Draft Master Content Outline for NRRI RTI

This document is a preliminary content outline for the Regulatory Training Initiative (RTI) for your review and comment. The outline covers the breadth of topics that the RTI could address. It will be both the basis of a reference manual on the history, theory, and practice of regulation and will provide source material for the various training programs to be offered. Neither the outline nor the future reference manual represents the content of a proposed course. Rather, specific training programs/courses would be based upon relevant sections of the manual.

1. Regulatory Overview
   1.1. Why Regulate?
       1.1.1. Just price
       1.1.2. Role of franchises
       1.1.3. Common carriage
       1.1.4. Natural monopoly
       1.1.5. Public utility commissions - convergence of public and private interests
   1.2. Regulation as a legislative act
       1.2.1. Empowering legislation
       1.2.2. Quasi-judicial process
       1.2.3. Jurisdictional issues: state v federal
   1.3. Standard of regulation
       1.3.1. Safe and adequate service at a just and reasonable price
   1.4. Types of Regulation
       1.4.1. Rate
       1.4.2. Service quality/safety
       1.4.3. Planning and adequacy
       1.4.4. Siting
       1.4.5. Determining scope of the utility
       1.4.6. Maintenance standards
   1.5. Overview of the Regulatory Process
       1.5.1. Overview of proceeding types – rates vs policy
       1.5.2. Ratecases
           1.5.2.1. Timeline of Case Development
           1.5.2.2. Participants, roles, etc.
   1.6. Policy cases
       1.6.1. Commission legislative process/with technical hearings
       1.6.2. FERC – notice of proposed rulemaking
       1.6.3. FCC – Administrative Procedures Act
   1.7. Litigation vs. Negotiation
   1.8. Introduction to regulation’s role in transforming regulated industries
       1.8.1. Telecom
           1.8.1.1. Break-up of Bell
           1.8.1.2. Technical change and competitive provision
           1.8.1.3. Rate of return vs price cap: subsidies, direct support, etc.
1.8.1.4. Universal Service defined/explained
1.8.1.5. Universal Service funding
    Ensuring sufficient and predictable support; interstate vs intrastate; state USF funds – low income, high cost, relay service; federal USF funds - broadband

1.8.2. Electric
1.8.2.1. Restructuring
1.8.2.2. Decarbonization
1.8.2.3. Transforming role of the customer

1.8.3. Water
1.8.3.1. Balancing rate setting with Water Quality objectives
1.8.3.2. Water Conservation, Efficiency, and Sustainability

1.8.4. Natural Gas
1.8.4.1. Role in a decarbonized world

2. The Ratemaking Process

2.1. Rate Case Basics
2.1.1. Overview of Cost of Service Regulation
2.1.1.1. Monopoly utilities and how they make money
2.1.1.2. Averch-Johnson incentive to over-invest
2.1.1.3. Prudence test & disallowances
2.1.1.4. “Used and Useful” and other standards
2.1.2. Rate case initiation and process
    filing of application, complaint, or commission action including filing of direct testimony; discovery; depositions; cross-examination; rebuttal testimony and cross-examination; briefs and reply briefs; recommended decision, Commission decision and order; appeals and judicial reviews
2.1.3. Basis for Ratemaking
2.1.3.1. Revenue Requirement = Return on & of capital + O&M + Taxes
2.1.3.2. Judicial basis for cost recovery of each aspect of the revenue requirement
2.1.3.3. Similarities and differences across industries
2.1.4. Relation to planning in establishing ratemaking objectives
2.1.4.1. Introduce capital budgeting and relation to planning
2.1.5. Introduction to the three steps in ratemaking: revenue requirement, cost allocation, and rate design

2.2. Tools of Regulation
2.2.1. The role of accounting
2.2.1.1. NARUC Uniform System of Accounts
2.2.2. Models as the language of regulation

2.3. Establishing the Revenue Requirement
2.3.1. Principles
2.3.2. The test year
2.3.2.1. Role in determination of rates
2.3.2.2. Historic (accounting) cost
2.3.2.3. Forward looking
2.3.2.4. Blended test years
2.3.2.5. Regulatory Lag

