



ORDER/NERC/275/2021

**BEFORE THE NIGERIAN ELECTRICITY REGULATORY COMMISSION
IN THE MATTER OF THE EXTRAORDINARY REVIEW OF MULTI-YEAR TARIFF ORDER FOR
JOS ELECTRICITY DISTRIBUTION PLC**

1.1. Title

This regulatory instrument may be cited as NERC Order on Performance Improvement Plan (PIP) and Extraordinary Tariff Review Application for Jos Electricity Distribution Plc ("JEDC").

1.2. Commencement

The approved PIP and Capital Expenditure ("CAPEX") programme of JEDC shall take effect from 1st July 2021 and shall remain effective until 30th June 2026 unless amended by the Commission.

1.3. Context

JEDC applied to the Commission in November 2019 for a review of the provisions for CAPEX in its Multi-Year Tariff Order ("MYTO") tariffs to support the implementation of its Performance Improvement Plan ("PIP") over the next 5 years. Under the Power Sector Recovery Program (PSRP), it is envisaged that the Commission would implement a robust tariff review process aimed at improving the performance of the Nigerian Electricity Supply Industry ("NESI"). This process involved a review of the capital expenditure allowances in the MYTO model to align with the Performance Improvement Plans (PIPs) of the Distribution Companies (DisCos). The approved PIP and Extraordinary Tariff Application shall form the basis for JEDC to prioritise the implementation of the proposed CAPEX initiatives. The approved PIPs shall also form the basis for defining KPIs for JEDC for the next 5 years by the Commission with emphasis on improvement in energy throughput and improved service delivery to the customers.

As part of the Stakeholder Consultation Process for Extra Ordinary Tariff Review, the Commission held public hearings to consider the applications filed by JEDC in February 2020 and monitored the stakeholders' engagements by JEDC at different locations within its franchise. Based on the feedback received during the consultations and subsequent

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deliberations with various stakeholders, the Commission approved the Service-Based Tariff (SBT) effective from the 1st of September 2020 to ensure that rates paid by customers align with the quality of service as measured by the daily average availability of power supply over a 60-day reference period. Further updates to JEDC's initial PIP submission have been considered as part of this review to align the PIPs with customer expectations of service commitment by JEDC.

1.4. Summary and Overview of JEDC's Network/Current State

Jos Electricity Distribution Plc (JEDC) whose headquarters is situated in Jos Plateau State, is one of the 11 successor distribution companies of the unbundled Power Holding Company of Nigeria Plc (PHCN). JEDC is responsible for distribution and retail services in Plateau, Bauchi, Benue, and Gombe States of Nigeria covering 132,859km². JEDC operates through 8 regional offices linked to the 8 TCN stations within its franchise states. In a bid to serve customers better, JEDC further decentralized operations into 30 area offices and 147 feeder offices.

JEDC currently has 2,569 permanent staff serving 458,706 customers connected to 6,845.9km route length of 33kV feeders and 1,538.2km route length of 11kV feeders and 12,534km route length of 0.400kV lines. JED is supplied from 8 TCN transmission stations with a combined nameplate capacity of 987.5 MVA. JEDC plans to significantly rehabilitate the network and construct new feeders to enhance the reliability of supply through network flexibility programs. The Company's focus is on proactive maintenance as well as a rapid response program for corrective maintenance to reduce the number of minutes the customer is out of supply due to faults on the network.

JEDC plans to carry out several business sustainability schemes which include the upgrade of physical customer care centers and leverage on technology to enhance customer service experiences to the segments that crave online real-time services. Corporate social responsibility (CSR) for low-income areas is in place to leave positive environmental footprints.

1.5. Stakeholder Consultation

JEDC had followed a process for stakeholder consultation as directed by the Commission. Several focused group discussions to harness stakeholder's views on the service delivery, future expectations, and preferences were conducted with various customer groups such as the Premium Customers, Manufacturers Association of Nigeria (MAN), and Non-Maximum Demand customers. These engagements were required to:

- instill accountability between JEDC and its customers on the services and justification for associated costs and resulting tariffs;



- assist in minimising disputes by engendering understanding and trust between JEDC and its customers;
- provide an opportunity for JEDC to engage with customers on the service improvement initiatives proposed in the PIP.

Key discussion areas for the stakeholder sessions were:

- Quality and reliability of supply
- Quality of the metering, billing, and payment process
- Consumers' perception of the processes
- Consumer relationship management and energy efficiency schemes
- Quality of fault complaint and repairs process

1.6. Outputs proposed with interventions:

JEDC proposes to undertake numerous interventions to improve service delivery to the customers. Over the next five years, the proposed interventions will allow JEDC to achieve but not limited to the following:

- Increasing the total energy supplied across our network from the 2019 levels of 1,250 GWh/ year to 1,808 GWh/year in 2024.
- Migrate more customers from service clusters with a lower average duration of supply to service clusters with a higher average duration of supply.
- Reduce the average frequency of interruptions from 3.0 per day in 2019 to 1.2 per day.
- Reducing the average duration of interruptions from 661 minutes per day to 473 minutes per day by December 2022.
- Reducing the average response time to calls from 7 minutes to 3 minutes by December 2022; and
- Reducing the average response time to resolving complaints from 8 hours to 4 hours by December 2022.

