

*Extraordinary*



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**ELECTRIC POWER SECTOR REFORM ACT**  
(No. 6 of 2005)

**NOTICE OF PROPOSED ESTABLISHMENT OF  
A METHODOLOGY FOR A MULTI YEAR TARIFF ORDER**

**INVITATION FOR COMMENTS**

In exercise of the powers conferred upon it by Section 76 (6) of the Electric Power Sector Reform Act and of all other powers enabling it in that behalf, the Nigerian Electricity Regulatory Commission hereby gives notice of the proposed establishment of a methodology for a multi year tariff order.

**1. INTRODUCTION**

The Nigerian Electricity Regulatory Commission proposes the establishment of a Multi Year Tariff Order (MYTO) pursuant to the authority given under Section 76 of the Electric Power Sector Reform Act (2005). By this notice, the Commission sets out the basis and pricing principles underlying the proposed MYTO and lays out the due process to be followed in meeting the statutory requirement.

The MYTO provides a 15 year tariff path for the electricity industry, with limited minor reviews each year in the light of changes in a limited number of parameters (such as inflation and gas prices) and major reviews every 5 years, when all of the inputs are reviewed with stakeholders.

The public, stakeholders and any affected parties are hereby invited to send their objections, comments or representations to the Nigerian Electricity Regulatory Commission at Adamawa Plaza, Plot 1099, First Avenue, Off Shehu Shagari Way, Central Business District, P.M.B. 136, Garki, Abuja, Federal Capital Territory, Nigeria within 30 days. Respondents are requested to provide two (2) hard copies of their comments to the above address or forward comments electronically to the following email address: — *Comments@nercng.org*.

**1.1 LEGISLATIVE AUTHORITY**

1.1.1. Section 76 of the Electric Power Sector Reform Act (2005) stipulates that electricity tariffs shall be regulated according to one or more methodologies adopted by the Commission.

1.1.2. With respect to activities that come under the scope of tariff regulation, the Electric Power Sector Reform Act (2005) specifies the following activities:

(a) Generation and trading, in respect of which licences are required pursuant to this Act, and where the Commission considers regulation of prices necessary to prevent abuses of market power and

(b) Transmission, distribution and system operation, in respect of which licences are required under this Act (Subsections 76 (1) (a) (b)).

1.1.3. Specifically, Sub-section 76(6) of the Electric Power Sector Reform Act provides that the Commission, prior to approving a tariff methodology, shall give

notice in the Official Gazette, and in one or more newspapers with wide circulation, of the proposed establishment of a tariff methodology, indicating the period within which objections or representations in connection with the same may be made to the Commission.

1.1.4. Section 76(7) provides that in preparing a tariff methodology, the Commission shall :

(a) Consider any representations made by licence applicants, other licensees, consumers, eligible customers, consumer associations, associations of eligible customers and such other persons as it considers necessary or desirable ;

(b) Obtain evidence, information or advice from any person who, in the Commission's opinion, possesses expert knowledge which is relevant in the preparation of the methodology (Subsection 76(7)).

1.1.5. Consequently, the Commission fixes 30 days from the publication of this notice for comments, objections and representations on the tariff methodology to be sent to the Commission.

1.1.6. The Commission, therefore, proposes that the final methodology, after the consultation process, will be issued in the form of a decision of the Commission and gazetted. Licensees will be required to comply with the provisions of the methodology, under the conditions of their licences (Subsection 76(11)).

## 1.2. BACKGROUND

1.2.1. The Electric Power Sector Reform Act (2005) requires that the regulation of electricity prices shall be governed by a tariff methodology, which shall be developed by the Commission. The Commission has looked at the regulation of the electricity supply industry around the world and considered a number of possible approaches, discussed further in paragraph 2 below.

1.2.2. The Commission has adopted three basic principles in the determination of an appropriate methodology. These principles require that a regulatory methodology :

- \* Produces outcomes that are fair ;
- \* Encourages outcomes that are efficient in that it involves the lowest possible costs to Nigeria and encourages investment in electricity generation ; and
- \* Is simple, transparent and avoids excessive regulatory costs.

1.2.3. While these principles can be stated fairly simply, they can become complex. What may seem fair to one group (consumers) may not seem the same to another (suppliers). However, the Commission is required to balance the interests of all parties (Section 76 of the Electric Power Sector Reform Act) and consider that the objectives of both stakeholder groups are joined by the common need to ensure that the electricity supply system is viable, adequate, reliable and safe. Efficiency also includes a number of important concepts. It means producing electricity at the lowest cost as well as providing incentives for new investment in the industry.

1.2.4. A fair and equitable tariff methodology should cover both the determination of the total allowed revenues that can be earned from regulated tariffs and the principles governing the structure of tariffs used to recover these revenues.

