



ELECTRICITY TRANSMISSION AGGREGATE REVENUE REQUIREMENT AND TARIFF

BY

GHANA GRID COMPANY LTD

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1 Introduction

Ghana Grid Company LTD (GRIDCo) is responsible for developing, managing, and operating the National Interconnected Transmission System (NITS) to ensure its reliability, efficiency, and sustainability. Since commencing independent operations in 2008, GRIDCo has facilitated wholesale electricity trading and provided ancillary services within the NITS. GRIDCo is committed to maintaining a resilient and dependable grid that supports Ghana's development and the broader sub-region, with sustainability and financial stability at the core of our short- and long-term strategies.

1.1 Brief Background of GRIDCo's Electricity Transmission Operations

GRIDCo, Ghana's independent electricity transmission utility, was established and became operational in 2008 as part of the Government of Ghana's (GoG) Power Sector Reforms. Since its inception, GRIDCo has been responsible for the following core mandates:

- I. Undertake economic dispatch and transmission of electricity from wholesale suppliers (generating companies) to bulk customers, which include the Electricity Company of Ghana (ECG), Northern Electricity Distribution Company (NEDCo) and the Mines.
- II. Provide fair and non-discriminatory transmission services to all power market participants.
- III. Acquire and manage assets, facilities, and systems required to transmit electrical energy.
- IV. Provide metering and billing services to bulk customers.
- V. Carry out transmission system planning and implement necessary investments to provide the capacity to transmit electric energy and manage the Wholesale Power Market reliably.

Additionally, as the Electricity Transmission Utility (ETU), GRIDCo is responsible for implementing and managing the Ghana Wholesale Electricity Market (GWEM). This is to ensure a fair, transparent, and non-discriminatory process in the procurement and dispatch of electricity.

1.2 Rationale /Objectives Underpinning Tariff Submission

Ghana's electricity transmission system is the backbone of the nation's power supply, ensuring the stable and reliable delivery of electricity to the three (3) major electricity distribution companies, mining companies, and other bulk customers. The primary objective of this tariff proposal is to present a detailed justification for achieving a cost-reflective tariff. This will enable GRIDCo to enhance service delivery, maintain quality standards, and ensure financial sustainability in the short, medium, and long term.

1.2.1 Increasing cost of maintenance

The reliability of the NITS largely depends on our ability to develop and maintain assets as required and our promptness in resolving intermittent disruptions. GRIDCo faces rising costs associated with maintaining vegetation undergrowth, curbing illegal mining activities in the

some Right's of Way of the NITS and upgrading the transmission network to reduce congestion within the NITS. Without adequate funding, the reliability and efficiency of Ghana's power transmission system could be severely compromised and affect power delivery.

GRIDCo operates over 6,000 circuit kilometres of transmission lines, many traversing densely populated areas, high vegetation growth areas, and areas akin to legal mining activities. The cost of clearing undergrowth and reclaiming land in illegal mining areas along these transmission corridors has increased significantly. Between 2022 and 2024, vegetation management and reclamation costs surged from 5.8174 million Ghana cedis to 23.5902 million Ghana cedis, a staggering 305.5% increase.

Aside from the challenge of dense vegetation posing a threat to our transmission lines, we are confronted with a high incidence of corrosion on our Coastal Transmission Backbone. This backbone is critical to the stability of the power system since it serves as the main corridor for evacuating over 1,500MW of power generated from the Western Region. Additionally, increased transformer capacity at most substations to reduce congestion, improve operational flexibility, and enhance reliability has led to higher maintenance expenditures on transformers and related equipment.

Unfortunately, GRIDCo's weakened liquidity position does not allow for comprehensive coverage of all these maintenance obligations. These factors, among others, are detrimental to the optimal performance of transmission assets. To address these challenges, GRIDCo requires the implementation of a cost-reflective tariff to provide the necessary resources for infrastructure development, maintenance and operational efficiency, ensuring the continued reliability of the NITS in the short to medium term.

1.2.2 Planned Infrastructure Investments

GRIDCo urgently needs to implement the Wholesale Electricity Market, which is estimated to cost about USD 25 million and undertake 18 critical transmission projects valued at USD 981.00 million. These projects are essential to:

- I. Improve NITS reliability and stability,
- II. Provide transmission capacity for renewable energy integration and export
- III. Reduce transmission losses and
- IV. Improve voltages.

Additionally, there are three (3) other medium-term and one long term project critical projects for which the company is awaiting a response from the commission.

Details of the critical investments list (Short-term, Medium-term and Long- term) are as illustrated in Appendix 1.

1.2.3 Financial Constraints

Despite quarterly tariff adjustments, GRIDCo continues to face revenue shortfalls that hinder full-cost recovery for transmission services. The current transmission service tariff of GHp 5.6422GHp/kWh for the first quarter of 2025 remains inadequate compared to the proposed cost-reflective tariff of GHp 10.8510/kWh for the 2021–2026 tariff period. These financial challenges are further exacerbated by the following:

- I. **Exchange rate fluctuations** negatively impact GRIDCo's financial performance and borrowing capacity.
- II. **Limited access to direct loans**, as financial institutions require cost-reflective tariffs for investment viability.
- III. **Funding constraints**, where GRIDCo relies primarily on concessionary funding and grants, which are insufficient for large-scale infrastructure development.

As a result, critical projects have been delayed or suspended, as evidenced by the suspension of loan disbursements by Agence Française de Développement (AFD) due to GRIDCo's inability to raise counterpart funding. Therefore, implementing a cost-reflective tariff is essential to enhance GRIDCo's financial health, enabling the company to secure necessary financing and attract private investors for critical infrastructure projects.

This proposal will ensure the sustainability and efficiency of Ghana's power transmission infrastructure, thereby supporting the nation's economic growth and energy security.

1.3 Legislative Provision(s) in Support of Tariff Application

GRIDCo derives its legal authority from the Energy Commission Act, 1997 (Act 541) and the Volta River Development (Amendment) Act, 2005 (Act 692). Its operations are guided by the Electricity Standards and Performance Regulations, LI 1934, and the Electricity Regulations, LI 1937.

1.4 Highlights of Major Issues that Describe the Structure of Tariff Submission

The Revenue Requirement Methodology prescribed by the PURC was employed in calculating GRIDCo's transmission tariff proposal for the 2026-2030 Major Tariff Review. Key Operational Assumptions include the following:

Assumptions	Unit of Measure(UoM)	2024(Actual)	2025	2026	2027	2028	2029	2030
Projected Energy Transmission	GWh	24654.06	28,338.9	30,982.7	33,207.5	35,280.0	38,334.1	41,965.9
Projected Peak Demand	GWh	3952	4,337.7	4,717.9	5,039.7	5,349.8	5,796.9	6,345.5
Projected Transmission Losses	GWh	951.28	1,197.0	1,368.0	1,461.3	1,551.3	1,680.9	1,840.0
Average Exchange Rates	GHS							
Expected Rate of Return on Net Fixed Assets	%							
Network Usage	GWh	11.0	14.2	14.4	15.4	16.3	17.8	19.2

Data Source: 2025 Supply Plan and GRIDCo

Based on the above assumptions and the revenue requirement methodology outlined by PURC, GRIDCo proposes the following Transmission Service Charges **for the 2026-2030 Major Tariff Review** shown in the table below, excluding all levies:

Tariff Period	2025	2026	2027	2028	2029	2030
Proposed TSC 1: Attributable to Network Operations, Maintenance , Depreciation, Return on Regulatory Asset base, Working Capital and Corporate Tax (GHp/kWh)	12.9768	13.04680	12.97983	13.10881	13.11561	13.44491

2 Initiatives Undertaken Since July 2022 Tariff Review

The initiatives focused on the transmission network and performance improvement to enable GRIDCo to monitor the whole supply value chain. The global objective is to improve supply quality, and reliability and reduce transmission system losses.

2.1 Projects Undertaken

2.1.1 Completed Projects

Since the last major tariff review, GRIDCo has embarked on numerous projects aimed at improving the reliability of the NITS to enhance customer satisfaction and **support economic development**. The projects and initiatives completed are listed in Table 3 below:

	PROJECT	LOCATION	*Months	Date Commenced	% Completion	Year of Completion	Project Cost(MillionnUSD)	Source of Funding
1a	Upgrade of SCADA and Corporate Telecommunications Network - SCADA Component	Tema, Kumasi	12	17 Mar 2023	100	2024	5	World Bank/IGF
1b	Upgrade of Scada and Corporate Telecommunications Network - TELECOM Component	Tema, Kumasi	12	10 Mar 2023	100	2024	3.5	AFD/IGF
2	Supply of Two (2no.) 330/225/34.5kV, 250MVA Autotransformers at Nayagnia Substation	Nayagnia Substation	12	31 Mar 2022	100	Certificate 1	6.2	IGF
3a	Supply of 4 No. 120/145MVA Power Transformers	Accra East, Afienya, Smelter II and Kumasi Substations	12	22 Jul 2022	100	Certificate 2	6.3	IGF

Data Source:GRIDCo Investment Plan

Notes

**Months define as Project Duration as per tariff proposal*

Certificate1: The Takeover Certificate for the delivery of the transformer was issued on March 27, 2024

Certificate2: Takeover Certificate for the delivery of the Transformers were issued on September 13, 2024

2.1.2 PURC Approved Critical Short-Term Investments (GRIDCo Projects 2025-2030)

The PURC approved critical short-term investment projects as part of the ongoing tariff review process. This is to ensure that approved revenues are directed toward strengthening the NITS. The implementation of these critical transmission projects will significantly strengthen GRIDCo's operational capacity, efficiency, and resilience across the NITS. The replacement and installation of higher-capacity power transformers at key substations such as Kumasi, Smelter II, Accra East, and Anwomaso will expand transformation capacity, reduce overloading risks, and enhance supply reliability in major load centres. Similarly, the addition of new transmission line bays and the termination of transmission lines will improve power evacuation from generation sites, eliminate bottlenecks, and provide the flexibility needed for secure dispatch and market operations.

