LOAN GUARANTEES AS A UTILITY INVESTMENT

IN

ENERGY EFFICIENCY FOR LOW-INCOME HOUSING

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INTRODUCTION

Many public utilities today do not believe investments in low-income Demand Side Management (DSM) measures to be cost-effective. When the low consumption, and thus low savings potential, of Poverty Level households is coupled with high per-unit administrative and delivery costs, cost-effectiveness tests are often difficult to meet.

This analysis proposes that there exists an entire *genre* of utility investments in low-income DSM that would allow cost-effective utility participation in the delivery of energy efficiency improvements to low-income households. The investment would be provided in the form of a utility guarantee of private financing for energy efficiency improvements.[1] Such an investment would be the energy equivalent to the "soft second mortgage," that financing which is so often crucial to low-income housing development today.[2]

The loan guarantee will be directed toward larger multifamily housing developments rather than to single family detached homes. Nationwide, these larger developments are often underserved by federal low-income weatherization programs. Even in those situations where federal dollars *are* directed to such developments --New York is one good example-- contributions from property owners are often required. In contrast, it would be difficult to reach the market of single-family detached homes through a lending programs, particularly a market of *low-income* single family homes. Thus, limiting the guarantee to multi-family developments is reasonable.

In this respect, the lending program contemplated by this proposal is not a lending program to low-income homeowners or renters. That type of lending program for energy efficiency improvements has consistently been shown to fail for a variety of reasons.[3] Instead, the lending

[1] This proposal, without more, would not suffice to be a comprehensive "low-income program" unto itself. A utility's comprehensive low-income program, in other words, would need to contain other components.

[2] See generally, Gold, From the Neighborhoods to the Capital Markets: Report of the National Task Force on financing Affordable Housing (June 1992).

[3] Included among these reasons are the unwillingness of low-income households to go into debt in order to finance speculative future dollars savings attributable to reduced energy consumption; the high transaction costs associated with granting and serving a low-income loan; and so forth.

program contemplated by this proposal, upon which a utility guarantee would be crafted, is the lending that routinely goes into low-income multi-family housing developments of all types.

1.1 THE CONCEPT OF LOAN GUARANTEES

1.1.1 The Concept as Articulated for Federal Loan Guarantees

The notion of using loan guarantees as a means of generating dollars of private investment is not new at all. The federal government, in particular, has relied upon loan guarantees for economic development purposes dating back to at least the 1930s. One commentator has identified the primary objective of federal loan guarantees to be: "to enable the federal government to use the resources of others to maximize the general welfare."[4]

Brooks and Cheever observe that "the phrase `resources of others' generally means funds provided by the private sector. Such funds are usually generated by financing institutions--commercial banks, saving and loan associations, insurance companies, factoring companies, investment banking houses, and venture capital investment companies."[5]

Moreover, Brooks and Cheever defined the term "use" in their identification of the primary objective of federal loan guarantees. Three basic ways exist for the federal loan guarantee program to "use" the "resources of others," they state.

> First, the programs attempt to shift, or redirect, resources within the private sector. The certainty of interest and principal payments that arise from a federal loan guarantee can induce private lenders to move their money from one sector of the economy to another. For example, the issuance of federal loan guarantees to rural and urban dwellers during the Great Depression brought badly needed private funds into a collapsing housing industry. Federal loan guarantees made investment in the housing sector a safe bet.
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> The second way in which the program attempts to `use' private funds to maximize the general welfare is by maintaining `resources in uses to which they were once directed by market forces but which now are less profitable than alternative uses.'

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[4] ***Brooks and Cheever, "The Federal Loan Guarantee Program: A Unified Approach," 10 Journal of Corporation Law 185, 200 (1984).***

[5] ***Id., at 201.***

It falls upon a Hamiltonian government to decide that some private enterprises, although less profitable than others, are too important to let die. Other values, such as high employment, may be so important as to outweigh the distortion of competitive forces occasioned by the government's injection of life into a possibly moribund enterprise which profit-stricken credit markets would not otherwise touch.

A less controversial `use' of private resources by the federal loan guarantee program is resource employment. Here, the program employs private resources left temporarily idled by short-term fluctuations in economic activity.[6]

1.1.2 The Concept Applied to Low-Income Energy Efficiency

The same objectives supporting the federal loan guarantee programs, as well as the same uses of funds, could be ascribed to private utility investments in low-income energy efficiency measures through a utility-financed loan guarantee endeavor. The objective of such a utility loan guarantee program would be to "use" the "resources of others" to maximize the general welfare of the utility. As with the federal loan guarantee program, the "resources of others" would involve private financing, discussed in substantial detail below. The term "maximize the general welfare" would mean to reduce the energy costs (and thus the "unaffordability" of energy bills) to low-income households (along with the social consequences of such unaffordability), to reduce the costs of producing energy through the implementation of least-cost resource acquisition, and to reduce the expanded avoided costs associated with bad debt, credit and collection, working capital and the like.[7]

1.1.2.1 Housing Abandonment

Facilitating the commitment of private resources to financing low-income energy efficiency would promote the general welfare of the community. For example, research has found a discernible connection between the loss of utility service and housing abandonment. Utility terminations are "clearly a precipitating factor in housing abandonment," recent research in Philadelphia has found. According to a joint study by the Philadelphia Energy Coordinating Agency and Temple University's Institute for Public Policy Studies (ECA/IPPS),[8] over five years, an

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[6] ***Id., at 202 (footnotes omitted).***

[7] ***See, pages 33 - 36, infra.***

[8] ***Energy Coordinating Committee and Institute for Public Policy Studies of Temple***

average of 32 percent of the homes of residential electric customers in that city became abandoned within one year following termination. The average percentage was found to be slightly lower for gas terminations: 22.4 percent.

The ECA/IPPS study concluded:

> The evidence linking utility terminations to abandonment is strong, consistent over a five year period and across two utilities, gas and electric. The utility survey results in Philadelphia suggests a stronger relationship between the loss of electric service than of gas. The evidence also suggests that the percentage of units which have experienced termination and become vacant increases over time.

To the extent that utility bills can be reduced and/or stabilized through energy efficiency, and thus made more affordable to low-income households, these costs to the community can be reduced. Housing abandonment not only has an impact on the household, but on the neighborhood stability, on the viability of the city or town. Patches of untended and unoccupied housing will have an adverse ripple effect on the sense of safety and potential in a neighborhood or town.

1.1.2.2 Homelessness

There is a relationship between utility disconnections and homelessness as well. The Philadelphia research found that "the relationship between terminations and homelessness is also clearly discernible." Surveys of homeless persons and emergency shelter providers across Pennsylvania, ECA/IPPS said, "have found the loss of utility service to be a minor, but consistent contributor to homelessness. Among the dominant housing-related reasons for homelessness, utility terminations were cited as the cause 7.9% of the time." High energy prices "also undoubtedly contribute to the other, more frequently cited housing related reasons for homelessness," ECA/IPPS said, "such as `lack of housing in income range,' and `eviction for nonpayment.'"

