RATE DESIGN AND FILING REPORT JULY 2023

KANO ELECTRICITY
DISTRIBUTION COMPANY PLC

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INTRODUCTION

Further to the ongoing efforts on market reset towards ensuring viability and sustainability in the Nigeria Electricity Supply Industry (NESI), Kano Electricity Distribution Company Plc, has carried out review of the input Assumptions in the MYTO Model. The review has provided KEDCO the opportunity to design a Cost-reflective Tariff that will guarantee cost recovery and financial sustainability of the Company in particular and the industry at large.

The review focused on the company's current revenue requirement, performance levels, and market remittances, while ensuring End-user tariffs are fair and affordable. On the input assumptions, the efficiency parameters were reviewed by way of replacing the projected ATC&C losses in the MYTO with the actual 2023 loss level and projected loss reduction trajectory for the next five years. Also reviewed were the Admin Operating cost, Fixed O&M, Variable O&M, CAPEX allowance (as approved in the PIP), and customer number where the life-line customers will be phased out by 2026.

This was followed by the development of three (3) rate design scenarios considering full and partial recovery within the five-year tariff path. Also, presented are projected performance targets and commitments, market remittances and envisaged challenges and their impacts on performance commitments. Other input assumptions remained unchanged particularly the macroeconomic parameters: Exchange rate, Inflation rate(for both Nigeria and US), Transmission Loss Factor, Energy allocation (as projected in the current MYTO).

INPUT ASSUMPTIONS

This section presents the review of the input assumptions on ATC&C losses, Admin Operating Cost, Fixed and variable O&M cost, Capital Expenditure and Customer Number.

Efficiency Parameters

Table 1: Efficiency Parameters

Description	2022	2023	2024	2025	2026	2027
Projected ATC&C Losses Reduction Trajectory Based on 2023 Actual Loss Level	**15.85%**	**53.07%**	**50.42%**	**42.85%**	**30.00%**	**20.40%**

Table 1 shows the aggregate technical, commercial and collection losses (ATC&C Losses) from the current MYTO trajectory of 15.85% to the actual loss level of Kano Disco of 53.07%. This is expected to be reduced aggressively to closed at 20.40% by the end of 2027. We are optimistic that our investment plan, as set out in the PIP will support the five-year loss reduction trajectory as projected. As stated in our PIP, the loss reduction trajectory and targets will be driven by about 70% of our annual investment on revenue protection initiatives, network rehabilitation and reinforcement as well as network expansion projects.

The investments will focus on two critical areas of our operation: Technical and Commercial operations as well as other CAPEX programs.

Technical:

- Supervisory Control & Data Acquisition (SCADA) systems.
- Service Interruption Management System.
- Reliability including Distribution Automation.
- New Distribution lines: 33kV, 11kV and 0.400kV.
- New Injection Transformers.
- New Distribution Transformers.
- Voltage compensation and system optimization projects.

Commercial:

- GIS-Based Customer Enumeration.

- Closing the Metering Gap (Customer, Distribution Transformers, Feeders, and Interface points).
- Deployment of Point-of-Sale Machines (POS) to drive collection and eliminate revenue leakages.
- Deployment of Commercial Management System (CMS), Incidents Recording and Management Systems (IRMS), and Enterprise Resource Planning (ERP) information System.

Other CAPEX Programs

- Building and Facility.
- Fleet and logistics
- Materials and Working Tools
- Spare Parts and Maintenance Materials.

Figure 1: Comparative Analysis of Efficiency Parameters

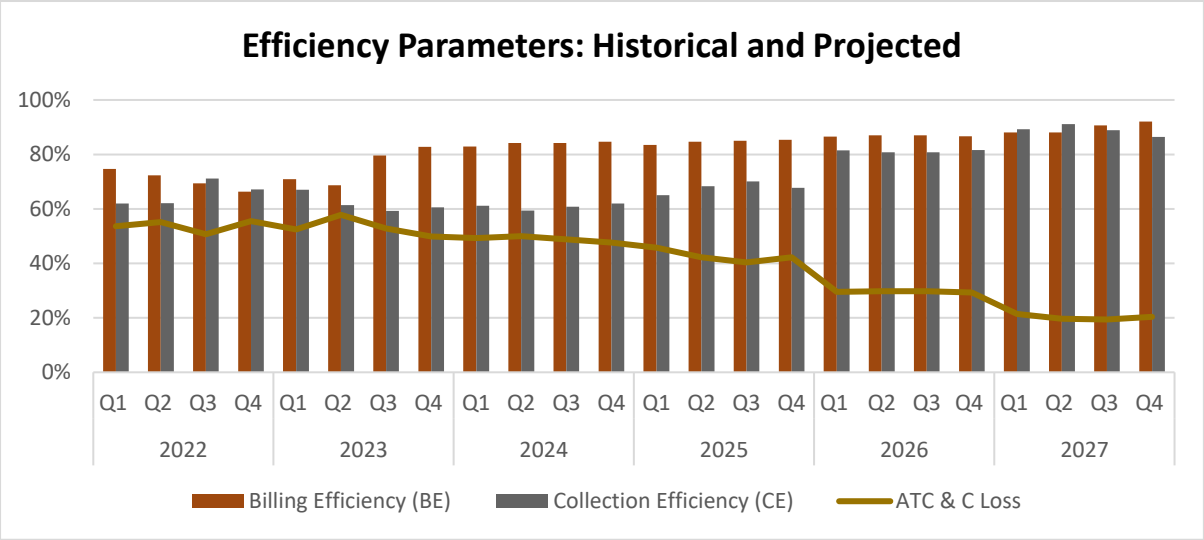


Figure 1 shows the historical and actual trend of the efficiency parameters as well as the proposed trajectory based on the investment plan outlined in the CAPEX program. It depicts a steady drop in the aggregate technical, commercial and collection losses which is expected to close the tariff path at 20.40%.

Analysis of the load allocation across service bands and across voltage levels

Table 2 shows the quarterly energy consumption across service band and voltage level for six consecutive quarters. This trend is in consonance with the MYTO projection and depiction of our distribution network capabilities. Our planned investment is expected to reinforce these capabilities and provide the basis for feeder upgrade in the coming years over the horizon.