The upgrade of existing transmission lines, including the Mallam–Kasoa corridor and the construction of new 330 kV transmission lines (Accra–Kumasi, Kumasi–Kintampo–Adebiliyili, and Awodua–Prestea), will increase transfer capacity, create redundancies, and improve the efficiency of bulk power transfer across the country. These expansions will also reduce technical losses, improve voltage stability, and strengthen regional interconnections, particularly in the northern regions with the provision of the ± 50 MVar STATCOM at Nayagnia.

Moreover, the development of new substations such as the Prestea 330 kV, Kpandai, Salaga, and the third Kumasi Bulk Supply Point (K3BSP) will enhance grid reliability, improve access to electricity for growing demand centers, and provide a stronger backbone for industrial and commercial growth. Collectively, these projects will position GRIDCo to deliver a more secure and reliable transmission service, support Ghana's growing electricity demand, facilitate the operationalization of the Ghana Wholesale Electricity Market, and reinforce GRIDCo's role as a reliable transmission utility within the subregion.

In addition to these approved projects, GRIDCo has proposed further critical short term investments for approval. These include:

- I. Takoradi Thermal 161 kV Switchyard Upgrade Project, which will involve decommissioning, dismantling, and replacing defective equipment to modernize operations at Aboadze.
- II. Mallam Substation Upgrade, which will replace obsolete 161 kV electromechanical equipment, including disconnect switches and circuit breakers, alongside associated civil works, to improve reliability in Accra.

- III. 330 kV Amandi–Takoradi Thermal Overhead Transmission Line Reconfiguration Project, which will reconfigure the existing Karpowership–Amandi–Takoradi Thermal transmission line into two double-circuit 330 kV lines (Karpowership–Aboadze and Amandi–Aboadze). This will enhance evacuation of thermal generation, improve redundancy, and strengthen supply security within the Western enclave.

When approved and implemented, these additional projects will complement the approved investments, ensuring GRIDCo achieves a modern, efficient, and resilient transmission system that supports both domestic demand growth and regional power exchange. Summary of the projects are below.

SUMMARY OF GRIDCo INVESTMENT PROJECTS			
SUMMARY OF PURC APPROVED CRITICAL SHORT-TERM INVESTMENTS-GRIDCO(2025-2030)			
No	Project TypeF	Project Description	Project Location
1	Supply and Installation of 6No. 161/34.5 kV, 50/66 MVA Power Transformers	Design, manufacturing, testing, supply, including loading, transportation, offloading and installation, pre-commissioning and commissioning of 6Nos 161/34.5 kV 50/66 MVA Power Transformers	Tafo, Cape Coast, Adubiliyili, Yendi and Yendi Solar
2	Installation of 5No. 161/34.5 kV, 120/145 MVA Power Transformer at Kumasi (K1BSP), Anwomaso (K2BSP), Smelter II, Accra East (A3BSP) and Afienya Substations, provision of transformer and feeder bays at Anwomaso, Accra East and K1BSP. Provision of Line Bay for the termination of the second circuit of 161 kV Konongo - Kumasi (J2K) Line.	- Decommissioning of 6no. 161/34.5 kV, 50/66 MVA Power Transformers and 3No. Single feeder bays at Kumasi (1No.) and Accra East (2No.) Substations. - Installation of 5No. 161/34.5 kV, 120/145 MVA Power Transformers. - Installation of 3No. new double feeder bays at Kumasi, Anwomaso and Accra East Substations. Provision of Line Bay for the termination of the second circuit of 161 kV Konongo - Kumasi (J2K) Line.	Kumasi (K13), Anwomaso (AW58), Accra East (AE59), Afienya (AA80), and Smelter II (SM60) Substations

3	Provision of Feeder Bay and Installation of 2No. 161/34.5 kV, 25/33 MVA Power Transformer at Elubo and Essiama Substations	Installation of 2no. 161/34.5kV, 25/33 MVA Power Transformers and Provision of New Feeder Bays with the necessary balance of plant.	Elubo and Essiama
4	Provision of 2No. 161 kV Transmission line Bays at Anwomaso Substation	Provision of 161 kV balance of plant for transmission line termination at Anwomaso Substation and construction of 161 kV transmission line from Anwomaso Substation to Anwomaso Thermal Power Plant.	Anwomaso
5	161 kV Mallam - Kasoa Transmisssion Line Upgrade Project	Upgrade of the 161 kV Mallam-Kasoa Transmission Line involving the reconstruction of the existing 20km Double Circuit Mistletoe Conductor Line of thermal capacity 170 MVA per circuit to a Double Circuit Twin Bundle Tern Conductor Line of thermal Capacity of 488 MVA per circuit using GRIDCo's engineered AA,BB and CC towers.	Accra
6	Supply of 6No. Transformers	Design, manufacturing, testing, supply, including loading, transportation, offloading complete of 6Nos Power Transformers of various capacities.	Various

7	330kV Awodua-Prestea Transmission Project Construction of 330/225kV Prestea Substation Project	The works involves the construction of 7km 330 kV double circuit transmission line from Awodua to Prestea complete with twin bundle Tern conductors (i.e. design, supply of towers and accessories complete with all fittings for termination of twin bundle Tern conductors, OPGW and shieldwire, construction of tower foundation, erection of towers and commissioning into service). Turnkey construction of a 330 kV substation at Prestea to be configured in a single Busbar scheme with four (4No.) bays consisting of two (2No.) 330 kV Transmission line bays and two (2No.) 330/225 kV 200 MVA Autotransformer bays.	Prestea, Awodua
8	Tafo Substation Expansion Project	Addition of two new line bays to facilitate the termination of the existing 161kV Akosombo-Nkawkaw Transmission line and upgrade of the substation.	Tafo
9	330kV Accra - Kumasi Transmission line project	The works involves the construction of 230km 330kV transmission line from Accra to Kumasi complete with conductors (i.e. design, supply of towers and accessories complete with all fittings for termination of twin bundle Tern conductors, OPGW and shieldwire, construction of tower	Accra, Kumasi, Nkawkaw

		foundation, erection of towers and commissioning into service).	
10	50 MVar SVC at Nayagnia Substation	Procure and install a ± 50 MVar STATCOM device at the existing 330 kV Nayagnia to smoothen voltage profiles and improve grid stability across the Northern Regions.	Nayagnia Substation
11	330 kV Kintampo - Adubiliyilli Transmission Line Project	To construct a 175 km 330kV double circuit transmission line from Kintampo to Adubiyili (Tamale).	Adubiliyili (Tamale), Kintampo
12	330 kV Kumasi (Anwomaso) - Kintampo Transmission Line Project	To construct a 185 km 330kV double circuit transmission line from Kumasi (Anwomaso) to Kintampo.	Kumasi (K3BSP), Kintampo
13	330 kV Kumasi III Substation Project	This project seeks to develop a Third Bulk Supply Point (K3BSP) in Kumasi to improve power supply reliability in the Kumasi area and its environs.	Kumasi (Offinso)
14	Ghana Wholesale Electricity Market	Operationalisation of Ghana Wholesale Electricity Market	National

15	161 kV Eastern Corridor Transmission Line Project	The project scope envisages the following: 1. Construction of a 100 km 330 kV double circuit transmission line from Adubiliyili - Salaga. 2. Construction of a 60 km 330 kV double circuit transmission line from Salaga - Kpandai. 3. Construction of an 80 km 161 kV double circuit transmission line from Kpandai – Nkwanta 4. Construction of an 100 km 161 kV double circuit transmission line from Nkwanta – Kadjebi 5. Upgrade of existing 69 kV 45 km line from Asiekpe – Ho to 161 kV double circuit transmission line 6. Construction of a 90 km 161 kV double circuit transmission line from Kintampo to Atebubu 7. Construction of 330/34.5 kV Salaga and 330/161/34.5 kV Kpandai substations 8. Construction of 161/34.5 kV Nkwanta and Atebubu substations 9. Upgrade of Kadjebi, Kpando, Ho substations from 69kV to 161 kV.	Tamale Salaga Kpandai Nkwanta Kadjebi Kintampo Atebubu Asiekpe Ho
	ADDITIONAL CRITICAL SHORT-TERM PROJECTS- FOR APPROVAL		
16	Takoradi Thermal 161 kV Switch Yard Upgrade Projects	Upgrading of the existing substation by decommissioning, dismantling and transportation	Aboadze

		of defective equipment, supply, installation, testing and commissioning of the new equipment.	
17	Mallam Substation Upgrade	Replacement of obsolete substation electromechanical equipment, including but not limited to 161kV Disconnect Switches and Circuit Breakers, etc., and civil works.	Accra
18	330 kV Amandi-Takoradi Thermal Overhead Transmission Line Reconfiguration Project	Modification of the existing 330kV Karpowership – Amandi – Takoradi Thermal Transmission line section to establish two (2No.) 330kV double circuit lines with Sections: 1. 330kV Karpowership – Aboadze Substation and 2. 330kV Amandi – Aboadze Substation. The two (2No) 330kV double circuit lines shall be constructed with twin bundle Tern conductors on conventional Steel lattice towers fitted with two shieldwires (one of which shall be OPGW), complete.	Aboadze

Notes: Items 1-15 approved by PURC

Items 16-18 to be approved by PURC

The required details are in the excel sheet attached.

