1,752	1,752	
Early Power Limited	410	0	0	190	1,493	2,893	COD expected by June, 2023

5.21.2 Projected Reserve Margin (18%) for Power Plants (2022-2026)

Name of Plant	Projected Annual Energy (GWh)				
	2022	2023	2024	2025	2026
Karpowership Ghana Company Limited	2,149	1,022	0	0	0
Early Power Limited	963	1,699	3,314	2,011	611
Cenit	0	546	70	964	964
AKSA	0	0	0	0	0

5.21.3 Projected Idle Capacity for Contracted Power Plants (2022-2026)

Name of Plant	Projected Annual Energy (GWh)				
	2022	2023	2024	2025	2026
Early Power Limited	285	0	0	0	0
Cenit	964	418	893	0	0
AKSA	2,891	2,891	2,409	0	0

ECG recommends that government extends a hand of support in the financing of the cost of excess capacity as it is not considered in the tariff. The company hopes that the decision by government to create the Delta Fund through the Ministry of Finance (MoF) to cater for this cost would be a reality. However, reserve margin needs to be recovered through the tariff due to its relevance to the entire sector. The estimated cost for both the 18% reserve margin and idle capacity for the regulatory period is about USD 1,131.18 billion as shown in the table below.

5.21.4 Cost of Reserve Margin and Idle Capacity (2022-2026)

Cost of Reserve Margin (18%) and Idle Capacity						
Item	2022	2023	2024	2025	2026	Total
Reserve Margin	185.21	161.02	155.24	120.00	55.17	676.65
Idle Capacity	172.97	145.11	136.46	0.00	0.00	454.54
Total Cost (USD Million)	358.18	306.13	291.69	120.00	55.17	1131.18

5.22 Human Resource-Skilled Manpower

The employee strength increased by 1.04% from 2018 to 2019, however there was a reduction in staff strength of 0.17% and 0.44% for 2020 and 2021 respectively with the total staff strength of 6,383 at the end of December 2021. The deployment of the Performance Management System (PMS) by ECG has helped to identify issues on staff strength with its associated capacity building needs.

The ongoing development of ECG work processes would help to properly align job functions with current upgrades of employee qualifications. Although recruitment in specific fields is required, ECG is forced to temporarily put a hold on recruitment until the exercise is completed.

A current study to determine the company's Average Aggregate of Percentage Readiness (AAPR) of staff to achieve corporate objectives showed that AAPR was approximately 77%. This figure is expected to improve after implementation of appropriate interventions. Consequently, ECG intends to adopt the Human Capital Readiness Index (HCRI) approach to identify appropriate intervention programmes for employee skill development. Such intervention programmes may include capacity building, employee motivation, managing change and improving accountability among staff.

6 Strategies to Address Key Challenges

Some of the strategies adopted by ECG to address some of challenges discussed are as follows;

- Deployment of VIT feeder automation technology on all overhead feeders starting with the most tripped.
- Deployment of drones for network inspection.
- Deployment of OMS, GIS technologies to improve operations.
- Deployment of live line technologies for network operations.
- Technical inspection of the network in all Regions and Districts with focus on identification and replacement of defective insulators on frequently tripping feeders.
- Intensive vegetation control is ongoing in all Regions and Districts.
- Strict adherence to planned maintenance activities in order to reduce outage periods.
- Creation of redundancy for system flexibility in the network.
- Provision of construction materials to undertake load balancing and system improvement
- Employment of staff and acquisition of vehicles to execute the maintenance charts.
- Training of contractors to improve workmanship.
- Replacement and repair of faulty test vans.

- Provision of stable internet and communication network.
- Availability of critical materials.
- Installation of AMR meters for high consuming residential and commercial customers to improve billing accuracy, subsequently improving customer satisfaction and revenue collection.
- Intensification of customer education on the use of E-payment. ie ECG Mobile App (ECG Power).

7 Total Distribution Utility System Load at Peak

The peak demand of ECG keeps on increasing year on year. For the year 2022, the ECG's peak demand is projected to be 2,269 MW. By the end of the tariff period in 2026, the peak demand is projected to be 2,617.30 MW. The Cumulative Annual Growth Rate (CAGR) for peak demand for the 5-year tariff period is estimated to be 2.90%. This requires sustained investment in the distribution network to ensure reliable and quality supply for customers in the ECG distribution system.