Table – 1: Planned Service Improvements

Item	Unit	Current	Service Improvement	Year-5 Target	Variance
Customers	#	458,706	696,640	1,155,346	152%
Current ATC&C Loss	%	61	-38	23.1	-62%
Energy Delivered	GWh	1,250	1,808	3,058.0	145%
Average Duration of Supply	(Hrs/Day)	13.6	3.1	16.7	23%
Average Frequency of Interruptions	#/day	3.0	-1.8	1.2	-60%

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Average Duration of Interruptions	Hrs/day	11.0	-3.0	8.0	-27%
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1.7. Investment Strategies:

Key strategies proposed by JEDC to attain the targeted service levels over the next 5 years include the following:

1. Implementation of investments and other initiatives in distribution network rehabilitation and upgrade aimed at resolving existing constraints limiting availability and quality of energy supply.
2. Identification of eventual constraints to meeting electricity demand arising from issues affecting high and medium voltage network infrastructure.
3. TCN-DisCo interface projects are required in resolving existing constraints and meeting electricity demand.
4. Installation of metering systems to capture all electrical parameters involved in commercial transactions with NBET and TCN and amounts of energy injected into the network operated by the DisCo.
5. Incorporation of an Incidents Recording and Management System (IRMS) to identify the location and analyze the extent of an interruption in electricity supply and to enable fast resolution and service restoration.
6. Regularization of consumers not registered as customers.
7. Installation of appropriate meters for all the ministries, departments, and agencies at federal, state, and local levels.
8. Incorporation of a Commercial Management System (CMS) to manage all commercial processes: revenue cycle, attending to customers, etc.
9. Incorporation of an Enterprise Resource Planning (ERP) information system to support corporate planning and management of shared services (accounting, finance, human resources, procurement, logistics & information technology).
10. Implementation of a Revenue Protection Project (RPP) supported by Advanced Metering Infrastructure (AMI) to systematically record and monitor consumption of large and medium customers.
11. Incorporation of a Supervisory Control and Data Acquisition System (SCADA) to operate and control HV & MV infrastructure.



Table – 2: Proposed Investment (Technical)

Item	Unit	Current	Additions/ Construction	Year-5 Target	Variance	PIP Rehabili tation	% of Rehabili tation
Network Length 33 kV	Km	6,846	25	6,871	0.4%	235	3%
Network Length 11 kV	Km	1,538	15	1,553	1%	220	14%
Network Length 0.4 kV	Km	12,534	210	12,744	2%		
MVA distributions transformers	MVA	1,773	92	1,865	5%		
# distributions transformers	#	7,250	191	7,441	3%		
MVA Substations transformers	MVA	668	45	713	7%		
# Substations transformers	#	95	4	99	4%		

Table – 3: Jos Disco Proposed Investment Programme (Financial)

Investment Type	2021	2022	2023	2024	2025	Total
	N000,000	N000,000	N000,000	N000,000	N000,000	N000,000
Construction of 33kV Feeder	40	40	40	40	40	199
Rehabilitation of 33kV Feeder	24	24	24	24	24	119
Construction of 11kV Feeder	24	24	24	24	24	119
Rehabilitation of 11kV Feeder	56	56	56	56	56	278
Construction of 0.415kV Feeder	111	111	111	111	111	556
Distribution Plan Capex	389	389	389	389	389	1,947
Substation Plan Capex	151	151	151	151	151	755
ATC&C Loss Reduction Plan (total)	715	715	715	715	715	3,577
Customer Service Improvement Plan	5,079	5,079	5,079	5,079	5,079	25,396
IT Investments	493	493	493	493	493	2,464
Network Metering Capex	739	739	739	739	739	3,696
Others	-	-	-	-	-	-
Total CAPEX	7,822	7,822	7,822	7,822	7,822	39,108



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2.0 Commission's Review

2.1. The Commission's Guideline for PIP Application established the criteria for JEDC to prepare an output-based plan that sets out the service improvement output targets over the planning horizon of 5 years. This plan includes the programs and activities that will lead to the realisation of those outputs, the human and material resources required, the projected costs and analysis of the risk factors, and the proposed mitigation measures. JEDC's PIP and Extraordinary tariff review application was exposed to a Public Hearing and consultation presided over by a panel of three commissioners in line with the Business Rules of the Commission and the "Regulations on Procedure for Electricity Tariff Reviews in the Nigerian Electricity Supply Industry" in February 2020. The Hearing provided an avenue for customers, interested parties, and expert intervenors to critically examine JEDC's proposal and the associated expected improvement in service levels. JEDC was further directed to conduct stakeholders' (customers') engagements at various locations within its franchise area which were attended to and monitored by the staff of the Commission.

2.2. Following the outcome of the public consultation, the Commission had vide Order NERC/198/2020 required JEDC to update its PIP and Extraordinary Tariff Review Application by disaggregating its respective service areas and/or customers per quality of service in order to align rates payable by customers with the quality of supply ("service-based tariffs"). A further review of JEDC's updated submission was considered using the following criteria:

- i. completeness and consistency of the description of each component of the PIP;
- ii. compliance of each component with the Guidelines for preparation of PIPs issued by the Commission;
- iii. analysis of expected results/outcomes from the implementation of each component including the mitigants provided for addressing identified challenges that may hinder the achievement of target;
- iv. thorough price benchmarking and other relevant approaches to the estimation of resources (physical amounts and related OpEx and CapEx) for each component;
- v. determining if the cost and timeline for delivering the output is efficient;
- vi. assessing the efficiency of the proposed financing arrangement;
- vii. analysing the level of technology/modernization leap proposed going forward;
- viii. determining and analysing the overall level of efficiency improvement proposed.

3.0 Results of the Review

The Commission, having considered JEDC's PIP and Extraordinary Tariff Review Application in line with the provision of EPSRA and relevant regulations, approved the PIP and CAPEX programme over 5 years as provided in Table – 4 and Table – 5 below.



Summary of approved projects for Year-1 and Year-2 are also provided in Table – 6, while a detailed list of approved projects for Year-1 and Year-2 are provided in Appendices 1 and 2 respectively.

