



# **U.S REGULATORY ACCOUNTING SYSTEMS IN PRACTICE**

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# HOW IS REGULATORY ACCOUNTING USED?

- In order to determine reasonableness of charges
- Form basis to allocate costs used in determination of rates
- Assessments of financial strength
- Examine new investments and measure impacts to existing services



# WHAT IS A UNIFORM SYSTEM OF ACCOUNTS?

- Accounting system established by a regulatory body
- consistency across industries/regulated companies
- Mandatory
- Prescribes accounting treatment for consistent reporting



# WHAT IS A UNIFORM SYSTEM OF ACCOUNTS?

- Must be information basis for the utility's financial information as reported to the regulatory body
- Does not need to be used as the company's primary accounting system for other accounting reporting



# PURPOSE OF A USoA

- Consistent reporting
- Stability in reporting
- Enables valid year-to-year comparisons
- Enables valid company-to-company comparisons
- Reflects stable, recurring data



## PURPOSE OF USoA (cont'd)

- Groups related transactions for the regulated industry
- Changes for new accounting standards
- Changes dictated by regulatory environment
- Underlying basis mostly remains “Generally-Accepted Accounting Principals” (GAAP)



# CONTENT OF USoA

- Definitions
- Accounting Instructions
- Listing of Accounts
  - Account Numbers
  - Account Titles
  - Instructions on recording transactions and description of the types of transactions to be recorded in the account



# DEFINITION EXAMPLE

- *Cost of Removal*

“means the cost of demolishing, dismantling, tearing down or otherwise removing electric plant, including the cost of transportation and handling incidental thereto. It does not include the cost of removal activities associated with asset retirement obligations that are capitalized as part of the tangible long-lived assets that give rise to the obligation.

(See General Instruction 25) “

***[18 C.F.R. Part 101, UNIFORM SYSTEM OF ACCOUNTS PRESCRIBED FOR PUBLIC UTILITIES AND LICENSEES SUBJECT TO THE PROVISIONS OF THE FEDERAL POWER ACT]***





# INSTRUCTION EXAMPLE

- “Operating Expense Instructions

1. *Supervision and Engineering (Major Utilities).*

The supervision and engineering includible in the operating expense accounts shall consist of the pay and expenses of superintendents, engineers, clerks, other employees and consultants engaged in supervising and directing the operation and maintenance of each utility function. Wherever allocations are necessary in order to arrive at the amount to be included in any account, the method and basis of allocation shall be reflected by underlying records.”



# ACCOUNT DESCRIPTION EXAMPLE

## *Operating Revenue Accounts 440 Residential Sales:*

- A. This account shall include the net billing for electricity supplied for residential or domestic purposes.*
- B. Records shall be maintained so that the quantity of electricity sold and the revenue received under each rate schedule shall be readily available.*
  - Note: When electricity supplied through a single meter is used for both residential and commercial purposes, the total revenue shall be included in this account, or account 442, Commercial and Industrial Sales, according to the rate schedule which is applied. If the same rate schedules apply to residential as to commercial and industrial service, classification shall be made according to principal use.*



# ACCOUNT NUMBERING\*

- 100-199 Assets and other debits
- 200–299 Liabilities and other credits
- 300–399 Plant accounts
- 400–432, 434–435 Income accounts

\*FERC Uniform System of Accounts for Public Utilities and Licensees

Subject to the Provisions of the Federal Power Act (electric); (gas similar)



# ACCOUNT NUMBERING

- 433, 436–439 Retained earnings accounts
- 440–459 Revenue accounts
- 500–599 Production, transmission and distribution expenses
- 900–949 Customer accounts, customer service and informational, sales, and general and administrative expenses



# MISCELLANEOUS BALANCE SHEET ACCOUNTS

- Current Assets
  - Cash and equivalents
  - Receivables
  - Allowance for Doubtful Accounts
  - Materials and Supplies
  - Prepayments
  - Other Current Assets



# MISCELLANEOUS BALANCE SHEET ACCOUNTS

- Non Current Assets
  - Non regulated Investments
  - Other Non-current Assets
  - Deferred Charges
  - Other



# LIABILITIES AND OTHER CREDITS

- Proprietary capital
  - Common stock, Preferred stock, Retained earnings
- Long-term debt
  - Bonds, Advances from associated companies
- Other non-current liabilities
  - Obligations under capital lease, Rate refunds, Asset retirement obligations
- Current and accrued liabilities
  - Notes payable, Accounts payable, Customer deposits, Taxes accrued, Interest accrued, Declared dividends
- Deferred credits
  - Other regulatory liabilities, Accumulated deferred investment tax credits





# PLANT ACCOUNTS

- Organization  
(Summary Account)
- Franchises and Consents
- Miscellaneous intangible plant
- Production plant
- Land and land rights
- Structures and improvements
- Etc., etc., etc.





