Bureau of
Energy Resources,
United States
Department of State

National
Association of
Regulatory
Utility
Commissioners

LMI Workshop on Regulation and Regional Coordination Bangkok - Thailand

Cost Reflective Pricing and Regulation

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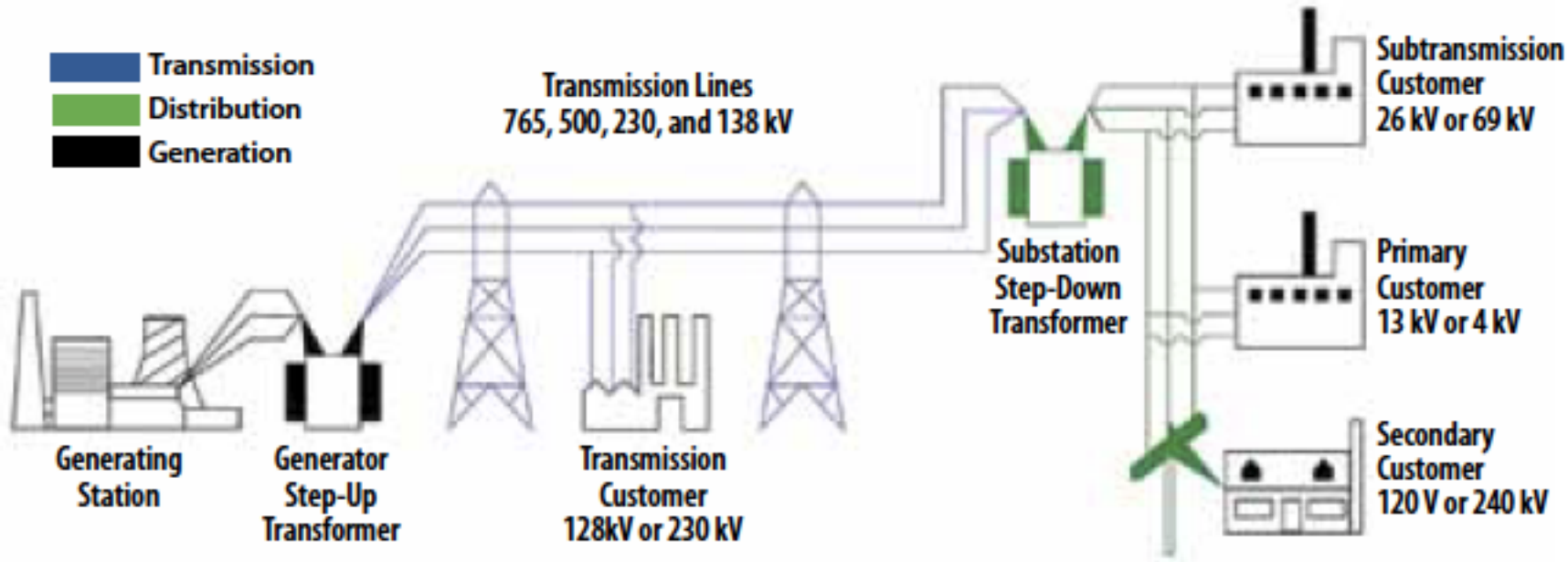
Elements of the Grid



Source: Regulatory Assistance Project (RAP)

Traditional Regulation

- Natural monopolies (may be state owned – SOEs - or investor owned utilities - IOUs);
- Systems vertically integrated;
- Legal planning/supply obligation;
- Centralized dispatch; and
- Regulated tariffs (prices determined administratively – “rate cases”).

Rate Base

	Total Plant In Service At Original Cost
-	Accumulated Provision for Depreciation
=	***Net Plant in Service***
+	Working Capital Allowances
-	Accumulated Deferred Taxes
+/-	Other Adjustments Approved by the Commission
=	***Rate Base***

Source: Regulatory Assistance Project.

Strong Points

- **Reliability and stability;**
- **Cost recovery; and**
- **Easy to incorporate social tariffs.**

Weak Points

- **Consumer underwrite risks;**
- **Encourages excessive investments and rewards inefficiency; and**
- **Abuse of public service obligation.**

Why Change?

- Competition is possible (in supply and retail);
- New generation technologies;
- Shortcomings in traditional model;
- Reduce cost, improve efficiency; and
- Favorable economic climate.

