



MYTO 2 and Embedded Generation

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Introduction

- MYTO: tariff methodology that establishes the electricity tariffs paid by all Nigerian residents
- Consumers pay ALL efficient costs of providing electricity

MY

Set 5 years in advance

T

Prices paid by the consumers

O

Based on regulatory Orders or decisions made by the Commission



Historical Perspective

- Since ECN in 1951, tariffs not cost-reflective
- Acceptable since market was small and power was a social service
- Population explosion, exponential demand, economic downturn and political denial caused abandonment of the sector
- Sector reform has compelled a realistic review of management and structure of the industry



Current Major Review of the MYTO

- Unrealised MYTO 2008 assumptions (such as 16,000 MW capacity by 2011) led to a more realistic assessment of MYTO assumptions
- No privatisation by 2009 as assumed
- Thus this Major Review was started in September 2010 and the first draft of the Consultation Paper was published in May 2011



Current Major Review of the MYTO

- The Major Review has been completed and separate tariffs have been set for each Disco to reflect their different costs, allocation of centrally-transmitted power and customer demographics
- The new tariffs will take effect on 1st June 2012
- The unbundling of the Discos has led to 11 independent companies which are free to procure additional (non-grid) power for their customers
- Any new procurement of power into a specific distribution network will be governed by NERC's Embedded Generation Regulation



MYTO Methodology- Assumptions for Retail Tariff Calculation

Inputs to the tariff – forecasts of load, capacity, fuel costs, investment, levels of losses, customer numbers, O & M costs and other economic and technical data

Generation:
life cycle costs

**Transmission: O&M,
Depreciation and
Return**

**Distribution: O&M,
Depreciation and
Return**

**Final retail tariff
To consumers**



MYTO Methodology – The MYTO 2 Model

INPUT

Control

Data / Assumptions
Generation, Transmission & Distribution
Load Forecast

COMPUTATION

Load Calculations

Generation
New Entrant Model

Transmission
Costs

Distribution
Costs (11)

Investor
Module
(IPP)

Transmission
Depreciation

Distribution
Depreciation (11)

Investor
Module
(DISCO)

Generation
Wholesale Prices

Transmission
Tariffs

Distribution
Tariffs (11)

Regulatory fee

Regulatory fee
BT Charges

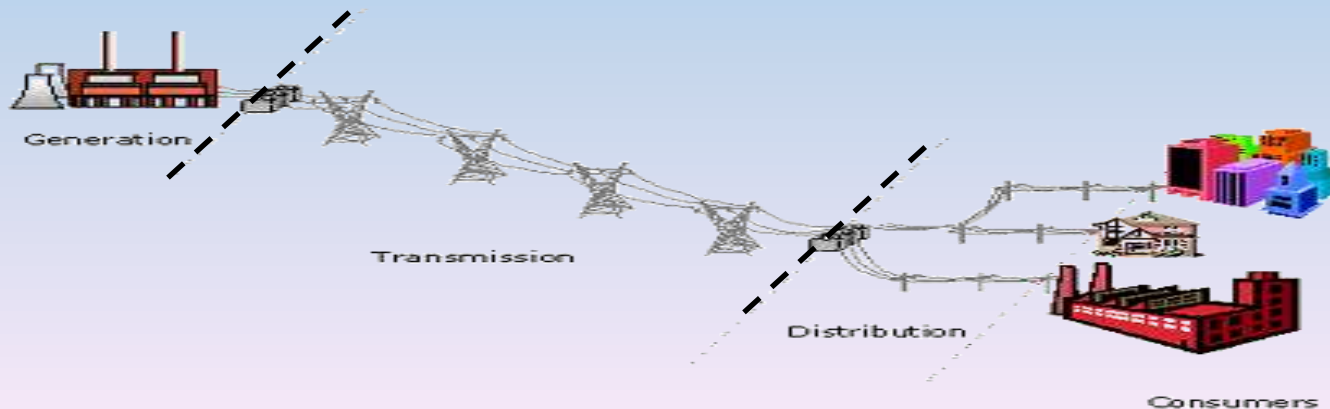
Regulatory fee

OUTPUT

Tariff Summary
(End-user Tariff)

