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METER ASSET PROVIDER (MAP) INTERVENTION PROGRAM AND BRIDGING THE METERING GAP IN THE ELECTRICITY SECTOR: RIVERS STATE EXPERIENCE, NIGERIA

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ABSTRACT

The privatization of Nigeria Power Sector was implemented with the hope that the new Companies shall massively deploy meters to electricity end users within the first five years of its implementation. This was not to be as DisCos saddled with the responsibility of providing meters to electricity consumers faced the challenge of liquidity, unstable foreign exchange regime, absence of local meter assembly plants, inadequate gas supply infrastructure and pricing in Dollars, poor customer service focus/engagement, etc. It has been almost five years and the metering gap has only been narrowed to 39% nationally. To date, 5,459,574 registered customers nationally are unmetered and 306,634 or 5.62% of them are in Rivers State. Rivers State is located within the coastal lines of Nigeria in the South-south geopolitical zone of the country. The State has twenty-three (23) local government areas and has Ogoni, Abua, Ekpeye, Ikwerre, Ibani, Opobo, Eleme, Okrika, and Kalabari, Etche, Ogba, Engenni, Egbema, Obolo and others as major ethnic groups. The population of the State is estimated at over 5,198,716 based on the 2006 census data. Majority of the communities in the State are being supplied electricity either from the national grid, state government owned turbine or through extension of electricity connections from Oil Companies operating within the area. This study has shown that MAP Operators shall require more than N18.31B to invest in meter deployment to close the gap in Rivers State alone. The ability of MAP operators to raise this fund coupled with their technical expertise to compete in an emerging market will determine the success rate of the program.

KEYWORDS: *Meter Asset Provider, Meter Deployment, Metering Intervention Program, Bridging Metering Gap, Electricity Sector, Rivers State Experience.*

INTRODUCTION

Nigeria's electricity industry has continued to evolve since the inception of the first utility company, the Nigerian Electricity Supply Company, which was established in 1929. Despite the various efforts of the State-owned utility, (which operated as a monopoly) to manage the sector and provide electricity, it became clear by the late 1990s that the Nigerian electricity system was failing to meet Nigeria's power needs. Hence, the National Electric Power Policy of 2001

kicked off the power sector reforms in Nigeria, leading to several other reforms over the past two decades.

Enojo A. Salisu O. P. and Abraham A. (2017) chronicled the evolution of the power sector reform in Nigeria into the following phases:

□ In 1998, the electricity (Amendment) Decree 1998 and the National Electric Power Authority (NEPA) (Amendment) Act 1998 were passed, terminating the monopoly status of NEPA and inviting private sector participation in the electricity sector.

□ The Electric Power Reform Implementation Committee (EPIC) was inaugurated by the Bureau for Public Enterprise (BPE) and resulted in the Federal Executive Council approving the National Electric Power Policy in September 2001 which recommended the privatisation of the electric power sector and the establishment of an independent power sector regulator.

□ In March 2005, the Federal Legislature passed the Electric Power Sector Reform (EPSR) Act. The Act contains the following provisions:

- i. Unbundle the state-owned power entity (NEPA) into generation, transmission and distribution.
- ii. Set up the Power Holding Company of Nigeria, Plc. (PHCN) to take over the assets, liabilities, rights, obligations and employees of NEPA.
- iii. Set up the Nigeria Electricity Regulatory Commission (NERC) as the independent regulator of the power sector.

□ In November 2005, PHCN Plc. incorporated 18 new successor companies comprising 6 generation companies (GENCOs), 1 transmission company (TCN) and 11 distribution companies (DISCOs).

□ In 2008, market rules to guide the operations in the electricity industry were approved by the Nigeria Electricity Regulatory Commission (NERC).

□ In July 2012, the Federal Government entered into a management contract with the Manitoba Hydro International Nigeria Limited (MHINL) for the management of the transmission company of Nigeria.

□ By November 2013, 11 successor distribution companies (DISCOs) and 6 generation companies (GENCOs) were handed over to the successful private power bidding companies, thereby, consummating Nigeria's power sector reform

Over the last few years, the Federal Government has been able to complete the privatization process. The Federal Government retains the ownership of the transmission assets (management under concession) with major stakes (40%) in the generating companies (GenCos) and distribution companies (DisCos) which were transferred to private investors on November 1, 2013.

