



THE ENUGU STATE

ELECTRICITY POLICY

ELECTRIFYING OUR STATE AND
EMPOWERING OUR PROGRESS





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FOREWORD

The transformation of the electricity sector in Enugu State is crucial to the attainment of our strategic objectives of inclusive economic development and sustainable prosperity. Electricity is the lifeline of modern society, and its availability is the backbone of economic growth and social engagement and well-being. As we embark on a transformative journey in Enugu State, we envision a future where every household, business, and community has reliable power supply.

We are aware of the challenges faced within the State with regards to electricity availability, access, and reliability. Currently, the State is allocated barely 70MW of electrical capacity daily from the national grid. For our over 5m citizens, this is essentially nothing. It is time to confront these challenges head-on and establish a strategic roadmap that lays the foundation for a robust system that will deliver electricity access to every corner of our State by the end of this decade. Hence, it is with great pleasure and a sense of responsibility that I present the Electricity Policy for Enugu State. This Policy is a testament to our commitment to harnessing the potential of electricity to drive progress, prosperity, and sustainable development for our beloved State and its people.

This Electricity Policy is aligned with recent developments in the sector nationally and as captured in the Electricity Act 2023. It represents a culmination of research and consultations with experts in the energy sector combined with a review of our socio-economic status in Enugu State. It recognises the synergy between natural gas and electricity but also the importance of consciously transiting to the deployment of renewable energy sources to power us into a cleaner, more sustainable future. It describes our desire to establish competitive and commercially viable energy market that encourages private sector investment to improve the quantity and quality of energy supply in our State. Our electricity regulatory framework, executive institutions and stakeholders, market participants and guiding principles are also clearly articulated within this document.

As we unveil this Policy document, we must remember that its success lies in our collective efforts as a society. Agencies of Government, existing industry players, new entrants, the private sector, civil society and citizens must unite, each playing its role in achieving our common vision for a brighter and fully electrified Enugu State. I encourage all stakeholders to embrace this new State Electricity Policy which sets out our road map to extending electricity access, improving supply and bridging the electricity access gap across the long-deprived communities of Enugu State.

DATED AT ENUGU THIS

DAY OF AUGUST 2023

PETER MBAH

GOVERNOR, ENUGU STATE

Abbreviations

CBN	Central Bank of Nigeria
DFI	Development Finance Institutions
Disco(s)	Electricity Distribution Company
ECN	Electricity Corporation of Nigeria
EEDC	Enugu Electricity Distribution Company
EERC	Enugu State Electricity Regulatory Commission
EERP	Enugu Integrated Energy Resource Plan
EPC	Engineering, Procurement, and Construction
ERCs	Electricity Retail Companies
Genco(s)	Electricity Generation Company
GDP	Gross Domestic Product
GW	Gigawatt
GWh	Gigawatt-hour
IERP	Integrated Energy Resource Planning
kW	Kilowatt
kWh	kilowatt-hour
LED	Light-Emitting Diode
LPFO	Low Pour Fuel Oil
MDAs	Ministries Departments and Agencies
MMscf	Million Standard Cubic Feet
MVA	Megavolt Amperes
MVDC	Medium-Voltage Distribution Company
MW	Megawatts
MWh	Megawatt-hour
NCP	National Council on Privatisation
NEPP	National Electric Power Policy, 2001
NERC	Nigerian Electricity Regulatory Commission
PGC	Payment Guarantee Company
SEP	State Electrification Plan
SMEs	Small and Midsize Enterprises
SO	System Operator
TCN	Transmission Company of Nigeria
TSP	Transmission Services Provider (a sub-division of TCN)



Introduction

Chapter One – Introduction

1.1 Enugu State and its capital city, Enugu, are regarded as the capital of Nigeria's South-East geopolitical zone. It is also a major transportation gateway for road and rail infrastructure linking the South-East directly with the South-South, North-Central and South-West geopolitical Zones. The State has a total area of 7,161 sq. km, a population estimated at 5.13m (2023) and a GDP of \$4.4bn, ranking 34th of the 36 States.

1.2 Once upon a time, the Oji River coal-fired generating plant supplied power to much of the former Eastern Region through the Electricity Corporation of Nigeria (ECN). Today, following sector reforms initiated in 2005 via the Electric Power Sector Reform Act, 2005 the State's electricity customers are served by Enugu Electricity Distribution Company Limited (Enugu Disco or EEDC). Enugu Disco was created out of the Enugu Zone of the defunct National Electric Power Authority and was privatised in 2013, with a core investor, Eastern Electric Limited, taking over 60% equity and management control of the company.

1.3 Uniquely, Enugu Disco is the only Disco in Nigeria that serves a single geopolitical zone, the South-East. Unfortunately, however, this has brought no real benefit to the people of Enugu State since capacity and energy delivered to the entire national grid have stagnated since 2015 at an average 4GW/96GWh daily, of which Enugu Disco receives an allocation of 9% or an average 360MW/8,640MWh daily. This breaks down further to approximately 69MW//1656MWh daily for Enugu State or 13.5 watts or 324watt-hours per capita per day, just enough to power three 10-watt LED bulbs for approximately 10 hours a day or a single 10-watt bulb for slightly more than 24 hours. In other words, residential, commercial and industrial residents of Enugu State (particularly the latter two), like the rest of Nigeria, must either live with abject energy poverty or depend almost entirely on alternative energy sources to power their socio-economic activities.

1.4 Diesel/petrol generating sets, solar power, charcoal, and kerosene lamps are the State's primary energy sources, with all the attendant additional costs that this imposes on residents. The economic cost of this dual system in a State with such low per capita GDP is incalculable and acts as a massive brake on the State Government's stated mission to see Enugu State "deliver quality, people-focused governance

by making Enugu the preferred destination for investment, tourism, business and living." By way of comparison, on-grid electricity supply costs an average ₦70 per kilowatt-hour and is intermittently available, while alternative power costs over ₦200 per kilowatt-hour and is the mainstay of the State economy and provider of electricity reliability. The losses in foregone investment (particularly in SMEs), savings, taxes, public sector investment and economic efficiency generally are incalculable and unsustainable.