8 Regulated Market Customers

Majority of ECG customers are managed within the industry's regulated market to ensure industrial harmony. To maintain and grow our customer profile, customer service staff are continually being trained in areas of shared attitudes, values, goals, and practices to achieve excellent customer service delivery. As of December 2021, total active customers stood at 4.29 million.

8.1 Regulated Market - Non-Special Load Tariff Customers

Total active NSLT customer population was 2.0 million for credit customers and 2.29 million for Prepayment customers as at the end of December 2021.

8.2 Regulated Market - Special Load Tariff Customers

Total Special Load Tariff (SLT) customer population was 1,853 as at December 2021. To retain all the SLT customers, pragmatic steps have been taken to meet their expectation. Our efforts to maintain these categories of customers are under serious threat since the Energy Commission started certifying bulk customers, allowing them to purchase directly from other suppliers.

9 Deregulated Market-Energy Commission Licensed Bulk Customers Embedded in the Network

Due to the lowering (now 500kVA) of the threshold for acquisition of Bulk Customer License by Energy Commission, several prime customers have gone ahead to secure Bulk Customer Licenses

accordingly. These customers have subsequently written to ECG requesting for negotiations of their tariffs. The increase in hydro allocation to ECG by the commission in the last quarter of 2020 is not lost on ECG but that increment was done with some few steel companies in mind.

ECG implores the Commission to review the hydro Allocation to ECG to cushion us from this influx of prospective negotiated tariff customers.

10 Base Load

ECG contributes significantly to the base load of Ghana. However, GRIDCo has the overview of the electricity sector to determine the base load of the entire electricity grid. On its part, ECG has engaged various IPPs to supply the peak demand projections for the company’s customers.

11 Forecast of Energy to be Purchased

The forecasted energy purchases as well as the projected sales and system losses for the tariff period (2022 – 2026) are shown in table 11.1. In the tariff computation, the base case scenario was adopted.

11.1 Electricity Demand Forecast (2022 - 2026)

Scenario	Category	Units	2022	2023	2024	2025	2026
Low	Total Sales	GWh	10,322.52	10,566.14	11,047.06	11,352.13	11,631.03
	Total Purchases	GWh	13,547.44	13,712.94	14,135.72	14,369.79	14,538.78
	System Losses	GWh	3,224.92	3,146.80	3,088.65	3,017.66	2,907.76
	System Losses	%	23.8	22.95	21.85	21.00	20.00
	Peak Load	MW	2,155.31	2,224.61	2,264.42	2,260.73	2,320.35
Base	Total Sales	GWh	10,985.75	11,942.26	13,020.54	14,149.03	15,402.42
	Total Purchases	GWh	14,417.87	15,498.89	16,660.96	17,910.17	19,253.03
	System Losses	GWh	3,432.12	3,556.64	3,640.42	3,761.14	3,850.61
	System Losses	%	23.8	22.95	21.85	21.00	20.00
	Peak Load	MW	2,269.00	2,381.94	2,466.48	2,505.57	2,617.30
High	Total Sales	GWh	11,823.29	12,688.33	13,925.59	15,034.23	16,193.49
	Total Purchases	GWh	15,517.07	16,467.16	17,819.06	19,030.67	20,241.86
	System Losses	GWh	3,693.78	3,778.83	3,893.46	3,996.44	4,048.37
	System Losses	%	23.8	22.95	21.85	21.00	20.00
	Peak Load	MW	2,466.63	2,669.10	2,851.73	2,990.69	3,226.38

11.2 Non-Conventional Energy - Renewable Energy (GWh)

Renewable Energy	2022	2023	2024	2025	2026
Hydro<100MW	0.29	0.29	0.29	0.29	0.29
Waste to Energy					
Biomass	0.69	0.69	0.69	0.69	0.69
Wind					
Solar	73	73	73	73	73
Wave					
TOTAL	73.98	73.98	73.98	73.98	73.98

12 Distribution System Losses at Various Voltage Levels

The company's system losses figure as at the end of 2021 was 29.84%. This is made up of 10.55% technical losses and 19.29% commercial losses. Table 12.1 below shows the target distribution system losses at the various voltage levels in ECG. Various measures and projects are planned to achieve these targeted loss reductions by the company.

