



ORDER/NERC/269/2021

**BEFORE THE NIGERIAN ELECTRICITY REGULATORY COMMISSION
IN THE MATTER OF THE EXTRAORDINARY REVIEW OF MULTI-YEAR TARIFF ORDER FOR
ABUJA 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 Abuja Electricity Distribution Plc (AEDC).

1.2. Commencement

The approved PIP and Capital Expenditure ("CAPEX") programme of AEDC shall take effect on the 1st day of July 2021 and shall remain effective until the 30th day of June 2026.

1.3. Context

AEDC 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 aiming 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 AEDC to prioritise the implementation of the proposed CAPEX initiatives. The approved PIPs shall also form the basis for defining KPIs for AEDC 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 AEDC in February 2020 and monitored the stakeholders' engagements by AEDC 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 Serviced-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 AEDC's initial PIP submission have been considered as part of this review to align the PIPs with customer expectations of service commitment by AEDC.

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

AEDC operates across four states of Nigeria (Kogi, Abuja, Nasarawa, and Niger) over a landmass of 133,000km Sq. comprising of 8,770 km of 33kV and 5,785 km of 11KV line making a total of 14,555 km of medium voltage lines.

AEDC has 277 units of injection substations supplied from the Transmission Company of Nigeria (TCN) across 18 interface transmission stations. The total installed AEDC injection capacity is 2,530MVA interfacing with TCN.

Per the MYTO allocation and Vesting contract, AEDC is entitled to 11.50% of the total generated energy per time within the network. However, in the past four years, AEDC has received on average 14.53% of total energy generated nationally. This is 3.03% more than the MYTO energy allocation. To enhance capacity, AEDC plans to make significant additional investment to upgrade 2,239 km of lines and 188nos. of distribution transformers and 27nos substation transformers to reduce losses in tandem with its Performance Agreement loss commitments.

The Demand Study forecasts conducted in the year 2019 indicate that total demand on the network is 1062.74MW, and subsequently 1,129.4MW, 1,200.63MW, 1,276.92MW, 1,353.21MW and 1,429.50MW for years 2020, 2021, 2022, 2023, and 2024 respectively. Given this capacity growth, AEDC will require investments in the network to adequately plan for the increased demand over the next 5 years.

Following the MAP regulation issued by NERC, AEDC flagged off the MAP in compliance with regulatory expectations. In total 149,953 MAP meters had been installed by AEDC as of November 2020. Implementing the initiative, the Company partnered with three MAP vendors in the initial round and added three MAPs to deploy meters across the franchise area.

1.5. Stakeholder Consultation

AEDC had followed a process for stakeholder consultation as directed by the Commission. Several focused group discussions to harness stakeholder's views on AEDC's services, future expectations, and preferences were conducted with participants representing various customer categories. These engagements are necessary to:



- instill accountability between AEDC and its customers on the services and justification for associated costs and resulting tariffs;
- minimise disputes by engendering understanding and trust between AEDC and its customers;
- provide an opportunity for AEDC to engage with customers on the service improvement investment programme.

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
- Consumers relationship management
- Quality of fault complaint and repairs process

1.6. Proposed Outputs:

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

- Reduce ATC&C losses from the current level of 45% to 19% over 5 years
- Achieve 100% metering of customers by installing 698,606 meters over 3years
- Improve customer safety and reduce inadvertent accidents
- Increase number of new customers from the current level of 1,214,259 to 1,450,695 over 5 years

Table – 1: Planned Service Improvements Targets

Planned Service Improvements					
Item	Unit	Current	Service Improvement	Year-5 Target	Variance
Customers	#	1,214,259	236,436	1,450,695	19.47%
ATC&C loss	%	45	26	19.3	57.35%
Energy Delivered	GWh	4,128	4,134	8,261.3	100.15%
Average Duration of Supply	(Hrs/Day)	17.52	0.46	17.98	2.61%
Average Frequency of Interruptions	#/day	1.12	-0.16	0.96	-14.45%
Average Duration of Interruptions	Hrs/day	6	-2	4	-27.73%

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1.7. Investment Strategies:

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

- a. Reliability and Quality of Supply Improvement (Technical Loss Reduction) Projects: The implementation of these projects will result in an appreciable reduction of technical losses, improved operational performance, and enhancement of customer service delivery across its franchise area. The projects to be executed are grouped into the following:
 - i. Network Expansion projects
 - ii. Network reconfiguration/rehabilitation
 - iii. Network upgrade
 - iv. Protection, Control & Communication and Metering
- b. Commercial Loss Reduction Strategies: These initiatives include Revenue protection, replacement of obsolete meters, improving billing accuracy, and deployment of Advanced Metering Infrastructure (AMI).
- c. Collection Efficiency Improvement Strategies: Some of the strategies include; robust Key Account management, full metering of MDAs, and rigorous engagement of MAP scheme to close the metering gap within two years to achieve zero % collection loss.
- d. Enhance Operational Efficiency and Flexibility: Several utility-specific technology tools will be deployed over the PIP horizon. Example of these tools include:
 - i. Geographic Information System GIS
 - ii. Incident Recording & Management System (IRMS)
 - iii. SCADA for HV and MV
 - iv. Outage Management Systems (OMS)
- e. Customer Service Performance Improvement Strategy: To attain full compliance with regulatory service delivery standards whilst providing real-time customer satisfaction and achievement of excellence operations.
- f. Furthermore, AEDC is exploring several innovative ideas to deliver significant improvement in service delivery and value creation. Some of these initiatives include:
 - i. Distributed Energy Solutions Strategy to facilitate the development of business models, which support the delivery of energy to augment grid supply;
 - ii. Abuja 24/7 initiative focused on the phased deployment of embedded generation and franchise model towards service improvement
 - iii. Health Safety and Environmental Improvement Initiatives;
 - iv. Stakeholder Communications and Engagement Strategies;



