# ENERGY EFFICIENCY AND THE LOW-INCOME CONSUMER:

# Planning, Designing and Financing

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Planning, Designing and Financing

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## WHAT YOUR LIBRARY SHOULD CONTAIN

***On The Brink of Disaster: A State-by-State Analysis of Low-Income Natural Gas Winter Heating Bills*** (1994). This report presents an examination of actual winter natural gas energy bills for nearly 200 natural gas utilities around the country. The report presents state-by-state data on bills as a percentage of income and of the number of low-income households in various public benefit programs by state. The report further presents utility-by-utility data, using actual winter bills from each utility, of winter home energy burdens for populations such as public assistance recipients and households with incomes less than $15,000.

***The Other Part of the Year: Low-Income Households and Their Need for Cooling: A State-by-State Analysis of Low-Income Summer Electric Bills*** (1994). This report presents an examination of actual summer electric bills for nearly 200 electric utilities from around the country. Relying upon the most recent literature, the report discusses the adverse health effects of hot weather and presents city-by-city data on the "threshold temperatures" over which hot weather becomes deadly. The report presents state-by-state, and utility-by-utility, data on summer electric bills as a percentage of income for various low-income populations. In addition, on a utility-by-utility basis, the report presents data on the increase in electric bills from 1987 to 1992 (as compared to the increases in public assistance levels), and on the difference between summer and winter electric costs.

***Energy Efficiency and the Low-Income Consumer: Planning, Designing and Financing*** (1994). This report presents a comprehensive low-income Demand Side Management program proposal for utilities. It also discusses the strategic alliances that utilities can develop with non-traditional partners such as housing developers, banks involved with developing Community Reinvestment Act (CRA) plans, and the like. The report contains a discussion of the most recent evaluations by utilities of the impacts which the low-income DSM programs of those companies generated on arrearage reduction, credit and collection savings, and related expenses.

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# EXECUTIVE SUMMARY

Low-income households in the United States face desperate needs involving their home energy bills. There is much agreement on that conclusion today. However, significant questions continue.

Precisely *what* is the need of low-income households? How might one measure it? *How* should one alleviate it? *Who* should bear the responsibility for alleviating it? *To what extent* does one bear the responsibility for alleviating it? These are all questions that march forward, each of which different people may reasonably answer differently.

There are some answers however. This report explores some of them. The report concentrates on energy efficiency and low-income households.

## WHAT IS MEANT BY "AFFORDABLE" HOME ENERGY

The affordability of home energy for low-income households can be measured by three different methods. While each has strengths and weaknesses, one method seems to withstand critical analysis better than the other two.

Affordability can be measured by:

- Looking at "energy burdens," which is the energy bill expressed as a percentage of income;
- Looking at the "net household resources" available to pay home energy bills, given all other household expenses; and
- Looking at the extent to which a household demonstrates its inability-to-pay through the involuntary disconnection of service for nonpayment or through the persistence of arrears.

The percentage of income model appears to be the best method of defining energy need, even though even this approach has its limitations.

- The approach relying upon a calculation of available household resources tends to prove too much, in that most low-income households have more expenses than income. Moreover, the assumption necessary for this model to be appropriate --that energy expenditures are the marginal household expenditure-- is counter to existing research.
- The approach which relies upon shutoff terminations and persistent arrears tends to be too much a measure of company management decisionmaking regarding credit and collection activity rather

than a measurement of low-income energy needs.

- While it is difficult to define precisely what percentage of income is "affordable" to low-income households --why is 12 percent *un*affordable while eight percent is not-- nonetheless, the notion of energy burdens being "too high" at some point, regardless of shutoffs or net available resources, bears the greatest appeal.

## STRATEGIC APPROACHES TO ADDRESSING UNAFFORDABILITY

Providing cash assistance is probably the primary approach to addressing low-income inability-to-pay problems. Cash assistance can help meet winter emergencies, can address the problems of even the lowest income households, and can be used to meet immediate needs.

Addressing low-income energy problems, however, involves more than simply providing cash fuel assistance. While cash assistance is unquestionably necessary, particular during high cost winter months, a low-income agenda must include, also, energy efficiency improvements. Like fuel assistance, weatherization has substantial limitations that limit its effectiveness. It is inadequately funded. Moreover, even if adequately funded, there are functions that weatherization simply cannot serve, and populations that weatherization cannot help. While weatherization, for example, can reduce future bills, it cannot help pay unaffordable arrears.

In addition to cash assistance and weatherization, regulatory low-income initiatives are needed that will ensure access to service with which to begin, that will provide discounted rates, that will eliminate unintentional discrimination, that will provide regulatory protections against unreasonable charges and fees, and that will protect against extreme weather shutoff crises.

## UTILITY DSM AND LOW-INCOME USAGE REDUCTION

While many utility-funded energy efficiency programs are under attack today, not all utility investments in DSM need to be justified strictly in terms of resource acquisition impacts. Instead, some DSM investments might serve "niche markets," markets that exhibit special needs or that provide special benefits to the utility offering DSM. As a result of these special needs or benefits, the level of DSM investment directed toward these niche markets might be held constant, or increased, even when dollars of investment directed toward DSM are being restricted generally.

Investment in low-income DSM is one such niche market. Through a variety of strategies, a public utility can identify specific low-income needs that stand independent of a utility's resource acquisition strategies. The issue for utilities to decide within these niches is *not* whether "all" low-income households are being served by the DSM program, but rather whether the needs which have been identified are being adequately and appropriately addressed. Specified needs might include reducing arrears, reducing lost opportunities in low-income housing, and providing affordable capital for energy efficiency improvements within the context of CRA programs designed by financial institutions. Creative identification of low-income market needs can allow a utility to serve low-income households cost-effectively while staying within overall DSM budget constraints.

Moreover, utilities can seek out "non-traditional" partners to help deliver cost-effective low-income energy efficiency programs. The search is to identify parties who not only have an interest in improving the wellbeing of low-income households, but who have an institutional interest of their own, as well, in reducing wasteful low-income energy consumption, along with the high energy bills that accompany such consumption.

## NON-UTILITY FUNDING FOR LOW-INCOME ENERGY EFFICIENCY

Even aside from niche markets and non-traditional partnerships, persons interested in planning, designing and financing low-income energy efficiency programs need not rely solely upon utility DSM dollars as a source of

funding. Indeed, opportunity exists to bring a wide range of investor dollars to bear on low-income energy efficiency. While these dollars may need to be supplemented with utility and WAP funds for administrative purposes, the private dollars can ultimately be returned to the investor with an interest rate payment.

Advocates of low-income energy efficiency improvements have been forced to look for new means of financing energy efficiency measures as federal WAP dollars, as well as oil overcharge funds, continue to dry up. No longer can advocates afford to view the provision of energy efficiency improvements as simply a government benefits program. If, indeed, conservation and weatherization measures will save the energy, and thus the costs, now claimed, it should be possible to make a case for the commitment of public and private *investment* funds on the promise that such funds will be returned with interest or profits based on the amount of energy saved.

New sources of capital *can* exist for low-income energy efficiency strategies. Such funds will not be made available as grants, but rather will be made available as investments in energy savings. Whether it be public sector pension funds investing debt, equity or near equity; governments investing through loan programs; or governments investing through the issuance of a variety of bond types, capital can be raised for such programs if the potential of conservation is appropriately marketed and appropriate legal processes for capturing and providing a return are created.

To generate new private investment funds to promote energy efficiency, careful attention must be given to identifying the self-interest of potential sources of capital. From an investor's perspective, either public or private, the commitment of capital to energy efficiency improvements must yield advantages in cash flow, rates of return and/or portfolio diversification. From the perspective of public sector investors, lesser financial advantages may be acceptable if, in return, the improvements yield other useful impacts such an increased tax revenue or a reduced need for social programs. Public sector investment may be warranted, as well, if, from a societal perspective, new investment will fill in capital gaps and provide corrections to an inefficiently operating capital market, thus resulting in increased employment or economic development.

In addition to these private investment dollars, there are innovative sources of non-traditional utility and government dollars that can be tapped for low-income energy efficiency programs. These programs can involve institutional funds as well as mechanisms to facilitate private contributions toward energy efficiency initiatives.

## THE BENEFITS ARISING FROM LOW-INCOME ENERGY EFFICIENCY

### *Indirect Utility Financial Benefits*

The cost-effective reduction of system costs is relevant and important in every part of the business operations of the utility, not simply to the power supply function. Accordingly, a utility should be concerned with the problem of nonpayment, overdue payment, and partial payment of utility bills. These delinquent payment expenses arise whenever ratepayers demand utility service (gas, electricity or water) from the system and then do not pay for it on a timely basis.

Using these avoidable costs, energy efficiency programs can be proposed that are justified on an avoided cost basis. This conclusion rejects the historical view that avoided costs include only an energy and a capacity component. Instead, it introduces the notion of avoided delinquent payment expenses. So long as the conservation program costs less than the delinquent payment expenses it will avoid, the program is cost-justified.

The offer of utility-financed energy efficiency measures will generate advantages far beyond traditional avoided costs. The benefits identified are far from conceptual. Some utilities are beginning to capitalize on this recognition of the expanded avoided costs associated with conservation programs targeted to payment troubled households. The discussions of gas, electric and water companies are encouraging as to the existence and extent of these savings.

Companies discussed include Central Maine Power, Columbia Gas Company of Pennsylvania, Detroit Edison, Wisconsin Gas Company and the Philadelphia Water Department.

### *Low-Income Payment "Externalities"*

In addition to these financial benefits to the utility, many Public Utility Commissions today are looking to cost-justify utility DSM programs by seeking to quantify the environmental "externalities" that are created by energy production. The "traditional" externalities examination involves seeking to quantify the air and water pollution impacts of energy production. By moving to DSM, the reasoning goes, the energy production (and thus the pollution associated with such production) is avoided.

Just like there are environmental externalities that can be avoided through the implementation of utility DSM measures, there are inability-to-pay externalities involving low-income households as well. Some of these affordability issues, while not explicitly "energy" problems, might nonetheless still be addressed through utility DSM programs. This analysis stands on the proposition that targeting DSM measures to low-income households represents an appropriate and effective strategy to use in seeking to stabilize low-income utility bills, to make those bills more affordable, and thus to eliminate these inability-to-pay externalities.

These externalities might include health and safety impacts, housing abandonment, homelessness, and customer hostility to the utility company. This list is illustrative and not comprehensive.

## A COMPREHENSIVE LOW-INCOME DSM PROGRAM

Having said all of the above, a comprehensive low-income conservation program would include at least eleven components, as follows:

1. **Scope and funding:** A utility DSM program should include a low-income component with adequate scope and funding. Adequate "scope" of a utility low-income DSM program means that the utility should seek to serve a wide-range of low-income constituencies. Adequate "funding" means that a utility's low-income DSM budget should increase until the company exhausts its cost-effective measures, or until it exhausts the institutional capacity to deliver cost-effective measures, whichever comes first.

2. **Non-traditional avoided costs:** A utility DSM program should consider non-traditional avoided costs in its assessment of the cost-effectiveness of low-income DSM measures. This proposal recognizes that expenses associated with delinquent payment, or nonpayment, are avoidable costs to the system just as energy and capacity costs are. To the extent that conservation measures can help reduce delinquent payment expenses, those reduced expenses should be included in the calculus of "avoided costs." These expenses would include, for example, avoided bad debt, avoided working capital, avoided credit and collection expenses, and the like.

3. **Coordinating utility program with WAP:** A utility low-income DSM program should not operate in parallel with WAP, but rather the utility program and WAP should combine so as to maximize utility investment in cost-effective energy savings measures and maximize WAP investment in the non-energy savings measures that depress utility benefit-cost ratios. Through such a combined effort, utility-financed programs that might be *not* cost-effective from the perspective of the company and its ratepayers will be made cost-effective. Moreover, by targeting its funding in a joint effort with local utilities, WAP subgrantees can leverage millions of dollars in additional low-income DSM funds.

4. **Filling gaps left by WAP:** A utility low-income DSM program should target households that fall in "gaps" not reached by the federally-funded Weatherization Assistance Program. These gaps include households that have been inadequately weatherized using WAP funds, but which cannot be "re-

weatherized"; multi-family dwellings that have insufficient numbers of low-income households to be treated by WAP; and households that have non-heating efficiency measures that can be cost-effectively installed.

5. **Reacting to utility incentives:** A utility low-income DSM program should generally *not* include incentives to be paid to the utility. However, in the event that incentives are to be approved, low-income intervenors should recommend that they be targeted in a manner consistent with affecting utility decisions. Incentives which involve an upward boost in a utility's rate of return fail this functional test. Instead, if a utility wishes to reward its management for innovations in the pursuit of DSM, that reward should be accomplished through the salary structure, which, in turn, would be subject to a review for reasonableness in a general rate case.

   Moreover, low-income intervenors should recommend that incentives be preconditioned on more than meeting preset spending or saving goals. They should be made dependent on providing adequate conservation services to low-income households, as well. In contrast, low-income intervenors should recommend that if a utility is to receive an incentive for meeting certain preset performance standards, it should be subject to a countervailing penalty in the event that such performance standards are *not* met.

   Finally, low-income intervenors should recommend that a utility only be permitted to obtain an incentive for offering DSM investments if a reciprocal incentive is provided to low-income households for accepting such measures and engaging in energy saving behavior.

6. **Low-income incentives to maximize savings:** Low-income households should be provided incentives both to participate in the DSM program and to maximize their energy savings behavior once they engage in such participation. Such incentives can involve either earned credits toward pre-program arrears or earned credits toward fixed monthly customer charges, or both.

7. **Low-income fuel switching:** A utility-financed DSM program should include fuel switching efforts. Whether offered by a natural gas utility, an Energy Service Company (ESCO), a solar energy contractor, or a developer of low- and moderate-income housing, fuel switching programs that present cost-effective bill-reducing potential to the residential customers served by such programs should be eligible for utility-financing.

8. **Overcoming low-income market barriers:** A utility-funded low-income DSM program should be specifically directed toward overcoming market barriers which prevent such households from implementing DSM measures on their own. Such market barriers would include, for example, the lack of investment capital and the high "hurdle rates" implicit in DSM investment decisions.

9. **Inability-to-pay "externalities":** Regulators should take into account low-income payment "externalities" in much the same fashion they consider environmental externalities. These externalities would include, for example, the adverse impact of inability-to-pay on customer health and safety, the impact that inability-to-pay has on promoting housing abandonment, and the impact that inability-to-pay has on causing homelessness.

10. **Tie-in to payment plans offered to payment-troubled households:** A utility low-income DSM program should include a direct tie-in between the DSM program and the offer of deferred payment arrangements by the utility. Low-income deferred payment arrangements seldom offer a serious opportunity for households to retire arrears. The cause of the payment troubles in the first instance was a mismatch between household income and home energy expenses. Any arrangement by which a low-income customer agrees to pay arrears over time should be coupled with the installation of all cost-effective utility-financed DSM measures to bring current bills into a more affordable range.

11. **Tie-in to "non-traditional" partners serving low-income households:** A utility's low-income DSM program should include "non-traditional partnerships" in furtherance of comprehensive energy efficiency programs. Historically, utilities have tended to limit themselves to developing piggyback programs with other energy institutions. These might include Community Action Agencies, fuel assistance agencies, and the like. Utilities have, however, ample opportunity to work with other agencies serving low-income constituencies. Utility DSM programs can be piggybacked with banks that have developed programs to implement CRA plans, with developers --both for-profit and not-for-profit-- of low-income housing, with municipal governments administering CDBG dollars, and the like.

# CHAPTER 1: INTRODUCTION

This report presents an overview of the relationship between utility-financed investments in energy efficiency improvements and the low-income consumer. The primary purposes of the research are four-fold:

- To provide an overview of what is meant by "affordable" energy service for low-income households.
- To explore specifically how usage reduction initiatives can contribute to making low-income energy bills "affordable."
- To review how public utilities might involve themselves in promoting affordable energy bills through usage reduction, and the benefits that might arise should this involvement occur. and
- To consider why environmental advocates and organizations might have an interest in supporting low-income discount rates.

