ORDER NO.NERC/143.

BEFORE THE NIGERIAN ELECTRICITY REGULATORY COMMISSION

MULTI YEAR TARIFF ORDER – 2015 FOR THE TRANSMISSION COMPANY OF NIGERIA (TCN) FOR THE PERIOD
1ST JANUARY 2016 TO 31ST DECEMBER 2024
Glossary of Terms

ARR  Annual Revenue Requirement
BPE  Bureau of Public Enterprises
Capex  Capital expenditure
CPI  Consumer Price Index
Disco  Distribution company
DUOS  Distribution Use of Service
EPSRA  Electric Power Sector Reform Act
FGN  Federal Government of Nigeria
GENCO  Generation Company
IFC  International Finance Corporation
IMF  International Monetary Fund
IPP  Independent Power Producer
KWh  Kilo Watt hours of electrical energy
LRMC  Long Run Marginal Cost
MAR  Maximum Allowable Revenue
MLF  Marginal Loss Factor
MMBTU  Millions of British Thermal Units
MO  Market Operator
MWh  Mega Watt hours of electrical energy
MYTO  Multi Year Tariff Order
NBS  National Bureau of Statistics
NBET  Nigerian Bulk Electricity Trading Company
NEDP  National Energy Development Project
NESI  Nigerian Electricity Supply Industry
NTDP  Nigerian Transmission Development Project
Opex  Operating expenditure
ODRC  Optimized Depreciated Replacement Cost
PPA  Power Purchase Agreement
RAB  Regulatory Asset Base
ROE  Return on Equity
ROT  Rehabilitate, Operate and Transfer
SO  System Operator
SPE  Special Purpose Entity
TCN  Transmission Company Of Nigeria
TSO  Transmission System Operation
TSP  Transmission Service Provider
TUOS  Transmission Use of System
WACC  Weighted Average Cost of Capital
BACKGROUND

1. Pursuant to the methodology established under Section 76 of the Electric Power Sector Reform (EPSR) Act 2005, the Commission in 2012 completed a Major Tariff Review and thereafter enacted three separate Tariff Orders, one for each of the sectors in the Nigerian Electricity Supply Industry (NESI), namely Generation, Transmission and Distribution (the MYTO-2 Tariff Orders).

2. Pursuant to the above, the Transmission Company of Nigeria (TCN) in 2014 requested for the review of its Revenue Requirement (cost components) for its three separate but interdependent departments – Transmission Service Provider (TSP), System Operations (SO) and the Market Operations (MO) in the following areas:
   a. Network/capital expenditure component;
   b. Operation expenditures; and
   c. Transmission losses

3. The Commission carried out a comprehensive review of TCN’s submission and has approved additional Revenue requirement for TCN to enable it expand and adequately maintain and operate its network in line with the expected growth in the Nigerian Electricity Supply Industry (NESI).

4. By this Tariff Order the Nigerian Electricity Regulatory Commission (NERC) establishes the regulated Transmission Use of System (TUOS) charge to be paid to the Transmission Company of Nigeria (TCN) by distribution/retailing companies (Discos) for the transportation of electricity from generators to their (Disco) local bulk supply point(s).

5. These regulated charges are established for the period 1 January 2016 to 31 December 2024 pursuant to Section 76 of the EPSR Act (2005).

6. The TUOS is levied on distributor/retailers and charged per unit of energy delivered to them at the bulk supply points. The TUOS charge is determined using the building blocks methodology by bringing together existing and forecast capital costs, efficient operating costs, and allowances for return on capital and depreciation. The charges are uniform throughout Nigeria (referred to as a postage stamp tariff) and billed monthly to distributors/retailers.

7. The MYTO financial model will henceforth be labeled the "MYTO-2015 Financial Model".

8. The MYTO-2015 financial model has been updated with the most recent data on generation capacity as well as macro-economic indices used for the 2015 minor review of the tariff. The
14. GENERATION CAPACITY

The Commission obtained the data on projected generation capacity for five years (2016-2020) from the System Operator (SO) and Nigerian Bulk Electricity Trading Company (NBET). The data made available is used for the purpose of this review. However, going forward the periodic minor review of the tariff will take into consideration changes/fluctuations in the generation capacity. In essence, the minor reviews will reflect the actual peak generation capacity for each generator. This is in line with the Regulation on Rate Review for the NESI.