Table - 2: Proposed Investment (Technical)

Item	Unit	Current	Additions/ Construction	Year-5 Target	Variance	PIP Rehabil itation	% of Rehabili tation
Network Length 33 kV	km	8,770	1,583	10,352	18%	201	2%
Network Length 11 kV	km	5,785	657	6,442	11%	3,540	61%
Network Length 0.4 kV	km	49,862	2,430	52,292	5%		
MVA distributions transformers	MVA	5,280	91	5,371	2%		
# distributions transformers	#	17,331	188	17,519	1%		
MVA Substations transformers	MVA	2,530	390	2,920	15%		
# Substations transformers	#	277	27	304	10%		

Table - 3: Abuja Disco Proposed Investment Programme (Financial)

	2021	2022	2023	2024	2025	Total
	N000,000	N000,000	N000,000	N000,000	N000,000	N000,000
Construction and Rehabilitation	6,293	6,293	6,293	6,293	6,293	31,464
Injection Substation	4,948	4,948	4,948	4,948	4,948	24,739
Customer Metering	3,958	3,958	3,958	3,958	3,958	19,788
Network Investment	1,279	1,279	1,279	1,279	1,279	6,395
SCADA ERP	1,112	1,112	1,112	1,112	1,112	5,558
Network Metering	988	988	988	988	988	4,940
Distribution Substation	762	762	762	762	762	3,808
Motor Vehicles	353	353	353	353	353	1,766
Plant and Equipment	217	217	217	217	217	1,084
ICT Investments	112	112	112	112	112	559
HSE, Safety Equip, PPE	41	41	41	41	41	205
Others	39	39	39	39	39	197
Work Tools	23	23	23	23	23	117
Security	10	10	10	10	10	50
Network Maintenance	10	10	10	10	10	49
Total	20,144	20,144	20,144	20,144	20,144	100,720

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2.0 Commission's Review

2.1. The Commission's Guideline for PIP Application established criteria for AEDC 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. AEDC'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 AEDC's proposal and the associated expected improvement in service levels. AEDC 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 AEDC 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 AEDC'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 AEDC'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 – 5 and Table – 6 below. Summary of approved projects for Year-1 and Year-2 are also provided in Table – 7, while



a detailed list of approved projects for Year-1 and Year-2 are provided in Appendices 1 and 2 respectively.

Table – 4: Approved 5-year PIP and CAPEX Programme

Year	2021	2022	2023	2024	2025	Total
	Period - 1	Period - 2	Period - 3	Period - 4	Period - 5	Period 1 – 5
	N000,000	N000,000	N000,000	N000,000	N000,000	N000,000
Annual Approved CAPEX	15,197.41	15,197.41	15,197.41	15,197.41	15,197.41	75,987.03

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

5-Year Approved PIP	
	<i>N000,000</i>
Total CAPEX	<u>75,987.0</u>
Distribution Network Capex	47,402.0
Construction of 33kV Feeder	9,777.0
Rehabilitation of 33kV Feeder	2,861.6
Construction of 11kV Feeder	3,470.8
Rehabilitation of 11kV Feeder	2,464.1
Construction of 0.400kV Feeder	2,147.8
Distributions transformers (plan)	2,861.6
MVA Substations transformers (plan)	23,819.1
ATC&C Loss Reduction Plan (total)	-
Customer Service Improvement Plan	2,384.6
IT Investments (SCADA+GIS+ERP+HSE)	17,950.8
SCADA Initiatives	10730.9
GIS Improvement	225.0
ERP System Infrastructure	2225.7
HSE Initiatives	1669.2
AMI Network Metering	3100.0
Customer Metering Capex	-
Network Metering Capex	2,289.2
Others	5,960.3

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Table – 6: AEDC'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>15,197.4</u>	<u>15,197.4</u>
Distribution Network Capex	8,545.4	8,903.8
Construction of 33kV Feeder	1,602.0	1,717.0
Rehabilitation of 33kV Feeder	825.8	432.5
Construction of 11kV Feeder	626.8	761.5
Rehabilitation of 11kV Feeder	580.8	547.2
Construction of 0.400kV Feeder	432.7	426.5
Distributions transformers (plan)	1,145.1	1,088.3
MVA Substations transformers (plan)	3,332.2	3,930.9
ATC&C Loss Reduction Plan (total)	-	-
Customer Service Improvement Plan	20.0	476.9
IT Investments (SCADA+GIS+ERP+HSE)	1,710.2	2,489.0
SCADA Initiatives	1500.0	1000.0
GIS Improvement	0.0	90.0
ERP System Infrastructure	150.0	445.1
HSE Initiatives	0.0	333.8
AMI Network Metering	60.2	620.0
Customer Metering Capex	-	-
Network Metering Capex	997.4	1,291.9
Others	3,924.5	2,035.8