Regulation Corrects Market Failure 1

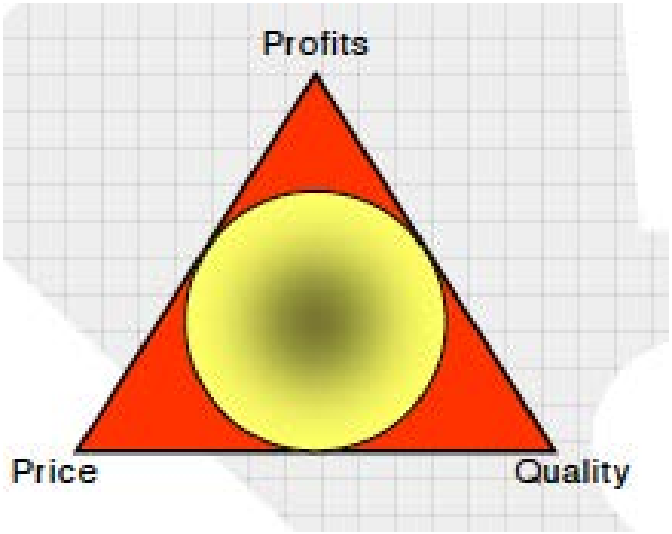
- Monopolies present market failure;
- Align the operators interest with the public interest;
- Customers desire protection from market power;

Regulation Corrects Market Failure 2

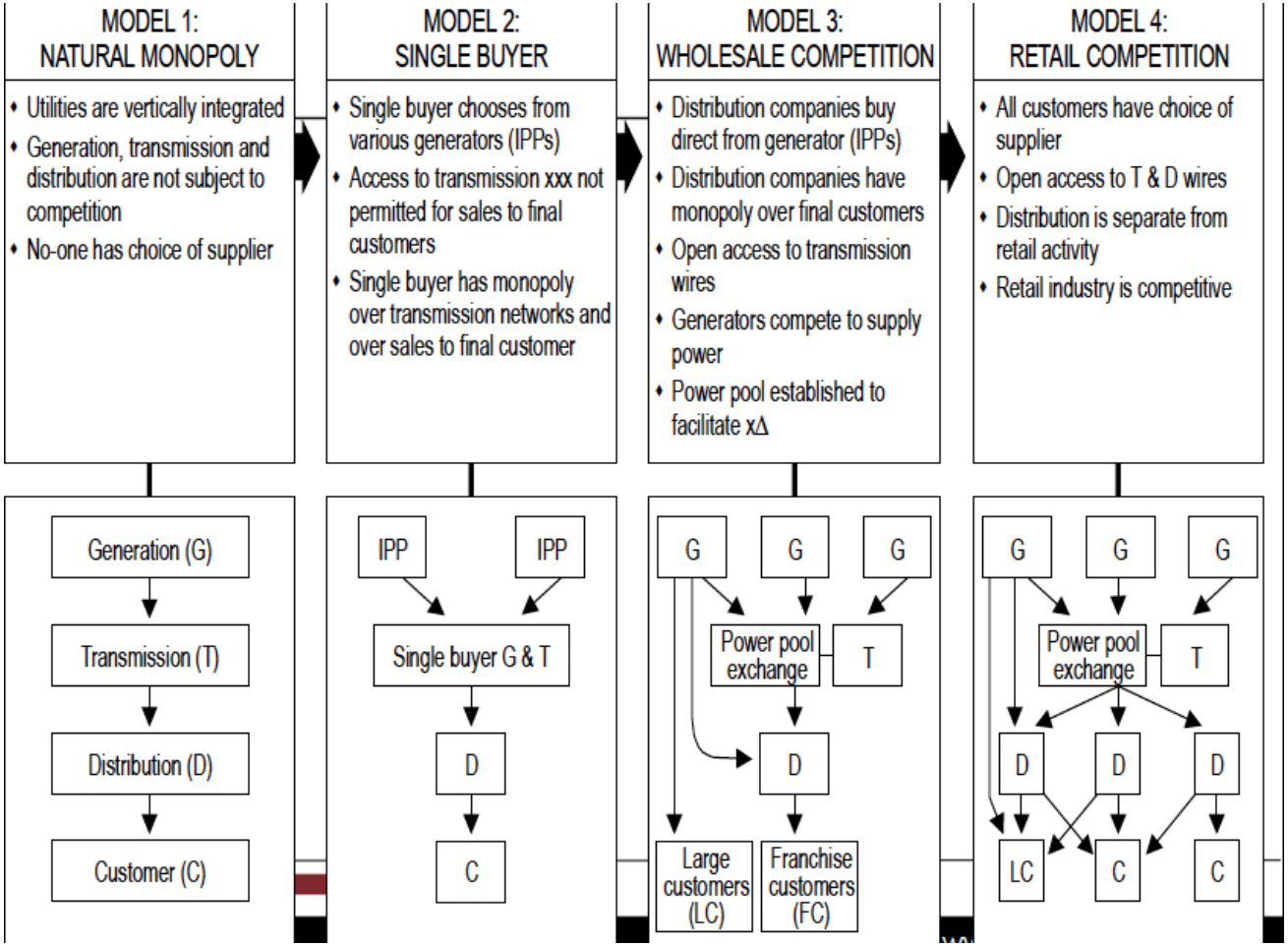
- **Operators desire protection from government opportunism; and**
- **The benchmark – perfect competition.**