This report is presented in eight chapters. After this Introduction, *Chapter 2* presents a detailed description of what is meant by

making home energy bills "affordable" to low-income households. *Chapter 3* describes the differing strategic approaches --as opposed to specific programs-- on how to increase affordability. *Chapter 4* considers how utility-sponsored usage reduction strategies, in particular, can be implemented to promote affordability, as well as the limitations on the reliance upon such strategies. *Chapter 5* examines funding sources for low-income energy efficiency improvements that might lie outside the utility arena. *Chapter 6* outlines a comprehensive low-income DSM program. *Chapter 7* identifies the specific energy-efficiency benefits to low-income households, to society, and to the institutions sponsoring low-income energy efficiency programs. *Chapter 8* assesses why environmental advocates should support low-income discount rates as a necessary ingredient in any energy efficiency program.

In brief, this report concludes that the implementation of energy efficiency measures is an important mechanism to use in addressing the plight of low-income households facing unaffordable energy bills. While insufficient unto itself as a low-income affordability response --there will always be a need for cash income supplements and crisis assistance as well-- energy efficiency measures can lower bills, while at the same time providing additional benefits to the community at large and to non-low-income ratepayers.

Despite these external benefits, utilities have historically found it difficult to cost-justify low-income DSM programs. Utility programs can best address these difficulties by developing the "niche marketing" of low-income DSM, while at the same time pursuing "non-traditional" energy efficiency partners. In addition, substantial sources of non-utility money exist to help finance low-income energy efficiency measures.

# CHAPTER 2: WHAT IS MEANT BY "AFFORDABLE"

This Chapter examines the concept of "affordability" within the context of assessing low-income energy "needs." There is little agreement in the literature about the means to measure low-income "energy needs." There are at least three different methods of defining "energy needs": (1) the percentage of income model; (2) the available household resource model; and (3) the service termination/persistent arrears model. Each is briefly discussed below.

The premise of this research is that without clearly defining the "need" sought to be alleviated, public policy aimed at redressing that need will be confused and confusing. Public policy cannot alleviate a need that has not been defined.

Some researchers, but few indeed, recognize the various alternative components in defining energy need. Consider the introductory paragraphs of the section titled "paying for energy with incomes below poverty" in the Final Report of the Blue Ribbon Commission on Energy Policy for Maine's Low-Income Citizens:[1]

> In recent years when energy prices were relatively low, many low-income families still could not afford to pay for energy, simply because their incomes were insufficient to cover all of their basic needs. For households below the

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

> poverty level, paying 12% or more of annual income for heat is a heavy or even impossible burden on top of other basic expenses. In some areas of the State, housing costs, excluding energy, often amount to more than 50% of the poverty level --or, in other words, more than 100% of a typical AFDC family's income. These households are simply unable to pay for heat without assistance.
>
> Even when annual energy costs are less than 12% of income, these low-income families face constant crises from lack of money. Large energy bills during periods of cold weather are likely to be unaffordable, but even smaller energy bills may be unmanageable when medical needs, car problems or housing costs become pressing.[2]

Moreover, the Blue Ribbon Commission found:

> Basic energy services are necessary for health, comfort and safety. Maine winters can cause serious consequences (including death) for those who cannot afford adequate heat. Households who do not have enough money to pay their basic needs* * *will often sacrifice adequate heat to pay for food, housing and medicine. Living with the threat of running out of fuel or having electric or gas service shutoff takes a severe toll on low-income households.[3]

The Commission concluded:

> 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.[4]

This Maine report thus recognizes each of the three approaches to defining "need": (1) the inability to maintain home energy service;[5] (2) the burden of energy bills as a percentage of income;[6] and (3) the inability to pay for utility service after considering

2. *Id.*, at 16.

3. *Id.*, at 32.

4. *Id.*

5. "Living with the threat of running out of fuel or having electric or gas service shutoff takes a severe toll on low-income households."

other household expenses.[7] These three approaches incorporate the different models used in defining and assessing low-income energy needs. Each of these three models is discussed individually in greater detail below.

### BILL AS PERCENT OF INCOME

One primary means to define "need" involves an examination of the extent to which energy bills exceed a designated percentage of a household's income. This is the definition implicit in the promotion of Percentage of Income Payment Plans (PIPPs) throughout the country.[8] While most analysts and utilities involved with PIPPs agree that little, if any, work has been done to determine what percentage of income is "affordable" to the poor, implicit in programs ranging from the Electric Lifeline Rate adopted by Central Maine Power Company, to the Customer Assistance Program adopted by Columbia Gas Company, to the PIPP adopted by the Rhode Island LIHEAP agency, is the assumption that a household's "need" is that portion of the home energy bill that exceeds a designated percentage of income.

Arguments against use of this definition of need include the definition's failure to account for household-specific expenses (such as high medical expenses), to a failure to *justify* what percentage is deemed "affordable," to a failure to account for the large number of low-income households who pay their bills notwithstanding the fact that the bills exceed the "affordable" percentage.

One of the first places the percentage of income model appears in the literature is in a 1980 report by the Fuel Oil Marketing Advisory Committee (FOMAC) of the U.S. Department of Energy.[9] FOMAC identified several "flaws" in the 1980 "Federal energy assistance program," including the fact that energy assistance was not "proportional to household energy needs and ability

(..continued)

6. "For households below the poverty level, paying 12% or more of annual income for heat is a heavy or even impossible burden on top of other basic expenses."

7. "* * *even smaller energy bills may be unmanageable when medical needs, car problems or housing costs become pressing."

8. *See generally*, Colton, R. (1991), ***Percentage of Income Payment Plans as an Alternative Distribution of LIHEAP Benefits: Good Business, Good Government, Good Social Policy***, National Consumer Law Center: Boston; Colton, R. (1991), ***The Percentage of Income Payment Plan in Jefferson County Kentucky***, National Consumer Law Center: Boston.

9. Buckley J. and Maggiore Jr., A. (1980), ***Low-Income Energy Assistance Programs: A Profile of Need and Policy Options***, Fuel Oil Marketing Advisory Committee, U.S. Department of Energy: Washington D.C.

to pay."[10]

FOMAC then defined low-income energy needs in terms of percentage of income expenditures on home energy. Home energy expenditures of low-income households[11] was projected to reach nearly 22 percent in 1980.[12] In contrast, FOMAC said, median-income households would spend only 5.1 percent of their income on home energy.[13] Thus, FOMAC reported:

> In brief, the percentage of income that low-income households will spend on home energy, on the average, will be *four times* that of median-income households. Energy costs of the poor will exceed $800 per household on an annual basis and the poor will utilize *21.8%* of their income directly on household energy.[14]

(emphasis in original). FOMAC concluded as to evidence of low-income energy needs, "it is apparent that the low-income households in America pay a far higher proportion of their total annual income for energy than do median-income households."[15]

More recently, a study by Barua, *et al.*, also concentrated on the percentage of income attributes of "energy needs."[16] Barua found that "on average, heating costs were equivalent to nearly 25 percent of LIHEAP household income and ranged as high as 71 percent and as low as 8 percent."[17] Barua identified two "areas of concern," both of which were based on the percentage of

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10. *Id.*, at 4.

11. "Low-income" was defined to be at or below 125 percent of poverty for all households except the elderly. Low-income for the elderly was defined to be households living at or below 150 percent of poverty.

12. *Id.*, at 8.

13. *Id.*, at 11.

14. *Id.*, at 11.

15. *Id.*, at 14.

16. Barua R., *at al. (1987),* ***Energy Needs and Costs of Low-Income Households: A Preliminary Profile of Delaware LIHEAP Clients***, Center for Energy and Urban Policy Research, University of Delaware: Newark, Delaware.

17. *Id.*, at 4.

income approach to defining energy needs: "(1) the low level of relative assistance provided to households with very low incomes but high energy costs; and (2) the high energy cost burdens borne generally by low-income households even after the fuel assistance benefits provided by the state program are taken into account."[18] Barua cited as evidence for his "concerns" that: "* * *nearly 25 percent of LIHEAP household income is needed, unless full assistance is received, to pay heating costs. For those with less than $4,000 in annual income, heating costs equal nearly 40 percent of their income." He concluded: "clearly, a substantial burden is being borne by many Delaware households with low incomes in trying to cover their heating costs."[19]

Finally, one research effort sought to apply a merged percentage of income/available resource test of sorts. According to Auch, "an individual's `need' for assistance was defined as the ratio of the household's heat cost to annual income adjusted for family size. It represents the percentage of the household's adjusted income that goes to pay for heat."[20] The incorporation of the "available resource" model occurs through the adjustment in gross income for household size.[21] Annual income is adjusted downward to take into account the additional expenses associated with increased family size.

### AVAILABLE RESOURCES TO PAY BILL

At least two jurisdictions look not at energy bills as a percentage of income as their definition of need, but rather at a calculation of available resources left after paying "necessary" household expenses with which to pay a household's energy bill. This is the principle underlying Iowa's Affordable Budget Payment Plan as well as behind the Customer Assistance Program (CAP) adopted by Philadelphia Electric Company.[22] This definition of need states that it matters not so much what portion of a household's income is devoted to home energy bills, but rather simply whether there is enough household income to pay those bills, be they

18. *Id.*, at 5.

19. *Id.*, at 20.

20. Auch L. *et al.* (1992), ***A Policy Study for the Washington State Low-Income Home Energy Assistance Program: Final Report***, at 9, Washington State Department of Community Development: Olympia.

21. *Id.*, at 8 - 9.

22. This should not be confused with the Energy Assurance Program adopted by the Philadelphia Gas Works or the Customer Assistance Program adopted in Pennsylvania by Columbia Gas Company, both of which are percentage-of-income-based.

above or below a designated percentage of income level. To study energy needs using this determinant requires the construction of a household budget and a determination of the extent to which low-income households have little or no income left after paying other essential household expenses.

Arguments against using this mechanism include criticism of the "Big Brotherism" inherent in evaluating what are "essential" household expenses, the administrative costs of making individualized determinations, and the inherent possibility of having different individuals or offices apply different standards to similarly situated households.

Some researchers explicitly set forth this model of defining energy needs. Research by Heiserman is one example. Heiserman sought to evaluate the effectiveness of the Iowa Affordable Heating Payment Program (AHPP).[23] Heiserman posited that the purpose of the AHPP was to "reduce heating cost liability to a payment level* * *sustainable from household resources."[24] He set forth that the "income available to pay heating costs" includes "only the amount remaining after gross income has been reduced by monthly out of pocket expenses for housing (rent, or mortgage, insurance, and taxes), recurring medical costs, child support or alimony payments, and nonheating electricity usage."[25] Iowa requires 25 percent of this "available income" to be paid toward heating costs.[26] This Iowa approach is the prototypical "disposable income model."

The Iowa approach incorporates elements of the "maintenance of service" model, as well, however. Heiserman said, the purpose of the Iowa program was to "provide() a variety of interventions to reduce the risk that low-income households would lose residential heating service."[27]

In undertaking to evaluate the Iowa program in light of these definitions of need, Heiserman focuses in on the two constructs that

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23. Heiserman O. (1990), ***Iowa Affordable Heating Payment Program: Pilot Project Evaluation***, Iowa Department of Human Rights: Des Moines.

24. *Id.*, at 4.

25. *Id.*, at 33.

26. *Id.*

27. *Id.*

he established at the beginning of his evaluation. He begins on track, by noting amongst other things that the study households "can and do maintain continuous primary heating fuel service" and that a high percentage of the study households "had service for the five month heating season or longer."[28] Hence, he considers his maintenance of service constraint. Moreover, Heiserman notes that the program requires participants to "make a `reasonable' copayment equal to 25% of their available income during the five heating season months* * *."[29] As can be seen, Heiserman remains true to his "available resource" model as well.

Philadelphia Electric Company (PECO) is another institution that has adopted the "available resource" model to define low-income energy needs. According to this company's program evaluation for its low-income program (called CAP: the Customer Assistance Program), the utility was "burdened with a cumbersome and lengthy collections process, which claimed the financial resources of the Company (and its ratepayers) and drained the emotional resources of its service representatives."[30] According to PECO's evaluation:

> The latter were frequently frustrated by their inability to effectively assist a growing number of their clients: customers who were consistently delinquent, who had accumulated large arrearages, and who appeared to have severe financial difficulty in keeping up with current bills. Many appeared to be unable to handle even the easiest repayment terms* * *.[31]

Philadelphia Electric thus created a low-income program that measured "need" based on available resources. "CAP works with each participant through detailed interviewing to arrive at an amount deemed to be affordable for electric service. That fixed monthly amount may be as low as $2."[32] This income and expense statement process is directed at "customers who are payment-troubled --who have fallen seriously behind in paying their bills and/or have broken one or more payment agreements-- and who

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28. *Id.*, at 5.

29. *Id.*, at 6.

30. The Conservation Company (1987), ***Evaluation of Philadelphia Electric Company's Customer Assistance Program: November 1 1985 to October 31, 1986***, Philadelphia Electric Company; Philadelphia.

31. *Id.*, at I-1.

32. *Id.* at I-1 and III-1.

claim that they are more or less chronically unable to pay* * *."[33]

Hoffman approaches the available resource test differently in his model for defining low-income energy needs.[34] One approach to defining need, Hoffman states, "would focus on the energy costs of lower-income households relative to available resources."[35] Hoffman's "available resource" test, however, assumes that it is the *non*-energy expenses that represent the marginal payments. His concern is not that insufficient household dollars are left to pay energy bills after other household necessities are purchased.[36] Rather, Hoffman states "energy costs vary sharply by circumstance and location, and* * *some households must persistently devote large shares of income to energy, thereby limiting the purchase of *other* essential items such as food and clothing."[37]

Sheehan, *et al.*, after empirically considering low-income energy needs in Washington State based on an available resource test, rejected future use of the test as providing no useful information.[38] In Washington State, Sheehan concluded:

> the net available resources [test] has failings that make it not the most ideal means of determining energy needs for the poor. The test proves too much. Nearly *all* households at or below incomes of $10,000 have "energy needs" under the test, since nearly all such households have expenses that exceed income. The net resources test thus does not do what it purports to do--to identify those households who have "affordable" energy bills when tested by a percentage of income test, but whose higher than average expenses make their bills *un*affordable nonetheless. Moreover, since the test reveals that virtually *every*one at or below incomes of $10,000 is in need, it does not help

33. *Id.*, at III-1.

34. Hoffman, W.L. (1979), ***Providing Energy Assistance to the Poor: Choices Relevant to Design of Future Programs***, The Urban Institute: Washington D.C.

35. *Id.*, at 14.

36. This approach presents the truer picture of how low-income households spend money. Households tend to pay their utility bills before other bills, excepting rent and mortgage. *See generally*, Colton, R. (1990), ***Understanding Why Customers Don't Pay: The Need for Flexible Collection Practices***, National Consumer Law Center: Boston.

37. *Id.* (emphasis added).

38. Sheehan, M., *et al.*, (1994). ***An Assessment of Low-Income Energy Needs in Washington State***, at 78 - 83, Fisher, Sheehan & Colton, Public Finance and General Economics: Scappoose, Oregon.

target solutions.[39]

Sheehan stated: "While the net available resources test may well assist general poverty research in that it indicates the extent to which low-income households are losing their fight against substandard living conditions, it does not appear to be an appropriate means by which to measure energy needs."[40]

**PERSISTENT ARREARS AND SERVICE TERMINATIONS**

A final mechanism for defining "need" is to look not at current home energy bills, but to look at the level and impact of household arrears instead. This philosophy holds forth that, regardless of the burden imposed upon a household by the payment of home energy bills, the fact that the household is in "need" is manifested only at that point where the unaffordability of the household's bill will result in adverse payment patterns. The model posits, in other words, that it is irrelevant what the household bill is as a percentage of income, for example, so long as, *in fact*, the household makes its payments. In contrast, payment problems (and thus household energy needs) are reflected in utility arrears and service termination statistics.

Seeking to address this energy need is the purpose of programs such as those adopted by Wisconsin Gas[41] and Niagara Mohawk[42] through which households can work off prior arrears either by making regular current payments or by reducing current bills through conservation, or both.

In this regard, the reasoning of the Pennsylvania Commission in September, 1990, also relied upon this model of "need" when it directed Columbia Gas of Pennsylvania to implement a pilot Energy Assurance Program (EAP), stating:

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39. *Id.*, at 83.

40. *Id.*

41. Wisconsin Gas Company (1988), ***Weatherization Arrears Savings***, Milwaukee.

42. Harrigan, M (1992), ***Evaluating the Benefits of Comprehensive Energy Management for Low-Income, Payment-Troubled Customers***, Alliance to Save Energy; Washington D.C.