Table 1: Projected Generation Capacity

<table>
<thead>
<tr>
<th>List of GENCOS</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>KAINJI</td>
<td>165</td>
<td>192</td>
<td>218</td>
<td>300</td>
<td>400</td>
</tr>
<tr>
<td>JEBBA</td>
<td>202</td>
<td>241</td>
<td>287</td>
<td>364</td>
<td>462</td>
</tr>
<tr>
<td>SHIRORO</td>
<td>242</td>
<td>289</td>
<td>344</td>
<td>436</td>
<td>554</td>
</tr>
<tr>
<td>EGBIN</td>
<td>1,006</td>
<td>1,100</td>
<td>1,100</td>
<td>1,100</td>
<td>1,100</td>
</tr>
<tr>
<td>SAPELE</td>
<td>101</td>
<td>117</td>
<td>134</td>
<td>300</td>
<td>400</td>
</tr>
<tr>
<td>DELTA</td>
<td>515</td>
<td>614</td>
<td>732</td>
<td>900</td>
<td>900</td>
</tr>
<tr>
<td>AFAM IV-V</td>
<td>100</td>
<td>200</td>
<td>300</td>
<td>400</td>
<td>500</td>
</tr>
<tr>
<td>GEREGU GAS</td>
<td>159</td>
<td>185</td>
<td>210</td>
<td>246</td>
<td>282</td>
</tr>
<tr>
<td>OMOTOSHO GAS</td>
<td>254</td>
<td>303</td>
<td>336</td>
<td>336</td>
<td>336</td>
</tr>
<tr>
<td>OLRUNSOGO GAS</td>
<td>231</td>
<td>275</td>
<td>328</td>
<td>336</td>
<td>336</td>
</tr>
<tr>
<td>GEREGU NIPP</td>
<td>213</td>
<td>248</td>
<td>282</td>
<td>330</td>
<td>378</td>
</tr>
<tr>
<td>SAPELE NIPP</td>
<td>116</td>
<td>135</td>
<td>153</td>
<td>180</td>
<td>250</td>
</tr>
<tr>
<td>ALAOJI NIPP</td>
<td>130</td>
<td>151</td>
<td>300</td>
<td>400</td>
<td>500</td>
</tr>
<tr>
<td>OLRUNSOGO NIPP</td>
<td>194</td>
<td>225</td>
<td>256</td>
<td>300</td>
<td>344</td>
</tr>
<tr>
<td>OMOTOSHO NIPP</td>
<td>226</td>
<td>262</td>
<td>298</td>
<td>349</td>
<td>400</td>
</tr>
<tr>
<td>IHOVBOR NIPP</td>
<td>279</td>
<td>333</td>
<td>397</td>
<td>504</td>
<td>508</td>
</tr>
<tr>
<td>OKPAI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
11. **CHANGES IN MACRO ECONOMIC INDICES**

In line with the provisions of the law, the Commission carried out a minor review of the tariff in 2015 and have incorporated the changes in these minor review indices in MYTO 2015. The data used for this review is as follows:

12.1. **Nigerian Rate of Inflation** – the inflation rate of 8.3% was used based on the data from NBS. This however, is subject to minor review bi-annually. In the MYTO, the rate of inflation is used to ensure that investors are well compensated against rising cost of doing business. To achieve this, the Commission escalates the following variables with the rate of inflation:

   a. WACC
   b. Fixed admin and labour cost
c. Variable O&M cost
d. Capital Investment

Table 2: Assumed Rate of Nigerian Inflation (2016-2020)

<table>
<thead>
<tr>
<th>Year</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflation %</td>
<td>8.76</td>
<td>8.76</td>
<td>8.76</td>
<td>8.76</td>
<td>8.76</td>
</tr>
</tbody>
</table>

12.2. Exchange Rate – The data from Central Bank of Nigeria shows an exchange rate of N197 to US$1.0 as at 30th October 2015. Please note that MYTO-2 also allows a premium of 1% above CBN rate. This is also subject to review bi-annually.

