Establishing Prices

ACERCA Tariff Committee Meeting

Tegucigalpa, Honduras
August, 2010

Topics

- Cost Plus versus Price Caps
- Overview of Ratemaking Elements
  - Revenue Requirement
  - Allocating Costs to Classes
  - Rate Design
- Treatment of Losses
- Purchased Power Cost Recovery
- Quality of Service in the Establishment of Rates

Cost Plus versus Price Caps

- Policy Choice
- Cost Plus
  - May not provide incentives for efficiency
  - May be the right choice if utility is growing and putting in new investment
- Price Cap
  - Must establish a base that is then indexed or capped
  - Cost plus regulation often provides a good base to which a formula can then be applied
  - Need to periodically review the formula and/or reset the base

Establishing Total Required Revenues

	Rate Base (Regulatory Asset Base)
x	Rate of Return on Rate Base
=	Authorized Earnings (NOT Guaranteed; Opportunity to Earn)
+	Operating and Maintenance Expenses
+	Administrative and General Expenses
+	Depreciation Expense
+	Taxes
=	Total Revenues Required

Rate Base

- Summary of the asset costs required and necessary to the provision of service

- The investment base upon which the provider is permitted to earn a rate of return
  - Generally includes only those assets funded with investor money
  - Excludes customer contributed assets

Rate Base: Other Considerations

- Used and Useful
  - Should the company be allowed to earn a return before construction is completed?
  - How should the regulator recognize the fact that plant is sometimes built larger then necessary today in order to allow for future growth?
- Prudence

Rate Base Valuation Methods: Actual Cost

- Based on the actual cost at the time that the asset first went into service
- Commonly includes the cost of financing the construction or acquisition of the asset
- Requires no subjective assessment (other than prudency)

	Opening Values
+	Prudent Capital Expenditures
-	Asset Disposals or Retirements
=	Ending Asset Balance
-	Regulatory Accumulated Depreciation
=	Net Asset Balance

Rate Base Valuation Methods: Indexed Historical Cost

- Historic or Original Cost that is Adjusted by Inflation or Some Other Industry-Specific Index
- Provides a Control on Capital Expenditures
- Limits the Amount of Investment Included in Rates so May Also Limit the Amount that Management is willing to Invest

	Opening Values
+	Prudent Capital Expenditures
-	Asset Disposals or Retirements
+	Index Allowance
=	Ending Asset Balance
-	Regulatory Accumulated Depreciation
=	Net Asset Balance

Rate Base Valuation Methods: Replacement Cost

- Sum of the current cost of replacing each asset with similar assets that replicate the capacity and service levels of the existing assets
- Simply updates the cost and not the overall efficiency, capacity, etc.
- In practice, may not result in different overall revenue since the authorized rate of return may be reduced to reflect updated asset values

Rate Base Valuation Methods: Depreciated Optimized Replacement Cost

- Different from Replacement Cost in that it does take into account the inefficiencies that may be part of the current set of assets
  - Removes excess capacity, duplication, redundancy, etc.
  - Requires judgment about how to reconfigure in an optimal manner
- Must address what happens to all of the sunk costs that are no longer deemed economic or necessary

Rate Base Valuation Methods: Fair Market Value

- Sum of the prices that would be obtained from selling each of the assets in a competitive market
  - The price that a third party would pay in an arm's length transaction
    - Difficult if no active market, especially for large, specialized items
  - Sum of the prices that would be obtained from selling each of the assets in a competitive market
    - What a third party would pay in an arm's length transaction
  - Tries to value the asset on the basis of its next best use

Rate Base Example

Plant in Service
Plant Held for Future Use
Miscellaneous Deferred Debits
Plant Acquisition Adjustment
Prepayments
Fuel Inventory & Materials and Supplies
Working Capital
Other Miscellaneous Items
TOTAL RATE BASE ADDITIONS

Accumulated Provision for Depreciation
Accumulated Provision for Amortization
Accumulated Deferred Income Taxes
Customer Advances for Construction
Customer Deposits
Miscellaneous Rate Base Deductions
TOTAL RATE BASE DEDUCTIONS

Rate of Return

	Proportion of Total Capitalization	Cost or Rate	Weighted Average Cost
Debt	55%	6.5%	3.58%
Equity	45%	10%	4.5%
TOTAL	100%		8.08%

Expenses Example

Steam Production Operation
Steam Production Maintenance
Other Production Operation
Other Production Maintenance
Other Power Supply

