



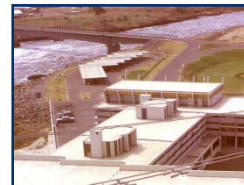
A Presentation at the 9th Annual State of the Nigerian Nation

Nigerian Peoples Forum USA

Power Sector Development in Nigeria: Power Marketing & Trading

Presented by
Rumundaka Wonodi

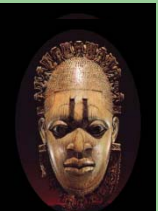
October 10, 2008





Road Map

- Background
- The Market Maturation Cycle
- ***Power Marketing and Trading***
 - *Participants*
 - *Products*
 - *Key components*
- Conclusion





Background

- The Nigeria power industry is undergoing a major restructuring
- The industry presents opportunities for investors in:
 - Independent Power Projects (IPP)
 - Distribution Companies (Disco)
 - Transmission Provider/System and Market Operator
 - Power Marketers and Traders
- With the proposed restructuring timeline, investments at this time will fair under different market regimes of which competitive power marketing will play a prominent role in near future.

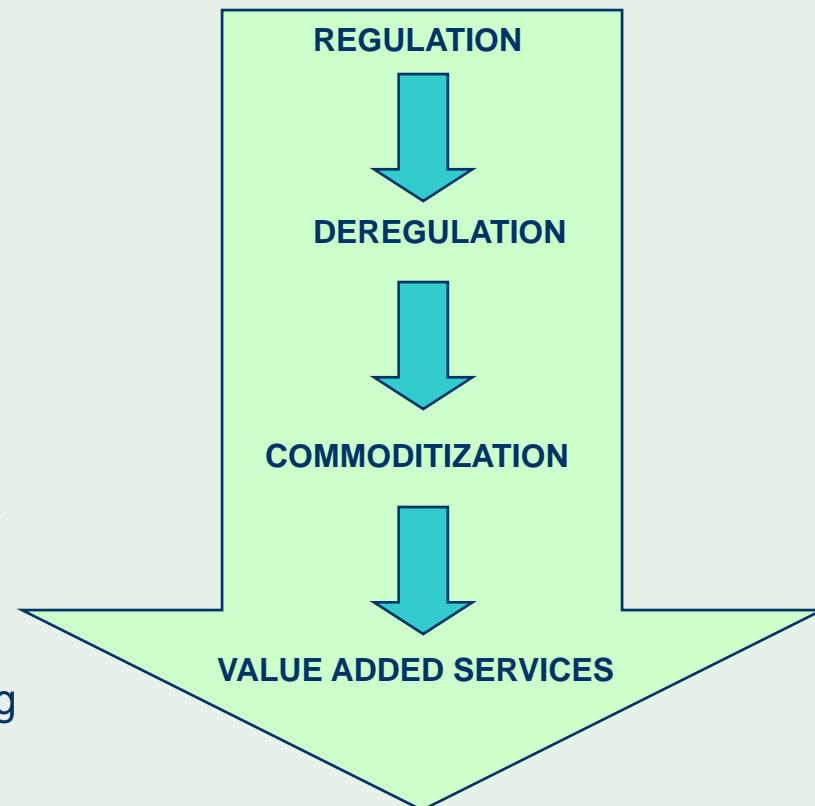




Typical Market Maturation Process

- **Regulation:**
 - Lack of competition across the chain
 - Generation, Transmission, Distribution and Billing
 - Fixed prices, may not reflect cost
 - Technically ended past June
- **Deregulation**
 - Began July 2008 with the MYTO and expected to be in place next 15 years ending 2023
 - Field is restructured to attract investors
 - Increased number of market participants
 - Tariff based rates
 - Beginning of unbundling of services and products
 - Bilateral Contracts, PPA and PSA among participants

MARKET MATURATION CYCLE





Typical Market Maturation Process (contd)

● **Commoditization**

- Electric power becomes a commodity (measured in MW)
- Trading and marketing activities become integral part of the market
- More standardized and unbundled products and services
- Financial and Credit Support Services
- Prices are more market sensitive and become more volatile
 - Distribution and Transmission services remain under tariff
- A more challenging regulatory environment for the oversight body

● **Value –Added Services**

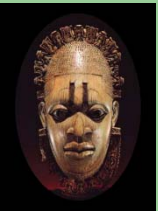
- Energy management – monitoring customer's usage patterns to reduce costs
- Demand side management – managing usage through technology to reduce costs
- Optimization services
- Improved user experience:
 - Billing, statements and payment
 - others





