

**GROUP HOMES AS
"LOW-INCOME RESIDENTIAL" UTILITY CUSTOMERS
FOR ENERGY EFFICIENCY PURPOSES**

By:

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Competition is coming to the electric utility industry. While the direct impact of such "restructuring" on advocates for residents of non-traditional housing may not be immediately obvious, electric restructuring decisions create an opportunity to address certain structural budget issues for group homes. As part of the "public benefits" funded through electric restructuring decisions, energy efficiency programs are being established for low-income residential consumers. This article posits that, if their residents are otherwise eligible, group homes for the disabled should be considered low-income residential consumers and be deemed eligible for receipt of this energy efficiency funding.

THE ENERGY NEEDS OF GROUP LIVING FACILITIES

In an effort to gain more understanding of the energy needs of individuals in group living facilities, a variety of shelters (of all types) were recently contacted in Washington State. Shelters for victims of domestic abuse, the homeless, refugees and developmentally disabled provide an important source of low-income housing in Washington State. The 63 shelters providing responses to the request for information provided housing to 17,178 persons in Fiscal Year 1994 (the last year for which data was available).¹¹ The shelters assisted an average of 327 persons per year.¹² Moreover, some shelters maintained records in terms of person nights, but not in terms of persons, and thus did not report

¹¹ To explore the needs of low-income persons living in alternative housing arrangements, contacts were made with agencies providing homeless shelters, domestic violence/sexual abuse shelters (DV/SA), and transitional housing for developmentally challenged individuals. Surveys were provided to 59 DV/SA programs, 133 homeless programs, 50 transitional housing programs, and eight (8) refugee housing programs. Not all such programs provided "shelters"; many programs, in other words, provide shelter through mechanisms such as hotel/motel vouchers. Other programs provide "services," but not "shelters." The responses discussed below are from programs providing information on shelters. Responses were received from 63 shelters, while receiving 33 responses from programs indicating that no shelter was provided.

¹² The largest number (2065) was excluded from this average. Moreover, transitional housing shelters, which serve from 3 to 10 persons each, were excluded from a calculation of the average.

comparable data to be included in this calculus. Program directors indicated that the residents of such shelters tended to have little or no income.

Burden of Energy Bills

Many shelters providing non-traditional living situations view their energy bills as serious threats to their financial viability. Respondents were asked to rate their energy bill burden on a scale of 1 - 7, with 7 being "not burdensome at all," 5 being "moderately burdensome," and 1 being "severely burdensome." Of the four respondents indicating that their energy bills were "not burdensome at all," three had received weatherization services, or had been rehabilitated recently.¹³⁾

In contrast to those shelters that had taken specific actions to control their energy bills, most shelters reported their energy bills to be moderately (n=35) (response 4 or 5) to severely (n=17) (response 1 or 2) burdensome. Of the nine shelters reporting their bills to be on the lower end of the "moderately burdensome" (response 4), six had received weatherization or rehabilitation services.

Burden Energy Bills Present to Special Population Service Providers		
LEVEL OF BURDEN	NO. RESPONDENTS	RECEIVED WX
1: severely burdensome	10	4
2	5	1
3	3	3
4	9	6
5: moderately burdensome	26	12 ¹⁴⁾
6	1	1
7: not burdensome at all	3	2

Just as telling of the energy burdens as the data itself are the comments that were provided in response to an open-ended invitation to comment on the energy burdens placed upon the respective shelters. Fifteen respondents took the opportunity to comment. None of the fifteen commenters had received government or utility-sponsored weatherization. Only four of the commenters rated their energy bills as good as "moderately" burdensome; the remainder were rated as "severely" (either response 1 or 2) burdensome.

One respondent said, for example, "this is our largest operating expense on an ongoing basis. We are

¹³⁾ One shelter declined to assign a value, indicating that its energy bills were paid by a specific HUD grant.

¹⁴⁾ Another had been rehabbed in 1992.

current with energy conservation, but bills are still high and climbing." At the other end of the spectrum is the respondent who said: "The shelter is 82 years old and would require measures beyond our capacity as a program to impact the consumption of energy." This shelter had gas and electric bills of \$3,600 (\$1,180 gas; \$2,410 electric) from an annual operating budget of \$29,000. Similarly, one commenter stated that the shelter faces the same choices often faced by low-income households. Noting that "last year, snow was on the ground for five full months, with an average temperature of 28 degrees," the shelter stated, "(we) can feed people, or keep them warm." This shelter had a total energy bill of \$2,500 and an operating budget of \$29,000.