This Philadelphia research is confirmed by research by the Northern Kentucky Coalition for the Homeless. That organization found in a recent

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University, An Examination of the Relationship Between Utility Terminations, Housing Abandonment and Homelessness (June 1991).

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study that the disconnection of utility service was one of the reasons consistently cited as a cause of homelessness.[9] Homelessness obviously damages the quality of life of the person with no home. But it also damages the larger community to experience the presence of numbers of individuals with no regular ties to a stable residence. Homeless people have more difficulty finding and keeping work, and their presence in the community is a visible reminder of the failure of the social and economic base of the community to provide a place for all its members.

1.1.2.3 Health Implications

There are substantial health implications associated with the loss of home heating in cold weather, which energy efficiency improvements can help avoid. A 1991 NCLC study of shutoffs in North Carolina found that seven percent (7%) of all households lost their primary heating service in that state for a variety of reasons in the last winter.[10] Many of these households lacked any alternative heating source when their primary heating source was out of operation. Nearly four of ten of those households (38%) having lost primary heat said that they had *no* alternative and, as a result, that they went *without* heat for some period of time during the winter because of the loss.[11]

A 1993 study in Washington State found similar results.[12] That study reported that sixty-two percent (62%) of the respondents losing heat in the immediately preceding 12 months reported using nothing while their heat was off. Of those who lost their heat during the *winter*, 51% reported using nothing while their heat was off. The next most frequent response for all shutoffs (and specifically winter shutoffs) was "other," having been selected by 15% of the respondents. In most cases "extra blankets" and "stayed at a friend's or family's house" were the responses written in. Therefore, not just a majority, but a substantial majority (62% + 15% = 77%), of those who lost their heat had absolutely no heat in

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[9] ***Northern Kentucky Coalition for the Homeless (with technical assistance by Applied Information Resources), Homelessness and Low-Cost Housing in Northern Kentucky: An Analysis and a Strategic Action Plan (July 1990).***

[10] ***Colton and Levinson, Energy and Poverty in North Carolina: Combining Public and Private Resources to Solve a Public and Private Problem (1991).***

[11] ***Id., at 62.***

[12] ***Sheehan, et. al, An Assessment of Low-Income Energy Needs in Washington State, at 108 (Nov. 1993).***

their homes for the duration of time that their heat was off.[13]

Loss of a household's primary heat source presents serious risks both in terms of the cold as well as the dangerous side effects such as fire and carbon monoxide poisoning resulting from using unsafe heating sources. According to the National Center for Heath Statistics, approximately 60,000 lives are lost annually by problems associated with cold weather including fires, carbon monoxide poisoning, pneumonia, influenza and other infectious diseases and of course hypothermia."[14]

Moreover, these dangerous tradeoffs between health and energy affect not only the vulnerable elderly, but young children as well. A study by Boston City Hospital of 7,367 children found that "the number of malnourished, low-weight children jumped dramatically following the coldest winter months."[15]

In fact, the elderly are one of the most vulnerable populations to these health impacts. Hypothermia is a more serious danger than people are commonly aware, particularly for the elderly. Over 2.5 million older Americans are at risk of developing hypothermia during the winter season each year according to the National Institute on Aging.[16] The proceedings of the Federal Council on the Aging, *Accidental Hypothermia: Facts and Myths*, states:

> Hypothermia, literally a drop in the body's internal temperature, is a potentially fatal cold weather hazard for older Americans. While usually associated with outdoor recreation or the homeless, most victims of hypothermia are the elderly who die in their own homes in seemingly normal temperatures.[17]

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[13] ***The North Carolina study did not consider the "other" category in its analysis.***

[14] ***Select Committee on Aging, House of Representatives, Deadly Cold: Health Hazards Due to Cold Weather, at 2 (1984).***

[15] ***Diego Ribadeneira, "BCH Study Illustrates Poor's Painful Choice," The Boston Globe, at 1 (September 8, 1992).***

[16] ***Id.***

[17] ***Federal Council on the Aging, Accidental Hypothermia: Facts and Myths, Washington,***

In discussing which elderly people are most vulnerable to death resulting from hypothermia, a Congressional Committee, the Select Committee on Aging, wrote in its report to Congress:

> Low fixed incomes, poverty and the increased cost of fuel heating and cooling the home create conditions in which many of the most vulnerable members of our communities are forced to make dangerous tradeoffs between energy and health. Energy conservation programs which encourage elderly people to reduce room temperature below 70 degrees F, directly endangers the health and safety of those who are vulnerable to hypothermia.* * * These individuals may try and minimize their fuel costs by keeping the temperature in the home or apartment as low as possible rather than a minimum of 65 degrees. In the worst case inability to pay for fuel energy could result in a termination of service and severe risk during a cold spell.[18]

The Select Committee found that these deaths related to cold weather are preventable. In the "Suggestions for Reform" section, the Select Committee for Aging, as one of its recommendations, advised the following: "health organizations should work closely with gas and electric companies to prevent gas and electric shutoffs to residential customers. Shutoffs during the winter time should not be allowed without adequate warning and notification of a responsible health department."

1.1.2.4 Safety Implications

Finally, in contrast to the households who had absolutely nothing to rely upon when their heat was shutoff as discussed above, the remaining 23 percent in Washington state generated heat by using another fuel source, whether it was a portable heater, the kitchen stove, or a fireplace.[19] Households which experienced loss of home heat between April and November were more likely to use a fireplace or portable electric heater. Similarly, in North Carolina, even those households who didn't lack heat altogether faced major disruptions in their ability to

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DC, iv.

[18] ***Select Committee on Aging, House of Representatives, Deadly Cold: Health Hazards Due to Cold Weather, Washington: U.S. Government Printing Office, 1984, 2.***

[19] ***Sheehan, et al., at 108.***

keep warm. Of those households losing their primary fuel last winter, nearly one in four (24%) used either portable kerosene heaters or portable electric heaters as their (expensive and very dangerous) replacement source of heat. A nearly equal proportion of the households losing their primary source of heat relied upon either their cooking stove or their fireplace (20%) as their primary heating source.[20]

However, there are serious safety implications with the use of these alternative sources of home heating. Home heating equipment is the leading cause of all residential fires, although space heaters account for only a small number of them. However, fires caused by electric space heaters are five times more likely to result in a fatality than the average house fire, and ten times more likely to result in a fatality than all fires. Half the deaths and one-third the injuries from electric space heaters occur when family members are asleep and the heater is unattended.[21]

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[20] ***Colton and Levinson, at 63.***

[21] ***Efficient, Inexpensive Space Heaters Also Pose Deadly Danger, Washington Post, at p. C-01 (January 20, 1989).***

1.1.3 SUMMARY

In sum, loan guarantees provided by public utilities to secure private investment in low-income energy efficiency improvements will fulfill the historic objectives that loan guarantees generally play. Such guarantees will involve the use of other peoples' money --non-utility funds, that is-- to direct private investment into a sector of the economy through which the utility as guarantor, the community at large, and the recipient of the energy efficiency improvements will benefit.