Table – 4: JEDC's Approved 5-year CAPEX Programme

Year	2021	2022	2023	2024	2025	Total
	Period - 1	Period - 2	Period - 3	Period - 4	Period - 5	Period 1 – 5
	₱000,000	₱000,000	₱000,000	₱000,000	₱000,000	₱000,000
Annual Approved CAPEX	9,446.76	9,446.76	9,446.76	9,446.76	9,446.76	47,233.82

Table – 5: JEDC's Approved 5-year PIP and CAPEX Programme

5-Year Approved PIP	
	₱000,000
Total CAPEX	<u>47,233.8</u>
Distribution Network Capex	23,110.6
Construction of 33kV Feeder	2,873.7
Rehabilitation of 33kV Feeder	1,362.5
Construction of 11kV Feeder	1,762.5
Rehabilitation of 11kV Feeder	2,446.6
Construction of 0.400kV Feeder	4,788.2
Distributions transformers (plan)	5,956.6
MVA Substations transformers (plan)	3,920.5
ATC&C Loss Reduction Plan (total)	2,731.7
Customer Service Improvement Plan	16,361.6
IT Investments (SCADA+GIS+ERP+HSE)	3,384.0
SCADA Initiatives	1,574.5
GIS Improvement	1,325.2
ERP System Infrastructure	-
HSE Initiatives	484.3
AMI Network Metering	-
Customer Metering Capex	-
Network Metering Capex	1,645.9
Others	-



Table – 6: JEDC’s Approved PIP and CAPEX Programme for 2021 and 2022

Approved PIP	2021	2022
	<i>N000,000</i>	<i>N000,000</i>
Total CAPEX	<u>9,446.8</u>	<u>9,446.8</u>
Distribution Network Capex	3,164.8	3,189.6
Construction of 33kV Feeder	163.2	247.3
Rehabilitation of 33kV Feeder	120.4	74.3
Construction of 11kV Feeder	144.9	106.9
Rehabilitation of 11kV Feeder	217.4	132.1
Construction of 0.400kV Feeder	553.9	643.2
Distributions transformers (plan)	1,413.0	969.6
MVA Substations transformers (plan)	552.0	1,016.2
ATC&C Loss Reduction Plan (total)	715.4	377.3
Customer Service Improvement Plan	4,244.1	4,532.1
IT Investments (SCADA+GIS+ERP+HSE)	412.6	941.0
SCADA Initiatives	0.0	629.8
GIS Improvement	310.4	219.7
ERP System Infrastructure	0.0	0.0
HSE Initiatives	102.2	91.5
AMI Network Metering	0.0	0.0
Customer Metering Capex	-	-
Network Metering Capex	909.9	406.9
Others	-	-

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4.0 Annual Update of PIPs

JEDC shall be required to provide an annual update to the PIP to reflect the proposed investment programme as part of the Minor Review of Tariffs on a continuous basis. The Commission recognizes this PIP as a dynamic roadmap of where JEDC envisions to be in the next five (5) years and will continue to evolve in alignment with market development and changes to the operating environment. JEDC may invest more than the indicated annual CAPEX figure in any particular year on account of front-loading proposed future investments or due to the unanticipated critical investment needs subject to the approval of the Commission.

5.0 Front-loading of CAPEX

JEDC is at liberty to front-load its CAPEX programmes to attain accelerated service improvements. Front-loading of CAPEX programme in any year shall not exceed annual CAPEX for the following year in line with the framework for continuous update of the PIPs.

6.0 CAPEX Clawback

Annual CAPEX provisions that are unutilized or imprudently expended shall be clawed back during Minor Reviews of Tariffs in line with the requirements of Section 7(a) of Regulations on Procedure for Electricity Tariff Reviews in the NESI.

7.0 Commencement and Effectiveness

The approved PIP and CAPEX programme of JEDC shall take effect on the 1st day of July 2021 and shall remain effective until the 30th day of June 2026.

8.0 Signature

Dated this 29th day of April 2021



Sanusi Garba
Chairman



Dafe C. Akpeneye
Commissioner

Appendices

Appendix 1 - Details of Planned 2021 Investments for Jos Electricity Distribution Company

<i>Distribution Network: lines</i>				
<i>Project Type: Construction of 33kV Feeder</i>				
#	Project Description	Location	Overhead/ underground	Route Length (km)
1	Construction of 4.3KM of new 33kV State Low Cost Feeder from Diye - Railway crossing to State Low cost junction to Ranhya 1 x 15MVA, 33/11kV Injection Substation to relieve Anglo-Jos 33kV feeder, Bukuru, Plateau State (Disco Interface Projects)	State-low Cost, Jos	Overhead	4.3

<i>Distribution Network: lines</i>					
<i>Project Type: Rehabilitation of 33kV Feeder</i>					
#	Project Description	Type of Rehabilitation	Overhead/ underground	Location	Route Length (km)
1	Rehabilitation of 65KM of 33kV Ankpa Feeder in Okupo Region, Benue State state (Disco Interface Projects)	Reconductoring & Replacement of O/H materials	Overhead	Okupo, Benue State	65
2	Extension of 33kV Ikpoyongu feeder by 13 spans Makurdi to feed Apir Community & others to Rehabilitate and deload NNPC feeder	Replacement of Poles	Overhead	Apir, Makurdi	13 Span

Distribution Network: lines

Project Type: Construction of 11kV Feeder

#	Project Description	Overhead/ underground	Location	Route Length (km)
1	Construction of 5.3KM 11kV line to deload Railway feeder Bauchi	Overhead	Bauchi	5.3

Distribution Network: lines

Project Type: Rehabilitation of 11kV Feeder

#	Project Description	Type of Rehabilitation	Location	Route Length (km)
1	Rehabilitation / Construction of 7KM 11kV line to deload 11kV Bukuru feeder Bukuru	Reconductoring & Replacement of O/H materials	Bukuru	7

Distribution Network: lines

Project Type: Construction and Rehabilitation of 0.400kV Feeder

#	Project Description	Type of Project	Overhead/ underground	Conductor Size (mm ²)	Location	Route Length (km)
1	Construction of New 0.400kV Lines (48km)	Rehabilitation	Overhead	100mm ²	Various Locations	50