# PLANT IN SERVICE

## General Plant:

- Land and land rights
- Structures and improvements
- Office furniture and equipment
- Transportation equipment
- Stores equipment
- Tools, shop and garage equipment
- Laboratory equipment
- Power operated equipment
- Communication equipment
- Miscellaneous equipment
- Other tangible property



# ASSETS AND OTHER DEBITS

## Utility Plant

- 101 Electric plant in service (Major only).
- 101.1 Property under capital leases.
- 102 Electric plant purchased or sold.
- 103 Experimental electric plant unclassified (Major only).
- 103.1 Electric plant in process of reclassification (Nonmajor only).
- 104 Electric plant leased to others.
- 105 Electric plant held for future use.
- 106 Completed construction not classified—Electric (Major only).
- 107 Construction work in progress—Electric.



# ASSETS AND OTHER DEBITS

## (continued)

- 108 Accumulated provision for depreciation of electric utility plant (Major only).
- 109 [Reserved]
- 110 Accumulated provision for depreciation and amortization of electric utility plant (Nonmajor only).
- 111 Accumulated provision for amortization of electric utility plant (Major only).
- 112–113 [Reserved]
- 114 Electric plant acquisition adjustments.
- 115 Accumulated provision for amortization of electric plant acquisition adjustments (Major only).
- 116 Other electric plant adjustments.



# ASSETS AND OTHER DEBITS (continued)

- 118 Other utility plant.
- 119 Accumulated provision for depreciation and amortization of other utility plant.
- 120.1 Nuclear fuel in process of refinement, conversion, enrichment and fabrication (Major only).
- 120.2 Nuclear fuel materials and assemblies—Stock account (Major only).
- 120.3 Nuclear fuel assemblies in reactor (Major only).
- 120.4 Spent nuclear fuel (Major only).
- 120.5 Accumulated provision for amortization of nuclear fuel assemblies (Major only).
- 120.6 Nuclear fuel under capital leases (Major only)



# ASSETS AND OTHER DEBITS (continued)

- Other property and investments
  - Non-utility property, Investment in associated or subsidiary companies, Depreciation fund
- Current and accrued assets
  - Cash and working funds, Notes receivable, Fuel stock
- Deferred debits
  - Unamortized debt expense, Extraordinary property losses, Other regulatory assets



# PLANT ACCOUNT INSTRUCTIONS

- Do not include the cost of plant contributed to the company.
- Plant is recorded at original cost.
- Plant cost includes *allowance for funds used during construction* (AFUDC) which provides for the cost of financing the plant construction.



# AFUDC

- Net cost of borrowed funds during construction
  - Used for construction purposes
  - Reasonable rate on those funds
  - Not to exceed allowances prescribed in formula





# AFUDC Formula

- $A_i = s(S/W) + d(D/D + P + C)(1 - S/W)$
- $A_e = [1 - S/W][p(P/D + P + C) + c(C/D + P + C)]$ 
  - $A_i$  = Gross allowance for borrowed funds used during construction rate.
  - $A_e$  = Allowance for other funds used during construction rate.
  - $S$  = Average short-term debt.
  - $s$  = Short-term debt interest rate.
  - $D$  = Long-term debt.
  - $d$  = Long-term debt interest rate.
  - $P$  = Preferred stock.
  - $p$  = Preferred stock cost rate.
  - $C$  = Common equity.
  - $c$  = Common equity cost rate.
  - $W$  = Average balance in construction work in progress plus nuclear fuel in process of refinement, conversion, enrichment and fabrication, less asset retirement costs (See General Instruction 25) related to plant under construction.