4.0 Annual Update of PIPs

AEDC 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 AEDC 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. AEDC 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

AEDC 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 AEDC 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

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

Distribution Network: Lines					
Project Type: Construction of 33kV Feeder					
#	Project Description	Location	Route Length (km)	Project Completion Date (MM - YY)	Expected Impact in MW)
1	33KV Construction	From 100MVA 132/33KV Katampe 3 TS to 33/11KV Injection substation at Karshim Ibrahim Street Wuse II by Turkish International School	6.9	Jul-21	15.00
2	33KV Construction	Apo TS to 2x15MVA Injection substation by Fraser Suite Central Business District Abuja	5	Aug-21	27.00
3	33KV Construction	From 100MVA 132/33KV Katampe 3 TS to Ministers quarters Mabuchi	7.0	Sep-21	13.50
4	33KV Construction	From 100MVA 132/33KV Katampe 3 TS to Oando filling station along Kubwa expressway	7.6	Jul-21	15.00

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5	33KV Construction	From Apo TS to Yoyale Hammed Estate by Kabusa junction	4.3	Jun-21	15.00
6	33KV Construction	Karu TS to Koeyeyi	6.0	Jul-21	15.00
7	33KV Construction	Ajokuta to Ajegwu	10.0	Aug-21	10.00
8	33KV Construction	From Kukwaba TS to Shoprite along Sheu Musa Yaradua express way and Airport junction to Lugbe Gossa along Sheu Musa Yaradua express way	11	Jul-21	5.00
9	33KV Construction	Leleyi, Gwari 1, 2 and 3.	7	Jun-21	5.00
10	33KV Construction	Kukwaba, Lugbe, Kuje	10	Jul-21	5.00

11	33KV Construction	Lokoja	5.8	Jun-21	5.00
12	33KV Construction	From Zango TS to Obajana junction and A,B,U on Isanlu moku	29.5	Jul-21	5.00
13	33KV Construction	Keffi to Uke/Mosaka	11.0	Jul-21	15.00
14	33KV Construction	Nasarawa Toto	4.0	Jul-21	4.50
15	33KV Construction	New Nyanya	9.5	Aug-21	27.00

Distribution Network: lines

Project Type: Rehabilitation of 33KV Feeder

#	Project Description	Type of Rehabilitation	Location	Route Length (km)	Project Completion Date (MM - YY)	Expected Impact in MW)
1	33KV Rehabilitation	Reconductoring, Replacement of Poles, Replacement of Poles accessories etc	From Central Area TS to Berger Roundabout	6.2	Jun-21	10.00
2	33KV Rehabilitation	Reconductoring	From Montama Minister Hill 33/11KV Injection Substation to 33/11KV Injection Substation by Karshim Ibrahim Street Wuse 2	2.8	Jul-21	15.00

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3	33kV Rehabilitation	Reconductoring	From 33/11kV Injection Substation by Annur Mosque along IBB way Wuse 2 to 33/11kV Injection Substation by Maitama Roundabout along IBB way Wuse 2	1.2	Jul-21	15.00
4	33kV Rehabilitation	Reconductoring	From 33/11kV Injection Substation by Maitama Roundabout along IBB way Wuse 2 to 33/11kV Injection Substation by El-Hamin International School along IBB way Maitama	2.6	Jul-21	15.00
5	33kV Rehabilitation	Reconductoring, Replacement of Poles, Replacement of Poles accessories etc	From Apo TS to lokogama and environs	32	May-21	5.00
6	33kV Rehabilitation	Reconductoring, Replacement of Poles, Replacement of Poles accessories etc	Apo, Lugbe, Kule	62.8	Jun-21	5.00
7	33kV Rehabilitation	Reconductoring, Replacement of Poles, Replacement of Poles accessories etc	From Minna TS to Lopai town	100	Jun-21	2.00
8	33kV Rehabilitation	Reconductoring, Replacement of Poles, Replacement of Poles accessories etc	Minna	20	Jun-21	2.00
9	33kV Rehabilitation	Reconductoring, Replacement of Poles, Replacement of Poles accessories etc	From Apo TS to Nigeria Security Printing and Mining Gariki	7.1	May-21	5.00

1 0	33kV Rehabilitation	Reconductoring, Replacement of Poles, Replacement of Poles accessories etc	Latifa	8.4	Jun-21	5.00
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Distribution Network: lines

Project Type: Construction of 11kV Feeder

#	Project Description	Location	Route Length (km)	Project Completion Date (MM - YY)	Expected Impact in MW)
1	11kV Construction	Apo TS to 2x15MVA Injection substation by Fraser Suite Central Business District Abuja	11	Aug-21	27.00
2	11kV Construction	Trode More	10	Jul-21	10.00
3	11kV Construction	Sobon Wuse	9.1	Aug-21	10.00
4	11kV Construction	lugbe	4.6	Jun-21	5.00
5	11kV Construction	Minna	7	Jun-21	5.00
6	11kV Construction	Ministers quarters Mabushi	5	Sep-21	13.50
Total			47		