2.1 THE POTENTIAL FOR PRIVATE FINANCING OF LOW-INCOME ENERGY EFFICIENCY

2.1.1 Sources of Private Financing

Significant sources of private financing exist today that can potentially be directed to the financing of low-income energy efficiency improvements. These dollars would be provided in the form of debt financing. Accordingly, the debt investor would expect a return "of" her investment along with a return "on" her investment in the form of an appropriate interest rate.[22]

Sources of private financing would include traditional financial institutions such as banks and savings and loans. Financing from such institutions would generally be directed to developers of low and moderate income housing. According to one recent study, most current construction loans for multifamily mortgages come from conventional financing sources. The report states:

> In 1989, $31.1 billion of multifamily mortgage loans were originated, which represents 6% of all long-term mortgages issued that year. In comparison, $352 billion in single family mortgages were issued. While the total dollar amount of multifamily originations increased nearly threefold over the decade, it still remains a small part of the overall mortgage market. Multifamily originations peaked at $49.8 billion in 1986 and have declined since to a low of $31.1 billion in 1989.
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> * * *Thrifts and commercial banks have clearly been the major originators of multifamily mortgages. Since 1983, the S&Ls accounted for between 35-50% of market originations. In 1989, thrifts and commercial banks originated 37% and 25% of

[22] ***The "appropriateness" is measured by the interest rates of other investments of similar risk and term.***

total multifamily loans, respectively.[23]

Moreover, Gold stated: "overall, multifamily developers rely heavily on commercial banks and thrifts for acquisition, development and construction (AD&C) loans. In 1989, 47% of multifamily construction loans outstanding were held by commercial banks. Thrifts held 36%."[24]

A second source of financing serving the low-income community involves state and local Housing Finance Agencies (HFAs). HFAs serve as the financing of last resort for much low-income housing. Collectively, state HFAs administer more than 600 affordable housing programs. Of this total, approximately 245 are rental housing programs. State HFA rental programs fall into six broad categories, including:[25] (1) providing financing and federal Housing Tax Credits for the construction or rehabilitation of affordable housing; (2) subsidizing rental costs; (3) preserving existing low-income rental projects; (4) providing loans and grants for repairs and energy conservation improvements to multi-family properties; (5) addressing specialized multifamily needs; and (6) raising or providing capital for new low-income multifamily housing projects through Tax Credit equity funds and other capital pools.

A third source of low-income debt financing involves Community Development Loan Funds (CDLFs). By 1993, 41 CDLFs existed in the country, with a total capitalization of $100.1 million, representing 3,437 investors. These institutions provided roughly $450 million in loans from 1986 through 1992, 44 percent of which went for affordable housing development. From 1986 through 1992, CDLFs financed 18,476 housing units, 86 percent of which were "permanently affordable" and 87 percent of which were affordable to low-income tenants. Each year, CDLF investments have grown, from $20 million in 1986 to $120 million in 1992. Moreover, CDLF lending from 1986 through 1992 leveraged an additional $1,678 million in funds, a 14:1 leveraging ratio.

Finally, the role of CDLFs is to finance community-based solutions to low-income neighborhood problems, and to provide for community

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[23] ***Gold, From the Neighborhoods to the Capital Markets: Report of the National Task Force on financing Affordable Housing, at A8 (June 1992).***

[24] ***Id., at A9.***

[25] ***Glenn Petherick (ed.), State HFA Program Catalogue: Volume Two: Rental Housing Programs (Jan. 1992).***

economic development strategies. From 1986 through 1992, CDLF financed projects created 3,867 jobs, of which 62 percent were specifically for low-income people. Each of these roles would encompass the financing of energy efficiency.

2.1.2 Points of Intervention

The points at which energy efficiency can be introduced to low-income housing developers are broader than simply at the time of new construction or rehabilitation. Clearly, new construction and rehabilitation are important processes, but they are perhaps not even the most important point of intervention.

A second point of intervention is at the time of refinancing. In Vermont, for example, most of the Section 8 housing mortgages are held by the VHFA. This housing might be refinanced in light of falling interest rates. A third point for financial intervention is at the time of a change in ownership.

In sum, the energy efficiency investment proposed below is not applicable only when major structural work is being done to the low-income units in question. The financing to be guaranteed by a public utility instead can be applied either to "new" or to "ongoing" projects.

3.1 BARRIERS TO LOW-INCOME FINANCING

Given the advantages of cost-effective investments in energy efficiency improvements by owners and developers of low-income housing,[26] it may at first appear that private financing of such improvements should occur irrespective of a utility's commitment of its DSM dollars in any fashion. For a variety of reasons, however, this does not occur.

Institutions involved with the development of low-income housing find several obstacles to the aggressive inclusion of energy efficiency measures within their efforts. Perhaps the most significant obstacle is the "over-improvement" of the properties in the first instance. This "over-improvement" is significant for those seeking additional debt with which to finance energy efficiency measures, even if such measures are

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[26] ***Cost-effective is measured from the perspective of the developer or owner. By hypothesis, only cost-effective energy efficiency investments are implemented.***

cost-effective over the lifetime of the project.[27] In those instances where a housing developer has borrowed at or in excess of traditional loan-to-value ratios, additional debt most often will *not* be provided for energy efficiency measures.[28] In this regard, traditional lenders view investments in energy efficiency as additional capital investments, while not taking into account the reduced operating costs that arise as a result of the energy savings (and thus reduced bills).

According to William Duncan of the Enterprise Foundation,[29] nonprofit developers experience a "significant crunch" between housing development costs and the "affordability factor." Developers, Duncan said, "are forced to make trade-offs, reduce fees, and take other measures to keep their housing affordable." Examples of these trade-offs, he said, are design standards attached by financing sources and regulations controlling the use of lead-based paints.

The two biggest problems that Duncan identified include:

1. The appraisal process for both rental and for-sale housing. When a house in a low-income neighborhood is purchased and rehabilitated, Duncan said, from a market standpoint, it is "almost always" over-improved. A property purchased for $15,000 and improved with $35,000 might receive a maximum appraisal of $25,000.

2. Elevating the value of the home through energy efficiency improvements must not put the price of the home outside the income range for which the home is targeted. Developers often target homes for households with incomes of as little as $15 - $20,000. The developer or financier must believe that the price of the energy efficiency improvements must, when combined with the price of the underlying home, still fit that market.

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[27] ***Cost-effective means simply that the life-cycle benefits from the energy efficiency improvements on a net present value basis exceed the life-cycle costs.***

[28] ***Virtually every housing development experiences this situation. This is one reason why "soft dollars" (such as local CDBG dollars and the like) are so essential to make low-income developments financially viable in the first instance. See generally, Gold, supra note*** *Error! Bookmark not defined..*

[29] ***Duncan is Director of the Enterprise Foundation's Rehabilitation Work Group.***

The situation identified above can be summarized as two problems: first, there is the inability to receive additional debt financing through traditional lenders, even for cost-effective energy efficiency improvements. Second, there is the unwillingness[30] of lenders to account for energy savings in their underwriting criteria.