12.1 Distribution system losses at the various voltage levels in ECG

Voltage Levels	2022	2023	2024	2025	2026
34.5kV-11.5kV	N/A	N/A	N/A	N/A	N/A
33kV-11kV	8.91	8.59	8.18	7.86	7.49
415V-240V	14.89	14.36	13.67	13.14	12.51

13 Customer Population by Classification

Category	2022	2023	2024	2025	2026
Active Customers	4,425,373	4,646,642	4,878,974	5,122,923	5,379,069
Non-active Customers	504,149	514,232	524,516	535,007	545,707
Total	4,929,522	5,160,874	5,403,490	5,657,929	5,924,776

13.1 Regulated Market Customers

13.1.1 Residential Customers

Category	2022	2023	2024	2025	2026
Lifeline	922,528	792,464	657,247	524,771	403,143
Medium	2,000,263	1,961,237	1,856,619	1,692,026	1,483,678
High	872,135	1,218,356	1,643,290	2,133,762	2,665,792
Total	3,794,925	3,972,057	4,157,156	4,350,559	4,552,613

NB: These are active customer numbers

13.1.2 Non-Residential Customers

Category	2022	2023	2024	2025	2026
Non-Residential	628,347	672,332	719,395	769,753	823,635

NB: These are active customer numbers

13.1.3 Special Load Tariff Customers

Category	2022	2023	2024	2025	2026
SLT-LV	1,099	1,143	1,189	1,236	1,286
SLT-MV	674	748	830	922	1,023
SLT-HV	196	232	273	323	381
Total	1,969	2,123	2,292	2,481	2,690

NB: These are active customer numbers

13.2 Deregulated Market-Energy Commission Licensed Bulk Customers Embedded in the Network

Category	2022	2023	2024	2025	2026
Bulk (MV)	13	13	13	13	13
Bulk (HV)	14	14	14	14	14
Total	27	27	27	27	27

Out of the 28 bulk customers, 7 are steel companies who have a special regulated tariff approved by the Commission. Only 7 bulk customers have negotiated their tariffs with ECG while the remaining 13 are yet to request for a negotiated tariff.

14 Energy Allocated to Public Lighting (GWh)

A study on streetlight was carried out by the Ministry of Energy (MoEn) in 2018. This was aimed at developing a strategy paper to guide the implementation of a nationwide street lighting programme. The study identified over 498,035 streetlights connected to the various distribution network across the country as well as over 2,100 solar powered streetlights. Out of the total of 498,035 lamps in use only 22,862 were LED lamps. It was established that majority of the energy consumed by streetlights in Ghana were not measured.

This number of streetlights identified translated into a total annual electricity consumption of 649.05GWh. Accordingly, the study revealed that at an Average End User Tariff (AEUT) of GHp63.5/kWh, equivalent to US cents 16.74 (based on USD1 to GHS3.794 used in the 2015 Utility Tariffs), the above streetlight consumption amounted to a total cost of USD108.65 million.

The study therefore emphasised the need to determine the accurate amount of energy consumed by streetlights through metering as well as the determining its equivalent cost using an appropriate tariff. Thus, it was recommended that the PURC approves a tariff specifically for billing of traffic lights, streetlights and public lights to enable the utilities bill the MMDAs appropriately. According to the study, the use of the tariff for streetlight billing would then determine whether the current levies charged for streetlights as per Act 946 are adequate or not.

The study further estimated that Ghana will require about 620,000 streetlights by 2020 to provide adequate lighting for the country. This indicates a 24.5% increase in the number of streetlights which could directly translate into same percentage increase in streetlight consumption by 2020. Out of the 498,035 streetlights identified during the study, 391,497 were found within ECG’s operational areas constituting almost 80% of the total. Consequently, the projected increase of 24.5% by end of 2020 could reflect same increase within ECG’s distribution zone to give an estimated figure of 487,414.

The company’s Revenue Protection Unit have regularly carried out similar exercises to determine streetlight consumption within the various operational areas. The streetlight consumption for the next 5-year period has been projected to be constant at 534.65GWh annually, representing about 82% of total streetlight consumption in the country as at the end of 2020. Projections for the next five years were made constant on the assumption that the MoEn would implement the recommendations of the 2018 study which includes the enforcement of LED lamps whose consumption may be as much as 50% lower.

ECG shares the view of the MoEn on the need for PURC to determine a tariff for streetlight. This would help distribution utilities to account fully for the cost of streetlight consumption

14.1 Energy Allocated to Public Lighting (GWh)

Category	2022	2023	2024	2025	2026
Streetlight Consumption (GWh)	534.65	534.65	534.65	534.65	534.65

15 Distribution Company's System Load Data

Table 1 below shows the peak demand projections for the various markets for ECG for the tariff period (2022 – 2026).