2.3.3. Establishing rate base
2.3.3.1. Characteristics of assets in rate base
2.3.3.2. Additions to rate base
   The Prudence Standard; used and useful; valuation of water rate base when acquiring municipal utilities
2.3.3.3. Depreciation
   Types of depreciation; depreciation in rates vs. depreciation for tax purposes; depreciation and technical obsolescence; population models to estimate pole depreciation rates
2.3.3.4. CWIP and AFUDC
2.3.3.5. Stranded costs

2.3.4. Cost of capital/rate of return
2.3.4.1. Cost of Debt and Equity
   Process for acquiring debt and equity; accounting and tax consequences of debt and equity
2.3.4.2. Optimal capital structure
2.3.4.3. Different approaches to estimation cost of equity (e.g., DCF v. CAPx)
2.3.4.4. “Zone of reasonableness”
2.3.4.5. Adjustment of rate of return for different factors
2.3.4.6. The role of rating agencies
2.3.4.7. Securitization

2.3.5. Expenses
2.3.5.1. Cost of fuel and purchase power
2.3.5.2. Labor and retirement obligations
2.3.5.3. Distribution system maintenance – (including tree trimming and vegetative management)

2.3.6. Taxes

2.4. Cost allocation
2.4.1. Principles
2.4.2. Categories of cost: demand, energy, distribution, customer
   2.4.2.1. Technical issues of determining marginal cost of each

2.4.3. Cost of service studies
2.4.4. Directly assignable costs and the increasing role of customer specific costs and benefits
2.4.5. The role of billing determinants in determining and allocating costs
2.4.6. Cost-of-service studies & customer consumption patterns
2.4.7. Methods in use: marginal (economic) vs. embedded (accounting) costs
2.4.8. Average-excess demand

2.5. Rate design
2.5.1. The role and goals of rate design
2.5.2. Rate Design Principles (“Bonbright Principles”)

2.5.3. Types of Rates
   2.5.3.1. Flat, two-part, three-part
   2.5.3.2. Straight fixed-variable rates
   2.5.3.3. Inclining vs. declining block
   2.5.3.4. Time-varying rates: time-of-use, critical peak, real-time, etc.

2.5.4. Unbundled Rates

2.5.5. Rate Adjustments
   2.5.5.1. Distribution System Improvement Charges

2.5.6. Other Rate Details
   2.5.6.1. Minimum Bills
   2.5.6.2. Demand Ratchets
   2.5.6.3. Power Factor
   2.5.6.4. Rates for partial requirements service (e.g., standby rates)
   2.5.6.5. Net metering

2.6. Evaluating the sufficiency of rates

2.7. Incentive issues associated with ratemaking
   2.7.1. How utilities make their money
   2.7.2. Rate base bias –
   2.7.3. Inefficiencies associated with Fuel Adjustment Clauses
   2.7.4. Changing incentive structures to accommodate energy efficiency and demand response
   2.7.5. Types of incentives -
      2.7.5.1. Targeted vs. utility-wide incentives
      2.7.5.2. Performance based regulation
      2.7.5.3. PIM

3. Regulation as a transformative force

3.1. Role of regulation in gas
   3.1.1. Jurisdictional issues and the field price of natural gas
   3.1.2. Order 636

3.2. Electric
   3.2.1. PURPA
   3.2.2. Energy Efficiency
   3.2.3. Net metering
   3.2.4. Restructuring
   3.2.5. Changing role of customer
      3.2.5.1. Customer as prosumer
      3.2.5.2. Demand response
   3.2.6. Non-wires/pipes alternatives

