

IN THIS ISSUE

**Providing Rate Affordability Assistance
in a Cost-Based Rate Structure**

NOTE TO READERS

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**Inverted Block Rates (IBR) for Minnesota
Electric Utility Promotes Conservation
and Affordability at Same Time**

A proposed inclining block rate structure (IBR) delivers affordability benefits to low-income customers even outside the confines of a low-income discount. FSC's Roger Colton recently filed testimony with the Minnesota public utilities commission in an Xcel Energy electric rate case on behalf of the Energy CENTS Coalition. Colton supported the inclining block rate structure proposed by the Minnesota Center for Environmental Advocacy (MCEA) for Xcel's residential customers.

MCEA proposed an IBR for Xcel consisting of four summer tiers priced as follows: (1) Tier 1 (0 – 350 kWh): \$0.06070; (2) Tier 2 (351- 700 kWh): \$0.09538; (3) Tier 3 (701 – 1,200 kWh): \$0.10405; and (4) Tier 4 (1,201 kWh or more): \$0.12684.¹ The purpose of the IBR was two-fold: first, to create a conservation incentive for higher usage residential customers, and second, to deliver affordability benefits to low use, low-income customers.

In Minnesota, two statutory sections support the Commission's approval of the proposed IBR for Xcel Energy. Minnesota statute Section 216B.16 (subd. 15) provides, among other things, that "the Commission *must* consider ability to pay as a factor in setting utility rates. . ." (emphasis added). Just as importantly, however, Minnesota statutes provide that "to the maximum reasonable extent, the commission *shall* set rates to en-

¹ The winter IBR was similar, though not identical. It consisted of four tiers priced as follows: (1) Tier 1 (0 – 300 kWh): \$0.05545; (2) Tier 2 (301- 600 kWh): \$0.08132; (3) Tier 3 (601 – 1,000 kWh): \$0.08872; (4) Tier 4 (1,001 kWh or more): \$0.09434. Electric space heating customers were exempted from the proposed IBR.

courage energy conservation. . .” (Section 216B.03) (emphasis added).

According to Colton’s testimony, there is an interrelationship between these two objectives: the affordability of utility service on the one hand, and the pursuit of energy conservation on the other. In recent years, the Minnesota Commission has recognized the effective role that price signals play in promoting energy conservation. As Colton noted, however:

low-income customers’ inability-to-pay for utility service. . .substantially distorts the price signal the consumer receives. When those customers cannot afford to pay their energy bills, price signals are not effective. The viability of sending a price signal assumes that the customer has the ability to receive and to act upon the signal. . .The closer the Commission can tailor rates to reflect affordability, the more efficacious any price signal will be.

If a customer has an ability to pay \$50 per month, in other words, the price signal sent to that customer by receiving a bill of \$75 rather than \$65 is negligible, if any signal exists at all. In contrast, the price signal received through a bill for \$49 rather than a bill for \$55 is more significant.

Setting an affordable rate under Section 216B.16, in other words, is thus closely aligned with setting rates that “to the maximum reasonable extent. . .encourage energy conservation” under Section 216B.03. As Colton told the Commission, the two sections of Minnesota statutes are not merely compatible, they are interdependent.

The discussion of an inclining block rate structure for Xcel Energy largely mirrors the discussion occurring in recent years when Minnesota Power moved to its five-block rate design.² In its

² In the Matter of the Application of Minnesota Power for Authority to Increase Rates for Electric Service in Minnesota, Docket No. E-015/GR-09-1151, Find-

Minnesota Power Order, the Commission specifically noted “the importance of designing rates with an eye to mitigating the adverse consequences for low-income ratepayers.” The Commission then appropriately noted that Minnesota Power’s five-block inclining block rate structure “identified the most promising combination of rate design elements” to allow the Company to earn its revenue requirement; address the Company’s “demonstrated need for additional revenues”; and address the “ongoing economic distress” in the Company’s service territory. (*Minnesota Power Order*, at 65).

In its *Minnesota Power Order*, the Commission noted that the IBR proposed for that utility was “designed to reduce electric bills for those with the lowest energy consumption while also providing an incentive for conservation by those with high rates of consumption. . .[T]he broader range of rate blocks will enable the Company to provide a discount for a larger number of kWh each month, while providing more rate blocks for recouping the cost of these discounts from high-volume customers.” (*Minnesota Power Order*, at 66).