Distribution Network: lines

Project Type: Rehabilitation of 11kV Feeder

#	Project Description	Type of Rehabilitation	Location	Route Length (km)	Project Completion Date (MM - YY)	Expected Impact in MW)
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1	11kV Rehabilitation	Reconductoring	Kashim Ibrahim Road Wuse 2 (B52)	5	May-21	2.00
2	11kV Rehabilitation	Reconductoring, Replacement of Poles, Replacement of Poles accessories etc	From 33/11kV Injection substation to supreme court Asokoro and its environs	2.8	Jul-21	5.00
3	11kV Rehabilitation	Reconductoring, Replacement of Poles, Replacement of Poles accessories etc	Suleja	2	Jun-21	10.00
4	11kV Rehabilitation	Reconductoring, Replacement of Poles, Replacement of Poles accessories etc	From Bida TS to Army Barracks Bida	80	Jun-21	3.00
5	11kV Rehabilitation	Reconductoring, Replacement of Poles, Replacement of Poles accessories etc	GRA, Minna	15	Jun-21	3.00
6	11kV Rehabilitation	Reconductoring, Replacement of Poles, Replacement of Poles accessories etc	Minna	30	Jun-21	2.00
7	11kV Rehabilitation	Reconductoring, Replacement of Poles, Replacement of Poles accessories etc	Keffi	5	Jun-21	3.00



8	11kV Rehabilitation	Reconductoring, Replacement of Poles, Replacement of Poles accessories etc	Lafia	5	Jun-21	8.00
Total				145		

Distribution Network: lines

Project Type: Construction and Rehabilitation of 0.400kV Feeder

#	Project Description	Type of Project	Location	Route Length (km)	Project Completion Date (MM - YY)	Expected Impact in MW)
1	Construction of Lower Voltage Network in critical areas across AEDC franchise areas	Construction	FCT, Kogi, Niger and Nasarawa States		Sep-21	25.00
2	Rehabilitation of lower Voltage Network in critical areas across AEDC franchise areas	Rehabilitation	FCT, Kogi, Niger and Nasarawa States		Sep-21	30.00
Total				0		

Distribution Network: stations

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

#	Name of Substation	Transformer Voltage (kV)	Rating - kVA	Type of work (New Construction or Replacement)	Location	Quantity	Project Completion Date (MM - YY)	Expected Impact in MW

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1	Construction of 120Nos 500kVA Relief Substations and replacement across AEDC franchise areas	33/0.415	500	New Construction	FCT, Kogi, Niger and Nasarawa States	120	Nov-21	60.00
	Total					120		

Network: Injection Substations (33/11kV)

Project Type: Construction, Reinforcement and Standardisation of Injection Substation

#	Name of Substation	Location	Rating - MVA	Type of work	N° of units	Project Completion Date (MM - YY)	Expected Impact (MW)
1	Completion of the ongoing 33/11kV 2X15MVA Televoras 4 Injection substation at Central Area by Fraser Suites In Central Business District.	Completion of the ongoing 33/11kV 2X15MVA Injection substation at Central Area by Fraser Suites In Central Business District	30	New Construction	1	Aug-21	27.00
2	Proposed construction of 2x7.5MVA, 33/11kV injection substation at Ministers quarters Mabuchi (Recovery and Replacement of 60No 33kV/11kV Transformers)	From 100MVA 132/33kV Kalampe 3 TS to Ministers quarters Mabuchi	15	New Construction	1	Sep-21	13.50
3	Proposed construction of additional 1 x 7.5MVA, at Apo Resettlement	Apo Resettlement	7.5	Additional Power Transformer	1	Sep-21	6.80
4	Rehabilitation of 2X15MVA 33/11kV Field base injection substation	Suleja	30	Rehabilitation	1	Jun-21	10.00

5	Proposed Installation of additional 1X15MVA Transformer at M44 33/11kV Injection substation Gwarinpa.	Gwarinpa	15	Additional Power Transformer	1	Sep-21	13.50
6	Completion of abandoned 2 x 15MVA, 33/11kV injection substation at New Nyanya Nasarawa State and radiation of 33kV feeder from 2X60MVA 132/33kV Karu TCN	New Nyanya	30	Additional Power Transformer	1	Aug-21	27.00
7	Upgrade from 1no 5MVA 33/11kV S/S to 2X7.5MVA and radiation of additional 11kV feeders at Modallo/Zubo from Suleja TS	Suleja	15	Additional Power Transformer	1	Nov-21	13.50
8	Proposed installation of 5MVA, 33/11kV Transformer and Resuscitation of Distribution substation to Nasarawa Tolo community	Nasarawa Tolo	5	Additional Power Transformer	1	Jul-21	4.50
9	Installation of 5MVA, 33/11kV substation at FUT Minna	FUT Minna	5	Additional Power Transformer	1	Aug-21	4.5
10	Replacement of failed 33/11kV 2.5MVA with 5MVA at CBN Minna	CBN Minna	5	Additional Power Transformer	1	Jun-21	4.5
	Total				11		