No	PROJECT	LOCATION	*Months	Date Commenced	% Completion	Year of Completion	Project Cost(Millionn USD)	Source of Funding
1a	Upgrade of SCADA and Corporate Telecommunications Network - SCADA Component	Tema, Kumasi	12	17 Mar 2023	1	2024	5	World Bank/IGF
1b	Upgrade of SCADA and Corporate Telecommunications Network - TELECOM Component	Tema, Kumasi	12	10 Mar 2023	1	2024	3.5	AFD/IGF
2	Supply Of Two (2no.) 330/225/34.5kV, 250MVA Autotransformers at Nayagnia Substation Background	Nayagnia Substation	12	31 Mar 2022	1	Certificate 1	6.2	IGF
3a	Supply Of 4 No. 120/145MVA Power Transformers	Accra East, Afiencya, Smelter II and Kumasi Substations	12	22 Jul 2022	1	Certificate 2	6.3	IGF

Data Source: GRIDCo Investment Plan

Notes

**Months are defined as Project Duration as per the
tariff proposal*

***Certificate 1:** The Takeover Certificate for the delivery of the transformer was
issued on March 27, 2024*

***Certificate:** Takeover Certificate for the delivery of the Transformers was issued on September 13,
2024*

2.1.3 Ongoing Projects Required for Grid Reliability and Expansion

GRIDCo seeks to continue to invest in the transmission infrastructure to enable reliable evacuation of power from all generating stations to the load centres, safely and securely.

GRIDCo's ongoing project is the **replacement** of 161kV **Volta Substation Control Panels** and Bus protections at Tema, expected to be completed by the end of August 2025. Arrangements have been made for the funding of this project, totalling USD970,000 through **internally** generated funds.

2.2 Performance Improvement

GRIDCo has undertaken several initiatives to improve the resilience and efficiency of Ghana's NITS:

1. **SCADA System Upgrade:** GRIDCo successfully upgraded its Supervisory Control and Data Acquisition (SCADA) system, modernising the Network Manager System (NMS) applications and servers, enhancing cybersecurity measures, and improving overall system functionality. This upgrade also included the installation of a new video wall at the System Control Centre and the establishment of a Backup Control Centre, significantly improving operational redundancy.
2. **Drone-Assisted Maintenance:** The implementation of drone technology has enhanced vegetation monitoring along transmission lines, allowing for precise assessments, increased safety, and reduced reliance on manual labour. This innovation ensures timely maintenance and minimises potential disruptions by proactively identifying excessive vegetation growth.
3. **Telemetry System Deployment:** To enhance data-driven decision-making, GRIDCo deployed a telemetry system that enables real-time monitoring of energy meters. This system facilitates the collection of critical data on various parameters, allowing for immediate analysis and rapid response to anomalies, thereby improving grid reliability.
4. **Reward Management Implementation:** As part of efforts to increase productivity and efficiency, GRIDCo introduced a new reward management system within its Performance Management System. This initiative is designed to recognise and incentivize outstanding employee performance, fostering a culture of continuous improvement and excellence.

2.3 Compliance with Directives of the Commission

2.3.1 Post-Tariff Directives Compliance: Billing for Transmission Service Charge 2(TSC2)

GRIDCo diligently adhered to the directives outlined in the PURC's letter dated May 18, 2023, reference number PURC/ES/VRA/GRIDCO/2023.05/1376, regarding the billing for Transmission Service Charge 2 (TSC 2). Our compliance efforts include:

- i) **Efficient Billing and Collection:** GRIDCo successfully billed and collected TSC 2 from customers, ensuring recovery of costs associated with energy lost in transmission, in alignment with the approved PURC Transmission Loss Benchmark.

- II) **Full Recovery of Outstanding Tariffs:** GRIDCo effectively billed and recovered TSC 2 accruals from September 1, 2022, to date, strictly adhering to gazetted tariffs.
- III) **Development of Agreement Framework:** In collaboration with VRA, GRIDCo developed and submitted an agreement or payment mechanism for approval, ensuring the seamless settlement of all TSC-2 funds collected.
- IV) **Formation of a Dedicated Working Committee:** GRIDCo and VRA established a Working Committee to oversee the reconciliation of TSC 2 accounts, promoting transparency and accountability.
- V) **Clarification on Payment Structure:** GRIDCo provided clear guidelines on the payment structure for DISCo and Bulk Customers regarding TSC 1 and TSC 2, ensuring clarity in financial transactions.
- VI) **Compensation for Transmission Losses:** GRIDCo compensated the affected GENCo for actual transmission losses exceeding the regulated benchmark and fulfilled obligations for actual losses generated by each GENCo.
- VII) **Regular Reporting to PURC:** GRIDCo consistently submitted monthly reports to the Commission, detailing specific particulars as required, demonstrating a commitment to regulatory compliance and operational transparency.
- VIII) **Legal & Operational Structures for System Operations, Market Operator Function, and Asset Ownership:** With the approval of the Market Rules by the Energy Commission, this matter will be given priority within this tariff period.

2.4 Key Policy Issues for Tariff Consideration

2.4.1 Setting up of Electricity Transmission Utility (ETU)

The approval of the Ghana Wholesale Electricity Market Rules by the Energy Commission represents a pivotal step in establishing the Electricity Transmission Utility (ETU) as an Independent System and Market Operator. Currently, GRIDCo is responsible for owning the National Interconnected Transmission System (NITS) assets and serving as the Independent System and Market Operator, as mandated by LI 1937. The establishment of the ETU is a critical policy issue for ensuring fair competition, fostering investor confidence, and aligning with global best practices in electricity market governance.

Moreover, as Ghana transitions towards a competitive wholesale electricity market, the ETU will play a pivotal role in strengthening regulatory compliance, improving long-term energy planning, and facilitating the integration of renewable energy sources. The restructuring will also enhance the reliability of the grid, improve system planning, and provide open access to transmission services, all of which are essential for a well-functioning electricity market. Hence, prioritising the setting up of the ETU as a key policy for tariff approval will ultimately **support** Ghana's broader energy sector reforms.

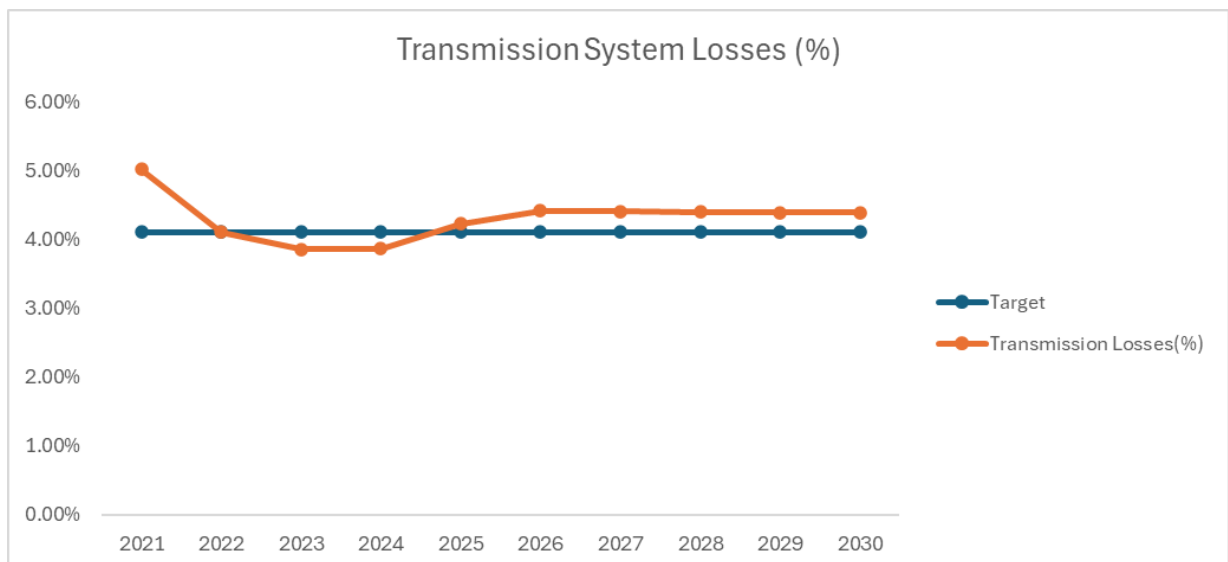
2.5 Proposed Service Delivery and Efficiency Improvements During the Tariff Period