## 2. THE PROPOSED TARIFF METHODOLOGY

### 2.1. THE METHODOLOGY USED TO DEVELOP THE MULTI YEAR TARIFF ORDER (MYTO)

2.1.1. The methodology used by the Commission to determine the MYTO tariff path is known as the building blocks approach. This was selected from a number of alternative methods, such as price cap regulation and rate of return regulation, which is also called cost of service regulation. The advantage of the building blocks approach is that it combines the positive attributes of rate of return regulation and price caps.

2.1.2. This type of regulation is known as incentive-based regulation. The Nigerian electricity supply industry needs to improve performance on a number of levels and this form of regulation provides incentives to do so. While the costs and other inputs used to set up a building blocks methodology are historical, the tariff path is forward-looking and based on projections of performance. The regulated entities have an incentive to do better than the projected performance levels built into the tariff path.

2.1.3. There are three standard building blocks used in this approach :

- \* The allowed return on capital – being the return necessary to achieve a fair rate of return on the necessary assets invested in the business ;
- \* The allowed return of capital – associated with recouping the capital over the useful lives of the assets (depreciation) ; and
- \* Efficient operating costs and overheads.

2.1.4. The inputs to the building blocks methodology include an initial capital valuation and future levels of capital expenditure, operating costs, sales volumes, cost and efficiency improvements to derive a future average regulated tariff for each year of the MYTO. This annual tariff can then be expressed in a formula as the percentage change over each of the annual tariff setting periods.

2.1.5. Each company's incentive to out-perform the performance standards in the MYTO will be based on its own costs and productivity considerations.

2.1.6. At the commencement of the MYTO all prices will be regulated but this will be reduced over time as competition increases in the market and electricity supply is sufficient to meet requirements. The major parts of the electricity industry are generation, transmission and distribution and retailing. These parts will be regulated as follows :

2.1.7. Generation will be subject to vesting contracts, which will set prices to be received by all generators who do not currently hold Power Purchase Agreements. Eventually, when the industry matures, generation prices will not be regulated.

2.1.8. Transmission will remain monopoly and will be subject to tariff regulation. However, all generators will enjoy open access and transparent pricing. The building blocks approach will be applied to produce a long term tariff path.

2.1.9. Distribution is also treated as a monopoly and its prices will be regulated, again using the building blocks approach.

2.1.10. Until the time that retail choice is introduced, retail sales and marketing will also be regulated as part of distribution and a building blocks approach will be applied to all of the distribution companies' activities.

2.1.11. In the Transition and Medium Term market phases, therefore, the MYTO derives a tariff for transmission and distribution/marketing using a building blocks approach as well as prices for generation under vesting contracts. Brought together, these three components combine to produce an end-user tariff.

## 2.2. TREATMENT OF CAPITAL COSTS IN MYTO

### 2.2.1. CAPITAL COST

2.2.1.1. Two out of the three building blocks provide a return of, and to capital invested. In a very capital intensive industry like electricity supply it is important that the cost of capital is recognised and that new capital investment is allowed a reasonable return. If it is not, new investment will be discouraged and future demand will not be met. In this case regulation will have done more harm than good.

2.2.1.2. The initial value of the assets is rolled forward each year. Depreciation reduces the valuation and new capital expenditure increases it. Replacement costs, actual capacity ratings and remaining economic life were taken into account in this valuation.

2.2.1.3. The cost of capital under a building blocks approach comprises two components : the return of capital (that is, depreciation) and the return on capital (measured by the cost of capital). The capital stock to which both of these are applied is the annual asset value of the electricity supply industry- the rolled forward asset value.

2.2.1.4. The allowed return on capital is aimed at providing appropriate incentives for future investment. Thus, in all building block regimes, the cost of capital is provided to all approved new investment under the regime. This is typically done via the mechanism of rolling forward new investment into the regulatory asset base.

### 2.2.2. TREATMENT OF DEPRECIATION IN MYTO

2.2.2.1. The depreciation method to be used for the calculation of future tariffs will be the optimised depreciated replacement cost (ODRC) method. This involves :

- \* Adjusting the cost of an asset from the year of its purchase to the year of the tariff calculation ;
- \* Optimising its capacity (ie, this usually means excluding any unnecessary expenditure or over-building) ; and
- \* Applying depreciation over the economic life of the individual asset or groups of assets.

2.2.2.2. In Nigeria all of the available electricity assets are generally used to their maximum capacity and NERC does not envisage reducing the value of existing assets

through the optimisation process. The MYTO is likely to be operated in this way for some time until the Nigerian electricity market matures.

