Rate Case Process and Rate-Based Ratemaking







Public Utilities Commission

Why Ratemaking? The obvious....

- Cost recovery for investments
- Risk minimization
- Hedging against outside fluctuations
- Economic development

Growth

- Economic growth is directly related to electric growth
- Energy is a key input to economic growth
- Energy demand and GNP have a direct correlation – both have grown over 60% in the past 25 years
- Low-cost reliable electric power is the key to economic well-being

Why Ratemaking? Maybe the "not so obvious"...

- Ohio has reinstituted "integrated resource planning"
- within resource planning, environmental compliance is addressed
- from an accepted resource plan flows forecasting modeling resource analysis and fuel mix analysis
- all of the above will allow for a rate case proceeding

State Regulatory Commissions

- Price
- Risk
- Reliability

Generation – Physical availability

Transmission – Being able to deliver

Environmental Performance

Initiating a Rate Case

Why?

• By a company to obtain more revenue; by a customer through a complaint case; or by the PUCO through a Commission Ordered Investigation (COI)

How?

- Company makes a Pre-Filing Notice (PFN) and informs mayors and legislative bodies 30 days before filing the full application at the Commission
- Application filed no earlier than 30 days after the PFN Company has the burden of proof in the request for an increase in rates
- Company files work papers, testimony and a set of proposed rates
- Company publishes notice once a week for 2 weeks in newspapers

Rate Case Steps

 Staff investigates the company's expenses, revenues and investment

- **Revenue Requirement** the amount of money that allows the company to cover expenses and earn a fair return on investment
- Rate Design how the revenue be collected from the various classes (residential, commercial, industrial) and based upon cost-of-service (i.e. the charge levied against a customer is proportional to the expense of service to the customer)

Rate Case Procedure

- Staff Report is filed usually within 5 months of the application. (not a statutory timeline)
- Objections to the Staff report must be filed within 30 days. (supported by testimony)
- Objections & Testimony frame the issues if not objected to, then Staff report carries the burden

The Parties to a Rate Case

- The Attorney General's office represents the PUCO Staff in the hearing and /or negotiations
- Office of Consumer's Counsel (state agency representing residential consumers)
- Commercial customers
- Industrial customers



Rate Case Hearings

Publish notice of upcoming hearings

• Two types of hearings:

- 1. **Public Hearing:** the public gets to hear about the proposed rate change an make comments. Public hearings are held in the communities affected by the application.
- 2. Evidentiary Hearing: an attorney examiner presides and witnesses testify to support their positions and are subject to cross-examination from other parties. PUCO staff testify at the evidentiary hearing in support of the staff report.

After the Hearings

- Parties file **briefs** with the Commission within a time established by the PUCO attorney examiner. Usually file initial briefs and reply briefs.
- PUCO attorney examiner writes an order and circulates it to the Commissioners. The Commissioners provide input and vote on the order at a commission meeting.
 PUCO Order is issued within 275 days of the application filing otherwise the company can put requested rates into effect subject to refund.
- Applications for Rehearing must be filed within 30 days. Any issue appealed to the Ohio Supreme Court must be raised in the application for rehearing

Appeal of Commission Order

- Appealing party must file a **notice of appeal** with the Ohio Supreme Court within 60 days of the date of denial of the application for rehearing by the Commission.
- No deadline in which the Court must act; however, the Court must hear PUCO appeals. Most appeals to the Ohio Supreme Court are discretionary – the court chooses what it will hear.
- Court can affirm/agree with the Commission order. Court can reverse the PUCO decision. Court can reverse and remand to the Commission

Rate Case Timeline

- Month 1 Commission accepts the filing/application within 30 days, establishes test year & Staff investigation begins
- Month 5 Staff Report filed
- Month 6 Objections to Staff report filed within 30 days (with supporting testimony)
- Months 7 & 8 Local public hearing & evidentiary hearing completed
- Briefs filed
- Month 9 Commission issues decision (275 days)
- Applications for Rehearing before Commission
- Appeal to Ohio Supreme Court



Why Regulation?

- Electricity has historically been considered a "natural monopoly."
- Entry into this market required huge investments in infrastructure.
- Electricity was considered a "public good."
- Very few people could make the investment to get into the electric business and those who did could take advantage of the monopoly.