1.5 By 2030, based on compounded average growth rates provided by the National Population Commission, Enugu State will have a population of approximately 6.2m, living in no less than 600,000 households and doing business in no less than 50,000 small, medium and large commercial and industrial entities. Applying a relatively low rule of thumb that delivers 100MW per 1m of population, this requires that the State has available to it by 2030 approximately 690MW of generation capacity (including a 15% reserve margin) delivering energy at least 20 hours daily. Ideally, at least 20% of this capacity should be from renewables, leaving the State with a need for approximately 160MMScf of natural gas daily and up to 1,500MVA of transformation capacity at medium voltage (33kV-66kV) and low voltage (11kV and 415v). At today's costs, this calls for an investment of approximately \$2bn during the course of the next 7 years in building out both grid-connected and off-grid systems. This investment is to be made across fuel supply, generation, transmission, medium voltage distribution, customer connections, customer care and their accompanying support services in an energy mix of renewable and thermal energy systems that assure Enugu State of secure, reliable electricity supply to power its socio-economic growth.

Electricity Assets in the State

1.6 Today, however, Enugu State does not have any operating grid-connected generation assets on the ground or currently being built or even planned in the near future. Along with these transmission assets, the distribution network in the State served by EEDC is based on 24 33kV feeders across the State. Transmission and distribution assets are located as follows:

Transmission Assets in Enugu State, Table 1

Region	Sub-Region	Sub-Station	Sub-Station Voltage	Sub-Station Capacity Rating (Mva)
Enugu	Nsukka	Nsukka	66kV	x 7.5MVA
	Enugu	Kingsway	66kV	1 x 2.5MVA
		Oji River	132kV	1 x 15MVA1 x 30MVA
		New Haven	132kV	2 x 30MVA2 x 60MVA
	Sub-total sub-region 132kv capacity			225 MVA
	Enugu	New Haven	330kV	3 x 150 MVA
	Sub-total sub-region 330kv capacity			450MVA

33kV Distribution Assets in Enugu State, Table 2

Feeders	Capacity
Kingsway	3 x 15MVA
Ebeano Tunnel	1 x 7.5MVA
Ninth Mile	1 x 15MVA
Egede	1 x 2.5MVA
Ogbete	1 x 2.5MVA2 x 15MVA
Thinker's Corner	2 x 15MVA
Independence Layout	2 x 15MVA
New Haven	1 x 7.5MVA
Trans Ekulu	2 x 7.5MVA
Emene	2 x 7.5MVA
Loma Linda	1 x 7.5MVA
Amichi Uwani	1 x 7.5MVA
Nike Lake	1 x 7.5MVA
Oji River	1 x 15MVA
Ezi Nze	1 x 2.5MVA
Nsukka UNN	1 x 15MVA
Nsukka Main	1 x 7.5MVA

1.7 This data indicates that Enugu State today can receive no more than 300MW/7,200MWh from EEDC through the TCN grid in the State, if that much capacity were to be available. This is the maximum nominal capacity of both the 330kV transformation and 33kV distribution capacity available within the State. Even this minimal capacity is constrained by the available 132kV transformation capacity which has a nominal capacity of just 150MW. All factors considered, however, Enugu State receives a small fraction, no more than 25% of its current electrical capacity daily, delivered inconsistently and unreliably, at its 33kV feeders. This historical shortage in both quantity and quality of electricity supply is a major contributory factor to the collapse of Enugu State's formerly significant industrial base. It is also the reason why hardly any of the surviving and more recent industries and public works projects in the State are supplied by Enugu Disco. In effect, residents of the State sustain themselves via their own alternative sources, largely diesel- and petrol-fired generators, massive cutting of trees for charcoal and the use of kerosene lamps by the many who cannot afford anything else. The consequent economic, environmental and human development (health, education, agriculture and social welfare) losses are simply unquantifiable.

1.8 It is, therefore, quite simple to conclude that the socio-economic burden imposed on the State and its citizens by a grossly inadequate and unreliable public electricity supply market costs far more in lost productivity per annum than the estimated \$300m per annum over each of the next seven (7) years that would deliver the 690MW needed to support the State's consistent and progressive socio-economic development. This is why it is vital that the State Government now seeks to comprehensively define in this Policy the challenges and opportunities that confront the prospective Enugu State Electricity Market, its possible design and the methods by which it could be established and sustained.

1.9 The assurance that this will happen has come only recently with the amendment effected to the 1999 Constitution, which now makes clear the exclusive responsibility conferred on the State Governments to make laws for electricity business conducted within the territory of a State, particularly the exclusive responsibility for electricity distribution. This power is now well-defined by the recently-enacted Electricity Act, 2023, which not only clarifies and affirms States' exclusively responsibility for regulating retail electricity markets but also mandates federal MDAs, NCP and NERC, to ensure the prompt transfer of regulatory authority over the Discos to each State that takes steps to establish its own State electricity market.

Chapter Two – Policy Objectives and Market Design

2.1 Universal access to sustainable electricity reliability for all residents of Enugu State is clearly stated as the sole objective of any electricity service or sector dedicated to the State.

2.1.1 “Universal access” simply means that every community in the State will be connected to some form of reliable electricity supply that does not require the resident to be its own primary provider.

2.1.2 “Sustainable” is that situation in which the State electricity sector evolves into a market growing steadily year-on-year at a pace that meets the expectations of the Enugu Integrated Energy Resource Plan (“EERP”, discussed below). This growth will be consistent, undertaken in an environmentally-responsible manner and devoid of socio-economic, demographic and gender biases or inequities across the State.

2.1.3 “Electricity reliability” is defined as the delivery of electricity to all resident customers in the State to meet peak demand in the desired quality, cost-efficiently and at the time it is needed; and still have an acceptable reserve margin available.

