FSC'S LAW & ECONOMICS INSIGHTS
Issue 10-4 Fisher, Sheehan & Colton, Public Finance and General Economics July/Aug 2010

IN THIS ISSUE

NOTE TO READERS

ON-LINE DELIVERY

This document presents the bi-monthly electronic newsletter of Fisher, Sheehan & Colton: *FSC's Law and Economics Insights*. Previous issues of the newsletter can be obtained at FSC's World Wide Web site:

http://www.fsconline.com/news/news.htm

Fisher, Sheehan & Colton
Public Finance and General Economics
34 Warwick Road, Belmont, MA 02478
(voice) 617-484-0597 *** (fax) 617-484-0594
(e-mail) roger@fsconline.com

Utility Rate Affordability: The Choice between Percentage of Income and Tiered Rate Discounts

A utility seeking to deliver rate affordability assistance to low-income customers has a choice between two reasonable alternatives when deciding whether to adopt a rate affordability program: a percentage of income payment plan (PIPP) or a tiered rate discount. In an analysis of program alternatives for Manitoba Hydro customers, FSC concluded that that Canadian utility should adopt an income-based "fixed credit" program, even though the "tiered discount" program could be reasonably supported.

The distinguishing factors, FSC said in a report to the Manitoba Utility Commission, turn on both policy and program decisions. The Manitoba report was prepared on behalf of a local non-profit, Resource Conservation Manitoba (RCM).

THE RECOMMENDED PERCENTAGE OF INCOME "FIXED CREDIT" PROGRAM.

Rate affordability assistance in Manitoba should be distributed on a percentage of income basis, FSC said. According to its Manitoba report, using a percentage of income approach to targeting provides a more efficient use of scarce rate affordability resources.

This can be demonstrated by comparing an across-the-board discount to a percentage of income approach. While a percentage of income approach delivers those benefits, but only those benefits, needed to bring low-income bills into an affordable range, an across-the-board discount does not.

Using an across-the-board discount, the universal service program would pay some customers *more* than is necessary to bring bills into an affordable range while paying other customers *less* than is necessary to bring bills into an affordable range. Accordingly, it is most appropriate to base the rate affordability component of a universal service program on a percentage of income targeting mechanism.

Although a variety of percentage-of-income based approaches exist, FSC recommended the delivery of rate affordability assistance using a fixed credit approach. The fixed credit approach begins as an income-based approach. In order to be eligible for the Manitoba-Hydro rate, a household would meet *both* eligibility criteria: (1) that the household income be at or below 125% of the Low-Income Cutoff (LICO) for Manitoba; and (2) that the household energy burden exceed the burden deemed to be affordable.

THE FIXED CREDIT CALCULATION

The fixed credit approach next calculates what bill credit would need to be provided to the household in order to reduce the household's energy bill to a designated percent of income. To calculate the fixed credit involves three steps: (1) calculating a burden-based payment; (2) calculating an annual bill; and (3) calculating the fixed credit necessary to reduce the annual bill to the burden-based payment. Each step is explained below.

Burden-based payment: The first step in the fixed credit model is to calculate a burden-based payment. Assume -- simply for the sake of illustration here -- that the household has an annual income of $8,000 and is required to pay six percent (6%) for its home energy bill. The required household payment is thus $480. This is determined as follows: $8,000 x 6% = $480.

Distinctions in the percentage of income payment are made based upon whether the customer is a heating or non-heating customer. The payment is split evenly between the heating and non-heating component of the utility bill. Under a 6% scenario, a natural gas heating customer would be asked to pay three percent (3%) of the household's income toward her home heating bill, and another three percent (3%) toward her electric bill. An all-electric customer would pay six percent (6%) toward her electric bill. Other percentage burdens would be similarly split half-and-half (8% converts to 4% toward each fuel; 10% converts to 5% for each fuel).

The energy burden represented by a combined heating and non-heating energy bill should not generally exceed six percent (6%) of income. It is generally accepted that a household's "shelter burden" (rent/mortgage plus taxes plus utilities) should not exceed 30% of income. In addition, a household's home utility bill should not exceed 20% of the household's shelter costs. Combining those two yields an affordable home energy burden of six percent (6%) (20% x 30% = 6%).

Projected annual bill: The second step is to calculate a projected annual household energy bill. This calculation is to be made using whatever method the local utility *currently* uses to estimate annual bills for other purposes. A utility, for example, will likely have an established procedure for estimating an annual bill for purposes of placing residential customers (low-income or not) on a levelized Budget Billing Plan (where bills are paid in equal installments over 12 months). That same process can be used to estimate an annual bill for purposes of calculating the needed fixed credit.

Fixed credit determination: The final step is to calculate the necessary fixed credit to reduce the annual bill to the burden-based payment. Given an annual bill projection of $1,200 and a burden-based payment of $480, the annual fixed credit would need to be $720 ($1,200 - $480 = $720). The household's *monthly* fixed credit would be $60 ($720 / 12 = $60).