Table 2: Analysis of Load Allocation Across Service Bands and Voltage Levels

Quarterly Energy Consumption Across Service Bands (MWh)						
Service Band	**Q1 2022**	**Q2 2022**	**Q3 2022**	**Q4 2022**	**Q1 2023**	**Q2 2023**
Lifeline	2,486	4,467	3,941	1,910	1,601	1,572
A	117,696	129,010	129,700	151,054	147,104	137,561
B	29,540	27,047	27,736	29,595	43,413	42,586
C	68,161	72,482	72,884	75,574	89,247	85,612
D	129,823	55,946	54,080	63,413	60,452	49,700
E	56,491	21,517	15,609	19,848	15,369	11,939
Total	404,198	310,470	303,951	341,394	357,186	328,970
Voltage Level- MWh Consumption						
Voltage Level	**Q1 2022**	**Q2 2022**	**Q3 2022**	**Q4 2022**	**Q1 2023**	**Q2 2023**
11KV	250,234	186,587	241,685	272,247	263,292	206,011
33KV	233,278	206,600	219,569	260,919	242,319	207,280

This we are optimistic are achievable targets considering the initiatives and projects outlined in the CAPEX program. However, in the event of a variance between the projected and the actual achieved, the savings from the efficiency gains will be used to cover for the revenue shortfall and thus guarantee 100% market remittance.

Admin Operating Cost, Fixed and Variable Operation & Maintenance Cost, and Capital Expenditure

Table 3: Analysis of the Historical OPEX for last Three Years

Analysis of Historical OPEX for the Last Three Years Broken Down into Expenditure Heads (Nm)				
NAME OF ACCOUNT	2020	2021	2022	CONSOLIDATED
	N'Million	N'Million	N'Million	N'Million
STAFF COST - Staff	5,910	6,300	6,375	18,585
STAFF COST -Management and Board expenses	151	91	72	314
Repairs and Maintenance Expenses (Technical expenses)	5,491	1,771	303	7,565
Billing and Collection Expenses	149	1,047	1,534	2,730
Office and Admin Expenses	2,395	2,582	1,092	6,069
Total	**14,096**	**11,791**	**9,376**	**35,263**

Table 3 shows an analysis of the operating expenditures broken-down into various expenditure heads for last three years. A review of the annual cumulative figures depicts a steady down trend, despite the upward trend of all the macroeconomic parameters in the economy. This goes to suggest the fact that the administrative operating expenditure provided in the MYTO is grossly inadequate to cover for the intended expenditure heads under the administrative cost. Also worthy of note is the size of the franchise area in terms of network route length, population, and customers sales staff ratio.

It is against this background that we proposed an upward review of the administrative cost as shown on table 4 below.

Table 4: Operating Costs

Line Item	Current (2023)	Proposed Review (2023)
Fixed O&M Cost	1,096,389	3,824,346
Variable O&M Cost	8,667,331	15,893,465
Admin Operating Cost	7,991685	12,256,175

Table 4 shows the operating expenses both the current and the proposed. We are proposing an upward review of admin operating cost as well as the fixed and variable O&M costs. This is inline with our correspondences on the need to review these costs upward as the current admin operating cost that is made available to KEDCo which is being used for both admin and O&M costs is grossly inadequate thereby impeding our operational efficiency. Furthermore, we are proposing and appealing to the commission to avail us a fraction of the O&M costs (both Fixed and Variable) for a more effective network reinforcement and preventive maintenance.

Capex Provision

Table 5: Analysis of Allowed vs Actual CAPEX for the Last 5 Years

Analysis of Allowed vs Actual CAPEX Utilisation for the last 5 years					
	2018	**2019**	**2020**	**2021**	**2022**
Actual CAPEX (Nm)	2,912	4,775	2,900	5,754	1,096
Allowed CAPEX (Nm)	3,816	3,816	4,769	12,612	12,612
Variance (Nm)	(904)	959	(1,869)	(6,858)	(11,516)

Table 5 shows the analysis of the allowed Capex provision in the last five years in relation to the actual capex deployed within the period under review. It will be observed that there were negative variances in some years under review which are mainly due to none-performance of some of the contractors, delay in CBN disbursement and of course the most recent change in management.

However, we are optimistic on our financing plan for the proposed Capex as presented in this report. It is pertinent to note that we are also making alternative arrangement in the event of any variance in the projected financing plan.

Table 6: Capital Expenditure Schedule

Naira Million	2023	2024	2025	2026	2027
Projected Capex Provision as Approved in the PIP	**14,010**	**12,611**	**12,611**	**12,611**	**12,611**

Table 6 depicts the capital expenditure schedule as approved in the performance improvement plan (PIP) and December 2022 MYTO. However, we are considering 2023 as year 1 for this tariff plan and in line with our aggressive loss reduction trajectory.

Customer Metering Gaps

Table 7: Customer Metering Gap Analysis

S/N	REGION	Metered Customers	Unmetered Customers	Total Customers	Metering Gap	Metering Coverage
1	KANO CENTRAL	50,267	40,300	90,567	44%	56%
2	KANO INDUSTRIAL	27,252	67,270	94,522	71%	29%
3	KANO EAST	26,159	75,067	101,226	74%	26%
4	KANO WEST	13,406	48,746	62,152	78%	22%
5	KANO NORTH	36,382	86,565	122,947	70%	30%
6	KATSINA NORTH	20,057	73,951	94,008	79%	21%
7	KATSINA SOUTH	12,731	20,588	33,319	62%	38%
8	KATSINA CENTRAL	4,338	26,868	31,206	86%	14%
9	JIGAWA NORTH	7,879	22,304	30,183	74%	26%
10	JIGAWA SOUTH	8,855	22,110	30,965	71%	29%
	TOTAL	**207,326**	**483,769**	**691,095**	**70%**	**30%**
Total number of billed customers			**691,095**			
Percentage of customers metered			**30%**			

Table 7 shows the breakdown of the metering coverage in our franchise area according to the regional offices as well as the metering gap. Currently KEDCO has about 70% metering gap which is essentially being addressed in the investment plan. Following our meter deployment plan as detailed in the PIP, we will close our metering gap by 2027 as shown in table 8 according to service bands.