2.2 On the path to attaining universal access and sustained electricity reliability by 2030, we enunciate a number of key objectives as follows:

Short Term

2.3 Short term objectives (2023) include:

2.3.1 Enact a comprehensive Electricity Policy and an Electricity Law by 31st October 2023 to implement the electricity policy principles detailed herein;

2.3.2 Establish a regulatory framework for the State electricity sector, place initial staff in the Commission, commence staff capacity development by 31st November, 2023;

2.3.3 Transmit communication to NCP, Enugu Disco and NERC no later than 31st November

2023;

2.3.4 Establish criteria and undertake identification and enumeration of all unserved and underserved communities in Enugu State through the State Electrification Agency and have them gazetted no later than 31st December 2023;

2.3.5 Issue first licenses for generation and distribution entities no later than 31st December; and

2.3.6 initiate a sustained and focused campaign of education and outreach to Enugu State residents, communities and interest groups, Federal Government stakeholders, capital providers and potential licensees to explain Policy, Law and market design and seek their interest in becoming stakeholders in a successful State electricity market.

Medium Term

2.4 Medium term objectives (2024 – 2026) are:

2.4.1 Establish the regulatory, technical and commercial design of the State electricity sector connected with key distribution licensees (the medium voltage distribution and electricity retail companies), the system operator and the electricity payment guarantee company formed by 31st March 2024;

2.4.2 Unserved and underserved communities across the State identified by the electrification agency and projects for connecting them to available or new distribution systems have started being procured by 31st March 2024;

2.4.3 Adopt the Enugu Integrated Energy Resource Plan, incorporating the State Electrification Plan (for unserved and underserved communities), by 30th April 2024;

2.4.4 The distribution licensee and the retail licensees in the three Senatorial Districts

have entered into contracts for the delivery of energy by Q3 2024;

2.4.5 Full commercial operations with peak energy cumulatively traded in the Enugu Energy Market reaching a minimum of 100MW/1,800MWh (100MW delivered over 18 hours) by 31st December 2024 increasing cumulatively to 300MW/5,400MWh (over 18 hours) by 31st December 2026;

2.4.6 Institute a process for transiting the State from dependency on distillate fuels to natural gas and renewable sources to fuel alternative energy provision in the State by 30th June 2024; and

2.4.7 Enugu State becomes a model for innovation and entrepreneurship in the provision of electricity access to populations in the South-East States of Nigeria.

Long term (2027 onwards)

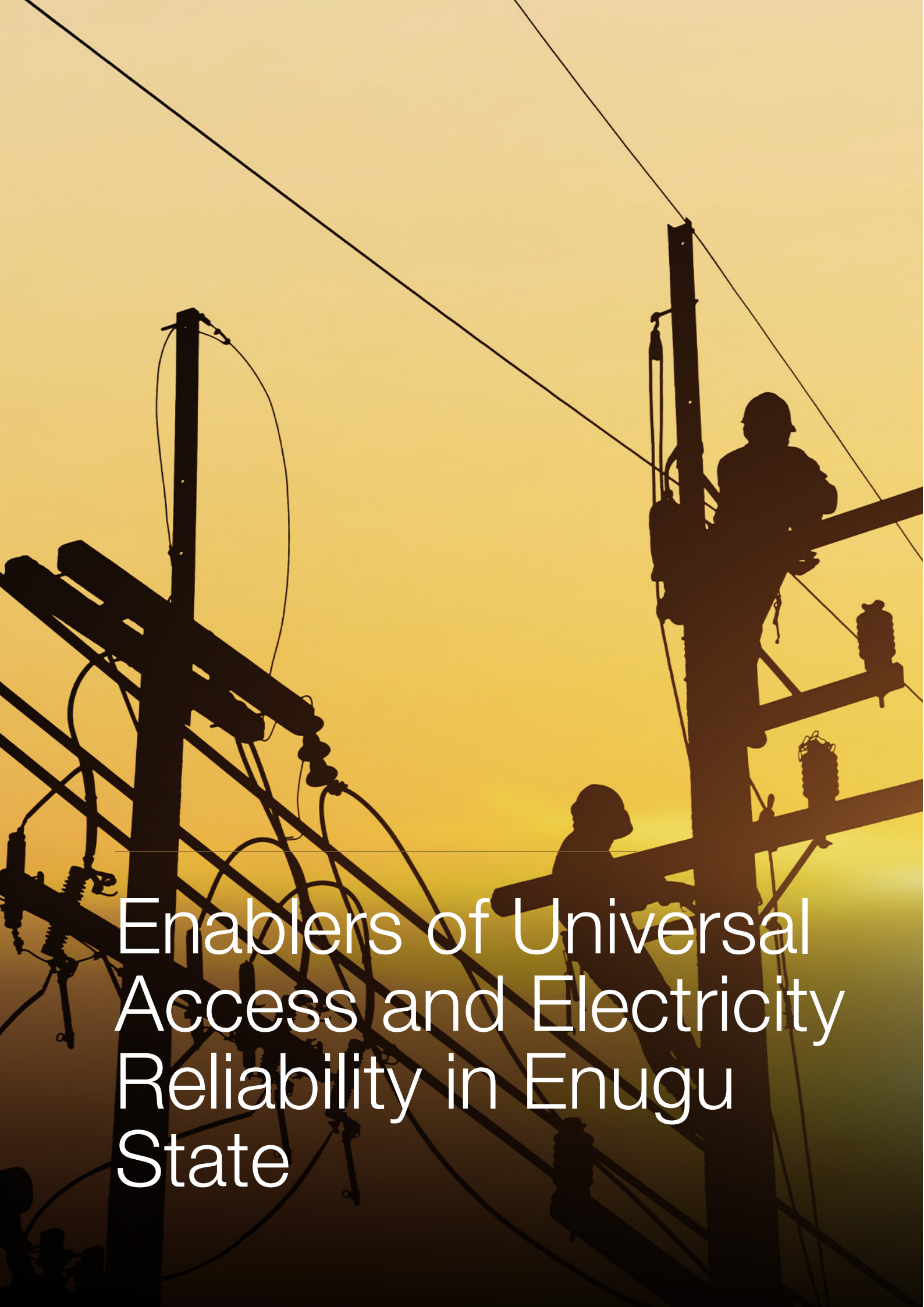
2.5 Long term, minimum 20% year-on-year growth in capacity, attaining 80% reliability (average 20 hours of supply daily) and delivering growth in the State electricity market from 300MW/4,500MWh (18 hours) daily by 31st December 2026 to 700MW/16,800MWh/h (24 hours daily including 15% reserve margin) by 31st December 2031;

2.6 The State Government expects that by 31st December 2031, the Enugu State Electricity Market will deploy efficient generation technologies and offer universal access to all citizens in the without widespread recourse to alternative electricity capacity.