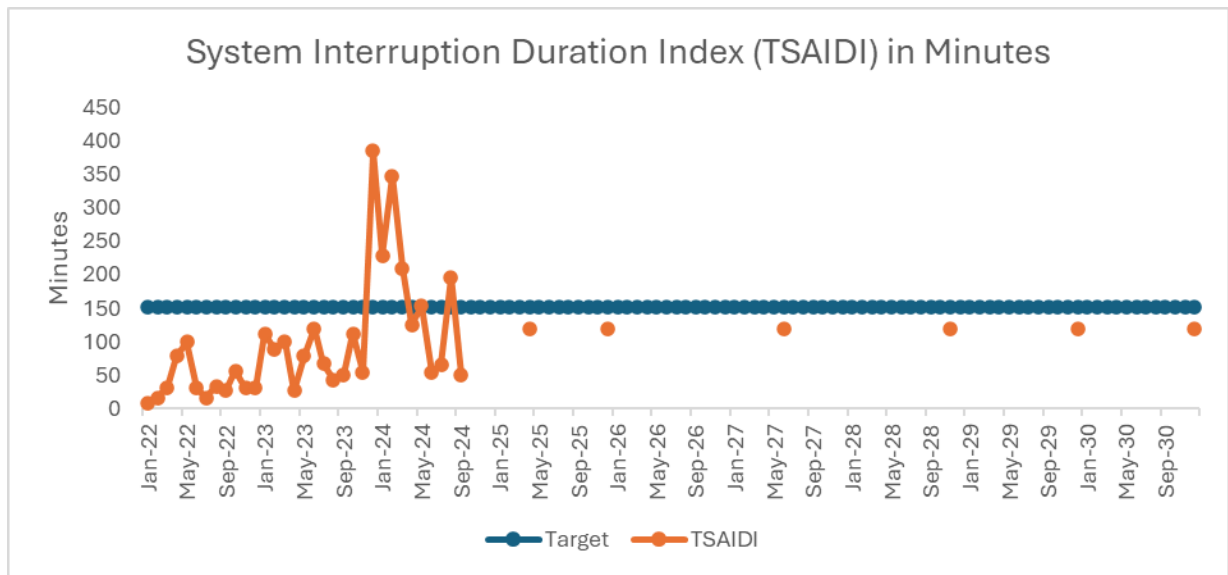
- **Provision of Redundancy (Transformer, Transmission line and feeder):** GRIDCo will maintain ongoing collaboration with distribution companies to optimise the redistribution of load across substations, aiming to reduce losses and enhance system reliability, particularly in key load centres such as Western corridors and Kumasi. Additionally, GRIDCo will prioritise the upgrade of transmission lines between major load centres,

including the Prestea-Bogoso transmission reinforcement project, which involves the termination of the second Prestea-Bogoso transmission line, as well as the development of a 330/225 kV substation at Prestea (including the 225/161 kV Prestea Substation Improvement Project). These programmes are designed to enhance transfer capabilities, increase transformer capacity efficiently, alleviate congestion, and improve operational flexibility and overall system reliability.

- **Closing of the loops:** The Eastern Corridor Transmission Project, which is intended to create the eastern loop from Akosombo-Yendi, remains a concern to GRIDCo. This project seeks to improve reliability, increase transfer capacity, and improve voltages for NEDCo (Bimbilla, Kete Krachi, Salaga) as well as ECG Customers in the Volta Region.
- **Installation of Static Var Compensator (SVC):** The installation of SVC at Nayagnia will improve system voltages in the northern sectors. The project, when completed, will enhance the quality of **power** supply to Bolgatanga, adjoining communities, and mining industries while supporting the integration of intermittent renewable energy sources.
- **161 kV Coastal Corridor Transmission Upgrade Project (Aboadze-Cape Coast-Winneba - Kasoa Transmission Line Upgrade Project):** The project, when completed, will enhance power supply quality for customers in the **West, Central, and Greater Accra Region** while increasing transfer capacity along the Aboadze–Cape Coast–Winneba–Kasoa transmission corridor. Additionally, **the upgrade will** improve system reliability, reduce transmission losses, and facilitate power exchange between the East and West generation enclaves

2.6 Service Delivery & Efficiency Targets

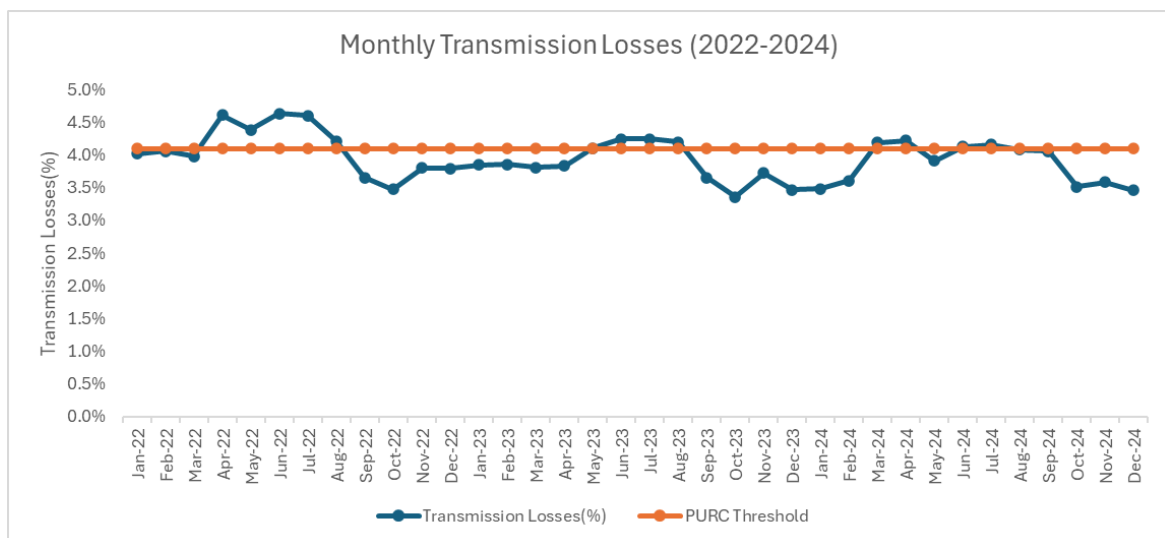




2.7 Financial Performance Indicators/Indices

3 Key Challenges Likely to Impact Service Delivery

3.1 Transmission Losses (Technical and Commercial)



Transmission losses have fluctuated between **3.4% and 4.6%** over the observed period. The primary factors contributing to these losses include the location of generation plants within the National Interconnected Transmission System (NITS). To address the issue of generation plant locations, a policy should strategically guide the siting of new power plants across the country for optimal integration into the NITS. Currently, Kumasi is being developed as a sub-generational hub, with plants such as Ameri (now Anwomaso Thermal) already contributing to the grid. However, accelerating this process is crucial to improving power transmission efficiency.

Additionally, upgrading transmission infrastructure is crucial to strengthening critical load centres experiencing low voltages.

3.2 Transmission Constraints

The NITS is currently challenged with the following major constraints:

- I. Low voltages in Western corridors of Ghana
- II. Low voltages in Eastern corridors of Ghana
- III. Low voltages in the Middle corridors of Ghana

3.3 Inter-Regional Transmission (Imports / Exports of Power)

From 2022 to 2024, the total energy transmitted amounted to 172.81 GWh and 6,855.44 GWh in imports and exports, respectively. These figures reinforce Ghana's position as a net exporter of electricity, with exports significantly surpassing imports.

Currently, Ghana's inter-regional power transmission partners include CIE (Compagnie Ivoirienne d'Electricité), Compagnie Energie Electrique Du Togo (CEET), **Société Beninoise de Production d'Electricité (SBPE - Togo/Benin)**, and **Société Nationale d'Electricité du Burkina Faso (SONABEL)**. Traditionally, VRA was the sole supplier to these markets, but Genser Energy has now entered the **power export** space, with a firm capacity of 193.35MW. GRIDCo will continue to ensure greater transparency and fairness in cross-border power trading to enhance economic benefits to the nation and **the sub-region**.

3.4 Automatic Load Frequency Operation and Load Curtailment

GRIDCo has implemented Automatic Frequency Load Shedding (AFLS) to manage frequency fluctuations and load curtailment at critical connection points, including Achimota, Mallam, and Winneba. GRIDCo remains committed to investing in advanced technologies to enhance the resilience and operational efficiency of the ~~National Interconnected Transmission System~~ NITS.

3.5 System Availability / Reliability of Supply (Quality of Service)

GRIDCo remains committed to improving high system availability and delivering quality service. Over the period, system availability declined from 99.26% in 2022 to 99.16% in 2023 and further to 98.99% in 2024. This deterioration was largely attributed to challenges along the western corridor of the transmission network, which experienced multiple system disturbances over the years.

One of the most significant disturbances occurred on August 27, 2022, when a transient fault on Transformers 7 and 8 (32T7 and 32T8) at the Takoradi Thermal Substation led to the tripping of Takoradi Thermal Line 3 (TT3T). This event triggered automatic trips on Takoradi Thermal Line 5 to Tarkwa Substation (TT5R) and Takoradi Thermal Line 8 to Tarkwa (TT8R), resulting in widespread disruptions along the Western corridor.