> * * *for the poorest households with income considerably below the poverty line, existing initiatives do not enable these customers to pay their bills in full and to keep their service.* * *Consequently, to address realistically these customers' problem and to stop repeating 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, we believe that new approaches like* * *the [Office of Consumer Advocate's] proposed EAP program should be tried.[43]

Note that the "problem" identified by the PUC for "the poorest households" in this Order was not a mismatch between income and energy bills, but rather the inability of such households "to pay their bills in full and to keep their service."

Researchers, however, have often tended to confuse this operational definition of "energy needs" with other definitions based on income and expense models. Weathers, for example, begins her analysis of the "unaffordability gap" in Utah by stating "the fact that any low-income utility consumer finds herself perpetually in arrears and repeatedly facing shutoffs despite the existence of emergency assistance programs indicates the need for new solutions."[44] She continues: "the thousands of Utahns who watch their utility arrearages grow and confront termination of service repeatedly are not financially capable of providing the solution themselves."[45]

Weathers, however, never quantifies this low-income energy "need" as evidenced by her posited permanent, and growing, arrears as well as repeated shutoffs of service. Rather than staying with her operational definition of energy needs, Weathers instead slips into a percentage of income model in her actual quantification of energy needs, noting three specific findings, including:

"o The average urban consumer spends 6.5% of gross household income on utility service; low-income consumers spend 22% (close to the percentage recommended by experts for `total' shelter costs including utility service).

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43. ***Pennsylvania Public Utilities Commission vs. Columbia Gas Company of Pennsylvania***, Docket R-891468, Decision and Order (September 1990). EAP stands for "Energy Assurance Program," an income-based utility rate proposed by the state Office of Consumer Advocate.

44. Weathers, S. (1987), ***Utility Ratepayers, Winter Heating Costs, and the Unaffordability Gap***, Utah Issues Information Program; Salt Lake City.

45. *Id.*

"o The difference between the average percentage of income paid by low-income consumers and that paid by average urban consumers may be assumed to be the portion of their utility costs that they cannot afford to pay, or an `unaffordability gap.'

"o Were low-income consumers to pay 6.5% of their income for utilities, the dollar difference between what they would pay and the amount they accrue in utility costs allows estimation of the size of the `unaffordability gap.'"[46]

Weathers explains the change in her analytical framework: "Utility write-offs or `uncollectible' accounts have some bearing on the `unaffordability gap.'* * *It might be thought that the uncollectible and the unaffordable are the same. However, the two are not comparable."[47] After making this blanket statement, however, Weathers does not explain the basis for her conclusion.

Other researchers take specific exception to the use of shutoffs as a measurement of low-income energy needs. In 1994, for example, a state-by-state analysis of low-income natural gas bills concluded that:

> The extent to which a utility disconnects service to payment-troubled households is not a good measure of the presence or absence of "energy needs" amongst the utility's low-income households. Measuring the disconnection of service does not document customers' needs so much as it documents a utility's response to those needs. This distinction is important. The disconnection of service tends to be highly selective, being driven as much by a company's credit and collection policies as by the inability-to-pay of its low-income customers.[48]

The report stated: "Because of this nature, the absence of service disconnections on a utility's system does not tend to indicate the absence of payment problems by a company's low-income population as much as it indicates that the utility does not respond to those problems by discontinuing service."[49]

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46. *Id.*, at 13.

47. *Id.*, at 15.

48. Sheehan, M. (1994) ***On the Brink of Disaster: A State-by-State Analysis of Low-Income Natural Gas Winter Heating Bills***, at 181 - 192, Osterberg & Sheehan, Public Utility Economists: Scappoose, OR.

49. *Id.*, at 181.

## SUMMARY AND CONCLUSIONS

Researchers commonly use three different models by which to measure the "energy needs" of low-income households. The first model looks at the percentage of income represented by the home energy bills of the poor. This percentage of income concept does not reflect the actual expenses of the household on other life necessities, or even the actual payments made toward home energy bills, as opposed to the bills that were received.[50] The second model looks at the household resources available to pay home energy bills. This model seeks to determine whether sufficient income exists from which to pay all necessary household expenses, including home energy. Contrary to existing research, it most often assumes that energy bills are the marginal payments. The third model measures "energy needs" in an operational fashion. This model posits that "need" is to be measured by the inability of households to maintain service (without shutoffs) or to maintain an arrears-free account balance. Under this model, households who are not disconnected or in arrears are not "in need," irrespective of the burden which home energy bills place on household income or available resources.

Most researchers never explicitly choose one model of defining low-income "energy needs" over another. These researchers do not consider the relative merits of the different models and make an affirmative selection. Instead, they merely refer to "need" in general while assuming a generally-accepted definition of what precisely that need is.[51] Other researchers adopt one model over another without articulating the basis for their choice or even acknowledging that they have made a choice among competing alternative analytic approaches. Finally, other researchers articulate a preference for one of the three alternative models, but then, in practice, allow their actual empirical data collection and analysis to slide into another, without acknowledging, announcing or justifying the change.

The percentage of income model appears to be the best method of defining energy need, even though even this approach has its limitations. The approach relying upon a calculation of available household resources tends to prove too much, in that most low-income households have more expenses than income. Moreover, the assumption necessary for this model to be appropriate --that

50. ". . .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." Colton, R. "A Cost-Based Response to Low-Income Energy Problems," ***Public Utilities Fortnightly*** (March 1991).

51. Either this, or they find no benefit from seeking to define precisely what they mean by "need."

energy expenditures are the marginal household expenditure-- is counter to existing research. Finally, the approach which relies upon shutoff terminations and persistent arrears tends to be too much a measure of company management decisionmaking as to credit and collection activity rather than a measurement of low-income energy needs.

# CHAPTER 3: STRATEGIC APPROACHES TO ADDRESSING UNAFFORDABILITY

This Chapter discusses the limited number of ways that exist to address low-income inability-to-pay problems. The thesis of this Chapter is that a "comprehensive" low-income program will have many facets. Different low-income energy problems will, in other words, be addressed by different mechanisms. The Chapter below will look at three different strategic approaches to addressing unaffordability problems. The first part of the Chapter will look at income supplement programs. The second part will look at the use of energy efficiency to redress unaffordability. The third part will look at regulatory approaches to addressing unaffordability problems.

When all is said and done, however, the fact of the matter is that for households who truly cannot afford their energy bills, only two broad strategies are available. These strategies can be pursued alone or in combination with each other. Either one can increase household income or one can reduce household expenses. The household expense at issue here, of course, is the household home energy bill. While other responses may be necessary and appropriate to address certain *consequences* of low-income inability-to-pay --a winter moratorium is one example of such a regulatory response-- only the income and expense strategies will directly address the root of the problem.

Clearly, energy costs are one major, if not *the* major, operating cost to many low-income households. More than 1.0 million households in 47 states and the District of Columbia with incomes less than $6,000 would have winter home heating burdens exceeding 30 percent of their income in the absence of federal fuel assistance, according to a 1994 study of the winter home heating bills of low-income households.[52] Roughly 1.9 million households would have winter home heating burdens of more than 20 percent of income. More than 2.7 million households would have winter home heating burdens exceeding 10 percent of income, the ceiling of "affordability."

A recent study found that low-income customers taking natural gas service from 164 of the 199 utilities studied[53] would pay "too much" for their winter home heating bills if they lost their fuel assistance dollars. Bills exceeding 10 percent of income were deemed excessive by the report.

The low incomes of households receiving federal fuel assistance (LIHEAP) mean that those families would pay very high percentage of income burdens for their natural gas winter home heating bills if LIHEAP is eliminated, the report said. In eight states, LIHEAP households, *on average*, would pay more than 20 percent of their income for natural gas winter heating bills.[54] In three more states, LIHEAP households, on average, would pay natural gas winter heating bills exceeding 15 percent of their income.

Inability-to-pay translates directly into the loss of utility service for nonpayment. Consider that in 1991, 5.3 *million* households had utility service involuntarily disconnected for nonpayment.[55] Year in and year out, not dozens, not hundreds, not even

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52. Sheehan, M. (1994) ***On the Brink of Disaster: A State-by-State Analysis of Low-Income Natural Gas Winter Heating Bills***, at 22, 24, Osterberg & Sheehan, Public Utility Economists: Scappoose, OR.

53. The study examined actual natural gas winter heating bills for 199 utilities in 47 states and Washington D.C. Data for utilities in New Mexico, Tennessee and Nebraska were not available.

54. *Id.*, at 18.

55. U.S. Department of Health and Human Services (1992). ***Low Income Home Energy Assistance Program, Report to Congress for Fiscal Year 1991***, at 163, U.S. Department of Health and Human Services: Washington D.C.

thousands, or tens of thousands, or hundreds of thousands of households lost their utility service due to inability-to-pay. More than *five million* did. The number of *people* losing service is thus significantly greater, assuming two or more people per household.

So what? Why do we care? Several reasons march forward.

- o According to the National Center for Health Statistics, roughly 60,000 lives are lost *each year* due to problems associated with cold weather, including fires, carbon monoxide poisoning, pneumonia, influenza, and, of course, hypothermia.[56]

- o A study of 7,400 children by Boston City Hospital found that the number of malnourished, low-weight children jumped dramatically following the coldest winter months.[57]

- o Separate studies in North Carolina[58] and Washington State[59] found that one-in-four households losing their heat to shutoffs for nonpayment relied upon portable electric or kerosene heaters as their alternative source of heating. According to the National Institute for Fire Prevention, however, fires caused by such heaters are five times as likely to result in a fatality than the average house fire.[60] Death rates due to fires caused by portable heaters are greatest in children and the elderly.

- o One study in Pennsylvania,[61] confirmed by research in Kentucky,[62] found that utility service terminations were cited not as

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56. Select Committee on Aging, U.S. House of Representatives (1984). ***Deadly Cold: Health Hazards Due to Cold Weather***, at 9, GPO: Washington D.C.

57. Diego Ribadeneira, "BCH Study Illustrates Poor's Painful Choice," ***The Boston Globe***, at 1 (Sept. 8, 1992).

58. Colton, R. and Leviton, R. (1991). ***Energy and Poverty in North Carolina: Combining Public and Private Resources to Solve a Public and Private Problem***, at 63, National Consumer Law Center:Boston.

59. Sheehan, M. *et. al*. (1994). ***An Assessment of Low-Income Energy Needs in Washington State***, at 108, Fisher, Sheehan & Colton, Public Finance and General Economics: Scappoose, OR.

60. Select Committee on Aging, U.S. House of Representatives (1984). ***Deadly Cold: Health Hazards Due to Cold Weather***, at 2, GPO: Washington D.C.

61. Energy Coordinating Committee and Institute for Public Policy Studies of Temple University (1991). ***An Examination of the Relationship Between Utility Terminations, Housing Abandonment and Homelessness***, Temple University: Philadelphia.

62. Applied Information Resources (1990). ***Homelessness and Low-Cost Housing in Northern Kentucky: An Analysis and a Strategic Action Plan***, Northern Kentucky Coalition

"a" cause, but rather as *the* precipitating cause of homelessness in nearly ten percent of the cases.

These are the direct impacts, but consider the *in*direct impacts as well. One study in Wisconsin found that from fifty to seventy percent of the low-income populations studied move within any given two year period due to the unaffordability of housing and utility bills.[63] That should be of concern. A 1994 study by the U.S. General Accounting Office, GAO, found that one of the primary factors interfering with childhood educational attainment was household mobility.[64]

Moreover, as should be self-evident, the disconnection of energy service to a low-income household can pose a serious threat to the home, health and perhaps even life of the consumer. As the U.S. Supreme Court has noted, "utility service is a necessity of modern life; indeed, the discontinuance of water or heating for even short periods of time may threaten health or safety."[65] Similarly, an Ohio federal district court stated that "the lack of heat in the winter time has very serious effects upon the physical health of human beings, and can easily be fatal."[66]

(..continued)

for the Homeless: Covington, KY.

63. Bergo and Matousek (1983). ***Wisconsin Pubic Service Corporation Lifestyle Study***, Wisconsin Public Service Corporation: Green Bay, WI.

64. U.S. General Accounting Office (1994). ***Elementary School Children: Many Change Schools Frequently, Harming Their Education***, GPO: Washington D.C.

65. ***Craft v. Memphis Gas, Light and Water Division***, 436 U.S. 1 (1978).

66. ***Palmer v. Columbia Gas Co. of Ohio***, 342 F.Supp. 241, 244 (N.D. Ohio 1972) (citations omitted); *see also*, ***Stanford v. Gas Service Company***, 346 F.Supp. 717, 721 (D.Kan. 1972). An excellent canvass of cases is found in ***Montalvo v. Consolidated Edison Company of New York***, 110 Misc. 2d 24, 441 N.Y.S.2d 768, 776 (N.Y. 1981).

## INCOME SUPPLEMENTS VS. ENERGY EFFICIENCY

A continuing debate, even within the low-income community, involves whether it is "better" to provide low-income households with cash assistance to help pay energy bills in the short-term, or better to provide the longer term structural assistance flowing from the bill reductions associated with weatherization. In fact, each has its role.

### *Cash Income Supplements*

Cash fuel assistance is perhaps the prime necessary component to help redress low-income energy needs. The fact is, some households simply lack sufficient cash resources to pay for their necessities of life. The 1994 report on natural gas winter home heating bills cited above found, for example, that the current federal fuel assistance program tends to serve the very poorest populations the most. While households living at or below 50 percent of the federal Poverty Level represent 15 percent of the total population eligible for fuel assistance, those households represent 20 percent of the recipient population. Similarly, while households living at 50 - 75 percent of Poverty represent only 10 percent of the eligible population, they represent 20 percent of all recipients.[67]

The dollars of income simply do not allow for sufficient funds for these households to pay all of their necessary household expenses. The *average* income of a LIHEAP household is below $6,000 in 17 of the 48 states reporting data. Even in the remaining areas, the average annual income of a LIHEAP recipient falls between $6000 and $8000 in 23 states. Nationwide, nearly one-in-five fuel assistance recipients had annual incomes of less than $4000.

To look only at *average* incomes and energy burdens, however, is to miss one of the most significant parts of the story of LIHEAP. Clearly, households at the lowest ranges of income, by definition, need fuel assistance the most. Consider, for example, that without LIHEAP, the *lowest* winter home heating burden[68] in any state --excluding Hawaii, Florida and California-- would be nearly 50 percent for households in the lowest income range (less than $2000). Texas, where this burden would arise, has almost 75,000 households --more than 16 percent of its total fuel assistance population-- who fall into this income range.

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67. Sheehan, M. (1994) ***On the Brink of Disaster: A State-by-State Analysis of Low-Income Natural Gas Winter Heating Bills***, at 9, 84, Osterberg & Sheehan, Public Utility Economists: Scappoose, OR.

68. The heating burden is the heating bill as a percent of income.

Cash assistance serves a purpose --and a population-- that no amount of energy efficiency investment, or winter protections, or regulatory protections, and the like, would be able to serve. These lowest income households simply need additional resources to pay their home heating bills.

***Problems with Existing Federal Cash Assistance Program: LIHEAP***

Despite the need for, and unique role to be played by, cash assistance to low-income households, the existing federal program -- called the Low-Income Home Energy Assistance Program or LIHEAP-- has several problems: substantive, administrative and political. Each of these problem areas is discussed individually below.

**Substantive Problems:** Perhaps the greatest substantive problem with LIHEAP is the lack of funding. No-one seriously suggests that the LIHEAP program comes close to meeting the energy needs --however defined-- of low-income households. One recent analysis of the energy needs of low-income households[69] in four selected U.S. cities,[70] for example, found that the needs of low-income households in those cities alone --the cities included Baltimore, Northern New Jersey, St. Louis and Seattle-- reached nearly one-half *billion* dollars annually.[71]

In contrast to these quantifications of low-income energy needs, the existing fuel assistance program is funded at only $1.5 billion *nationally*. Therefore, it is clear that whatever other problems LIHEAP has, its biggest problem is that it is not funded at levels sufficient to adequately address the energy needs of the poor.

The problem with inadequate funding is exacerbated by the recognition that LIHEAP is generally designed to address only a small

69. "Energy needs" were defined to be the excess bill over a designated percentage of income. The percentage of income deemed "affordable" in this estimate was fifteen percent (15%) for a combined electric and natural gas bill.

70. Colton, R. ***Defining and Measuring Energy Needs in Selected U.S. Cities***, Masters Thesis, Antioch University (October 1993).