2.7 While empirical figures are unavailable for now, we believe that as much as 500MW of alternative generation may already be available in the State, located in residences, government, business and industrial premises. This capacity has been procured and is operated at an inordinately huge cost as baseload, instead of emergency, power. The opportunity cost to the Government and people of the State in having to spend scarce funds on meeting their need for electricity, in terms of capital and operating costs and the health and environmental damage caused by petrol/diesel-fired generators, is immense and irrecoverable. We believe it will remain so until an Enugu State Electricity Market is established to remove the State's dependency on back-up supply that doubles so inefficiently as baseload energy.

2.8 The design of the putative Enugu State Electricity Market that is expected to best serve these objectives noted above is made up of seven key stakeholders and market participants who collectively trade electricity from two sources of supply. Overlooking the entire market and assuring its commercial and technical wellbeing is the State regulatory commission responsible for technical and economic regulation of the market. There will be generating companies (Gencos) licensed by NERC in the wholesale electricity market and located outside the State; and those licensed by the State regulatory commission to be located within the State. Both types of Gencos will enter into power purchase agreements directly with the electricity retail companies in the State. Energy from the national wholesale market will be delivered to the State via the TCN-owned national grid and, when it is delivered into the State, distributed across the State by the medium-voltage distribution company (MVDC) network. For now and into the immediate future, energy traded within the State will be almost entirely that delivered through the national wholesale electricity market. State-licensed Gencos in the State electricity market, located within the State, will connect directly to the MVDC's feeders, which will in turn deliver energy to the low-voltage 11kV/415v network that serves customers in the State. We expect that in a short time, the MVDC's 33kV and 66kV network will grow exponentially to be much more extensive than is presently the case in order to accommodate increased energy supply into the State.

2.9 By virtue of the provisions of the Electricity Act, 2023, the MVDC will be gathered into, established and operated as the State-based subsidiary of Enugu Disco. This will immediately become a monopoly with common carrier status and be regulated by the State regulatory commission as such. Very importantly, the 33kV MVDC lines will be separate and distinct from the even more extensive network of 11kV/415v transformers, lines and customer service (meters, billing, payment and collection systems) assets. These assets are expected to become the focus of competitive tension and will be transferred by Enugu Disco into a number of electricity retail companies (ERCs) that will sell energy directly to traders through what is expected to be an army of retail energy traders competing with each in every area of the State. There will be no monopoly traders this this service level, for which this fourth set of market participants, the various electricity retail companies (ERCs) will be licensed to operate competitively across the State.

The image features a warm, golden-yellow sunset background. In the foreground, the silhouettes of two utility workers are visible. One worker is positioned higher on a utility pole, while the other is lower down. The intricate network of power lines and insulators is also silhouetted against the bright sky. The overall scene conveys a sense of industry and infrastructure.

Enablers of Universal Access and Electricity Reliability in Enugu State

Chapter Three – Enablers of Universal Access and Electricity Reliability in Enugu State

3.1 The Enugu State Government considers it vital that its residents thrive and innovate through policies and programmes that reduce the cost of living and of doing business while also raising standards of living in the State. It is also extremely important that the significant number of the State’s population who live in so-called peri-urban and rural areas and who are practically unserved by the incumbent Enugu Disco are also brought fully into the frame of universal and reliable electricity access in the State.

3.2 Enugu citizens are unable to enjoy the benefits of electricity reliability due to the gross inadequacy of electricity supply from Enugu Disco made worse by the numerous daily incidents of unplanned outages in the meagre supply available. The reality that Enugu State cannot rely solely for the supply of its electricity needs on an unreliable national grid is compounded by Enugu Disco’s insolvent status, now under strict financial/revenue supervision from the CBN. Accordingly, the State Government must seek a solution to its electricity supply challenges that looks beyond the unviable and economically disabling status quo.

Vital Features of a Credible Enugu State Electricity Market

3.3 Electricity is increasingly becoming a decentralised service and as it becomes clear that this global trend is irreversible, it also becomes obvious that electricity, as a manufactured commodity, is best provided within an organised, orderly and sensibly-regulated market by private sector players; recognising always that special provision must be made to provide access to the often-neglected vulnerable and less privileged demographic.

3.4 In the peculiar context of Enugu State, there are a number of factors that may be considered

as necessary enablers of universal access and electricity reliability in Enugu State. These are: 1) an enabling constitutional and legal framework; 2) an autonomous, credible regulatory and consumer protection body; 3) an integrated resource plan; 4) competitive and transparent procurement of generation resources; 5) well-funded, well-managed operators; and 6) a bankable commercial framework.

An Enabling Constitutional/Legal Framework Established by Inter-Governmental Collaboration

3.5 Paragraph 3.1.3 of the National Electric Power Policy (NEPP), 2001 states that:

“The State Governments will carry out their responsibilities for the development of off-grid electrification and their joint responsibilities with the Federal Government on the establishment of power stations as set out in the 1999 Constitution. The State role will also include regulation of off-grid non-centrally despatched electricity operations, which are wholly limited within the State boundaries.”

3.6 “Central despatch” refers to the activity of the Nigerian Electricity System Operator (nson.org) that controls the movement of electricity across State boundaries through the national grid maintained by TCN-TSP. Non-central despatch, therefore, refers to all generation and transmission activity that is not controlled by the national system operator, that is, activity that is carried on exclusively within a State. Accordingly, Section 13 of the Concurrent Legislative List, Part II, Second Schedule of the 1999 Constitution (as amended) empowers the National Assembly to make laws for the Federation with respect to electricity and “the generation and transmission of electricity in or to any part of the Federation and from one State to another State”. Section 13

does not mention “distribution” at all. Section 14 of the same Concurrent Legislative List, however, provides the power of a House of Assembly to make laws for the State with respect to electricity and “the generation, transmission **and distribution of electricity within that State**” (bold italics for emphasis).

