



Regulatory Workshop on Regional Electricity Trade and Market Development Hanoi, Vietnam

Pricing and Determining Cost Reflective Rates at National Level

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Historic Tariff Structure (Static)

- Utilities vertically integrated with standardized load profiles;
- Tariffs are based on historic regimes (average cost principles);
- Tariffs are a combination of supply and distribution needs; do not reflect the cost structure of the network; and
- Include class specific cross-subsidies that are unfair to other classes (political pressures and social ratemaking in emerging economies).







Price Regulation









Electricity Cost Drivers

Analyze cost centers separately (COS study).

- Primary energy costs;
- Generation, transmission and distribution costs;
- Operation & maintenance costs;
- Depreciation;
- Return on assets; and
- Purchased power.







Non Electricity Costs

- Socio-political subsidies to certain customer classes;
- Subsidies to promote renewables;
- System losses and thefts; and
- Taxes.

Indian Example: Real Costs and Tariffs

Under traditional model, the cost of supply remains higher than the approved tariffs. There is no incentive to invest in new infrastructure.

Average Cost of Power Supply and Average Tariff Realized (paise/kWh) from 2007-08 to 2011-12



Source: Administrative Staff College of India, Hyderabad (Rajkiran Bilolikar)







Tariff Design Principles

Tariffs should :

- Be forward looking, transparent, non-discriminatory, stable, and predictable;
- Be cost-reflective, efficient, simple but effective, and promote competition; and
- Be affordable, protect the vulnerable, encourage demand response, and incentivize investors.







Cost Reflective Tariffs (Smart)

- Ensure supply security, sustainability, and drive economic efficiency;
- Create incentive for investments in new infrastructure, are time varied and provide cost signals;
- Influence individual's behavior to optimize the electricity use; and
- Use smart technologies (smart meters or grids real time energy markets, critical peak and time of use).







Cost Reflective Tariffs Formulae

UTP=ESC+VAD

Where:

UTP=Unit Tariff Price ESC= Unit Energy Supply Cost (ESC) VAD=Unit Distribution and Value Added Cost









- Demand responsive markets (location, time and pattern of network use);
- Encourage peak shaving (peak power flow);
- Fill valleys by shifting demand;
- Allow load management;
- Are necessary for private investments; and
- Encourage pricing of distributed generation.







Load Management









Regulatory Balance

- Optimal resource allocation (company earns profit);
- <u>Prices</u> reflect efficient cost levels; and
- Optimal balance between costs and <u>quality.</u>











- Regulators must allow real costs to ensure service and supply security;
- Reflect capacity costs by demand and provide clear and sustainable benefits;
- Load management (shifting load profiles);
- Sharing of costs according to ownership and borders;
- Interruptible consumption; and
- Incentivized investments to provide new infrastructure.







What to Do?

- Establish energy policy (no cross-subsidies);
- Unbundle the utilities (liberalization);
- Separate accounts by business line;
- Develop costs for each category of customer;
- Allow competition where it is feasible; and
- Develop smart tariffs (e.g. ToU etc.)







Revenue Requirements, Costs and Charges



Source: Donald Hertzmark, "Electricity at the Right Price"







Incentive Regulation

- Rate of return or cost of service;
- Price cap or Consumer Price Index minus Efficiency improvement factor (CPI-X);
- Revenue cap; and
- Hybrid schemes.







Price Cap Regulation

X factor is expected efficiency gain. A study may be needed to determine this factor.









Best Practices

- Communication;
- Consultation;
- Consistency;
- Predictability;
- Flexibility;

- Independence;
- Effectiveness and Efficiency;
- Accountability; and
- Transparency.







Thank you!

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