Table 8: Metering Deployment Plan

Year	Band A	Band B	Band C	Band D	Band E	Total
2023	54,562	47,871	24,181	13,164	85	139,863
2024	48,822	91,005	69,110	2,468	54	211,459
2025	151,792	33,741	12,690	9,056	54	207,333
2026	46,828	181,219	32,807	6,611	34	267,499
2027	181,457	54,097	37,111	12,976	5,520	287,247
Total	**483,461**	**407,933**	**175,899**	**44,275**	**5,747**	**1,113,401**

Metering Existing Customers:

As of December 2022, a total of 21 HV (High Voltage) meters and 480,110 PPM (Prepaid Meters) are needed to meter all the MD and NMD customers in the company. The HV

meters will be installed for MD customers while PPM will be installed for NMD customers. Installation of LV meters for MD customer was discouraged to reduce losses.

In addition to installing new meters for MD and NMD customers, some of the MD customers' meters also need replacement. The replacement of these meters is required to ensure accurate measurement of power consumption and billing – see Table 12 below.

Table 9: Customer Metering Analysis

Metered Customers by Demand	Total	Prepaid	Postpaid
MD Customers	**2,285**	0	2,285
Non-MD Customers	**682,845**	202,735	480,110

Replacement of Obsolete Meters:

Energy meters commonly have a life expectancy of approximately ten years. After this period, these meters may not function optimally and may cause errors in the measurement of electricity consumption, leading to inaccurate accounting. Additionally, the obsolete meters may be less efficient and may not support the latest technology, making it difficult to integrate them into the modern distribution system.

The replacement of obsolete MD and NMD meters is essential to ensure accurate measurement of electricity consumption and billing. The replacement process will be carried out in a phased manner, considering the number of meters that need replacement and the budget available for the project. Based on the study following meters are identified as obsolete:

Table 10: Obsolete Meters

No.	Category	Meter Make/Type	Year of Manufacturing	Quantity
1	Maximum Demand	PRI	2007	1,033
2	Maximum Demand	Mojec	2009	98
3	Maximum Demand	Electric Trivector	2006	19
4	Maximum Demand	Landis & Gyr	2009	43
Total – Maximum Demand Meters				**1,193**
5	Non-Maximum Demand	Conlog (1-Phase PPM)	2006/2007	16,357
6	Non-Maximum Demand	Conlog (3-Phase PPM)	2006/2007	33, 209
Total – Non-Maximum Demand Meters (PPM)				**49,567**

Projection for New MD Customers

To project the future growth of maximum demand customers, we considered various factors such as the past year trend, economic growth of the region, industrial development, and population growth. Based on these factors, we make a projection of the expected growth of maximum demand customers.

The projected growth of maximum demand of customers is expected to increase by 5% every year for the next five years. Based on this projection, Table 14 below depicts yearly plan for the procurement of meters.

Table 11: New MD Customers Projection

	Year 1	Year 2	Year 3	Year 4	Year 5
New MD Customers Projection	180	190	200	210	220
Procurement of HV meters for New Customers	180	190	200	210	220
HV meters for Replacement of Obsolete Meters	600	593	0	0	0
Total	780	783	200	210	220
Grand Total	**2193**				

The above yearly plan for the procurement of meters ensures that the demand and replacement of meters is met while also considering the budget and other constraints. By aligning the procurement of meters with the projected growth of maximum demand customers, the company will ensure the efficient and effective distribution of electricity while ensuring accurate measurement of power consumption and billing.

Projection for New NMD Customers

As at December 2022, we have 480,110 unmetered NMD customers in our network, and we are planning to meter all the unmetered customers through Meter Asset Provider (MAP), Disco / Vendor Financing and National Mass Metering Program (NMMP) projects. Also, we are working towards capturing all unregistered customers in our network, after which we will have an addition of about 287,361 to our existing 685,128 NMD population, making a total of around 972,489 customers by the end of 2026.

In addition to our efforts to meter all unmetered customers and register all unregistered customers, we are planning to expand our network to reach unserved and underserved populations.

Customer Population Projection

We have a population of 685,030 customers across Kano, Katsina and Jigawa State. We have 2,285 Maximum demand customers which are all metered and 202,735 no. of NMD prepaid customers. As at Dec-22, our unmetered customer population stands at 480,110. According to our analysis, we anticipate a significant increase in the number of customers we serve, from 685,128 in Dec-22 to 1,113,401 by the end of 2028. We have prepared a metering plan to meter all the customers within our licensed area as presented in Table 12.

Table 12: Projected Customer population

Year	Band A	Band B	Band C	Band D	Band E	Total
2023	8,582	6,352	5,685	4,541	8,795	33,955
2024	7,082	24,584	29,117	13,254	7,897	81,934
2025	20,267	33,741	32,263	16,111	10,130	112,512
2026	25,976	22,871	32,506	16,071	8,565	105,989
2027	21,176	24,378	37,111	24,382	13,836	120,883
Total	**83,083**	**111,926**	**136,682**	**74,359**	**49,223**	**455,273**

Customer Metering Plan

As per our plan, in the first year of the Performance Improvement Plan (PIP) for the year 2023, we aim to commence installation of 332,00 meters, as part of the National Mass Metering Program (NMMP) Phase one, 100,000 through DISREP(IPF) and through the existing Meter Asset Provider (MAP) scheme. We are committed to ensuring that all new customers are metered prior to connection, to enable accurate measurement of their energy consumption and to avoid estimated billing. By implementing these measures, we aim to enhance the transparency and efficiency of our operations, while providing better service to our customers. Over the course of the 5-year Performance Improvement Plan, we aim to meter our entire customer base, and by the end of the year 2028, we expect to have metered a population of 1,113,401.

Table 13: Metering Plan

Year	Band A	Band B	Band C	Band D	Band E	Total
2023	54,562	47,871	24,181	13,164	85	139,863
2024	48,822	91,005	69,110	2,468	54	211,459
2025	151,792	33,741	12,690	9,056	54	207,333
2026	46,828	181,219	32,807	6,611	34	267,499
2027	181,457	54,097	37,111	12,976	5,520	287,247
Total	**483,461**	**407,933**	**175,899**	**44,275**	**5,747**	**1,113,401**

Network metering gaps

Table 14 provides a network metering gap analysis for feeders and MDAs.

Table 14: Review of Feeder and MDAs Metering Gaps

Metering	Priority assigned by NERC in PIP Guidelines	Current situation	KEDCO desired implementation date
Bulk metering (market interface)	Very high priority	All the 26 Incomers have been properly metered and all 66 outgoing feeders have been metered.	
MDAs metering	Very high priority	MD MDAs metering is 100% covering Kano, Jigawa and Katsina	Completed. However, we have a plan to integrate all the meters into AMI software in year 2023.