3.7 This is the constitutional foundation of the legal and commercial framework for the Enugu State-focused electricity market. Reading Sections 13 and 14 of the Concurrent Legislative List together with the NEPP, we understand them to mean that all electricity operations, whether generation, transmission or distribution, carried on within a State are the exclusive preserve of State law and regulation. The absence of the word “distribution” from the National Assembly’s legislative powers in Section 13, Concurrent Legislative List, is not an error. Rather, it acknowledges the fact that in large federal jurisdictions such as India, Brazil, Chile, Argentina, Australia and Canada, distribution is a local matter that is left to regional or State authorities to provide for and regulate. The point is emphasised by the wording of Section 14(b), Concurrent Legislative List which defines the power of the State of the Federation to make laws for “generation, transmission **and distribution...**” However, in the 24 years since the proclamation of this Fourth Republic, even though the 1999 Constitution makes clear that the distribution sector is the responsibility of the States and the National Electric Power Policy clearly anticipates that there will be State electricity markets, no State has yet evolved to that extent.

3.8 Thus, until now the Federal Government has exercised by default the regulatory responsibilities, including over the distribution sector, that ought to have been the responsibility of the States. With the recent momentous constitutional amendments that removed the constraints in the 1999 Constitution against State electricity markets in Section 14, Concurrent List; also taking into account the provisions of the Electricity Act, 2023 that explicitly recognise the fact of State electricity markets; and with Enugu State expressing the vision, desire, willingness and capacity to take on its electricity responsibilities, there now has to be a transition of responsibility from the national electricity regulator, the Nigerian Electricity Regulatory Commission, to State electricity regulators. There has also have to be corporate actions taken urgently to create a corporate personality around Enugu Disco’s designated, assets, liabilities and staff located within and dedicated to serving customers located in Enugu State. This corporate

entity is what is to be regulated by the Enugu State regulatory entity. The transition has to be clear about delineating responsibilities between the Federal and State regulators and a timeline of activities that will see the transition through to the end. As early as possible after enacting an electricity law and establishing the State regulator, the State will commence the formal process of transition.

An Autonomous and Credible Regulatory/ Consumer Protection Body

3.9 An autonomous and credible regulator is needed to enable the State to fulfil its desire to have a robust, customer-oriented state electricity supply system. The State electricity regulator will be responsible for: 1) overseeing the steady evolution of the Enugu State electricity market in accordance with technical and commercial regulations established by it and reviewing the resulting market design from time to time and taking steps to ensure the said design meets State electricity policy objectives; 2) licensing of qualified applicants to operate in the Enugu State electricity market; 3) ensuring that tariff methodologies are established whereby market participants, particularly in the absence of competition, publish tariffs that are reflective both of willing buyer-willing seller arrangements and a cost-efficient operating process; 4) ensuring the safety, reliability and quality of service in the Enugu electricity market; and 5) market surveillance, monitoring and reporting.

3.10 The electricity regulator will be autonomous and capable in the sense that the effectiveness of the body will as quickly as possible after its establishment be substantially dependent for the funding of most of its daily activity from outside the Enugu State Government; it will have appointed leaders committed to integrity and competence in executing their tasks; its daily functions will not suffer interference from the Executive or the Legislature; it will hold true to the principle of regular consultation with key stakeholders (particularly consumers, licensees, policymakers, legislators and civil society groups); and the continuous training of leaders and management staff. These are vital enablers of accumulating regulatory competence and credibility, attracting quality licensees and delivering value to Enugu citizens. The State Government will put in place a well-drafted enabling electricity law that unambiguously ensures credible, value-driven, investment-promoting regulation by the State regulator.

An Integrated Energy Resource Plan (The Enugu Integrated Energy Resource Plan)

3.11 An integrated electricity resource plan, the Enugu Integrated Energy Resource Plan (EERP), will meet the planning needs for future electricity demand by establishing the availability of electricity generation resources available to the State and the load (demand) these resources will serve. The Plan will also identify the least cost options by which the various fuel and generation resources available within the State can be combined to meet all identified demand. It will also consider the wide range of demand resources and highlight financial, economic and environmental impact in regard to meeting projected future electricity needs.

3.12 The main advantage of the EERP is that it identifies an overall least cost energy supply mix while also determining and assessing different constraints such as fuel and the environment. The Plan will serve the present and future electricity needs of the State while being neutral about the fuel and technology choices that will ultimately be made in implementing it. However, it is a non-negotiable strategic necessity that the EERP will also require that any energy solution deployed in the State must be environmentally-friendly and climate efficient. The polluting and environment-damaging effects of having to use distillate fuels such as petrol, diesel and LPFO to power socio-economic activity has had incalculable damaging consequences on the environment.

3.13 Therefore, apart from requiring that future electricity solutions will be the most environmentally-friendly available, this State electricity policy will also incentivise phasing out environmentally-damaging power distillate-fired back-up solutions or reverse-engineering them to use cleaner fuels. Third, policy measures will be put in place to ensure that future alternative generation solutions shall, as from a date to be determined after due consultation, be designed to run on clean natural gas or be derived from viable renewable energy options. Incentives will also be developed by the State Government to encourage the use of renewable energy solutions, such as home solar-battery systems, by all citizens.

Competitive and Transparent Procurement of Resources

3.14 Ideally, a competitive and transparent energy procurement framework ought to be developed and managed for the State by a mandated neutral

entity. That entity, in this case, would be the State system operation company. Competitive procurement tends to create opportunities for interested and capable parties to bid to finance, build and operate new lowest available cost generation sources and deliver energy to customers. However, considering that current demand significantly outstrips available supply of public electricity supply, it is probable that at this early stage of evolving a viable State electricity market a few credible providers as are available will be identified and encouraged to enter into the market in the shortest time possible at minimum cost without going through a competitive procurement process. This ensures that operators focus their spending on providing service rather than on surmounting expensive barriers to entry in a market that is still demand-driven. However, this non-procured first mover capacity will not be allowed to exceed 70MW (10% of 2031 projected total demand). Thereafter, all future new capacities will be competitively contracted into the State under the IERP framework.