One survey respondent expressed dismay about the impact the shelter's energy bills had on the ongoing ability to deliver service. The respondent said simply: "Help! It would be a real plus to be able to use energy moneys to enhance services for the homeless* * *." This shelter had an energy bill of \$6,119 (\$1,281 gas; \$4,837 electric) from an annual operating budget of \$105,000. Another shelter, while also not indicating that utility bills represented a threat to the ongoing efficacy of the program, indicated that "we could provide more client services with the monies that are currently being used to pay utilities." This shelter has an energy bill of \$7,541 (\$2,641 gas; \$4,900 electricity, water and sewer) from an operating budget of \$190,000. Two different shelters indicated the need for additional funds to do weatherization. They had energy bills of \$7,600 and \$10,300 respectively. One shelter indicated that "the heating bill is our major expense," with an electric bill of \$2,900 from an operating budget of \$42,000.

THE ENERGY EFFICIENCY OF SHELTERS

The level of energy bills for shelters can be affected by either the energy efficiency of the building itself --the building "envelope" refers to the actual structure-- or by the efficiency of the appliances used in the building. While the purpose of the survey was not to undertake a study of the specific energy efficiency needs of various shelters, some generalizations can be made.

Age of Buildings

The shelters tend to use older buildings, with older furnaces and water heaters.¹⁵¹ Excluding those shelters new in 1993 (n=3) and the one shelter reporting its age as 140 years, the average age of the building for these shelters was 44 years. Most shelters, however, were at the upper end of that spectrum. Older buildings tend to have greater energy efficiency problems, with less insulation, more leaks in the building envelope, and a greater deterioration in the physical structure. In addition, the technologies used, ranging from the ventilation systems to the construction materials, tend to be less energy efficient as well.

Range of Age of Shelters in Washington State

¹⁵¹ Some shelters reported having baseboard heat rather than furnaces, and thus did not respond to the question concerning the age of the heating system.

0 - 10 YEARS	7
11 - 20 YEARS	8
20 - 40 YEARS	13
40+ YEARS	24

Age of Appliances

From an energy perspective, even more of a problem than the age of the shelter, itself, is the age of the appliances serving the shelters. The average age of the furnaces was 16 years. Some shelters had relatively new heating systems, with 23 having systems less than 10 years old. Others (n=11), however, had heating systems older than 20 years. As might be expected, the newer heating systems were present in the newer shelters. Hence, the energy problems faced by older and less efficient buildings were compounded by older and less efficient systems used to heat those buildings.

The other energy intensive appliance present in these shelters, domestic hot water heaters, also tended to be older and thus, presumably, less efficient. While not as old as the heating systems, one-third of the water heaters reported to serve these shelters were older than 10 years. The average water heater age was nine years.

Range of Age of Water Heaters In Washington State Shelters	
0 - 10 YEARS	28
11 - 20 YEARS	12
20 - 40 YEARS	2
40+ YEARS	0

Presence of Weatherization

While most respondents reported having rudimentary weatherization measures in their shelters, few had received weatherization services through either local government or local utility programs. Roughly half of the respondents reported having storm windows (n=30), with more reporting ceiling insulation (undesignated R Factor)^{16\} (n=40) or wall insulation (undesignated R Factor) (n=39). Fewer reported having floor insulation (n=22) and virtually none had storm doors (n=19). Only 13 shelters had received weatherization services through the state or local governments, and only six reported having received weatherization services from their local utility. Two said they had weatherized their shelters using their own funds.^{17\}

^{16\} R factor is the energy savings value of the insulation. A higher R factor means there will be less heating leakage through the insulation.

^{17\} Three shelters were new in 1992 or later.

TYPES OF ENERGY EFFICIENCY PROGRAMS

Energy efficiency programs directed toward low-income consumers can take several different forms. In virtually every instance, energy efficiency programs will be directed toward lowering the cost of home heating. Home heating efficiency improvements can range from the installation of ceiling, wall and floor insulation; to the sealing of small leaks in the building envelope. Small holes that develop around floors and ceilings, as well as around chimneys and ducts, represent a major source of home energy (and thus dollar) loss. These leaks can be identified and inexpensively repaired by using a blower-door home energy audit. A blower door depressurizes the home, thereby allowing an energy auditor to find holes by identifying the drafts where air rushes in from the outside.^{18\}

In addition to home heating costs, however, some utility energy efficiency programs are directed toward non-heating consumption as well. This non-heating consumption is frequently referred to as "base load" energy consumption. Base load consumption can consist of everything from lighting to electric appliances. Indeed, one source of considerable energy waste in low-income homes involves old and energy inefficient refrigerators. The average efficiency of refrigerators has increased by nearly 60 percent in the last 20 years.^{19\} Refrigerators represent roughly 15 percent of all home energy consumption.

Overall, an effective energy efficiency program for low-income consumers can reduce home energy bills from 20 to 30 percent or more.