Distribution Network: stations

Project Type: New Construction, Reinforcement and Standardisation of Distribution Sub-station

#	Name of Relief Substation	Transformation Voltage (kV)	Rating - kVA	Type of work (New Construction or Replacement)
1	OLD BURIAL GROUND Relief	11/0.400	300	New Construction
2	GIDA DUBU I Relief	11/0.400	300	New Construction
3	GAMAWA CLOSE Relief	11/0.400	300	New Construction
4	GWALLAGA OLD Relief	11/0.400	300	New Construction
5	NASSARAWA PRIMARY Relief	11/0.400	300	New Construction
6	BAYAN GARI Relief	11/0.400	300	New Construction
7	BURIAL GROUND Relief	11/0.400	300	New Construction
8	RAFIN ZURFI I Relief	11/0.400	300	New Construction
9	DAY LIGHT Relief	11/0.400	300	New Construction
10	DIYE ZARMAGANDA Relief	11/0.400	300	New Construction
11	CONTINENTAL Relief	11/0.400	300	New Construction
12	KERANA 1 Relief	11/0.400	300	New Construction
13	RAHWOL KAK Relief	11/0.400	300	New Construction
14	ROUNDABOUT Relief	11/0.400	300	New Construction
15	VICTORY Relief	11/0.400	300	New Construction
16	SARKI RUWA 1 Relief	11/0.400	300	New Construction
17	USMAN FARUK 1 Relief	11/0.400	300	New Construction
18	G.S.S 1 Relief	11/0.400	300	New Construction
19	PATAMI 1 Relief	11/0.400	300	New Construction
20	PATAMI 2 Relief	11/0.400	300	New Construction
21	MANAWASHI Relief	11/0.400	300	New Construction
22	MECHANIC VILLAGE Relief	11/0.400	300	New Construction
23	RAFIN PA Relief	11/0.400	300	New Construction
24	KAMFALA RELIEF II	11/0.400	300	New Construction

25	BAYAN PRIMARY	11/0.400	500	Replacement
26	SHONGO IDRISA 3	11/0.400	500	Replacement
27	YAN SHANU	11/0.400	500	Replacement
28	ADEKE VILLAGE	11/0.400	500	Replacement
29	THE APOSTOLIC	11/0.400	500	Replacement
30	JORFADA COMMUNITY	11/0.400	500	Replacement
31	ZANGO I	11/0.400	500	Replacement
32	ANGWAN RIMI B	11/0.400	500	Replacement
33	NEW DUBAI	11/0.400	500	Replacement
34	LOW COST EXTENSION	11/0.400	500	Replacement
35	IKOBI VILLAGE	11/0.400	500	Replacement
36	BOJINJI VILLAGE	11/0.400	500	Replacement
37	MAGAMA GARI	11/0.400	500	Replacement
38	ATOSHI CLOSE	11/0.400	500	Replacement
39	BOGO	11/0.400	500	Replacement

Network: Injection Substations (33/11kV)

Project Type: Construction, Reinforcement and Standardisation of Injection Substation

#	Name of Substation	Location	Number of Units	Type of work	Rating - MVA
1	Proposed installation of 7.5MVA, 33/11kV Power Transformer and associated switchgears at Games village, Bauchi State.	Bauchi	1	Replacement	7.5

Network: Standardisation of Existing Injection Substations (33/11kV)					
Project Type: Replacement of Switch Gears, Control Panel and Protection Equipment					
#	Name of Substation	Description	Location	GPS Coordinates	Quantity
1	Uni Jos	11kV indoor Switchgear-7 board Panel	Jos Metro	8.618777N, 7.783085E	1
2	Railway Bauchi	11kV indoor Switchgear-7 board Panel	Bauchi	10.285737N, 9.850185E	1
3	Uni Agric Makurdi	11kV indoor Switchgear-7 board Panel	Benue	8.618777N, 7.783085E	1
4	B&L Makurdi	11kV indoor Switchgear-7 board Panel	Benue	8.59051N, 7.719555E	1

AT&C Loss Reduction Plan

#	Name	Description	Quantity
1	Reconductor of undersized O/H conductors on 8 number 11kV feeders across the 8 Regions	Reconductor of undersized conductors	25
2	Loss Reduction Materials (TO ELIMINATE HOT JOINTS)	This Materials include: Cable Sockets, Cable glands, Bi-Metallic line taps, Ferrules, etc	
3	Reconductor/Construction of 26KM of LT Network for the 20 Number relief substations	Replacement of undersized conductors which frequently cut due to overload on various units of distribution transformers	24
4	Construction of 30KM of LT Network for the 24 Number relief substations	Replacement of undersized conductors which frequently cut due to overload on various units of distribution transformers	30
5	Upgrade of 13 Numbers Distribution transformers	Upgrade of 13 Numbers 300kVA, 33/0.400kV to 500kVA, 33/0.4kV DSS	13

<i>Customer Service Improvement Plan</i>			
#	Name	Description	Quantity
1	Deloading of 33kV Ankpa Feeder	Construction of 8.8KM of new 33kV Feeder from Asa 1 x 40MVA, 132/33kV Transmission Station to separate Old Enugu 1 x 7.5MVA, 33/11kV Injection substation to deload Ankpa 33kV feeder in Orukpa, Benue State (Disco Interface Projects)	1
2	Rehabilitation of 33kV Kumo Feeder,	Rehabilitation of 60KM on 33kV Kumo Feeder, Gombe state (Disco Interface Projects)	1
3	Rehabilitation of 33kV Dorowa Feeder	Rehabilitation of 65KM of 33kV Dorowa Feeder in Bukuru/Pankshin, Plateau state (Disco Interface Projects)	1
4	Fault Clearing Initiative	Customer Service Improvement: Procurement and Installation of 3Nos 33kV Auto Reclosers/ Sectionalizers with server and remote on 33kV Kumo, Ankpa & Dorowa feeders for Network reliability and reducing down time on fault clearing (Disco Interface Projects)	1
5	Network Flexibility and power reliability Initiative	Customer Service Improvement: Procurement and Installation of 11Numbers 11kV RMU(Extendible)for Network Flexibility and power reliability at District feeder, by Peugeot Substation, Makurdi; West of Mines, by Electricity House, Jos Metro; Government House, Dogon Yaro Roundabout, Bouchi;Ibrahin Taiwo, by Hill Station, Bukuru;Fed Lowest, near Rafin Sany, Gombe;Bukuru Town, near First Bank, Bukuru;Zaria Road, by UBE, Jos Metro	1