The Advantages of a Percentage of Income Fixed Credit Program

In addition to various administrative benefits from the use of a fixed credit, FSC said in its Manitoba Hydro report, the fixed credit also offers the advantage of providing a strong conservation incentive to the low-income customer. Under the fixed credit model, the local utility provides a $60 fixed credit to the low-income household irrespective of the household's actual bill. If the household increases its consumption, and thus has a higher bill, the household pays the amount of the increase. If, in contrast, the household conserves energy and thus lowers its bill, the household pockets the savings.

The administrative advantages of the fixed credit program are two-fold. First, use of fixed credits as a benefit distribution mechanism allows the program to work within a fixed operating budget. Once a low-income customer is enrolled in the universal service program, the maximum possible financial exposure for the time of the enrollment is established. At no time, can the maximum financial exposure exceed the budgeted program revenues. Systems can be easily designed to track funds that are obligated and expended to ensure that the budget is not exceeded. In contrast, benefit expenditures through either a straight percentage of income program or a percentage of bill program may vary based upon changes in consumption.

In addition to this budgeting advantage, the fixed credit approach makes the billing less complicated as well. Using the same process that currently exists to establish a levelized budget-billing plan, fixed credits can be subtracted from a customer's levelized annual bill.[1] The monthly bill is then rendered based upon this one-time annual adjustment. The utility does not need to make monthly billing adjustments as is the case with either the straight percentage of income, or with the percentage of bill, approach.

THE TIERED DISCOUNT AS AN ALTERNATIVE RATE AFFORDABILITY STRUCTURE.

Not all electric and/or natural gas utilities have the financial wherewithal to adopt the fixed credit rate affordability described above. For small utilities in particular – Manitoba Hydro would not qualify as a "small" utility, FSC said --[2] a rate affordability alternative is available. The substantive benefits of a rate affordability program can be generated without incurring the administrative costs of implementing a fixed credit program.

The alternative to a fixed credit program involves the adoption of a tiered discount program. As with the fixed credit program, a tiered discount program is tied to an affordable energy burden. The tools this alternative uses to reach the affordability objectives, however, are somewhat blunter and less-well tailored to assure that all customers achieve affordability. Instead of the targeted affordability benefits, a tiered discount program is aimed at ensuring affordability on average.

The purpose of a rate affordability program is to promote the supply of affordable home energy service to low-income customers. As described above, energy burdens are the generally-accepted mechanism by which to measure "affordability." The fixed credit approach to distributing home energy affordability benefits, as described above, explicitly reduces low-income energy bills to a point where those bills present an affordable burden. The fixed credit is based on a household's actual annual income and actual home energy bills (with some exceptions). The fixed credit defrays the cost of bills that

[1] The fixed credit is, in essence, booked as a "payment" on the account.

[2] The Belmont Electric Light Department, a municipal utility serving 10,000 residential customers, adopted a "small utility" rate affordability alternative effective January 2006. One alternative to defining "small utility" by policy is to establish the "small utility" alternative and require a utility to petition regulators for the option of adopting the small utility alternative.

exceed the affordable burden. This difference is the benefit that a tiered discount is designed to deliver. So long as a customer has annual expenditures that are equal to the company's residential average, application of a tiered discount will reduce that customer's annual electric bill to the burden determined to be affordable.

In contrast to the fixed credit approach, a tiered discount approach can only approximate an affordable burden. A tiered discount approach to distributing benefits is designed to reduce a bill to an affordable percentage of income (with the percentage differing depending on whether the customer is a base load customer or a space heating customer) *assuming that the household consumes at the average level of consumption*. To the extent that a household consumes more or less than average, the household will bear a burden either higher or lower (respectively) than the affordable burden.

The Tiered Discount Calculation

To calculate a tiered discount, all low-income customers are placed into buckets demarcated by annual income levels. Buckets used to develop a tiered discount can be disaggregated into as large (or small) of a range as desired. Using the mid-point of each income bucket, an affordable bill can be calculated by applying the home energy burden determined to be "affordable." A program having seven "buckets" was examined for Manitoba Hydro; the buckets largely correspond to the income buckets for which the Company collects information. An affordable home energy burden was set at 6% of income for electric heating and 3% of income for electric base load consumption associated with natural gas heating customers.[3]

By taking the mid-point of each bucket, the affordable burden is exactly accurate only for those persons exactly at that mid-point. Customers with incomes in the half of each bucket below the mid-point will pay somewhat more than an affordable burden, while customers with incomes in the half of the bucket above each mid-point will pay somewhat less than an affordable burden.

Households in each income bucket are next assigned the average annual expenditure for electricity irrespective of income ($1,800 for electric heating; $710 for non-heating electric baseload) in Manitoba.