Utility investment in low-income energy efficiency through the provision of a loan guarantee can help address each of these problems.

4.1 DIFFERENT TYPES OF GUARANTEE PLANS

Two types of loan guarantee programs can be developed, according to Brooks and Cheever. The first is called a "prime borrower plan." The second is called a "marginal borrower plan." About "prime borrower plans," they state:

> As its name implies, Prime Borrower Plans are loan guarantees which seek to provide credit assistance to borrowers the *government* (emphasis in original) deems to be credit worthy in the sense of having readily marketable collateral.[31] Typically, such borrowers are small and are in need of federal credit assistance not because of their size but rather because they seek credit under some novel financing scheme or under a conventional financing scheme which could create a cash-flow problem for any number of reasons* * *. By providing credit assistance to such borrowers, the government attempts to redirect or employ private resources to favored sectors of the economy.[32]

In contrast, there are the "marginal borrower" programs. According to Brooks and Cheever, "Marginal Borrower Plans" are similar to "Prime Borrower Plans" in many respects. Both deal with small borrowers, place borrowers in a pool to effectuate risk distribution, and redirect or

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30 ***To say "unwillingness" may unfairly imply a misfeasance. These traditional lenders operate under regulatory guidelines that may restrict their discretion on such matters.***

31 ***In this proposal for a utility loan guarantee program, this would, of course, be the financier, not the government, making this creditworthiness decision.***

32 ***Brooks and Cheever, at 203.***

employ private resources."[33] However, they continue:

> As the name implies, Marginal Borrower Plans are for marginal, or undependable, borrowers--borrowers who as a group have developed a relatively high record of default and are unable to provide good collateral. Small businesses and students are quintessential Marginal Borrowers.[34]

Most loan guarantee plans are Marginal Borrower Plans, Brooks and Cheever state, but the *dollar volume* of Prime Borrower Plans has traditionally exceeded the dollar volume of Marginal Borrower Plans. The percentage of outstanding loan guarantees by Prime Borrower Plans is also greater."[35]

Both of these levels of analysis of guarantee programs are applicable to a utility guarantee for energy efficiency improvements. On the one hand, the utility guarantee is provided only to projects that are found to be creditworthy in the first instance for the non-energy component of the loan.[36] In this respect, a utility program looks much like a Prime Borrower Plan. On the other hand, the utility guarantee is provided to the energy component of projects that would not be funded in the absence of the guarantee. In this respect, a utility program looks like a Marginal Borrower Plan.

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[33] ***Id., at 204.***

[34] ***Id.***

[35] ***Id.***

[36] ***Hence, in other words, the owner, manager or developer of affordable housing approaches a financial institution. That owner/manager/developer seeks financing for new construction or substantial rehabilitation, or seeks refinancing, or seeks financing for a change in ownership. Having decided that the owner/manager/developer is sufficiently creditworthy for that financing, the financier then agrees to provide additional energy efficiency financing based on the strength of the utility guarantee for that component of the deal.***

In many senses, however, it may be difficult to tell. For the reasons discussed above, the utility, itself, as opposed to the traditional financier, may believe that the energy component of the development is unquestionably solvent (and thus the energy efficiency improvement is considered a Prime Borrower candidate from the utility's perspective) while the financier may simply not understand or appreciate the energy efficiency improvement's financial underpinnings (and thus the energy efficiency improvement is considered a Marginal Borrower candidate from the financier's perspective).

5.1 RISKS TO BE GUARANTEED AGAINST

To understand the exposure to which a utility holds itself out through a low-income guarantee program, the utility must first identify and articulate the risk against which it provides a guarantee. Those risks might be less than at first imagined.

5.1.1 Developer Insolvency/Project Non-Viability

A utility guarantee of financing for energy efficiency improvements provides recourse of last resort in the event of a payment default. In order for a utility's guarantee to be called upon for repayment, at least two contingencies must first simultaneously occur:

1. The project or developer must default due to insolvency or non-viability; *and*

2. The collateral pledged to secure the underlying financing must be insufficient to reimburse the primary financiers the full value of the financing --including the energy efficiency financing-- without resort to the guarantors.

The first risk to the utility, therefore, is simply the risk of nonpayment due to insolvency. The insolvency is of two types. First, the developer could become insolvent for a variety of reasons. Second, the particular development could become insolvent or non-viable. In this latter instance, repayment of the debt financing could be jeopardized irrespective of how financially strong the developer might otherwise be.

Each of these risks to the utility is minimized because the utility is providing a guarantee *not* for the entire project, but rather simply for the energy efficiency "add-on" to an existing project.[37] Guarding against any risks to the utility, in other words, are the facts that both the

[37] ***While the developer would pledge the entire project as security, the utility guarantee would be for the energy efficiency component only.***

developer *and* the development must be sufficiently financially viable to satisfy the underwriting criteria for the primary financing as a whole. Because of this initial screening process, the marginal risk to the utility of developer insolvency or project non-viability arising because of the energy efficiency improvements would be small.[38]

5.1.2 Risk Shifting of Guarantee

The way to conceptualize a utility guarantee is as a risk-shifting mechanism for risks that may be more perceived than real. A lack of relevant investment expertise is one factor that prevents adequate private capital from flowing to energy conservation. Most banks, one researcher notes, "have had little experience in making loans for energy efficiency equipment and are not familiar with how energy efficiency equipment works or how it relates to the overall operation of a facility."[39]

Lack of an established track record in producing results is a second factor that has been cited as interfering with the generation of adequate private capital for energy conservation.[40] This lack generates a skepticism, sometimes deservedly so, regarding the projected results. Accordingly, banks are often unwilling to rely upon the stream of energy savings as a source of loan repayment. Articulated problems include the difficulty in measuring the savings as well as the unreliability of the savings projections. In response to efforts to generate bank financing for one shared savings project, one bank refused even an insurance policy that would have insured the estimated energy savings that would have been realized for the transaction.[41]

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[38] ***Indeed, many would argue that the energy efficiency improvements would improve, not threaten, the development's financial viability. However, this belief begs the question.***

[39] ***Klepper, Sherman and Carroll, Innovative Financing for Energy Efficiency Improvements, at 217 - 223 (1982).***

[40] ***Id.***

[41] ***Id.***

A final barrier to bank financing of energy conservation equipment includes the lack of generally accepted collateral for the loan.[42] The energy conservation measures themselves are infrequently of sufficient value to secure a bank loan. Moreover, even if the measures are sufficiently valuable, banks have posited that such measures are ill-suited to be collateral for a loan since the removal of energy conservation measures is both difficult and expensive. Moreover, there is a lack of a readily identified secondary market for such measures, even if removed. When coupled with the unwillingness of banks to rely upon the projected energy savings as a source of repayment, this barrier is fatal to many banking transactions.[43]

While these perceptions of risk may be sufficient to inhibit the interest of traditional financial lenders, who are not particularly knowledgeable of energy efficiency and its potentials, they should be of less concern to experts in energy efficiency such as utility DSM planners.