Through the privatization of PHCN, 6 generation companies ("GenCos") and 11 distribution companies ("DisCos") emerged, while the transmission segment of the network remained under the control of the Federal Government. The key criteria for selecting the successor DisCos was the concept of Aggregate Technical, Commercial and Collection ("ATC&C") loss reduction over a five-year period. The DisCos, as per their Performance Agreement, were required to make capital investments in distribution network infrastructure (including metering) and business reengineering programs to reduce losses and improve operational efficiency, commercial viability and service delivery.

The unbundling and transfer of the successor companies to private entities has, to date failed to deliver the expected benefits. This has been largely attributed to the fact that upon takeover, the DisCos assumed responsibilities and challenges beyond the scale and scope originally envisaged. Most of the challenges faced by the DisCos include out of date network infrastructure, nonfunctioning metering systems, non-cost reflective tariffs with huge revenue shortfalls, high incidence of electricity theft and equipment vandalism, amongst other pertinent issues.

Tobinson A. Briggs and King Ugorji (2017) in corroboration with the above stated the problems in the electricity distribution system as follows:

- a) The vandalization of distribution lines by criminals and winds.
- b) The broken and bent cross arms, oil leakages in transformers, cracked pot insulators, and overload.
- c) Inability to perform standard load analysis on the current injection distribution substations by Port Harcourt Electricity Distribution Company.
- d) Corruption, Bribery, and Mismanagement in the power sector.
- e) Lack of preventive maintenance.

Consequently, the DisCos have been unable to finance and roll out the desperately required strategic initiatives to improve cash flow and service delivery in order to achieve the ultimate goal of ATC&C loss reduction (which is currently at about 45%). Nevertheless, metering effectively represents the foundation for sustainable revenue generation and commercial viability of the electricity sector, DisCos must accurately account for inflows of electricity into their network and outflows of electricity delivered to customers. This enables the utilities to provide an assurance of fair billing and payments to and from suppliers and customers alike.

The implication is that metering must be a top priority for DisCos and the entire power sector value chain whose respective costs of service are all embedded in the final utility bill borne by the customer. Essentially, the power sector value chain is wholly dependent on the DisCos to provide last mile services to the customer and perform the role of revenue collections. This critical role is only successfully enabled by an effective and comprehensive metering program that offers accountability and transparency as well as incentivizes customers' willingness to pay. It is, important to mention, at this point that a comprehensive metering program goes beyond the installation of a metering device for customers. It must also include network metering, customer enumeration and a robust commercial monitoring and revenue assurance framework as all related constituent projects that feed into a robust metering program.

STATEMENT OF THE PROBLEM

The KPMG Report (2016) captures the challenge of metering gap in the operations of DisCos and these are traceable to the following factors which has bedeviled the sector:

1. Liquidity: The entire sector value chain was plagued with intense liquidity challenges as the tariff was not cost reflective and enough to generate revenues to cover the costs of the entire value chain. This made DisCos incapable of providing meters for end users.
2. Unstable foreign exchange regime. The Forex regime that prevailed from 2015 to date made investment into metering by DisCos almost impossible as the exchange rate rose from N170/\$ to about N500/\$. This greatly eroded the power of the Naira as more money was required to secure Forex to enhance meter importation
3. Absence of local meter assembly plants: Meters and their components are essentially off-shore items and local content in terms of manufacturing and assembling was almost nonexistent.
4. Gas Infrastructure, Supply and Pricing: The Multi Year Tariff Model (MYTO) priced the gas component (important input in power generation) in Dollars thereby creating a high tariff illusion in the sector making the unit cost of energy far beyond what is affordable by many consumers.
5. Customer Service Focus/Engagement: Power firms were faced with severe operational challenges like power-theft, inadequate power supply, customer dissatisfaction, collection losses, limited gas supply, stranded capacity, inadequate revenue, etc. Consequently, very little attention was paid to metering of consumers as they found estimation as a way out of the doldrum.