On January 14, 2023, a bushfire along Tarkwa Line 3 to New Tarkwa caused a fault that led to the tripping of Takoradi Thermal Line 8 to Anwomaso Substation, resulting in outages across the middle belt of the grid. Later in the year, on September 8, 2023, excessive loading on Transformers 1 and 2 (2T1 and 2T2) at the Volta Substation, coupled with the auto-tripping of

Achimota Line 4 to Mallam (H3M) and Achimota Line 2 to Accra Central (H3AC), triggered cascading outages across the central and western corridors of the **transmission** system.

Despite these challenges, GRIDCo has made significant strides in reducing transmission losses from 4.1% in 2022 to 3.86% in both 2023 and 2024, meeting regulatory thresholds and generating substantial cost savings. This improvement is largely due to infrastructure upgrades such as the 330kV transmission line from Anwomaso to Kintampo and enhanced dispatch efficiency. However, sustaining and further improving these gains requires additional capital investments to upgrade ageing transmission infrastructure, enhance network resilience, and mitigate recurring system disturbances for improved system availability.

Moving forward, GRIDCo remains committed to prioritising key projects outlined in its investment plan to address existing constraints, enhance grid stability, and ensure a more reliable and resilient transmission network.

3.6 System Improvement / Expansion

Several NITS expansion projects are currently at the preparation stage, marking a significant step toward strengthening Ghana's electricity transmission infrastructure. These projects include the 330kV Accra-Kumasi transmission line, 330kV Kintampo-Adubiliyili transmission line, 330kV Adubiliyili-Nagyania transmission line, 161kV Mallam-Kasoa transmission line, and the Takoradi Substation expansion, among others. Each of these projects is strategically designed to enhance the reliability, efficiency, and capacity of the national grid, ensuring a more stable and resilient transmission network. By investing in these critical infrastructure projects, GRIDCo aims to reinforce grid stability, promote regional power trade, and contribute to the long-term sustainability of the electricity sector. These efforts align with Ghana's broader energy sector reforms, creating a more robust and efficient transmission network that supports economic growth and development.

3.7 Status of Transmission Projects

3.8 Reactive Power Compensation

Reactive power compensation on the NITS could be achieved through either or a combination of:

- I. Installation of Capacitor Banks
- II. Installation of SVCs
- III. Procurement from power generation plants

GRIDCo has installed 920MVAR Capacitor Banks. We note that capacitor banks are more effective when installed within the Distribution Network as well as the networks of Bulk Customers, which are the sources of reactive power demand.

Currently, a 40MVAR SVC is in service at Tamale, and a 50MVAR SVC is also in service at the Kasoa BSP project. ***As indicated above, GRIDCo is working on installing a 50MVAR SVC in Kumasi.***

3.9 Embedded Generators & Interconnection

To prevent stranded assets, GRIDCo has revised its transmission service agreement for customers transitioning to embedded generation, ensuring that charges are based on the transmission capacity made available to them, reflecting the investment in the NITS.

3.10 Power Procurement from Independent Power Producers and Renewable Energy Generators

Energy demand has continued to rise since the last tariff proposal, with total forecasted energy consumption for the period 2021-2024 estimated at **89,914** GWh, compared to an actual consumption of **92,149.77** GWh, reflecting a 2.5% increase. This growth can be attributed to population growth, economic development, and electricity exports. During this period, power procured from IPPs accounted for 46.49% of total generation, compared to the government-owned entity, the Volta River Authority (VRA).

Although renewable energy, particularly solar, remains a small portion of the generation mix, accounting for just 0.3379% of total power procured, GRIDCo has improved its dispatch efficiency for renewable plants through the SCADA system. To further optimise renewable energy integration, GRIDCo has established a dedicated renewable energy desk to monitor and coordinate dispatch operations.

Currently, power procurement from IPPs and renewable energy producers is conducted through bilateral agreements. However, GRIDCo aims to introduce a Capacity Market as part of the Ghana wholesale electricity market to ensure sufficient generation capacity, enhance affordability, and support economic growth and national security.

3.11 Management Information System

GRIDCo's corporate strategy is driven by information technology (IT), which serves as the foundation for reducing operational costs, enhancing customer satisfaction, and strengthening operational resilience. These IT-driven initiatives align with GRIDCo's mission to deliver efficient and reliable electricity transmission services. To sustain these advancements **in information technology**, it is crucial to implement a cost-reflective tariff that supports our ongoing digital transformation agenda.

Between 2022 and 2024, GRIDCo made significant progress in its digital transformation by implementing several critical systems. The first phase of the Enterprise Resource Planning (ERP) system was introduced to optimise financial planning and operations. Additionally, ongoing cybersecurity awareness programs were rolled out to minimise security threats and protect vital infrastructure. The company also upgraded its SCADA system to enhance service reliability and operational efficiency for grid participants.

As part of its cost-reduction strategy, GRIDCo is focusing on developing in-house applications under the INTEGRA initiative to reduce dependency on expensive third-party software. The plan includes creating seven in-house applications at a total cost of GHS 300,000, which is expected to yield 90% cost savings and eliminate operational expenditure (OPEX). Furthermore, the deployment of D365 PR has already reduced ERP support OPEX by 25%. By

2030, GRIDCo aims to fully replace its ERP system with in-house applications, projecting total savings of \$460,000, including cuts in ERP support costs.

To enhance customer experience, GRIDCo is advancing digitalisation through various initiatives. These include implementing E-Billing and customer meter information portals to increase transparency and accessibility. The company has also introduced self-service solutions, such as chatbots and knowledge bases, enabling customers to resolve issues instantly without manual assistance.

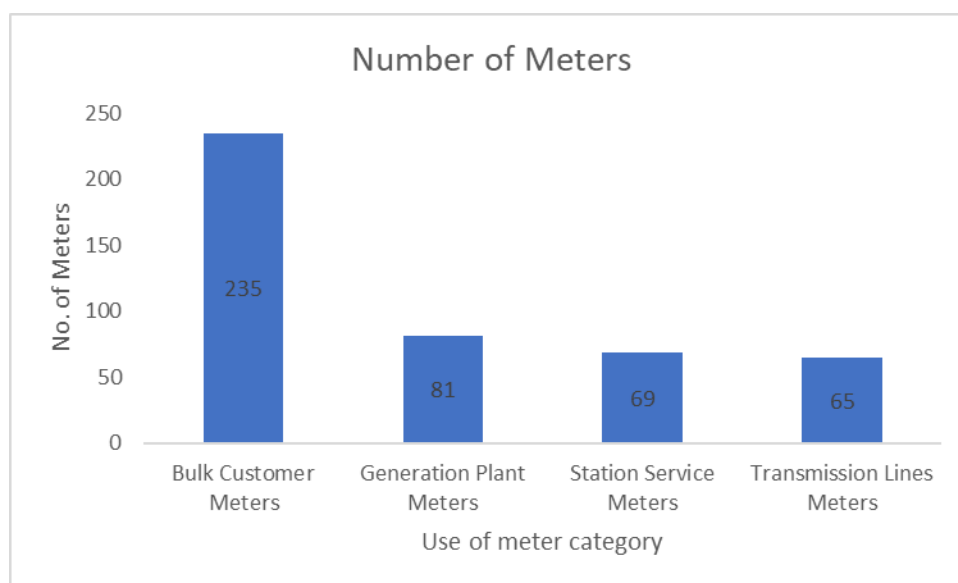
GRIDCo is also committed to ensuring business continuity through strategic measures. The company has set a target of achieving an 80% recovery rate within 48 hours in case of a total system outage. Strengthening regulatory compliance remains a priority to avoid penalties and uphold corporate reputation. Additionally, staff training programs on emerging technologies like Artificial Intelligence (AI) are being conducted to drive innovation and improve operational efficiency.

Given these strategic investments, a cost-reflective tariff is crucial to sustain and expand GRIDCo's digital transformation efforts. These initiatives are projected to generate cost savings of USD 7,931,250.00 while improving customer experience, strengthening cybersecurity, and enhancing overall operational resilience.

3.12 Metering and Accounting

GRIDCo, by Article 13.02 (e) of the National Electricity Grid Code, is mandated to install Main Meters at all Connection Points. To fulfil this requirement, GRIDCo has deployed high-precision meters at all connection points for Wholesale Suppliers and Bulk Customers, as well as meters to monitor its internal consumption. The total number of meters across the NITS can be found in the graph below.

Total number of Meters



Additionally, GRIDCo has implemented a telemetry system to collect, store, and transmit real-time energy consumption data, enhancing transparency and operational efficiency. Periodic verification of the metering systems is conducted to support audits and maintain data integrity. To ensure accurate energy accounting and settlement, GRIDCo has established an Energy Accounting Model that accounts for all energy generated and consumed by Grid Participants, facilitating the settlement process.