The IBR rate structure proposed for Xcel would result in substantial savings to Xcel’s low-income customers, Colton found. Under the IBR, and with the proposed increases to the energy and fuel charges (and the existing customer charge):

- a customer with residential consumption that is 50% smaller than average would save \$44 a year (\$496 IBR bill vs. \$540 flat rate bill).
- a customer with average residential consumption would save roughly \$44 per year (annual bill of \$983 vs. \$1,027 flat rate);
- a customer with residential consumption 50% higher than average would have a

ings of Fact, Conclusions and Order, issued November 2, 2011.

bill that is roughly \$100 more under the IBR as compared to the proposed increased flat energy rates (\$1,589 IBR vs. \$1,427 flat rate);

Given Xcel's *current* energy rates and customer charge, under the proposed IBR, customers with average consumption will see a four percent (4.0%) annual bill decrease (rather than the 9.0% bill increase under the Company's proposal). Customers with consumption of half of the average will experience a bill decrease of more than fourteen percent (14.4%) (rather than a 9.6% bill increase under the Company's proposal).

Similarly, Colton said, given the Company's *proposed* revenues, under the proposed IBR, customers with average consumption will experience an annual rate increase of only 4.4% (compared to a 9.0% increase under the Company's proposed rates). Customers with consumption one-half of average will experience a rate decrease of 8.2% (compared to a 9.6% increase under the Company's proposal).

These bill reductions represent substantial improvements in affordability for low-income households. The bill reductions generated by adoption of an IBR at an average consumption (proposed rates and customer charge) would be equivalent to more than a 30% increase in the Minnesota LIHEAP benefit, Colton found.³ The average bill reduction at 50% of average consumption (proposed rates and customer charge) (\$86) would represent the functional equivalent of a 60% increase in Minnesota's LIHEAP benefit.

Moreover, Colton continued, the bill reductions represent a meaningful reduction in "energy burdens." A household's "energy burden" is its electric bill as a percentage of household income. The \$86 bill reduction produced by the IBR at 50% of average consumption would reduce the home electric burden by between 1%

and 3% (depending on household income). "Given that an 'affordable' bill is generally defined to be a burden of 6% or less for total energy, it is clear that these bill savings represent a substantive improvement," he said.

The bill reductions produced by adoption of the IBR would help primarily low-income households. Colton produced extensive evidence documenting that "a direct relationship exists between income and electricity consumption. As income increases, electric usage and expenditures increase as well." That conclusion was based on a review of Company-specific data; Minnesota state-specific data; regional data for the upper Midwest; and national data.

This empirical finding was supported, also, by the Company's own 2012 Residential Energy Use Survey. The Company's 2012 Residential Energy Use Survey found that low-income customers of Xcel Energy in Minnesota had lower penetration rates for central air conditioning; automatic dishwashers; automatic clothes washers; automatic clothes dryers; multiple refrigerators; stand-alone freezers; multiple televisions of any type; desktop computers/laptops, tablets; and light bulbs.

The Company's Survey found that "as expected, electric usage increases as size of home increases. . ." The Company's Survey also found that "as would follow given the relatively smaller dwellings of renters (on average), it can be seen here that the amount of electricity used during any given month is significantly less for renters compared to customers who own their homes."

Given these subsidiary findings, it thus comes as no surprise, Colton said, that the Company reports, based on its extensive energy use survey, that "throughout the year, lower income customers' electric use is consistently lower than their higher income counterparts." Colton noted:

The data showing a direct relationship between income and electricity consumption and expenditures in Minnesota is compelling and consistent. The differences that

³ "LIHEAP" is the federal fuel assistance program, the Low-Income Home Energy Assistance Program (42 U.S.C. § 8621, et seq. (2014)).

are evident in the data are not small. The significance lies not simply with each piece of information standing alone, but in the consistency of the data at all levels. The Xcel-specific data, the state data, the regional data reported by the U.S. Department of Energy, and the national data reported by the U.S. Department of Energy, all establish the same relationship. Moreover, the significance lies not only in the finding of differences in usage and expenditures by income, but also in the consistency of the *causes* of those differences.

In sum, Colton's testimony helped Energy CENTS establish that "usage increases as income increases and low-income customers are likely to be low usage customers. . .As such, an Inclining Block Rate (IBR) electric rate structure will necessarily benefit low-income households by increasing the affordability of low-income, low-use electric bills."

The Impact on High Use Customers

Merely because low-income customers, by a wide margin, disproportionately are also low-use customers does not mean that there are *no* high-use low-income customers. The proposed IBR, however, has exempted electric heating customers and customers using electricity for medically necessary equipment.⁴ Accordingly, there are very, very few high-use low-income Xcel customers, Colton found. In order to fall into the highest tier of the IBR, a customer would need to have monthly consumption of more than four times the average residential consumption. Only 428 of the Company's 72,160 (0.6%) LIHEAP customers have monthly usage that exceeds 2,400 kWh; only 282 (0.4%) have monthly usage that exceeds 2,600 kWh.