THE OBJECTIVE OF THIS STUDY

The objective of this study is to evaluate and assess the Meter Asset Provider (MAP) intervention program and bridging the metering gap in the Electricity Sector: with particular reference to Rivers State.

This study will therefore examine the following

- a) The concept of Meter Asset Providers as a solution to resolving the huge metering gap in the electricity distribution system.
- b) The metering gap in Rivers State and contributory factors to the phenomenon.
- c) The activities of Port Harcourt Electricity Distribution Company in meeting the yearning metering gap.
- d) The metering trend and the intervention initiatives to bridging the metering gap.

- e) Assessment of the Meter Asset Provider model as a response to failure of DisCos to meet their metering obligations.

This study will be critical in meeting the social economic demands of Nigerians particularly those of Rivers State extraction. A thorough examination of the MAP program, it's pivotal initiatives, implementation and the management of the infrastructure and all contributory factors that will make the intervention meaningful and result oriented, particularly in the satisfaction of the existing metering demands of electricity consumers in Rivers State.

THEORETICAL FRAMEWORK

Okoye A. E. (2014) identified the key responsibility of members of the Nigeria Electricity Supply Industry (NESI) as to provide adequate power to ensure Nigeria is among the industrialized nations, with the three critical activities listed below:

1. Adequate power must be generated
2. The power must effectively be transmitted to all parts of the country; and
3. Finally be efficiently distributed to the consumers.

Electricity distribution services has been fraught with a lot of challenges. The most challenging feature of the Nigerian electricity distribution challenges are;

- a). Insufficient production of electricity to meet the yearning needs of Nigerians.
- b). Aged electricity infrastructure which makes electricity delivery unstable, unreliable and incapable of supporting industrial and productive efforts of entrepreneurs.
- c). A regime of estimation of electricity consumed by end users instead of use of metering devices, which created apathy to payment, encouraged electricity theft and meter tampering.
- d). Vandalism of electrical infrastructure by unscrupulous persons.
- e). Hostility and attacks on electricity workers by irate consumers.

The challenges facing the electricity sector in Nigeria can broadly be divided into two, namely that which affects electricity production and supply to consumers (Technical) and secondly the aspect that affects energy consumption measurement and pricing (Commercial). While most consumers are sympathetic to the inadequacy of electricity production, distribution and network overhaul as part of the national decay and rot, they have shown their utter discontent and rejection of extortionist tendencies which they associated with unjust and imbalanced estimation methodology of calculating energy consumption at consumer premises. This is because electricity has become the barometer for measuring the good life and the product affects every facet of man and their social-economic endeavours.

As noted by Ise O. Joseph (2014), Energy is an important input to production and without electricity, mass production of goods becomes virtually impossible. While erratic supplies of electricity disrupt production, voltage fluctuations negatively affect the durability of machines. Better electricity-related infrastructure can, thus, raise the efficiency and durability of physical capital.

The response of Nigeria Electricity Regulatory Commission (NERC), the sectoral Regulator, to the outcry by Nigerian electricity consumers against estimation and unfair business transactions by utility operators was the introduction of MAP as a panache to the issue of adequate energy accounting. According to NERC, the Meter Asset Provider (MAP) Regulations (2018) defines MAP as a person that is granted a permit by the Commission to provide metering services which may include meter financing, procurement, supply, installation, maintenance and replacement.

The philosophy behind the concept is hinged on a principle that utility operators like DisCos should face the business of network development and wheeling of energy to the premises of end-users while the measuring instrument – the Meter- can be bought from accredited agents registered under MAP Regulation. It is believed that if meters are provided for electricity consumers, the plague of under recovery of energy revenues which has bedeviled the power sector which formed the basis of the privatization of the DisCos and GenCos will be reversed.

NERC REGULATION NO: NERC-R-112 has outlined the main objectives of the Regulations are to provide standard rules to achieve the following:

- a. Encourage the development of independent and competitive meter services in NESI (Nigerian Electricity Supply Industry).
- b. Eliminate estimated billing practices in NESI.
- c. Attract private investment to the provision of metering services in NESI.
- d. Close the metering gap through accelerated meter roll out in NESI.
- e. Enhance revenue assurance in NESI.