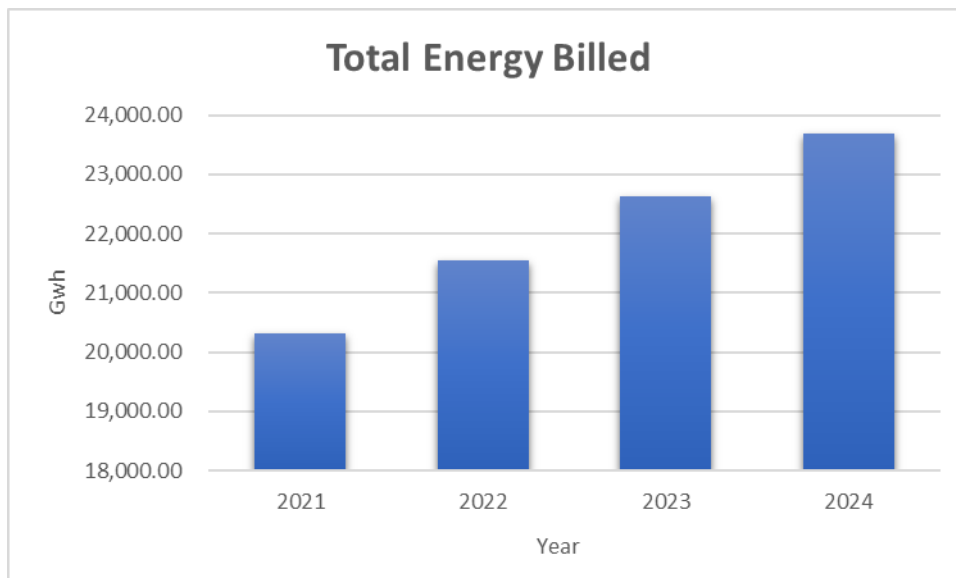
The settlement framework is crucial for an effective tariff structure. Through high-precision metering, transparent energy accounting, and a standardised settlement process, GRIDCo has enhanced fairness and improved overall efficiency in electricity transmission.

3.13 Billing and Collection

GRIDCo operates on a monthly billing cycle for all its customers, applying the quarterly PURC-approved tariffs, which include TSC1, TSC2, and the Regulatory Levy. To enhance transparency, reliability, and efficiency in meter reading and transmission service billing, GRIDCo is developing an E-billing portal. This platform will grant Wholesale Suppliers and Bulk Customers direct access to their metering data from the telemetry system, allowing them to validate meter readings and access their end-of-month bills.

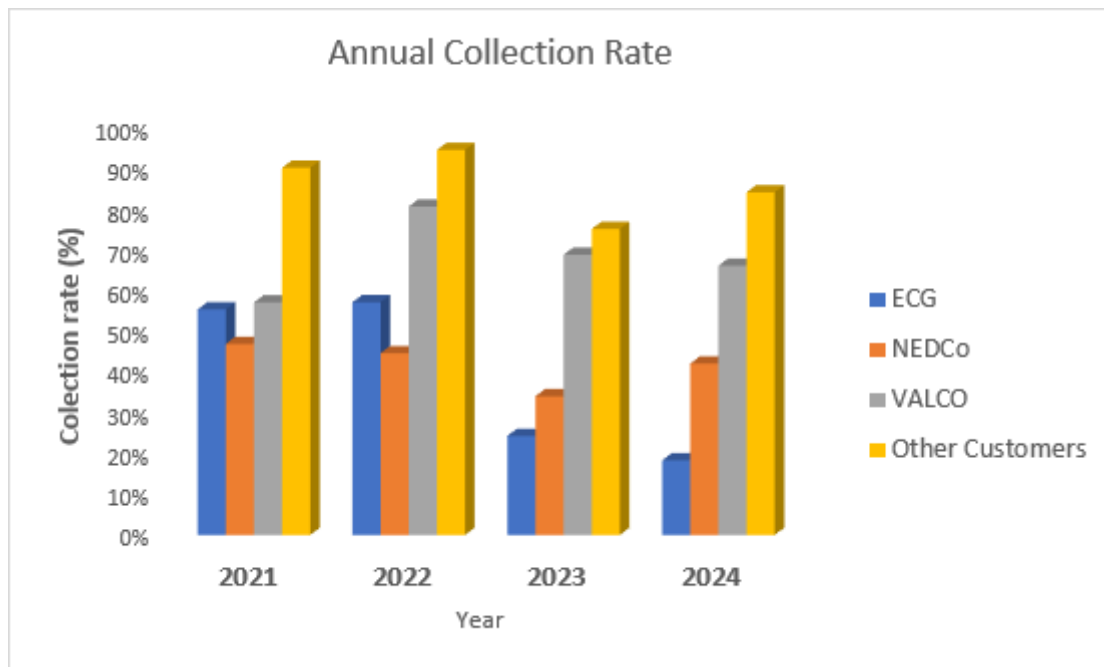
GRIDCo currently bills 33 Bulk Customers and 11 Wholesale Suppliers for transmission service. The total energy bill for the period 2021 – 2024 is found in the graph below.

Total Energy Billed (2021- 2024)



GRIDCo's collection rate varies across the Bulk Customers. A summary of the collection rate for the period 2021 -2024 is found in the graph below.

Collection Rate for the period 2021 - 2024



3.14 Organisational Reform and Restructuring

To enhance operational efficiency and workforce productivity, GRIDCo has developed a comprehensive competency framework that is being integrated into all Human Resource (HR) management systems. This framework includes key components such as performance management, reward management, and recruitment management, ensuring that employees are assessed, developed, and retained based on well-defined competencies. By aligning HR practices with this competency-based approach, GRIDCo aims to strengthen workforce capabilities and foster a culture of high performance. The framework will guide employee development, ensuring that staff possess the necessary skills and expertise to deliver efficient and reliable electricity transmission services.

This strategic restructuring initiative is expected to improve overall productivity, streamline talent management, and enhance service delivery. Through targeted competency development, GRIDCo is positioning itself for long-term success while maintaining a highly skilled and motivated workforce.

3.15 Customer Complaints

Bulk power customers along the Western Corridor frequently face disruptions due to outages on the 330kV transmission lines. When these outages occur, power is rerouted to nearby 161kV lines, but these lines cannot handle the increased load. As a result, customers experience voltage fluctuations, overcurrent conditions, and even partial grid collapses, severely affecting power reliability in the region. These constraints directly impact Bulk Customers, as frequent power instability disrupts industrial operations, commercial activities, and essential services.

The inability of the 161kV lines to support load transfers during 330kV outages highlights the urgent need for infrastructure upgrades to ensure a consistent and reliable power supply.

Mitigation: Planned Upgrades to Improve Power Reliability

To resolve these challenges, GRIDCo is seeking approval of the investment plan from the Commission to secure funding to reinforce the 161kV transmission lines along two critical routes:

- I. Aboadze → Takoradi → Prestea
- II. Bogosu → Dunkwa → New Obuasi

These upgrades will increase transmission capacity, reduce overloading risks, and enhance power supply reliability for communities and industries along these corridors.

Additionally, GRIDCo plans to interconnect the 330kV and 161kV systems at Dunkwa, leveraging the existing Aboadze-Kumasi line. This integration will:

- I. Enhance grid stability
- II. Optimise power flow
- III. Improve voltage regulation in Dunkwa, Obotan, Asawinso, and surrounding areas.

Impact on Customer Satisfaction

The current limitations of the 161kV network led to frequent power disruptions, forcing businesses and industries to rely on costly backup solutions. Until these upgrades are completed, customers in the Western Corridor will continue to experience unreliable power supply, affecting productivity and economic growth.

3.16 Legal Issues Including Resolution of Court Cases

GRIDCo continues to face significant legal challenges, particularly regarding compensation claims from Project Affected Persons (PAPs). Between 2021 and 2024, a total of 14 lawsuits were filed against GRIDCo, of which five have been resolved.

A major obstacle in project execution remains cash flow constraints, which impact the availability of funds needed to cover all aspects of project implementation. When compensation payments to PAPs are delayed or deemed insufficient, affected individuals from substation and transmission line projects across the country pursue substantial financial claims through the courts and statutory bodies such as the Commission for Human Rights & Administrative Justice (CHRAJ) to seek redress. Compensation cases over the period include the following:

- 1. Edmund Martei Korle v GRIDCo
- 2. Nana Kwamina Ahinkofi IV
- 3. Stephen Odei
- 4. King of Kings Evangelical Ministry
- 5. King of Kings Evangelical Ministry v. GRIDCo, VRA and AG
- 6. Hannah Ntim
- 7. Victor Gadri vs. GRIDCo

8. Raphael Duah v GRIDCo (No.2)
9. Nana Kwame Dari v GRIDCo
10. Wisdaf Company Limited v AG and GRIDCo
11. Evans Kwakutei-Dezanga v GRIDCo
12. Kobina Assan & John Forson
13. Solomon Ameabuno Adombire
14. Cocoa Abrabopa Association, Suit No.: CEN/DNO/HC/E1/01/2025
King of Kings Evangelical Ministry v. GNPC & GRIDCo

These claims have at times led to delays in the execution of projects across the country, thereby affecting the ability of GRIDCo to meet its statutory objectives.

3.17 Introduction of the Wholesale Electricity Market

The Ghana Wholesale Electricity Market (GWEM) is designed to promote fair, transparent, and non-discriminatory electricity trading while attracting private investment into Ghana's power sector. GRIDCo, as the Electricity Transmission Utility (ETU), is responsible for implementing and operating the GWEM.

Following the Energy Commission's adoption of the Market Design for the GWEM, Draft Market Rules were developed. Market Participants and Regulators were engaged to provide feedback on the Rules, which have been finalised and approved by the Energy Commission.

GRIDCo is set to conduct a Gap Analysis to identify gaps between Ghana's current electricity market structure and the approved Market Rules. Market Participants will be engaged to address these gaps before full implementation.