Table-1 System Load Data 2022-2026

Parameter	2022	2023	2024	2025	2026
Total System Load @ Peak	2,269.00	2,381.94	2,466.48	2,505.57	2,617.30
Regulated Market (Non-SLT Customers)	1,928.65	2,024.65	2,096.51	2,129.74	2,224.70
Regulated Market (SLT including Bulk Customers)	249.59	262.01	271.31	275.61	287.9
Regulated Market (Energy Commission Licensed Bulk Customers Embedded in Disco Network)	90.76	95.28	98.66	100.22	104.69
Projected Base Load	2,269.00	2,381.94	2,466.48	2,505.57	2,617.30

16 Capital Expenditure

To continue to supply reliable and quality power based on load growth projections, ECG has planned projects for network expansion, loss reduction, improvement in operational efficiency (including revenue mobilisation) and system reliability, etc. to be undertaken during the regulatory period 2022 to 2026. Greater Accra region has the highest demand growth projections and therefore majority of these projects would be implemented in the capital.

Table 2 shows a summary of ECG’s investment plan for the regulatory period (2022 – 2026) in accordance with the company’s approved format. The investment plan from 2022 to 2026 and the ongoing projects have been factored in this proposal. This is based on the selection of committed and feasible projects to be implemented within the tariff period.

A graphical view of ECG’s total capital expenditure in terms of completed, ongoing and planned projects is shown in graph 6. The total cost of all three categories of investment is USD1.51 billion. Details of the completed, ongoing and planned projects form part of the separate documentations submitted to the Commission. The details of the investment plan include type of project, purpose, location, cost, source of funding, start and completion schedule, benefits of the projects, etc.

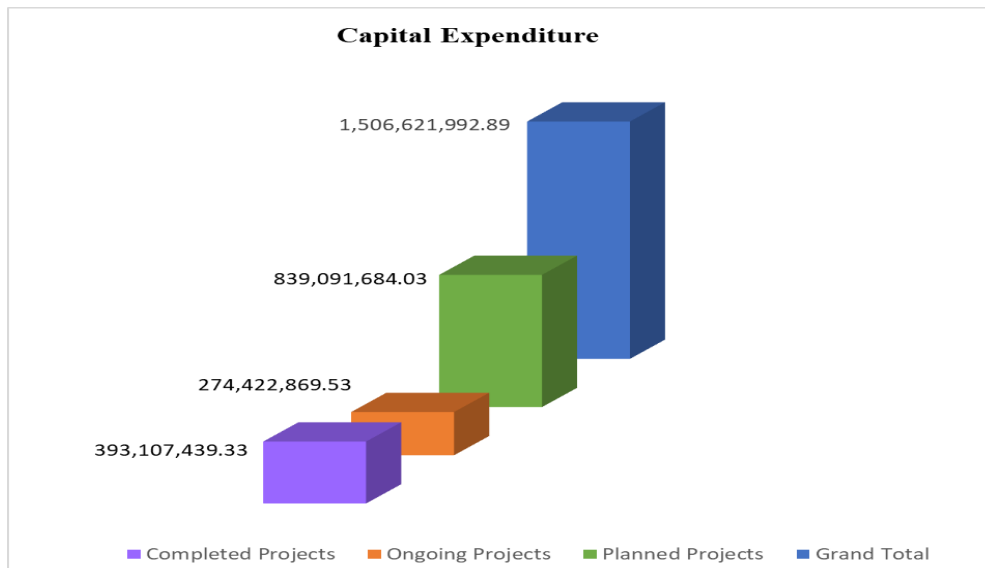
Out of the total planned investment cost of USD959.85 million, the amount incorporated in this tariff proposal is USD839.09 million. This excludes the cost for electricity access projects (USD33.5m) and 10% contingency (87.26m). Electricity access projects could be funded by government and would therefore not qualify to be factored in the tariff proposal.

