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Empirical Evaluations of Percentage of Income Programs do not Find Evidence of Systematic Increases in Consumption.

NOTE TO READERS

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Summary of Evaluation Findings Regarding Impact of Low-Income Bill Affordability Programs On Program Participant Usage

One concern frequently expressed about bill affordability programs in which bills are set equal to an affordable percentage of income (sometimes known as "percentage of income plans" or PIPs), is that such programs eliminate any incentive for customers to conserve energy. Since bills are not based on consumption, the argument goes, but rather upon the customer's income, customer usage can increase with no corresponding increase in the bill.

A prior issue of this newsletter (Jan/Feb 2016) explored the economic theory involved with why bill affordability programs generally, but not PIPs in particular, tend to improve price signals provided through utility rates. This issue summarizes the various empirical evaluations that have examined whether usage increases do, indeed, occur.

Over the course of more than 30 years of evaluations, done for different programs in different states for different utilities by different evaluators, *not one* has found that systematic increases in usage result from adoption of a PIP.

Each evaluation discussed below is available electronically from FSC's Boston office.

IRAPP: Evaluation of the Illinois Residential Affordable Payment Program (1985)

Illinois found that in five of seven utilities measured, participants increased their winter gas consumption. For only three of these companies was the consumption increase statistically significant. Moreover, in all of the utilities providing natural gas, there was increased summer consumption. However, for only one was the difference statistically significant.

The impact of IRAPP on electricity consumption varied from one utility service area to another. Winter electricity consumption increased for three of the six utilities. For each of these utilities, the difference was statistically significant. For the remaining three utilities, winter electricity consumption by participants decreased. For each of these utilities, however, the difference was not statistically significant. In contrast, summer electricity consumption increased in three utility service areas and decreased in two utility service areas. The difference in each instance was not statistically significant.

Evaluation of Minnesota Fair Share Pilot Programs (1986)

Of the clients served in Anoka County, 57 percent of all participating households fell within the range of a ten percent increase to a ten percent decrease (37 percent increased consumption; 20 percent decreased). An equal number experienced “significant” increases as decreases, with ten percent using at least 25 percent more and eleven percent using at least 25 percent less.

The second Minnesota pilot program involved the BICAP community action agency. With BICAP, the data was almost identical. For participating households, 67 percent of all households fell within the plus or minus ten percent range (21 percent increased; 46 percent decreased). Similarly, while eight percent of participating households increased consumption by at least 25 percent, nine percent decreased consumption by at least 25 percent.

Evaluation of Warwick (Rhode Island) Percentage of Income Payment Plan (PIPP) Demonstration Project (January 1988)

The presence of PIPP does not appear to be a factor affecting energy consumption by PIPP participants. Over 60 percent (60%) of PIPP participants with 12 months of consumption data fell within a range of a ten percent increase to a ten percent decrease in consumption during the Program Year. Within that group, slightly more households went up (34%) as went down (27%).

An insignificant number of PIPP participants substantially increased their energy consumption during the Program Year. Roughly eleven percent (11%) increased their consumption by more than 20 percent. An equal number of households decreased their energy consumption by a similar amount. Roughly eight percent experienced consumption decreases of more than 20 percent.

The Impact of Missouri Gas Energy’s Experimental Low-Income Rate (ELIR) On Utility Bill Payments by Low-Income Customers (October 2003)

The grant of fixed credits to the ELIR population does not appear to provide an incentive for those customers to systematically increase their energy consumption. . .While the [Energy Assistance] (EA) population has a total average monthly consumption of 86 therms per month, the ELIR population has a total average consumption of 68 therms. The ELIR population has consumption that is roughly 20% lower than the EA population. The consumption of the ELIR population is much closer to the total population average monthly usage of 72 therms than to the comparable low-income population not receiving ELIR credits.