Therefore, 1% of 197 = 1.97

CBN exchange rate + 1% premium is therefore 197 + 1.97 = 198.97

Table 3: Assumed Naira/US Dollar Exchange Rate (2016-2020)

<table>
<thead>
<tr>
<th>Year</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exchange Rate</td>
<td>198.97</td>
<td>198.97</td>
<td>198.97</td>
<td>198.97</td>
<td>198.97</td>
</tr>
</tbody>
</table>

12.3. US rate of inflation – the US rate of inflation from the US Bureau of Labor Statistics website shows the US inflation rate to be 0.2% as at 30th October 2015. This is also subject to review bi-annually.

Table 4: Assumed US Rate of Inflation

<table>
<thead>
<tr>
<th>Year</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>US rate of inflation</td>
<td>0.2%</td>
<td>0.2%</td>
<td>0.2%</td>
<td>0.2%</td>
<td>0.2%</td>
</tr>
</tbody>
</table>

13. WACC - The cost of capital included in the MYTO is intended to provide a return on existing assets and appropriate incentives for future investment. The cost of capital is an important component of the tariff and is included in the annual revenue requirement calculation as a return on the value of capital invested (refer to MYTO 2 Transmission Order on the Computation of WACC for TCN).
Major Changes Used for TUOS Calculation in MYTO-2015

14. Adjustments to Asset Value and Capital Expenditure

NERC in 2012 determined that TCN's initial asset valuation will largely reflect historical costs plus recent additions to TCN's asset base. This provides an initial asset value at the beginning of 2012 of N=189 billion (one hundred and eighty-nine billion Naira). In order to calculate the asset value in each year of the tariff period, the forecast capital expenditures are added to this amount and depreciation plus any reduction in asset values due to the optimization are deducted. However, this was reviewed in this tariff review to reflect additional asset base as follows:

14.1. Starting balance as of end 2010 based on NERC's MYTO 2 ODRC (Optimised Depreciated Replacement Cost) valuation of NGN 189 billion;

14.2. Recognition of additional asset base that will result in higher return of capital (depreciation cost on assets in service) based on:
   a. Recognition of additional transmission assets of NGN 72 billion not captured in the 2010 valuation in ‘14.1’ above as reported in PHCN books to have been procured/completed as at December 31st 2013;
   b. Transfer of NIPP asset received by TCN in 2014 amounting to NGN 310.4 billion;
   c. Transfer of Investment in plant using internally generated funds and World Bank/other donor (NTDP and NEDP) assisted transmission projects managed by the Project Management Unit (PMU) of PHCN not reflected in valuations used in 2010. These assets together amount to NGN 23.4 billion as at 2013.

14.3. Higher annual investment levels totaling NGN 1.36 Trillion over the next five years that results in increased carrying cost (return on capital) and an increase in depreciation expense (return of capital).

Table 5: Capital expenditure included in the TUOS calculation (nominal N’ 000,000)

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>205,212</td>
<td>418,504</td>
<td>265,203</td>
<td>247,828</td>
<td>224,395</td>
</tr>
</tbody>
</table>

14.4. It is important to note that NERC is already in the process of valuing all transferred assets (NIPP and others) to Discos and TCN. Once the process is concluded, the Commission will effect necessary adjustments to Discos' and TCN's regulatory asset bases (RAB) to reflect revalued figures subsequently.
rationale for this is to remain as close as possible to current economic realities. The available/tested generation capacity and macro economic variables will continue to be reviewed semi-annually in line with the MYTO methodology and the Regulation on Procedure for Electricity Tariff Review in the NESI.

9. The TUOS charges will be reviewed bi-annually and a change made to the TUOS charge if Nigerian inflation, exchange rate and generation capacity has varied materially from that used in the calculation of the tariff.

10. Pricing Principles

The Commission has maintained the use of building blocks approach as a regulatory method to set TUOS charges in the MYTO in line with the Methodology. The building blocks approach is simply a way of bringing together all of the industry’s costs in a consistent accounting framework. The standard building blocks used in this approach are:

a. **The allowed return on capital** – being the return necessary to achieve a fair (market based) rate of return on the assets necessarily invested in the business;

b. **The allowed return of capital** – associated with recouping the actual capital invested during the useful lives of the assets (depreciation); and

c. **Efficient operating costs** and overheads.