Transmission Operations
Transmission Maintenance

Distribution Operations
Distribution Maintenance

Customer Accounting Expense
Bad Debt Expense

Administrative and General Expense

Depreciation and Amortization Expense

Taxes Other than Income
Income Taxes

TOTAL OPERATING EXPENSES

Energy Accounting

MidAmerican Energy Company				
Electric Energy Account				
December 31, 2002				
	MWH			MWH
SOURCES OF ENERGY			DISPOSITION OF ENERGY	
Generation (Coal, Gas)	18,716,878			
Steam	3,066,741		Retail Sales	18,505,770
Nuclear	15,126		Wholesale Sales	9,478
Hydro			Non-Firm Sales	8,855,063
Other	59,776		Energy Used by MidAm	24,473
Net Generation	21,858,521			
			TOTAL ENERGY LOSSES	**1,799,925**
Purchases	6,719,146			
			TOTAL	29,194,709
Net Transmission	617,042			
			Losses as a % of Total Available	**6.17%**
TOTAL	29,194,709			

Slide Information Taken from October 15, 2003 Presentation by Dan Fritz,
Energy Accounts: Tracking Flows, Sources and Dispositions of Power

Incorporating Quality into Rates

- A portion of the allowed earnings is based on operating performance of one or more specified items
- Incentive provided through increased return or revenue for good performance; decreases imposed for bad performance
- Types of items
  - Outages
  - Distribution Losses
  - Lost Work Time Accidents
  - Customer Satisfaction
  - Complaints to Regulators
  - Other