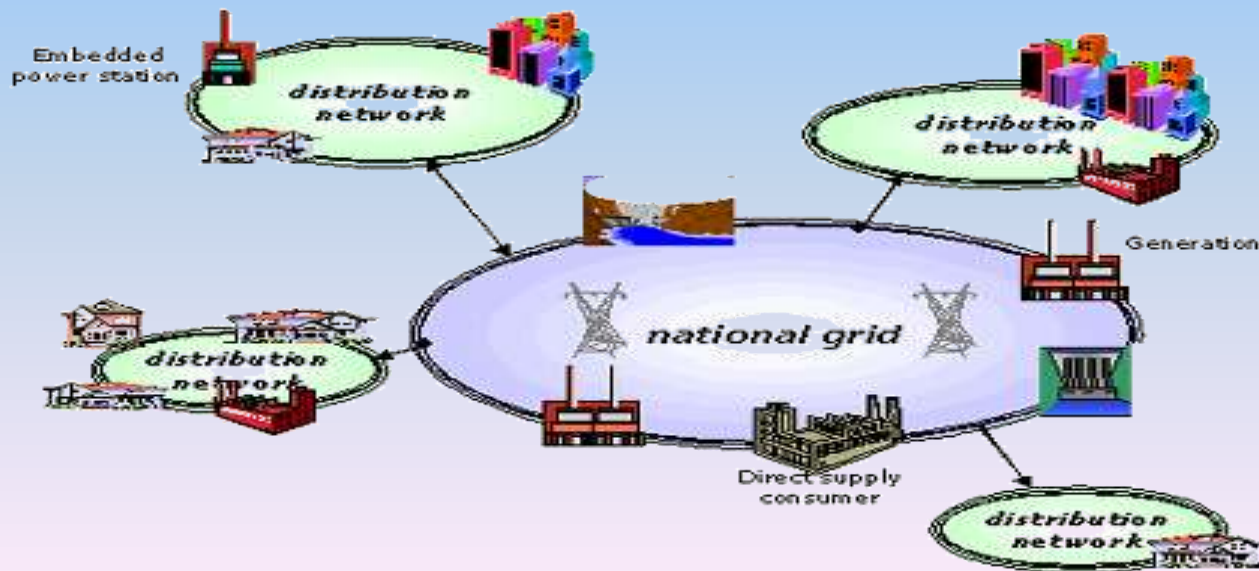
Power Generation in Nigeria

- The Nigerian Electricity Supply Industry (NESI) is currently dominated by centralised power plants, which feed in to the National Grid and the power is then allocated to different Discos
- Existing and even planned transmission substations can be 100s of miles away from the actual users of the power generated leading to technical losses, poor voltage profiles and resultant loss of customers and revenues
- All these issues can be mediated through Embedded Generation



Embedded Generation

- **Embedded Generation (EG)** in Nigeria, defined simply, is a generator which is directly connected to a distribution network operated by a distribution licensee
- This concept is also known as Distributed Generation, On-site Generation, or Decentralized Generation
- Here, the generators are connected directly to or near the load centre on the distribution network, i.e., at 33kV, 11kV or 0.415kV



Benefits of Embedded Generation

- EG has lower capital cost, modular construction and short build times
- Reduced cost of connection while transmission use of system costs is avoided
- Network losses are reduced due to shorter distances
- Improved utilization of distribution assets by the Discos
- End users can benefit through increased supply of electricity, lower end user tariffs, and potentially increased reliability and quality of supply
- Growth in EG will contribute to fuel diversity, mix and security of supply as diverse sources are tapped including Renewable Energy Plants
- In the long term, reduction of overall costs of energy consumed by providing a more efficient electricity system that generates and supply power close to the point of use

Regulation on Embedded Generation

- The Commission has released a regulation on Embedded Generation which covers the following issues
 - Distribution Planning
 - Connection Requirements
 - Commissioning Procedure
 - Commercial Arrangements
 - Technical and Non-technical Losses
 - Application for a Licence
 - Engagement in Other Regulated Activities
 - Miscellaneous Provisions
- The full regulation is available on the Commission website: www.nercng.org

Tariffs for EG

- The MYTO Methodology will be the basis for calculating the Tariffs for Embedded Generators
- This means that their tariff will cover the Long Run Marginal Cost of generation over a 20 year period
- MYTO offers benchmark costs but the actual wholesale tariff paid will be agreed between the Generator and the Disco, and approved by NERC
- Components of the tariff are:
 - Fuel Cost
 - Fixed and Variable Operations & Maintenance costs
 - Capital Cost
 - Tax
 - Return on Investment

Tariffs for EG

- Once the available power and costs for the embedded generator are established, this is then fed into the relevant Disco's retail tariff calculation
- The increased availability power will lead to lower technical losses, greater stability of power, increased customer numbers and a lower tariff for the customers of that Disco (over the medium term) than that ordinarily available via grid-connected generation

Conclusion

- The MYTO Review is a critical step towards sector viability and immediate growth
- MYTO 2 now provides the Discos with tariffs that reflect the costs of generation, transmission and distribution
- MYTO is flexible enough to adapt to the different cost profiles that would emerge if a Disco procures Embedded Generation
- NERC's Embedded Generation Regulation provides a viable option for investors intending to operate generating stations, including state and local governments
- The Regulation requires open access to the distribution networks by all potential and operating Embedded Generators, and also the ready availability of all relevant technical information on the network





THANK YOU

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