#### **Cost of Service**



NARUC Energy Regulatory Partnership Program

The Energy Regulatory Commission of the Republic of Macedonia and The Vermont Public Service Board

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### **Overview**

# Cost of service => revenue requirement Test year: period in which expenses are compared to revenues

# **Rate Case Objectives**

- Rates should reflect the cost of providing service
- Costs should include all relevant costs, private and social
- Costs should be reasonably or prudently incurred
- Costs should be used & useful

### **Revenue Requirement**

"Cost-Plus" Ratemaking Determine OPERATING INCOME at Current Rates Revenues, retail and other Expenses, including taxes Determine the RATE BASE Estimate the required COST OF CAPITAL Compute revenue deficiency or excess

# What is a "Test Year?"

12 month period used for measuring costs, loads, and revenues
Can be any 12 month period
Historical test years
Future test years
Normalized

# **Historical Test Year**

- Actual experience for an actual period
  - Actual facilities, labor costs, and taxes
- Normalizing Adjustments
- Pro forma adjustments -- "known and measurable"
  - New facilities, projected fuel & labor costs
- Implicitly assumes growth in revenues = growth in costs

# "Normalization"

"Restating adjustment" -- nonrepresentative data Adjust for unusual weather Strike during the test year Major transmission outage during the test year Major power plant refurbishment during the test year

# **Pro-Forma Changes**

\* "Known and Measurable"
Examples:

New power plant in service
Emission control system will change fuel usage
New factory built at end of test year



# **Future Test Year**

- Typically a "budgeted" year
   Future facilities, expenses
   Assume normal weather and availability
- Adjustments go well beyond "known and measurable"

Attempt to estimate actual economic environment in which the utility will operate when the rates are in place

# Which Method is Best?

- Historical method is free from manipulation
- If incremental costs close to average costs, historical method is much easier.

 Future test year more appropriate if system growing rapidly, or if incremental costs are very different from average costs

# **Cost of Service Formula**

RR = E + d + T + (V-D)rE = Operation & Maintenance Expense d = Annual Depreciation Expense T = TaxesV = Original Book Value of Plant **D** = Accumulated Depreciation (V-D = "net rate base") r = Weighted Average Cost of Capital

# **Overview of a Rate Case**

- f Income Statement
- f Balance Sheet
- f Cost of Capital
- f Revenue Deficiency / Excess
- f Cost Allocation
- f Rate Design

# **Example (Handout)**

Net Operating Income
Income Statement
Rate Base
Balance Sheet
Cost of Capital
Test Period Results

### Expenses

Principle - Does it provide material benefit to the customer? It must be reasonable and necessary to provide service Source - Books of company at end of test period Adjusted to normalize period Considerations Non-allowable expenses Annualization adjustments Normalization

#### **Expenses**

Per books expenses
Restated and normalized
Regulated / non-regulated entities
Prudence; non-allowable expenses
Pro forma changes

# **Non-Allowable Expenses**

Non-utility services Unregulated subsidiaries / parents Political Expenses - Contributions and Lobbying Charitable Expenses Costs of future services -- to be deferred and capitalized Fines / Penalties



# Depreciation

- Principle It must represent a year's value in the longevity of each class of plant
- Source Separate and complete review independent of a rate case proceeding
- Consideration
  - Often largest operating expense
    Change Technology and life span

#### **Depreciation and Amortization**

Depreciation is a non-cash expense Amortization of regulatory assets Conservation investments Regulatory expenses Matching principle Fully amortized past expenses removed New investments add new depreciation

# **Deferred Expenses**

 Differences in tax timing
 One-time losses amortized in rates over multiple years (extraordinary items)

- Investment tax credits
- Taxes on capital acquisitions immediately deductible

#### Taxes

- Principle Represents the normal taxes owed, not necessarily those paid
- Source Books of the company, kept for regulatory purposes, not tax purposes

# **Adjusting the Taxes**

- Every expense increase means lower taxes
- Every revenue increase means more taxes
- Deferred taxes/credits to be amortized
- Tax benefit of interest -- linked to rate base

# **Rate Base Formula**

Original Cost of Plant Less Accumulated Depreciation Sum of past annual depreciation expenses Plus or Minus other adjustments to rate base Customer deposits Working Capital

# **Rate Base Adjustments**

Accumulated depreciation
Working capital
Disallowed investments
Fully amortized investments
New investments



# **Cost of Capital**

Capital Structure
 Debt, Common Equity, Preferred

Equity

- Ratepayer-supplied capital
- Cost of equity capital
- Cost of debt capital
- Cost of ratepayer-supplied capital
- Overall Rate of Return

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### **Capital Rates**

Debt
Short-term, Long-term
Source: Contracts
Equity
Preferred, Common Stock
Source: Market

# **Revenue Deficiency/Excess**

Net Operating Income at Current Rates - Required Net Operating Income = Net Operating Income Deficiency (Excess)

#### Conversion Factor

Increased rates means increased taxes
Must cover NOI deficiency, taxes, revenuesensitive costs.

Divide NOI increase by conversion factor to compute revenue increase (decrease)

# From Costs to Rates

"Cost of Service" -- Allocate costs between customer classes
"Rate Design" -- Design rates within customer classes
Tariff issues -- credit, collection,

service response, etc.