Company Submission

- Rate Base
- Income Statement
- Cost of Capital
- Required Total Revenues
- Class Cost of Service Study
- Rate Design and Tariff Changes
- Testimony/Explanation of Schedules

Application For Establishment or Change in Rate

If the application is for an increase in rates it shall also contain:

- A report of property that is used and useful in providing utility service;
- A complete operating statement of its last fiscal year, showing in detail all its receipts, revenues, and incomes from all sources, all of its operating costs and other expenditures, and any analysis such public utility deems applicable to the matter referred to in said application;
- A statement of the income and expense anticipated under the application filed;
- A statement of financial condition summarizing assets, liabilities, and net worth;
- A proposed notice for newspaper publication fully disclosing the substance of the application;
- Such other information as the commission may require in its discretion

Parties to a Rate Case

- The Attorney General's office represents the Staff in the hearing and /or negotiations
- Office of Consumer's Counsel (state agency representing residential consumers)
- Commercial customers
- Industrial customers
- Cities

Rate Case Steps

- Staff investigates the company's expenses, revenues and investment
 - Revenue Requirement the amount of money that allows the company to cover expenses and earn a fair return on investment
 - Rate Design how the revenue will be collected from the various classes? – residential, commercial, industrial. Based upon cost-of-service – the charge levied against a customer are proportional to the expense of service the customer

Uniform System of Accounts for Electric Companies

- Electric light companies are required to keep their books of accounts and records in accordance with the uniform system of accounts prescribed by the Federal Energy Regulatory Commission (FERC).
- The Public Utilities Commission of Ohio reserves the right to require the creation and maintenance of additional accounts to cover the accounting procedures of electric light companies operating within the state of Ohio.

Staff Investigation

Time Prior to Application Being Filed:

- Develop an <u>overall</u> understanding of the applicant's operations and financial position and a <u>general</u> understanding of the applicant's industry.
- Develop a <u>specific</u> familiarity with the applicant and to develop an understanding of :
 - The prior rate case issues
 - The staff's treatment of the prior issues
 - Commission rulings on these prior issue

FIRST, the "total" revenue requirement for a utility is determined;

- THEN, the revenue requirement for individual classes of customers (i.e. Residential, Commercial, Industrial and "other" – street and traffic lighting) must be determined; and,
- THIRD, rates must be designed such that each class pays for its own costs.

The total revenue received from all the classes equals the total revenue requirement. The most important step in determining the revenue distribution between and among the classes and in developing rates is the cost of service study.

Revenue Requirement Formula

In determining the total revenues a utility should receive through electric service rates, the PUCO, by law, uses the following general formula:

Revenue Requirement

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Expenses + Depreciation + Taxes + (rate of return X Rate Base)

Setting Base Rates

Operating Income

Base Revenues Fuel Revenues Misc. Revenues

Total Revenues

Operation and Maintenance Exp. Depreciation Exp. Tax Expense

Total Operating Expenses

Total Operating Income

Rate Base

Plant in Service Less: Depreciation Reserve

Net Plant in Service

C.W.I.P. Working Capital Cash Materials and Supplies Fuel Other Rate Base Items

Rate Base

The Commission computes the gross annual revenues to which a utility is entitled by adding the dollar amount of a fair and reasonable rate of return on the valuation of its property to the cost of rendering the public service for the test period.

METHODS OF COMPUTING AN AUTHORIZED RETURN ON EQUITY

Constant Growth Discounted Cash Flow (DCF) Model

$\mathbf{E}(\mathbf{r}) = (\mathbf{D}_1 / \mathbf{P}_0) + \mathbf{g}$

- E(r) = expected return, cost of equity capital
- D_1 = Dividend at the end of period one
- P_o = current stock price
- g = expected growth rate

Non-Constant Growth Discounted Cash Flow Model

$$P_{o} = D_{1}/(1+E(r)) + D_{2}/(1+E(r))^{2} + ...$$

...+ $D_{n}/(1+E(r))^{n} + P_{n}/(1+E(r))^{n}$

- E(r) = expected return, cost of equity capital
- D_1 = dividend at the end of period one
- P_o = current stock price
- P_n = expected stock price in year n, or P_n = ((D_n(1+g))/(E(r)-g)) if the growth rate beyond year n is expected to be constant
- g = expected growth rate

Capital Asset Pricing Model (CAPM)

$$\mathbf{E}(\mathbf{r}) = \mathbf{R}_{\mathrm{f}} + \boldsymbol{\beta}(\mathbf{R}_{\mathrm{m}} - \mathbf{R}_{\mathrm{f}})$$

• E(r) = the expected return, cost of equity capital

- R_f = the risk free rate
- R_m = the required rate of return on the overall market
- β = the beta risk measurement.