The Regulation in its metering obligations charter listed the following critical responsibilities.

1. The Distribution Licensee is responsible for meeting its metering targets as specified by the Commission from time to time.
2. The metering gap for all Distribution Licensees was reported as 4,740,275 meters as at December 31, 2017. This is projected to significantly increase upon the conclusion of the ongoing customer enumeration exercise.
3. All Distribution Licensees shall engage the services of MAPs in accordance with the provisions of these Regulations towards meeting its metering targets specified by the Commission.

4. Eligible Customers being served under the Eligible Customer Regulations may engage MAP to ensure proper energy accounting.

The Regulation, which became effective on 3 April 2018, provides for the supply, installation and maintenance of electricity meters by approved third-parties. It introduces meter asset providers (MAP) as a new set of service providers in the NESI and provides for third-party financing of meters, under a NERC-issued permit.

The Regulation further mandates DisCos to engage the services of MAP within 120 days from the effective date of the Regulation, towards meeting their 3-year metering targets as specified by the NERC. The bid process for contracting MAP must be open, transparent and competitive to ensure that meters are provided at the least cost to electricity customers. The Regulation also directs investors to procure a minimum of 30 percent (a threshold that is subject to adjustment by the NERC as production volumes of local manufacturers increase) of their metering volume from indigenous meter manufacturers. (Adewale et al, 2018)

Metering of electricity end-users/consumers has been a big challenge in Nigerian. Prior to the introduction of the Electric Power Sector Reform Act (EPSR 2005), the erstwhile NEPA/PHCN (National Electric Power Authority/Power Holding Company of Nigeria) implemented several uncoordinated meter deployment programs which were grossly inadequate, due to paucity of funds to support the initiative. This situation was again compounded because of the monopoly status of the utility company which operated as a social service provider. All that changed when the government first introduced the concept of commercialization and later privatization.

The first strategy introduced to address customer metering in the nascent electricity market was an initiative launched by the Nigerian Electricity Regulatory Commission (NERC) in 2012 tagged 'Credited Advance Payment for Metering Implementation' (CAPMI). The scheme was designed with in-built customer financing scheme where they provide the cost of the meter and its accessories with a promise of refund within 36 months with 12 percent interest rate per annum. CAPMI implementation did not perform as envisaged as money paid by customers were misapplied by the DisCos who failed to provide meters to subscribers within 45 days or maximum of 60 days. Thus, there was unactionable proliferation of estimation billing resulting in protests and rejection of electricity bills by many consumers.

The current metering gap in the distribution segment of the power sector is a huge opportunity for the MAP to tap into and ease the burden on the DisCos in this regard. According to the Nigerian Electricity Regulatory Commission (NERC), the electricity customer population as at June 2018 stands at 8.89

million of which only 3.43million (39% of the identified customer population) are metered, leaving the unmetered population – the metering gap – at 5.46 million customers. Cumulatively, the overall metering gap in Nigeria based on unmetered identified customers (5.46 million), estimated customers with obsolete meters of 50% (1.7 million) and projected unidentified or unconnected customers (33.1 million) is potentially a population of 40.26 million customers.

The Performance Agreement executed between the Bureau of Public Enterprises (BPE) and the core investors in the eleven (11) DisCos provide for the installation of end-use meters based on agreed targets. However, the actual performance as at June 2018 indicates that about every six (6) in nine (9) customers are unmetered and therefore, subjected to estimated billing.

METERING STATISTICS AS AT JUNE 2018

DISCOS	TOTAL NUMBER OF CUSTOMERS JUNE 2018	TOTAL NUMBER OF METERED CUSTOMERS JUNE 2018	CURRENT METERING GAP JUNE 2018	PERCENTAGE METERED
ABUJA	1,887,368	430,098	1,457,270	23%
BENIN	856,292	544,828	311,464	64%
EKO	470,766	215,987	254,779	46%
ENUGU	884,992	409,748	475,244	46%
IBADAN	1,613,635	665,609	948,026	41%
IKEJA	910,338	311,332	599,006	34%
JOS	486,198	170,409	315,789	35%
KADUNA	484,310	136,037	348,273	28%
KANO	508,640	126,539	382,101	25%
P/HARCOURT	453,818	352,533	101,285	78%
YOLA	337,220	70,883	266,337	21%
TOTAL	8,893,577	3,434,003	5,459,574	39%

