Docket No. 08I-420EG: "Customer Incentives"

Policy Area: Tiered (Inverted Block) Rate Design for Electricity

Key factors that the Commissioners should apply, when implementing this policy:

- ❖ Establish a clear objective for implementing an inverted block rate.
  - Any rate design must be "just and reasonable" [§40-3-101(1) C.R.S.]
  - The objective(s) should address the most pressing needs of the Colorado (PSCo and BH) electric systems
  - **Recommended Objectives** (elaborated below): (a) reduce the residential customer segment's contribution to peak demand; (b) encourage relatively high use residential customers to consider conservation and efficiency options

  - There is a general consensus that the Residential rate class is the most appropriate for tiered rate design. Other rates and strategies (time of use rates; interruptible tariffs; etc.) better address the unique energy and demand features of larger customers.

- ❖ When designing a tiered rate for the Residential rate class:

  - Align the service and facilities charge with the objective(s) of the rate design. This may mean limiting the service and facilities charges to the actual incremental costs associated with metering and billing

  - If the objective is to reduce residential peak demand, consider using tiered rates seasonally.
    - It has been suggested that seasonal differences in marginal capacity costs may result in a seasonally differentiated rates

  - If the objective is to reduce overall residential energy usage, then consider a year-round tiered rate.

  - Before considering a year-round tiered rate, consider the impact upon other large users, such as electrically heated homes.

- ❖ Various options exist for defining the number and size of the tiers and setting tier prices:

  - Generally match the tiers to various load factors, such as:
    - High load factor – lighting and appliances
    - Medium load factor – electric water heat
    - Low load factor – space conditioning

- Consider using the resource costs generally associated with serving the load represented by each tier (see above) as the cost basis of each tiered rate.
    - It has been suggested that the age and efficiency of the generation be the cost basis rather than load factor.

- Recognize that an inverted/tiered block rate, in conjunction with existing (kWh) metering, can not effectively communicate short-term margin costs. Thus, a more realistic objective in pricing blocks should be long-term marginal costs.

- Articulate whether an objective of a tiered rate structure is revenue neutrality, both overall and by class of customer. Given dynamic market forces and forecasting error, the first iteration of a tiered rate design is not likely to yield neutrality. Anticipate the need for adjustment, as well as the difficulty in isolating the impacts of the tiered rate from the impacts of other variables (*e.g.*, weather; economic conditions; etc.)

- When defining the blocks:
    - Consider keeping the first block fairly small, so that no ratepayer will receive all service via the first block; objective is to have customers make decisions based upon the upper block(s) price signals.
    - Establish endblock prices sufficient to encourage usage curtailment and/or energy efficiency investments.
    - Consider at most a three-block rate, with the last block targeting space conditioning (~800-1200 kWh+/month), if peak demand reduction is the objective, or a wider range for the last block (> 400 kWh) if usage reduction is the objective

- Consider whether a Critical Peak Pricing option should also be made available (if the metering is available or is relatively inexpensive to install)

- Consider managing utility earnings volatility resulting from a tiered rate design through one or more of these possible approaches:
    - A weather normalization reserve account used to offset drops in equity ratios.
    - Decoupling

- Concerning the low-income customer segment's needs, it is suggested that inverted rate design focus on its primary objectives and not attempt to also implement a low-income assistance policy. (That can be addressed separately.)

- Recognize that substantial customer education needs to accompany transition to a tiered rate and that the desired consumption changes may not occur until after such education occurs.

- Any proposal to implement a tiered rate design also needs to undergo scrutiny regarding the possible unintended consequences that may occur.

- Any proposal to implement a tiered rate design also needs to include an assessment of complementary public policy changes that would assist in achieving the objective(s). For example, if the objective is reducing residential summer peak demand, then also assess: higher minimum air conditioning efficiency standards; expanded use of "Saver Switch" type programs; other technological options to assist customers reduce peak load.

Action Steps:

- Consider initiating a Rulemaking Proceeding
- Consider directing utilities to file, in the next Phase II Electric Rate Case, a proposed tiered rate design. This proposal could be an alternative to a proposal advocated by the utility. However, as an alternative proposal, it serves as a starting point for discussion of the comparative merits of each and incorporates the insights of this docket.