Power Trading: The Participants

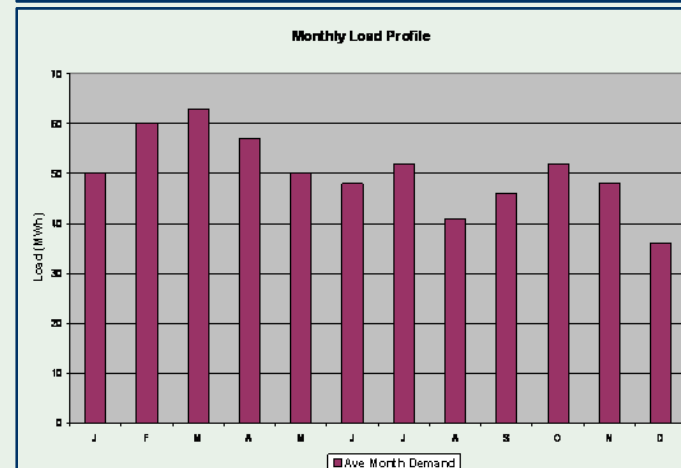
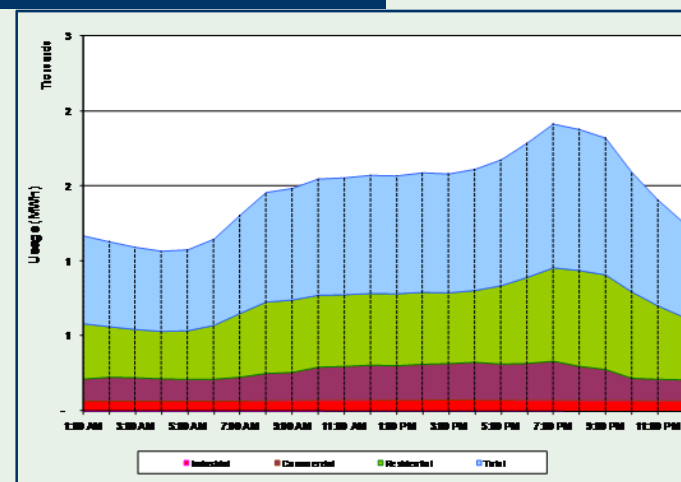
- Power Producers
- Transmission Provider/System and Market Operator
 - Scheduling of load and dispatch of generators
 - System load forecasting and management
 - Settlements
- Distribution Companies
 - Sell under tariff rates and are default providers of electricity to consumers
 - Provide distribution, metering and billing services to all consumers regardless of energy provider
 - Marketers remit D,M & B portion of bill to Discos
- Power Marketers and Trader
 - Buy power from Generators, arrange for transmission and resell to end users or other wholesale buyers
- Financial Institutions
 - Provide financial and credit support in light of trading activities
 - Risk management to reduce volatility in prices especially with regards to FX components of cost
- Consumers
 - Three major types of consumers
 - Turn on the switch and pay bills when due





Electric Power Consumers

- Residential Customers
 - Top use is for lighting, AC systems, TV
 - Peaks in the evening
 - Low load factor ((average/peak load ratio)
 - Low price responsive
 - Most number of meters/counts
- Commercial Customers
 - Higher load factor with higher consumption per meter
 - Less number of meters
 - Medium price responsive
- Industrial customers
 - Highest load factor (average/peak load ratio)
 - High consumption
 - Very price responsive and likely to seek alternative source of supply
 - Billing and services cost lowest





Power Generation

Baseload

- Low variable cost
- Limited Operation Flexibility
- Runs 24x7
- Conventional Hydro, Coal, Thermal Units, Combined Cycle Gas Turbine, Nuclear