Table-2 Summary of Capital Investment Plan (USD) 2022-2026

INVESTMENT PLAN (2022-2026)						
Category	2022	2023	2024	2025	2026	Total
A. Network Capacity Expansion/Extension Projects	108,674,006	23,412,639	2,600,000	13,000,000	9,540,000	157,226,646
B. Reliability Improvement Projects	45,723,762	11,162,647	8,723,044	9,481,351	9,975,263	85,066,067
C. Technical Loss Reduction/Voltage Improvement Projects	1,451,540	1,125,000	1,125,000	1,500,000	2,250,000	7,451,540
D. Commercial/Revenue Improvement Projects	106,332,162	99,556,095	96,029,883	96,744,618	97,748,703	496,411,461
E. Institutional Development Projects	12,000,000	21,575,862	21,877,586	16,440,172	21,042,349	92,935,970
F. Electricity Access Projects*	11,000,000	9,000,000	4,500,000	4,500,000	4,500,000	33,500,000
Contingency (10%)*	28,518,147	16,583,224	13,485,551	14,166,614	14,505,631	87,259,168
Total Cost (USD)	313,699,618	182,415,468	148,341,064	155,832,755	159,561,946	959,850,852
Grand Total (USD)				959,850,852		

NB: *Electricity Access Projects and Contingency (10%) not included in Tariff Proposal

Graph 6 Graphical View of ECG’s Total Capital Expenditure (USD) 2022-2026



16.1 Capital Expenditure Financing Plan

Table-3 Summary of Capital Expenditure Financing Plan (Million GHS) 2022-2026

Item	2022	2023	2024	2025	2026
Accumulated Depreciation	2,923.77	3,461.28	4,047.20	4,686.21	5,525.79
Retained Earnings	(1108.84)	(1214.17)	(1151.89)	(1239.40)	(1173.87)
Commercial Borrowings:					
Domestic	13.00	12.46	11.72	10.81	9.91
Foreign	49.23	53.49	43.95	38.79	33.55
Additional Equity Contribution By Shareholder(s)					
Grants:					
Domestic					
Foreign					
Tariff Revenue (Revenue from Projected Capacity)	1,981.08	2,204.74	2,432.62	2,656.11	2,899.78

17 Operation and Maintenance Costs

Table-4 Operation and Maintenance Costs (Million GHS) 2022-2026

Item	2022	2023	2024	2025	2026
Fixed O & M Costs	295.49	350.00	404.65	491.64	579.47
Variable O & M Cost	52.15	61.76	71.41	86.76	102.26

18 Administration and General Costs

Table-5 Administration and General Costs (Million GHS) 2022-2026

Item	2022	2023	2024	2025	2026
Fixed O & M Costs	120.10	127.22	135.66	145.31	154.25
Variable O & M Cost	223.04	236.27	251.95	269.87	286.46

19 Human Resource Costs - Employee Costs

Table-6 Human Resource Costs (Million GHS) 2022-2026

Item	2022	2023	2024	2025	2026
Fixed O & M Costs	341.7	392.96	392.96	432.25	432.25
Variable O & M Cost	634.59	729.78	729.78	802.76	802.76

Human resource cost for the company is directly linked to salary increments which takes place every two years pursuant to the Collective Agreements (CA) between the company and its Senior Staff Union (SSU) as well as its Junior Staff Union (JSU).

The salary component of the human resource cost during the five-year period has therefore been aligned to the above agreements and would ultimately be approved by the company’s board.

20 Public Education

Table-7 Summary of Public Education Costs (Million GHS) 2022-2026

Item	2022	2023	2024	2025	2026
Stakeholder Communication & Sensitisation (Public Education)	8.59	10.18	11.77	14.05	16.86

21 Financing and Interest Costs:

Table-8 Financing and Interest Costs (Million GHS) 2022-2026

Item	2022	2023	2024	2025	2026
Interest on Foreign Loans	84.39	84.97	84.80	83.54	80.94
Interest on Domestic Loans	331.32	347.38	364.24	381.94	400.53
Interest on Working Capital Loan	9.94	11.56	11.21	13.14	6.95

22 Return on Equity

Table-9 Equity Financing Costs (%) 2022-2026

Item	2022	2023	2024	2025	2026
Rate of Return	20.87	8.90	7.96	5.09	15.85

23 Depreciation

Table-10 Equity Financing Costs (%) 2022-2026

Item	2022	2023	2024	2025	2026
Rate of Return	17.03	10.26	11.12	13.26	5.725

24 Projected Electricity Distribution Revenue Requirement

Table-11 Summary of Distribution Company's Revenue Requirement (Million GHS) 2022-2026