5.1.3 Energy Efficiency Improvement Performance

The loan guarantee provided by the utility under this proposal is a financial guarantee provided to the financier. The guarantee is to protect the financier against the risk of nonpayment. The guarantee is not a guarantee of any particular level of performance by the energy efficiency improvements. Nor is the guarantee a financial safety net for the customer who installs the efficiency improvements. The utility seeks to underwrite the loan, not the performance of the improvements installed as a result of the loan.

5.1.4 Other Risks *Not* Guaranteed Against

As important as identifying the risks against which to guard through a utility guarantee is to identify the risks against which the utility guarantee does *not* protect. Like a cash deposit collected by a utility from one of its customers, a utility-provided loan guarantee is designed to protect against the permanent loss of revenue to the financier due to nonpayment. The risk of late payment, for example, should be distinguished from the risk of permanent loss. The costs associated with late payment cannot be addressed through a loan guarantee. A guarantee is to protect against loss due to bad debt.

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[42] ***Id.***

[43] ***Id.***

6.1 OPERATION OF THE GUARANTEE

6.1.1 Funding the Guarantee

A utility should insert a line-item into its low-income DSM program each budget period which equals the present value of the anticipated loss due to calls upon its guarantee of low-income energy efficiency improvements. The amount of the loss payout is the utility's investment in low-income DSM under this approach.[44]

In deciding upon the budget line-item for a guarantee program, three principles are clear. First, the total dollar amount of the loans to be guaranteed and the budget line item for the guarantee are *not* the same numbers. Indeed, for all the reasons stated above, the frequency with which the utility guarantee is actually called upon to satisfy an unpaid debt should be relatively rare. The budget line-item, in other words, should not be the extent of the guarantees, themselves, but rather the amount of the anticipated loss.

Second, it is clear that for any amount of loans guaranteed in a particular year, there will be some risk of loss extending over the life of the loans. The entire risk, in other words, is not a first year risk and the amount of potential loss should not be budgeted in first year dollars. Instead, the risk of loss should be calculated for each year of the life of the loans granted during the budget period. The line item budget amount is, therefore, the sum of the present value of that stream of losses.[45]

Finally, the loss for which a present value is calculated and included in the budget line item is not the *full* amount of the potential loss. Instead, the line item budget amount should include only the amount of the loss multiplied by the risk that the loss will occur. If a utility anticipates a 25 percent risk of a $100,000 loss in year two of a loan, in other words, to include the present value of $100,000 would be to over-secure the company against that risk. Given these three principles, an illustrative budget line item calculation might thus look something as follows in the

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[44] ***A guarantee should not be the sole component of a low-income program, however. A comprehensive low-income DSM program should have other components as well.***

[45] ***This process involves a simple equation calculating the loss in each year and then to net present value that loss back to current year dollars.***

Tables below.[46]

The utility would need to decide, as well, whether it desired to maintain a funded reserve, or whether a corporate undertaking would be sufficient to secure the guarantee. It seems difficult to imagine that lenders would require a funded reserve as a matter of policy. It is unlikely that a guarantee would be avoided through the unavailability of funds, funded or not.[47]

6.1.2 Distributing the Guarantee

The utility should not provide guarantees directly to the institutions *seeking* financing for energy efficiency improvements in low-income housing. To do so would be to involve the utility in the financing arrangements to an extent not called for.

Instead, the utility should provide a guarantee "line-of-credit" to designated financial institutions that are, in turn, providing financing for low-income housing. The financial institution can then draw down that line of credit until it is exhausted.[48] It is left to the financial institution, however, to determine:

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[46] ***The figures used here are purely hypothetical and are not intended to represent any necessary relationship to reality.***

[47] ***An alternative to a loan guarantee is for the utility to purchase insurance against nonpayment. However, financial intermediaries have told analysts that from their perspective, not only would a loan guarantee likely be less expensive, it would also likely be viewed more favorably from the financier's perspective.***

[48] ***From the utility perspective, exhausting the line of credit simply means that the sum of the weighted present value losses equals the line-item investment it wishes to make in low-income DSM through this particular program.***

1. Whether the provision of energy efficiency within a particular development is a sound investment;[49]

2. Whether the provision of the utility guarantee is necessary to justify the additional dollars needed to be loaned for energy efficiency implementation; and

3. Whether the developer is solvent and the development viable.

[49] ***The utility need not be totally uninvolved with this process. It could, for example, provide a list of approved or recommended measures.***

YEAR	INITIAL INVESTMENT	MAXIMUM POTENTIAL ANNUAL LIABILITY[50]	EXPECTED LOSS		PRESENT VALUE LOSS	
			PERCENT[51]	NOMINAL $$$	5% DISCOUNT	7% DISCOUNT
1	$3.0 million	$329,384	1.8%	$ 5,775	$ 5,500	$ 5,397
2		$329.384	3.1%	$10,293	$ 9,336	$ 8,990
3		$329,384	3.8%	$12,599	$10,883	$10,285
4		$329,384	3.2%	$10,458	$ 8,604	$ 7,978
5		$329,384	3.8%	$12,352	$ 9,678	$ 8,807
6		$329,384	2.7%	$ 8,729	$ 6,514	$ 5,817
7		$329,384	2.1%	$ 6,999	$ 4,979	$ 4,359
BUDGET LINE ITEM			2.2%	$67,205	$55,494	$51,633

[50] ***This assumes the $3.0 million loan is for a 15 year period at seven percent (7%) interest. Only the first seven years of the loan are portrayed here.***

[51] ***There is a probability density analysis that underlies this "expected loss." An illustrative probability density analysis is set forth in the next Table. These numbers are purely arbitrary and are set forth for illustrative purposes only.***

PROBABILITY DENSITY LOSS ANALYSIS (1st Year)				
TOTAL POTENTIAL LOSS	**RANG OF POTENTIAL LOSS**	**MID-POINT OF RANGE**	**LOSS PROBABILITY[52]**	**EXPECTED LOSS**
$329,384	$0 - $10,000	$5,000	2.0%	$100
$329,384	$10,001 - $20,000	$15,000	1.5%	$225
$329,384	$20,001 - $30,000	$25,000	2.5%	$625
$329,384	$30,001 - $40,000	$35,000	1.5%	$525
$329,384	$40,001 - $50,000	$45,000	4.0%	$1,800
$329,384	$50,000+	$50,000	5.0%	$2,500
SUM OF EXPECTED LOSSES				$5,775

[52] ***These figures are not empirically based, but are set forth simply for illustration. of the calculation.***

The utility might distribute the guarantee line-of-credit through a request for proposal process, through which process the institutions would bid on the guarantee. The utility further protects its own interests by a periodic review of the institutions to whom it provides its guarantee line of credit. This review could occur annually, biannually or at any other time interval deemed appropriate by the utility.