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Policy Area: Low-Income Rate Assistance

Key factors that the Commissioners should apply, when implementing this policy:

- The definition of "low-income utility customer" has been set by statute [§40-3-106(d)(II)]:
    - "(A) has a household income at of below one hundred eighty-five percent of the current federal poverty level; and (B) otherwise meets the eligibility criteria set forth in rules of the Department of Human Services adopted pursuant to Section 40-8.5-105." This is the definition of eligibility used for energy assistance (LEAP) and weatherization.

- The eligibility process can be rather complex, requiring rules and procedures, and anticipating legal matters such as appeal of denials. Be sensitive to placing a workload burden upon utilities, regarding determining customer eligibility for assistance.

- Be aware of the limits to achieving low-income energy affordability (energy costs not exceeding some percent of total income), while simultaneously encouraging low-income customers to reduce their usage
    - A functional working definition of "energy affordability" is critical to this endeavor[1]. Affordability is relative and dynamic, impacted by several variables.
    - Making energy affordable literally to all may be unachievable. A reasonable objective may be to make energy more affordable and within reach of most low-income households. (Need to determine whether assistance should target the average household or the "worst case scenario.")
    - Consider focusing on affordability as it pertains to the average usage in a low-income home that has received DSM services. (See diagram.)
        - Use rate design and/or subsidization to make an average usage amount affordable
        - Use DSM services to assist low-income customers with above-average use to reduce their consumption
        - Use the price, (whether via the current rate or a tiered rate), associated with higher than average consumption levels to encourage customers to seek out DSM services and reduce elastic (discretionary) demand
        - Work in conjunction with energy assistance organizations, who can better assist above average households with affordability

[1] EOC witness Colton, in 08S-146G, defined the threshold of energy affordability as 6% of total income. This pertains to all energy sources consumed in the household.

- ❖ Simultaneously designing a new rate structure (such as tiered rates) and addressing energy affordability may yield unintended conflicts. Consider keeping these two policy objectives separate.[2]
    - Defining the first block of a tiered rate design as a "lifeline" quantity of consumption may benefit low-income customers, yet, not support the broader objectives that a tiered rate is striving to achieve.

- ❖ What is the best way to balance financial assistance with encouraging conservation and efficiency?
    - These two objectives may be at odds. Making electricity more affordable (via a discount or subsidy) communicates a price signal that could encourage increased usage.
    - Consider making the inelastic portion of low-income electric use as affordable as possible, since this portion of usage (being inelastic) should not change as the price changes. One challenge is defining the inelastic portion, generically for all low-income customers or on a customer-specific basis. (See attached diagram.)

- ❖ Premise: a portion of low-income energy assistance costs may be merited as a surcharge on all customers due to the resulting avoided costs; the balance is likely to be, in effect, a subsidy for the low-income, the cost of which is carried by other (non-low-income) customers. What is a reasonable amount of such cost shifting, with regard to 40-3-106(d)(III)?
    - §40-3-106(d)(I) states that "the Commission may approve any rate, charge, service, classification, or facility of a gas or electric utility that makes or grants a reasonable preference or advantage to low-income customers, and the implementation of such…shall not be deemed to subject any person or corporation to any prejudice, disadvantage, or undue discrimination." The operative term, for purposes of cost shifting, is "reasonable."

    - The Commission needs to balance achieving energy affordability for the low-income with the financial burden resulting for non-low-income customers.

Action Steps:

- Consider initiating Rulemaking Proceeding
- Consider directing utilities to file, in the next Phase II Electric Rate Case, a proposed low-income assistance rate/subsidy. This proposal could be an alternative to a proposal advocated by the utility. However, as an alternative proposal, it serves as a starting point for discussion of the comparative merits of each and incorporates the insights of this docket.

[2]See *Borenstein* report (*Equity Effects of Increasing-Block Electricity Pricing,* November 2008), regarding this matter. Both objectives – improving price signals and providing financial assistance to low-income via the rate structure – are substantial, and may not be achievable via one rate structure.