Customer Numbers

Table 15: Customer Number Projections

Category	2022	2023	2024	2025	2026	2027	2028
Life-line	16,518	17,344	867	43	2	0	0
A - Non MD	97,759	104,602	111,924	119,759	128,142	137,112	146,710
A - MD1	947	1,013	1,084	1,160	1,241	1,328	1,421
A - MD2	219	234	250	268	287	307	328
B - Non MD	95,513	102,199	109,353	117,008	125,199	133,963	143,340
B - MD1	364	390	417	446	477	511	546
B - MD2	27	29	31	34	36	39	41
C - Non MD	231,220	247,405	264,724	283,255	303,082	324,298	347,000
C - MD1	923	987	1,057	1,130	1,210	1,294	1,385
C - MD2	34	37	39	42	45	48	52
D - Non MD	241,665	258,581	276,682	296,050	316,774	338,948	362,675
D - MD1	155	165	177	189	203	217	232
D - MD2	10	11	12	13	14	14	15
E - Non MD	73,055	78,169	83,641	89,496	95,760	102,464	109,636
E - MD1	8	9	9	10	11	11	12
E - MD2	6	6	7	7	8	8	9
Total Customers	**758,422**	**811,181**	**850,274**	**908,909**	**972,489**	**1,040,562**	**1,113,401**

We plan to phase out the life-line customer category by 2026 and to grow the total customers on our database to over a million customers by 2027, as show on table 15. This will help us reduce the impact of cross subsidy on customers on bands A & B, thus making our tariffs fair and affordable.

Demand Forecast

The supply to KEDCO received from the transmission network (operated at 132kV and 330kV) by Transmission Company of Nigeria (TCN) is restricted to an average of 280 MW with an all-time peak of 330MW. The restriction is applied due to single circuit 330kV single line to Kano with rated maximum capacity of 380MW and maximum rated capacity of main receiving station at Kumbotso, Kano of 3*150 MVA (290MW peak) with other two receiving stations at Kwanar Dangora and Funtua restricted to 80MW.

System outages are quite frequent for a grid of this size – typically two to four times in a month, thereby, leaving the entire coverage area in darkness, and such outages range from 4 to 24 hours in some instances. This problem experienced by KEDCO is due to the chronic shortages of power, equipment unreliability, and in some cases unenergized feeders. Consequently, only parts of the network are energised at any point in time which makes the underlying total load difficult to determine. To combat this issue of sparseness in the data, KEDCO modelled the time series of hourly load of its feeders using the Autoregressive model to determine forecast average annual peak demand for the network.

Since the customer database is incomplete and not aligned by feeder and customer category, it was not possible to undertake a category-wise forecast of demand. It is assumed that with the completion of enumeration and alignment of customers to be identified by both tariff class and the feeder/DT connectivity, a more detailed breakup of demand can be estimated. However, with the present data available, we are constrained to use past billing data as a proxy to reverse determined demand based on energy consumption/allocation among customer categories.

Forecasting Methodology

The forecasting methodology used include:

- Econometric analysis – This method models the demand for electricity in terms of driving factors such as income, price, sectoral economic growth rates, etc.;
- Time series analysis – This approach assumes that the demand for electricity in a certain period can be modelled in terms of the past values of the demand and the

forecasted demand can be fitted on the regression curve based on the time-series data;

- Combination of econometric and time series methods – This methodology models the demand for electricity in terms of driving factors and lagged values of demand; and
- End-use analysis – This model uses norms for various categories of consumers and aggregates the demand based on growth curves for each consumer category.

The forecast used a combination of models according to the availability of data, time, resources, and statistical significance of equations.

Forecasting Results

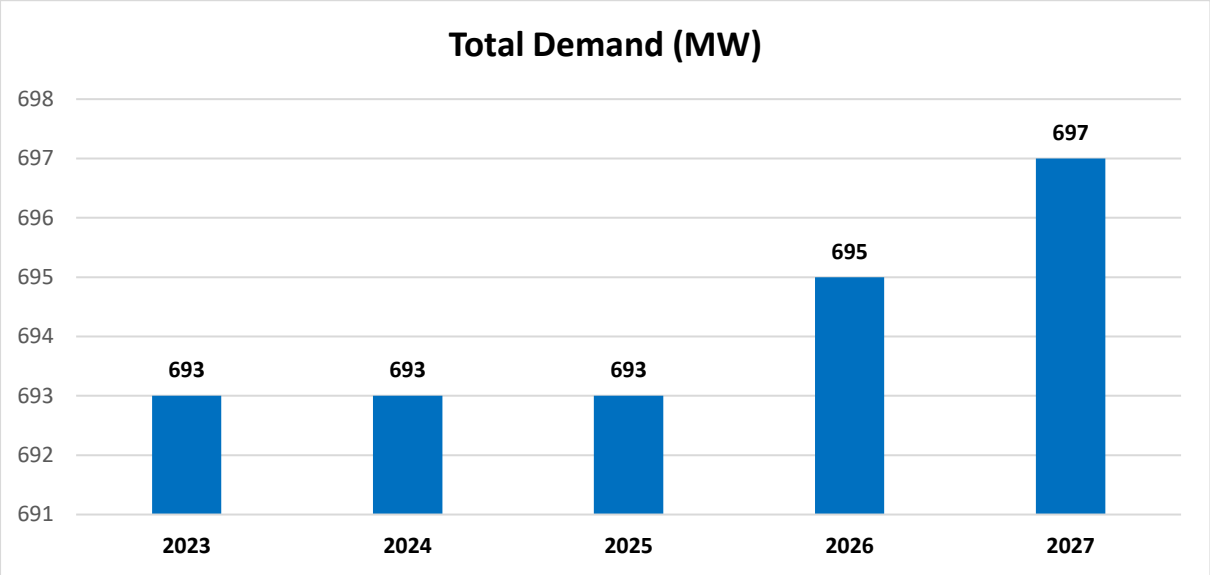
The results from the econometric and time series model for KEDCO in 2022 reveal an unconstrained peak demand of 928.14 MW, actual peak demand served at 586.26MW, and with demand supply gap of 341.88MW. This represents a 37% shortfall in supply – Refer to Table 16.