2.2.2.3. The depreciation schedule for regulatory purposes will be applied to each group of assets so that, to the maximum extent that is reasonable, it reflects the remaining economic life of the asset or group of assets.

2.2.2.4. Within the life of the MYTO it would also be reasonable to assume that the economic life of assets that will be in the competitive part of the electricity supply industry, such as generation, will equal technical life. The rationale for this is that at present generation, transmission or distribution capacity are in short supply and there is a strong likelihood of high demand growth once a reliable electricity supply is offered.

## 2.2.3. TREATMENT OF THE COST OF CAPITAL (THE WEIGHTED AVERAGE COST OF CAPITAL)

2.2.3.1. The cost of capital is a key input into the determination of tariffs, since the return on existing and new assets is a significant element of the revenue requirement of the electricity business.

2.2.3.2. The basis for estimating the cost of capital for a utility business is the cost of capital that would be required by a privately owned business with similar risk characteristics. The cost of capital to be used by NERC in calculating electricity tariffs will be estimated as a weighted average cost of capital (WACC) - using an estimation of the cost of equity and a cost of debt which reflects bond finance costs.

2.2.3.3. Instead of applying different returns to different components of capital, such as debt and equity, a weighted average cost of capital (WACC) recognises that lenders and equity investors require different rates of return because of the different risks they face. The WACC aggregates these returns, and weights each according to the estimated percentages of debt and equity in the industry.

2.2.3.4. The cost of debt is directly observable as commercial interest rates. The returns required by equity are not and are typically estimated.

2.2.3.5. The cost of debt is almost always lower than the cost of equity, with the WACC lying in between.

## 2.3. TREATMENT OF OPERATIONAL EXPENSES IN MYTO

2.3.1. The initial operating costs used in calculating the tariff will be those gathered from the Nigerian electricity industry from 2000 to 2006.

2.3.2. Operation and maintenance costs are assumed to include an allowance for the improved performance required under the performance indicators which will be included in the MYTO. A number of items of plant are currently out of service for want of maintenance. The repair or replacement of these units would improve supply and reduce the quantity of unserved energy. In the future, the use of spinning reserve units, which would reduce the number and duration of outages, might also involve slightly higher operating costs. The MYTO would acknowledge that these costs were required to provide a reliable service.



2.3.3. It is expected that operation, maintenance, management and staff costs may be higher initially and the tariff calculation will include the assumption that an additional sum for operation and maintenance costs will be needed each year. In the short term the tariff calculation will include an allowance for overheads (administration, central stores and other centralised functions) but in the longer term the MYTO will include the assumption that overheads and administration are gradually reduced.

2.3.4. The assumptions in the MYTO concerning the electricity industry's ability to collect sales revenue will begin at current low levels but will be assumed to improve over the first five years, coinciding with an increase in metering roll-out and billing expenditure.

### 3. PRICING GENERATION IN MYTO

3.1. The most pressing issue in the electricity sector is the shortage of generation capacity to meet demand. Exacerbating this under-investment in capacity, a high proportion of the electricity supply industry's generation capacity is unusable through lack of maintenance (plant availability is below 60%) and re-investment. This situation is being addressed in part by the current network building program aimed at increasing capacity to 10,000MW by the end of 2007.

3.2. The current structure of the generation sector is characterised by a large, dominant government-owned business together with a small presence from independent power producers (IPPs). This is expected to change as the industry is transformed in the coming years and the MYTO has the flexibility to cope with this change.

3.3. Securing new investment in generation capacity through the establishment of private sector participation in a competitive energy market is a major part of the overall reform vision for the Nigerian electricity supply industry. Once the industry has reached the 'steady-state' stage, it is intended that generation will operate within a commercial environment, with generators entering into commercial bilateral contracts with distributors. Ultimately, the price of wholesale electricity will be market based and be reflected in the final tariff to users (and included with the regulated transmission and distribution charges, the costs of retail functions, and other costs).

3.4. Moving from the current arrangements to the final stage of a competitive wholesale market for energy will not happen overnight. One essential pre-condition is the attainment of a sufficient number of private suppliers into the industry. A second is the removal of the huge supply deficit.

3.5. The main objectives in setting bulk electricity prices in vesting contracts are to cover the costs of existing plant and allow for their efficient maintenance and ongoing investment programs while ensuring that an appropriate incentive exists for new entry generation. For this reason the appropriate price for bulk electricity supplied by generators under vesting contracts is the unit price an efficient new plant would require in the Nigerian electricity supply industry.

3.6. The strategy for managing the transition to a competitive wholesale market includes the use of vesting contracts for generators. Vesting contracts have been used in many countries as a means to manage the transition to a competitive market.