71. A somewhat more dated analysis found that LIHEAP recipients continued to be billed 20 percent plus of their incomes on their home energy bills. Hill, C. (1989). ***Energy and the Poor: The Forgotten Crisis***, National Consumer Law Center: Washington D.C. It is not accurate to say that low-income households "spend" 20 percent of their income on home energy. Rather, the bills, if fully paid, represent 20 percent plus of their income. Due to the unaffordability of these bills, however, they are rarely fully paid. This distinction, between what households are billed and what they actually pay becomes important below.

portion of the home energy needs of the poor in the first instance. While there is a cooling component to the federal fuel assistance effort, the substantial majority of LIHEAP dollars is devoted simply to home heating assistance. In Fiscal Year 1990, for example, out of a $1.626 billion dollar funding availability, $1.030 billion was used for heating assistance while only $0.025 billion was used for cooling assistance.[72] Indeed, more money was transferred to other HHS block grant programs than was used for "cooling assistance." No dollars are available for energy uses not involving space heating or cooling (*e.g.*, hot water).

Heating comprises only a portion --a substantial portion, but perhaps not as substantial as most people believe-- of a low-income household's energy bill. Work done in Louisville in 1990, for example, found that home heating was only 50 percent of the total bill of low-income households.[73] Similar findings have been made in Washington State.[74] Hence, as currently structured, LIHEAP is addressed to only a portion of low-income energy needs, even if fully funded.

**Administrative Problems:** The federal fuel assistance program is hampered by administrative problems as well. The primary administrative problem is the lack of targeting that occurs within each state. In this regard, there is no assertion that LIHEAP is going to households who do not need the assistance. The observation simply is that LIHEAP is not distributed in as effective of a manner as it could and should be. Households are measured relative to each other, in other words, not relative to any determination of need.[75]

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72. Other portions of the appropriation were used for administration, crisis intervention, weatherization, transfers to HHS block grants, and carryover. ***LIHEAP Annual Report to Congress: FY 1990***, at 10 (Sept. 1991).

73. Colton, R. (1991). ***The Percentage of Income Payment Plan in Jefferson County, Kentucky: One Alternative to Distributing LIHEAP Benefits***, National Consumer Law Center: Boston.

74. Sheehan, M. *et al.* (1994). ***An Assessment of Low-Income Energy Needs in Washington State***, at 51, Fisher, Sheehan and Colton, Public Finance and General Economics: Scappoose, OR.

75. The 1994 reauthorization of LIHEAP, however, mandates targeting based on energy burdens. Public Law 103-252 (108 Stat. 623) provides that "the Secretary is authorized to make grants. . .to States to assist low-income households, particularly those with the lowest incomes, that pay a high proportion of household income for home energy, primarily in meeting their immediate home energy needs." Public Law 103-252, at Section 302 (Statement of Purpose). The statute provides that the term "energy burden" means "the expenditures of the household for home energy divided by the income of the household." The statute finally provides with regard to targeting that the term "highest home energy needs" means the home energy requirements of a household determined by taking into account both the energy burden of such household and the unique situation of such household that results from having members of vulnerable populations, including very young children, individuals with disabilities, and frail older individuals." *Id.*, at Section 304. The Conference Report to accompany the reauthorization stated that the bill "places the primary emphasis of the program on meeting the immediate home energy needs of those with low incomes and high relative energy burdens, with a secondary emphasis on reducing the energy needs and costs of such households." ***Conference Report to Accompany S.2000***, at 70 (May 9, 1994).

Substantial research has shown that low-income households face widely divergent energy burdens even after the receipt of LIHEAP.[76] While some households pay relatively modest percentages of their incomes for home heating after receiving LIHEAP, other households continue to pay more than 30 or 40 percent of their incomes, even after receiving federal fuel assistance. Significant objection has been made to these distributional aspects of the LIHEAP funding structure. Some poverty advocates believe that funds are misdistributed on a per-household basis.

A second distributional objection has been advanced on a regional basis. Southern states believe that too many dollars flow to the northern (and particularly New England) states, while too few dollars flow to the Sun Belt.

Any reconsideration of funding distribution, however, will result in a loss of dollars to someone.[77] Additional funds cannot be provided to the Southern states without reducing already inadequate resources to the colder weather states, assuming level funding. Similarly, even on a per-household basis, additional funds cannot be provided to some households without reducing already inadequate benefits to other households, again unless further funds are made available. Thus, the administrative problems associated with objections over distribution are greatly exacerbated by inadequate funding with which to begin.

**Political Problems:** The political problems of the federal fuel assistance program tend to fall into three areas. One of the greatest political problems is the refusal of the energy industry to acknowledge its role in helping to solve the inability-to-pay problems of low-income households. Utilities continue to insist that they are "not social service agencies" and that inability-to-pay problems are social problems to be addressed by state and federal dollars distributed through social service programs.

In contrast, while inability-to-pay problems has a social component, it has a component to be addressed by the industry, itself, as well:

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76. Colton, R. and Leviton, R. (1991). ***Energy and Poverty in North Carolina: Combining Public and Private Resources to Solve a Public and Private Problem***, National Consumer Law Center: Boston; Colton, R. (1990). ***The Percentage of Income Payment Plan in Jefferson County, Kentucky: One Alternative to Distributing LIHEAP Benefits***, National Consumer Law Center: Boston; Colton, R. (1991). ***Percentage of Income Payment Plans as an Alternative Distribution of LIHEAP Benefits: Good Business, Good Government, Good Social Policy***, National Consumer Law Center: Boston; Colton, R. (1988). ***Fuel Assistance Alternatives for Utah*** (1989); Colton, R. ***Low-Income Utility Protections in Maine: Volume 3: Fuel Assistance and Family Crisis Benefits***, National Consumer Law Center: Boston.

77. Given constant funding, in other words, someone cannot receive "more" without someone else receiving "less."

> There is no question but that this inability to pay is a social problem. There is also no question, however, but that this inability to pay represents a *utility* problem. While inability to pay utility bills is unquestionably a social problem, in other words, it is not *exclusively* a social problem and it should not exclusively be addressed at public expense. The inability to pay is *undeniably* a business problem to the state's utilities demanding a business solution. And the state thus undeniably has a right to require the state's utilities to pay their fair share of the costs.[78]

So long as the federal fuel assistance program undertakes to shoulder low-income inability-to-pay problems with government dollars alone, however, utilities and other energy vendors will be able to continue to deny their role in helping to redress their part of the problem. Utilities will continue to slough their credit and collection problems off onto the government's social service system.

A second political problem involves perceptions over who primarily benefits from the federal fuel assistance program. The federal fuel assistance program is often viewed not as a program primarily delivering public benefits to low-income households, but rather as a program primarily delivering benefits to utility companies (and other energy vendors). That perception has a legitimate basis. By paying low-income energy bills through LIHEAP, the federal government delivers innumerable benefits to local utility companies. Decreased working capital expenses, reduced credit and collection costs, reduced bad debt, lower arrears, and so forth are all utility benefits that arise as a result of the federal fuel assistance program.[79]

The final political problem for LIHEAP is its perception as simply another income transfer program akin to all other public welfare programs. The problem with such programs, according to their opponents, is that they do not promote self-sufficiency on the part of households. Instead, they represent government hand-outs which promote long-term dependency. Current welfare reform efforts posit that if such programs are to continue, they must be combined with some type of corresponding responsibility placed on the household to match the government payment of benefits.[80]

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78. Colton, R. "A Cost-Based Response to Low-Income Energy Problems." ***Public Utilities Fortnightly*** (March 1, 1991).

79. However, in light of the health and safety problems associated with inability-to-pay outlined in this report, it seems impossible to reasonably conclude that federal fuel assistance is *only* a program to provide "welfare for the utility industry." Moreover, the "welfare for utility" argument ignores the tremendous inability-to-pay problems outlined by the ***On the Brink of Disaster*** report discussed above.

80. The most glaring example of this reasoning are AFDC "workfare" proposals.

### *Decreasing Home Energy Bills Through Energy Efficiency*

In contrast to income supplements, a different component to low-income energy solutions involves energy efficiency programs targeted to the poor.

Weatherization can be an effective tool to use in reducing low-income energy needs for many, but not all, households. In fact, the plight of many of the households most significantly in need can be addressed through increased efficiency in usage. It is generally recognized that weatherization assistance is a more efficient means of addressing low-income energy needs over the long term than the distribution of fuel assistance. Weatherization provides continuing benefits year-in and year-out. Fuel assistance, on the other hand, provides a one-time cash supplement to help pay current utility bills (including arrears in some cases). Each year, a new one-time cash supplement must be provided.

It is recognized that a small minority of low-income households have extremely high energy bills relative to their incomes, which can be effectively controlled through weatherization assistance. According to Cleveland State University, for example, while 80 - 90 percent of Ohio's PIP households "are managing to keep their debt at reasonable levels," there is a group (11-12%) that "is accumulating debt at a very rapid pace."[81] According to Cleveland State, "this small group accounted for 40% and 34% of total gas and electric PIP debt respectively."[82] Cleveland State described these customers, saying:

> The high debt segments are a relatively small percent of the total population. This small group has tended to accumulate debt at a high rate in the past; they begin the program with 2.6 times higher debt, they have accumulated 3 times as much total net debt, and their annual increase in debt is 3 times greater than the majority of the PIP households.[83]

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81. Hexter, K., *et al*. (1989). ***Coordinating Ohio's Percentage of Income Payment Plan and Home Energy Assistance Program: A Guidebook***, at 4, Cleveland State University: Cleveland. (hereafter ***1989 Cleveland State University***).

82. *Id.*, at 2 (emphasis added).

83. *Id.*, at 41 - 42.

Cleveland State continued, stating: "Their annual usage (and their annual bills) are 1.6 times higher than the mid-range segments. * * *(T)heir bill/income ratios are about 1.7x higher."[84]

Columbia Gas Company of Pennsylvania found this same phenomenon in 1991. Columbia Gas studied 1,000 of its Budget Plus customers.[85] Some Budget Plus customers, Columbia found, were experiencing a growth in arrears despite the company's efforts to mold arrears payments to fit within household-specific budgets.[86] The customers with increasing arrears tended to be very high use customers, Columbia Gas found. These households demonstrated consumption 1.54x the residential average. The projected aggregate annual bill of $1,127,900 for these 1,000 increasing arrears customers translated into an annual bill per participant of $1,128. That compared to an average residential customer bill of $731.

Columbia Gas found that the 1,000 customers it studied would begin a pilot program designed to address inability-to-pay problems with $1.6 million in pre-program arrears as of October 1, 1990,[87] an average per household pre-program arrears of $1,610. In contrast, the average level of *all* "Budget Plus" arrears, including households with increasing *and* decreasing arrears, on that same date was only $618. As can be seen, therefore, while the 1,000 study customers represented eight percent (8%) of total Budget Plus customers, the arrears of the 1,000 represented 21 percent of total Budget Plus arrears (in dollars).[88] Weatherization directed toward reducing this consumption would help reduce the build-up of arrears as well.

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84. *Id.*, at 43.

85. Budget Plus is the typical payment plan offered by Columbia Gas to its payment-troubled customers in Pennsylvania. Pursuant to a Budget Plus agreement, the utility and the customer calculate an amount that the customer can afford to pay toward its arrears each month. There is, however, a minimum payment of $5 per month. The total arrears is then divided by that calculated payment; this provides the length of the payment plan, regardless of the outcome. Thus, if a customer has a $500 arrears and an ability to pay $25 per month, the payment plan is 20 months long; if the customer has a $500 arrears and an ability to pay $5 per month, the payment plan is 100 months long. The household must also make levelized payments toward current bills.

86. There is considerable significance to this result. An increasing arrears means that not only does the customer pay nothing toward retiring the arrears underlying the Budget Plus agreement, but the customer is paying less than the full current bill as well. The belief is that customers with increasing arrears are those customers that do not have the ability to pay their full bill for current usage in a complete and timely fashion and thus pay nothing.

87. ***Pennsylvania Public Utilities Commission v. Columbia Gas Company of Pennsylvania***, Docket No. R-901873, *Direct Testimony and Exhibits of Michael Martin*, Exhibit 104-D-1 (January 1991). This level of arrears was determined as of October 31, 1990.

88. The total Budget Plus arrears on that date was $7,731,937. The total Budget Plus customers on that date was 12,500.

Despite the *advantages* of publicly-funded (or utility-funded) weatherization assistance, using energy efficiency as a means of addressing low-income energy problems has substantial *dis*advantages as well. Like LIHEAP, perhaps the most significant is the lack of adequate funding. Federal Weatherization Assistance Program (WAP) dollars will never be adequate to provide services to all eligible low-income homes needing weatherization within a reasonable period of time. Federal WAP appropriations today stand at a fraction of what they were at their peak. Moreover, most states used oil overcharge dollars in the mid- to late-1980s to supplement federal appropriations. This source of supplemental funding has now been exhausted.

Even at peak efficiency, however, WAP could only make a small dent in the needs of low-income households. For example, one 1992 estimate in Michigan reported that:

> There are roughly 497,000 homes eligible for low-income weatherization assistance in the State of Michigan. Assuming that we could reach 8,000 homes a year (the current WAP level of effort), it would take more than 42 years (497,000 - 157,000 = 340,000 / 8,000 = 42.5) to weatherize each eligible home. And that assumes that no home would need to be redone during that time period, a clearly erroneous assumption.[89]

Similarly, one 1991 estimate in North Carolina reported that:

> Since 1979, almost 65,000 North Carolina housing units have been weatherized through WAP. Based on the 1980 Census, the N.C. Energy Division estimates 556,746 WAP-eligible units in the state. At current funding levels, only about 5,000 units are weatherized a year.[90]

Finally, a recent study of Washington State's low-income energy programs found that only 44,000 of the 250,000 eligible homes in that state had been weatherized.[91] The study reported:

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89. Direct Testimony and Exhibits of Herbert Yaminishi, ***In Re. Request for Low-Income Conservation Program for Consumers Power Company and Michigan Consolidated Gas Company***, filed in support of Complaint on behalf of Oakland County Welfare Rights Organization and Westside Mothers, at 10 - 11 (May 15, 1992).

90. ***Colton and Leviton***, at 68.

91. Sheehan, M. (1994). ***An Assessment of Low-Income Energy Needs in Washington State***, at 171, Fisher, Sheehan & Colton, Public Finance and General Economics: Scappoose, OR.

> At 1990 funding levels, it will take 48 years to complete the job of weatherizing the current stock of low-income housing.[92] This assumes that the per-household average cost will rise to and remain steady at $1,900* * *. It also assumes that no more low-income households will be added to the pool during that time. Of course, neither of these assumptions is likely to hold true over the course of five decades.
>
> * * *
>
> * * *it is likely that the cost per home for weatherization will continue to increase with time. In addition, the number of homes qualifying for assistance will also increase each year, making it more difficult to finish the job.* * *Although the new homes should be built to standards that make participation in the WAP unnecessary, the qualifying population will continue to increase. As these households by definition cannot afford the generally more expensive new housing, many will be forced to live in older, sub-standard structures. Some of these structures currently may not be considered in need of weatherization, but due to deterioration of materials may qualify in the future. Others may qualify now, but are currently occupied by households that do not meet the income requirements for participation in the WAP.[93]

As is apparent, WAP dollars, standing alone, will *never* address the weatherization and conservation needs of low-income households.

Even if WAP were successful in reaching all homes, however, the scope of the program is more limited than low-income households need. As the Washington State report notes with regard to that state:

> Moreover, weatherization programs generally deal only with space heating. Thus, even if the more ambitious 20-year goal is achieved, the results will be an increase in efficiency for only the half of the typical household energy

92. The average rate of weatherizing homes between 1982 and 1990 was about 4,920 per year. The per-unit spending cap in 1990 was about $1,700 per home. 4,920 X $1,700 = $8.36 million per year. If the $400 million figure above is correct, $400 / $8.36 = 48 years.

93. *Id.*, at 172.

bill dedicated to heating. Low-income households will still face a burden in their energy bills, which will be exacerbated if actual weatherization program savings are lower than those predicted.[94]

94. *Id.*, at ES-4.