Table 16: KEDCO Demand Projection 2023-2027

Year	Total Demand (MW)	Actual Peak Demand Served (MW)	Demand Supply Gap (MW)	% Shortfall in Supply (MW)
2023	693	550	143	21%
2024	693	559	134	19%
2025	693	568	125	18%
2026	695	577	118	17%
2027	697	586	111	16%

Over the forecast period, the network capacity is expected to grow from 693MW to 697MW by 2027 as shown in Figure 2.

Figure 2: KEDCO Non-simultaneous Peak Demand (MW) 2023-2027



KEDCO plans to bridge this supply gap by procuring additional energy from embedded generation arrangement and increase the current volume of energy procured – see Table 17. The network infrastructure analysis presented here is based on the demand projection for customers served by KEDCO.

Generation Projection

KEDCO's generation projections are as projected in the Multi-Year Tariff Order (MYTO) and supplemented by the embedded generation initiatives currently being implemented with our development partners (GIZ, RMI, KONEXA, NSIA, Bagaja, IFC and FMP). About 40 MW (Phase One) is expected to come on stream by fourth quarter of 2023 and by 2027 we would bring onstream additional 100 MW of green energy to key into the Energy Transition Initiative of the Federal Government of Nigeria. The table below shows our EG plan for 1st phase to be implemented by Q4 2023.

Table 17: KEDCO Embedded Generation Plan Phase One

S/N	Project Description	Business Model	Owner / Developer	Status/Completion Date
1	**10MW** HASKE Solar Plant located at Kombotso LGA Kano State.	Premium Grid Franchising in partnership with Konexa and NSIA to supply power to MD&NMD customers within the Challawa Premium Grid delineated area.	Developed and financed by NSIA and owned by FGN, Kano State Government & Kombotso LGA.	Project progress – 75% Franchising Agreement yet to be finalised. Completion – Q3 2023
2.	**10MW** Katsina Windfarm located at Lambar Rimi Katsina State	Bilateral On-grid Power Supply arrangement between KEDCO and Lamba Rimi EG Co. Ltd to Offtake power at 33KV level and supply customers in Katsina	Federal Ministry of Power and developed by private partners (CREDCO&TERAWATT/OTIS)	Project progress – 80% Bilateral Agreement – Ongoing Operational – Q3 2023
3.	100MW Solar Plant (1MW in 100 locations within KEDCO Franchise Area)	Interconnected Mini Grid (IMG) in partnership with Rocky Mountain Institute (RMI) and private mini grid Developers.	Funded/Managed by RMI (Funding through GEAPP)	100 proposed locations for the Solar Plants already selected.
	1st Phase - Pilot project **1MW** Zawaciki Solar Plant	IMG developed by BAGAJA Renewables to supply electricity to Zawaciki Housing Estate Kano, through Franchising arrangement with KEDCO.	Managed by RMI with funding through GEAPP and developed by BAGAJA Renewables.	Project progress – 95% Franchising Agreement between BAGAJA and KEDCO executed. Operational – Q2 2023
	2nd Phase – Scaling-up the 1MW Solar Plant in additional 19 out of the 100 proposed locations – Additional **19MW**	Proposed Interconnected Mini grids in 19 locations to provide additional 20MW to be evacuated and supplied to customers within proximity of the proposed Solar Plant site.	Managed and funded by RMI in partnership with KEDCO and private developers.	Project progress – Feasibility stage Operational – Q4 2023

Planned Transition to Bilateral Contract

Following the directive of NERC to three Discos (Abuja, Eko and Ikeja) to start preparation for bilateral power contracting and the indication that KEDCO and few other Discos will be in the second phase. KEDCO has open discussions with some generation companies, bearing in mind proximity of the GENCO and TCN constraints.

KEDCO plans to procure over 100MW in the next five years from four generating companies. Discussions have started with Niger Delta Power Holding Company (NDPHC), Mainstream Energy Solution, Taopex Energy Services and North-South Power for the procurement of additional 100-150MW power progressively over the horizon.

However optimistic, we are concerned about the impediments on the way of our bilateral contracting of power. The transmission network constraints are of great concern to us but we are hopeful TCN will work assiduously to clear off all the interface constraints within our franchise area, particularly feeder supplying our load centres of Dakata & Dan'agundi.

Table 18: Reliability Parameters: SAIFI, CAIDI, SAIDI and Safety Indices

S/N	Key performance index	Measurement Criteria	Annual Performance					
			Base-line (2022)	2023	2024	2025	2026	2027
1.	Reliability/ availability	Number of customer Interruptions	1,397	1000	800	400	200	50
2.	Safety	Mitigate the occurrence of deaths and injuries	8	0	0	0	0	0

Table 18 depicts the reliability criteria which shows the baseline number of interruptions and the aggressive projected drop in the frequency of interruption from the baseline 1,397 in 2022 to a record 50 interruptions by 2027. This will be achieved through the massive investment in network rehabilitation and reinforcement as well as automation as detail in the CAPEX program. Furthermore, this will go a long way in supporting our HSE initiatives to achieve zero death or injuries.

RATE DESIGN OUTPUT SCENARIOS

Scenario A: Full Recovery Through Five-Year Sculpting Path

Scenario A is planned to recover the full revenue requirement through sculpting of the annual revenue requirement to balance at the end of the tariff period. This scenario presents minimum remittance percentage of 37.74% for the remaining months in 2023 and to close the tariff period at 100% remittance by 2027. Tariff will increase immediately by 48% in this scenario, which will thereafter increase smoothly to avoid tariff shock.