Item	2022	2023	2024	2025	2026
A1. Capital Recovery Component (CRC) for Legacy Assets	1,539.59	1,906.41	2,267.05	2,659.94	3,377.22
A2. Capital Recovery Component (CRC) for New Investments	519.47	730.87	938.20	1,096.78	1,252.56
B. Fixed O & M Component (FOMC)	295	349	404	492	579
C. Revenue from Energy Charge	15,395.41	17,927.69	20,666.21	23,883.33	27,351.76
D. Reactive Power Charge	40.33	45.92	53.11	60.46	67.28
E. Revenue from Open Access - Wheeling	N/A	N/A	N/A	N/A	N/A
F. Fixed Charges					
F1. Service Connection Charge	78.03	89.73	103.19	118.67	136.47
F2. Reconnection Charges	1.03	1.14	1.25	1.38	1.51
F3. Interconnection Charges	N/A	N/A	N/A	N/A	N/A
F4. Separate Metering Charges	13.43	14.77	16.25	17.88	19.66
F5. Penalties-Illegal Connection	10.04	11.05	12.15	13.37	14.7
F6. Revenue from National Electrification Levy	291.61	332.05	384.05	437.15	486.47

25 Proposed Tariff and Rates Structure

The company’s proposed Annual Revenue Requirement (ARR) was based on PURC’s rate setting guidelines. As discussed earlier, the full cost recovery concept was adopted in this tariff proposal. The tariff proposal therefore assumed the cost of power procurement (excludes reserve margin and idle capacity cost), a cost of transmission based on the current transmission service charge and a cost recovery distribution service charge which would cover the company’s cost of distribution.

The projected purchases and sales in gigawatt used in the tariff proposal is shown in the table below. The cost of projected purchases was based on the commercial terms of the PPAs. The projected system loss figures were aligned with the agreed benchmarks in the MOU between

Energy Commission and ECG.

25.1 Projected Purchases and Sales

Item	Actual	Projected				
	2021	2022	2023	2024	2025	2026
Purchases (GWh)	14,222	14,418	15,499	16,661	17,910	19,253
Sales (GWh)	9,978	10,986	11,942	13,021	14,149	15,402
System Losses (%)	29.84	23.80	22.95	21.85	21.00	20.00

The components of the ARR include operational expenses (OpEx), depreciation, return on Regulated Asset Base (RAB), return on working capital allowance, capital recovery payment, 2% provision for uncollectible and corporate tax.

The gearing ratio (Debt-to-Equity) applied was 70:30. The Weighted Average Cost of Capital (WACC) obtained was 16.02%. Similarly, an average rate of 5.2% was calculated based on ECG's proposed net and inventory days which was then used to obtain Working Capital Allowance (WCA).

In view of the recent PURC rate setting guidelines, there was the need to segregate legacy assets and the company's own capital expenditure (new investment). It is assumed that majority of the legacy assets have recovered their cost over the years though their replacement would always be at the current costs. It was therefore inappropriate to apply same WACC on both legacy assets and CapEx. In view of this, a 2% average rate of return was applied on legacy assets. The computed WACC of 16.02% was however used in calculating the return on capital expenditure and the cost of working capital allowance respectively.

The provision for uncollectible has been maintained at 2% though ECG believes that realistically a 5% provision would ultimately provide the needed support.

The result of ECG's tariff proposal for the next five (5) years shows an approximately 148% increase on the current DSC1 in 2022 and an average increase of 7.6% year on year from 2023 to 2026. The high increase in the DSC1 for year 2022 could be attributed to the gap that has developed over the years between the actual cost recovery tariff and the PURC approved tariffs as well as the cost of completed projects. This gap has been discussed earlier in section 1.3. The CAGR for the proposed DSC1 over the five-year tariff period is 6%.

Similarly, ECG’s proposed DSC2 shows a higher increase of 28.4% in first year (2022) while that of the subsequent years’ increases by an average of 2% from 2022 to 2026.