The consumption for the ELIR and EA populations was tested for statistical significance at the 0.05 level. With an average consumption of 86 therms, the EA population had a statistically significant *higher* consumption than did the ELIR customers, who had an average consumption of 68 therms. It cannot be concluded that the MGE ELIR program resulted in an increase in consumption relative to those customers not receiving ELIR fixed credits.

Final Report: Washington Low-Income Bill Assistance Program: Phase II, Impact Analysis (October 2003)

One concern that arose in our interviews was that the discount might simply encourage participants to use more electricity. While there were a few in the focus groups who admitted that they used more electricity than normal due to the bill reduction, all claimed that the increase was only enough to make the home more comfortable. Furthermore, the vast majority (more than 90%) of the participants in the focus groups remarked that their participation in the Program had elevated their level of consciousness and that they tended to be much more conservative in the consumption of electricity. Forty-five percent of the participants claimed to have reduced their electricity consumption. Another 45% reported that their consumption had remained the same.

TW Phillips Energy Help Fund Program Evaluation: Final Report (November 2004).

[The data] shows that about 20 percent of current and past participants said that their gas usage decreased while they were participating in the program, about 5 percent said their gas usage increased, and more than 60 percent said that their gas usage had not changed.

Final Report: PG Energy Universal Service & Energy Conservation Programs Evaluation (August 2005)

Weather Normalized Usage: The weather normalized usage is annualized usage that has been adjusted to control for the weather, by modeling the relationship between the average daily temperature and the customer's gas usage, and then predicting the customer's usage in an average weather year. Customers had an average weather-normalized usage of 1,489 ccf in the year preceding enrollment and usage of 1,485 ccf in the year following enrollment, an insignificant decrease of 4 ccf. The net change in weather normalized usage was not statistically significant.

Final Report: Impact Evaluation and Concurrent Process Evaluation of the New Jersey Universal Service Fund (April 2006)

Data on customers' energy usage were analyzed to assess the impact of the USF program on consumption. Customer usage data from the year prior to the institution of the USF program, October 2002 to September 2003, were compared to data from the following year, October 2003 to September 2004. . .The findings with respect to gas usage were:

- On average, clients used about 1,200 therms of gas.

- Gas usage in the preprogram period was about eight percent higher than in the post-program period.

- The change in average usage by group fell into a narrow range from about -5.2 percent to -8.5 percent. . .

The findings with respect to electric usage were:

- On average, clients used about 7,200 kWh of electricity.

- Electric usage in the preprogram period was about the same as that in the post-program period.

- The change in average usage by group fell into a narrow range from about -2.5 percent to +1.6 percent.

In general, these findings suggest that participation in the USF program had little or no impact on usage.

PPL Electric Utilities Universal Service Programs: Final Evaluation Report (October 2008)

There is sometimes a concern that customers who participate in payment assistance programs will increase their usage, as their bill remains constant throughout the year, and they face a lower cost for using electricity. Previous research has not found increases in usage, except in some cases when customers cannot afford bulk fuel delivery and switch to electric space heat. This section examines the change in usage for OnTrack participants in the year following enrollment to determine if participants do increase their usage.

Table VII-15A displays the change in usage for the OnTrack participants and the comparison groups. The table shows that the OnTrack participants had an increase of 350 kWh in the weather normalized consumption, an increase of two percent over the year prior to OnTrack enrollment. However, the comparison groups also increased their usage during this time period, and this increase in usage therefore most likely reflects a general trend toward increased usage with the increased plug load that is seen in consumers homes. The net change in usage for the treatment group was a decline of 101 kWh.

Table VII-15B examines the change in usage for electric heating customers. This table shows a 501 kWh increase in usage over the pre-enrollment period, a three percent increase. The comparison groups also showed increases in usage over this time period. The net change in usage was an increase of 63 kWh.

Table VII-15C examines the change in usage for non-electric heating customers. This is the group that we may expect to see a larger increase in usage. However, the table shows a 352 kWh increase in usage over the pre-enrollment period, a three percent increase and again the comparison groups showed similar increases in usage over this time period. The net change in usage was a decline of 131 kWh.