Table 19A1: Minimum Remittance Profile

Parameter	Unit	2022	2023	2024	2025	2026
PA Effectiveness	PA Year		-	-	-	-
Loss Target	%	15.85%	53.07%	50.42%	42.85%	30.00%
Nigerian Inflation	%	18.77%	22.0%	22.0%	22.0%	22.0%
US Inflation	%	8.0%	5.1%	5.1%	5.1%	5.1%
Exchange Rate N/$	N	427.3	639.1	639.1	639.1	639.1
Transmission Loss Factor	%	7.50%	7.25%	7.00%	6.75%	6.50%
Energy Delivered to DisCo	GWh	1,924	2,524	2,860	3,155	3,479
Energy Delivered to DisCo	MWh/h	220	288	326	360	397
Generation Cost	N/kWh	28.6	43.8	43.7	44.2	44.8
Transmission & Admin Cost	N/kWh	5.3	7.7	7.2	7.1	7.1
End-User Cost Reflective Tariff	N/kWh	70.7	145.4	189.7	183.2	156.2
End-User Allowed Tariffs	N/kWh	63.4	87.2	113.8	109.9	125.0
Tariff Shortfall	N'000,000	11,848	68,883	107,612	132,091	76,100
Minimum Remittance 2020 - 2021	%	43.69%	37.74%	68.98%	82.44%	135.95%

Table 19A1 shows a snapshot of the major assumptions and parameters behind the rate design in this scenario. These assumption and parameters form the basis for the determination of the minimum remittance percentage.

Table 19A3 is the five-year tariff path for all tariff bands. It depicts the naira per kWh to be charged to all tariff bands.

Scenario B: Under Recovery Through Five-Year Sculpting Path

Scenario B is planned to under-recover the full revenue requirement through sculpting of the annual revenue requirement to balance at the end of the tariff period. This scenario presents minimum remittance percentage of 29.96% for the remaining months in 2023 and to close the tariff period at 100% remittance by 2027. Tariff will increase immediately by 36% in this scenario, which will thereafter increase smoothly to avoid tariff shock.

Table 20B1: Minimum Remittance Profile

Parameter	Unit	2022	2023	2024	2025	2026
PA Effectiveness	PA Year		-	-	-	-
Loss Target	%	15.85%	53.07%	50.42%	42.85%	30.00%
Nigerian Inflation	%	18.77%	22.0%	22.0%	22.0%	22.0%
US Inflation	%	8.0%	5.1%	5.1%	5.1%	5.1%
Exchange Rate N/$	N	427.3	639.1	639.1	639.1	639.1
Transmission Loss Factor	%	7.50%	7.25%	7.00%	6.75%	6.50%
Energy Delivered to DisCo	GWh	1,924	2,524	2,860	3,155	3,479
Energy Delivered to DisCo	MWh/h	220	288	326	360	397
Generation Cost	N/kWh	28.6	43.8	43.7	44.2	44.8
Transmission & Admin Cost	N/kWh	5.3	7.7	7.2	7.1	7.1
End-User Cost Reflective Tariff	N/kWh	70.7	145.4	141.1	123.5	102.0
End-User Allowed Tariffs	N/kWh	63.4	79.9	91.7	95.1	102.0
Tariff Shortfall	N'000,000	11,848	77,494	70,051	51,202	0
Minimum Remittance 2020 - 2021	%	43.69%	29.96%	43.90%	63.27%	100.00%

Table 20A1 shows snapshot as in table 19A1.

Table 21C1: Minimum Remittance Profile

Parameter	Unit	2022	2023	2024	2025	2026
PA Effectiveness	PA Year		-	-	-	-
Loss Target	%	15.85%	53.07%	50.42%	42.85%	30.00%
Nigerian Inflation	%	18.77%	22.0%	22.0%	22.0%	22.0%
US Inflation	%	8.0%	5.1%	5.1%	5.1%	5.1%
Exchange Rate N/$	N	427.3	639.1	639.1	639.1	639.1
Transmission Loss Factor	%	7.50%	7.25%	7.00%	6.75%	6.50%
Energy Delivered to DisCo	GWh	1,924	2,524	2,860	3,155	3,479
Energy Delivered to DisCo	MWh/h	220	288	326	360	397
Generation Cost	N/kWh	28.6	43.8	43.7	44.2	44.8
Transmission & Admin Cost	N/kWh	5.3	7.7	7.2	7.1	7.1
End-User Cost Reflective Tariff	N/kWh	70.7	145.4	141.1	123.5	102.0
End-User Allowed Tariffs	N/kWh	63.4	87.2	105.8	105.0	96.9
Tariff Shortfall	N'000,000	11,848	68,883	50,036	33,392	12,421
Minimum Remittance 2020 - 2021	%	43.69%	37.74%	59.93%	76.04%	92.03%

Table 21A1 shows snapshot as in table 19A1.

and collection losses.

Energy offtake is a crucial KPI that measures the total electricity consumed by KEDCO's customers. To make projection on Energy Offtake, we consider factors such as the growth in customer base expected to be around 7% annually, energy demand patterns and growth of average of 11% annually for the next five years. Improvement in supply availability and reliability through a combination of grid reinforcement, capacity additions, and enhanced transmission and distribution infrastructure and deployment of quick response teams to minimize downtime and improve reliability.

KEDCO's Commercial performance indicators will focus on improving billing efficiency and revenue collection, which are critical for financial sustainability and improving the overall performance of the company. To achieve this, we will put more emphasis on Economic Dispatch of energy, optimizing our Billing Process and reducing commercial losses (averaging an annual growth of 2% in Billing Efficiency), reducing the Metering Gap by 10% annually and implementing smart metering solutions and revenue protection systems like AMI and DT Metering. Also, we plan to enhance customer engagement and communication which is expected to impact on customer experience and willingness to pay for electricity consumed. With the successful implementation of these strategies, KEDCO aims for a steady annual revenue growth of 8% - 10% over the next five years.

MARKET REMITTANCES

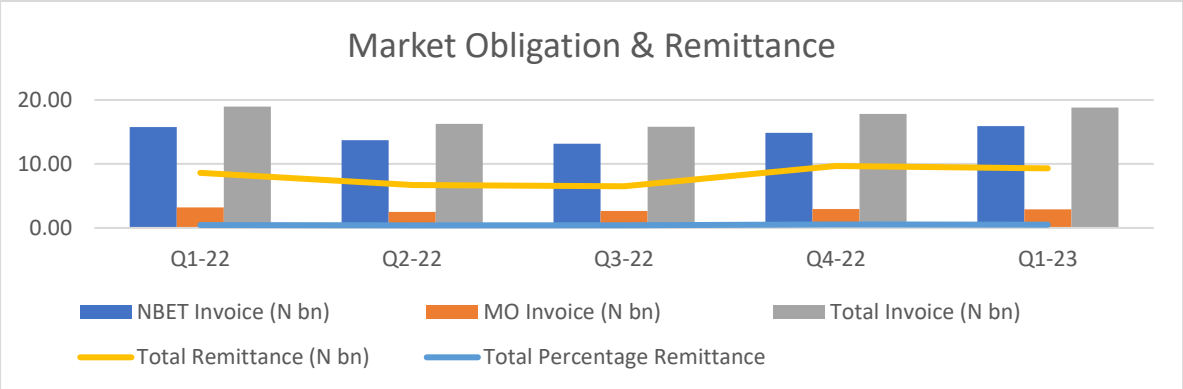
KEDCO like every other DISCO in the NESI, have specific market remittance expectations mainly payments to the Market Operator to cover the cost of energy, capacity charges, and other market-related fees and payments to NBET for the electricity received and sold to end-user customers. Poor revenue collection, hight ATC&C, Non-Reflective Tariffs and other operational inefficiencies has affected KEDCO's ability to meet full market obligation, further leading to liquidity challenges in NESI.