3.15 There is also the reality that Enugu Disco enjoys a de facto (but not de jure) monopoly in the State that has not yet provided the universal access to electricity that every citizen deserves, even as the access gap continues to widen. This situation of growing inadequacy will last only as long as it is allowed to continue and the way to remove or minimise it completely is to foster and actively encourage new entrants into the market, particularly at the low voltage, customer care-driven, level (11kV/415v). Therefore, the State Government will promote the creation of the enabling legal and commercial framework for electricity players to competitively provide reliable electricity service to all residents of the State that wish to enjoy such service; and not to selected higher end customers as is now the case.

3.16 Nevertheless, it is indeed desirable that the State Government puts in place a legal framework for the competitive procurement in future of cost-efficient electricity generation and distribution projects in grossly unserved and under-served spaces of the State; which it will undertake through the State electrification agency.

Well-Funded, Well-Managed Licensees

3.17 When established, the Enugu electricity market will offer significant investment opportunities for the various market participants described in Chapter Two. The underlying value of the State electricity market design is in highlighting the paramount importance of

payment discipline by the ERCs and retail traders whose responsibility it will be to collect all the revenues generated by the market and pay it in full to upstream beneficiaries. At some point in future, as the market grows and matures, there may be a need for a transmission entity. This will happen either by the MVDC expanding its foot print in the State to include the provision of transmission or by licensing a separate transmission entity. The regulatory commission will consult and decide on this at the appropriate time.

3.18 It is vital that at the onset, every square meter of Enugu State territory is covered by at least three ERCs. In bringing universal access to underserved and unserved areas of the State, the State electrification agency will run a procurement process to identify communities that will work with a specific ERC to propose least cost capital projects that will then be awarded grants from the State Electricity Access Fund aimed at reducing the total project cost, and those the end-user tariff paid by the customer.

3.19 Regarding Enugu Disco, as also noted earlier in Chapter Two, it is expected that the Disco will incorporate a subsidiary corporate entity around its 33kV assets located entirely in the State. This is expected to happen alongside a transition process agreed with NERC to transfer the regulatory responsibilities currently exercised by it over distribution and off-grid/mini-grid activity to the State utilities regulatory commission. Creating a subsidiary solely for Enugu State enables that entity to be regulated by the State regulator. It also facilitates commercial focus and intensity on serving the needs of the State. Furthermore, we note that Enugu Disco's regulated asset base includes a significant stock of operating assets historically paid for by the State Government but for which no value has so far been received following the 2013 privatisation, in spite of promises to do so by the Federal Government. The treatment of this equitable interest in the equity of EEDC will be a subject of discussion between the Federal and State Governments.

3.20 While, the utilities regulator will not impose commercial terms on licensees, it will also not tolerate licensees cherry-picking the best of the commercial and residential customer classes or engaging in abusive behaviour against customers and other players. It is important that unlike what we are experiencing today, licensees do not avoid addressing the needs of residential and small business users, particular in unserved and underserved areas, who are by far the largest number of customers and the foundation of the State's wellbeing; and who also have the greatest

need for socio-economic equity. Indeed, specific license terms and conditions issued by the Commission will set in place minimum service and customer care requirements, including for providing universal access to residents within each license area and for ensuring that licensees that are part of the same corporate holding structure are subject to well-defined accounting separation, monitoring, surveillance and reporting requirements.

3.21 It is expected that all these licensees, being focused entirely on Enugu State, would find it easier to create individual business cases that would appeal to operating partners and capital providers within and outside Nigeria. We therefore expect that financing the capitalisation of these various entities will provide significant opportunities for the growth of Nigeria's project finance, insurance services, infrastructure EPC and related sectors; the more so as the non-negotiable element of this design is the assurance of payment discipline and credit worthiness. Particularly, it is expected that the focus of capital-raising will be the gencos, the MVDC, the ERCs and, above all, the payment guarantee company – the first three requiring capital for their various EPC projects while the fourth will require significant capital to secure payment of revenues due to the Gencos as they fall due. This fourth will really be a financial intermediary that is expected to be owned and funded by private sector and DFI financial institutions and capital providers. Assuming that guarantees will be sought to back PPAs for up to 50MW of capacity in the first year at 90% availability, at a tariff of ₦=100/kWh and further assuming US Dollar exchange rate of ₦=900:\$1, this means that the payment guarantee company will need to raise guarantee capital of approximately \$45m in its first year.

A Bankable Commercial Framework

3.22 All electricity market participants in the State are expected to be owned and operated by the private sector. In this regard, the State Government will focus on enacting the right policies and laws and enabling the development of an EERP that speaks to the development of State-based electricity projects (using a mix of thermal and renewable fuel sources) focused on delivering service to customers in the State's various license areas in a holistic and commercially sustainable manner.

3.23 The State Government also expects that the relationships amongst players in this market will be governed by contracts negotiated on a willing

seller-willing buyer basis, providing for various commercial and technical terms established under a tariff methodology and technical codes duly established by the State regulatory commission. The payment guarantee company will provide its guarantees to Gencos on purely commercial terms. The regulatory commission will also provide for dispute resolution mechanisms that emphasise alternative dispute resolution processes in preference to the State courts, which latter must be seen as a very last resort.

3.24 The EERP shall account, first, for the necessity to ensure the commercial and financial viability of the Enugu Electricity Market; and, second, for the ability of consumers to pay for services in order for the market or the State Government not to be burdened with open-ended financial liabilities. It is of critical importance that revenues derived from market operations in license area cover the cost of service and deliver a reasonable return to

licensees. The methodology or methodologies by which electricity tariffs in the State are determined will be the subject of consultations enabled by the regulatory body. The EERP study and these consultations will identify vulnerable and less economically viable segments of the market that will benefit from measures that reduce both the capital cost of delivering electricity projects and the tariffs to be paid for being served by these projects.

3.25 The cumulative effect of these statutory provisions is to provide a comprehensive basis for the licensees to establish commercially viable operations in the State from the start, rather than replicate Federal Government-funded electricity subsidy models that do not incentivise the growth of service volumes and footprints or the charging and collection of economic tariffs.