Regulatory Objectives

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



Regulatory Models



Model 1 - Monopolies: Comments

- Customers bear the risks (investment mistakes, demand forecasts, technological obsolescence etc.);
- Utility acts as tax collector; and
- Regulatory lag.

Model 2 – Single Buyer: Comments 1

- Some competition;
- Centralized planning;
- Risk of IPPs passed to consumers;
- Oversight on PPAs is needed;

Model 2 – Single Buyer: Comments 2

- **Limited economic incentive;**
- **Purchaser responsible for generation adequacy; and**
- **Purchaser takes generators risk in PPA contracts.**

Model 3 – Wholesale Competition: Comments

- IPP may or may not be vertically integrated (self dealing);
- Long term supply obligation left to the market;
- Efficiency drives the producers; and
- Consumers demand retail competition.

Model 4 – Wholesale/Retail Competition: Comments 1

- Spot market becomes essential;
- Metering becomes a major issue;
- Market power becomes an issue;
- Guarantee of supply left to the market;
- Incentives for efficiency in generation.

Model 4 – Wholesale/Retail Competition: Comments 2

- Consumer choose suppliers (integration of generation and retailing);
- Integration of distribution and retailing has to be closely supervised;
- Stand alone retailing is high risk/low return; and
- Demand responds to market prices.

Incentive Regulation

- Rate of return or cost of service;
- Price cap or RPI-X;
- Revenue cap; and
- Hybrid schemes.