The utility interests in both the RFP process and the periodic review would be three-fold:

1. First, of course, the utility would want to review the dollars being leveraged by its investment. If one institution consistently requires a 90% guarantee, in other words, while another requires an 80% guarantee, that would be a factor to consider.

2. Second, the utility would want to review the marginal investments in energy efficiency. If a financial institution is using a utility guarantee to underwrite investments that would normally be part of a housing development irrespective of the utility program,[53] that would be a factor to consider.

3. Finally, a utility would want to review its loss payout ratios. In this respect, losses that are "too great," as well as those that are "too small," should be of concern. Losses that are too great would indicate that the financial institution is being perhaps too casual with the utility guarantee. Losses that are too small would indicate that the financial institution is being too strict in the amount of guarantee required or insufficiently aggressive in using the availability of the guarantee to make the marginal loans that might otherwise be too risky for the institution to make in the absence of the guarantee.

6.1.3 Targeting the Guarantee

The purpose of a utility guarantee program is to leverage private investment in *low-income* energy efficiency that would not otherwise occur in the absence of the utility guarantee. There are two ways for a utility to ensure that its low-income targeting will occur.

First, the utility could adopt regulations along the lines of the U.S. Department of Energy (DOE) Weatherization Assistance Program (WAP). These regulations require that a minimum proportion of assisted units be occupied by income-eligible households. To prevent the need for

[53] ***For example, if energy efficiency improvements do not exceed existing housing code requirements or customary construction standards.***

creating and justifying new threshold levels, the utility could simply adopt the WAP regulation.[54] Certification that the WAP regulations are met could be made part of the financing application and the guarantee by the utility could explicitly be made contingent upon such compliance.

Second, and perhaps simpler within the context of the guarantee proposal here, a utility could establish the conclusive presumption that developments using designated sources of public low-income housing funds are "low-income housing" for purposes of the utility guarantee program. Whether the funds are low-income housing tax credits, Housing Finance Agency dollars, Community Development Block Grant (CDBG) dollars, HOME dollars, or other local, state or federal low-income housing dollars, the involvement of such financing would conclusively establish the development's eligibility for the utility low-income energy efficiency guarantee.

6.1.4 Determining the Level of the Guarantee

The utility should set maximum levels of guarantees that it will provide, but allow the implementing financial institution discretion to vary below that maximum when a lesser guarantee is deemed sufficient. It would be unlikely that a utility would be justified in providing a 100 percent guarantee.

It is important to maintain a focus on what the utility is guaranteeing. The utility is *not* guaranteeing the savings to arise as a result of the installation of energy efficiency measures. The utility is instead guaranteeing repayment of the component of the total financing which is attributable to the cost of the energy efficiency improvements. While the projected energy savings may have been a factor considered by the financial institution in granting the loan with which to begin, it is the loan repayment, and not the energy efficiency performance, which the utility is underwriting.

Utilities can be governed in establishing their level of guarantee by federal programs providing a variety of guarantees. Few, if any, federal programs provide 100 percent guarantees. Most federal programs guarantee no more than 90 percent of a loan.

6.1.5 Size of the Guarantee Investment Fund

In deciding how much to budget for loan guarantees, a utility should undertake a survey of low-income housing development activities in its

[54] ***10 C.F.R. §440.22(b)(2) (1993).***

service territory and target energy efficiency investments so as to minimize the lost opportunities currently arising among those developments. As the term is used in the context of this proposal, "lost opportunities" are not "costs" in an accounting sense. The term simply refers to the situation where the opportunity to install cost-effective DSM measures in a low-income dwelling is lost if the opportunity is not seized within a particular time period.[55] For new construction and substantial rehabilitation, for example, if energy efficiency measures are not installed at the time of the construction or rehab, the decision has effectively been made to supply those units with power through energy efficient appliances or structure. That decision is essentially irrevocable for the useful life of the construction and rehab.

Decisions made by low-income housing developers represent decisions that will hold for the useful life of the measures. Accordingly, if a developer installs a relatively inefficient furnace or hot water heater, or fails to install the most cost-effective level of insulation, it is not likely that a utility will soon revisit that home to install more energy efficient measures. The opportunity to install high efficiency measures is lost at the time of the developer's initial decision.

The utility should adopt an aggressive posture toward providing the incremental funding necessary to ensure that low-income housing developments implement the greatest amount of energy efficiency improvements that can be cost-justified. In this sense, "development" would include new construction, substantial or moderate rehabilitation, or other similar work. In addition, opportunities for providing guarantees as proposed here would arise in situations involving refinancing and a change in ownership.

The organizations that a utility should guarantee incremental financing for include the following:

> **Community Development Corporations:** Community Development Corporations (CDCs) represent one of the primary vehicles for delivering affordable housing development for low- and moderate-income households.
>
> Unfortunately, housing developers rarely have the ability to finance energy efficiency improvements as part of their construction or substantial rehabilitation of affordable housing. This is true for several reasons. First, low-income housing developers generally stretch their financial resources to the limit in the first instance. Whatever the life-cycle cost-effectiveness of installing energy efficiency measures, these developers simply do not have sufficient up-front funds to provide such measures.

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[55] ***Lost opportunities arise when the accomplishment of some given task precludes the future accomplishment of additional work at that same dwelling.***

In addition, low-income developers tend to "over-improve" properties *vis a vis* the value of the property in the first instance. If the appraised value of the property is $35,000, in other words, low-income developers are often required to engage in more than $35,000 in improvements. As a result, energy efficiency measures, which add expenses to the development while not increasing the appraised value, are often not seen to be a viable investment.[56]

Municipal CDBG Administrators: Local government officials administering the Community Development Block Grant (CDBG) program should take an active role in seeking utility-financed conservation targeted to assist low-income housing construction and rehabilitation funded with CDBG dollars.

A recent study by the National Association of Housing and Redevelopment Officials (NAHRO) found that roughly 31 percent of all CDBG funds requested in small cities were for housing development and housing rehabilitation projects.[57] Similarly, large cities reported requests for housing and rehabilitation projects in 1991 representing more than 50 percent of the cost of all funding proposals submitted. "Overall," NAHRO found, "housing-related activities occupied the lion's share of funding requests in 1991, representing 44 percent of total requests" for CDBG funds.

State Housing Finance Agencies: As mentioned above, HFAs serve as the financing of last resort for much low-income housing. Collectively, state HFAs administer more than 600 affordable housing programs. Of this total, approximately 245 are rental housing programs.