Risk Premium Method

$$\mathbf{E}(\mathbf{r}) = \mathbf{R}_{\mathbf{f}} + \mathbf{R}_{\mathbf{p}}$$

- E(r) = expected return, cost of equity capital
- R_f = Risk Free Rate
- $R_p = Risk Premium$

Basic Sources

Utilities accounting records

- Plant investment data
- Detailed property records
- Balance sheets
- Operating expenses
- Performance of generating units
- Load research
- System maps

Operating results for a particular 12-month period

Normalization

Key terms

Test period = unless otherwise ordered by the Commission, the *test period* shall be the 12-month period beginning the six months prior to the date the application is filed and ending six months subsequent to that date. In no event shall the test period end more than nine months subsequent to the date the application is filed. The revenues and expenses of the utility shall be determined for the test period.

Date Certain = the *date certain* shall fall within the test period, but be no later than the date of the application. The valuation of the used and useful property of the public utility shall be determined as of the date certain.

Key terms

Expenses = the day-to-day costs of providing customers with electricity. Expenses generally include operation and maintenance expenses (e.g. fuel, labor) and administrative and customer-service-related expenses. Depreciation and taxes are also "expenses," but are generally broken out separately in the revenue requirement calculation.

Rate Base = the amount of money invested in plants and equipment needed to supply electricity, and a working capital allowance. Rate base items generally include Gross Plant (plant = production, transmission, distribution and general facilities and equipment), the Accumulated Depreciation on those facilities and equipment, Construction Work In Process (CWIP) and Working Capital.

Key terms

Return on Rate Base = the amount of money needed to cover the cost of funds invested in rate base.

Revenues = the amount of money the utility receives from charging the approved rates.

Net Operating Income = Rate Base X rate of return

Gross Revenue Conversion Factor (GRCF) = The factor which shows the relationship between increases in revenue and expenses used in order to calculate the corresponding increase in "expenses" (primarily due to tax effects) due to an increase in "revenues."

The Cost of Service Study (COSS)

- Provides cost information that allows the rate analyst to allocate costs to the various classes of customers.
- Provides cost information that is functionalized, classified, and allocated to various customer classes for a particular utility company.
- The schedule should an be account by account detail of all expenses and revenues over the twelve-month test year period

Purpose of Cost Studies

- Attribute costs to different categories of customers based on how those customers cause costs to be incurred
- Determine how costs will be recovered from customers within each class
- Calculate costs of individual types of service based on the costs each service requires to utility to expend
- Determine revenue requirement for the services offered
- Separate costs between different regulatory jurisdictions

Functionalization

Costs are functionally separated into:

- Production related
- Transmission related
- Distribution related

Production Costs

Costs related to the production of electricity such as

- the electric generating plant in service
- variable costs such as
 - □ fuel
 - operation and
 - Maintenance
- Can also include purchase of power (wholesale)
- And delivery INTO the bulk system
 - at the bus-bars of the power stations
 - interconnection points





Transmission Costs

• Predominantly fixed costs



- Does not vary with the quantity of energy transmitted
- Associated with the transmitting of the energy from the generating plant to the distribution facilities
- Transmission of power to and from interconnected utilities
- Transfer of power from one geographical location to another, various regions or load centers



Distribution Costs

- Costs associated with plant, equipment, maintenance and operation required to move the energy from the transmission system to the customer's premises.
- Affected primarily by demand and number of customers



Classification

Once the costs are functionalized, they can then be classified into Demand, Energy, and Customer related costs.

Service characteristics

- Demand usage
- Energy consumption
- Number of customers

Demand Costs

- Demand costs are generally the fixed costs related to plant in service.
- Rate base and expense items –related to PEAK USAGE of electric power
- Basis of demand (KW) imposed on the system during specific peak hours
- Most generation and transmission supply facilities fall into this category
- Demand costs are generally allocated to various customer classes based on the coincident demand of the class during the utility system peak period.
- This could be anything from a 1 C.P. (coincident peak) to a 12 C.P., depending on the operating characteristics of the utility company

Energy Costs

- Energy costs are generally variable costs.
- Allocated among customer classes on the basis of energy (KWH) which the system must supply to serve the customers.
- Rate base and expense items related to total kilowatthours consumed during a period of time.
- Fuel and operation/maintenance.
- Energy costs are allocated to the various classes based on each class' energy usage compared to the total energy usage from all classes.
- For example, if Residential customers use 33% of the total energy consumed then the residential class will be assigned 33% of all energy related expenses.

