

Rate Modernization

Discussion of Rate Structures to Promote Alignment of Cost Causation and Revenue Responsibility

*While minimizing revenue volatility and maximizing bill stability,
under existing Fuel Adjustment Clause structures.*

Discussion of Rate Structures to Promote Alignment of Cost Causation and Revenue Responsibility

This discussion is intended to be generally applicable to all Missouri investor-owned utilities, but may not apply to the particular facts and circumstances of each regulated utility. In particular, the availability of information to reasonably design facilities charges is expected to vary. Further, the capacity position of each utility, and whether market revenues are greater than or less than the costs of operating the utility generation fleet vary by entity and over time.

The views presented in this document are those of Sarah L.K. Lange, and are not presented as reflexive of the views at this time of Staff, the Commission or of any particular Commissioner.

Definitions

- Rate Structure
 - Rate Design
 - Billing Determinants
 - Revenue Volatility
 - Bill Stability
- Cost Causation
 - Original
 - Marginal
 - Embedded
 - Net
 - Fully Allocated
 - Revenue Responsibility
 - Current Perspectives
 - Interclass
 - Intraclass
 - Shifted Perspectives
 - By time period
 - By infrastructure needs

Rate Structure and Rate Design

Rate Structure

- The elements that are billed to customers

Rate Design

- The price of elements billed to customers

Existing elements

- Customer
- Facilities
- Demand
- Hours use declining blocks
- Reactive Demand

Other options

- Time-based usage
- Time-based demand
- Critical Peak

Billing Determinants

- What units did the utility sell?
- What units did customers purchase?
- Billing months differ
- Time periods differ
- Individual demand dictates block break points for Hours' Use elements
- Is there a process available to normalize and annualize the determinant in a rate case?

Revenue Volatility and Bill Stability

Revenue Volatility

- How much variability is experienced by the utility in year to year revenue?
- Does the variability align with changes in costs?
- High fixed charges decrease revenue volatility, but do not align with changes in costs
- FAC design shifts volatility to future periods.

Bill Stability

- How much variability is experienced by a customer, year over year, in like months.
- Does the variability align with changes in costs caused?
- High fixed charges mute usage-related price signals, but promote stability.
- FAC, MEEIA, RESRAM decrease stability.

Cost Causation

- Original Costs
 - For rate base – what did the item cost to buy and install?
- Marginal Cost/Expense
 - For rate base – what would a new item cost?
 - For expense – what does the item actually cost?
- Embedded Costs
 - For rate base – what was the original cost of this sort of item, minus the accumulated depreciation reserve?
- Net Expense
 - For expense – what does the item cost, net of the revenue received from other sources for related services?
- Fully Allocated Costs/Expense
 - What did something cost, net of related revenues, plus an allocation of the costs of doing business, paying employees, and other items allowed in the revenue requirement.

Revenue Responsibility

Current Perspectives

- Interclass – First, allocate embedded costs to all classes, then Commission determines appropriate allocation of revenue responsibility.
- Intraclass – Finally, size each rate element to meet class revenue requirement by dividing ordered revenue requirement by determinants.
- Example
 - Lunch cost: \$60
 - Coupon: - \$10
 - Diners: 5
 - \$/Diner: $\$50/5 = \10

Revenue Responsibility

Shifted Perspectives

- By time period
- By infrastructure needs
- Example
 - Diner A: \$4.00 drink
 - Diner B: \$4.00 drink
 - Diner C: \$1.00 happy hour drink, \$10.00 burger and fries, BOGO coupon
 - Diner D: \$1.00 happy hour drink, \$10.00 burger and fries
 - Diner E: \$10 drink, \$20 appetizer, shared with table
 - Lunch cost: \$60
 - Coupon: - \$10
 - Diners: 5
 - \$/Diner: ???

Revenue Responsibility

- By time period
 - Energy
 - Reactive Demand
 - Resource Capacity
 - Transmission charges
 - Energy market charges
 - Network distribution requirements
- By infrastructure needs
 - Meter
 - Service drop
 - Dedicated distribution/transmission
 - Dedicated substations
- By what?
 - Market energy revenue
 - Cost for generation sold to market
 - Excess/underutilized infrastructure
 - Employee pensions and OPEBs
 - Advertising, dues and donations
 - Corporate salaries

Non-Residential Rate Structure

- Continuous Rate Design
 - All Rates Equal for All Non-Residential Customers
 - Adjusted for losses to Service Voltage level
- Elements (New ~~Eliminated~~)
 - Customer Charge
 - Facilities Charge
 - ~~• Demand Charge~~
 - ~~• Hours Use Declining Block Energy Charge~~
 - Time Based Energy Charge
 - Reactive Demand Charge
 - Critical Peak Charge

Customer Charge

Cost Causation

- Allocated cost of billing
- Allocated cost of customer service provision
- Embedded costs are the floor, Marginal costs are the ceiling.

