

ERB and NARUC Partnership

Thursday, February 24th, 10:45 to 12:00

Overview of Rate Regulation (continued)

ERB and NARUC Partnership

Overview of Rate Regulation – Topics

1. Determining Rate Base
2. Determining Revenue Requirement
3. Companies' Data – Retention & Review
4. Price Reviews / Over Earnings Investigations
5. Ongoing Monitoring

Rate Base & Revenue Requirement

Rate Base Determination

General Definition of Rate Base - A Utility's

Rate Base is the Total Value of its Various Properties: (for an electric utility)

- Power Plants
- Transmission Lines
- Buildings
- Fuel Stocks

Rate Base & Revenue Requirement

The utility is allowed, through its rates, to collect a percentage of profit or margin on the value of its rate base. This percentage of profit or margin (called rate of return) varies, but generally averages 5 to 11 percent.

Rate Base & Revenue Requirement

Rate Base Expressed in Mathematical Terms:

Original Cost of Electric Plant in Service

- Accumulated Depreciation Reserves
- Accumulated Provision for Deferred Income Taxes (Accounts 281-283)
- Operating Reserves
- + Electric Plant Held for Future Use
- + Construction Work in Progress (if allowed)
- + Working Capital
- + Accumulated Provision for Deferred Income Taxes (Account 190)
- = **Rate Base**

Rate Base & Revenue Requirement

Rate of Return - The percentage of profit a utility may earn from its electric rates; generally, it applies only to investor-owned utilities regulated by a state agency.

Rate Base & Revenue Requirement

Mathematical Expression of Rate of Return:

$$R = RB \times r$$

Where:

R = Return

RB = Rate Base

r = Rate of Return
(a percentage)

Rate Base & Revenue Requirement

Revenue Requirement Determination

Revenue Requirements Expressed in Mathematical Terms:^[1]

$$RR = \left[\left(\frac{Tr}{1-Tr} \right) + 1 \right] * (OE + R + FITA + SITA - OR)$$

The elements that are applied in the above formula are the test year costs, plus pro forma adjustments if a historical test year is used.

^[1] Page 26, Electric Utility Cost Allocation Manual, January 1992, distributed by National Association of Regulatory Utility Commissioners

Rate Base & Revenue Requirement

Where:

RR = Total Retail Service Revenue Requirement

Tr = Revenue Tax Rate, if Applicable

OE = Operating Expenses, Excluding Income
and Revenue Taxes

R = Return

FITA = Federal Income Taxes Allowable

SITA = State Income Taxes Allowable

OR = Other Operating Revenue, Exclusive of
Revenue Taxes

Rate Base & Revenue Requirement

It is important that items that can change significantly from year-to-year be normalized in a rate case:

- Weather Normalization – Sales & Revenues
- Tax Normalization – Amortized Effects
- Other Volatile Cost of Service Items

Rate Base & Revenue Requirement

The following 6 slides provide a simplified example of the rate base and revenue calculation for an electric company.

Rate Base & Rate of Return Determination Example



For ABC Electric Company

Positive Components of Rate Base

Plant in Service

- Used and Useful Concept: Only plant currently providing or capable of providing utility service to the consuming public is allowed in rate base.
- Prudent Investment Concept: Only plant prudently purchased or constructed is allowed in rate base.
- Original Cost: The cost of such property to the person/company *first* devoting to public service.
- Time Period: End of test year approach.