1. Historical Market Remittance

Between Q1 2022 & Q1 2023, KEDCO average Market Remittance stands at about 46% with an improvement of about 20% from Q3 2022 to Q1 2023 as indicated in the table and chart below.

Table 22: Historical Quarterly Minimum Remittance

Description	Q1-22	Q2-22	Q3-22	Q4-22	Q1-23
NBET Invoice (N bn)	15.77	13.72	13.15	14.86	15.91
MO Invoice (N bn)	3.20	2.52	2.65	2.94	2.89
Total Invoice (N bn)	18.97	16.24	15.80	17.80	18.80
Total Remittance (N bn)	8.63	6.73	6.51	9.68	9.31
Total Percentage Remittance	45%	41%	41%	54%	50%



2. Projected Market Remittance

With the successful implementation of KEDCO's strategic initiatives, we expect a steady increase in annual Market Remittance of about 56%, 50% and 36% for scenarios A, B, and C respectively. The table below show our expected growth in revenue and improvement in market remittance.

Table 23: Projected Annual Minimum Remittance Schedule 2023-2027

Description	2023	2024	2025	2026	2027
Scenario A	37.74%	68.98%	82.44%	135.95%	100%
Scenario B	29.96%	43.90%	63.27%	100.00%	100%
Scenario C	37.74%	59.93%	76.04%	92.03%	100%

MARKET SHORTFALL & PROVISION OF PAYMENT GUARANTEES

KEDCO's inability to meet MRO threshold over the years has generated market shortfall leading to indebtedness to both NBET and MO, with both parties requesting for payment guarantees to settle the outstanding balances and provision for future shortfall.

We will want to reiterate our Receivership status after the restructuring of KEDCO in July 2022 with Fidelity Bank now acting as the Core Investors. The company is presently in the process of transferring ownership to a preferred Investor that is fully aware of our indebtedness and have put in place plans to offset them once they takeover in the nearest future.

As an immediate remedy towards settling our indebtedness to NBET covering the outstanding balance of March 2023 and other indebtedness to the MO, KEDCO is already engaging Fidelity Bank to reactivate an existing Bank Guaranty of N5.5bn issued in 2015.

KEDCO acknowledges its financial obligations to both NBET and MO, and understands the importance of settling outstanding payments promptly, in line with the provisions of the Vesting Contracts and our Minimum Remittance Order (MRO). We are committed to resolving this indebtedness, as we strive to better the fortunes of the company and address the liquidity issues bedevilling the sector.

PIP FUNDING PLAN

According to our assumptions in all the scenarios, KEDCO's expected funding sources for the period 2023 to 2027 will include various options. The company plans to generate 10% of the required funding from retained revenue surplus. KEDCO also plans to secure 15% of the funding from Equity Investment.

The envisage to secure another 10% of the required CAPEX funding from either International Finance Corporation (IFC) or Federal Government through the Central Bank of Nigeria. This funding is likely to come in the form of long-term loans with single digit interest rate.

The Distribution Sector Recovery Program (DISREP) which is a World Bank initiative and intervention program aimed to support the implementation of DISCOs' Performance Improvement Plan (PIP). The Program will provide concessional lending to KEDCO via shareholder loans from BPE, to support the implementation of our approved PIPs and Metering (NMMP Phase 2) through the Investment Project Financing. The expected funds will cover 40% of our approved PIP and metering plan.

Finally, KEDCO is expecting 25% for our capex provision to come from Meter Acquisition Fund to finance NMMP Phase 1.

Overall, the expected total funding for KEDCO during the period 2023 to 2027 is N64.5bn.

Table 24: Planned Sources of Funding

Source of Funds	%	Year 1	Year 2	Year 3	Year 4	Year 5	Total
		2023	2024	2025	2026	2027	
Retained Surplus (₦m)	10%	1,401	1,261	1,261	1,261	1,261	6,445
Equity Investment (₦m)	15%	2,102	1,892	1,892	1,892	1,892	9,668
CBN/FG Loan (₦m)	10%	1,401	1,261	1,261	1,261	1,261	6,445
World Bank [DISREP/IPF] - (Nm)	40%	5,604	5,044	5,044	5,044	5,044	25,782
MAF (Nm)	25%	3,503	3,153	3,153	3,153	3,153	16,114
Total (₦m)		14,010	12,611	12,611	12,611	12,611	**64,454**

Without funding support from the Federal Government, KEDCO plans to source additional funding from International Finance Corporation in form of long-term loans of about 10% of the total funding requirement. This financing plan will augment the 10% from retained

surplus and 15% equity funding. Our proposed financing plan excluding Government sources is as shown in Table 25 below.

Table 25: Planned Sources of Funding without Government Source

Source of Funds	%	Year 1	Year 2	Year 3	Year 4	Year 5	Total
		2023	2024	2025	2026	2027	
Retained Surplus (₦m)	10%	1,401	1,261	1,261	1,261	1,261	6,445
Equity Investment (₦m)	15%	2,102	1,892	1,892	1,892	1,892	9,668
IFC/ Loan (₦m)	10%	1,401	1,261	1,261	1,261	1,261	6,445
World Bank [DISREP/IPF] - (Nm)	40%	5,604	5,044	5,044	5,044	5,044	25,782
MAF (Nm)	25%	3,503	3,153	3,153	3,153	3,153	16,114
Total (₦m)		14,010	12,611	12,611	12,611	12,611	**64,454**

CHALLENGES MILITATING AGAINST MEETING PERFORMANCE OBLIGATIONS

1. Interest Charges on Market Shortfall

The lack of cost-reflective tariffs and the resultant growth in tariff shortfalls, the revenues of the Discos have been unable to support the full settlement of market invoices as well as the necessary investments in the Discos to improve revenue and service reliability. W hile NBET has been allowed to charge interest on the amounts owed by the Discos on their market shortfall, the Discos have not been allowed to charge interest on the accrued tariff shortfalls or charge interest on customers outstanding amount for nonpayment. The resultant impact of the NBET and MO interest cost is allowed to remain on our books which further widens the gap in our cashflow.

