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National  
Association of  
Regulatory  
Utility  
Commissioners

# Regulation: Rationale & History

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## Regulation & Tariff Workshop

- Introduction & Program
  - Day 1 - introduction to regulation
    - What is regulation?
    - How do regulatory bodies work elsewhere?
    - What is the regulatory process?
    - How are regulators funded?
  - Day 2 - tariff construction & methodology
    - Overview & goals of tariffs
    - How are costs tallied up in tariffs?
    - How does gas differ from electricity regulation?
    - Numerical example of tariff



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## Regulation & Tariff Workshop

- Introduction & Program
  - Day 3 - Tariff design issues
    - Limits on tariffs - cost caps, revenue caps, etc.
    - Allocation among customer groups - case study
    - Advanced tariff design issues
      - Incentives for consumers
      - Incentives for suppliers
    - Ratemaking exercise



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## Regulation & Tariff Workshop

- Introduction & Program
  - Day 4 - Advanced tariff design issues
    - Unbundling
    - Time of use & location tariffs
    - Open access
    - Service quality
    - Customer service
    - Impacts on low income/vulnerable customers
    - Public role of regulators
    - Exercise on regulatory process



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## Regulation & Tariff Workshop

- Introduction & Program
  - Day 5 - IPPs & private sector participation
    - Role of private investors
    - Key issues & pitfalls in private investment regulation
    - Electricity trading & power pools - brief discussion
    - IPP case studies
    - IPP bidding exercise
  - Workshop summary & evaluations



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## Regulation & Tariff Workshop

- Day 1 - introduction to regulation
  - What is regulation?
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## Introduction to regulation

- What is regulation?
  - Utility regulation is the conscious effort to ensure that all parties - suppliers, customers, government - are represented in the oversight and governance of a utility's operations
    - Prices
    - Service quality
    - Implementation of government policies
    - Viability of the suppliers long term
    - Protection of those lacking market power
    - Institutionalization of transparency & rule of law in decisions affecting the public's welfare



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## Introduction to regulation

- How did regulation come about elsewhere?
  - Recognition of “natural monopoly” condition of network industries - Railroads, pipelines, electricity transmission
    - Costs to use the network fall until the network is fully utilized (called falling average costs in economics)
    - The network owner/operator is both a monopolist (single seller) and a monopsonist (single buyer) - who else purchases transmission towers or rails?
    - Network owner has ability to charge different customers varying prices for the same product (Price discrimination)
    - Network industries are vital to national development, but may damage national economy if operated abusively or inefficiently





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## Introduction to regulation

- Why are electric utilities natural monopolies?
  - Is it the power plant?
  - Is it the network?
  - Is it the service function - planning, operating, billing, maintenance?



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## Introduction to regulation

### Why are electric utilities natural monopolies?

- The power plant
  - Takes in some sort of raw material - fuel, water, fast neutrons - and sends electrons out the other side
  - A power plant is a factory - one that manufactures electrons
  - Power plants are subject to the same general rules as any other factory
    - Efficient operation is better than wasteful operation
    - There is a least cost operational mode for the power plant
    - That least cost mode calls for less than 100% utilization of the plant
    - Over large portions of the plant's cost curve, the marginal cost of operation is constant

The power plant is not the source of monopoly power



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## Introduction to regulation

- Why are electric utilities natural monopolies?
  - The network
    - Very large initial investment
    - Very low operational costs
    - Falling marginal or incremental costs of operation
  - Why have two?
    - Will costs per unit go down?
    - Will service quality improve?



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## Introduction to regulation

- Why are electric utilities natural monopolies?
  - Service and Operational Issues
    - Electricity cannot be stored
    - There has to be one entity with responsibility for maintaining balance in the system
    - Planning for Transmission & Distribution is implicitly planning for generation (certain capacities and output are assumed)



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## Introduction to regulation

- Traditional utility regulation
  - Two models - Ministry run and independent

### Ministry Run:

- Operates as a division of the Ministry of Energy/Power/Water
- Staffed by civil servants
- Implements government policy directly
- Funded by regular government appropriations



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## Introduction to regulation

- Traditional utility regulation
  - Two models - Ministry run and independent

### Independent

- Split into Commissioners (with the legal authority to make decisions) and staff (subject matter specialists)
- Quasi judicial - hearings, open procedures
- Implements government policies, subject to the weighing & assessment of the balance of equities
- Funded by some type of levy on the regulated entity



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## Introduction to regulation

- Recent developments in regulation
  - Trend to regulate only real monopoly side of business (network)
  - Regulator enforces financial unbundling of regulated entities
    - Business segments - G, T, D
    - No transfers of funds from one segment to another
  - Use of incentives - less specific regulation of inputs v. performance contract with regard to measurable outputs
    - *RPI-x*
    - Cost caps, price caps, revenue caps



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## Introduction to Regulation

- Different types of price regulation
  - Rate of return (the cigar box method)
    - All variable costs are passed through
    - Utility is allowed specific return on its rate base
  - Incentive-based regulation
    - Price cap - utility is allowed a specific maximum price each year per unit sold - may be unbundled by segment or service (G, T, D) or metering/billing, maintenance, etc.
    - Cost cap - limitation on allowable costs for certain services
    - Revenue cap - limitation of overall income of utility for services in a segment





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## Introduction to Regulation

- Different types of utility regulation - summary of recent trends
  - With increased market liberalization, traditional methods have proved less than effective
  - Greater role for private sector raises more issues of incentives
  - Transparency has become key desiderata for utility regulation and operations