The Washington research concluded:

> space heating represents about 50 to 55 percent of a household's energy budget. Thus, for every two percent of heating energy saved through a weatherization program, approximately one percent of the *total* energy budget would be saved.[95]
>
> Weatherization programs thus appear to offer an opportunity for substantial savings for low-income households. While it is true that these programs can substantially cut costs for heating and cooling homes, they are less valuable for helping reduce total energy costs.[96]

Finally, for some households with very low-incomes, no amount of weatherization will be able to bring their bills low enough to be "affordable" from a percentage of income perspective. The 1994 assessment of natural gas winter home heating bills concluded:

> The winter heating crisis facing low-income households is not a problem that can be addressed by increasing weatherization funds alone. The winter heating burdens faced by low-income households are not simply a function of high energy bills, but instead are a function of the interplay between energy bills and income. While weatherization unquestionably plays an important role in helping to address unreasonable low-income winter heating burdens, even if given "unlimited" funding, weatherization alone would be inadequate to redress the mismatch between household heating expenses and household resources available to pay those expenses.[97]

Some households simply have so little income, virtually *any* energy bill will be burdensome. The report found that nationwide, 46.1 percent of all LIHEAP recipients had incomes of less than $6000; 18.7 percent of all LIHEAP recipients had annual incomes of $2,000 to $4000; an additional 6.3 percent of all LIHEAP recipients had incomes of less than $2000.[98] To look only at *average*

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95. *Id.*, at 51.

96. *Id.*

97. Sheehan, M. (1994). ***On the Brink of Disaster: A State-by-State Evaluation of Low-Income Natural Gas Winter Heating Bills***, Osterberg & Sheehan, Public Utility Economists: Scappoose, OR.

98. *Id.*, at 16.

energy burdens in the absence of LIHEAP is to miss one of the most significant parts of the story about LIHEAP. In the absence of LIHEAP,[99] the burden faced by the poorest households, those with incomes of $0 to $2,000, is almost unimaginable. The six states with the highest burdens within this income range ($0-$2000) are as follows:

| | |
|---|---|
| New York | 197.3% |
| Connecticut | 178.8% |
| Massachusetts | 174.0% |
| Maryland | 154.2% |
| Washington D.C. | 140.1% |
| Illinois | 137.5% |

Note that in each of these instances, these households would be required to pay more than 100 percent of their winter income just for their natural gas winter heating bills.

In sum, therefore, whatever the level of effort or funding for low-income energy efficiency,[100] there will always be a need for a cash supplement program. Energy efficiency, while an adequate long-term solution for many, simply cannot address the energy problems for the lowest income households with the highest energy burdens.

99. As evidenced by substantial cutbacks in funding in recent years, LIHEAP remains under substantial Congressional pressure. As the federal financial picture becomes tighter, the continuation of LIHEAP funding at existing levels remains in doubt from year-to-year. Moreover, even if funding remains level, the loss of purchasing power represents a substantial reduction in the "real" benefits provided by the program.

100. Delivering energy efficiency, of course, is not simply a matter of funding. There must be the institutional capacity to deliver the efficiency measures as well. This issue of institutional capacity is discussed in greater detail below in the discussion of developing a decision-rule for funding utility energy efficiency programs targeted to low-income households.

## SOME REGULATORY INITIATIVES

While addressing the root of low-income inability-to-pay problems is one focus of a low-income agenda, it cannot be the *only* focus. There are specific problems faced by low-income households, not unrelated to the income and expense problems addressed above, which need redress as well. An appropriate agenda designed to fully address low-income energy problems thus would include regulatory initiatives directed toward ensuring access to energy services in the first instance; guarding against unreasonable and unnecessary increases in bills; providing crisis assistance; protecting against unintended discrimination; and providing regulatory protections against unconscionable results of nonpayment. Each of these will be briefly reviewed below.

### *Access to Service*

Gaining access to energy service is the first threshold that low-income households must often overcome. Given the problems that low-income households face today with high energy bills, it is vitally important for policymakers to ensure that undue burdens are not placed on already overburdened households when they *seek* service. In this sense, the problems that low-income households have with paying their current utility bills carry over to the payment of deposits as well.

A utility commission, for example, must ensure that the collection and maintenance of low-income deposits is a rational exercise which serves a legitimate business purpose. The collection of a cash deposit is one means to gain protection against the potential loss of revenue through bad debt. The deposit serves the function of security to protect against the risk of default. A utility must justify its collection of deposits, however, in light of the costs inherent in obtaining and maintaining them. A utility, in other words, must demonstrate that the collection and maintenance of deposits reduces its uncollectible accounts in an amount at least equal to all costs associated with the collection and maintenance of such deposits.

For example, one failing in the determination of whether deposits should be sought is the use of third-party, non-utility, credit information.[101] Utilities who use third-party supplied information as a basis for deposit demands may face particular problems. Third party information is used by some companies to determine whether or not new applicants for service are "creditworthy." Rather than directly denying service, a utility simply requires a household deemed to be non-creditworthy to post a cash deposit.

101. Colton, R. (1994). "The Use of Consumer Credit Reports in Establishing Creditworthiness for Utility Deposits." 27 ***Clearinghouse Review*** 1342.

The use of third-party supplied credit information as a basis for making utility deposit decisions constitutes a problem when the third party information is not itself comprised of utility payment histories. Several reasons support this conclusions. First, substantial research has found that consumers tend to pay their utility bills before paying nearly any other outstanding credit (other than rent or mortgage obligations). Second, it has been found that low income consumers frequently acquire poor credit ratings by refusing to complete payments on installment purchases of defective or shoddy merchandise. Finally, a person who has never borrowed from a reputable institutional lender, or maintained a charge account at a large store, may have difficulty establishing that his credit is good. As a result, information from a credit reporting agency that indicates a lack of creditworthiness based on non-utility transactions does not provide useful information as to a customer's likelihood of paying a home utility bill. Ensuring that low-income households can gain access to utility service is the first important step in a low-income agenda.

***Guarding Against Unnecessary Increases in Bills***

A second component of addressing low-income energy problems is to provide regulatory protections against actions that tend to irrationally and unreasonably inflate the cost of low-income energy. Protecting against the imposition of late fees is one such example.

Utilities often seek to impose a late payment charge on those households who do not pay by a designated due date. The imposition of such a charge is generally designed to provide an incentive for households to make timely payments. Unfortunately, not only do utility late payment charges often bear little relation to this stated purpose, but, in overcharging in cases of delinquent payments, utilities often create adverse impacts, particularly for low-income households.

From the perspective of the low-income customer, late payment charges should reflect a delineation of the *type* of customers which are likely to be involved. A utility, in other words, must recognize the differences which exist between habitual nonpayers. Nonpayers can be categorized into three primary groups. Households who "do not" pay because they "can not" pay represent the first group. These households are typified by extremely low-incomes and high bills as a percentage of their income. These households simply have insufficient funds to pay their bills.

Households who experience an ongoing mismatch between their utility cycle billing date and their receipt of public assistance comprise a second group of habitual late payers. A household in this group might, for example, receive a utility bill due on the 15th of each month but not receive its Social Security check until the 20th. In such instances, while all monthly payments are likely

made, they are routinely made after the due date. The potential for this class to be sizeable is great. Households who depend on public benefit programs such as SSI, AFDC, Social Security and the like have no control over the date on which they receive their income.

Households who use late payment as a money management technique comprise the third and final group of chronic late payers. In these cases, so long as the return on the funds not paid to the utility exceeds any resulting late payment charge, the customer will financially benefit from delaying payment as long as possible. These households are not likely to be low-income households. Households making this type of sophisticated financial calculation are not likely to include those households lacking in education.

It is a legitimate inquiry as to whether the level of the late payment charge bears any relation to an acceleration in payment dates. Moreover, it is a legitimate inquiry as to whether a late payment charge designed to induce prompt payment is rational in those instances where nonpayment occurs in households who are unable to pay either because of chronic poverty or because of a mismatch between their receipt of utility bills and public benefits checks.

A financial inducement to make prompt payments is effective when the customer's reason for nonpayment is to gain financial advantage from devoting the funds to other uses to gain the difference between the substitute return and the utility late charge. Clearly, however, low-income households do not withhold payments toward their utility bills in order to gain a higher return by devoting their resources to alternative uses. Low-income households do not pay because they cannot afford to pay. Increasing their bill will thus provide no inducement to make prompter payments. Seeking to create an incentive to make prompt payments by making unaffordable bills even higher is not only ineffective, but ultimately counterproductive. If nonpaying households do not pay because they cannot pay, it is no remedy to impose penalties which increase the bill even further.

***Unintended Discrimination***

A third component of protecting low-income energy service is to ensure that rates and services are to be offered on a "non-discriminatory" basis. Unfortunately, the claim of "discrimination" is often used only as a shield by regulators and other ratepayers to stop income-based programs designed to protect the poor. Moreover, the claim of "discrimination" has often been confined to "rates" while discrimination in the provision of service has been largely ignored.

Anti-discrimination regulations should be applied particularly in the evaluation of the "service" practices of public utilities.[102] State utility statutes should be construed not only to proscribe overt discrimination in rates, but to proscribe more subtle forms of discrimination, inadvertent or otherwise, in the areas of disconnections, deposits, payment plans, late charges and the like.

The same principles that are used to evaluate claims of discrimination in ratemaking should be used to evaluate claims of service discrimination as well. Four such principles stand out. First, a utility may not rely on a social policy ground unrelated to the provision of utility service to justify its service policy. However socially beneficial or justified the policy may be argued to be, if there is no utility-related basis for the practice, the policy may not serve to justify a service practice. Second, even when a utility justification is proffered, there must be a rational relationship between the practice and the asserted basis. This relationship may not be assumed, but must be clearly demonstrated. Third, if a practice is over- or under-inclusionary in nature, it should be disapproved. It may not exclude those to which it should apply nor may it include those to which it should not apply. Finally, and in sum, the foundation of any claim of discrimination is that all persons similarly situated must be treated alike. If households that have no discernible differences are receiving disparate service treatment, or if households with different characteristics are receiving identical treatment, a claim of discrimination will lie.

*De facto* discrimination against low-income households can occur in a variety of contexts when public utility actions are judged by an "effects test." The example that is discussed below involves discrimination in the offer of payment plans by Central Maine Power Company. In this instance, Central Maine Power did not seek to implement a program that overtly discriminated against low-income households. Nevertheless, the CMP practices did indeed discriminate against poor people because of program attributes that are unrelated to any compelling need of the utility.

The state of Maine has adopted a unique approach to the winter payment problems of low-income customers. Rather than adopting a "pure" winter moratorium, whereby disconnections of service are absolutely prohibited for income-eligible customers from November through April, Maine has adopted a two-pronged approach to winter shutoffs. The first prong requires utilities to make a reasonable effort to make personal contact with customers who are $50 or more in arrears. This "personal contact" may occur either by telephone or by a premise visit. The second prong is a system of payment plans. The Maine commission requires most utilities to offer eligible customers an opportunity to enter into a Special Payment Arrangement. Under this plan, a customer

102. *See generally*, Colton, R. (1990). "Discrimination as a Sword: Use of an `Effects Test' in Utility Litigation." 37 ***Washington University Journal of Urban and Contemporary Law*** 97, *reprinted*, XIII ***Public Utilities Anthology*** 813.

may pay less than the full amount of winter bills as they become due; the difference is then "made-up" in equal increments paid during the non-heating months. In the event that (1) no personal contact is made with the customer, or (2) personal contact is made and the customer and utility fail to agree on a payment plan, or (3) a payment plan is agreed to but is subsequently broken, a utility may seek to disconnect service even during the winter months so long as it first seeks and obtains approval from the Maine PUC's Consumer Assistance Division.

A 1988 report for the Maine PUC[103] found that these rules operated, however unintentionally, to discriminate against a discrete population of low-income households. The report found that 70 percent of the households for whom a winter disconnection was sought, and 80 percent for whom a winter disconnection was granted, lacked telephone service in their home. The study found that the homes without telephones did not have greater arrears than the remaining population.

The study found further that the structure of the utility's collection procedures worked to exclude these households that lacked telephones. It found that a statistically significant difference existed in the number of "no-phone households" that arranged to make full or partial payments, that obtained public assistance, and that entered into payment plans. The study concluded:

> It would appear that households which lack telephone service do not have the same ability to undertake the basic activities necessary to maintain home heating. They cannot contact social service agencies for public assistance; nor can they contact their utility to make payment plan arrangements.[104]

Based upon this analysis, the Maine PUC was urged to eliminate the source of discrimination, heavy reliance upon telephone collection techniques. The Maine situation is an excellent example of establishing unintentional discrimination. The Maine utility had, in effect, made the presence of a telephone a prerequisite to maintaining energy service.

***Extreme Weather Moratorium***

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103. Colton, R. (1988). ***Low-Income Utility Protections in Maine, Volume 1: An Evaluation of Low-Income Utility Protections in Maine: Winter Requests for Disconnect Permission***, National Consumer Law Center: Boston.

104. *Id.*

Finally, the need for protections against the disconnection of service because of unreasonable winter heating burdens and inadequate incomes to pay winter bills was discussed in detail above.[105] In addition, however, there is a growing recognition of the need for households to be protected against death and illness induced by extreme *hot* weather as well.[106]

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105. According to ***The Other Part of the Year***, public policy has been wrongly concentrated on cold-weather related protections. "Such decisions might include focusing federal fuel assistance dollars on certain heating months of the year or on certain geographic areas of the country. The limitation of utility `shutoff moratoria' to cold weather months, also, indicates the perhaps misguided notion that only cold weather can be deadly.

"Heat is a substantial contributor to death tolls in even average summers. While those persons most prone to heat-induced deaths are the elderly and the infirm, death can be found in all age groups and socio-economic strata. Given that observation, cooling can be viewed as more than a comfort-related luxury. Cooling can, and in fact, most often is, a necessity of life." *Id.*, at 1 - 2, 95 - 99.

106. While most people think of "extreme weather needs" as relating to *cold* weather, hot weather, as well, creates significant health risks. *See generally*, Colton, R. and Sheehan, M. (1994). ***The Other Part of the Year: Low-Income Households and Their Need for Cooling, A State-by-State Analysis of Low-Income Summer Electric Bills***, Fisher, Sheehan & Colton, Public Finance and General Economics: Belmont, MA. According to that report:

"The loss of utility service during non-winter months can be just as deadly, if not more so, than the loss of winter heating service. Heat-related deaths are a little-recognized, and even less well understood, public health problem. Heat-related deaths tend to be under-counted, and are certainly under-considered in the formulation of public policy.

"Hot weather can be deadly to low-income households, recent research has found. Without having identified precisely what the *most* vulnerable population is, there is general agreement that the susceptibility to death due to hot weather varies significantly based on age, sex and race. Heat-related deaths are concentrated in the northeast and midwestern regions of the country. They generally occur only after certain city-specific threshold temperatures are reached.

"Hot weather, in combination with other meteorological conditions, contributes significantly to human mortality rates in American cities. Traditional measures of heat-related deaths substantially *under*state the dangers attributable to hot weather. Statistics that have been reported in the past have tended to report only `heat stroke' as a heat-related death. Many causes contribute to heat-related deaths, however, of which heat stroke is but one minor one. In fact, heat stroke only accounts for roughly 10 percent of the deaths in which heat was a contributing factor.

"There are two big spikes in heat wave deaths: heart attack and stroke. These spikes have occurred for every heat wave in the last 50 years. There is a very important relationship between heat and the heart. What `heat stress' means is that hot weather places a burden on the heart. The greatest danger during a heat wave is thus not heatstroke, but heart attack or stroke. Heart attacks and real strokes account for nearly 90 percent of all deaths due to heat.

"Heat-related deaths cannot be isolated among a few designated causes, however. Instead, research shows that `mortality from a wide variety of causes increases during extreme summer weather, and the notion of a few specific weather-related causes in summer appears to be specious.'

"Deaths attributable to hot weather are not a `southern' phenomenon. Indeed, a variety of estimates `confirm for various climate change scenarios that the mortality impact on northern and midwestern US cities will be greater than in southern cities.' Indeed, one set of researchers. . .found that cities in `temperate areas' experience a `sharp rise in total mortality during unusually hot weather while mortality rates in warmer cities seemed to be less affected no matter how high the temperatures rose.'

*Id.*, at 1, 14 - 29 (citations omitted).

It is now clear that such extreme weather protections do not adversely affect utilities. Data from Pennsylvania indicates that the state's winter moratorium has little impact on whether households develop greater arrears during the heating months. The conclusion is, in other words, that a household's winter arrears would be no lesser without a winter moratorium than they are with the moratorium.