Revenue Recovery

- Determinants is per customer, per month
 - Does not vary by class
 - Normalized/annualized using current procedures

Facilities Charge

Cost Causation

- Allocated cost of meter, service drop, line transformer, dedicated distribution/transmission/substation facilities, as applicable.
- Approach 1 – by class
 - Average costs found by class, may be stable, linear, or categorized within class
- Approach 2 – continuous rate design
 - Average costs found across range of customer sizes, per kW charge developed to fit line of average cost to kW demand
- Embedded costs are the floor, Marginal costs are the ceiling.

Revenue Recovery

- Approach 1
 - Per customer per month, OR
 - Per annual peak kW per customer per month, OR
 - Determinants for all classes not currently available,
 - Per customer, by subclass, per month,
 - Determinants not currently available.
- Approach 2
 - Across all classes, per annual peak kW per customer per month, OR
 - Determinants for all classes not currently available,
 - Across all classes, per average of three triennial peak kW per customer per month.
 - Determinants not currently available.

Time Based Energy Charge

Cost Causation

- Actuals per designated season and time period, per kWh
- Gross wholesale cost of Day Ahead market energy
- Prorated costs of other market charges
 - Most Ancillary Services
 - Capacity market, if applicable, or surrogate*
 - Transmission charges
- Time-allocated costs for shared distribution and transmission resources*

Revenue Recovery

- Per kWh, per time period
- Varies only by voltage level (constant across classes)
- *Coincident peak demand charge may be better solution for these items
 - Determinants not currently available
 - Relevant time period likely varies by season

Capacity market, if applicable, or surrogate

- Costs to be allocated to periods most corresponding to applicable capacity requirements
 - Single annual peak currently in SPP
 - Seasonal construct recently introduced in MISO
- MISO has capacity market, SPP does not
- Depending on bid strategy, full capacity requirements may not be monetized under MISO construct
- For utilities participating in SPP, or for utilities participating in MISO if full capacity requirements are not monetized, average cost of existing capacity on per-kW basis, CONE, or other measure may be used.

Time-allocated costs for shared distribution and transmission resources

- Costs allocated to time periods using method used in most recent Ameren rate case,
- Embedded costs are floor, marginal costs are ceiling,
- Difference in costs of equity and cost of debt may be used to accentuate differences in cost allocation to accommodate policy-related desires for greater rate differences between time periods.

Reactive Demand Charge

Cost Causation

- Cost of ancillary service of reactive demand provision
- Costs/Expenses of any system additions made to support voltage

Revenue Recovery

- Per kVAR, per month
 - Not current determinant for most classes

What about everything else?

Cost Causation

- Costs of owning and operating generation
- Revenues from owning and operating generation
- Employee pensions and OPEBs
- Corporate Salaries
- Difference between marginal and embedded costs from other charges

Revenue Recovery

- Net it all
- Due to operation of current FAC, assess as positive or negative per kWh charge to all classes

Critical Peak Pricing Charge and Rider

Charge Operation *EXAMPLE*

- When event is called, applicable Time-Based Energy Charge is doubled.
- Event notice will be posted through media, as well as website and any requested delivery channel (text, email).
- Events will be called if:
 - Emergency when RTO may require curtailments
 - Energy prices will be over threshold levels set in each rate case for each time period
 - For example, a summer on-peak \$/MWh in excess of \$150 for 2 or more consecutive hours

Rider Operation

- Effectively an offset to the FAC, but not part of FAC due to statutory limitations.
 - Exact carrying cost/timing procedures as FAC.
 - No sharing mechanism.

Residential Rate Structure

- Customer Charge – Same as Continuous Design
- Facilities Charge
 - May be per kW, or may be fixed based on standardized installations
- Time Based Energy Charge – Same as Continuous Design
- Reactive Demand Charge
 - If warranted after study
- Critical Peak Charge – Same as Continuous Design

Why Continuous Rate Design?

- Existing classes are an artifact of the unavailability of hourly load data.
- Existing Hours Use Rate Structures are artifact of unavailability of hourly load data.
- Existing classes are artifact of unavailability of hourly load data.
- Now we have hourly load data.
- Existing classes do not recognize the diversity of customers within classes
 - Use patterns
 - Customer-specific facilities

Other Options

- On-Peak demand charges
 - Greater bill and revenue stability, but is it too much bill and revenue stability?
 - Seasons and months are somewhat arbitrary
 - Reasonable cost recovery for production capacity revenue requirement to only to the extent production capacity is appropriate for that utility's capacity needs. CONE or other surrogate may be more appropriate.
- FAC Revision
 - Limits to flexibility under statute
- MEEIA mechanisms, Conservation mechanisms, etc
- Interim energy charges
 - On-peak price is set to reflect a reasonable estimate of the high-end of expected wholesale energy costs averaged over the applicable period.
 - Each month, actuals wholesale charges for that period are compared to actual revenues.
 - Applicable refunds are provided as bill credits to customers on the following month's bill.
 - Currently prohibited by statute if a utility has an FAC.

Next Steps

- Gather data, estimate determinants, and estimate rates
 - Study rate impacts and consider mitigations or intermediate steps
- Rate case
 - Get best data available, develop determinants, calculate rates
 - Educate customers
 - Promulgate
 - Support and bill
- Questions?