3.3. Restructuring
   3.3.1. Telecom
   3.3.2. Electric
   3.3.3. Gas

3.4. Financial issues
3.4.1. Bankruptcy
3.4.2. Securitization

4. Electric Utilities
4.1. Unique aspects of electric utilities
4.1.1. Jurisdiction
4.1.2. Storage limitations
4.1.3. Interconnects and RTOs/ISOs
4.2. Planning for reliability and resource adequacy
4.2.1. The focus of planning
  4.2.1.1. Historic focus – generation adequacy
  4.2.1.2. Integrated Resource Planning
  4.2.1.3. Evolving notions of resource adequacy
  4.2.1.4. With restructuring – the reliance on the “market” as planner
  4.2.1.5. Impact of restructuring on planning
  4.2.1.6. Emergence of distribution system planning
4.2.2. Planning tools
  4.2.2.1. Valuing the need and value of capacity (the LOLE, LOLP and EUE)
    Criteria; Monte Carlo vs Booth-Baleriaux recursive convolution method;
    Evaluation of transmission constraints and system imports/exports
  4.2.2.2. Transmission planning
    Power Flow models; criteria for adding transmission
4.2.3. Distribution System Planning and Hosting Capacity
4.2.4. Resilience
4.2.5. Relation of planning concepts to pricing
  4.2.5.1. Peak load pricing –
  4.2.5.2. Optimal capacity mix
  4.2.5.3. The peaker method and capacity market design
  4.2.5.4. Implications of zero marginal cost generation
4.3. Restructuring and PURPA
4.3.1. Restructuring & retail competition
4.3.2. PURPA
  4.3.2.1. Legislative history
  4.3.2.2. Process and issues of implementation
  4.3.2.3. The role of all-source bidding
4.4. Wholesale electric markets
4.4.1. Introduce FERC – Empowering legislation
  4.4.1.1. Jurisdiction under 205 and 206
4.4.2. ISO’s and RTO’s
  4.4.2.1. History of development
  4.4.2.2. Order 888. EPACT 1992 etc
  4.4.2.3. Scope
4.4.3. Types of products
4.4.3.1. Dispatch and the structure of day-ahead and real-time markets
4.4.3.2. Capacity markets
4.4.3.3. Ancillary Services

4.4.4. Organization of markets
4.4.4.1. Committee structure and decision process
4.4.4.2. Stakeholder decision process
4.4.4.3. Role of ISO staff
4.4.4.4. Market Oversight

4.4.5. Review of proposed ISO actions
4.4.5.1. Just and reasonable standard

4.4.6. Order 1000 – competitive procurement of transmission
4.4.7. Incentive rate of return for transmission projects

4.5. Distributed Generation

4.6. Storage
4.6.1. Pricing issues
4.6.2. Ownership

4.7. Electric Vehicles
4.7.1. Pricing issues associated with electric vehicles
4.7.2. The utility's role in EV infrastructure

5. Gas Utilities
5.1. Unique aspects of gas utilities
5.2. Planning
5.2.1. Natural gas system design the role of standards
5.2.1.1. Safety management systems
5.2.2. Gas distribution planning
5.2.3. Need for pipelines
5.2.3.1. FERC methods of determining need
5.2.4. Non-pipe alternatives
5.2.5. Renewable natural gas
5.2.6. Finance and rate treatment of gas plan

6. Water Utilities
6.1. Unique aspects of water utilities
6.1.1. Water quality: primary vs. secondary criteria
6.1.2. Very small water utilities
6.2. Planning
6.2.1. Long-term water adequacy planning
6.2.2. Water Conservation, efficiency and Non-revenue Water
6.2.3. Infrastructure Replacement and Asset Management
6.2.4. Water-Energy Nexus
6.2.5. Regulating Small Water Systems
6.2.6. Water Quality
6.2.6.1. Emerging Contaminants
6.2.6.2. Secondary Contaminants
6.2.6.3. Lead Service Lines
6.2.6.4. Algae Blooms
6.2.7. Multi-jurisdictional coordination challenges
6.2.8. System Abandonment
6.2.9. Mergers and Acquisitions
6.2.10. Single tariff pricing

7. Low and Moderate Income Ratepayers
   7.1. Utility discounts and assistance programs
   7.2. Lifeline rates

8. Demand-Side Management
   8.1. Conservation, Efficiency, & Demand Response as Alternatives to Supply
   8.2. Efficiency
      8.2.1. Cost tests for evaluating energy efficiency
      8.2.2. Rate mechanisms to eliminate disincentive to pursue energy efficiency
      8.2.3. The importance of measurement and verification
      8.2.4. Delivering efficiency: utility vs third-party provider
   8.3. Demand Response
      8.3.1. Design of mechanisms to deliver demand response
      8.3.2. FERC v. EPSA

9. Legal Foundations of Regulation
   9.1. Possible coordination with the Energy Bar Association

10. Economics of Regulation
    10.1. Incentives and utility behavior
    10.2. Peak load pricing literature

11. Safety issues