Source: NERC PRESENTATION ON REGULATION ON METER ASSET PROVIDERS (MAP) JULY 2018

The above metering statistics have not adjusted for faulty meters and “inaccessible” post-paid meters that are also billed based on estimation. It is noteworthy that the key objective of the MAP Regulation is to close the above metering gap within three (3) years of the completion of the procurement process by the DisCos.

Although, the 11 DisCos committed to metering 1.75million customers annually on acquisition of the distribution assets, the metering capacity of the DisCos is constrained by the limited allowable capital expenditure (CAPEX) in the Multi-Year Tariff Order (MYTO). The total annual CAPEX provision of N46.3 billion in the MYTO, if utilized wholly for metering is insufficient to meet the DisCos' annual metering commitment which is estimated at N52.5 billion annually. However, it is imperative to note that metering is just one of the various CAPEX requirements for the DisCos. If 100% of the current MYTO provision is spent on metering, DisCos will have capacity to meter 1.54 million customers annually. From our estimation of the actual metering

gap, it will take at least 25 years to bridge the metering gap. (Jerry and Ebele 2018).

Aside the inadequate CAPEX provision, the other factors limiting investments in the sector and by extension metering programs include infrastructure constraints, liquidity challenges and high value chain losses. Nigeria's total generating capacity is only 30% of the total installed capacity due to technical and gas supply restraints. Furthermore, the available 30% generation capacity currently records a 52% loss across the value chain from generation to distribution. This limits the amount of revenue that can be generated by the DisCos and the bankability of proposals to potential funding partners to undertake the required capital investments in metering.

Notwithstanding, the mix of regulatory interventions and the World Bank/FGN Power Sector Recovery Plan (PSRP) – which has earmarked \$500m for metering initiatives – it is pertinent to establish the key enablers for a successful metering program.

METHODOLOGY

This study relied on the analysis of mined secondary data sources from the Regulator and the utility firms operating within the area of coverage of this study. Additional sources of data also include journals, textbooks, newspapers and online publications.

The Rivers State Experience

Rivers State is located within the coastal lines of Nigeria in the South-south geopolitical zone of the country covering a total land area of 10,575 square kilometers. The State has twenty-three (23) local government areas and has Ogoni, Abua, Ekpeye, Ikwerre, Ibani, Opobo, Eleme, Okrika, Kalabari, Etche, Ogba, Engenni, Egbema, Obolo and others as major

ethnic groups. The population of the State is estimated at over 5,198,716 based on the 2006 census data. Majority of the communities in the State are being supplied electricity either from the national grid, state government owned turbine or through extension of electricity connections from Oil Companies operating within the area.

Rivers state supply of electricity which is covered by Port Harcourt Electricity Distribution Company has five major divisions called Integrated Business Centres (IBC) spanning across the state to distribute power to electricity consumers. The electricity distribution structure including areas covered by the offices are as tabulated below:

RIVERS STATE ELECTRICITY DISTRIBUTION STRUCTURE

Garden City Central	Garden City East	Garden City Industrial	Garden City Main	Garden City New	Ahoada Area
GRA	Ada George	Abuloma	Borokiri	Eliogbolo	Ahoada
Orazi	Agip	Eledenwo/Akpajo	Ogbanabali	Obi Wali	Elele
Rumukalagbor	Diobu	Eleme	Moscow	Okporo	Omagwa
Rumuola	Rumuolumeni	Okirika	Sandfilled	Oyigbo	Igwuruta
Rumuomasi		Rumuogba		Rumuodomaya	
		Trans Amadi			

Electricity connection in Rivers State at the onset was mainly tied to households of consumers. A household usually was defined by the property owner, family members and in some cases the tenants. Thus, most of the connections of electricity to buildings had single cabling even when the occupants are independent of each other. Back then, the electricity bills to the households or premises was usually shared among the occupants on monthly basis at an agreed ratio.

