

ECONOMIC OPPORTUNITY STUDIES

Weatherization *Plus* Major Home Repair Can Produce Better Results for Payment-Troubled Utility Customers

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Introduction: Unaffordable Energy Bills

Many Americans cannot afford to pay for all of life's necessities. The Census Bureau periodically documents the hardships they incur as a result. Every four years, householders participating in the multi-year Survey of Income and Program Participation (SIPP) are asked whether there was one or more occasion in the last 12 months when they could not afford to pay for each of several basic needs.¹ The data consistently have indicated that the most common problem is unaffordable utility bills. In the latest report covering 2004, nearly 11.2 million consumers, about almost 10% of all consumers in the nation, failed to pay at least one month's energy bill because they could not afford to do so. We call this situation an "energy hardship". Just over half of them had incomes low enough to qualify them as eligible for federal Energy Assistance and Weatherization services, although lower state income ceilings may have barred their participation

Targeting Weatherization to Result in Paid-up, Affordable Bills

Weatherization Assistance lowers energy usage and, if energy prices do not rise too dramatically, results in lower bills. One persistent question for Weatherizers is whether the bills become low enough to be affordable for those with very limited incomes. Put another way: *Will the home improvements that reduce energy demand have a sufficient impact on the family budget so that more necessities of life are in reach? What is the bill impact if homes are selected solely on the basis of low income, so that the lowest income are first to be weatherized? Would immediate cash payments make a bigger difference in the recipient's well-being than a marginal, albeit welcome, energy bill reduction?*

Utilities and regulators considering the benefits of rate-payer investments in home efficiency also ask: *Do chronically "payment-troubled" customers become consistent payers following the bill reduction W.A.P. provides?*ⁱⁱ *Should homes in which the eligible customer has a long history of unpaid energy bills be prioritized for efficiency services?*

The answers affect both the selection of homes to weatherize and the selection of a remedy for consumer energy hardships. *Should homes be inspected primarily for the potential to add significantly to the insulation, air sealing and equipment efficiency and then prioritized on that basis? Should homes that need significant repairs be dropped from the program because of the cost of repairs?*

Energy Bills and Housing Quality – A Close Connection

There is little or no recent evaluation of the impact of Weatherization on a household's payment history. Therefore, it is useful to look for solid evidence that leaky and/or substandard housing is likely to be home to those with a record of nonpayment more than to those in the same economic group who pay all their energy bills.

The Census' SIPP offers some evidence. It gathers information on the quality of housing and records five serious defects that Weatherizers can fix in many units they serve:

1. holes in the floor,
2. cracks in the walls or ceilings,
3. leaking roof,
4. broken windows and window frames, and/or
5. exposed wiring.

While 24% of the homes with at least one unpaid 2004 bill, i.e. with an energy hardship, had at least one such defect, only 9% of those who paid all their 2005 energy bills on time reported any defects.

The SIPP also collects information on indoor temperature and comfort, factors that which Weatherization addresses directly. More than 27% of those who could not afford all their energy bills felt too cold in winter or too hot in summer at home, and more than third of those were uncomfortable in both seasons. By contrast, just 7% of those who had no unpaid bills, meaning no energy hardships, were uncomfortable at any time.

Since having inadequate income might account both for living in substandard housing (as measured by how many of the five possible defects were in the home) and for uncomfortable indoor air temperatures, we tested whether having a low income strongly predicts poor housing and also the incidence of energy hardships. The results in Table 1 show it does not.

A simple two-way correlation between annual income and regular bill payment is only weakly predictive; low income is even more weakly associated with having housing defects and uncomfortable conditions. In other words, income differences between households "explain" only about 11% of the variation between those who experience energy hardship and those who do not.

Table 1: Low Income Is Not a Strong Predictor of Unpaid Energy Bills	
Simple Correlations of an Energy Hardship and of Housing Conditions with Annual Income	
<i>Energy or Housing Conditions</i>	<i>Correlation with Income</i>
Has Energy Hardship	-.11 (**)
Number of Housing Defects (of 5 possible)	-.06 (**)
Satisfaction with Warmth and Coolness	.07(**)
**Pearson Correlation is significant at the 0.01 level (2-tailed)	

Further analysis indicates that **whether consumers are in poverty or are moderate-income workers, the likelihood that their energy bills will exceed their means is determined more by the condition of their home than by their income.**

Table 2 shows that, when correlations are computed controlling for income, so that respondents are compared to others with the same income levels, the association between housing defects and non-payment of bills is almost twice as strong as that between income and non-payment shown above. In other words, in any group with similar income, about 20% of those who did not pay one or more energy bills will have homes with serious defects that Weatherizers could remedy given adequate resources. In fact, the more defects, the higher the likelihood bills will be unaffordable, regardless of income. And those whose housing defects have been eliminated are 4 times more likely to pay bills on time.

