
RATE DESIGN IMPACTS ON ENERGY EFFICIENCY PROGRAMS

**CAREC Electricity Regulators Forum
Fourth Annual Meeting
15-19 September 2008 Kyrgyz Republic**

Michael A. Pitlock

The views expressed in this presentation are the views of the author and do not necessarily reflect the views or policies of the Asian Development Bank (ADB), or its Board of Governors, or the governments they represent. ADB does not guarantee the accuracy of the data included in this presentation and accepts no responsibility for any consequences of their use. Terminology used may not necessarily be consistent with ADB official terms.

RATE DESIGN THEORY

- Costs can be divided into two main categories
 - Fixed costs
 - Variable costs
- Fixed costs can either be demand related or customer related
- Variable costs are directly related to the level of kWh sales

RATE DESIGN THEORY

- **Theoretical Rate Design**
 - \$ / kWh : for variable costs
 - \$ / kW / Month : for demand related fixed costs
 - \$ / Customer / Month : for customer related fixed costs

RATE DESIGN REALITY

- Many customers do not have demand meters for the rate design is limited to \$ / kWh or \$ / Customer / Month
- \$ / kWh is the easiest rate design for customers to understand
- Large \$ / Customer / Months rates are socially unacceptable because they place a disproportionate burden on small users

RATE DESIGN CHALLENGE FOR ENERGY EFFICIENCY PROGRAMS

A bundled \$ / kWh rate design creates a direct link between sales and profit.

Energy Efficiency Programs **reduce sales**, therefore, Energy Efficiency Programs **reduce profit**.

OPTIONS FOR MEETING THE CHALLENGE

UNBUNDLING

- Each segment of Electricity Service is impacted differently by Energy Efficiency Programs
 - Generation
 - Transmission
 - Distribution
 - Supply
 - Metering

GENERATION

- The Generation segment has significant variable cost which will move in conjunction with reductions in sales due to Energy Efficiency Programs
- The fixed costs of Generation are related to demand and will not be affected by short-term reductions in sales
- Two part tariff; Capacity fees / Energy fees

TRANSMISSION

- Transmission costs are mainly fixed costs related to Peak Demand and kilometers of line
- Transmission costs will not be directly affected by short-term reductions in sales
- Capacity fees charged on Coincident Peak Demand

DISTRIBUTION

- Distribution costs are mainly fixed costs related to Peak Demand and number of Customers
- Distribution costs will not be directly affected by short-term reductions in sales
- Capacity fees charged on Non-Coincident Peak Demand / Customer charges

SUPPLY

- Supply costs are mainly fixed costs related to the number of Customers served
- Supply costs will not be directly affected by short-term reductions in sales
- Customer charges

METERING

- Metering costs are mainly fixed costs related to the number of Customers served
- Metering costs will not be directly affected by short-term reductions in sales
- Customer charges

REVENUE CAPS

- Incentives to minimize costs
 - Allowed revenue remains unaffected resulting in improved profitability
- Severing link between allowed revenue and volume can reduce incentive to expand services to new and existing customers
 - Increases costs without corresponding increase in revenue
 - Some formulas attempt to link allowed revenue to number of customers (variable revenue caps)
- Compatible with Energy Efficiency Programs
 - Assists utility to manage costs and thus improve profits
 - Incentive may be artificially strong resulting in demand being reduced to below efficient levels

PRICE CAPS

- Incentive to minimise costs
 - Allowed average revenue is unchanged whatever costs are incurred
- Incentive to lower prices below economically efficient levels where demand can be increased at relatively low marginal cost
 - Increases the volume sold with little increase in cost
 - Utility earns more revenue and thus increases profitability
- Incentive to expand volume conflicts with Energy Efficiency Programs
 - Strong disincentive to participate in such programs as they reduce the revenue earned

“Rate Design alone can be an effective and cost free form of Energy Efficiency Program, and at the same time Rate Design alone can render otherwise effective Energy Efficiency Program almost useless”

THANK YOU