Modernity arising from cosmopolitan lifestyle has changed this phase of urban settlement as electricity consumers now desire to maintain a relationship with utility providers where they have their individual accounts, meters and monthly bills, without recourse to other tenants or their landlord. Available data from PHED indicate that the number of electricity consumers in Rivers State rose from 164,746 in December 2014 to 194,645 at the end of 2017, showing a growth of 18.15% as shown below.

RIVERS STATE CUSTOMER POPULATION FROM 2014 TO 2017

NAME OF IBC	2014	2015	2016	2017
Garden City Central	16,081	19,419	19,359	20,707
Garden City East	25,525	28,092	29,599	35,818
Garden City Industrial	37,123	40,337	38,432	37,128
Garden City Main	17,524	18,431	18,395	19,302
Garden City New	59,454	67,238	67,739	67,871
Ahoada Area	9,039	11,896	12,863	13,820
YEARLY TOTAL	164,746	185,412	186,387	194,645

To improve on better service delivery and meet the challenges of energy consumption growth, PHED embarked on two initiatives namely a Know Your Customer survey through Consumer Enumeration

Exercise and massive deployment of meters. Interestingly, both exercises are ongoing but the result as at September 30, 2018 is as shown below.

RIVERS STATE METERING GAP AS AT SEPTEMBER 2018

NAME OF IBC	TOTAL CUSTOMER POPULATION	POPULATION ON POST-PAID METERS	POPULATION ON PRE-PAID METERS	TOTAL METERED	METERING GAP
Garden City Central	49,030	7,514	37,643	45,157	3,873
Garden City East	33,680	14,732	6,777	21,509	12,171
Garden City Industrial	97,847	20,280	64,739	85,019	12,828
Garden City Main	19,192	12,298	6,290	18,588	604
Garden City New	79,142	22,014	38,836	60,850	18,293
Ahoadia Area				-	-
TOTAL	278,891	76,838	154,285	231,123	47,768

The table above show a metering gap of 47,768 which is 17.13%. However, from the experience of PHED in meter rollout in Rumuomasi, a ringfenced area with a customer population of about 1,850 customers had 6,500 prepaid meters installed at the close of metering, thus giving an increase of 251.35%. It is being projected that with the ongoing enumeration program, the ration may be as high as 400%. This means new meter requirement will be 191,072 in addition to 50% of existing meters (231,123) of 115,562 making a total of 306,634.

At an average cost of N50,000 and N75,000 for single and three phase meters respectively, the cost estimate to implement MAP in Rivers State at 70/30 ratio of single/three phase meters shall be N17.63B. An additional sum of N677M for management system and other paraphilia will bring the total sum to N18.31B. The MAP operators must be ready to invest this sum of money and recoup their investment over a period of ten years as per the regulation. The ability of MAP operators to raise and infuse the above investment is indeed a key factor in the implementation of MAP.

Thus, the MAP initiative shall be developed to meet this metering gap in the next three years to meet the needs of electricity consumers in Rivers State.

CRITICAL FACTORS TO BE CONSIDERED FOR SUCCESSFUL MAP ROLLOUT

The intention of MAP is that unmetered customers will be issued meters by the investors who shall get paid through the introduction of a meter service charge (MSC) in the tariff currently being implemented in the electricity market, as shall be either clarified or

amended by NERC. The entire aim of metering is to reduce energy theft and commercial losses in the downstream sector, promote energy accounting and reduce aggregate technical, commercial and collection (ATC&C) losses of the utility operator. MAP critical success factors will therefore include the following;

1. A clearly defined operational scope where MAP operators are given well delineated areas with enumerated customer population to provide accurate customer data that will aid meter ordering, installation and monitoring.
2. Since MAP meters shall be installed in areas where legacy meters exist, the responsibility of owning, operating, monitoring and revenue protection activities of all meters within the ringfenced zone must be made to reside within the operational framework of MAP operators to avoid duplicity, poor service and response to customer complaints and challenges.
3. The vexatious issue of vending, vending platform management, payment gateway hosting and payment gateway management must be resolved in a reassuring way such that both the DisCos and MAP Operators' revenue will be guaranteed. Both players have interest in recovering the cost of energy and meter respectively, including shared cost like operations and maintenance.
4. MAP Operators are bound to be involved in other activities like by-pass detection, loss of revenue recovery, monitoring of both postpaid and prepaid meters of customers within their franchise area. A mechanism that will measure these efforts and reward the

operators in terms of cost reimbursement must be put in place. This will enable the MAP operators generate the needed revenue to pay for their staff and operating cost.