# ACCUMULATED DEPRECIATION AND AMORTIZATION

- Accumulated Depreciation
- Accumulated Depreciation – Held for Future Use
- Accumulated Depreciation – Non-operating
- Accumulated Amortization -- Tangible
- Accumulated Amortization – Capitalized Leases



# LIABILITIES AND STOCKHOLDERS' EQUITY

- Current Liabilities
  - Current Accounts and Notes Payable
  - Customers' Deposits
  - Income taxes – Accrued
  - Other taxes – Accrued
  - Net Current Deferred Operating Income Taxes
  - Net Current Deferred Non-operating Income Taxes
  - Other Current Liabilities



# LIABILITIES AND STOCKHOLDERS' EQUITY

- Long Term and Funded Debt
- Other Liabilities and Deferred Credits
  - Other liabilities and deferred credits
  - Unamortized operating investment tax credits
  - Unamortized non-operating investment tax credits
  - Net non-current deferred operating taxes
  - Net deferred tax liability adjustments
  - Net non-current deferred non-operating income taxes
  - Deferred tax regulatory adjustments
  - Other jurisdictional liabilities and deferred credits



# LIABILITIES AND STOCKHOLDERS' EQUITY

- Stockholders' Equity
  - Capital Stock
  - Additional Paid-in Capital
  - Treasury Stock
  - Other Capital
  - Retained Earnings



# INCOME ACCOUNTS

- Utility operating income
  - Operating revenues & expense
  - Maintenance & depreciation expense
  - Amortization of ltd.-term and other electric plant
  - Regulatory debits & credits
  - Taxes: income, utility operating income & other
  - Provisions for deferred IT & investment tax credits
  - Gains/losses from disposition of utility plant & allowances
  - Expenses of electric plant licensed to others
  - Other utility operating income



# INCOME ACCOUNTS

- Other income & deductions
  - Other income
  - Revenues from merchandising, jobbing, & contract work
  - Revenues from & expenses of non-utility operations
  - Non-operating rental, interest & dividend income
  - Gain/loss on disposition of property
  - Donations, Life insurance, Penalties
  - Other deductions
- Interest charges



# RETAINED EARNINGS ACCOUNTS

- Balance transferred from income
- Appropriations of retained earnings
- Declared dividends – common & preferred stock
- Adjustments to retained earnings



# REVENUE ACCOUNTS

- Sales of electricity
  - Residential, commercial & industrial sales
  - Street & highway lighting
  - Other sales to municipal utilities, railroads, railways
  - provisions for rate refunds
- Other operating revenues
  - Forfeited discounts
  - Revenues from transmission of electricity to others
  - Regional transmission service revenues
  - Miscellaneous revenues





# REVENUES

- Operation
  - Operation supervision and engineering
  - Fuel
  - Steam expenses
  - Electric expenses
  - Rents
  - Allowances



# REVENUES

- Maintenance
  - Maintenance supervision & engineering
  - Maintenance of structures
  - Maintenance of boiler plant
  - Maintenance of electric plant
  - Maintenance of steam plant
  - Nuclear power generation



# CUSTOMER ACCOUNTS EXPENSES

- Supervision (major only)
- Meter reading expenses
- Customer records and collection expenses
- Uncollectible accounts



# CUSTOMER SERVICE AND INFORMATIONAL EXPENSES

- Customer service & informational expenses
- Supervision
- Customer assistance expenses
- Informational & instructional advertising expenses
- Miscellaneous



# SALES EXPENSES

- Operation
  - Supervision (major)
  - Demonstrating and selling expenses
  - Advertising expenses
  - Sales expenses
  - Administrative and general expenses – salaries, office supplies, outside services, insurance, benefits, regulatory commission expenses



# OTHER ACCOUNTING CONSIDERATIONS

- Record Retention Requirements
  - Retain supporting documentation for how long?
  - For audit?
  - For regulators?
- Requirements for Level of Detail in Main Accounts and Subsidiary Records?
- Cost/Benefit of Implementation
  - Costs of implementation to system operators versus informational need for regulatory bodies?



# USoA Electric

- **4901:1-9-05 Uniform system of accounts for electric companies.**
- (A) Electric light companies subject to the jurisdiction of the public utilities commission of Ohio shall keep their books of accounts and records in accordance with the uniform system of accounts from time to time prescribed by the federal energy regulatory commission (FERC) except to the extent that the provisions of said uniform system of accounts are inconsistent in any way with the outstanding accounting orders of the public utilities commission of Ohio.
- (B) The public utilities commission of Ohio reserves to itself the right to require the creation and maintenance of such additional accounts as may hereafter be prescribed to cover the accounting procedures of electric light companies operating within the state of Ohio.
- R.C. 119.032 review dates: 10/8/2002 and 09/30/2007
- Promulgated Under: 111.15
- Statutory Authority: 4905.13
- Rule Amplifies: 4905.13
- Prior Effective Dates: 1/8/88