2. Capping Order and its Impact on Market Remittances

The continuous existence of estimated billing is due to the inability of the Meter Asset Providers (MAP) to provide the Disco customers with meters at the pace originally

envisaged by the commission. By capping the billable amount to Disco's customers, the Order is essentially restricting the allowable revenue and is further compounding the liquidity and cashflow challenges, as well as worsening the ability of the Discos to settle market obligations in full.

3. TCN Interface Constraints

KEDCO distributes power to customers through its 189 Feeders (both 33kV and 11kV), via 53 Injection Sub-stations having a total installed capacity of 705 MVA. The Company receives power from the TCN through three sources; 330kV Kano-Kaduna Line, 132kV Funtua Line, and 132kV Kwanar Dangora line. The Company has one 330/132kV Transmission Sub-Station and thirteen 132/33kV Transmission Sub-Stations.

TCN interface constraints within Kano DISCO is a well-known issue that has been lingering for a while now. These issues have affected our ability to take full load allocation and significantly limited our ability to supply customers, particularly at our Load Centers of Dakata, Dan'agundi and Katsina. Some of the major TCN interface constraints issues are listed below.

I. Kumbotso 4x150MVA, 330/132kV, 2x30MVA+40MVA+60MVA, 132/33KV TS: The Kaduna (Mando) – Kano Single Circuit (SC) line cannot be loaded beyond 350MW comfortably at any given time. This is a major drawback on power evacuation in our coverage area. All the four 150 MVA, 330/132 are currently overloaded and there is no availability of 33kV bay to evacuate power from Kumbotso TS;

II. Dan'agundi 3x60MVA, 132/33KV TS: The 132KV line from Kumbotso TS to Dan'agundi is under sized and over-loaded. The line feeds half of the entire Kano Metropolis and is already overstretched. This has made the available capacity of 3x60MVA effectively under-utilized as the line can only accommodate 70MW safely and unavailability of bay to radiate more feeder is another bottleneck. Furthermore, all the existing power transformers are currently overloaded.

III. Dakata 2x60MVA+30MVA, 132/33KV TS: The 132KV line from Kumbotso TS to Dakata has similar issue with that of Dan'agundi line, it is under sized and overstretched. This has also made the available capacity of 2x60MVA + 30MVA under-utilized as

the line can only accommodate 70MW safely and unavailability of bay to radiate more feeder is another bottleneck. Furthermore, all the existing power transformers are currently overloaded.

IV. Kankia 2x30MVA, 132/33KV TS: Only one power transformer is operational while the other power transformer is out since inception. The existing power transformer is overloaded.

V. Kano - Kankia – Katsina - Daura 132KV line is in critical need of re-conducting. The line has a history of low voltage at full load due to under sized conductor. The feeders have a combined load demand of about 100MW.

VI. Kwanar Dangora 1x30/40 MVA, 132/33kV TS: The existing power transformer is overloaded and additional power transformer is required.

VII. Kano-Hadejia 132/33kV line has undersized conductor and currently overloaded. Line has a limitation of 50MW.

VIII. Walalambe 2x40MVA, 132/33KV TS: The transmission substation has been on-going for the last fifteen (15) years. It was proposed to be connected to 132KV Hadejia line that needs re-conducting.

4. Security Challenges and Forbearance

The operation of the KEDCO is affected by insecurity particularly in Katsina State. The security challenges like Insurgency, Terrorism and Banditry in communities around Funtua, Kankiya, Dandume, Faskari and Sabuwa among others have significantly affected KEDCO's ability to supply electricity to customers, leading to high cases of Vandalism, Theft, Safety concerns for our personnel operating within the areas, limited access to carryout network maintenance and Bill payment resistance and unwillingness of some customers to pay for electricity consumed further aggravating the revenue shortfall of the company.

To mitigate the security challenges, KEDCO have been implementing several measures including collaborating with Security Agencies, Community Engagement, deployment of flexible billing and payment solutions and recently exploring the use of alternative energy solutions such as Mini-grids or Distributed Energy Resources to provide localized power

supply and reduce dependence on the main grid infrastructure existing the areas that are prone to attack and vandalism.

CONCLUSION AND PRAYERS

1. The review of the efficiency parameters particularly the ATC&C levels has become imperative due to the wide variance between the current level as projected in the MYTO and actual loss level. Other reviewed parameters like the Admin Opex and O&M cost were necessitated by the gross inadequacy of the current provision. We are appealing to the Commission, to approve Admin Opex as proposed in the rate design and an approval to access a fraction of the O&M cost as provided in the MYTO.

2. Interest charges on the market shortfall over the years have worsen our liquidity situation and thus making it practically impossible to settle our market invoices in full. The situation is more precarious as KEDCO is not allowed to charge customers interest on their outstanding balances. As such, we are appealing to the Commission to direct NBET and MO to discontinue charging interest on the market shortfall, also expunge the interest components on our outstanding market obligations.

3. We understand the rationale behind the capping order but with the creation of the meter acquisition fund in the MYTO, the metering intervention funds from the federal government and the world bank, and the metering deployment plan in our PIP, we are positive the metering gap in our franchise will be aggressively closed. Thus, we are appealing for the Commission's consideration towards suspending the Capping Order to allow for full billing and recovery of revenue requirement of the entire value chain.

4. Though TCN has awarded contracts to address some of interface and network constraints challenges, almost all the projects are yet to commence or halted due to pending Right-of-Way (ROW) and Exchange rate issues. We urge the Commission and the Government at both State and Federal to intervene on the ROW issues and provide lasting solutions.

5. To further alleviate the security challenges and its impact on our operations and revenue, we appeal to the Commission to consider a concessionary rate on market remittance for the supplied to the affected areas. This will reduce our market shortfall and the corresponding pressure on customers to pay bills in full.