Conceptual Diagram:
Integrating Low-Income Energy Assistance Strategies

<table>
<tr><th></th><th></th><th>Natural Gas</th></tr>
<tr><td></td><td></td><td>Affordability Gap</td></tr>
<tr><td>Strategy</td><td>Electricity</td><td rowspan="4">Behavior/Conservation
(targeting elastic usage)

Efficiency Improvements (insulation; furnace repair/replace; leakage reduction – walls/ducts; showerheads)

Base (inelastic) Usage</td></tr>
<tr><td>Government/Non-Profit Assistance (LEAP and EOC)</td><td>Affordability Gap</td></tr>
<tr><td>Price Signal (consumption above average)</td><td>Behavior/Conservation (targeting elastic usage)</td></tr>
<tr><td>DSM (targeting elastic & inelastic use)</td><td>Efficiency Improvements (frig replaced; CFLs)</td></tr>
<tr><td>Rate Discount/ Subsidy

(targeting inelastic demand)</td><td>Base (inelastic) Usage</td><td></td></tr>
</table>

Notes:

- "Values" (relative sizes of boxes) as symbolic vs. quantitative.
- For the most part, energy assistance (LEAP) targets home heating, which is primarily natural-gas based in Colorado. (EOC assistance may address non-heat energy costs.)
- Inelastic electric usage: refrigeration; some lighting; heating system motor.
- Inelastic natural gas usage: a "base" level of home heating and water heating, (approximately 68ºF for space; 120ºF for water).
- The "Affordability Gap" is after netting out improvements due to efficiency and conservation.
- Rough averages: 1,000 therms/yr. (~$900/yr.); 7,000 kWh/yr. (~$650/yr.)

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Policy Area: Time of Use (TOU) Rates

Key factors that the Commissioners should apply, when implementing this policy:

- ❖ Defining Time of Use:
    - STATIC -rates change in blocks of time throughout the day and/or season usually consisting of a peak block and one or two shoulder blocks.
    - DYNAMIC - also referred to as Real Time Pricing (RTP), where prices change continually throughout the day to reflect the cost of generation.

- ❖ Identify the Rate Classes to Which Time of Use Rates Best Apply:
    - Industrial and Large Commercial – most comments support this rate class as being the most appropriate to have TOU applied to them as they will have the greatest incentive and ability/knowledge to adjust to frequent changes throughout the day. Applying TOU rates, even in a static format, to this group should also result in a greater reduction of capacity needs, relative to other customer classes, as their usage tends to remain more consistent throughout the normal work day and drop off at night.
    - Residential and Small Commercial - while sending the most accurate pricing information may be of value, the infrastructure costs may outweigh these benefits and residential customers may not view the additional complexities of a TOU rate as worth the potential benefits (cost savings through price-motivated conservation and/or efficiency).

- ❖ Determine Whether Time of Use Rates Should be Mandatory or Voluntary:
    - If TOU is implemented on a voluntary basis only ratepayers who benefit from altering their energy consumption will alter their behavior. Thus, the ability of the rate to yield significant conservation or efficiency will be minimized.
    - To achieve the objectives of conservation and/or efficiency and equity the rate needs to be mandatory within the targeted rate class(es).

❖ Determine the Objective(s) of a Time of Use Rate?

- All of the following are reasonable and achievable objectives for TOU:
  - Reducing Peak - seasonal or year round
  - Energy Efficiency - proper pricing signal
  - Conservation
  - Ratepayer Equity

Action Steps:

- Consider initiating a Rulemaking Proceeding
- Consider directing utilities to file, in the next Phase II Electric Rate Case, a proposed time of use rate. This proposal could be an alternative to a proposal advocated by the utility. However, as an alternative proposal, it serves as a starting point for discussion of the comparative merits of each and incorporates the insights of this docket.

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Policy Area Identified: Agricultural Use of On-Site Renewable Generation
(Customer on-site renewable energy generation, net-metering and a 3-part rate structure - customer charge; energy charge; demand charge)

Key factors that the Commissioners should apply, if implementing this policy.