10.1. In order to calculate a projected annual value for each of the building blocks an estimate was required for:

- The initial value of the TCN regulatory asset base (RAB);
- A particular Weighted Average Cost of Capital (WACC) to be achieved each year;
- A capital expenditure program developed from a forecast of feasible growth;
- An appropriate method of depreciation;
- An efficient level of operating expenditure and overheads; and
- A rate of improvement in industry losses.

The annual revenue requirement for transmission determined using the building block approach was then divided by the forecast level of energy transmitted on the TCN network each year to produce a TUOS charge per unit of transmitted energy.
Operating and Maintenance Expenditure and Transmission Losses

The table below shows the allowance made for annual operation and maintenance and administration costs in the tariff calculation.

Table 6: Annual O & M included in the TUOS calculation (nominal =N='000)

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TCN Variable O&amp;M Costs - excluding Admin</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSP</td>
<td>18,572,000</td>
<td>22,675,000</td>
<td>24,661,330</td>
<td>26,821,663</td>
<td>29,171,240</td>
</tr>
<tr>
<td>MO</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>SO</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total Variable O&amp;M</strong></td>
<td>18,572,000</td>
<td>22,675,000</td>
<td>24,661,330</td>
<td>26,821,663</td>
<td>29,171,240</td>
</tr>
</tbody>
</table>

| **TCN Fixed O&M Costs - excluding Admin** |            |            |            |            |            |
| TSP                  | 11,505,132 | 13,176,000 | 13,703,040 | 14,251,162 | 14,821,208 |
| MO                   | 461,000    | 593,000    | 616,720    | 641,389    | 667,044    |
| SO                   | 7,161,000  | 10,650,000 | 11,076,000 | 11,519,040 | 11,979,802 |
| **Total Fixed O&M**  | 19,127,132 | 24,419,000 | 25,395,760 | 26,411,590 | 27,468,054 |

| **TCN Fixed Costs Admin** |            |            |            |            |            |
| TSP                  | 3,308,000  | 3,516,000  | 3,898,625  | 4,240,144  | 4,611,581  |
| MO                   | 397,000    | 460,000    | 187,589    | 204,022    | 221,894    |
| SO                   | 6,191,000  | 6,694,000  | 2,569,832  | 2,794,950  | 3,039,787  |
| **Total Admin**      | 9,896,000  | 10,670,000 | 6,656,046  | 7,239,116  | 7,873,262  |
16. **TUOS Charges**

Market Participants will be required to pay a number of institutional charges in order to enhance the effective regulation and administration of the electricity market. These charges are the regulatory charge, system operation (SO) charge, market operation (MO) charge and payment for ancillary services.

The table below shows the TOUS charges that have been allowed by NERC for each year of including the institutional charges noted above. The table shows the charges derived through the building blocks (operation and maintenance, return on capital and depreciation) approach and aggregated to a total annual revenue requirement. This annual revenue requirement is then divided by the forecast energy transmitted and delivered to distribution and export customers to arrive at the estimated per unit charge (Naira/MWh) of transmission services.

Based on TCN's submission and the structure of the MYTO-2015 model, the Commission has approved the following charges in Table 7 below:

**Table 7: Approved TOUS charges (Naira/MWh)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TSP</td>
<td>2,975.12</td>
<td>3,202.70</td>
<td>3,624.46</td>
<td>3,708.54</td>
<td>3,921.57</td>
<td>3,873.98</td>
<td>3,657.35</td>
<td>3,520.48</td>
<td>3,384.57</td>
</tr>
<tr>
<td>SO</td>
<td>330.08</td>
<td>329.55</td>
<td>211.10</td>
<td>187.92</td>
<td>181.75</td>
<td>172.38</td>
<td>168.41</td>
<td>167.80</td>
<td>167.00</td>
</tr>
<tr>
<td>MO</td>
<td>22.21</td>
<td>20.04</td>
<td>12.46</td>
<td>11.10</td>
<td>10.76</td>
<td>10.23</td>
<td>10.01</td>
<td>10.00</td>
<td>9.97</td>
</tr>
<tr>
<td>NERC ISO Charge</td>
<td>5.28</td>
<td>5.24</td>
<td>3.35</td>
<td>2.99</td>
<td>2.89</td>
<td>2.74</td>
<td>2.68</td>
<td>2.67</td>
<td>2.65</td>
</tr>
<tr>
<td>Ancillary Services</td>
<td>50.69</td>
<td>55.94</td>
<td>61.40</td>
<td>67.13</td>
<td>73.19</td>
<td>79.82</td>
<td>86.97</td>
<td>94.70</td>
<td>103.12</td>
</tr>
<tr>
<td>Total TUOS Charge</td>
<td>3,383.38</td>
<td>3,613.47</td>
<td>3,912.77</td>
<td>3,977.67</td>
<td>4,190.16</td>
<td>4,139.14</td>
<td>3,925.42</td>
<td>3,795.64</td>
<td>3,667.32</td>
</tr>
</tbody>
</table>

17. **Bi-Annual Review**

(1) NERC will continue to review TCN’s tariffs bi-annually as part of the minor review. However, with effect from the issuance of this MYTO-2015 Order, minor reviews will henceforth apply retroactively by taking into account changes (gains/losses) that occurred within the minor review period in adjusting TCN’s tariffs bi-annually. This is fair to both TCN and its customers in order not unduly shortchange any party on account of market indices not fully within their control.

(2) NERC will vary TCN’s tariffs during minor reviews if there is a material change in the inflation rate, exchange rate and generation capacity used in the derivation of TCN’s Tariffs. NERC considers that a material change would be plus or minus 5% in the minor review indices.
18. Date and NERC Performance Targets

From 1st January 2016, TCN will be held accountable for service improvements in relation to annual projected generation capacity and service standards stated below:

a. TCN shall be penalized for its inability to deliver allocated energy to Discos due to constraints on TCN’s network. In this vein, TCN will be liable to compensate Discos for imbalance in revenue resulting from such action. Likewise, where a Disco does not take its allocation for any reason other than SO’s instructions, the Disco shall compensate TCN for attributable loss in revenue.

b. Full SCADA communication system in 12 months of tariff approval

c. TCN shall on annual basis submit for NERC’s approval the following on their capital expenditure budget before the commencement of each financial year:

i. Achieving specific service improvement objectives by locations in relieving immediate to long term grid constraints;

ii. Evidence of consultation with customer groups (Discos and Gencos) in developing TCN’s investment plan and specific projects tailored towards addressing specific Disco/Gencos needs;

iii. Evidence of alignment of the investment plan with generation adequacy and planned load projections;

iv. Justification for cost estimates used in deriving the planned investment program and relevant benchmarks against which the procurement plans can be evaluated;

v. Evidence of TCN’s capability to raise the required financing to fund planned investment program in a timely manner;

vi. Evidence of TCN’s procurement and project management capabilities to enable efficient delivery of planned investment program and related penalties for delays in delivering of projects;

vii. Evidence that TCN’s planned investment program will not result in gold-plating or the creation of stranded assets in the network.
19. Following consultation with relevant stakeholders, the Commission hereby orders that:

1. This Transmission Tariff Order as described above shall be effective from 1st February 2016;

2. The Table of Charges for TSP, SO, MO and Ancillary services shall come into effect from 1st February 2016 and continue to be in force until 31st December 2024 as shown hereinbefore, subject to the provisions of this Order.

3. Upon coming into effect, the said charges shall continue in force subject to such minor and major reviews as the Commission may conduct from time to time.

4. This Order shall be called the Multi-Year Tariff Order (MYTO) 2015 for Transmission Company of Nigeria (TCN).

20. Effective Date

This Order shall be effective from 1st February 2016.

Dated at Abuja this 21st day of December 2015

[Signatures]

Dr. Sam Amadi
Chairman/CEO

Dr. Steven Andzenenge
Commissioner
(Legal Licensing and Enforcement)