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

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

#	Name of Substation	Description	Location	Quantity	Projected Completion Date (MM - YY)	Expected Impact
1	Replacement and Rehabilitation of 11kV switch gear of L14 2 X 7.5MVA Lafia Injection substation	11kV Indoor Control Panel	Lafia	1	Jul-21	4.00
2	Replacement of 11kV defective RML in the FCT regions	11kV outdoor circuit breaker	FCT	20	Jul-21	
3	11kV indoor breakers incoming at Suleja, Lokojo, Minna, New Nyanya and Apo Resettlement	11kV indoor Control Panel	33/11kV Injection Substations at Suleja, Lokojo, Minna, New Nyanya and Apo Resettlement	10	Jul-21	
4	11kV indoor breakers outgoing Suleja, Lokojo, Minna, New Nyanya and Apo Resettlement	11kV Indoor Control Panel	33/11kV Injection Substations at Suleja, Lokojo, Minna, New Nyanya and Apo Resettlement	40	Jul-21	
5	33kV outdoor line breakers Suleja, Lokojo, Minna, New Nyanya and Apo Resettlement	33kV outdoor circuit breaker	33/11kV Injection Substations at Suleja, Lokojo, Minna, New Nyanya and Apo Resettlement	12	Jul-21	
6	Line control panel Suleja, Lokojo, Minna, New Nyanya and Apo Resettlement	Line control panel	33/11kV Injection Substations at Suleja, Lokojo, Minna, New Nyanya and Apo Resettlement	12	Jul-21	
7	Power transformer protection & control panel	33kV Isolator	FCT, Kogi, Niger and Nasarawa States	8	Jun-21	

8	Procurement of Instrument Transformers (CTs and VTs) for use in our Injection substations at Salejo, Lokojo, Minna, New Nyanya and Apo Resettlement	Current Transformer & Voltage Transformer	33/11kV Injection Substations at Salejo, Lokojo, Minna, New Nyanya and Apo Resettlement	12	Jul-21	
9	110v Tripping unit; battery charger Company wide	Tripping unit	FCT, Kogi, Niger and Nasarawa States	16	Jul-21	
10	200Amp battery bank, 9 per set company wide	battery bank	FCT, Kogi, Niger and Nasarawa States	30	Jun-21	
11	Transformer oil for company use	Transformer oil	FCT, Kogi, Niger and Nasarawa States	180	May-21	
12	Smart oc/af relay microprocessor with broken conductor NR relay. Company wide	Relay	FCT, Kogi, Niger and Nasarawa States	80	Jul-21	
13	33kV auto recloser Company wide		FCT, Kogi, Niger and Nasarawa States	30	Jun-21	
14	control cables (2.5mm x 24 core) for company use.		FCT, Kogi, Niger and Nasarawa States	1000	May-21	
15	control cables (2.5mm x 12core) for company use		FCT, Kogi, Niger and Nasarawa States	1000	May-21	
16	control cables (4mm x 4core) for company use		FCT, Kogi, Niger and Nasarawa States	1000	May-21	
17	control cables (2.5mm x 7 core) for company use		FCT, Kogi, Niger and Nasarawa States	1000	May-21	
	Total			4451		

Customer Service Improvement Plan

Dr. Mr. Apo

#	Name	Quantity	Project Completion Date (MM - YY)
1	Procurement of CRM for enhancement of customer services	1	May-21
	Total	1	

IT Investments (SCADA)				
#	Name	Description	Project Completion Date (MM - YY)	Expected Impact
1	Supervisory Control and Data Acquisition (SCADA)		Sep-21	
	Total			

Network Metering (Smart Meters)				
#	Project Description	Description	Quantity	Project Completion Date (MM - YY)
1	Smart Feeder Meters for Manned Sub Stations.	New	917	Jul-21
2	Smart Feeder Meters for unmanned Sub Stations	New	128	Jul-21
3	Smart Feeder Meters for station service consumption	New	157	Jul-21
4	MD HV metering Panel	New	40	Jul-21

Other Service Improvement Plan

#	Name	Project Completion Date (MM - YY)
1	Construction of AEDC Office at Zone 6 + fixtures (WIP)	Sep-21
2	Proposed Construction of Transformer Repair Workshop	Jul-21
3	Non-technical Capex	
4	Vehicles	May-21
5	Heavy duty crane-HAIB -15 tonnes, 3+ boom, 15ft bucket	May-21
6	IT Worktools (laptops, Desktops, UPS & Accessories)	May-21
7	Procurement of 34 feet and 28 feet (HT & LT) fibre ladders across AEDC franchise areas	May-21
8	80kV pressure tester for company use	May-21
9	Fluke clamp on ammeter for company use	May-21
10	Avometer for company use	May-21
11	Outage detection and notification system (FCI)	May-21
12	Procurement of Clamp of Ammeter for RPU and Transformer load readings	May-21
13	Remote monitoring and remote control of 415V distribution transformer (DT) and artificial intelligence and data mining	Jul-21

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

<i>Distribution Network: lines</i>					
<i>Project Type: Construction of 33kV Feeder</i>					
#	Project Description	Location	Route length (km)	Project Completion Date (MM - YY)	Expected Impact in MW

Dr. Mr. [Signature]