Consider whether:

- the generation-to-customer load match for agricultural on-site generation and demand, usage, and service and facilities is sufficiently different from the other customers within the SG class to warrant an alternative rate structure for agricultural use of on-site renewable generation; (*e.g.*, should an agricultural class be created?)

- the agricultural customers' contribution to peak load that drives system demand is modified by on-site renewable generation during the peak load period;

- the load profile and flexibility to shed load warrants consideration of an interruptible service program for agricultural customers providing on-site renewable generation; related thereto, consider whether an interruptible service program for agricultural users with on-site renewable generation would increase or mitigate integration costs (thus providing a financial benefit to the system that could be reflected in an interruptible tariff);

- the aggregation of on-site renewable energy generation by agricultural customers assists in obtaining the policy goals identified in§ 40-2-124 (VI) relating to "community-based projects" (potentially providing renewable energy credits using a multiplier rate of 1.5 per kilowatt-hour that could be sold to the utility); related thereto, consider whether aggregation of on-site renewable energy generation by agricultural customers as part of such a project increases or mitigates integration costs;

- sufficient demand for an alternative service offering exists to warrant development and administration of such an offering; (in other words, is it practical to develop and administer such an offering for a target group of customers?);

- an alternative rate structure enables agricultural customers to take advantage of existing financial incentives.

Action Steps:

- Consider directing utilities to file, in the next Phase II Electric Rate Case, a proposed interruptible rate alternative for agricultural use of on-site renewable generation. This proposal could be an alternative to a proposal advocated by the utility. However, as an alternative proposal, it serves as a starting point for discussion of the comparative merits of each and incorporates the insights of this docket.
- Consider directing utilities file, in next RPS plan, the development of RECs for "community-based" agricultural use of on-site renewable generation.
- Consider directing utilities to devise and implement pilot projects or other studies that address the unknowns identified above.
- Encourage all parties to address this policy area through participating in the RES Rulemaking, Docket No. 08R-424E.

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Policy Area Identified: Billing: content of current bills; level of detail regarding rate adjustment factors

Key factors that the Commissioners should apply, when implementing this policy:

- The utility bills (and inserts) perform two general functions: (1) an invoice/statement detailing the amount owed by the customer; and (2) communicating various messages to the customer regarding their utility service.
- The information needs/expectations of utility customers appear to vary, from basic invoice information (amount owed, replicable calculation of the amount; due date; etc.), to "transparency" information (generation sources used, emissions data, etc.)
- Establish the objective(s) of an information disclosure requirement concerning energy usage; (e.g., is the goal to educate the customer, to change the customers' choices, etc.). Note that consumers' choices include both their volume of usage and, to some extent, generation technology.

Further research/investigation is needed regarding the following:

- Determine what information assists customers in making informed choices about utility services.
- Determine whether it is necessary for the Commission to establish statewide standards for measuring and disclosing a utility's (and/or a customer's) "environmental footprint" in order to assure uniformity between utilities and make information of value to customers.
- Identify criteria for measuring if the additional disclosure is effective in meeting the stated objective(s).
- Consider that the consumers' desire for information and the effectiveness of various communication media (*e.g.*, web portal, bill inserts, advertising, etc.) varies by customer and by customer class.
- Explore the options for balancing between simplicity on customer bills and communicating complex information.
- Estimate the cost of developing and implementing programs to meet new information disclosure requirements.
- Consider the flexibility necessary for the utility to most effectively meet the information disclosure requirement goal(s) of their customers.

- Concerning rate adjustment factors (cost adjustments/riders):
  - Consider whether rate adjustment factors could be combined into one (or a few) line items on the bill, and how much information would be necessary on the bill to explain this line item;
  - Consider which adjustments/riders, including resource-related costs, (currently approved as part of a utility's resource plan), might be able to be included in base rates.

Action Steps:

- Consider requiring utilities, by a date certain, to initiate activities (e.g., focus groups, survey devices) to determine the unmet needs of their Colorado customers concerning, at minimum: the readability and understandability of their current bill; their desire for periodic information on the utility's generation fuel mix and emissions; and, the most effective means of communicating that information.
- Consider requiring utilities, by a date certain, to report back to the Commission with the results of those activities and with their plans to meet those needs.