Rate Base

**ABC Electric Company
Case No. XX-XXXX
Rate Base**

Total Plant In Service		
Utility Plant In Service	\$	15,000,000
Subtractions From Plant In Service		
Depreciation Reserve		4,000,000
Net Plant In Service	\$	11,000,000
Add:		
Materials and Supplies	\$	10,000
Prepayments		10,000
Total Additions To Net Plant In Service	\$	20,000
Less:		
Customer Deposits	\$	20,000
Deferred Income Taxes		1,000,000
Total Deductions To Net Plant In Service	\$	1,020,000
Total Original Cost Rate Base	\$	10,000,000

Rate of Return

ABC Electric Company

	Capital Dollars	% of Capital	Embedded Cost	Weighted Cost
Common Equity	\$400,000	40%	10.00%	4.00%
Long Term Debt	600,000	60%	9.16%	5.50%
Total Capital	\$1,000,000	100%		9.50%

Revenue Requirement

ABC Electric Company
Case No. XX-XXXX
Twelve Months Ended December 31, 2004
Revenue Requirement

Description	10.00% Equity Return
Net Original Cost Rate Base	\$ 10,000,000
Rate of Return	9.50%
Net Operating Income Requirement	\$ 950,000
Net Income Available	860,000
Additional Net Operating Income Needed Before Taxes	\$ 90,000
Income Tax Requirement	
Required Current Income Tax	\$ 36,000
Test year Current Income Tax	26,000
Additional Current Income Tax Requirement	\$ 10,000
Gross Revenue Requirement	\$ 100,000

Net Income Available

ABC Electric Company

Case No. XX-XXXX

Twelve Months Ended December 31, 2004

Account	Description	Total Company	Seperations Factor	Adjustments	Adjusted Jurisdictional
5001.000	Metro Area Revenues	\$ 73,000	100.000	0	\$ 73,000
5002.000	Western Region Area Revenues	187,000	100.000	0	187,000
5040.000	Special Connection Revenues	1,000	100.000	0	1,000
5060.000	Other Area Revenues	3,000	100.000	0	3,000
5081.000	Buy-Back Provision Revenues	60,000	0.000	0	-
5082.000	Industrial Off-System Revenues	618,000	0.000	229,000	229,000
5083.000	Special Access Revenue	430,000	0.000	0	-
5084.000	State Contract Revenues	800,000	100.000	0	800,000
5129.000	Other Private Network Revenues	3,000	100.000	0	3,000
5230.000	Directory Revenue	78,000	100.000	0	78,000
5264.000	Other Incidetal Regulated Rev	52,000	100.000	0	52,000
5270.000	Billing & Collection Revenue	20,000	50.000	0	20,000
5301.000	Uncollectibles	4,000	50.000	0	4,000
				0	
	Total Revenue	\$2,329,000		\$ 229,000	\$ 1,450,000
	Total Plant Specific Operations Expense	\$ 322,000	56.000	0	\$ 180,320
	Total Plant Non-Specific Operations	115,000	62.000	0	71,300
	Total Customer Operations Expenses	87,000	60.000	0	52,200
	Total Corporate Operations Expense	225,000	59.500	0	133,875
	Total Operating Expense	\$ 749,000		0	\$ 437,695
6561.000	Depreciation	\$ 165,000	55.800	0	\$ 92,070
7240.000	Operating Other Taxes	48,000	71.322	0	34,235
	Net Income Before Taxes	\$1,367,000			\$ 886,000
	Current Income Taxes	\$ 36,142	71.940		\$ 26,000
	Net Operating Income	\$1,330,858			\$ 860,000

Data Requirements

Data Collection Needs – A significant amount of data needs to be tracked and supplied by the utility.

Data Requirements

Data For Embedded Costs Relies On:

- Company's Historical Records or
- Projections of These Records
- Need to be Able to Audit for Accuracy

Data Requirements

Data required for an audit is extensive and requires an organized effort by the utility to retain in sufficient detail to be useful.

Having accounting standards in place that detail where different accounting items are to be tracked will greatly simplify this process.

Data Requirements

An area of data retention for purposes of future analysis that is sometimes neglected is the need to track data necessary to perform class costs of service studies (CCOS) and rate design.

Make sure this data is being tracked as well – your CCOS and rate design analysts will need this information to establish fair and reasonable rates!