This association should be of particular interest to utility managers concerned about growing residential arrears, as well as to the US Department of Energy. **Home repair packaged with Weatherization is a risk-reduction investment for utility programs.**

Table 2: Substandard Housing Is a Strong Indicator of Unpaid Energy Bills		
Partial Correlations of an Energy Hardship and of Housing Conditions [Controlling for Annual Income]		
	<i>Number of Housing Defects (0-5):</i>	<i>Satisfaction with Warmth and Coolness</i>
Had an Energy Hardship	0.19.5**	-0.10**
** Correlation is significant at the 0.001 level (2-tailed)		

Changing Program Designs for Better Results

Weatherization local providers repair all the major defects listed above only in the rare program with funding from sources (other than US DOE) that support major repairs and health and safety measures. W.A.P. program cost limits and energy-focused cost-benefit tests means Weatherizers defer most homes with bad roofs and/or electric code violations; inspecting homes with an audit for Weatherization programs and then deferring service to them because they do not meet certain criteria is an expensive waste of efficiency program resources. Yet these homes appear to be the most likely locations for finding payment-troubled consumers. Further, denying or postponing service to applicants with the worst housing ensures that their hardships will persist and probably multiply, causing not only costlier family economic instability, but also imposing new collections costs on their utility.

Utilities reap double benefits when customers become regular bill-payers; they and their regulators should develop a renewed interest in financing repairs to roofs and electrical systems as part of the "Weatherization Plus" investments that local W.A.P. agencies deliver on their behalf. Utility-Weatherization partnerships typically provide support only for

investments directly related to energy measures on the assumption that they provide a uniquely measureable return on the investment.ⁱⁱⁱ However, now that there is strong evidence that a home in good repair is significantly less likely to run up bills beyond the resident's means, investments that can measurably improve bill payment consistency are also justified by utilities' "bottom line."

Utilities can anticipate that they will have indefinite relationships, if not with their current payment-troubled customer, with many future residents of the same building. A disproportionate number of those reporting many home defects were living in rental units. Repairs financed by utility-W.A.P.-landlord partnerships may well reduce the building's turnover that results from customers escaping unaffordable bills or poor conditions. When Weatherization services are delivered, inclusion of repairs PLUS efficiency measures can increase the probability that the unit will be a home for regular bill-payers.

Utility efficiency programs can increase the chance that residents of a weatherized address will be able to pay their bills by making sure that the Weatherization program it supports has the resources to repair even the worst housing conditions associated with unpaid bills.

Comprehensive Program Delivery Elements:

Selecting Homes to Weatherize AND Repair:

- Screening at program sites: The LIHEAP intake interview is the major source for Weatherization applications, although utility customer service centers are a secondary source of LIHEAP applications. Identifying those applicants with unpaid bills is part of the LIHEAP client assessment routine. LIHEAP Applicants at Community Action Agencies may seek crisis assistance because they have already received a bill they are unable to pay or they may seek help because they know their lower incomes will not cover all the cost of the necessities they anticipate buying. The intake worker can see the payment history and will determine the willingness of the applicant to seek Weatherization services; she records any additional information the Weatherization team will need to further determine eligibility for one or more services, including those financed by a utility partner. That screening could easily be modified to screen participants' housing defects that are associated with unaffordable bills.

- A pro-active utility approach would mine the information systems and designate building addresses that chronically are home to payment-troubled accounts as priorities for inspection and repair, choosing these payment-troubled sites as desirable locations for W.A.P. delivery organizations to consider investments in repairs as well as in whole-house efficiency measures. W.A.P. providers are as concerned about affordable bills and improving their community housing stock as about meeting DOE targets for reducing energy demand; indeed their organizations are Community Action Agencies or affordable housing developers that are typically involved in making multiple investments in the families served.

Efficient Local Coordination of Priorities

The final choice of Weatherization sites must be conducted with consideration of the total cost and efficiency of serving the locations identified. Study of successful utility-W.A.P. partnerships indicates poor results if the local delivery organization must use different criteria for selecting buildings for different funding streams.^{iv} However, utility partners can identify payment-troubled buildings, allow their local delivery partners to seek matches with interview data indicating that major repairs are needed, and then make ratepayer funding flexible enough to permit major repairs on any job site where needed.

These proposals can serve to open a discussion among partners in leveraged public-private programs about a Weatherization-Plus solution that is a win-win-win for the Weatherization energy metrics, for the utility debt-reduction goals, and, most of all, for the consumer who will be better able to afford basic energy services.

The Weatherization Leveraging Partnership Project

This research was a part of the EOS Weatherization Leveraging Partnership Project funded by the National Energy Technology Laboratory with support from the Weatherization Assistance Program. It is an element in the Low-Income Energy Consumer Databank section. Please visit our site or call for resources to support your leveraging initiatives.

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ⁱ The data used in this paper are from the U.S Census Bureau's Survey of Income and Program Participation (SIPP) 2004 Panel Wave 5 Topical Module respondents. <http://www.sipp.census.gov/sipp/>

ⁱⁱ For a full description of the Weatherization Assistance program and its investments, visit www.waptac.org; for an overview of Weatherization programs that combine resources from government, utility initiatives and other public-private partnerships, visit www.weatherizationplus.org.

ⁱⁱⁱ <http://www.opportunitystudies.org/weatherization-plus/leveraged-programs/utility/>

^{iv} "Introduction to Best Practices in WAP/ Utility Energy Efficiency Programs or: *Lessons Learned the Long Way*" http://www.opportunitystudies.org/repository/File/weatherization/Dos_and_Donts.pdf