Lighting Up the
Unserved and
Underserved
Communities of
Enugu State

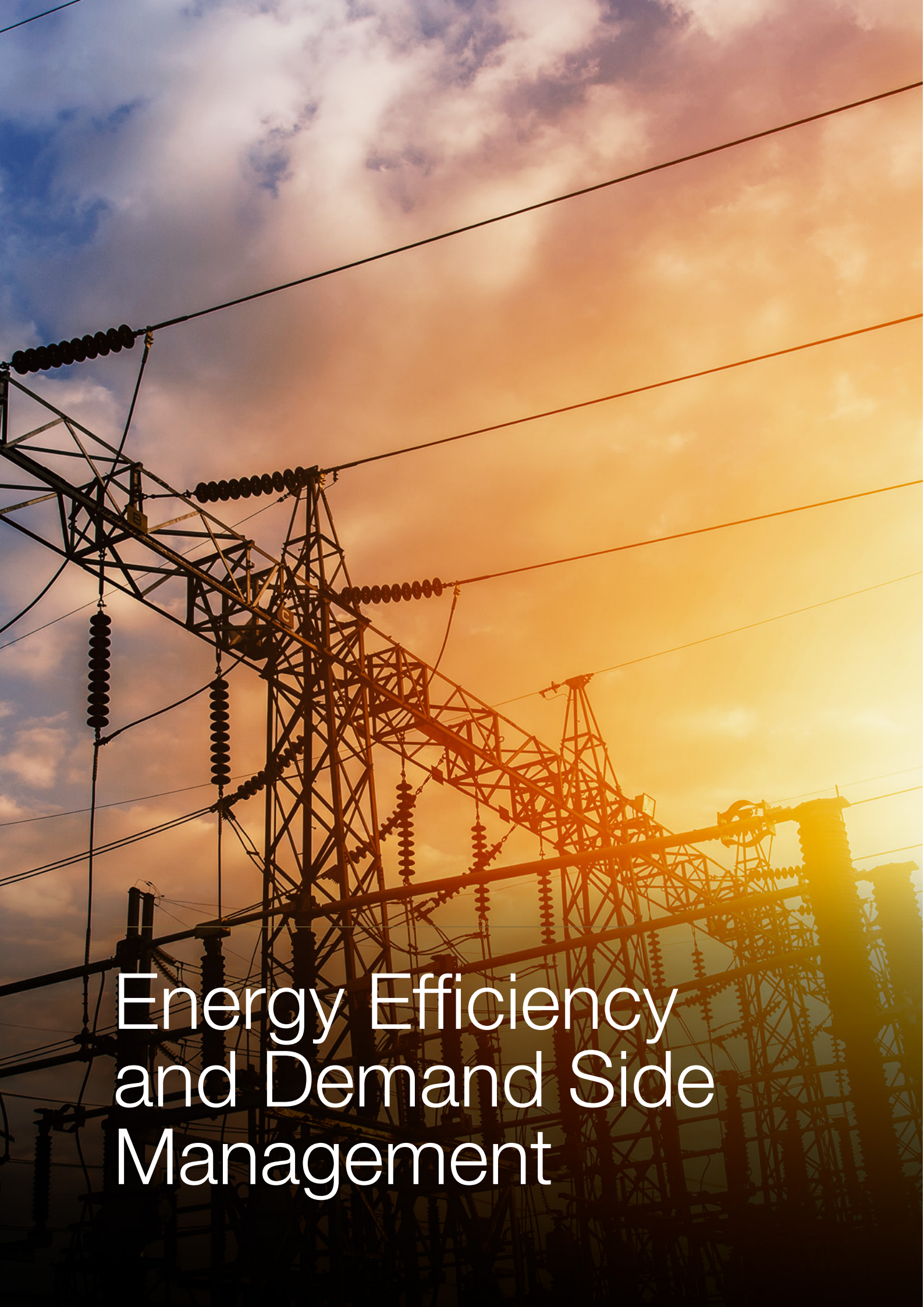
Chapter Four – Lighting Up the Unserved and Underserved Communities of Enugu State

4.1 This is the single most important item of this Policy, considering that most of the State's population live in such communities. Significant areas of Enugu State are so poorly served that a specific strategy must be developed to address the reality that service in such areas is either non-existent or is very scanty, even more so than the metropolitan areas of the State that are “underserved”. Typically, these areas are described as off-grid but since the entire State, receiving approximately 1.5% of volumes delivered to the national grid, is in reality itself “off-grid”, it is appropriate to use more precise terminology that speaks to the nature of our peculiar challenge. Whatever terminology we may use, however, the strategy for extending service into the State's grossly deprived areas focuses on enhancing socio-economic activity and improving quality of life indices, especially for young persons, women and those living below the poverty line, enabling the provision of functional social (health and education) and public infrastructure.

4.2 Electrification schemes in these areas shall focus on the deployment of distributed generation, isolated and connected minigrids and renewable energy-based home solutions. The State Government's interventions will be focused on identifying all deprived communities across the State and developing, as a part of the Enugu State Electrification Plan (which will be a subset of the Enugu State Integrated Energy Resource Plan), a set of principles or criteria whereby resources will be committed via a transparent procurement process to support the capital cost of extending access to such communities. In such areas, with the careful application of monies granted by the State Electrification Fund, which will be established by law and custodied by the State Electrification Agency, it would become economically and technically feasible to deliver reliable electricity access across the State.

4.3 The application of a transparent procurement process and the deployment of the State electrification fund to deserving beneficiary communities will be the responsibility of a new Enugu State Electrification Agency, also to be established by law. This entity's primary purpose will be to support licensees in delivering cost-effective and universal electricity access across the State; develop the criteria for defining a community as “unserved” or “underserved”, then identify and enumerate all communities in the State that fall within these definitions, develop and execute the State Electrification Plan (SEP), whose primary purpose will be the delivery of electricity access to the identified unserved and underserved areas of the State; and the management of the State Electrification Fund in the implementation of the SEP.