Customer Costs

- Customer costs are generally fixed
- Customer costs are allocated to the various classes based on the number of customers in those classes.
- Directly related to an individual customer taking service from the utility, such as meter expense or service drop





Typical Cost Classifications

Typical Cost Function

• Production

• Transmission

• Distribution

Customer Service

Typical Cost Classification

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

Allocation

Once the costs are classified they can then be allocated to the various customer classes such as Residential, Commercial, Industrial, and Other.







Rate Design

- Once all costs have been allocated to the classes you can design rates for the classes.
- Each customer class generally has several different rate schedules in an attempt to provide appropriate rate designs to meet individual customer characteristics.
- Each rate schedule can have a separate rate for Customer, Demand and Energy
- Not all rate schedules have all three rate components. If there is not a separate demand charge, the demand costs are likely included in the energy charge. Often, Residential and Small Commercial schedules are designed this way, since such customers generally have inexpensive kWh-only metering.

Customer Charge

The customer charge is determined by taking the amount of customer-related costs that were allocated to this class and dividing the amount by the number of customers in the class.

- ✓ \$100,000 of customer-related costs
- ✓ class of 100 customers

 ✓ divide the \$100,000 by the 100 customers and then divide by 12 to get a monthly customer charge. ((\$100,000/100)/12) = \$83.33

Demand Charge

- The demand charge is calculated by dividing the total demand related costs allocated to a class by the total class demand (kW).
- Rates may be "blocked" (different rates for different blocks of demand) to reflect variations in costs due to a customer's demand pattern.

Energy Charge

- The energy charge is calculated by dividing the total energy related costs allocated to a class by the total kWh's used by that class.
- Rates may also be "blocked" (different rates for different blocks of usage) to reflect variations in costs due to a customer's usage patterns.

A typical tariff schedule will look like :

Schedule A

Customer Charge	\$83.33/mo.
 Demand Charge 	
• First 50 kW/kW	\$10.00
• Over 50 kW/kW	\$8.00
 Energy Charge 	
• First 1,000 kWh/	kWh \$ 0.085
• Next 1,000 kWh/	kWh \$ 0.045
• Over 2,000 kWh	/kWh \$ 0.025

While it is practical to design rates as described above, other criteria must be considered

Some other non-cost causation generally accepted principles of rate design are:

- gradualism
- continuity
- resulting customer bills
- ease of understanding

Rate Design

- Base rates typically include a fixed component and a variable component
- Historically, the fixed component was small relative to the variable component.
- Ohio has recently moved away from this approach and replaced it with a "Straight Fixed Variable" rate design in gas cases.

Straight Fixed Variable (SFV) Rates

- Under SFV, all distribution costs (base rates) are recovered in the fixed component. There is no variable charge.
- SFV recognizes that an LDCs distribution costs do not vary with volumes.
- Under SFV, all residential customers pay the same for distribution service. No more subsidies from high-use to low-use customers

"Regulation is an art, not a science."

"All regulation is incentive regulation."

Rate of Return Regulation

- Prices set to generate allowed rate of return
- Used and useful plant
- Reasonable earnings
- Earnings stability
- Prices and revenues tied to cost of production/delivery
- Consumers bear risk
- Limited incentives for exceptional performance

Rate of Return Regulation

- Prices are set to generate a rate of return
- Utility allowed reasonable earnings
- Prices are linked to costs
- Departure from earnings trigger regulatory reviews
- Pass-through mechanisms used for variable expenses, such as fuel

Positive Attributes of Rate of Return

- Prices are reflective of costs
- Utility provided revenue stability
- Prevents against excessive over- and under- earnings
- Customer provided rate certainty
- Potential for cost containment with regulatory timing "lag"

Some Problems...

- Information intensive
- Subjective
- Contentious and costly proceedings
- They may also be frequent
- Cross subsidies can occur

And Potential Disadvantages

- If rate of return is not equal to the actual cost of capital, can lead to over- or under- investment
- When pass-through mechanisms are utilized for operating costs, price risk hedging is not needed or used
- Nor are there rewards for cost containment
- Consumer bears the risk
- No incentives for good performance
- Investment decisions may be perverted
- Long run cost reductions minimal
- Short-run costs reductions favorable to utility, a "reward" due to regulatory "lag"