Community Development Financial Institutions: These institutions provided roughly $450 million in loans from 1986 through 1992, 44 percent of which went for affordable housing development. From 1986 through 1992, CDLFs financed 18,476 housing

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[56] ***Whether, such an investment is in fact viable because the increased investment is more than offset by decreased operating expenses over the life of the project is largely irrelevant in this regard, if the life-cycle cost-effectiveness is not perceived to exist.***

[57] ***The NAHRO Community Development Research Project: A Final Report, at 7 - 9 (Sept. 1992).***

units, 86 percent of which were "permanently affordable" and 87 percent of which were affordable to low-income tenants. Each year, CDLF investments have grown, from $20 million in 1986 to $120 million in 1992.

As can be seen, substantial opportunity exists for a utility to promote energy efficiency in low-income housing through the provision of loan guarantees to financiers serving developers of affordable housing. The upper limit on a utility's budget for delivering energy efficiency measures through loan guarantees to these entities should be the point at which the marginal costs of such programs equal the marginal benefits.

In reality, however, a utility rarely, if ever, spends to the margin. A substitute principle thus needs to be developed as a decision rule. The decision rule that seems best is that utility funding should be of sufficient magnitude such that no lost opportunities occur within the realm of affordable housing developments for lack of capital.

7.1 COST-JUSTIFYING THE GUARANTEE

Cost justifying a low-income guarantee program would involve two steps. First, the utility would need to quantify its investment. Second, the utility would need to estimate the savings arising from its investment and compare the financial benefits of those savings to the extent of the investment to determine if net benefits exist.

7.1.1 The Costs of the Program

While determining the costs of a guarantee program may not be as straightforward as many utility DSM programs, calculating the costs is neither difficult nor unusual in its methodology. As described above, the costs of the guarantee program on an annual basis would be the net present value of the expected losses occurring as a result of the loans made based on a particular year's guarantee line of credit. The costs, of course, would also need to include a fair assignment of administrative and overhead expenses.

7.1.2 The Benefits of the Program

7.1.2.1 Traditional Avoided Costs

Calculating the benefits of the utility guarantee program poses greater difficulty than calculating the costs. The benefits should include all savings arising from energy efficiency measures that were financed and installed that would *not* have been financed and installed "but for" the existence of the utility guarantee.

As is clear, therefore, the utility's low-income program experiences a substantial multiplier in the benefits attributable to its guarantee. There will be substantial savings that arise from loans made as a result of the availability of the utility guarantee but which ultimately impose *no cost* to the utility. If the utility guarantees $3.0 million in loans, in other words, the savings arising from the full $3.0 million represent benefits of the program, even if the ultimate loss payout by the utility is only $100,000.

7.1.2.2 Expanded Avoided Costs

In addition to these "traditional" avoided costs, a low-income guarantee program will generate other avoided costs as well. Cost evaluations of these programs should include the benefits associated with reduced arrears (such as reduced credit and collection expenses,[58] reduced working capital expense[59] and the like). These additional impacts would only be positive; they could be substantial.

The inability of low-income households to pay their utility bills in a full and timely fashion imposes costs upon the public utility industry, costs which that industry can and should seek to avoid or alleviate. The Pennsylvania Public Utility Commission's Bureau of Consumer Services noted recently that these costs of payment problems are already "embedded in existing rates."[60] The Vermont Public Service Department has noted that there are:

> two harsh realities for the utility industry. First, charging a rate and collecting a rate are two separate actions. Simply because a utility charges a particular rate does not mean that the utility will ever collect that money from a low-income household.

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[58] ***See e.g., Roger Colton, Identifying Savings from Low-Income Programs (April 1993).***

[59] ***Roger Colton, Low-Income Programs and Their Impact on Reducing Utility Working Capital Allowances (April 1993).***

[60] ***Bureau of Consumer Services, Pennsylvania Public Utility Commission, Final Report on the Investigation into the Control of Uncollectible Accounts (Feb. 1992).***

> Second, even when a utility does collect the total bill from a low-income household, the utility often spends considerable sums in the very act of collection."[61]

And the *Final Report of the Blue Ribbon Commission on Energy Policy for Maine's Low-Income Citizens* said:

> Other Maine households and businesses also suffer from the effects of unmet energy needs of low-income citizens. Electric utilities carry large uncollectible expenses* * *which are paid for by all ratepayers as a cost of business.* * *Collection costs and working capital on unpaid bills impose costs on energy vendors, utilities, and all consumers."[62]

The purpose of the discussion below is not to definitively articulate the magnitude of the costs involved. Instead, this discussion is simply to create a taxonomy of the types of costs that are involved. This section presents an overview of the reasons a utility company --natural gas or electric-- might have an interest in a proposal involving utility-based energy efficiency loan guarantees for low-income housing.

Credit and Collection Expenses: Expenses associated with credit and collection activities are the most apparent type of cost. Credit and collection activity is defined to include the following five types of actions by a utility: (1) a shutoff notice; (2) personal contact (via telephone); (3) personal contact (via a premise visit); (4) the disconnection of service; and (5) the reconnection of service. Since virtually every utility reports that each service disconnection is quickly followed by a service reconnection (generally within hours, not even days), both the disconnection *and* the reconnection should be considered part of the credit and collection process.

Bad Debt: Uncollectible accounts represent a second type of cost. Bad debt will not represent a substantial part of the savings attributable to low-income programs. Under the best of circumstances, utilities run bad debt ratios of 0.25 percent to 0.5 percent. Under the worst of circumstances, utilities run bad debt ratios of 3.0 to 4.0 percent.

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[61] ***Brief and Argument, Vermont Department of Public Service, In Re. Investigation into Low-Income Programs, Docket No. 5308 (Jan. 1991).***

[62] ***Ward S. (1990), Ready for Winter?: Final Report of the Blue Ribbon Commission on Energy Policy for Maine's Low-Income Citizens, at 32, Augusta: State of Maine Executive Department.***

Payment Plans: One major expense that should be avoided through the implementation of certain low-income programs is the negotiation of payment plans. The advantage of making low-income bills affordable is that they eliminate an entire series of payment plan negotiations for the utility. Rarely does a utility negotiate a single payment plan for a low-income customer. Indeed, the reasoning of the Pennsylvania Commission in September, 1990, was sound when it directed Columbia Gas of Pennsylvania to implement a pilot low-income rate, referring to "a wasteful cycle of consecutive, unrealistic payment agreements that cannot be kept, despite the best of intentions, followed by service termination, then restoration, and then more unrealistic agreements* * *."[63]

Lost "Time Value": One "expense" associated with the low-income payment plans arises from the fact that a dollar collected today is worth more than a dollar collected tomorrow. As a result of payment plans, in other words, a utility loses the time value of the arrears subject to these plans.

The loss may manifest itself in one of two ways. In the event that the utility must borrow money to fill its short-term capital needs, the loss shows up as a working capital expense. In contrast, even when a company need *not* borrow money to provide the revenue (the payment of which is deferred through a payment plan), the loss shows up as an opportunity cost. If the money *had* been collected rather than deferred through the deferred payment plan, the prudent utility manager would have invested that revenue and obtained a rate of return on it.