6	Power reliability Initiative	Customer Service Improvement: Procurement and Installation of 12No 11kV RMU (main only) for 2.5MVA, 33/11kV Power Transformers at the following Injection substations (locations): Lohmark 2.5MVA Bukuru, Ningi 2.5MVA, Bauchi, Shira/Yaama 2.5MVA, ATB Stadium 1-2.5MVA Bauchi, ATB Stadium 2-2.5MVA Bauchi, Obarike 2.5MVA Otukpo, Okpogo 2.5MVA Otukpo, Ben Poly 2.5MVA Otukpo, Ugbokolo 2.5MVA Otukpo, Oju1-2.5MVA Otukpo, Vandekya 2.5MVA Gboko and Adikpo 2.5MVA Gboko.	
7	Customer supply reliability/availability Initiatives	Installation of 20 Numbers 300kVA, 11/0.400kV Relief Substations with DD Construction	20
8	Customer supply reliability/availability Initiatives	Upgrade of 18No. 300kVA, 11/0.400kV Dss to 500kVA, 11/0.400kV	18
9		Procurement of 10No 100kVA, 33/0.400kV Station service transformer for the following Injection substation: Makeri, West of Mines, Railway Bauchi, Vom, Mangu, North Bank Makurdi, BBL Makurdi, BSU Makurdi, Uni Agric Makurdi and Rayfield Bukuru	10
10	Reliability and availability initiative	Construction 8km 33kV line to transfer rural leg of 33kV Doma Feeder to less loaded 33kV Malam Sidi feeder.	1
11	Customer supply availability initiative	Construction of 10KM of new 33kV feeder to Proposed New GRA 1 x 15MVA, 33/11kV Injection Substation Makurdi	1
12	Customer supply availability initiative	Construction of a New 3.5KM 33kV Feeder from Zaria Road TS to 2X15MVA Bauchi Road Injection S/S Jos to de-load 33kV JUTH feeder	
13	Reliability and availability initiative	Construction of special 9KM New 33kV Feeder Dual Circuit using special 40ft RC pole from Zaria Road Transmission to Unijos 1 x 7.5MVA, 33/11kV S/S to de-load Dogon Duthe 33kV feeder Jos Metro Region, Jos Plateau State	
14	Reliability and availability initiative	Rehabilitation/Rerouting of 5km of 4No. 33kV Feeders (JUTH, Anglo Jos, Dogon Duse & Zaria Road) from source at Zaria Road TS Jos.	

15	Customer supply reliability/availability Initiatives	Customer Service Improvement: Procurement and installations of 10 Numbers 33kV Auto Reclosers for reducing down during fault clearing and network reliability	
16	Customer supply reliability/availability Initiatives	Construction of New 6.5 KM of 11kV line to de-load Township feeder Jos	
17		Customer Service Improvement: Replacement of 10 No 33kV Transformer Control/Relay Panels for the following Injection substations: Anglo-Jos T2 Bukuru, Dogo-Duste Jos, Railway T1 Bauchi, Industrial Makurdi, BBL Makurdi, Uni Agric Makurdi, Dilimi Jos, Vom Buk	
18	Customer supply reliability/availability Initiatives	Customer Service Improvement: Procurement and installation of 482 No. 800Amps Feeder Pillar to Replace burnt ones across the 8 regions	
19	Customer supply reliability/availability Initiatives	Customer Service Improvement: Replacement of 16 No Defective relays on 11kV Panels in the following Injection substations: West of Mines Jos (4No), Rantya Jos (3No), Dogo-Duste Jos (2No), Mangu Bukuru (1No), Uni Jos (4No) and Bukuru (2No)	
20	Customer supply reliability/availability Initiatives	Customer Service Improvement: Procurement and installation of 14 No 110V, 25A Tripping Unit (Complete with Battery Bank) for the following Injection substations: Dogo-Duste Jos, Railway Bauchi, Industrial Makurdi, BBL Makurdi, Uni Agric Makurdi, North Bank	
21		Customer Service Improvement: Replacement of 4 sets of 7-Board 11kV switchgear Panel at the following Injection substations: Uni Jos 1set, Railway Bauchi 1set, Uni Agric Makurdi 0.5set, BBL Makurdi 0.5set and Tashan-Dukku 1set.	
22		Customer Service Improvement: Procurement and installation of 12 sets of 33kV Outdoor free standing current transformers (400-200/1.1-1A) for the following Injection substations: Bauchi Rd Jos, Railway Bauchi, Industrial Makurdi, BBL Makurdi, Barracks Rd	