Intermediate

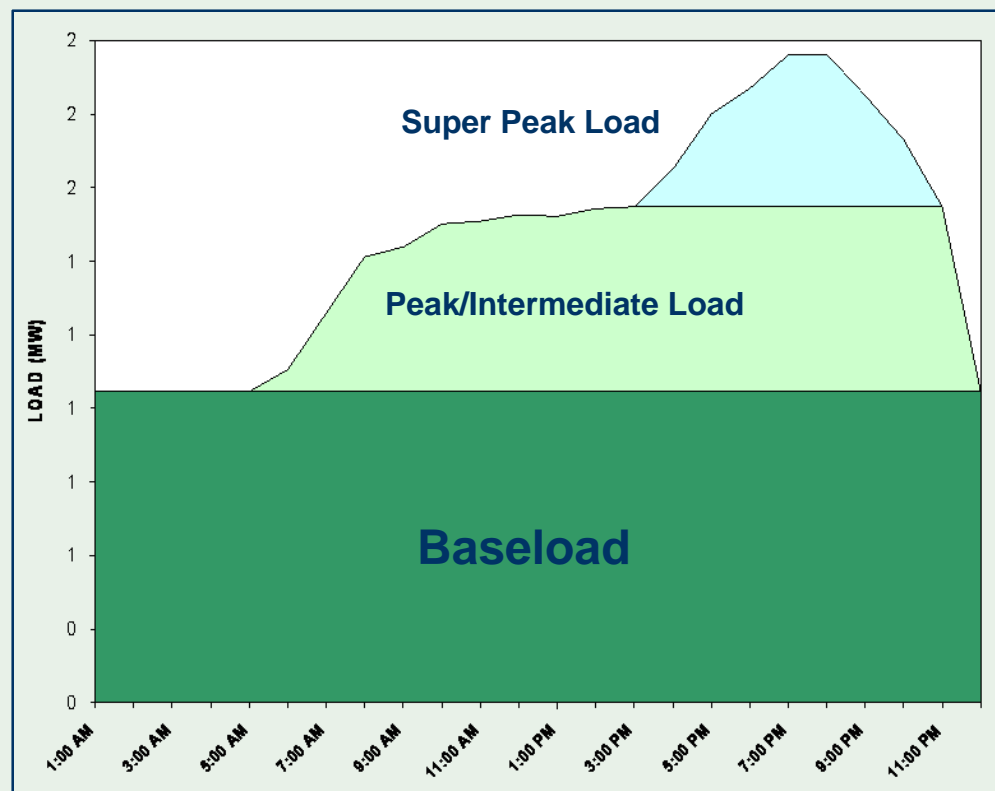
- Medium variable cost
- Flexible operational capability
- Gas Turbines, Hydro Units,

Super Peak Load:

- Very flexible operational parameters
- Higher variable cost
- Peaking gas units, Distributed Gen, Pumped and Conventional Hydros

Others

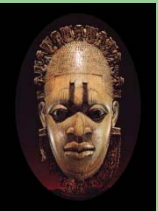
- Renewables – Solar, Wind, Geothermal





Tradable Power Products

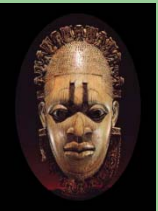
- On Peak Energy: Electricity used during hours of higher demand than average supply
- Off Peak Energy: Electricity used during non on-peak hours and mainly served by baseload generating facilities, overnight and weekend
- Round-The-Clock Energy: Electricity used 24x7
- Transmission Rights
 - Each PPAs and PSAs must guarantee an adequate transfer of power from source to the sink
- Capacity: Power producing capability of a plant measured in MW
 - Each load serving entity (Discos, Marketers) contracts for capacity
 - Capacity requirement is based on peak load plus a reserve margin
- Ancillaries – primarily reliability of the system
 - Automatic Generation Control (Regulation): ability to ramp a unit up or down to follow load at the command of the SO
 - Reserves: capacity available to SO if needed, spinning and non-spinning
- Carbon credits
- Emission rights
- Fuels: Natural Gas, Coals, Off-peak power for pumped storages





Key Components for a Power Trading Environment

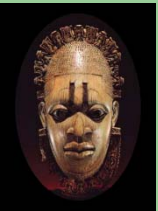
- Generation must outstrip demand
- Adequate transmission capability
- Supply Side Competition
 - Many and diverse sellers/generators for all buckets of the day to sustain liquidity
- Unbiased System Operator
 - SO/MO should have the ability cause the ramping up or ramping down of units to meet reliability
 - Should be fair in allocation pool resources and provide fair access to the grid
- Efficient Settlement System (MO)
 - Numerous market participants with different products creates need for superior and transparent settlement mechanism
 - Ensures that money flows to provider of services
- Demand Side Competition
 - The need to balance a market with numerous sellers with numerous buyers and limit market power and ensure liquidity
- Fair Distribution - DISCOS
 - Providing access to meter data for both customers and marketers
 - Fair default rates to allow choice programs
- Strong Market oversight with fair but strict licensing requirements.
 - Some trading transactions can be a zero sum game
 - Settlements to carried out monthly or quarterly will require good credit





CONCLUSION

- Power marketing presents a great opportunity for investors and will greatly benefit end users
- Marketing firms need
 - Firm grasp of the supply and demand side of the markets
 - Analytical skills and tools to capture and deliver value in a very complex and volatile environment – scheduling and forecasting tools
 - Sound financial backing to meet requirements for licensing as may apply to market accounts
 - Ability to negotiate complicated contracts: PPA, PSA and Tolling Contracts
 - Business Integrity: business cycle is long and extended





Thank you for your time.