CONCLUSION

The MAP Regulation as an intervention tool in bridging the metering gap in Nigeria is a well-crafted solution but its success depends on the financial capacity of the participating operators and the technical expertise to deploy the scheme seamlessly.

The bane of the power sector has been estimated billing and its regime has been a frustrating experience for many customers. Hopefully, MAP implementation shall resolve this malady and give a new sigh of relief to electricity consumers.

RECOMMENDATIONS

In implementing the MAP initiative, some critical success factors that are germane to its delivery are hereunder recommended;

1. Development of a meter deployment plan which will identify customer groups, network configuration, meter allocation, deployment and installation that will support the achievement of its metering targets as stipulated by the Commission.
2. Planning and execution of a transparent and competitive procurement process for the engagement of MAPs that will supply and install meters within DisCos's franchise areas.
3. Execution of a Metering Service Agreement with successful MAPs for the deployment of meters based on the Distribution Licensee's meterdeployment plan.
4. Provision of a payment structure and security plan acceptable to the MAP in line with the terms of the MSA (Meter Services Agreement)
5. Provision of relevant information to the MAP in a timely manner to enable it carry out its obligations under the contract.
6. DisCos to timely disburse in full to MAPs, the aggregated metering service charge, paid by all customers supplied with meters under an MSA.
7. DisCos to take liability for the payment of applicable metering service charge for customers affected by a prolonged service outage exceeding two weeks.
8. The metering service charge paid by all customers shall be ring-fenced in a dedicated account for the purpose of timely payment to MAPs.

REFERENCES

1. *Aderwale, A., Martins A., Ebenezer. I., (2018). Recent Development in Nigeria's electricity industry. Power sector watch. Edition 2018-Q2*
2. *Divine N. Utazi, Nnaemeka S. P. Obuka (2014) Inadequate and Poor Electricity Metering Affect Energy Efficiency End-user Behaviour in Nigeria. International Journal of Engineering Trends and Technology (IJETT) – Volume 12 Number 8 - June 2014*
3. *Enojo.Audu, SalisuOjonemi Paul, Abraham Ameh (2017) Privatization Of Power Sector And Poverty Of Power Supply In Nigeria: A Policy Analysis, International Journal of Development and Sustainability ISSN: 2186-8662 – www.isdsnet.com/ijds Volume 6 Number 10 (2017): Pages 1218-1231*
4. *Ise Olorunkanmi O. Joseph (2014) Issues and challenges in the Privatized Power Sector in Nigeria, Journal of Sustainable Development Studies, ISSN 2201-4268, Volume 6, Number 1, 2014, 161-174*
5. *Jerry. E and Ebere, O. (2018). Bridging the Metering Gap. Strategies for success part 1Price water Cooper Limited.*
6. *KPMG Report (2016) A Guide to the Nigerian Power Sector*
7. *NERC (2018) METER ASSET PROVIDER REGULATIONS (2018) REGULATION NO: NERC-R-11 ABUJA, NIGERIA 2.*
8. *NERC (2018) PRESENTATION ON REGULATION ON METER ASSET PROVIDERS (MAP) JULY 2018, ABUJA, NIGERIA*
9. *NERC (2013) ORDER ON CREDITED ADVANCE PAYMENT ON METERING IMPLEMENTATION: ORDER NO. NERC/05/0001/13. ABUJA, NIGERIA*
10. *Okoye A. E. (2014) Review of Nigeria Power Sector*
11. *Tobinson A. Briggs and King Ugorji (2017) Assessment Of Electricity Demand And Prediction Model For The Furture: Rivers State European Journal of Mechanical Engineering Research Vol.4, No.1, pp.1-23, April 2017*