The first stage of GWEM implementation is the Capacity Market. GRIDCo has assessed key bottlenecks in transitioning to the Capacity Market, including:

- i. Existing Capacity Procurement Construct (ECPC) compared to PURC's Centralised Competitive Capacity Procurement (CCCP) and the proposed Generation Capacity Market (GCM).
- ii. Fuel market adequacy to support GCM.
- iii. Transmission network adequacy for effective capacity delivery.
- iv. Regulatory readiness to oversee the new market structure.
- v. Financial assurance & credit risk for load-serving entities.

Currently, a major bottleneck in the implementation of the data exchange phase of the GWEM is the timely submission of availability and demand declaration schedules by Market Participants. Only a few participants consistently submit their demand data to the ETU (MO), affecting dispatch scheduling.

GRIDCo has engaged Market Participants to ensure compliance with daily data submission requirements.

3.18 Wholesale Bulk Customers

GRIDCo currently has 30 Bulk Customers against 28 during the last tariff proposal and 3 Distribution Companies.

4 Strategies to Address Key Challenges

4.1 Transmission Loss Reduction Strategy

The transmission losses as projected for the 4-year tariff years are depicted in Table 8 below. The system losses as projected are with the expectation that the following projects will be commissioned into service within the tariff period -2026 to 2030.

- 330kV Pokuase - Anwomaso (Accra-Kumasi) transmission line
- 50MVAR SVC in Kumasi
- Upgrade of 161 kV Mallam-Kasoa transmission line
- 161kV Pokuase - Mallam Transmission line
- 330kV Dunkwa Substation
- Upgrade of overloaded transformers (Tamale, Techiman, Sunyani, Tafo)
- Upgrade of western corridor transmission lines (Aboadze- Takoradi -Tarkwa – Prestea, Bogoso – Dunkwa – New Obuasi, Dunkwa – Ayenfuri – Asawinso)
- Upgrade of Eastern Corridor Transmission lines

5 Projected Generation

Table 1 Summary of Projected Electricity Generation 2025-2030

Generating Station/Plant	Gross Generation Capacity	Name Plate Power Capacity Factor	Net Effective / Dependable Generation Capacity	Projected Energy Generated
Hydro:				
Akosombo Generating Station	1023.15		900	22075
Kpong Generating Station	183.6		140	4425
BUI Generating Station	400		360	3500
Sub Total	1606.75		1400	30000
Thermal:				
TAPCo	364.4		300	7067.49
TICo	364.4		320	10512.00
TT1PP	113.4		100	
TT2PP	86.2		70	
MRP				
T3				

KTPP	220.1		200	
AMERI	250		230	7177.73
SAPP I	180		170	5212.20
SAPP II	360		350	13030.50
CENIT	113.4		100	3285.00
KARPOWERSHIP	450		450	16753.50
AKSA	370		330	
CENPOWER	360		325	11388.00
AMANDI	202		190	7073.70
BRIDGEPOWER	147		144	8633.00
TOTAL				

Table 2 Summary of Akosombo Generating Station Data 2025-2030

Parameter	2025	2026	2027	2028	2029	2030
Gross Generation Capacity	1023.15	1023.15	1023.15	1023.15	1023.15	1023.15
Name Plate Power Factor						
Net Effective / Dependable Generation Capacity	900	900	900	900	900	900
Projected Energy Generated	4415	4415	4415	4415	4415	4415
Target Availability of Power Plant						

Table- 3 Summary of Kpong Generating Station Data 2021-2026

Parameter	2025	2026	2027	2028	2029	2030
Gross Generation Capacity	183.6	183.6	183.6	183.6	183.6	183.6
Name Plate Power Factor	0.9	0.9	0.9	0.9	0.9	0.9
Net Effective / Dependable Generation Capacity	140	140	140	140	140	140
Projected Energy Generated	885	885	885	885	885	885
Target Availability of Power Plant						

Table- 4 Summary of TAPCo Data 2025-2030

Parameter	2025	2026	2027	2028	2029	2030
-----------	------	------	------	------	------	------

Gross Generation Capacity	364	364	364	364	364	364
Name Plate Power Factor	0.85	0.85	0.85	0.85	0.85	0.85
Net Effective / Dependable Generation Capacity	300	300	300	300	300	300
Projected Energy Generated	1971	1971	1971	1971	1971	1971
Target Availability of Power Plant	0.6	0.6	0.6	0.6	0.6	0.6

Table 5 Summary of TICO Data 2025-2030

Parameter	2025	2026	2027	2028	2029	2030
Gross Generation Capacity	364	364	364	364	364	364
Name Plate Power Factor	0.85	0.85	0.85	0.85	0.85	0.85
Net Effective / Dependable Generation Capacity	320	320	320	320	320	320
Projected Energy Generated	2102	2102	2102	2102	2102	2102
Target Availability of Power Plant	0.75	0.75	0.75	0.75	0.75	0.75

Table 6 Summary of TTIPP Data 2025-2030

Parameter	2025	2026	2027	2028	2029	2030
Gross Generation Capacity	113.4	113.4	113.4	113.4	113.4	113.4
Name Plate Power Factor	0.8	0.8	0.8	0.8	0.8	0.8
Net Effective / Dependable Generation Capacity	100	100	100	100	100	100
Projected Energy Generated	613	613	613	613	613	613
Target Availability of Power Plant						

Table 7 Summary of TT2PP Data 2025-2030

Parameter	2025	2026	2027	2028	2029	2030
Gross Generation Capacity	86.2	86.2	86.2	86.2	86.2	86.2

Name Plate Power Factor	0.8	0.8	0.8	0.8	0.8	0.8
Net Effective / Dependable Generation Capacity	70	70	70	70	70	70
Projected Energy Generated	429	429	429	429	429	429
Target Availability of Power Plant						

Table 8 : Summary of MRP Data 2025-2030

Parameter	2025	2026	2027	2028	2029	2030
Gross Generation Capacity	0	0	0	0	0	0
Name Plate Power Factor						
Net Effective / Dependable Generation Capacity						
Projected Energy Generated	0	0	0	0	0	0
Target Availability of Power Plant	0	0	0	0	0	0

Table 9 Summary of T3 Data 2025-2030

Parameter	2025	2026	2027	2028	2029	2030
Gross Generation Capacity						
Name Plate Power Factor						
Net Effective / Dependable Generation Capacity						
Projected Energy Generated						
Target Availability of Power Plant						

Table 10 Summary of KTPP Data 2025-2030

Parameter	2025	2026	2027	2028	2029	2030
Gross Generation Capacity						
Name Plate Power Factor						
Net Effective / Dependable Generation Capacity						
Projected Energy Generated						
Target Availability of Power Plant						

Table 11 Summary of AMERI Data 2025-2030

Parameter	2025	2026	2027	2028	2029	2030
-----------	------	------	------	------	------	------

Gross Generation Capacity						
Name Plate Power Factor						
Net Effective / Dependable Generation Capacity						
Projected Energy Generated						
Target Availability of Power Plant						

Table 12 Summary of BUI Power Data 2025-2030

Parameter	2025	2026	2027	2028	2029	2030
Gross Generation Capacity						
Name Plate Power Factor						
Net Effective / Dependable Generation Capacity						
Projected Energy Generated						
Target Availability of Power Plant						

Table 13 Summary of SAPP I Data 2025-2030

Parameter	2025	2026	2027	2028	2029	2030
Gross Generation Capacity						
Name Plate Power Factor						
Net Effective / Dependable Generation Capacity						
Projected Energy Generated						
Target Availability of Power Plant						

Table 14 Summary of SAPP II Data 2025-2030

Parameter	2025	2026	2027	2028	2029	2030
Gross Generation Capacity						
Name Plate Power Factor						
Net Effective / Dependable Generation Capacity						
Projected Energy Generated						
Target Availability of Power Plant						

Table 15 Summary of CENIT Data 2025-2030

Parameter	2025	2026	2027	2028	2029	2030
Gross Generation Capacity						
Name Plate Power Factor						
Net Effective / Dependable Generation Capacity						
Projected Energy Generated						
Target Availability of Power Plant						

Table 16 Summary of KARPOWERSHIP Data 2025-2030

Parameter	2025	2026	2027	2028	2029	2030
Gross Generation Capacity						
Name Plate Power Factor						
Net Effective / Dependable Generation Capacity						
Projected Energy Generated						
Target Availability of Power Plant						

Table 17 Summary of AKSA Data 2025-2030

Parameter	2025	2026	2027	2028	2029	2030
Gross Generation Capacity						
Name Plate Power Factor						
Net Effective / Dependable Generation Capacity						
Projected Energy Generated						
Target Availability of Power Plant						

Table 18 Summary of CENPOWER Data 2025-2030

Parameter	2025	2026	2027	2028	2029	2030
Gross Generation Capacity						
Name Plate Power Factor						
Net Effective / Dependable Generation Capacity						
Projected Energy Generated						
Target Availability of Power Plant						

Table 19: Summary of AMANDI Data 2025-2030

Parameter	2025	2026	2027	2028	2029	2030
Gross Generation Capacity						
Name Plate Power Factor						
Net Effective / Dependable Generation Capacity						
Projected Energy Generated						
Target Availability of Power Plant						

Table 20: Summary of BRIDGEPOWER Data 2025-2030

Parameter	2025	2026	2027	2028	2029	2030
Gross Generation Capacity						
Name Plate Power Factor						
Net Effective / Dependable Generation Capacity						
Projected Energy Generated						
Target Availability of Power Plant						