3.7. In the MYTO in the first five year period the cost of generation will comprise vesting contracts for generators and the cost of existing Power Purchase Agreements.

#### 4. PRICING TRANSMISSION IN MYTO

4.1. Transmission charges in the MYTO will have the following components :

- \* A connection charge for new generators that covers their costs in connecting to the high voltage network.

- \* The covering of transmission losses at different connection points on the network by generators injecting enough power to cover their contracted amounts plus the associated transmission losses.

- \* A charge on distributors per unit of energy taken from the high voltage system at the bulk supply points.

4.2. The connection charge above will be a once only charge to cover the costs of transmission infrastructure required to connect a new power station to the transmission network. It will vary according to how much capital expenditure is required and how far the power station is from the existing network.

4.3. The second charge above relates to the cost of transmission losses. Transmission systems lose between 5 and 10% of the energy injected into them through heating and leakage. Generators will effectively pay for these losses by injecting a sufficient amount in excess of their contracted amounts to cover the losses associated with their sales. For example, if the losses associated with their injection point are 5%, they will be required to inject 105% of their sales volumes in each settlement period.

4.4. The transmission tariff to be levied on distribution companies will be based on a building blocks methodology, although the costs associated with losses from the network will not be included in the calculation as this component will be covered by the generators.

4.5. The charges have been designed in this way so that :

- \* Electricity generators see an incentive to locate reasonably close to the transmission network as they will pay the costs of connection ;

- \* Electricity generators will also see an incentive to locate at places on the network where losses are low. Such points are typically near load centres or at the end of long transmission lines to isolated load centres ;

- \* Electricity distributors effectively pay for the capital cost of the distribution system as well as operation and maintenance.

#### 5. PRICING DISTRIBUTION AND RETAILING

5.1. Distribution tariffs are similar in a number of respects to transmission tariffs. Most of the cost of the distribution network arises from the capital expenditure needed to build and maintain it. The most useful guide to the future level of necessary capital expenditure comes from the forecasts of peak demand for each electricity distributor. Distributors would likely grow at different rates and their capital needs will therefore vary.



5.2. The Distribution Use of System (DUOS) tariff will cover the cost of distribution and marketing. DUOS charges are calculated according to the building blocks methodology and include allowances for capital expenditure, operation and maintenance of the network, losses across the distribution networks and metering costs.

5.3. These costs are included in the MYTO along with the operating and administration costs of retailing and billing electricity sales.

5.4. At the first 5-year review, the Commission will gather information from the distribution companies on the reliability and quality of the supply that they deliver.

#### 6. WHY A MULTI YEAR TARIFF ORDER?

6.1. The MYTO provides a stable price path into the future. The tariffs will be reviewed each year by the Commission but will only be varied according to varying rates of inflation, the cost of input fuel for electricity generation (primarily gas) and exchange rate fluctuations.

6.2. The major 5-yearly tariff review will consider each of the input assumptions for the tariff model in order to update them to appropriate current values.

6.3. Major reviews will be undertaken at less than 5 year intervals if industry participants can demonstrate to NERC that industry parameters have changed from those used in the MYTO to such an extent that a review is required urgently to maintain industry viability.

6.4. At the commencement of the major 5-year review, NERC will prepare a consultation paper that will indicate the issues to be covered. The Commission will inform those parties who will be regulated by the review of the information it seeks from each of them. All regulated electricity operators will be the major source of information on the industry. As part of the regulatory process they will be required to provide verifiable information on a uniform reporting and accounting basis regarding their regulated operations on matters such as :

- \* capital expenditure,
- \* actual and projected sales,
- \* operating costs,
- \* fuel costs and
- \* taxes and other payments.

6.5. While NERC will be informed by the industry's views on a number of matters it will develop its own analysis and conclusions on important parameters. These include : forecasts of electricity demand, interest rates and a reasonable industry WACC, appropriate expansion of the transmission and distribution networks and reasonable annual rates of reduction of industry losses, particularly non-technical losses.

6.6. A 5-yearly Review is likely to take about 12 months. It will be commenced more than one year before the beginning of the new 5-year tariff period.

6.7. In the initial years the tariff path also allows the industry some time to ramp up gradually to appropriate tariff levels, avoiding a large step change in one year.

6.8. A long term tariff path also reduces some of the risks for both major electricity consumers and investors in the industry. While they do not know the exact level of future tariffs they know how they will be calculated and that they will be reasonably consistent between the 5 year reviews.

6.9. The general public is invited to send its comments to the Commission as stipulated in paragraph 1 above.

MADE at Abuja this 26th day of April 2007.

DR RANSOME OWAN  
*Chairman/ Chief Executive Officer*  
*Nigerian Electricity Regulatory Commission*