Rate Structures/Methodologies

Class Costs of Service Analysis

Cost of service studies are among the basic tools of ratemaking and are used by regulators for the following purposes:

→ To attribute costs to different categories of customers based on how those customers cause costs to be incurred.

Rate Structures/Methodologies

- To determine how costs will be recovered from customers within each customer class.
- To calculate costs of individual types of service based on the costs each service requires the utility to expend.

Rate Structures/Methodologies

- To determine the revenue requirement for the monopoly services offered by a utility operating in both monopolistic and competitive markets.
- To separate costs between different regulatory jurisdictions.

Rate Structures/Methodologies

Generally, the main purpose of cost of service studies is to aid in the design of rates. The development of rates for a utility may be divided into four basic steps.

→ Development of test period revenue requirements.

Rate Structures/Methodologies

- Calculation of the test period revenue requirement to be recovered through rates.
- The cost allocation procedure
- The design of rates

Rate Structures/Methodologies

The cost of service study for an electric utility generally includes the following efforts:

- Functionalization
- Classification
- Allocation of Costs

Rate Structures/Methodologies

Functionalization:

Involves categorizing accounts by the type of function with which an account is associated. Accounts are categorized as being related to Production, Transmission, Distribution, Customer Accounts, Administrative and General, etc.

Rate Structures/Methodologies

Classification:

Involves designating different classes as: customers (related to the number of customers), demand (related to the portion of peak usage), commodity (related to annual energy consumption), or “other” costs, depending on the function that they are associated with.

Rate Structures/Methodologies

Allocation of Costs:

Involves choosing allocation factors that will allocate a reasonable share of jurisdictional costs to each customer class.

Rate Structures/Methodologies

Customers are categorized and charged by type of rate classification. These may include:

- Residential
- Commercial
- Industrial
- Public Street & Highway Lighting
- Public Authorities
- Railroads

Rate Structures/Methodologies

Why Customer Groups are Classified In This Manner?

- Collect Revenues From Appropriate Customers
 - Varies by Customer Usage Levels
 - Varies by Customer Usage Patterns
- Groups customers in appropriate “classes” for purpose of designing rates.

Rate Structures/Methodologies

Once the customer classes to be used in the cost allocation study have been designated, the functionalized and classified costs are allocated among the classes as:

- Demand-Related Costs
- Energy-Related Costs
- Customer-Related Costs

Rate Structures/Methodologies

Demand-Related Costs:

Allocated among the customer classes on the basis of demands (KW) imposed on the system during specific peak hours.

Rate Structures/Methodologies

Energy-Related Costs:

Allocated among the customer classes on the basis of energy (KWH) which the system must supply to serve the customers.

Rate Structures/Methodologies

Customer-Related Costs:

Allocated among the customer classes on the basis of the number of customers or the weighted number of customers. Normally, weighting the number of customers in the various classes is based on an analysis of the relative levels of customer-related costs (service lines, meters, meter reading, billing, etc.) per customer.

Price / Over Earnings Reviews

Over earnings investigations are typically triggered by evidence that a utility is potentially earning a profit level that is inappropriate for a monopoly to receive.

- Rate Cases Typically Triggered by Utility Filing
- Earnings Complaint Cases Typically Triggered by Commission Staff or Consumer Advocate Filing

Price / Over Earnings Reviews

Beyond the fact that they are filed by different parties and the outcome can be a reduction in rates vs. an increase, the type of auditing and analysis is similar between a rate case and an over earnings case.

One significant difference is the burden of proof:

Rate Case → Company Burden to Justify

Complaint Case → Staff/OPC Burden to Justify

Ongoing Monitoring

After rates have been set in a rate or earnings complaint case it is necessary to monitor the company:

- To Be Aware of Earnings / Losses
 - Major New Financing / Capital Structure / D&E %s
- To Be Aware of Any Restructuring
 - Affiliated Transactions / Non-Regulated Ventures
- To Be Aware of Any Issues In Other States
- To Be Aware of Evolving Issues & Impacts