The *difference* between the average bill and the affordable bill is determined. For example, the amount by which the actual average bill exceeds the affordable bill for a household in the bucket with less than $10,000 of income (mid-point of $5,000) is $1,500 for electric heating customers ($1,800 - $300 = $1,500) and $560 for electric baseload customers ($710 - $150 = $560).

Using this process demonstrates that a six percent (6%) energy burden is achieved for a household with an annual income at the mid-point between $0 and $10,000 ($5,000 x .06 = $300) by providing an 83% discount to an $1,800 home energy bill ($1,500 / $1,800 = 83%). An affordable burden (3%) is achieved for a household with an annual income at the mid-point between $0 and $10,000 ($5,000 x .03 = $150)) by providing a discount of 79% ($560 / $710 = 79%). At higher income levels, the discount levels would be considerably lower.

The discount is "tiered" because, as incomes decrease, it takes a deeper discount to deliver a benefit equal to the difference between an affordable bill and the average bill. The more levels of discount that exist (i.e., the more "tiers"), the more highly targeted the discount will be. Regulators need to determine by policy, FSC said, how many tiers they wish to adopt in a tiered discount program.

[3] A further refinement of the tiered discount approach is to base the discounts on a tiered energy burden. This approach quite reasonably is based on the observation that 3% of income is "more important" to households in the lowest income tiers than it is to households in the higher income tiers. This refinement, however, is set aside for now.

In all matters other than benefit level, a tiered discount affordable rate should deliver the same program components (e.g., arrearage management, crisis assistance, availability to energy efficiency) to all tiers.

THE POLICY CHOICES BETWEEN THE TWO ALTERNATIVE RATE AFFORDABILITY PROGRAMS.

According to FSC's Manitoba analysis, a decision on whether to implement a fixed credit program or implement a tiered discount alternative for Manitoba Hydro presents two primary issues. The issues are of two kinds:

- A policy issue, and
- A program issue

The Policy Issue

The first issue is one of policy. On the one hand, the fixed credit program clearly better targets benefits to low-income customers. A customer would consume at a utility's average residential consumption only by happen chance. Because discounts are based on average consumption, in nearly every case, low-income customers will receive either more benefits than are needed to reduce their expenditure to an affordable burden or fewer benefits than are needed.

And this result does not even consider the fact that average consumption is combined with the use of the mid-point of the income range. Even if a customer consumes exactly at a company's average, unless that customer *also* has annual income exactly at the mid-point of the income bracket for which the discount is established, a tiered discount will give the customer either "too much" or "too little."

The response to this is that, setting aside whether the tiered discount is *exactly* correct in its reduction of energy burdens to an affordable level, in *every* case, the customer is *better off* than had the customer received no discount at all. The adage that it is better to be approximately correct than precisely wrong informs this observation. Even if the lowest income customers do not have their electric burdens reduced to exactly six percent (6%), paying eight percent (8%) with the discount leaves the customer better off than paying 40% without the discount.

The fixed credit, on the other hand, precisely targets benefits. The issue of whether some customers receive "too much" and others receive "too little" does not arise. This precision in targeting, however, comes with a cost. Some utilities argue that the cost of setting-up and administering a fixed credit program is much higher than the cost of setting-up and administering a tiered discount program.

The significance of the higher set-up and administrative costs is that every dollar that goes for set-up and administration is a dollar that is *not* going to pay energy assistance benefits.

The Program Issue

The program issue is raised by the fact that a fixed credit is "fixed." Once determined at the beginning of the program year, the risk that bills will change (based either on weather or on price) lies with the customer. If the customer has a lower bill, he or she pockets the difference. If the customer has a higher bill, he or she bears the burden of the increase.

In addition to creating a conservation incentive, this approach provides operational benefits. The maximum program expenditure is established at the time a customer enters the program. Changes in weather or price will not drive program costs up. In contrast, with a tiered discount, program costs will fluctuate based on both weather and price. If there is a very cold winter (or a very hot summer), with correspondingly higher bills, the program must bear the cost of the higher discounts that will be provided.

SUMMARY AND CONCLUSIONS

Outside of the two major issues identified above, a fixed credit and tiered discount rate affordabil-

ity program should operate in much the same fashion. No inherent differences exist. The tiered discount and the fixed credit are simply alternative ways of delivering benefits.

The programs remain basically constant. The fixed credit program assures that all rate affordability assistance is precisely targeted; this assurance comes with a somewhat more involved administrative structure. The tiered discount program has a somewhat less involved administrative structure; this simplicity comes with an inherent level of mis-targeting, with some customers receiving "too little" and other customers receiving "too much."

For more information about alternative structures of utility rate affordability programs, including obtaining a copy of the Manitoba Hydro report, contact:

roger[at]fsconline.com

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.