An October, 1983 Pennsylvania PUC Bureau of Consumer Services (BCS) study found that average overdue bills are at a low in November and rise to a high point in March or April. "The apparent relationship of this pattern to Public Utility Commission regulations is obvious. That is, arrearages are greatest at the end of the Commission's winter termination restrictions* * *and have been reduced to their lowest point immediately prior to the introduction of those restrictions for the following year."[107]

BCS, however, then dismissed the relationship between high arrears and *the existence of the moratorium.* Seasonal fluctuations in arrears, BCS found,

> are substantial only for heating accounts. Arrearages for non-heating accounts show only minor season fluctuations.* * *Heating customers' bills grow radically in the winter and so do their arrearages. Non-heating customers' bills change very little seasonally and their arrearages follow suit.[108]

BCS concluded:

> In other words, if the assertion that winter termination restraints invite nonpayment were correct, then non-heating arrearages should show the same seasonal pattern of variation as do heating arrearages. That they do not casts substantial doubt on the assertion that PUC winter termination restraints are responsible for willful non-payment and consequent collection problems.[109]

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107. Farrell J. (1983). ***Utility Payment Problems: The Measurement and Evaluation of Responses to Customer Nonpayment***, at 19, Pennsylvania Public Utilities Commission, Bureau of Consumer Services: Harrisburg, PA.

108. *Id.*

109. *Id.*

These Pennsylvania conclusions are corroborated by information developed in Maine. Data from Maine indicates that winter shutoff restrictions have very little impact on whether households continue to make utility payments during cold weather months, particularly for households who have maintained service for longer than twelve months. The Maine study looked at all households for whom Maine's electric utilities sought a winter disconnection of service for nonpayment. The study found that "there is not a readily apparent trend of households avoiding the disconnect process through use of the winter protections." For example, the Maine study found, there are *not* substantial numbers of households who "enter Maine utility systems immediately prior to the winter moratorium period, make one or more nominal payments, and then stop paying for the duration of the winter heating season."[110]

## SUMMARY AND CONCLUSIONS

Low-income inability-to-pay for home energy bills is a concern that far transcends protecting people from freezing to death. Inability-to-pay has implications, as well, regarding preventing homelessness and neighborhood deterioration due to housing abandonment. Inability-to-pay increases a utility company's aggregate expenses, and thus rates to all other utility customers.

Addressing low-income energy problems, however, involves more than simply providing cash fuel assistance. While cash assistance is unquestionably necessary, particular during high cost winter months, a low-income agenda must include, also, energy efficiency improvements. Like fuel assistance, weatherization has substantial limitations that limit its effectiveness. It is inadequately funded. Moreover, even if adequately funded, there are functions that weatherization simply cannot serve, and populations that weatherization cannot help.

Finally, in addition to cash assistance and weatherization, regulatory low-income initiatives are needed that will ensure access to service with which to begin, that will provide discounted rates, that will eliminate unintentional discrimination, that will provide regulatory protections against unreasonable charges and fees, and that will protect against extreme weather shutoff crises.

110. Colton, R. (1988). ***Low-Income Utility Protections in Maine***. (3 volumes), ***Volume 1: An Evaluation of Low-Income Utility Protections in Maine: Winter Requests for Disconnect Permission***, National Consumer Law Center: Boston.

# CHAPTER 4: UTILITY DSM AND LOW-INCOME USAGE REDUCTION

## INTRODUCTION

Increasing debate is occurring today regarding whether it is appropriate for utilities to invest in Demand Side Management (DSM) strategies. Arguments *against* such utility investments take several forms. First, it is said, in times of long capacity and declining marginal costs, there is not the same pressure to obtain cost reductions through the implementation of utility DSM programs. Utilities, in other words, are not now being placed in the position of needing to displace expensive generating capacity with less expensive DSM. Moreover, given the methods now in place for capturing and distributing DSM benefits, particularly *vis a vis* DSM costs, program nonparticipants are often being faced with higher bills irrespective of whether total system costs decline or not.[111] When DSM is viewed solely as a resource acquisition strategy, proposals to ramp down DSM expenditures can be supported, even while recognizing the financial and planning benefits of DSM expenditures[112] One need not be an "opponent" of

111. Colton, R. (1990). ***A Regulatory Response to Low-Income Energy Needs in Colorado: A Proposal***, at 30 - 47 National Consumer Law Center: Boston. "When some households pay all or part of the costs of a DSM measure but, due to the nature of capturing and distributing the benefits, receive none of those benefits, a distributional problem arises. This result has particular implications for low-income households. Assume for the moment that low-income households tend to be non-participants in utility-financed conservation programs. . .If that is true, when a utility uses ratepayer money to finance DSM measures, there is a direct income transfer from low-income households to households with moderate and upper incomes. The income transfer from an equity viewpoint is clearly in the wrong direction." *Id.*, at 30.

112. *See generally*, Colton, R. (1994). ***Why Ramping Down DSM Expenditures Can be "Pro" DSM***, Fisher, Sheehan & Colton, Public Finance and General Economics: Belmont, Massachusetts.

DSM, in other words, to accept the observation that the need for acquiring DSM resources waxes and wanes, exactly like the need to acquire other types of utility resources does.[113]

## LOW-INCOME DSM AS A NICHE MARKET

Whether or not in an expansive or a restrictive DSM environment, however, some DSM expenditures can be supported at existing, or even increased, levels of investment. Even in an era of reducing or restricting DSM expenditures, some market niches exist that can be cost-effectively filled with utility-financed DSM. The goal of such a DSM niche marketing strategy is to successfully serve the identified niche in the market.

Marketing DSM to low-income households is one such niche that can be pursued whether in an expansive or a restrictive DSM environment.[114] The reason for this difference in treatment between low-income DSM and "other" DSM arises from the fact that low-income DSM is not simply a resource acquisition strategy and thus does not (or should not) rise and fall with total utility resource acquisition plans. Instead, in addition to being a resource acquisition strategy, utility delivery of energy efficiency strategies to low-income households serves important public utility purposes that are independent of resource acquisition considerations.

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113. There is no basis for asserting that the need for DSM has "waned" today. Indeed, there exists today a much greater potential for cost-effective DSM than has been pursued to date. *See e.g.*, ***America's Energy Choices*** (Cambridge, MA: Union of Concerned Scientists, *et al.* 1991); *see also*, ***Energy Efficiency--Challenges and Opportunities for the Electric Utility Industry*** (Washington D.C.: Office of Technology Assessment, November 1993).

114. The whole concept of "niche" marketing for low-income households is consistent with the low-income "market barrier" approach to DSM. *See generally*, R.Colton (1991). ***Utility-Financed Low-Income Energy Conservation: Winning for Everyone***, National Consumer Law Center: Boston.

> "For a utility effectively to design and offer conservation programs to its low-income customers, it should have a clear grasp of what market barriers prevent the implementation of those measures without utility assistance. The utility program, accordingly, would most rationally be designed to effect the removal of the identified market barriers. If, for example, the market barrier is an unreasonably long payback period, the utility may offer direct subsidies to shorten that period. If, in contrast, the market barrier is a lack of affordable investment capital, the utility may offer a low-interest/no-interest loan fund.
>
> "In addition to market barriers common to all residential ratepayers, however, 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 more severely restrict the availability of conservation measures to low-income households than to residential households in general."
>
> *Id.*, at 35, 37.

More specifically, DSM programs can be specifically and explicitly directed toward redressing low-income inability-to-pay problems. Without endeavoring to label these expenditures, the expenditures nonetheless can be viewed as a customer service strategy, a credit and collection strategy, or a "quality of service" strategy, as much as a resource acquisition strategy. As such, the need for (and benefits from) low-income DSM can be justified independently from the resource acquisition implications of such strategies.[115] Moreover, the resource acquisition considerations that may counsel for ramping down DSM expenditures at some point in time (or for some period of time) do not hold true for low-income DSM.

The niche marketing of DSM to low-income households introduces a new paradigm to DSM planning and design. The new paradigm states that rather than measuring low-income success by dollar magnitude of investment or by total number of households served, success should instead be measured by the ability: (1) to accurately identify, and (2) to adequately address low-income needs through DSM.[116]

The remainder of this chapter seeks to flesh out these two tests. When planning and evaluating low-income programs under this new paradigm, therefore, rather than asking questions such as "how many households" and "how much money," the questions to ask include: what is the need of this low-income population? can DSM help alleviate this need, and, if so, how? and, to what extent can DSM alleviate this need?

On the one hand, the planner may need to be prepared for some disturbing answers. It may be that the utility will find that some low-income households have needs that cannot be addressed through DSM.[117] It may be that *not* all low-income households will

115. For a description of how to evaluate the success of DSM programs in addressing inability-to-pay, *see*, Colton, R. ***Weatherization Assistance Program Evaluations: Assessing the Impact on Low-Income Ability-to-Pay***, Fisher, Sheehan & Colton, Public Finance and General Economics: Belmont, MA (July 1994).

116. For example, utility targeting of DSM investments toward payment-troubled customers could be viewed as a means of redressing the "damages" associated with nonpayment. *See e.g.*, Colton, R. and Smith, D., "The Duty of a Public Utility to Mitigate `Damages' from Nonpayment through the Offer of Conservation Programs." 3 ***Boston University Public Interest Law Journal*** 239 (Fall 1993).

117. One recent analysis found that some households receiving federal fuel assistance have such low incomes, virtually *any* energy bill will result in a mismatch between household bills and household ability-to-pay, a mismatch that cannot be eliminated by increasing household energy efficiency. Sheehan, M. (1994). ***On the Brink of Disaster: A State-by-State Examination of Low-Income Winter Heating Bills***, at 35, Osterberg & Sheehan, Public Utility Economists: Scappoose, OR. "The winter heating crisis facing low-income households is not a problem that can be addressed by increasing weatherization funds alone. The winter heating burdens faced by low-income households are not simply a function of high energy bills, but instead are a function of the interplay between energy bills and income..* * *even if given `unlimited' funding, weatherization alone would be inadequate to redress the mismatch between household heating expenses and household resources available to pay those expenses." *Id.*

be served by DSM. It may be that DSM works only when done in conjunction with other programs. Nonetheless, under a niche marketing approach, serving "all" is not the goal.

On the other hand, the planner may find some answers to be uplifting. It may be that given the impacts on reduced arrears and related costs,[118] some targeted strategies can be cost-justified even in times of reduced resource acquisition avoided costs or even given higher program administrative costs. It may be that the needs identified allow for highly effective piggyback programs undertaken with non-traditional partners. It may be that concerns with lost base revenues become totally irrelevant for low-income programs.

Given this backdrop, the discussion below lays out some proposed "niche marketing" low-income DSM strategies that need not be justified primarily as a resource acquisition strategy. Accordingly, steady or increased expenditures on such strategies can be justified whether or not utility DSM programs, in general, are constant or even declining.

### SOME LOW-INCOME NICHE MARKETING STRATEGIES

The analytic framework leading to the design of effective niche marketing for low-income DSM programs is to respond to two questions: (1) what need does this specific group of low-income households exhibit; and (2) how, if at all, can DSM help address that need. As can be seen, rather than starting the analysis by looking at the *programs*, therefore, the analysis is started by looking at the low-income population.

118. Colton, R. and Sheehan, M. "A New Basis for Conservation Programs for the Poor: Expanding the Concept of Avoided Costs," 21 ***Clearinghouse Review*** 135 (1987).

1. **Eliminating spring time arrears/disconnection potential:** One of the major problems facing low-income utility customers is the accrual of large arrears during the winter heating months, leading to the potential disconnection of service during the springtime when winter shutoff protections lapse. The need, in other words, is the alleviation of large winter heating arrears.[119]

The niche marketing of a utility DSM program would involve the identification of low-income households with large April arrears to permit the reduction or elimination of those arrears through DSM. Targeting low-income weatherization in this fashion has been extremely successful in decreasing arrears. Wisconsin Gas Company was one of the first companies to recognize the legitimacy of special low-income conservation and weatherization programs when it implemented a pilot program explicitly designed to use conservation measures as a means to reduce the costs associated with delinquent payments and bad debt. The purpose of the study, Wisconsin Gas said, was "to examine the effects of Wisconsin Gas Company's Weatherization Program on the arrearages of low-income customers."[120]

The Wisconsin Gas results were dramatic. For single family homes, Wisconsin Gas experienced an overall therm savings of 23.4 percent.[121] Moreover, therm savings based on heat load were computed, producing "an overall single family heat load savings rate of 30.7 percent* * *."[122] Two-family homes generated similar results.[123]

Wisconsin Gas found that not only did the program reduce energy consumption for participating households, but the households recognized significant *arrears savings* from the program as well. According to that utility, its conservation program reduced the number of members of the study group who would have had arrears of $100 by 300 percent; moreover, Wisconsin Gas reported, its program reduced the number of households having *any* arrears by 400 percent.

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119. The arrearages need not be eliminated in their entirety to be successful in this regard, so long as they are reduced in some substantial way.

120. *See*, Wisconsin Gas Company, ***Weatherization Arrears Savings*** (April 1988).

121. While the savings ranged widely between units, the company noted that 64 percent of the single family homes fell in the 10 percent to 35 percent savings range. *Id.*, at 2.

122. *Id.* Again, while the savings ranged widely between units, 60.2 percent of the single family homes fell in a range of 25 percent to 50 percent savings.

123. *Id.*, at 5. Over 70 percent of the dwellings fell in the 10 percent to 35 percent savings range.

"This reflects favorably on weatherization potential as an arrears eliminator," the Company said. Indeed, Wisconsin Gas found that it received a 20 percent return on its weatherization investment in the first year of the program, *strictly* from the reduced nonpayment, and *before* considering traditional avoided costs.

In sum, Wisconsin Gas concluded: "The study indicates that single family dwellings generated on average $353 less *annual* arrears after weatherization. For the two family group, weatherization reduced arrears $502 *annually*." (emphasis added).

2. **Addressing arrears that have become too large to be addressable:** A second major problem facing many low-income households is the fact that they have accrued arrears which are simply too substantial to realistically address on a limited low-income household budget.[124] The need, in other words, is to provide these households who are in a "hopeless" situation with a clean slate.

The niche marketing of a utility DSM program would involve the design of an arrearage forgiveness program that exchanges regular payments and reductions in usage for forgiveness of the unaffordable arrears. Again, one can turn to Wisconsin Gas Company for guidance. Wisconsin Gas and a local community action agency (CAP Services, Inc.) developed a program that combines weatherization and arrearage forgiveness. The program was offered in eight rural counties of central Wisconsin. It began in the summer of 1985 and offered several options to low-income customers who are in arrears at least two months.

Pursuant to the Wisconsin Gas programs, households could earn the forgiveness of arrears through any one of a number of options:

- Weatherization and Credit for Payments
- Credit for Payments
- Energy Counseling and Credit for Conservation
- Energy Counseling, Credit for Payment and Conservation

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124. *See e.g.*, Colton, R. (1990), ***Controlling Uncollectible Accounts in Pennsylvania: A Blueprint for Action***, at 66 - 81, National Consumer Law Center: Boston. That report found:

Payment plans in Pennsylvania are simply not working.* * *Budget Plus payments are simply not being made by Columbia Gas customers. In calendar year 1989, Columbia Gas had an average of 13,390 heating participants in its Budget Plus payment plans each month. On average, 4,404 of those accounts (33 percent) were "delinquent." Similarly, Columbia Gas had on average $8.2 million subject to Budget Plus agreements each month. Of that money, $3.5 million (43 percent) was delinquent.* * *The Columbia Gas experience is by no means unique. Indeed, it is the norm for Budget Plus payment plans to fail rather than to succeed. *Id.*, at 69 - 71.

Under the Credit for Payment option, a customer's arrearage would be reduced by 1/36th for each month the current bill was paid. Under the Credit for Conservation option, a customer's arrearage was reduced by the cost of each therm saved on a weather-adjusted basis.[125]

The Wisconsin program established a criteria that current bills *must* be paid. Whether the customer chose the payment or conservation credit option, her arrearages were placed on hold only as long as bills for current month's usage were paid. Otherwise, collection efforts were to be renewed.[126]

The experience in Wisconsin was positive. In the first year, only seven percent (7%) of all participants failed to keep their bills current. At the same time, 46% of participants completely eliminated their back bills. In the second year, only five percent (5%) of all participants failed to keep their bills current.

In total, customers have saved an average of 15 percent on their monthly bills; some saved as much as 26 percent. For most customers, the conservation credits were more effective in reducing arrears than payment credits.