According to Colton, the Commission should reject objections to the proposed IBR that exam-

⁴ Identifying these two customer populations does not create a new administrative task. The Company already identifies both of these two customer populations.

ine and rely upon only month-by-month usage data. *On an annual basis*, the IBR generates bill savings to both the low-income customer base generally and to the LIHEAP customer base specifically. Any assessment of the impact of IBR affordability benefits should focus on the monthly average consumption over a full twelve months and not on individual months standing alone. If a customer pays \$2 more in July, but receives an offsetting bill *decrease* of more than \$2 in June, August and September, that customer has not been harmed by the IBR.

A review of the Company's usage data documented that, while there are some months in which a small portion of LIHEAP recipients will have bills that are greater under the IBR than they would have been without the IBR, there is not merely "the *likelihood* that months with bill reductions will offset months with small bill increases, but also the *certainty* of such months with bill offsets." (emphasis in original). All LIHEAP recipients (even *with* the inclusion of space heating customers) had a monthly average consumption over the twelve month period in 2013 of 644 kWh, Colton found. "While there are some individual months in which average monthly consumption is somewhat higher," he said, "there are other individual months in which the much lower consumption would offset those higher-use months."

The fact that there are only a small number of low-income customers with high use cannot be reasonably contested for Xcel. Xcel's own data shows that in any given month:⁵

- There are only 4,049 LIHEAP non-heating customers with usage over 1600 kWh.
- There are fewer than 1,600 LIHEAP non-heating customers with usage over 1,800 kWh;

⁵ This data does *not* show that these customers use the stated amount of kWh in *every* month. It shows what average number of customers will have the stated kWh of usage in any given month.

- There are only 1,011 LIHEAP non-heating customers with usage over 2,000 kWh;
- There are only 427 LIHEAP non-heating customers with usage over 2,400 kWh.

The available data for LIHEAP non-heating customers, in other words, confirms that: (1) the number of LIHEAP non-heating customers with high usage is quite small; and (2) the number of LIHEAP non-heating customers with high usage is well within the ability of existing programs to deliver any necessary financial assistance.

Moreover, energy efficiency treatments alone would be sufficient to reduce consumption to the point that the IBR would be beneficial to these customers. Colton testified that:

With a reasonably small energy efficiency effort, the bills under an IBR will be less than the bills would have been if the Company's flat rate was retained. In the summer months, a five percent energy efficiency outcome would reduce IBR bills to less than they would have been under the flat rate for monthly usage up to 1200 kWh. For usage up to 2200 kWh, an energy efficiency usage reduction outcome of only 10% would result in lower bills than if the flat rate [had] been retained. For usage over 2500 kWh, a 15% usage reduction outcome would result in lower bills under the proposed IBR. Similar results occur for winter month bills.

“In assessing the significance of these numbers, it is important to keep in mind that. . .the numbers of households with these high usage levels are quite small,” he said.

The Commission had previously found, in approving the Minnesota Power five-tier IBR, that there are ample resources in Minnesota available to meet the needs of high-use low-income customers. Indeed, the Commission found, there

are more resources available to address the needs of high-use customers than there are resources available to address the needs of low-use customers.

The Use of LIHEAP as a “Low-Income” Surrogate.

In assessing the disproportionate impacts of the Company's rate structure on low-use, low-income customers –disproportionately positive impacts from the IBR and disproportionately negative impacts from an increased residential customer charge—Energy CENTS established beyond reasonable dispute that low-income customers have lower consumption than non-low-income customers.

Colton urged the Commission to reject efforts to disprove that proposition based on a review exclusively of LIHEAP customers. LIHEAP recipients, he said, are a very small portion of the total number of Xcel low-income residential customers. Moreover, LIHEAP recipients are not representative of low-income customers generally.

LIHEAP recipients represent only six percent (6%) of the Company's overall customer base. The data shows, Colton said, that while the Company reported data for 61,643 LIHEAP recipients, the Company has more than 200,000 customers in the metropolitan region alone who would be eligible for LIHEAP. LIHEAP recipients, in other words, are a fraction of the total low-income customer population.

The Company's own data further demonstrates that LIHEAP recipients have higher usage than do low-income customers generally. The fact that LIHEAP recipients have higher consumption than low-income customers generally comes as no surprise.