Table 21: Summary of Electricity Transmission Utility (ETU) Operational Data 2025-2030

Parameter	2025	2026	2027	2028	2029	2030
Total System Load @ Peak	4,337.7	4,718	5039	5,349	5,796	6,345
Total Domestic Load @ Peak		4,021	4,333	4,643	4,979	5,411
Regulated Market (ECG, NEDCo & EPC)						
Energy Commission Licensed Bulk Customers						
Projected Base Load						

6 Energy Transmitted (Dispatch and Scheduling)

Table 22: Summary of ETU Projected Energy (GWh) 2025-2030

Generating Station/Plant	2025	2026	2027	2028	2029	2030
Hydro:						
Akosombo Generating Station						
Kpong Generating Station						
BUI Generating Station						
Sub Total						
Thermal:						
TAPCo						
TICo						
TT1PP						
TT2PP						

MRP						
T3						
KTPP						
SAPP I						
SAPP II						
KARPOWERSHIP						
AKSA						
CENPOWER						
AMANDI						
BRIDGEPOWER						
Sub Total						
TOTAL						

6.1 Total Transmission Utility System Load at Peak

6.2 Transmission System Losses at Various Voltage Levels

7 Capital Expenditure

For purposes of tariff application, the Transmission Utility must provide a system augmentation plan based on the Load Growth Forecast during the tariff review period, which in this case is 2026-2030. The same is required for the computation of the Revenue Requirement (RR), indicating the projected amount of electricity to be transmitted by GRIDCo, taking into consideration the estimated growth plan of its customers and any plans for the new transmission system, based on network expansion plans.

The capital investment plan to be submitted by GRIDCo must contain details of ongoing projects as well as new projects beyond the tariff period.

The Transmission Utility must submit Renovation and Modernisation (R&M) **plans** for the purpose of extending of asset life beyond its useful life. Detailed project reports indicating scope, justification, cost-benefit analysis, estimated life extension from a reference date, financial package, phasing of expenditure and schedule of completion.

With respect to the Annual Performance Review, the Utility must submit capital expenditure incurred and capitalisation during the year under review alongside the Annual Performance Review.

The outline of the Capital Investment Plan must include, but is not limited to, the following:

- Purpose of Capital Investment Plan
- Replacement of existing assets with a view to meeting load growth, technical loss reduction, reactive energy requirements, and improvement in the quality and reliability of supply
- Capital Structure
- Capitalisation Schedule
- Financing Plan

- Cost-benefit analysis
- Performance improvement envisaged in the tariff period

Table 23: Summary of Capital Investment Plan (Million GHS) 2025-2030

Item	2025	2026	2027	2028	2029	2030
Capital Cost						
Initial Spares						
Additional Capitalisation						
Renovation & Modernisation (R&M)						
Rehabilitation & Resettlement (R&R)						

7.1 Capital Expenditure Financing Plan

Table 24: Summary of Capital Expenditure Financing Plan (Million GHS) 2025-2030

Item	2025	2026	2027	2028	2029	2030
Accumulated Depreciation						
Retained Earnings						
Commercial Borrowings:						
Domestic						
Foreign						
Additional Equity Contribution By Shareholder(s)						
Grants:						
Domestic						
Foreign						
Tariff Revenue (Revenue from Projected Capacity Charge)						

7.2 New Projects

7.3 CAPEX for O and M Related Projects

7.4 CAPEX for Telecom-Related Projects

7.5 CAPEX for Information Technology-Related Projects

7.6 CAPEX for Transmission Related Projects and Construction

7.7 CAPEX for Civil Works

8 Operation & Maintenance Costs

Table 25: Summary of Operation and Maintenance Costs (Million GHS) 2025-2030

Item	2025	2026	2027	2028	2029	2030
Fixed O & M Costs						
Variable O & M Cost						

9 Administration and General Costs

Table 26: Summary of Administration and General Costs (Million GHS) 2025-2030

Item	2025	2026	2027	2028	2029	2030
Fixed O & M Costs						
Variable O & M Cost						

10 Human Resource Costs (Employee Costs)

Table 27: Summary of Human and Resource Costs (Million GHS) 2025-2030

Item	2025	2026	2027	2028	2029	2030
Fixed O & M Costs						
Variable O & M Cost						

11 Public Education

Table 28: Summary of Public Education Costs (Million GHS) 2025-2030

Item	2025	2026	2027	2028	2029	2030
Stakeholder Communication & Sensitisation (Public Education)						

12 Financing and Interest Costs

Table 29: Summary of Financing and Interest Costs (Million GHS) 2025-2030

Item	2025	2026	2027	2028	2029	2030
Interest on Foreign Loans						
Interest on Domestic Loans						
Interest on Working Capital Loan						

13 Return on Equity

Table 30: Summary of Financing and Interest Costs (%) 2025-2030

Item	2025	2026	2027	2028	2029	2030
Rate of Return						

14 Projected Electricity Transmission Revenue Requirement

Table 31 Summary of Projected Electricity Transmission Revenue Requirement (Million GHS) 2025-2030

Item	2025	2026	2027	2028	2029	2030
Projected System & Market Operations Revenue Requirement						
Capital Recovery Component (CRC)						
Fixed O & M Component (FOMC)						
Variable Operating Component (NFVOC)						
Transmission Charge						
Revenue from Open Access (Wheeling)						
Reactive Power Compensation Component (RPCC)						
Ancillary Services Compensation						

15 Proposed Tariff and Rates Structure

Table 32: Summary of Proposed Tariff and Rates Structure (Million GHS) 2025-2030

Item	2025	2026	2027	2028	2029	2030
A. Fixed Cost						
A1 O & M Expenses:						
Employee Cost						
Repairs & Maintenance Expenses						
Administrative & General Expenses						
Interest on Loan Capital						
Depreciation						
Return on Equity						
Interest on Working Capital						
Sub Total						
B. Additional Expenses						
Bad & Doubtful Debts						
Sub Total						
Total Trans. Cost (A + B)						
C. Pass Through Expenses						
Total Annual Revenue Requirement						
D. Total Annual Revenue Requirement (A+B+C)						
E. Less Misc. receipts						
F. Annual Revenue Requirement to be recovered(D-E)						

15.1 Total Revenue Requirements Apportionment

The Transmission Utility must segregate its business into System Operation, Market Operation and Transmission Network activities.

Until such time that there is a complete segregation of accounts between System Operation, Market Operation and Transmission Network activities, the Revenue Requirement for each business activity must be supported by an Allocation Statement containing apportionment of all costs, revenues, assets, liabilities, reserves and provisions between the various business activities. The Allocation Statement must indicate the methodology used for apportioning costs among the different business activities.

Table 33: Summary of Cost Allocation (Million GHS)

Item	System Operation	Market Operation	Transmission Network	Head Office (Shared Cost)	Total
A. Fixed Cost					
A1. O & M Expenses					
Employee Cost					
Repairs & Maintenance Expenses					
Administrative & General Expenses					
Interest on Loan Capital					
Depreciation					
Special Appropriation					
Return on Equity					
Interest on Working Capital					
Sub Total					
B. Additional Expenses					
Bad & Doubtful Debts					
Sub Total					
Total Trans. Cost (A + B)					
C. Pass Through Expenses					
Total Annual Revenue Requirement					
D. Total Annual Revenue Requirement (A+B+C)					
E. Less Misc. receipts					
F. Annual Revenue Requirement to be recovered (D – E)					

Table 34: Summary of Expected Revenue from Transmission Charges (Million GHS) 2025-2030

Customer	Energy Transmitted	Transmission Loss	Energy Transmitted Plus Transmission Loss	Rate	Amount
ECG					
NEDCo					
EPC					
Total Regulated Market					

Customer	Energy Transmitted	Transmission Loss	Energy Transmitted Plus Transmission Loss	Rate	Amount
Emergency Sale to Captive Power Purchasers (CPP)					
Wheeling of Power to Bulk Customers					
Total					

Table 35: Summary of Maximum Demand of Bulk Customers (Year 2023)

Bulk Customer	Monthly Maximum Demand (MW) Year 2023	Month of Maximum Demand	Capacity Utilisation Ratio	Allotted MW for Capacity Utilisation	% Allocation for sharing ARR	Annual Sharing of ARR
1. ECG						
2. NEDCo						
3. EPC						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
Total						

16 Appendices

F-1T - Transmission Lines Data

F-2T - Transmission Substations Data

F-3T - Transmission Fixed Assets Schedule

F-4T - Transmission Fixed Assets Depreciation Schedule

F-5T - Transmission Project Cost Data (Foreign Costs)

F-6T - Transmission Project Cost Data (Local Costs)

F-7T - Transmission System Project Cost Data

F-8T - Capital Expenditure Funding/Financing Plan

F-9T - Transmission Operation and Maintenance Cost Data

F-10T - Transmission Administration and General Cost Data

F-11T - Transmission Human Resource Cost Data

F-12T - Working Capital Requirement Data

F-13T - Summary of Transmission Costs

F-14T - Relevant Documentation in Respect of Transmission Tariff Proposal

F-15T - Summary of Qualitative and Quantitative Data Contained in Forms F-1T-F14T in Respect of Tariff Application