1	Proposed construction of 33kV dual feeders to 1x15MVA 33/11kV M44 Injection substation Gwarinpa and Dawaki from the proposed 2x60MVA Dawaki Transmission station	Gwarinpa	12.00	Sep-22	15.00
2	Proposed Construction of 33kV Feeder to the 2x15MVA 33/11kV M2 Injection substation Jobi from the proposed 2x60MVA Lugbe Transmission station	Jobi	11.20	Sep-22	15.00
3	Proposed Construction of 33kV Feeder to Godab Estate from the proposed 2x60MVA Dawaki Transmission station	Godab	9.69	Sep-22	15.00
4	Proposed construction of 33kV feeder from the proposed 2x60MVA, 132/33kV Lugbe Transmission station to feed the proposed 4x15MVA Idu injection substations and radiation of 5No 11kV outgoing feeders	Idu Industrial Layout	25.00	Sep-22	15.00
5	Proposed Construction of 33kV Feeder to 2x15MVA 33/11kV M42 Injection substation Gwarinpa from the proposed 2x60MVA Dawaki Transmission station	Gwarinpa	7.10	Sep-22	15.00
6	Proposed construction of 33kV feeder from the proposed 132/33kV Lokogoma Transmission station to feed the proposed 2x15MVA Lokogoma injection substations and radiation of 2No 11kV outgoing feeders	Lokogoma	14.33	Sep-22	15.00

7	Proposed construction of 33kV line to River Park Estate Lugbe from the proposed 2x60MVA, 132/33kV, Lugbe Transmission station	River Park Lugbe	12.70	Sep-22	15.00
8	Proposed construction of 33kV line to Lugbe Across Lugbe from the proposed 2x60MVA, 132/33kV, Lugbe Transmission station	Lugbe Across	7.10	Sep-22	15.00
9	Proposed construction of 33kV feeder to feed Kuje Town and environs from the proposed 2x60MVA, 132/33kV, Kuje Transmission station	Kuje Town	6.26	Sep-22	15.00
10	Proposed construction of 33kV feeder to feed Premium farm and environs from the proposed 2x60MVA Kuje Transmission station	Premium Farm Kuje and environs	10.30	Sep-22	15.00
11	Proposed construction of 33kV line from the proposed 2x60MVA, 132/33kV Lugbe Transmission station to Lugbe 2x15MVA.	Lugbe	4.40	Sep-22	15.00
12	Proposed construction of 33kV dual lines from 2x60MVA, 132/33kV Karu TS to Mararaba to deload feeder K4	Karu, Mararaba, Lugbe	3.20	Sep-22	15.00
13	Proposed Construction of 33kV feeder from the proposed 2x60MVA, 132/33kV Transmission station, Dawaki to Sokale Duste	Sokale Duste	7.30	Sep-22	15.00
14	Proposed extension of 33kV feeder from NTA roundabout to Ekpara 2x15MVA. Injection Substation Lokoja main	Lokoja	2.00	Aug-22	5.00



15	Proposed Construction of 10km 33kV feeder from 1x60MVA Ajaokuta TS to Ajegwu junction including 4nos tower (Phase 2)	Ajaokuta	10.00	Sep-22	10.00
16	Proposed Construction of 33kV double circuit to NIPP & Obi Awe feeder from 2x60MVA, 132/33kV Akurba transmission station Lafia, Nasarawa	Lafia, Nasarawa	14.40	Aug-22	15.00

Distribution Network: lines

Project Type: Rehabilitation of 33kV Feeder

#	Project Description	Type of Rehabilitation	Overhead/ underground	Location	Route length (km)	Project Completion Date (MM - YY)	Expected Impact in MW)
1	Reconfiguration of 134 Kukuwaba TS to de-load Feeder 3 from Central area TS	Reconductoring, replacement of Poles, replacement of Poles accessories etc	Overhead	Central Area	1.20	Jul-22	5.00
2	Rehabilitation of 33kV feeder 9 from Central area TS	Reconductoring, replacement of Poles, replacement of Poles accessories etc	Overhead	Central Area	3.90	Jul-22	5.00
3	Rehabilitation of 33kV Bwari feeder from 2x60MVA 132/33kV Kubwo TS	Reconductoring, replacement of Poles, replacement of Poles accessories etc	Overhead	Bwari	8.10	Jul-22	5.00
4	Rehabilitation of 33kV feeder from Nasarawa to Mararoba Udege	Reconductoring, replacement of Poles, replacement of Poles accessories etc	Overhead	Mararoba Udege	25.00	Jul-22	5.00

5	Rehabilitation of 33KV Kateregi feeder from Minna TS	Reconductoring, replacement of Poles, replacement of Poles accessories etc	Overhead	Kateregi	17.81	Jul'22	5.00
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Distribution Network: lines

Project Type: Construction of 11kV Feeder

#	Project Description	Overhead/ underground	Conductor Size (mm ²)	Location	Route Length (km)	Project Completion Date (MM - YY)	Expected Impact in MW)
1	Proposed construction of 2No 11KV feeder to Lokogoma from the proposed 2x15MVA, 33/11KV Lokogoma Injection substation.	Overhead	150 mm ²	Lokogoma Abuja	8.0	Aug-22	10.00
2	Proposed construction of dual 11KV feeders from the 2x15MVA Lokojo main Injection Substation to feeds Ganoja and Notoke	Overhead	150 mm ²	Lokojo	24.0	Aug-22	10.00
3	Proposed construction of dual 11KV feeders from the 2x15MVA L16 Lafia Injection Substation to feeds commercial viable customers within Lafia	Overhead	150 mm ²	Lafia	13.0	Aug-22	10.00
4	Construction of Dual 11KV feeders within the state to improve supply to the commercial viable customers	Underground	150 mm ²	Minna	14.0	Sep-22	10.00
5	Proposed dualization of 11KV Bosso feeder from 2x15MVA	Overhead	150 mm ²	Minna	12.2	Aug-22	5.00

Dr. M. H. A. O.