Energy Efficiency Market Barriers

Given these benefits, it might at first blush seem that an economically rational consumer would install energy efficiency measures if the expenditure of money on energy efficiency measures returns more in savings than it costs.^{110\} The dynamics of energy efficiency investing, however, are not quite so simple.

A host of market barriers exist that impede the implementation of efficiency measures by consumers. Moreover, low-income consumers face unique market barriers not facing consumers in general. Residents of group homes are likely to face the low-income market barriers.

Consumers generally must overcome several significant impediments to the installation of energy efficiency measures.^{111\} First, consumers do not have free access to information on capital/operating

^{18\} If the home is depressurized, the higher pressure air on the outside will be forced through the holes to the lower pressure home interior. By walking around the depressurized building, the auditor can thus find these leaks and plug them.

^{19\} Energy Information Administration (May 1992). *Residential Energy Consumption Survey, Housing Characteristics 1990*, at 24, U.S. Department of Energy: Washington D.C.

^{110\} If you can spend \$100 to save \$110, that's a good deal. The consumer is \$10 better off having made the expenditure.

^{111\} See generally, Roger Colton (1995). *Energy Efficiency and the Low-Income Consumer: Planning,*

tradeoffs. There is an implicit cost in time and effort to obtain this information. Particularly if human resources are stretched thin, time may not exist to determine the advantages of energy efficiency investments. Second, the ability to invest in energy efficiency measures often depends on having access to credit. However, consumer credit is often limited by financial institutions that disregard the value of conservation investments. Third, even in the event that a measure is cost-justified in the long-term, if the initial capital cost exceeds the ability of a customer to finance, the measures will not be implemented. It obviously makes no difference if a \$2,000 investment will yield \$3,000 in savings if a consumer does not have the \$2,000 to invest in the first place.

In addition to market barriers common to all residential consumers, low-income households have market barriers that are different from, and more extensive than, residential households in general. The result of these market barriers is to even more severely restrict the availability of energy efficiency measures to low-income consumers than to residential consumers in general. To illustrate the meaning of the term "market barriers," three in particular are discussed below: (1) payback periods; (2) liquidity; and (3) tenancy.

Discount Rates: Low-income households tend to have extremely high implicit discount rates (also sometimes known as hurdle rates or internal rates of return). From an institutional perspective, what this means is that if the "payback" from the measures (that time period within which the total savings will exceed the initial expenditure) is longer than the planning horizon, measures will not be implemented. It is difficult to invest in energy efficiency that will yield net benefits in five years if one is not certain about *next* year's budget.

In a report for the Electric Power Research Institute (EPRI), Cambridge Systematics found that the implicit discount rate for low-income households ranged up to the 80 - 90 percent level (something more than a one year payback). A hurdle rate of 100 percent means that the cost of the investment must be returned in savings in one year. While energy efficiency investments frequently have payback periods of from five to seven years, few will generate a payback in only one year.

Liquidity: Low-income households tend to have extremely low liquidity. In these circumstances, the payback period for any particular energy efficiency measure becomes irrelevant if the household does not have the investment capital with which to begin. One important source of energy savings, for example, is to move a customer from the purchase of a less energy efficient new refrigerator to a more energy efficient new refrigerator. In such an instance, however, most low-income households are not in the market to purchase new refrigerators with which to begin. If and when they replace an old or broken refrigerator, they replace it with a used appliance.

Tenancy: Finally, low-income households tend to live in rental dwellings. Research in a variety of states has found that from 60 - 75 percent of all recipients of federal fuel assistance tend to be tenants. This finding has significance in two respects. On the one hand, tenants have little or no incentive to improve the landlord's property. They do not receive any of the increased value of the property and, in fact, may face rent hikes as a result of the improvements. On the other hand, landlords
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owning housing occupied by tenants whose electricity use is individually metered have little incentive to invest in energy efficiency improvements. The savings from the reduced energy bills flows to the tenants, not to the landlord. This "split incentive" often leads to nothing being done.

Market Barriers for Shelters

The shelters in Washington state evidenced many of the same market barriers to energy efficiency improvements as do low-income households. One respondent reported, for example, that they could not improve their shelter since it was rented. This shelter had an energy bill of \$1,530 from an operating budget of \$50,000. Another echoed this sentiment, noting that "our shelter building is extremely inefficient, however, we do not own the building." This shelter paid an electric bill of \$1,700 from an operating budget of \$10,000.

Shelters faced liquidity problems as well. Without assistance, the survey respondents were unlikely to be able to afford to provide weatherization services. *None* of the shelters provided for possible weatherization measures in their routine maintenance budgets, and none maintained an operating reserve for future energy efficiency improvements.