23		Customer Service Improvement: Procurement and installation of 12sets of 33kV Outdoor free standing Voltage transformers (33000/110V) for the following Injection substations: Railway Bauchi, Industrial Makurdi, BBL Makurdi, Dilimi Jos, Yam Bukuru, Doma G	
24		Procurement and installation of 10No 33kV Outdoor Circuit Breaker for the following Injection substations: Bauchi Rd Jos, Dogon-Duste Jos, Dilimi Jos, Railway T1 Bauchi, Industrial Makurdi, BSU Makurdi, BBL Makurdi, Fodaman Mada Bauchi, Doma Gombe an Old	
25		Customer Service Improvement: Procurement of 468 Sets of 33kV and 11kV Drop Out fuse to Replace burnt ones across the 8 Regions to improve power delivery and reliability	
26		Rehabilitation of Existing 33kV Feeders (228km) (Rukuba, Anglo-Jos, Bukuru, Makeni, NNPC Makurdi, Oju, Makurdi Town, Shongom, Water Works & Azare)	
27		Standardization / Rehabilitation of 10 Number Injection Substations (Dogon Dutse, Jos Metro; West of Mines, Jos Metro; Yam, Bukuru; Industrial, Makurdi; Yelwa, Bauchi; Fodama Mada, Bauchi; Doma, Gombe; Nafoda, Gombe; Enugu Road, Okupo; & Azare Main, Azar	
28		Rehabilitation of 20KM of Existing 11kV Feeders (Polo, Hwalsha, District, Mallam Inno & Bank Road)	
29		Construction of 15 Numbers 300kVA,33/0.400kV Relief Substations with HT Down Drop , and LT line Constructions	
30	Customer supply reliability/availability Initiatives	Replacement of 18 Number failed 500kVA,33/0.400kV DTs	
31		Working Tools & Instruments (Various working tools and articulated vehicles)	
32		Proposed upgrading of 7.5MVA to 15MVA, 33/11kV at BBL Injection Sustain Makurdi Benue State	

33		Crossing of River Benue with 132KV Double circuit Galvanized steel Towers & installation mini-towers	
34		Customer Service Improvement: Procurement of various types of U/G Cables for Relief projects and upgrading over loaded and burnt cable for repairable power delivery 12.5KM	
35		Customer Service Improvement: Procurement and installation of 2 Nos 33KV RMU for Network reliability and reduce down time on fault clearing at Grand cereals, Bukuru Region, Jos Plateau State.	
36		Construction of 15KM special 33KV Double circuit line with special 40 ft re-inforced Concrete pole to Grand Cereals Company	

IT Investments (GIS)		
#	Name	Description
1	IT INFRASTRUCTURES: NEPLAN Software, AMI & GIS	Enhancement of existing AMR/TMR and other Meter telemetry system.
2		NEPLAN V10, Server/Intranet or Local solution, Unlimited nodes
3		Short Circuit Calculation, Reliability Analysis, Load Flow Time simulation.
4		
5		Geographic information system
6		Expand and enhance the existing GIS toolsets and enumeration exercises

IT Investments (HSE)		
#	Name	Description
1	HSE Plan A	Purchase of PPE and Safety equipment

Network Metering (Smart Meters)			
#	Project Description	Description	Quantity
1	Network Feeder Metering for 145 11kV Feeders (outdoor smart metering)	New	142
2	Network Feeder Metering for 45 NUMBER 33kV Feeders (outdoor smart metering)	New	42
3	33/0.400kV DT meter		150
4	11/0.400kV DT meter		332

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Appendix 2 - Details of Planned 2022 Investments for Jos Electricity Distribution Company

Distribution Network: lines

Project Type: Construction of 33kV Feeder

#	Project Description	Location	Overhead/ underground	Route Length (km)
1	Construction of 3.0KM of new 33kV from Pankshin TS to Pankshin Injection substation.	Pankshin	Overhead	3

Distribution Network: lines

Project Type: Rehabilitation of 33kV Feeder

#	Project Description	Type of Rehabilitation	Route Length (km)
1	Rehabilitation of 1.5KM of 33kV Water Works Bauchi	Replacement of O/H materials	1.5

Distribution Network: lines

Project Type: Construction of 11kV Feeder

#	Project Description	Location	Route Length (km)
1	Construction of 3KM 11kV line From proposed New GRA Injection substation Makurdi	Makurdi	3

Distribution Network: lines

Project Type: Rehabilitation of 11kV Feeder

#	Project Description	Type of Rehabilitation	Overhead/ underground	Route Length (km)
1	Rehabilitation of 22KM of Existing 11kV Feeders (Bukuru Town, Township Makurdi, GOVT House Bauchi, GRA Gombe, Murfalo Jos)	Replacement of overhead materials	Overhead	22

Distribution Network: lines

Project Type: Construction and Rehabilitation of 0.400kV Feeder

#	Project Description	Type of Project	Overhead/ underground	Conductor Size (mm ²)	Location
1	Construction of New 0.400kV Lines (38km)	Rehabilitation	Overhead	150mm ²	Various Locations

Distribution Network: stations

Project Type: New Construction, Reinforcement and Standardisation of Distribution Sub-station

#	Name of Relief Substation	Transformation Voltage (kV)	Rating - kVA	Type of work (New Construction or Replacement)	Quantity
1	MANAWASHI	11/0.400	300	New Construction	1
2	MECHANIC VILLAGE	11/0.400	300	New Construction	1
3	RAFIN PA	11/0.400	300	New Construction	1

4	ADEBAYO	11/0.400	300	New Construction	1
5	SUZUKI	11/0.400	300	New Construction	1
6	AREA COURT	11/0.400	300	New Construction	1
7	FILIN SUKWA RELIEF	11/0.400	300	New Construction	1
8	NDIEA	11/0.400	300	New Construction	1
9	RIKKOS 1	11/0.400	300	New Construction	1
10	GRAVITY A	11/0.400	300	New Construction	1
11	PW	11/0.400	300	New Construction	1
12	OWNER OCCUPIER EXT.	11/0.400	300	New Construction	1
13	MKD INT'L MKT JUNCTION	11/0.400	300	New Construction	1
14	SPECIAL SCIENCE	11/0.400	300	New Construction	1
15	KATSINA-ALA STR	11/0.400	300	New Construction	1
16	HADIZA	11/0.400	300	New Construction	1
17	MODERN MKT ROAD	11/0.400	300	New Construction	1
18	ADEKE VILLAGE 2	11/0.400	300	New Construction	1
19	BHD MOBIL	11/0.400	300	New Construction	1
20	UTC	11/0.400	300	New Construction	1