33/11kV Power House Injection substation Mirna								
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Distribution Network: lines

Project Type: Rehabilitation of 11kV Feeder

#	Project Description	Type of Rehabilitation	Overhead / underground	Conduct or Size (mm ²)	Location	Route length (km)	Project Completion Date (MM - YY)	Expected Impact in MW)
1	Replacement of bad 11kV underground cable on RM 9A from 2x15MVA 33/11kV C2 Injection substation Matama	Replacement of bad underground cable and termination kits	Underground	150 mm ²	Matama	1.6	Jul-22	2.00
2	Rehabilitation of 11kV feeder 1, 2, 3 and 4 from 2x15MVA 33/11kV, B32 Injection substation Zone 5, Berger	Reconductoring, replacement of Poles, replacement of Poles accessories etc	Overhead	150 mm ²	Berger	12	Jul-22	5.00
3	Rehabilitation of 11kV Distribution network for Lafia/Obi Area Office	Reconductoring, replacement of Poles, replacement of Poles accessories etc	Overhead	150 mm ²	Nasarawa	20	Jul-22	2.00
4	Rehabilitation of 11kV Duse Kuru feeder from 2x15MVA 33/11kV Zaramai Injection substation Mirna	Reconductoring, replacement of Poles, replacement of Poles accessories etc	Underground	150 mm ²	Mirna	20	Jul-22	2.00

5	Rehabilitation/Maintenance of 11KV Tudun Fulani feeder Bosso	Reconductoring, replacement of Poles, replacement of Poles accessories etc	Underground	150 mm ²	Bosso, Minna	15	Jul-22	2.00
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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	Rehabilitation of 11kV Distribution network for Idifa/Obi Area Office	Rehabilitation	Overhead	150 mm ²	Nasarawa	43
2	Rehabilitation of Low Voltage Network in critical areas across AEDC franchise areas	Rehabilitation	Overhead	150 mm ²	FCT, Kogi, Nasarawa and Kogi	50
3	Construction of Low Voltage Network in critical areas across AEDC franchise areas	Rehabilitation	Overhead	150 mm ²	FCT, Kogi, Nasarawa and Kogi	150

Distribution Network: stations

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

#	Name of Substation	Transformation Voltage (kV)	Rating - kVA	Type of work (New Construction or Replacement)	Location	Quantity	Project Completion Date (MM-YY)

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1	Construction of 100Nos 500kVA Relief Substations across AEDC franchise	33/0.415	500	New Construction	FCT, Kogi, Nasarawa and Niger	100	Sep-22
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Network: Injection Substations (33/11kV)

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

#	Name of Substation	Location	Rating - MVA	Type (Manned/unmanned)	Type of work	N° of units	Project Completion Date (MM - YY)	Expected Impact (MW)
1	Proposed construction of 4X15MVA 33/11kV Injection Substation at Idu Industrial layout from the proposed 2X60MVA Lugbe Transmission station	Idu Industrial layout	60	Manned	New Construction	4	Nov-22	57.00
2	Proposed construction of 2X15MVA 33/11kV Injection Substation in Lokogoma from the proposed 2X60MVA, 132/33kV, Lokogoma Transmission station	Lokogoma	30	Manned	New Construction	2	Nov-22	27.00
3	Upgrading of Karshi 2.5MVA to 5MVA 33/11kV unarmored transformer, RMU CT Relay operated (two mains & one extension) & 185MM2 cable	Karshi	5	Unmanned	New Construction	1	Aug-22	4.50
4	Replacement of faulty 1x7.5MVA with 1x15MVA at 2x7.5MVA NIPP Injection Substation Kubwa	Kubwa	15	Manned	New Construction	1	Jul-22	13.50

5	Reactivation of Zarumai 15MVA 33/11KV transformer, transformer oil	Zarumai, Minna	15	Manned	Rehabilitation	1	Jul-22	13.50
6	completion of installation of TR2 Bwari	Bwari	15	Manned	New Construction	1	Aug-22	13.50

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

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

#	Name of Substation	Description	Location	Quantity	Project Completion Date (MM - YY)
1	HV Indoor CT	CT	FCT, Kogi, Nasarawa, Niger and Kogi	5	Jul-22
2	HV Indoor VT	VT	FCT, Kogi, Nasarawa, Niger and Kogi	5	Jul-22
3	300mm Single Core Cable	Cable	FCT, Kogi, Nasarawa, Niger and Kogi	600	Jul-22
4	LV CT (100/5)	CT	FCT, Kogi, Nasarawa, Niger and Kogi	10	Jul-22
5	LV CT (200/5)	CT	FCT, Kogi, Nasarawa, Niger and Kogi	10	Jul-22