Illinois PIPP Program Impact Evaluation (December 2009)

One concern with a PIPP program is that PIPP clients would increase their energy consumption because these clients are required to pay 10 percent of their monthly income toward their utility bill regardless of their actual energy usage and have no incentive to cut back consumption. Table 4.61 shows the annual electric usage in pre- and post-enrollment periods for the clients with 12 months of pre- and post-enrollment data. . . The usage analysis shows that the PIPP clients, who had to pay a fixed amount regardless of the actual usage, increased their consumption by between 0.9% and 3.8% in the post-enrollment period. The small increase in usage may be due to the fact that some of these households were able to afford to keep their home at a healthier and safer temperature, or that they did not have their service disconnected during the post-enrollment period.

Allegheny Power: Universal Service Programs Final Evaluation Report (July 2010)

Respondents were also asked to compare their electric usage prior to LIPURP to while they were participating in the program. Table VII-30 shows that the majority said that there was no change in their usage. However, 25 percent of current participants and 16 percent of past participants said that their usage was lower while on LIPURP and 11 percent of current participants and seven percent of past participants said that their usage was higher when they were on LIPURP.

Equitable Gas: 2011 Universal Service Impact Evaluation (May 2011)

In March 2009, the Company commenced an extensive CAP Usage Monitoring Program wherein they reviewed all active CAP customers for usage greater than 110% of their historical usage. This captured CAP customers from the 2007-2008 program year with twelve months of post-CAP consumption. Customers who were non-active or removed from CAP were deducted from the original pool of 18,650 customers. In addition, the Company weather normalized the consumption to confirm excess usage. . . The Company expends considerable time, effort and manpower to monitor CAP high usage as currently exists. The use of Company and contractor resources for this effort is excessive compared to the yielded results. For the 2007-2008 CAP program year, a mere 0.2% of CAP customers were identified as requiring follow-up for review.

Public Service Company of Colorado's (PSCo)
Pilot Energy Assistance Program (PEAP)
and Electric Assistance Program (EAP)
2011 Final Evaluation Report (February 2012).

The PEAP participation population did tend to have somewhat higher natural gas consumption than both the residential population in general and the federal energy assistance population. Gas-only PEAP participants had a higher gas usage than did the gas-only LEAP participant or the gas-only residential customer. Each type of combination (electric/gas) PEAP participant also evidenced higher consumption than did either the LEAP population or general residential population.

This finding is consistent with prior research regarding low-income "percentage of income" programs. While households seeking the benefits of a low-income affordability program tend to have somewhat higher than average consumption with which to begin, they do not tend to increase their consumption as a result of their participation in the program.

UGI Utilities, Inc. – Gas Division and UGI Penn Natural Gas, Inc.
Universal Service Program: Final Evaluation Report (November 2012)

Customers were also asked about the impact of the program on gas usage. [The data] shows that 34 percent said that their usage was lower and eight percent said that it was higher. UGI customers were more likely than the other utility CAP participants to say that their usage was lower while participating in the program.

Usage Change	UGI	Allegheny	PPL	PG Energy
Higher	8%	11%	16%	9%
Lower	34%	25%	27%	22%
No change	47%	55%	48%	61%
Don't Know	11%	9%	10%	7%

P GW Universal Service Program Impact Evaluation:Final Report (November 2012)

Respondents were asked to compare their gas usage while on CRP to their usage before they began participating in the program. [The data] shows that 40 percent of current participants said their usage was lower, eight percent said it was higher, and 44 percent said it had not changed.

Summary and Conclusions

Based on the above data and analysis, FSC concludes that adoption of a percentage of income bill affordability program for low-income customers will not have an adverse impact on customer usage patterns.

For more information regarding the evaluation of low-income rate affordability programs, or to obtain a copy of any of the evaluations discussed above, please 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.