# USoA Gas

- **4901:1-13-13 Uniform system of accounts for gas companies.**
- (A) Natural gas companies subject to the jurisdiction of the public utilities commission of Ohio shall keep their books of accounts and records in accordance with the uniform system of accounts from time to time prescribed by the federal energy regulatory commission except to the extent that the provisions of said uniform system of accounts are inconsistent in any way with any outstanding orders of the public utilities commission of Ohio.
- (B) The public utilities commission of Ohio reserves to itself the right to require the creation and maintenance of such additional accounts as may hereafter be prescribed to cover the accounting procedures of natural gas companies operating within the state of Ohio.
- Replaces: 4901:1-13-01
- Effective: 12/07/2006
- R.C. 119.032 review dates: 09/30/2009
- Promulgated Under: 111.15
- Statutory Authority: 4905.04, 4905.06, 4905.22, 4905.28
- Rule Amplifies: 4905.13
- Prior Effective Dates: 2/1/91





# EMBEDDED COST OF SERVICE

Kim Wissman  
Executive Director, Ohio Power  
Siting Board  
Director, PUCO Energy &  
Environment Department



# 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



# 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:

$$\begin{aligned} &\text{Revenue Requirement} \\ &= \\ &\text{Expenses} + \text{Depreciation} + \\ &\text{Taxes} + (\text{rate of return} \times \text{Rate Base}) \end{aligned}$$



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.



# 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.”



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.



# 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.



## Applicant Responsibility

- The cost of service study is provided by the utility company with its rate application filings.
- The schedule should account by account detail of all expenses and revenues over the twelve-month test year period.



## Functionalization

The costs are functionally separated into

- Production related;
- Transmission related; and,
- Distribution related costs.



Some examples are:

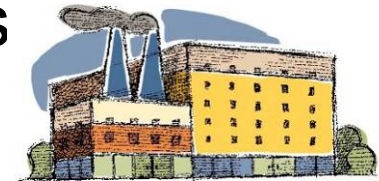
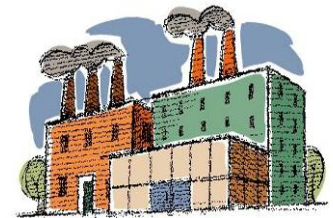
- general plant and common plant investment
  - administrative and general expenses
- 
- *No direct relationship to the service characteristics*
  - *Conveniently divided among functions*



# 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

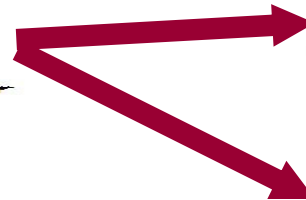
- Predominantly fixed costs
- Does not vary with the quantity of energy transmitted
- Associated with the transmitting of the energy from the generating plant to the distribution facilities
- Transmission of power to and from interconnected utilities
- Transfer of power from one geographical location 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 kilowatt-hours consumed during a period of time
- Fuel and operation/maintenance





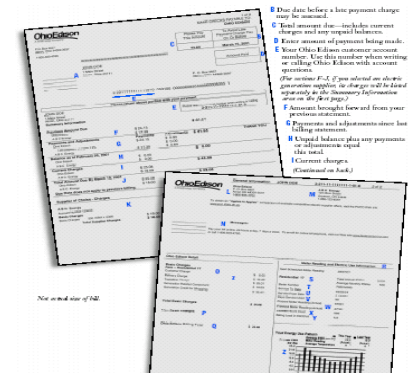
- Energy costs are allocated to the various classes based on each class' energy usage compared to the total energy usage from all classes.
- For example, if Residential customers use 33% of the total energy consumed then the residential class will be assigned 33% of all energy related expenses.





# 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-----

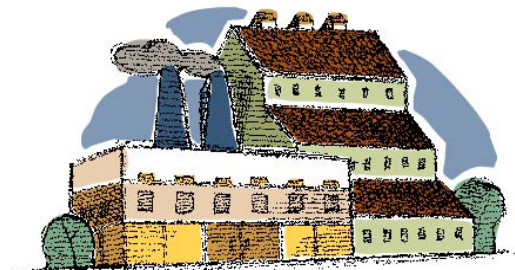
### Typical Cost Classification

- 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.





- Certain costs are directly assignable to specific customers or classes. For example, a residential customer uses a much different meter (and less expensive) than an industrial customer, therefore, the costs associated with meters are directly assigned to the appropriate classes, otherwise the residential customers (which number thousands more than industrials) would be paying a disproportionate share of meter expenses.



# 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.



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.  $((\$100,000/100)/12) = \$83.33$





- 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.





- 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 the following:

## 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



“Regulation is an art, not a science.”