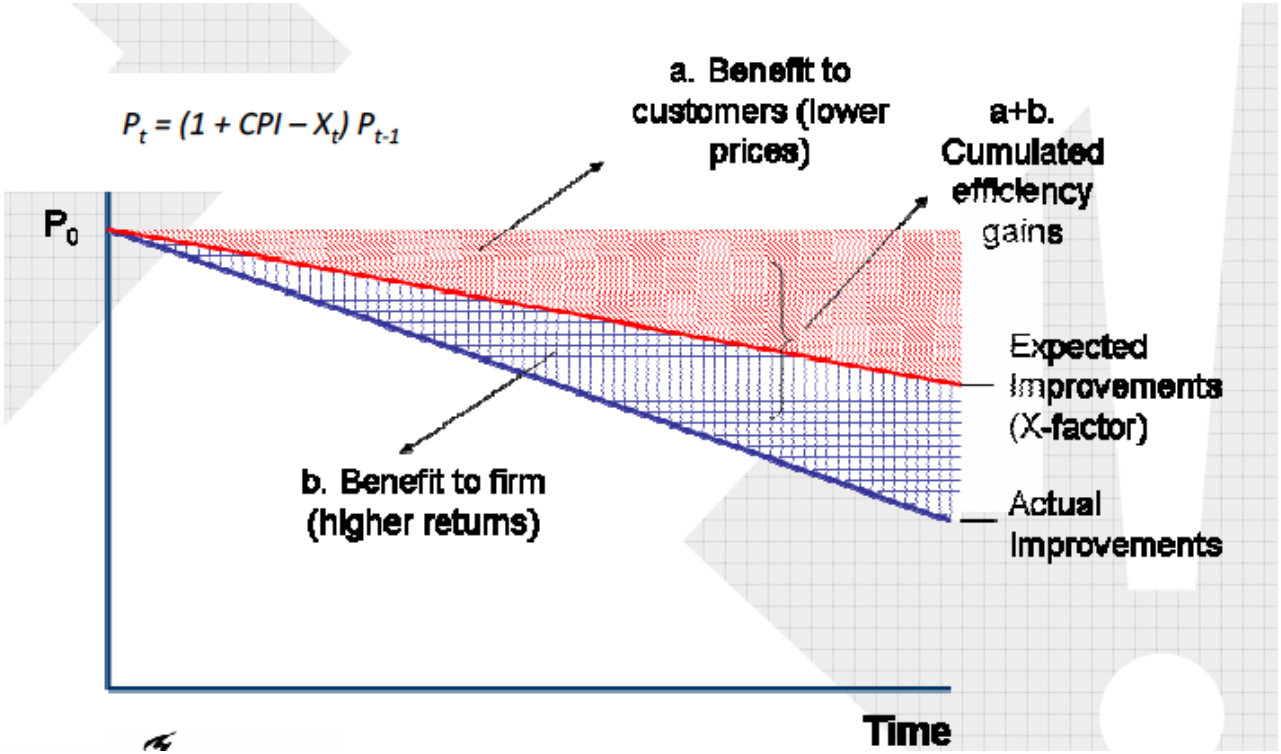
Incentive Regulation Vs. PBR

Traditional Regulation	Performance-Based Regulation
Rate Base	Rates in Period 1
X Rate of Return	+ Inflation
+ Operating Expenses	- Productivity
= Revenue Requirement	+ / - Z-factor
/ Sales = Rates	= Rates in Period 2

Source: RAP

Price Cap Regulation

X factor is expected efficiency gain. Need a study to determine this factor.



Price Cap – Pros and Cons

Pros:

- Simple & clear
- Balances company and consumer interest.
- Moderate info needs
- Useful when company auditing system are deficient.

Cons:

- Defining starting price.
- How to define X?
- Choice of inflation index.
- When high inflation!
- Problem when real return deviates from regulated return.
- Unfair profit sharing within regulatory period.
- Incentive for degrading service quality: CPI-X+Q.

Revenue Cap

The maximum revenues allowed are established:

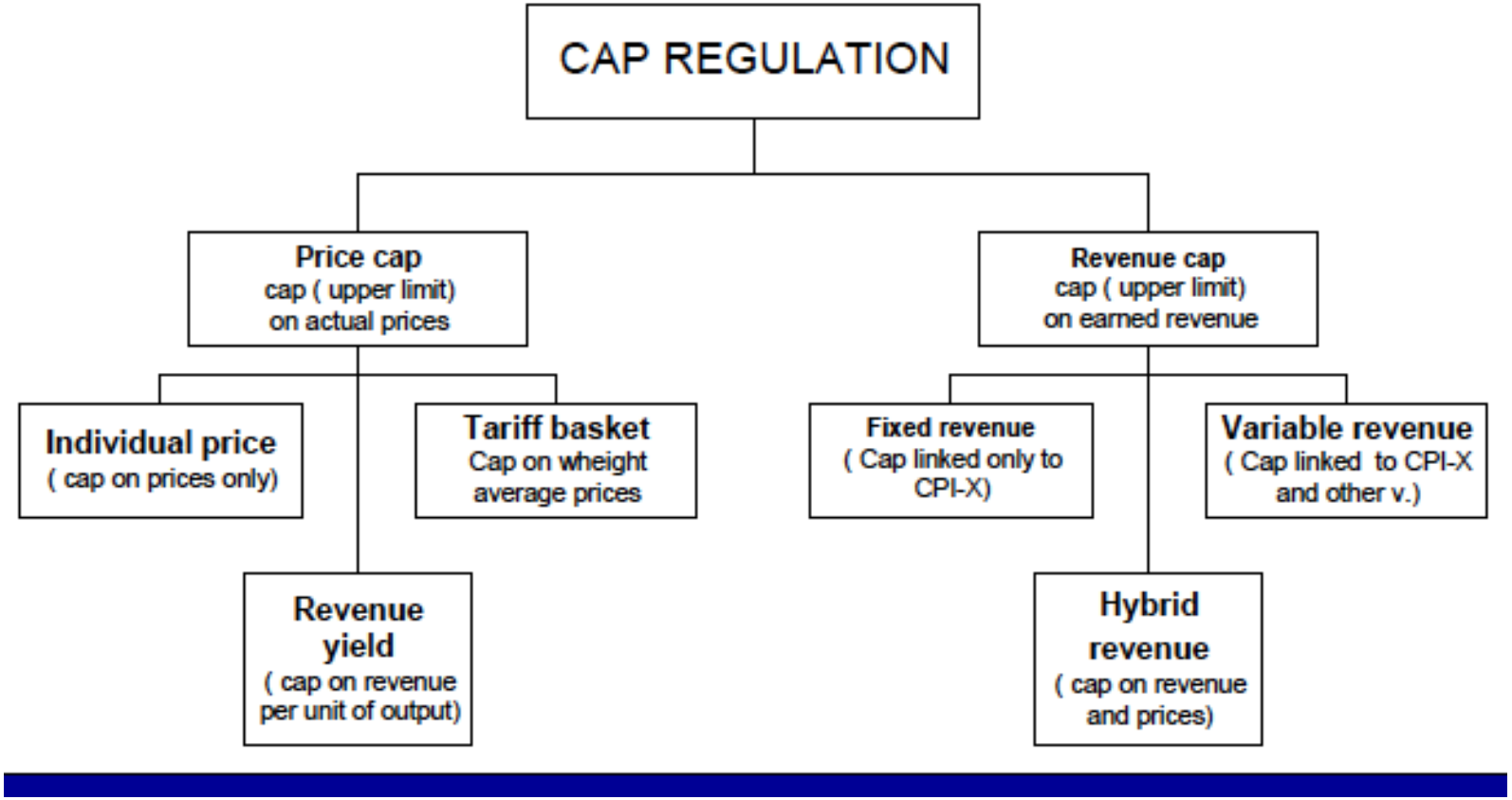
$$Rt=(Rt-1 +CGA*\Delta Cust)*(1+I- X)\pm Z$$

Rt = authorized remuneration or revenues in year t.

CGA = consumer growth adjustment factor (currency unit/consumer).

ΔCust = yearly variation in the number of consumers.

Revenue and Price Cap Regulation



Source: Sustainable Energy Systems, Presentation by M. V. Martins.

Rate Design

- Marginal cost pricing;
- Multipart pricing;
- Incorporating service quality issues;
- Financial analysis;
- Ring fencing and account separation;
- Bench marking or yardstick; and
- Lifeline tariffs and financing mechanism.

Regulatory Process

- **Institutional structure (independence, financing and policy framework);**
- **Expertise, institutional capacity, capabilities and incentives; and**
- **Regulatory Capture and price expediency (government or utility).**

Risks

- Absence of predictable regulatory and policy environment to attract private sector investments;
- Lack of secure and unambiguous laws; and
- It may be easier for customers and other stakeholders to regulate the regulator and policy makers.

Institutional Arrangements

- Methods of review and appeal;
- Appointment process, responsibility and authority;
- Financing mechanisms;
- Encourage ethical conduct; and
- Managing relationships with stakeholders and protecting consumers.

Lifeline Rates

	Non-Lifeline Rate	Lifeline Rate Block	Zero Customer Charge
Customer Charge	$5.00	$5.00	$ –
First 500 kWh	$0.10	$0.05	$0.10
Over 500 kWh	$0.10	$0.10	$0.10
Customer Bill			
0 kWh	$5.00	$5.00	$ –
500 kWh	$55.00	$30.00	$50.00
1,000 kWh	$105.00	$80.00	$100.00
1,500 kWh	$155.00	$130.00	$150.00

Source: RAP

Best Practices

- Communication;
- Consultation;
- Consistency;
- Predictability;
- Flexibility;
- Independence;
- Effectiveness and Efficiency;
- Accountability; and
- Transparency.

Conclusions

- Any form of regulation represents a precarious balancing act;
- Many different tools available, but none the 'best';
- The market environment and the goals of regulation are important;
- Service quality and access for vulnerable; and
- Align private behavior with public interest.

Thank you!

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