25.2 Multi-Year Tariff Proposal (2022-2026)

COMPOSITION OF ARR	5-YEAR TARIFF PROPOSAL (GHS 'MILLION)				
	2022	2023	2024	2025	2026
OPEX	980.85	1,118.84	1,260.92	1,476.23	1,691.30
HUMAN RESOURCE COST	976.29	1,122.74	1,122.74	1,235.01	1,235.01
DEPRECIATION	1,196.85	1,560.13	1,894.82	2,264.02	2,979.85
RETURN ON RAB	342.74	346.28	372.23	395.92	397.38
CAPITAL RECOVERY PAYMENTS	519.47	730.87	938.20	1,096.78	1,252.56
RETURN ON WORKING CAPITAL ALLOWANCE	8.04	9.34	10.37	12.33	14.00
CORPORATE TAX	41.02	72.00	127.97	162.23	176.17
PROVISION FOR UNCOLLECTIBLES (2%)	323.69	360.32	412.25	437.15	486.47
TOTAL ARR	4,388.96	5,320.53	6,139.49	7,079.67	8,232.73
DSC1 (GHS/kWh)	0.3995	0.4455	0.4715	0.5004	0.5345
PERCENTAGE CHANGE	148.0%	11.5%	5.8%	6.1%	6.8%
DSC2 (GHS/KWh)	0.1981	0.2022	0.2067	0.2133	0.2152
PERCENTAGE CHANGE	28.4%	2.1%	2.2%	3.2%	0.9%

25.3 Summary of Multi-Year Tariff Proposal (2022-2026)

PROPOSED DISTRIBUTION SERVICE CHARGE (Ghp/kWh)					
CATEGORY	2022	2023	2024	2025	2026
DSC 1	39.9513	44.5521	47.1524	50.0364	53.4509
DSC 2	19.8080	20.2221	20.6722	21.3320	21.5239

26 Conclusion

The financial sustainability of the Electricity Company of Ghana is important as it impacts on the entire energy sector. With the huge investment needs facing the distribution industry over the next five years, it is expected that the proposed tariff increases would inevitably be approved to sustain efficient and reliable electricity service.

Overall, this tariff proposal indicates a high increase (148%) in year 2022 compared with the subsequent years' increases of an average of 7.6%. This high increase in 2022 is largely attributable to the cost of investment projects; the gap that has developed over the years between the actual cost recovery tariff and the PURC approved tariffs; the continual application of the prevailing tariff (which was a 14% reduction) beyond the stipulated regulatory period (2019-2020); and the effect of macroeconomic factors.

Over the next five years, the DSC₁ will need to increase consistently (average of 7.6%) to cover distribution cost. It is expected that the approved BGC would correspond with the commercial terms of PPAs. ECG also anticipates that the approved DSC₁ would be an increase on the current share (23%) of the EUT.

Tariffs for NSLT customers especially residential customers need to increase gradually in accordance with their cost of service to eventually eliminate cross-subsidisation and ease the burden on SLT customers.

ECG recommends an engagement with the Commission on the determination of the defined threshold for a lower tariff for non-residential (commercial) customers in relation to the proposed two-block tariff for all categories of NSLT customers.

The company anticipates that Government (MoF) would support its financial sustainability by absorbing all cost associated with excess capacity charges. ECG hopes that government would soon adopt a policy decision to deal with the issue of excess capacity once and for all. The Commission is entreated to consider the recovery of reserve margin (18%) through the tariff as it impacts the entire sector.

The company also seeks the support of government (MoEn) in relation to the proposal to introduce a streetlight tariff to enable ECG to properly account for the full cost of streetlight consumption. ECG's analysis based on the current EUT, shows that streetlight consumption (6% of total annual sales) would cost an estimated amount of GHS468.38 million per annum. Out of this, ECG is expected to receive GHS 140.51 million (60% of the public light levy) leaving a shortfall of about GHS327.87 million each year.

ECG indeed requires financial support through a full cost recovery tariff to ensure sustained investment for reliable and quality supply of service to our cherished customers.

ECG hereby submits its 2022 tariff proposal for a five-year period (2022–2026) and recommends approval of the entire multi-year tariff with the possibility of a review when necessary.

27 References

1. 2021 – 2024 Strategy Document; Electricity Company of Ghana Limited, March 2021
2. 2021 Budget; Electricity Company of Ghana Limited, December 2020.
3. Memorandum of Understanding Between the Energy Commission and Electricity Company of Ghana Limited for Performance Monitoring, November 2020
4. Strategies for Streetlighting; Ministry of Energy, January 2018

28 Appendices

- F-1D Distribution Sub-Transmission Data
- F-2D Distribution Network Capacity Parameters Data
- F-3D Distribution Substations Data
- F-4D Distribution System Capital Outlay Data
- F-5D Distribution Fixed Assets Schedule
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