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6	LV CT (300/5)	CT	FCT, Kogi, Nasarawa, Niger and Kogi	10	Jul-22
7	LV CT (500/5)	CT	FCT, Kogi, Nasarawa, Niger and Kogi	30	Jul-22
8	Filtration machine BIG (flow rate 2,400 LPH)	Filtration Machine	FCT, Kogi, Nasarawa, Niger and Kogi	1	Jul-22
9	Filtration machine SMALL (Flow rate 600LPH)	Filtration Machine	FCT, Kogi, Nasarawa, Niger and Kogi	1	Jul-22
10	SF6, gas leakage detector	SF6	Suleja, Lokola, Minna, New Nyanya and Apo	2	Jul-22
11	Transformer oil sealant (Power patch)	Transformer Oil	Resettlement	20	Jul-22
12	Transformer oil	Transformer Oil	FCT, Kogi, Nasarawa, Niger and Kogi	180	Jul-22
13	Oil sample test equipment	Oil tester	FCT, Kogi, Nasarawa, Niger and Kogi	9	Jul-22

14	Smart relays OC/EF & broken conductor NR	Relay	FCT, Kogi, Nasarawa, Niger and Kogi	41	Jul-22
15	Smart relays OC/EF & broken conductor MICOM	Relay	FCT, Kogi, Nasarawa, Niger and Kogi	41	Jul-22
16	Silica gel 200kg	Silica	FCT, Kogi, Nasarawa, Niger and Kogi	25	Jul-22
17	11KV panel (2 Incomer, 1 coupler & 6 Outgoings)	Panel	FCT, Kogi, Nasarawa, Niger and Kogi	5	Jul-22
18	RMU CT Relay operated (two mains & one extension)	RMU	FCT, Kogi, Nasarawa, Niger and Kogi	12	Jul-22
19	Power Transformer control Panel	Control Panel	FCT, Kogi, Nasarawa, Niger and Kogi	2	Jul-22
20	Line Control Panel	Control Panel	FCT, Kogi, Nasarawa, Niger and Kogi	3	Jul-22
21	Repair of power transformer (15MVA 33/11KV)	Power Transformer	FCT, Kogi, Nasarawa, Niger and Kogi	1	Jul-22



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22	Resuscitation of Lifecamp 7.5MVA transformer, bushing, transformer oil	Transformer Bushing	FCT, Kogi, Nasarawa, Niger and Kogi	1	Jul-22
23	Fisporioral plug terminator 240mm ² 33kv for B33 inl. s/s	Plug terminator	FCT, Kogi, Nasarawa, Niger and Kogi	1	Jul-22
	Fisporioral plug terminator 185mm ² 33kv for Wuye Inl. s/s	Plug terminator	FCT, Kogi, Nasarawa, Niger and Kogi	1	Jul-22
24	Procurement of feeder pillars of different capacities	Feeder Pillar	FCT, Kogi, Nasarawa, Niger and Kogi	1	Jul-22

IT Investments (SCADA)		
#	Name	Project Completion Date (MM - YY)
1	Deployment of Advance Distribution Management System across all Injection Substation covering (SCADA, RMS, DMS, OMS, EMS, GIS, FISLR o/k/o/ dist. Automation, WVO, AMI)	Oct-22

IT Investments (GIS)		
#	Name	Project Completion Date (MM - YY)

1	Proposal for the GIS mapping of HT/LT distribution network asset	Jul-22
2	Deployment of an Enterprise GIS Software (ArcGIS)	Jul-22

Network Metering (Smart Meters)				
#	Project Description	Description	Quantity	Project Completion Date (MM - YY)
1	Meter Accuracy Mobile Test Equipment	New	20	Aug-22
2	DT Metering	New	400	Aug-22
3	Prepaid DT Metering	New	300	Aug-22
4	33KV Boundary Meters	New	13	Aug-22
5	11KV Boundary Meters	New	15	Aug-22
6	Grid Energy Meters	New	120	Aug-22
7	Metering Tool Box	New	180	Aug-22
8	Android Tablet for Meter Commissioning	New	120	Aug-22
9	MD Energy Meter	New	700	Aug-22
10	2.5mm X 12 Core Cables	New	10000	Aug-22
11	Whole Current Energy Meter	New	400	Aug-22

Other Service Improvement Plan		
#	Name	Project Completion Date (MM - YY)

1	Proposed construction of Transformer Repair/Maintenance Workshop of AEDC central store, Wuse Zone 5, Abuja	Oct-22
2	Non-technical Capex	Oct-22
3	Vehicle for Metering Activities	Oct-22
4	Procurement of 34 feet and 28 feet (HT & LT) fibre ladders across AEDC franchise areas	Oct-22
5	Procurement of Chain saw machine for Vegetation Control	Oct-22
6	Remote monitoring and remote control of 415V distribution transformer (DT) and artificial intelligence and data mining.	Oct-22
7	Outage detection and notification system (FCI)	Oct-22
8	Procurement of Clamp of Ammeter for RPU and Transformer load readings.	Oct-22