Colton discussed three specific reasons why the consumption of LIHEAP recipients tends to be higher than the consumption of low-income households generally. First, households with higher consumption (and thus higher bills) tend

to be more likely to seek public assistance (such as LIHEAP) to help pay their home energy bills. Second, there is a demonstrated relationship between higher consumption and higher levels of payment-troubles. As households seek assistance to pay arrears, they are more frequently referred (whether by community-based organizations or by the utilities themselves) to LIHEAP to receive such assistance. Finally, by statute, LIHEAP is to be targeted to high-use and high-burdened households. Therefore, the higher consumption of LIHEAP recipients simply reflects States' efforts to comply with the federal statutory targeting mandate.

The Administrative Aspects of an IBR.

The proposed IBR would not present significant administrative implementation problems. An IBR *certainly* does not present a potential for "customer confusion" to the extent that the IBR should be avoided. Arguing that an IBR would result in "customer confusion" was the same argument that IBR opponents raised when Minnesota Power implemented a five-tier IBR, Colton noted. The Commission rightfully rejected that argument then, finding that Minnesota Power "does not foresee substantial customer confusion resulting from adding two more blocks."⁶

And experience has proved the Commission's finding to be accurate, Colton said. In its Second Annual IBR Evaluation, Minnesota Power reported that: "[d]ata from Minnesota Power's customer call center indicate that the call center received 25 calls in 2011 (when the five-block rates were in place for only seven months), 44 calls in 2012, and 45 calls in 2013 dealing at least partially with the inclining block rate structure."⁷ Minnesota Power also reported that

⁶ In the Matter of the Application of Minnesota Power for Authority to Increase Rates for Electric Service in Minnesota, Docket No. E-015/GR-09-1151, Finding of Fact, Conclusions, and Order (November 2, 2010), at 66.

⁷ Minnesota Power does not explain in its Annual Reports what it meant when it said that a complaint dealt "at least partially" with the Company's IBR.

"[b]ased on the relatively low number of calls, it does not appear that Minnesota Power's customers have been substantially confused by the change from three to five blocks for residential rates."

Colton disputed the testimony of Attorney General witness Ron Nelson, in which Nelson "worried" about customer confusion. In formulating his concern, Colton found, Mr. Nelson did not review the number of customer complaints that Minnesota Power received about its IBR, and wasn't sure if he reviewed Minnesota Power's Annual Reports on that Company's IBR filed in response to the Commission's directive to prepare an annual evaluation.

While Mr. Nelson could not remember how many complaints the Minnesota Power IBR generated, he did agree that Minnesota Power had roughly 120,000 residential customers, thus generating 1.44 *million* bills a year (120,000/month x 12 months) under the IBR. With the Minnesota Power IBR having been in place for three years now, Colton said, Minnesota Power would have issued more than 4.3 million bills (1.44 million/year x 3 years) under its five-tier IBR. In that time period (3-years; 4.3 million bills), Colton found, Minnesota Power has received a grand total of just over 110 calls⁸ dealing "at least partially" with the inclining block rate structure. Minnesota Power's IBR, in other words, Colton said, has generated a complaint rate of 0.0026% (26 ten-thousandths of one percent).

Two other administrative concerns were raised when Minnesota Power first moved to its five-tier IBR: (1) elongated billing periods (when the number of billing days in the billing period is either shorter or longer than the normal billing cycle); and (2) circumstances where a single meter serves more than one home. Minnesota Power's experience has demonstrated, however, that both of these concerns can be (and have been) addressed. "There is three years of exper-

⁸ 25 in 2011; 44 in 2012; 45 in 2013. (Exh. 234, p.23) (internal citations omitted).

rience with Minnesota Power’s five-block rate. Moreover, pursuant to Commission order, Minnesota Power has explicitly assessed the extent to which these three concerns were fact-based and has filed annual evaluations to address each of these three concerns. This experience documents that the concerns are not well-grounded.”

Summary

The IBR proposed for Xcel Energy in Minnesota was submitted to the PUC to be considered through a stipulated process. Parties signing the stipulation, or endorsing it through testimony, included the Environmental Intervenors, the Energy CENTS Coalition, Xcel Energy, the Suburban Rate Authority, and the Department of Commerce/Division of Energy.

Persons interested in receiving a copy of the FSC testimony in support of the IBR proposed for Xcel Energy in Minnesota can write:

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Fisher, Sheehan and Colton, Public Finance and General Economics (FSC) provides economic, financial and regulatory consulting. The areas in which *FSC* has worked include energy law and economics, fair housing, affordable housing development, local planning and zoning, energy efficiency planning, community economic development, poverty and telecommunications policy, regulatory economics, and public welfare policy.