4.4 The SEP itself will be an important part of the Enugu Energy Resource Plan (EERP). The SEP will set out the basis on which the State's electricity-deprived areas will be served by the provision of reliable access to electricity, street lighting and other amenities enabled by electricity. The SEP will identify all deprived communities in the State by name (updated annually); identify the generation technology and fuel type most likely to be cost effective in serving each community; discuss the nature of incentives that may be provided to communities and operators that wish to undertake connections to these communities; identify the process by which partners will be procured to execute projects in the various identified communities; and the expectations of such partners in achieving the goal of universal access and electricity reliability in the State.



Energy Efficiency and Demand Side Management

Chapter Five – Energy Efficiency and Demand Side Management

5.1 In many jurisdictions, especially those that enjoy generation adequacy, to which category neither Nigeria nor Enugu State yet belong, the considerations of efficiency and demand side management policies are to reduce costs of consumption, reduce the need for cross-border energy imports and reduce greenhouse gas emissions. In Enugu State, again as in Nigeria, the additional policy considerations include the urgent need to significantly reduce the use of diesel and petrol to power the back-up generators that enable much of the socio-economic engagement in the State. This is in addition to the demand to better use finite natural resources, evolve towards wider deployment of renewable energy sources and preserve the environment.

5.2 Enugu State sits at the heart of the Anambra hydrocarbon basin and is blessed with significant deposits of natural gas, which is now designated as transition fuel. Over the years, blocks were awarded in the basin to licensees for the production of these hydrocarbons. For various reasons very little was done. As the Federal Government finally begins to take deliberate policy actions to integrate natural gas with electricity domestically, Enugu will seek to identify gas sector players in the Anambra Basin and work with them to support their gas-to-power initiatives from which the State will benefit. It is expected that private sector-led initiatives will lead to the widespread deployment of distributed generation and mini grids utilising these readily available energy sources.

5.3 In addition, in order to contribute to the reduction of greenhouse gas emissions emanating from the State, the State Government will consider establishing policies deliberately aimed at minimising reliance on back-up generation systems that run on distillate fuels. To this end, regulatory directives will be aimed at mandating the utilisation of cleaner fuels and generation sources such as hydropower, natural gas and solar PV systems. This will be via a time-limited mandates that permit the importation into and sale of large capacity diesel generators in Enugu only up to a certain date in the near future (subject

to consultation), after which any generator set coming into the State must be engineered to run ONLY on natural gas or a cleaner fuel.

5.4 There will be further directives that require all distillate-fuelled generator sets currently operating in the State to be retrofitted to run only on natural gas or cleaner fuels no later than a certain date in future. The electricity regulatory commission will consult widely on the capacity thresholds and longstop dates to be determined by these regulations. It is anticipated that regulations such as these will have the very salutary effect of incentivising large scale deployment of cleaner technologies in the State.

5.5 Finally, at a time in the future, probably during the medium term period noted in Chapter Two, as the State begins to enjoy steadily increasing levels of electricity reliability, the regulator will move towards mandating demand side management principles and regulations that encourage residents to be more efficient in the levels, patterns, timing and quantities of electricity that they consume; such that the cost of building out the Enugu State Electricity Market becomes more efficient.

5.6 For now and into the near future, however, the emphasis will be on working to bring private sector players into the State to set up and run formal, market-driven systems and on directing every available Naira of public and donor funds into reducing the capital cost of providing access across the State where there was little or none before.



Review of the Policy

Chapter Six – Review of the Policy

6.1 The State Electricity Law will mandate a review and re-publication of the State Electricity Policy no later than every five years from the date it comes into effect. At all times, this Policy and the forthcoming Electricity Law, whose enactment will follow this Policy, will be the reference points for understanding and executing the State’s strategic electricity sector objectives.

6.2 This Electricity Policy will be necessarily dynamic. As the years go by, its stated objectives and the methods for attaining them will be reviewed and updated to take account of key factors such as the pace of growth in the State market, technological innovation and developments in national domestic energy markets. Other key factors to consider at a later date are climate change and the constant evolution in environmental management

policy and practice along with feedback from consumers, citizen groups, investors and capital providers, development partners and the State Government itself.

6.3 The State Government will establish channels of communication with key stakeholders within and outside the State Government and the State, to enable input into policy formulation to be given and discussed. Adjustments to this Policy will be made as often as is necessary. In addition, the Ministry of Energy and Mineral Resources will organise formal electricity policy review workshops no less than once every five years and the outcomes therefrom will be processed to produce subsequent editions of the Policy and amendments or, where necessary, even a repeal of the Law.





Conclusion

Chapter Seven – Conclusion

7.1 This Electricity Policy provides the essential principles of a Enugu State electricity policy framework for ensuring universal access to electricity and thus genuine electricity reliability in the State. These principles will be expounded in detail in a Bill that establishes a State electricity market separate from, but also connected with, the national wholesale electricity sector. The Bill will clarify the roles of all stakeholders in the market and establish their place in a legal/commercial framework that enables the entry of various credible players focused at various levels on delivering electricity services within the State. The Bill will establish an entity to be responsible for extending electricity access into the underserved and unserved areas of the State where the majority of our people live. The Bill will also establish the State electricity regulatory body and specify its functions in terms of designing and setting the regulatory and consumer protection principles for the State electricity sector.

7.2 This Policy outlines a vision for setting a firm foundation for reinforcing the resurgence of Enugu State as a major economic, cultural and social hub in Nigeria. The State Government's

ability to bring the benefits of tomorrow to its people today depends significantly on the State Government's ability to articulate and oversee the implementation of an electricity market designed to meet the current electricity challenge in the State. Our purpose is to light up and provide universal access to electricity for every community in the State and thereby assure uninterrupted growth across all segments and demographic groups of the State. In this State Electricity Policy, the State Government has articulated a vision whose details demonstrate a deep understanding of the enormity of the task before us, a comprehensive grasp of what needs to be done and the extent of collaboration between the public and private sector required to ensure our programme is implemented fully, in a measurable manner within the stated time frame.

7.3 As we work to build a peaceful, secure, highly developed and prosperous State for all, we, the people and Government of Enugu State invite our friends, investors and development partners to join us in working to realise our fervent, but very much attainable, aspirations.





THE ENUGU STATE
**ELECTRICITY
POLICY**