Forced Mobility: Finally, one impact of an inability to pay utility bills is a "forced mobility" on the part of low-income households. Low-income households move for a variety of reasons. They may be running from an unpaid and unpayable bill. Perhaps more frequently, low-income households move in search of more affordable shelter. Each time one of a utility's low-income households moves, however, it imposes a cost on the utility. There is the cost of disconnecting service at the old address (even when the disconnection is "voluntary"). There is also the cost of reconnection of service at the new address.

Moreover, low-income households have finite and limited resources to devote to their household expenses. The "forced mobility" of low-income households thus redounds to the substantial detriment of the utility by diminishing the *corpus* of the low-income household's ability-to-pay. Rather than using household income to pay for necessary expenses such as current monthly utility bills, household income is instead

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[63] ***Pennsylvania Public Utilities Commission vs. Columbia Gas Company of Pennsylvania, Docket R-891468, Decision and Order (September 1990).***

diverted to paying moving expenses, rental deposits, telephone connection fees, bank fees on minimum balances and the other expenses associated with changing residences. To the extent that the residency of low-income households can be made more stable, therefore, the allocation of household income can be made more rational. Less will be wasted. Rather than diverting money from limited resources to the household's process of staying ahead of creditors, those limited resources can instead be made more available for paying month-to-month expenses.

7.1.2.3 Calculating the Benefit-Cost Ratio

The second policy decision inherent in the calculation of benefits --other than the definition of benefits-- is the perspective from which cost-effectiveness is to be calculated. Since the issue is the desirability of this particular *utility* investment in DSM, the perspective should be that of the utility.

The appropriate means of performing the analysis to ascertain whether conservation is a least-cost resource is to consider conservation as an incremental resource. The cost of this resource can then be compared to the costs of the avoidable incremental supply side resource to determine which represents a cost-effective least-cost resource addition.

In fact, there are two primary mechanisms for determining whether energy efficiency is a cost-effective resource addition from the perspective of the utility. These include:

1. An energy efficiency program is cost-effective if the cumulative net present value of the program's benefits exceed the cumulative net present value of the program's costs. Thus, the benefit/cost ratio must be greater than 1.0 for a program to be cost-effective

2. An energy efficiency program is cost-effective if the cost of conserved energy is less than the cost of delivered gas on a per therm basis (or electricity on a per kWh basis).

The goal of least-cost planning is to provide utility service to customers at the lowest possible revenue requirement with an adequacy of service constraint. If, in other words, reasonably adequate service can be maintained by "producing" electricity or natural gas through demand-side measures at a lesser cost than by producing such energy through supply-side measures, the demand-side measures should be pursued.
The test for whether conservation and weatherization measures should be pursued in this context is whether, through the implementation of

such measures, the utility will lower its total revenue requirement to ratepayers. The essence of a cost-effectiveness test is whether total revenue requirements are lesser with rather than without the conservation measures.

8.1 ADVANTAGES OF A UTILITY GUARANTEE PROGRAM

8.1.1 Advantages to the Low-Income Community

Three distinct advantages arise for advocates of low-income energy efficiency through a utility guarantee program. The first is the "but for" financing. By hypothesis, significant gaps exist in the provision of capital for low-income energy efficiency improvements. Moreover, by hypothesis, a utility guarantee program will address and overcome the market failures that give rise to the capital gaps in the first instance. As a result of the provision of the utility guarantee, in other words, dollars of capital will be made available that would not have been made available in the absence of the guarantee. Total investment in low-income energy efficiency will increase.[64]

Second, the increase in capital available for low-income energy efficiency should be some substantial multiple of the actual utility investment. A discussed above, the utility investment is not equal to the capital invested in low-income energy efficiency. Instead, the utility investment is simply the sum of the present value of the stream of expected losses due to nonpayment over the life of the loans guaranteed by the utility. Clearly, the total investment in low-income energy efficiency will substantially exceed this present value of expected losses.

Finally, a utility guarantee for energy efficiency financing will lower the risk of financing and, therefore, presumably, the cost of capital. As the cost of money decreases, the number of energy efficiency measures that will be cost-effective from the perspective of the developer will thus increase. Accordingly, a utility guarantee program for low-income energy efficiency should not only increase the number of institutions *making* energy efficiency investments, but should increase the *amount* of the investment per unit as well. More low-income units will be more efficient with than without a utility guarantee program.

8.1.2 Advantages to the Utility qua Utility

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[64] ***This will be true only in a certain market segment. Separate programs will still be needed for retrofitting single family detached homes.***

The utility as a utility will recognize several advantages of a low-income guarantee program as well. The primary advantage, of course, is the extent to which the utility leverages its investment. As discussed above, the actual utility investment in low-income energy efficiency under a guarantee program is *not* the amount of the guarantee, but rather is the present value of the weighted loss that is actually paid by the utility pursuant to the guarantee. The utility has leveraged dollars to the extent that the private investment in energy efficiency exceeds that presented value expected loss payout. In the Table above, for example, there is a leveraging ratio of nearly 45:1 generated by the utility guarantee program in nominal dollars ($3.0 million to $67,203), and a leveraging ratio of more than 58:1 in present value dollars ($3.0 million to $51,633 at a seven percent discount rate).

A second primary advantage of targeting energy efficiency improvements to low-income households in particular involves the credit and collection savings generated by the investment. This advantage is multiplied because of the extent to which the utility has leveraged its investment. Every dollar of energy efficiency investment in low-income households, in other words, helps generate these credit and collection savings, not simply the dollars of *utility* investment.

A third advantage to the utility of a low-income guarantee program is the extent to which the program is designed to minimize lost opportunities for low-income energy efficiency improvements. Lost opportunities arise when the accomplishment of some given task precludes the future accomplishment of additional work at that same dwelling.

A final advantage to the utility of a low-income guarantee program is the minimization of administrative costs to the utility. The utility effectively piggybacks its delivery of energy efficiency through this program to the administrative structure of another effort. The effort to minimize transaction costs occurs in at least two ways:

1. **No auditing is necessary:** This lending model does not seek to *retrofit* an existing building. Instead, the model seeks to piggyback energy efficiency financing onto an existing program. This may be either substantial rehabilitation or new construction; it may involve refinancing or a change in ownership.

2. **No creditworthiness check is necessary:** This lending model does not seek to independently establish the creditworthiness of a person, agency or organization to whom a utility guarantee would be committed. Again, instead, the model seeks to piggyback energy efficiency financing onto an existing transaction. In the case of a developer seeking conventional financing, there will be an independent creditworthiness check prior to the loan approval for the underlying project. To finance energy

efficiency improvements would not *detract* from the financial feasibility of a project, but should, if anything, enhance the financial feasibility of the project.

9.1 SUMMARY AND CONCLUSIONS

One way for a utility to invest in low-income energy efficiency improvements is through the provision of loan guarantees for private financing. Through such guarantees, a utility can overcome many of the traditional barriers to utility investment in low-income energy efficiency. Through a loan guarantee program, the utility will be able to generate multiple advantages for itself and for the low-income community generally.