3. **Addressing inadequate Section 8 utility allowances:** One of the poorest segments of the low-income population includes those households who live in federally-assisted housing. In theory, the federal housing subsidy provides a "utility allowance" that is adequate to pay for all utility bills faced by the household (other than telephone). A 1992 study by the General Accounting Office (GAO) found, however, that for Section 8 households, rent burdens averaged about 36 percent of adjusted monthly income--notably different than the statutory amount. About 70 percent of the Section 8 households paid more than 30 percent of their adjusted income for rent and utilities. Even more striking, 32 percent of the Section 8 households had rent burdens exceeding 40 percent of adjusted income. Moreover, even amongst those households paying 30 percent on average *annually*, GAO found, fully 93 percent of the households had 3 or fewer months in which the burden was equal to or less than 30 percent.[127] When utility bills go unpaid and service is disconnected, evictions follow

125. If a customer is more than 90 days in arrears, he or she is eligible for both payment and conservation credits.

126. LIHEAP was distributed in such a way in Wisconsin, however, to limit current month bills to an affordable percentage of household income.

127. U.S. General Accounting Office, ***Assisted Housing: Utility Allowances Often Fall Short of Actual Utility Expenses (Vol. I)*** (March 1991); ***Assisted Housing: Utility Allowances Often Fall Short of Actual Utility Expenses (Vol. II)***, at 30 (March 1991).

since a housing unit without energy is considered not inhabitable. The need, therefore, is to bring utility bills in closer alignment with utility allowances.

The niche marketing of a utility DSM program would involve a tie-in between the direct vendor payment of utility allowances to the utility in exchange for the delivery of utility-financed DSM to ensure that the Section 8 unit is as energy efficient as possible.[128] One proposal advanced to the National Association of Housing and Redevelopment Officials (NAHRO) involves four distinct steps. The first step involves the utility in extending significant efforts to identify the Section 8 households on its system. Once identified, each Section 8 household would be encouraged to enter into a levelized 12-month Budget Billing program, under which the estimated annual bill is divided by 12 and then billed in equal monthly installments. In such a fashion, the monthly utility bills will more closely match the monthly utility allowances, thus ensuring the allowance will be used to pay the utility bill it was intended to pay.

The third step involves the PHA agreeing to the direct vendoring of Section 8 utility allowances. Through such agreements, Section 8 utility allowances would be paid directly to the utility by the local PHA.[129] As a result of such payment, the utility will capture the full annual utility allowance to be credited against the annual utility bill.

The fourth step involves the utility's provision of energy efficiency measures to those units for which direct vendor payments are being made. In consideration of the agreement by a PHA (and the Section 8 tenant) to provide direct vendor payments to the utility, the utility would provide a full range of energy efficiency improvements to those units for which direct vendor payments are being made. A variety of measures can be provided as part of this agreement, all of which would be cost-justified to the utility on avoided cost grounds.

## NON-TRADITIONAL PARTNERS FOR LOW-INCOME ENERGY EFFICIENCY

Too often, utilities seek to serve their low-income populations using only traditional low-income energy resources. In this respect,

128. Colton, R. and Sheehan, M. (1993). ***Using Energy Efficiency To Improve the Affordability of Assisted Housing***, paper presented to the Annual Meeting of the National Association of Housing and Redevelopment Officials (NAHRO): Denver, CO.

129. Federal regulations provide that if the Family and the utility company consent, a PHA or Owner may pay the Utility reimbursement jointly to the Family and the utility company, or directly to the utility company.

"traditional resources" include the utility's resources, resources from fuel assistance agencies, and resources from the agencies which deliver federal Weatherization Assistance Program (WAP) dollars. Utility programs, however, should seek to ensure that "non-traditional" partners have been identified and the advantages of working with those partners fully explored. FSC believes that, as a result of these non-traditional partnerships, benefits will arise both to low-income households, to the utilities developing the partnerships, and to the partners themselves.

Because of the breadth of the potential "non-traditional" partnerships --that breadth should be constrained only by the limits of the DSM planner's imagination-- rather than seek to explain conceptually what might identify such a partner, examples of such partnerships are provided. These examples are provided for illustration only.

1. **Reducing energy bills to make homeownership affordable on a sustainable basis:** Notwithstanding the explosion of "first time homeowner programs" offered by institutions such as Fannie Mae and Freddie Mac (in conjunction with local lending institutions), homeownership is not "sustainably affordable" to many/most low-income households. Studies show that as many as 70 percent of the households who purchase homes through programs involving reduced downpayments and closing costs default within the first seven years of homeownership.

   In short, first time homeowner programs that focus on downpayment and closing cost assistance often miss a good deal of the "affordability problem" with low-income housing. The sustainable affordability of housing must take into account the affordability of energy as well. The programs miss, also, many of the "hidden" costs of homeownership.

   The pursuit of a utility DSM program with a non-traditional partner would involve a tie-in between low-income utility DSM and first-time homeownership programs. An important component of any CRA-induced first time homeownership program, for example, should involve a long-term maintenance and repair reserve. Unfortunately, low-income households have the greatest need for, and least ability to create, a maintenance and major repair reserve. Low-income households tend to live in the oldest and least well maintained housing units with the oldest major systems (such as electric, heating and water). As a result, this housing is more likely than most to have needs for extraordinary repairs. "Extraordinary repairs" might include, for example, the repair or replacement of roofs, the repair or replacement of heating systems, the repair or replacement of major piping/plumbing, and the like.

   Just as axiomatic as the need for financing such extraordinary expenses is the inability of low-income households to set

aside reserves in advance to help pay for such emergencies. Coupled with this, of course, is the inability to fund these extraordinary expenses out of their current month's income.

The impacts of these failures tend to follow one of three paths. First, the low-income homeowner could do nothing. As a result, the physical quality of the housing unit deteriorates. At the same time, the household loses the quality of life associated with homeownership, the financier loses the value of the loan collateral, and the neighborhood loses one of its stabilizing factors. Second, the homeowner could be forced into the high cost, and abuse-laden, home repair lending industry. The high interest rates and fraudulent practices of such lenders have been well-chronicled. Payment of such rates harms all other creditors of the household, in addition to the household itself. Third, the homeowner could simply give up and abandon the house. The household thus loses its home and its creditworthiness, the financier loses its stream of repayment revenue, and proponents of the first time homeowner program lose their chance for "success" arising from the joint ventures. Under all three scenarios, the utility serving the household will likely lose its stable, good-paying customer.

As part of a CRA supplement, a public utility could help capitalize either an individualized or, more probably, a systemwide home maintenance and repair reserve. Through such a reserve, the utility would help the local financial institutions guard against, and respond to, the need for debilitating extraordinary repairs. Moreover, the utility could increase the flow of affordable capital into the energy components of renovation or repair undertakings. This utility involvement could involve a mere targeting of a utility's direct investment program, or it could alternatively bring new low cost utility-provided capital to bear on the financing.

2. **Providing low-cost capital to eliminate lost opportunities in low-income housing programs:** 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 cost-effective over the lifetime of the project. 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. 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).

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 failure of lenders to account for energy savings during their underwriting review of estimated operating costs.

The pursuit of low-income DSM with a non-traditional partner would thus involve making available affordable capital to developers of low-income housing. Such capital might, for example, take the form of a utility-based "linked deposit" program.[130] Through a linked-deposit program, utilities would place long-term deposits with community-based lenders with the *proviso* that such deposits be used to finance low-interest loans to developers of low-income housing, which loans are to be used in the funding of energy efficiency improvements. Through such a program, a utility can pursue its goal of promoting low-income energy efficiency without spending its own money. Such a program, in other words, would *use* utility funds without actually spending them.

3. **Eliminating lost opportunities for improved affordability in bank financing programs:** Utility low-income DSM programs can beneficially be teamed with financial institution programs emphasizing reinvestment in center city neighborhoods. Notwithstanding the considerable attention devoted to financing housing development through bank Community Reinvestment Act (CRA) programs today, very little attention is devoted to including financing for energy efficiency in such efforts. The reasons for this failure are several-fold. Historically, low-income residential energy conservation has been financed through publicly provided funds --including federal Weatherization Assistance Program (WAP) and oil overcharge funds-- irrespective of traditional financing criteria such as rate of return, liquidity and risk. Large institutional investors have not been asked to participate, nor have they sought out such participation. In addition, because of the technical nature of determining conservation potentials, determinations of the efficacy of investment in low-income conservation/weatherization may entail specialized knowledge. Sources of repayment funds, the estimation and measurement of savings, and the valuation of risk have thus not fit into historical investment expertise.[131]

Moreover, energy conservation measures often have greater payback periods than those required in the traditional terms of

130. *See generally*, Colton, R. ***"Linked Deposits" as a Utility Investment in Energy Efficiency for Low-Income Housing***, Fisher, Sheehan & Colton, Public Finance and General Economics: Belmont, MA (1994).

131. Colton, R. (1992). ***Third Party Financing of Low-Income Conservation: Replacing Reliance on Government and Utility Funds***, Fisher, Sheehan & Colton, Public Finance and General Economics: Belmont, MA.

commercially available capital. Traditionally accepted payback periods for conservation measures reach up to seven (7) years. The longer term commitment of dollars required by energy conservation measures reduces an investor's liquidity. Conversely, the resulting short term of the bank loan increases the monthly debt service cost to the person seeking financing.[132]

A final barrier to financing energy conservation equipment through traditional financial institutions includes the lack of generally accepted collateral for the loan. 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.[133]

The niche marketing of low-income DSM would thus involve piggybacking low-income DSM programs onto bank CRA affordable housing financing. As above, this might involve making available affordable capital to developers of low-income housing through a utility-based "linked deposit" program. In contrast, this might involve making available means to make energy efficiency lending more secure, such as through a utility-based loan guarantee program.[134]

Providing utility capital (or security) for energy efficient low-income housing within the CRA construct, should be given particular consideration by utilities. Because buildings are occupied by primarily low-income tenants, this financing is severely needed and difficult to obtain. Low tenant income is generally accompanied by low rent rolls and low rents are generally only available in the older, deteriorated building stock. Antiquated and deteriorated building energy components and systems are inefficient and expensive to operate. These economic conditions conspire to weaken the net operating income and cash-flow and future of the building as a source of habitable housing. The need for building improvements and the low profits from these buildings generate a serious need for financing from a lending institution. The effort required to obtain this low cost financing also adds to the proportional overhead expense of the financial packaging work involved in

132. *Id.*

133. *Id.*

134. *See generally*, Colton, R. (1994). ***Loan Guarantees as a Utility Investment in Energy Efficiency for Low-Income Housing***, Fisher, Sheehan & Colton, Public Finance and General Economics: Belmont, MA.

these deals.

The willingness of utilities to work with financial institutions in order to develop creative means of financing such energy improvements meets several further needs of the low-income community as well. These include the correction of substandard living conditions in households occupied by families of very low-income; and the alleviation of conditions of economic hardship *for the buildings* which contribute to their continued deterioration and eventual loss.

The uniqueness and value of the service provided by energy efficiency improvements goes far beyond the specific investment for energy improvements. The following features should also be noted:

- Investments are universally made in buildings that are presently occupied and salvageable;
- The low per unit level of expenditure enables the servicing of a large number of households per dollar of allocation;
- The work helps to economically stabilize the building by: (a) reducing building operating costs (energy, maintenance, etc.); and (b) improving the investment value (through appreciation and cash flow improvement);
- The work corrects hazardous and degrading living conditions suffered by these tenants; and
- The work tends, also, to be "preventative" in nature, thus helping to avoid the future public costs resulting from building abandonment, homelessness, and consequent increased costs for social services and major building rehabilitation.

4. **Building on local government goals and programs:** Utility low-income DSM programs can beneficially be teamed with local government spending on a variety of programs. The goals of municipal financing of low-income energy efficiency can be viewed simply from the perspective of the municipal government, setting aside the positive social impacts for the moment.[135] The goals of an energy efficiency financing program from the perspective of a city are six-fold:

135. This is not to say that the positive social impacts are unimportant, merely that the focus of *this* discussion is on the *self*-interest of the City to pursue the types of efforts proposed below.

a. To increase the efficacy of other municipal government programs, such as affordable housing development efforts;

b. To ensure the coordination of various municipal government functions, such as housing, economic development, neighborhood redevelopment, social service provision, school programs, and so forth;

c. To increase the "safety and soundness" of existing municipal government "investments" in social services, neighborhoods, housing, and the like;

d. To preserve the municipality's housing base, along with the accompanying property tax base, sales tax base, school finance base, and the like;

e. To leverage substantial private resources in furtherance and support of municipal initiatives; and

f. To invest in the avoidance of future expenses associated with neighborhood decay, housing abandonment, and the like.

Having adopted these "goals" for the low-income energy initiatives of the municipality, it is then possible to explore specific concepts and programs that will promote the achievement of these goals. "Low-income housing developers" encompasses a wide range of for-profit and non-profit institutions using a wide range of public and private dollars. Consider as just one example the extent to which public Community Development Block Grant (CDBG) funds are used for low-income housing. 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.[136] 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. Utilities should seek to ensure that these dollars are spent with the highest cost-effective energy efficiency improvements as one component of the project.

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

5. **Assist Public Housing Authority home ownership conversion programs:** Public utilities should consider the impact of energy efficiency measures on the feasibility of converting local Public Housing Authority (PHA) units to private low-income ownership. Such conversion is the focus of much federal effort at this point in time. The utility effort would involve two steps:

   a. Consideration of how energy efficiency improvements may improve the ability to obtain financing for the units subject to conversion. This would involve, for example, an evaluation of the debt that each unit would be able to carry (or some representative sample of the units) given existing energy bills and how that debt could increase if one would instead engage in "performance financing." In this regard, "performance financing" means simply that the units are treated with energy efficiency improvements. The cash flow for each unit is then *re*computed and the cash flow *after* the energy efficiency measures is compared to the cash flow *before* the measures to quantify the extent which the energy efficiency measures improved the ability to finance the conversion to private ownership.

   b. Consideration of how energy efficiency improvements may improve the sustainable affordability of the units subject to conversion. To be affordable (and thus marketable), a unit must have sustainable affordability, not simply front-end affordability (*i.e.*, affordable downpayments and mortgage payments). A sustainable affordability evaluation would include not only an examination of mortgage and other anticipated homeowner costs, but would include home energy costs as well. This evaluation would examine the trend of home energy bills over an historical time period and would project those bills into the future to determine the extent to which, if at all, they might affect the "sustainable affordability" of the shelter being offered. To the extent that home energy bills might make total shelter costs *un*affordable, even if mortgage payments might be payable, the conversion of the units to private low-income ownership might be infeasible. Accordingly, the installation of energy efficiency at the time of conversion to private ownership may well improve the sustainable affordability of the units (and thus the feasibility of converting to low-income ownership in the first instance).

6. **Leverage municipal resources devoted to various shelter programs:** Since this topic may seem less "intuitively apparent" than the others, the discussion below is presented in somewhat greater detail. The final energy efficiency issue involves learning how to factor energy efficiency improvements, and thus energy savings, into the municipal budget process in order to help fund additional social services or additional amenities within local housing endeavors. No question

exists today but that municipal budgets are tight. Given scarce financial resources, it is more important than ever to not "waste" dollars by paying for energy use that can be reduced or eliminated in local housing programs. Reducing energy consumption, and thus energy bills, in other words, should free up dollars to help pay for other programs or amenities.

This is particularly true for alternative living programs. Recent research for the State of Washington found that not all low-income persons live in "traditional" housing units.[137] To limit a discussion of low-income energy needs to those traditional households, therefore, would substantially misstate the impacts of inability-to-pay. 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. To the extent that energy costs impose unreasonably upon such shelters, there is a low-income "energy need."

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 an FSC request for information provided housing to 17,178 persons in their most recently completed Fiscal Year. The shelters assisted an average of 327 persons per year.[138] Moreover, some shelters maintained records in terms of person nights, but not in terms of persons, and thus did not report comparable data to be included in this calculus. Program directors indicated that the residents of such shelters tended to have little or no income.

The relative energy efficiency of the survey respondents was very similar. Several conclusions follow. The shelters tend to be older buildings, with older furnaces and water heaters.[139] Excluding those shelters new in 1993 (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 on the older end of that spectrum.