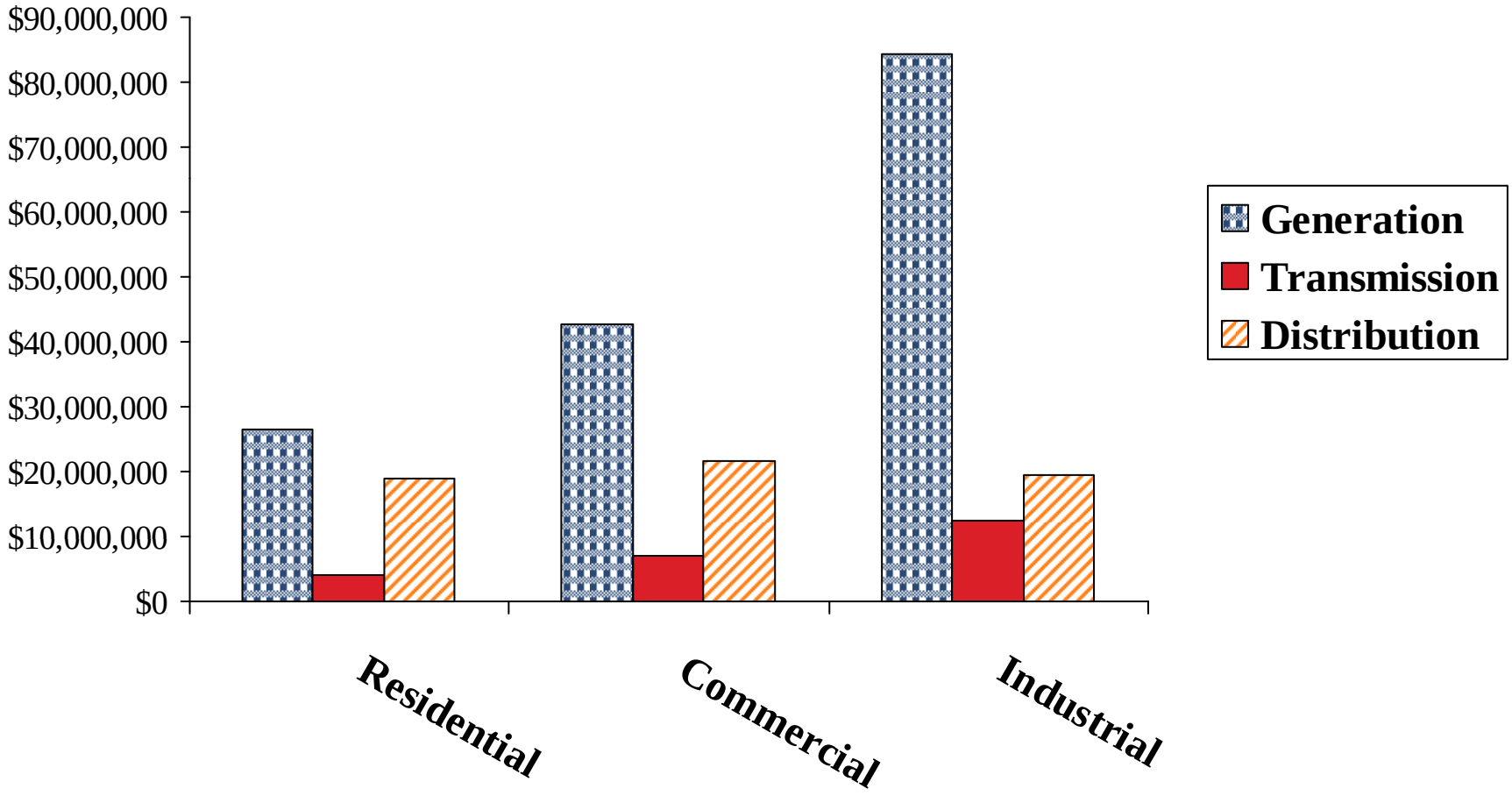
Classify Costs by Function

- Separate Generation, Transmission, Distribution Costs
  - Directly Assign Costs
    - Most costs can be directly assigned to one of the primary functions (perhaps 90% direct assignment)
- When cannot directly assign, look for causal relationship
- When no causal relationship, allocate to functions in the same proportion as the plant or investment that was directly assigned -- Example:
  - Generation Direct Assign 65%
  - Transmission Direct Assign 10%
  - Distribution Direct Assign 25%

Classify Costs Based on Cost Causation

- Demand Costs
  - Costs relate to the utility's ability to deliver its services upon demand
  - Normally measured based on a peak usage period
- Energy Costs
  - Generally varies with the amount of kWh output or the customers' consumption
- Customer Related Costs
  - Costs that are generally fixed and are related to the customer's location – not related to the amount of service actually used by or provided to the customer.
  - Generally related to services, meters, billing and collection costs

CLASSIFY COSTS



Cost Causation

- Generation
  - Plant – mix of demand and energy
  - Fuel – 100% energy
  - Wholesale Power Purchases – mix of demand and energy
- Transmission
  - Plant – mix of plant and energy (example: 75% demand/25% energy)
  - Wheeling – mix of demand and energy
- Distribution
  - Substations – Demand Allocation
  - Meters and Services – Direct Assignment (Customer cost)

Group Cost by Type of Customer

- Break into groups with each group matching one rate classification
  - Example: could have one commercial class or multiple commercial classes to recognize size differences
  - Example: industrial could be differentiated by transmission level service versus distribution level service

Group Cost by Type of Customer

- All customer classes incur all types of costs: demand, energy, and customer related (monthly service)
- Rates may not match cost categories
  - Residential customers often not billed demand component in rates (demand meters too expensive)
  - Identified demand costs may be incorporated into per unit energy charge or monthly service charge

  Residential Rate changes may be driven by installation of smart meters.

Group Cost by Tariff Schedule

Demand

- Split Demand Costs by tariff schedule based on relative demand of the customer class at the time of the system peak (coincidential demand)
- Alternatively: base on customer class' relative contribution to the sum of the noncoincidential peaks

- Energy
  - Computed by measuring relative energy (kWh) usage of the customer class as a portion of the total system annual usage
  - Differentiate the level of technical losses by class
- Customer Cost (Billed as monthly flat rate)
  - Allocations based on Weighted Customer Factors

Class Cost of Service

	Residential	Commercial
Plant in Service	9,866,070	5,180,835
Accumulated Depreciation	6,247,938	3,164,060
Net Plant in Service	3,618,132	2,016,775
Materials and Supplies	59,120	25,538
Prepayments	12,790	5,751
Deferrals	(501,276)	(195,834)
Customer Advances & Deposits	(27,393)	(17,230)
Rate Base	3,161,373	1,835,000

Class Cost of Service

	Residential	Commercial
Cost of Fuel	4,955,580	3,147,964
Operating and Maintenance	604,412	408,515
Customer Accounting	477,795	133,024
Administrative and General	460,529	200,820
Depreciation	442,603	225,721
Taxes	233,213	76,347
Total Expenses	7,174,132	4,192,391

Cost Allocation Summary

- Demand
  - Residential Cost = $5.40/KW Rate = $0
  - Commercial Cost = $11.31/KW Rate = $9.92
  - Industrial Cost = $13.28/KW Rate = $11.84
- Energy
  - Residential Cost =$.019/kWh Rate = $.05611
  - Commercial Cost = $.019/kWh Rate* = $.06411
  - Industrial Cost = $.019/kWh Rate* = $.01930
- Monthly Customer Related (per customer per month)
  - Residential Cost = $8.09 Rate = $8.89
  - Commercial Cost = $10.38 Rate* = $19.00
  - Industrial Cost = $646.76 Rate* = $1360.00

*Depends on primary or secondary voltage and single or three phase service.

Special Fuel and/or Purchased Power Tariff

- Characteristics
  - Beyond Company's Control
  - Significant Portion of Cost
  - Unpredictable with Wide Variations of Costs
- May establish a separate tariff provision to reflect changes in fuel or power costs on a frequent basis separate from the review
  - No profit allowed in rate changes
- May include an incentive or sharing provision
  - Dead band for no change
  - Specified percentage the responsibility of the shareholders

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