21	HE APOSTOLIC		11/0.400	300	New Construction	1
22	OGBE OIBANDE AVENUE OTUKPO		11/0.400	300	New Construction	1
23	MAKARA HUTA		33/0.400	300	New Construction	1
24	BEM ANGWE		33/0.400	300	New Construction	1
25	LOCAL GOVT		33/0.400	300	New Construction	1

Network: Injection Substations (33/11kV)

Project Type: Construction, Reinforcement and Standardisation of Injection Substation

#	Name of Substation	Location	GPS Coordinates	Number of Units	Type (Manned/unmanned)	Type of work	Rating - MVA
1	Industrial	Makurdi	8.4917N, 7.704273E	1	Manned	Upgrading of 7.5MVA to 15MVA, 33/11kV Transformer	15

Network: Standardisation of Existing Injection Substations (33/11kV)

Project Type: Replacement of Switch Gears, Control Panel and Protection Equipment

#	Name of Substation	Description	Quantity
1	Barracks Rd	Replacement of 11kV Switchgears	1
2	Rayfield and Vom	Replacement of 11kV Switchgears	1
3	Fodamon Mada and Yelwa	Replacement of 11kV Switchgears	1
4	Stadium	Replacement of 11kV Switchgears	0.5
5	Old Enugu Rd	Replacement of 11kV Switchgears	0.5
6			
7	Azore	Replacement of faulty 33kV Free standing Current transformer	3

8	Uni Jos	Replacement of faulty 33kV Free standing Current transformer	3
9	Makeri	Replacement of faulty 33kV Free standing Current transformer	3
10	Asa	Replacement of faulty 33kV Free standing Current transformer	3
11	Toshan Dukka	Replacement of faulty 33kV Free standing Current transformer	3
12	Nofada	Replacement of faulty 33kV Free standing Current transformer	3
13			
14	Toshan Dukka	Replacement of faulty 33kV Free standing Voltage transformer	3
15	Bukuru	Replacement of faulty 33kV Free standing Voltage transformer	3
16	Fadaman Mada	Replacement of faulty 33kV Free standing Voltage transformer	3
17	Riyal	Replacement of faulty 33kV Free standing Voltage transformer	3
18	Azare NIPP	Replacement of faulty 33kV Free standing Voltage transformer	3
19	Langtang	Replacement of faulty 33kV Free standing Voltage transformer	3
20			
21	Maraban Jama'o	Replacement of faulty 33kV Outdoor Circuit Breaker	1
22	Toshan Dukka	Replacement of faulty 33kV Outdoor Circuit Breaker	1
23	Legislative Otrs	Replacement of faulty 33kV Outdoor Circuit Breaker	1
24	Bukuru	Replacement of faulty 33kV Outdoor Circuit Breaker	1
25	Mangu	Replacement of faulty 33kV Outdoor Circuit Breaker	1
26	Maraban Jama'o	Replacement of Defective Relays	2
27	Bauchi Rd	Replacement of Defective Relays	4
28	Uni Jos	Replacement of Defective Relays	2
29	Bukuru	Replacement of Defective Relays	2
30	Makeri	Procurement and Installation of Tripping Unit (110V Charger and Battery Bank)	1
31	Rantyo	Procurement and Installation of Tripping Unit (110V Charger and Battery Bank)	1
32	West of Mines	Procurement and Installation of Tripping Unit (110V Charger and Battery Bank)	1
33	Bauchi Rd	Procurement and Installation of Tripping Unit (110V Charger and Battery Bank)	1
34	Doma	Procurement and Installation of Tripping Unit (110V Charger and Battery Bank)	1
35	Kafin Tafawa	Procurement and Installation of Tripping Unit (110V Charger and Battery Bank)	1
36	Bukuru	Procurement and Installation of Tripping Unit (110V Charger and Battery Bank)	1
37	Riyal	Procurement and Installation of 110V Battery Bank	1

38	Azare	Procurement and Installation of 110V Battery Bank	1	1
39	Kalshingi	Procurement and Installation of 110V Battery Bank	1	1
40	Bogoro	Procurement and Installation of 110V Battery Bank	1	1
41	Uni Agric	Procurement and Installation of 110V Battery Bank	1	1
42	Mangu	Procurement and Installation of 110V Battery Bank	1	1
43	Uni Jos	Replacement of failed Transformer Relay Control Panels	2	2
44	Bukuru	Replacement of failed Transformer Relay Control Panels	2	2
45	Old Enugu Rd	Replacement of failed Transformer Relay Control Panels	1	1
46	Rayfield	Replacement of failed Transformer Relay Control Panels	1	1
47	Legislative Ctrs	Replacement of failed Transformer Relay Control Panels	1	1
48	West if Mines	Replacement of failed Transformer Relay Control Panels	1	1

AT&C Loss Reduction Plan

#	Name	Description	Quantity	Project Cost (N)
1	Loss R eduction Materials (TO ELIMINATE HOT JOINTS)	This Materials include:- Cable Sockets, Cable glands, Bi-Metallic line tops, Ferrules, etc	1	32,831,654.5500
2	Uproing of Substations	Upgrade of 10 Numbers 300KVA, 33/0.400KV to 500KVA, 33/0.4KV DSS	10	91,601,610.0000
3		Construction of new 0.6KM 11KV feeder at Kafin Tafawa injection substation Bauchi	0.6	4,935,537.0000