ELECTRIC INDUSTRY RESTRUCTURING

A major event is occurring in this country's economic system today: the "restructuring" of the electric power industry. In brief, electric restructuring allows electric utilities to compete with each other and with other power generators and largely frees these competitors from government regulation. As a result, restructuring commits to "the market" certain protections that regulation has historically provided.¹²⁾

While it may seem that electric restructuring will not be of particular significance to group homes for the disabled, in fact, it provides a window of opportunity for such homes to reduce their energy consumption, lower their total home energy bills, and improve their budgetary outlook. One condition that many states are placing on "restructuring" the electric industry involves the imposition of a "wires charge," "system benefits charge" or "distribution fee." This type of charge generally generates funds for three purposes: (1) the provision of cash fuel assistance; (2) the provision of crisis intervention assistance; and (3) the provision of energy efficiency improvements. In particular, group homes for the disabled should seek to tap into the energy efficiency funds that are being generated.

Energy Efficiency in Electric Restructuring Decisions

Legislation, as well as state regulatory decisions, providing for the restructuring of the electric industry is almost universally providing funds for programs to implement low-income energy efficiency

¹²⁾ Ensuring reliability, providing consumer protections, and guaranteeing fair prices are but illustrations of such protections that would no longer be overseen by a regulatory agency. Instead, competition would be relied upon to achieve these goals.

improvements. In California, which began electric "retail choice" on January 1, 1998, the state legislation mandating competition in the electric industry provides that "programs provided to low-income electricity customers, including but not limited to targeted energy efficiency services and the California [rate discount] shall be funded at not less than 1996 authorized levels based on an assessment of customer need."^{13\} The California legislation provides further that low-income energy efficiency services and the rate discount should be administered separately, but in close coordination with each other. Almost one third of the statewide low-income assistance is directed toward energy efficiency improvements.^{14\}

Similarly, in New Hampshire, which has legislation allowing electric retail choice,^{15\} the regulatory decision implementing the legislation authorizes a "system benefits charge" to accomplish three goals: (1) to bring electric bills into the "range of affordability"; (2) to encourage conservation and the use of energy efficiency mechanisms to make electric bills manageable; and (3) to make the most effective use of limited funding.^{16\}

The state of Pennsylvania has required a continuing reliance on its Low-Income Usage Reduction Program (LIURP) as part of the restructuring plans to be pursued by the electric utilities in that state.^{17\}

Massachusetts, too, requires that electric utilities incorporate low-income energy efficiency programs into their electric restructuring implementation plans.^{18\}

SUMMARY

The creation of low-income energy efficiency programs as part of electric restructuring decisions creates an important opportunity for advocates for the disabled (or other groups of persons using non-traditional housing) to seek assistance in reducing home energy bills for group homes. The fact that such group homes may represent non-traditional housing should not detract from their participation if residents are otherwise eligible. The fact that group homes may be owned by for-profit as well as not-for-profit institutions makes them no less eligible. The fact that on-site staff or supervisors are provided to group home residents makes them no less eligible.^{19\}

^{13\} West's Ann. Cal. Pub. Util. Code, §382 (1997).

^{14\} Roger Colton (1997). *Status of State Electric Restructuring Activities on Low-Income Assistance*, at Table 4, Fisher, Sheehan and Colton, Public Finance and General Economics: Belmont, MA.

^{15\} N.H. St. §374-F:3(VI) (1996).

^{16\} *Re. Restructuring New Hampshire's Electric Utility Industry*, 175 P.U.R.4th 193 (NH Pub. Serv. Comm'n) (Feb. 28, 1997).

^{17\} *Re. Guidelines for Universal Service and Energy Conservation Programs*, 178 P.U.R.4th 508 (Penn. Pub. Util. Comm'n) (July 11, 1997).

^{18\} 1997 Massachusetts HB 5117, §19 (enacted November 25, 1997).

^{19\} The housing and land-use implications of excluding group homes from consumer protections, bill

Given their residential nature, their need for energy efficiency improvements identified above, and their otherwise limited budgets to pay for home energy, group homes for the disabled should seek to participate fully in low-income residential energy efficiency programs funded through state electric restructuring decisions.

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payment assistance, and energy efficiency programs otherwise available to low-income residential customers is explored elsewhere. Roger Colton (1998). *Utility Rate Classifications and Group Homes as "Residential" Customers*, Fisher, Sheehan and Colton, Public Finance and General Economics: Belmont, MA. (submitted to *Clearinghouse Review* for publication). The general applicability of the federal Fair Housing Act to competitive electric service providers is outlined in Roger Colton (June 1997). *Electric Industry Restructuring and the Regulation of Electric Service Providers: The Role of the Fair Housing Act*, Fisher, Sheehan and Colton, Public Finance and General Economics: Belmont, MA.