4	Construction of new 2.0KM 11kV feeder at Asa injection substation Olukpo	2	16,451,790.0000
5	Construction of 13KM Double circuit 33kV line from Gombe TS to Legislative injection s/S to Separate Legislative Qtrs Injection substation to relieve Kumo 33kV feeder	13	231,450,000.0000

Customer Service Improvement Plan

#	Description	Quantity
1	Customer Service Improvement: Procurement and installation of 500 No. 800Amps Feeder Pillar to Replace burnt ones across the 8 regions	500
2	Customer Service Improvement: Procurement of 550 Sets of 33kV and 11kV Drop Out fuse to Replace burnt ones across the 8 Regions to improve power delivery and reliability	550

3	Standardization / Rehabilitation of 10 Number Injection Substations(Uni Jos, Rayfield, Mangu, B8I, North Bank, Uni Agric. Langtang, Makeri, Wase, legislative)	10
4	Working Tools & Instruments (Various working tools and articulated vehicles)	
5	Customer Service Improvement: Procurement of various types of U/G Cables for Relief projects and upgrading over loaded DTs and replacement of burnt cables for reliable power delivery.	
6	Construction of 30KM of LT Network for the 25 Number relief substations	
7	Construction of 25KM of LT Network for the 20 Number relief substations	
8	Replacement of 15 Number failed 500KVA, 11/0.400KV DTs	
9	Construction of New 1x15MVA, 33/11kV Injection substation	
10	Installation of recovered 7.5MVA, 33/11kV Transformer at North Bank	
11	Upgrading of 7.5MVA to 15MVA, 33/11kV Transformer Tashan Dukku	
12	Upgrading of 7.5MVA to 1x7.5MVA & 1x8.9MVA, 33/11kV Transformer Shongo, Gombe	
13	Upgrading of 7.5MVA to 15MVA, 33/11kV Transformer, Uni. Jos	
14	Procurement of Switchgear accessories & Installation of 8.9MVA 33/11kV Transformer including 33kV & 11kV switchgears. Car Wash Jos	
15	Construction of New 1x7.5MVA, 33/11kV Injection substation, Jos Road, Bauchi	

16	Upgrading of 7.5MVA to 15MVA, 33/11kV Transformer, ASA Chukpo	
17	Installation of 25 Numbers 300kVA, 11/0.400kV Relief Substations DD	
18	Upgrade of 25No. 300kVA, 11/0.400kV Dss to 500kVA, 11/0.400kV	
19	Replacement of 10 Number failed 500kVA, 33/0.400kV DTs	
20	Procurement and installation of 6No 33kV Outdoor Circuit Breaker for the following Injection substations: Maraban Jama' a, Tashan Dukku, Legislative Qtrs Gombe, Bukuru, Mangu and Maraban Jama' a.	
21	Customer Service Improvement: Procurement and installation of 6sets of 33kV Outdoor free standing Voltage transformers (33000/110V) for the following Injection substations: Tashan Dukku, Bukuru, Fodaman Mada, Riyal, Azare, Langtang.	
22	Customer Service Improvement: Procurement and installation of 6sets of 33kV Outdoor free standing current transformers (400-200/1-1-1A) for the following Injection substations: Barracks Rd 1set, Rayfield 0.5set, Vom 0.5set Stadium Jos Metro 0.5set, Old Enugu Rd Chukpo 0.5set, Fodaman Mada Bauchi 0.5set and Yelwa Bauchi 0.5set.	
23	Customer Service Improvement: Replacement of 4sets of 7-Board 11kV switchgear Panel at the following Injection substations: Barracks Rd 1set, Rayfield 0.5set, Vom 0.5set Stadium Jos Metro 0.5set, Old Enugu Rd Chukpo 0.5set, Fodaman Mada Bauchi 0.5set and Yelwa Bauchi 0.5set.	

24	Customer Service Improvement: Procurement and installation of 7No 110V, 25A Tripping Unit (Complete with Battery Bank) for the following Injection substations: Makeri, Rantya, Bukuru, West of Mines, Bouchi Rd, Domo, Kafin Tafawa.	
25	Customer Service Improvement: Replacement of 12No Defective relays on 11kV Panels in the following Injection substations: Bouchi Rd Jos (4No), Maraban Jama'a (2No), Uni Jos (2No), Bukuru (2No), Barracks Rd (2No)	
26	Customer Service Improvement: Replacement of 7No 33kV Transformer Control/Relay Panels for the following Injection substations: Uni Jos (2No), Bukuru (2No), Old Enugu Rd (1No), Royfield (1No), Legislative Qtrs Gombe	
27	Construction of new 5.0KM 11kV feeder at Riyal injection substation Gombe	
28	Customer Service Improvement: Procurement and installations of 15MVA, 33/11kV Power Transformer to Upgrade 8.9MVA 33/11kV to 15MVA 33/11kV at Domo injection substation Gombe.	
29	Customer Service Improvement: Procurement & installation of 6No 110V Battery Banks for the following Injection substations: Riyel, Azare, Katsingi, Bogoro, Uni Agric Makurdi, Mangu.	
30	Customer Service Improvement: Installation of 1X7.5MVA, 33/11kV Power Transformer at Makeri Inj. S/S, Bukuru	

IT Investments (GIS)		
#	Name	Description
1		Geographic information system
2		Expand and enhance the existing GIS toolsets and enumeration exercises
3		
4		CUSTOMER MANAGEMENT AND SUPPORT SYSTEM

IT Investments (HSE)		
#	Name	Description
1	HSE Plan A	Purchase of PPE and Safety equipment

Network Metering (Smart Meters)			
#	Project Description	Description	Quantity
1	Network Feeder Metering for 10 11kV Feeders (outdoor smart metering)	New	10
2	Network Feeder Metering for 10 NUMBER 33kV Feeders (outdoor smart metering)	New	10
3	33/0.400kV DT meter		250
4	11/0.400kV DT meter		150

[Handwritten scribbles and symbols]