From an energy perspective, even more of a problem than the age of the shelter, itself, is the age of the appliances serving

137. Sheehan, M. *et al.* (1994). ***An Assessment of Low-Income Energy Needs in Washington State***, Fisher, Sheehan & Colton, Public Finance and General Economics: Belmont, MA.

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

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

the shelters. The average age of the furnaces, for example, was 16 years. Some shelters had relatively new heating systems, with 23 having systems less than 10 years old. Others (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. Most of the furnaces were natural gas (32 natural gas; 12 electric; 5 fuel oil).

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 heat age was nine years. Most of the water heaters were electric (31 electric; 25 natural gas).

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, for example, reported having storm windows (30), with more reporting ceiling insulation (undesignated R Factor) (40) or wall insulation (undesignated R Factor) (39). Fewer reported having floor insulation (22) and virtually none had storm doors (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.[140]

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.

Not surprisingly, given all of the above, many shelters viewed 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." In contrast to these shelters who had taken specific actions to control their energy bills, and thus their costs, most shelters reported their energy bills to be moderately (35) (response 4 or 5) to severely (17) (response 1 or 2) burdensome. Of the nine shelters who reported their bills to be on the lower end of

140. Three shelters were new in 1992 or later.

the "moderately burdensome" (response 4), six had received weatherization or rehabilitation services.

For a public utility's efforts to promote a local government partnership, the implications from the city's perspective are several-fold. First, whenever the city contributes funds to help support these institutions, it is contributing to help pay for wasteful and inefficient energy use. Those funds are, in other words, effectively diverted from the social service uses for which they were intended. By helping such agencies finance their energy efficiency improvements, the city can increase the efficacy of its own social service budgets. Second, as municipal and non-profit budgets get tighter, high (as well as increasing) energy bills will threaten the very financial survival of these not-for-profit institutions. To maintain the level of social services supported by the city's budget, without increasing the city's financial contribution thereto, the city can help finance the energy efficiency improvements previously discussed.

### *Summary*

Non-traditional partnerships can be forged by public utilities with their low-income DSM programs. These partnerships can help increase the financial viability of the utility DSM programs, can help serve important public policy goals that dovetail with DSM, and can help the partners pursue their own important policy goals. The purpose of this discussion is to promote an evaluation of whether the utilities are too constrained in their vision, planning and decisionmaking in the development and implementation of low-income DSM partnership programs.

## SUMMARY AND CONCLUSIONS

In sum, not all utility investments in DSM need to be justified strictly in terms of resource acquisition impacts. Instead, some DSM investments might serve "niche markets," markets that exhibit special needs or that provide special benefits to the utility offering DSM in such circumstances. As a result of these special needs or benefits, the level of DSM investment directed toward these niche markets might be held constant, or increased, even when dollars of investment directed toward DSM are being restricted generally.

Investment in low-income DSM is one such niche market. Through a variety of strategies, a public utility can identify specific low-income needs that stand independent of a utility's resource acquisition strategies. The issue for utilities to decide within these niches is *not* whether "all" low-income households are being served by the DSM program, but rather whether the needs which have been identified are being adequately and appropriately addressed. Specified needs might include reducing arrears, reducing lost opportunities in low-income housing, and providing affordable capital for energy efficiency improvements within the context of CRA programs designed by financial institutions. Creative identification of low-income market needs can allow a utility to serve low-income households cost-effectively while staying within overall DSM budget constraints.

Moreover, utilities can seek out "non-traditional" partners to help deliver cost-effective low-income energy efficiency programs. The search is to identify parties who not only have an interest in improving the wellbeing of low-income households, but who have an institutional interest of their own, as well, in reducing wasteful low-income energy consumption, along with the high energy bills that accompany such consumption.

# CHAPTER 5: NON-UTILITY FUNDING FOR LOW-INCOME ENERGY EFFICIENCY

This Chapter explores some illustrative sources of non-utility funding for low-income energy efficiency. The Chapter should be read in conjunction with the discussions above, which provide examples of how utility programs can be piggybacked with "non-traditional" partners. The discussion below should not be considered comprehensive. Indeed, the sources of non-utility funds are constrained only by the imagination of the DSM planner and/or low-income advocate.

With this simple disclaimer, several sources of private and governmental funds are explored below.

## PRIVATE INVESTMENT FUNDS

Advocates of low-income energy efficiency improvements have been forced to look for new means of financing those measures as federal low-income Weatherization Assistance Program (WAP) dollars, as well as oil overcharge funds, continue to dry up. No longer can advocates afford to view the provision of energy efficiency improvements as simply a government benefits program. If, indeed, conservation and weatherization measures will save the energy, and thus the costs, now claimed, it should be possible to make the case for the commitment of public and private *investment* funds on the promise that such funds will be returned with interest or profits based on the amount of energy saved.

Advocates for the provision of energy efficiency improvements to low-income households must become as adept at marketing

investment opportunities, and at generating private and public investment capital, as advocates of economic development and small business incubation have become. Generating such capital entails understanding where such capital comes from and what motivates investors to commit their funds to particular enterprises. It further involves marketing the potential of low-income conservation and weatherization as a means of returning a profit to the investor.

New sources of capital *can* exist for low-income energy efficiency strategies. Such funds will not be made available as grants, but rather will be made available as investments in energy savings. Whether it be public sector pension funds investing debt, equity or near equity; governments investing through loan programs; or governments investing through the issuance of a variety of bond types, capital can be raised for such programs, if the potential of conservation is appropriately marketed and appropriate legal processes for capturing and providing a return are created.[141]

To generate new private investment funds to promote energy efficiency, careful attention must be given to identifying the self-interest of potential sources of capital. From an investor's perspective, either public or private, the commitment of capital to energy efficiency improvements must yield advantages in cash flow, rates of return and/or portfolio diversification. From the perspective of public sector investors, lesser financial advantages may be acceptable if, in return, the improvements yield other useful impacts such an increased tax revenue or a reduced need for social programs. Public sector investment may be warranted, as well, if, from a societal perspective, new investment will fill in capital gaps and provide corrections to an inefficiently operating capital market, thus resulting in increased employment or economic development.

### *Identifying the Conservation Capital Gap*

Marketing the financial opportunity of low-income conservation and weatherization must show that such measures not only will work in the real world, but that they are a "good buy" as well. From the perspective of an investor, a "good buy" can be shown by identifying energy efficiency improvements as yielding an expected return greater than that return associated with alternative investments of similar risks. Generally, this can be done by demonstrating that the market has not provided sufficient, competent attention to the potentials of such an investment. This often occurs where there is little institutional ownership or research in such investments. This represents the area where there is most likely to be an inefficient segment of the market.

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141. *See e.g.*, Colton, R. (1994). ***Securitizing Utility Avoided Costs: Creating an Energy Efficiency "Product" for Private Investment in WAP***, Fisher, Sheehan & Colton, Public Finance and General Economics: Bemont, MA.

***The Problem of Displacement Financing***: Identifying "capital gaps" and "market inefficiencies" helps low-income advocates avoid the problem of displacement financing. Displacement financing occurs when the "new" sources of capital generated by advocates merely fill a market that would have been filled by existing sources *even without* the efforts of the advocates. Taking pains to avoid displacement financing is necessary for several reasons. It will ensure that the efforts of advocates are productive, resulting in net gains for the low-income community. Moreover, it will help minimize the opportunity costs associated with the investments made in low-income energy efficiency improvements.

For the sought after advantages to arise from investments in low-income energy efficiency, the efforts of low-income advocates must actually *induce* the investment in the sought-after energy efficiency improvements. Inducement is to be measured by a "but for" test: the investment in low-income energy efficiency improvements would *not* occur but for the efforts of the advocates. If, in contrast, the new sources of funds are mere substitutes for existing funds, and the *total* capital available for low-income energy efficiency improvements does not expand, the efforts of advocates have borne no fruit.

In addition, low-income advocates should be more concerned with the opportunity costs of "new" investments in circumstances where the investment supplants rather than supplements capital available for low-income energy needs. If the capital newly channeled to energy efficiency had not been spent on low-income energy improvements, would it otherwise have been spent on low-income housing, or job creation, or education? To displace current investment capital by capital currently devoted to other projects with beneficial impacts for low-income households may very well result in net losses to the constituent community.

***Market Inefficiencies***: The search for new sources of capital to devote to low-income energy efficiency improvements should start with the fundamental proposition that market inefficiencies exist that prevent the devotion of "appropriate" amounts of investment capital to the task of providing such measures. In seeking to generate new sources of financing for the provision of low-income conservation programs, the advocate is simply seeking to fill this "capital gap."

The existence of such market inefficiencies, and, accordingly, the existence of such capital gaps, is not uncommon. Indeed, the low-income energy advocate can be well-informed by previous analysis in the areas of small business incubation, economic development and affordable housing, as well as by commercial, industrial and institutional energy conservation efforts.

Small business, housing and economic development programs share characteristics with energy efficiency programs that interfere

with the generation of adequate sources of capital. The shortfalls in investment capital arise not so much because of inadequate rates of return or related reasons as because of market failures and inefficiencies. Accordingly, substantial sums of capital await discovery by the aggressive and creative low-income entrepreneur.

A lack of relevant investment expertise is one factor that prevents adequate private capital from flowing to small business incubation and 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." Because of the technical nature of determining conservation potentials, determinations of the efficacy of investment in low-income conservation/weatherization may entail specialized knowledge. Sources of repayment funds, the estimation and measurement of savings and valuation of risk may well not fit into historical investment expertise. Historically, low-income residential energy conservation has been financed through publicly provided funds --including federal Weatherization Assistance Program (WAP) and oil overcharge funds-- irrespective of traditional financing criteria such as rate of return, liquidity and risk. Large institutional investors have not been asked to participate, nor have they sought out such participation.

Lack of an established track record in producing results is a second factor that has been cited as interfering with the generation of adequate capital for energy conservation. This lack generates a skepticism, sometimes deservedly so, regarding the projected results. Accordingly, banks are generally 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. Private sector investment in low-income residential energy conservation measures does not have a mature private industry in place. One result is that the procedures for estimating and measuring conservation savings do not have long-track records, either of success or failure.

Other barriers to private bank financing of energy conservation measures exist. In pursuing an industrial conservation pilot project, one company reported several barriers that "repeatedly arose":[142]

> (i) High cost of bank loans - banks which contemplated advancing a loan seemed interested in lending at the prime interest rate plus 2 to 5 percentage points. By the time the cost of financing the points and other expenses normally incurred by the

142. Klepper, M. (1982). ***Innovative Financing for Energy Efficiency Improvements***, 217 - 223, Lane and Edson: Washington D.C.

borrower in a bank loan transaction were added in, the cost of bank financing would be very expensive;

(ii) Short term of bank loans --most commercial banks were only interested in loans with a term of 2 to 5 years. The small size of the loans involved in such transactions limits the availability of financing because of the high transaction costs per loan;

(iii) Small size of the transaction --several potential financiers conceded that they were not interested in this transaction because of its small dollar size. The longer term commitment of dollars required by energy conservation measures reduces an investor's liquidity. Conversely, the resulting short term of the bank loan increases the monthly debt service cost to the person seeking financing.

Economic development programs face similar problems in their attempts to find investment capital. Perhaps the primary barrier is the uncertainty of results from any given investment opportunity. The lack of liquidity, high management costs, and the long-term nature of any returns are all barriers common to economic development initiatives as well. A primary capital gap arises in economic development initiatives that require loans of a relatively small size.

This list of factors can be used in two different ways. On the one hand, investors can use these factors as reasons not to become involved in financing low-income residential energy conservation measures. On the other hand, investors can use these factors as measures of the capital gap that is waiting to be filled by innovative and creative financing schemes. The list is indicative of the need for new thinking on the types of assistance to be provided, and the types of mechanisms to be used rather than being indicative of the need to avoid this investment opportunity altogether.

***Forms That Private Investments Might Take:*** There exist any number of potential sources of revenue to devote to low-income energy efficiency improvements. In discussing these sources, however, one must distinguish between the source of the capital and the mechanism used to deliver that capital to low-income programs. Generating new dollars through public bonds, for example, does not provide any indication of how that capital is devoted to low-income energy uses. Similarly, convincing a public sector pension plan that low-income energy efficiency improvements are a "good buy" does not provide the mechanism for investment. While the two different aspects cannot be totally divorced from each other, attention must nevertheless be addressed to both aspects of the problem: (a) the source of the money; and (b) the mechanism for translating that money into low-income energy efficiency improvements.

Mechanisms for generating low-income energy efficiency funding have been categorized into three broad categories for purposes of analysis below. While unquestionably making the delivery mechanism more difficult, each category described below involves having the funding source receive a return both of and on the investment. Specifically excluded, in other words, are government programs that provide low-income energy efficiency investments as a social response to a social problem. The goal below is to identify those sources where investing in low-income energy initiatives represents sound financial policy on the part of the investor. The form of financing will dictate how the investor may participate in the decisionmaking regarding the offer of conservation measures as well as how the investor will recoup her money.

Funding sources might include equity investments; fixed return (or debt) investments; and near equity programs. Each of these different types of financing will be examined below.[143]

***Debt Instruments:*** "Pure debt financing" gives the investor no ownership or control over the means by which energy efficiency improvements are provided to low-income households. With debt, provided in the form of loans or bonds, the debtor contractually agrees to repay the loan principal, at a predetermined rate of interest, over a predetermined timetable. A loan can be unsecured or it can be a mortgage.

***Equity Investments:*** In contrast to debt, an equity investment provides an ownership share in the assisted enterprise. Pursuant to an equity investment, the investor does not have a right to a predetermined return on the investment in the form of interest. Instead, the investor obtains a rate of return based on the profits generated, taking into account the risk that the actual return will be different from the expected return. A riskier investment, in other words, merits a higher rate of return since it is less likely that the return will be what is expected.

***Near Equity Investments:*** Debt instruments can be made to appear more like equity investments through a variety of mechanisms. The debt may include a moratorium on the payment of principal or interest during the early years of the loan so that the enterprise has an opportunity to become established and to start generating sufficient revenues to guarantee its long-term survival.[144] The debt may involve an actual forgiveness of interest during these early days, or it may simply tie the level of interest

143. *See generally*, Richards, J. (1983). ***Fundamentals of Development Finance***, at 126 - 132, Praeger Publishers: New York.

144. This presumes that the enterprise is less likely to be profitable during its initial start-up and growth phases.

to the level of profit for the enterprise.

Some times, investors may offer a combination of debt and equity. Providing a loan containing warrants is one such mechanism. Warrants provide the lender a right to purchase a specified number of equity shares at a specified price. In like fashion, debt may be made convertible. Under this type of agreement, the value of the loan may be converted into equity shares at a rate specified in the loan agreement.[145]

A final combination of debt and equity is the sale of equity with a "put option." Under such an agreement, the investor can sell the stock back to the enterprise at a price named in the investment agreement regardless of the current value of the investment. Such an option provides the investor with protection against losing the original value of the investment in the event that the enterprise faces financial difficulty while ensuring that the investor, if the enterprise prospers, can share in the gains.[146]

***Sources of Conservation Financing***

A wide variety of alternatives exist for agencies to obtain new sources of capital for low-income energy efficiency improvements. A laundry list of examples of such alternatives is discussed briefly below:

***Public Bonds:*** Debt provided by public entities will likely be provided in the form of bonds. General obligation bonds are not likely the source of such public revenues. General obligation bonds commit the full faith and credit of the state[147] as a source of repayment for the bonds. In the event of default, the state's finances, including the state's taxing power, is pledged to ensure the payment of the debt.

145. One advantage of warrants over convertible loans is that warrants are "detachable." They may be sold separately in a secondary market. Even if the warrants are sold separately, the underlying debt remains.

146. The "put option" is not unrestricted. Under a "window put," the option can be exercised on a specific day or during ga given month in the future. An "anniversary put" permits the investor to put the bond back to the issuer periodically, generally on a given date once every year.

147. The term "state" is intended to include, also, local governmental units such as cities, counties and public authorities.

Revenue bonds stand in sharp contrast to general obligation bonds.[148] Revenue bonds keep inviolate the general power of taxation. Revenue bonds generally expressly disclaim the liability of the state (or other public entity such as city or county) to pay the underlying debt.[149] Such bonds, in other words, do not constitute a general obligation of the public entity nor do they create a charge upon the tax revenues of the entity or upon any revenue or property of such entity. Revenue bonds are backed by a pledge of an identifiable stream of funds other than tax dollars as security for debt repayment. The bondholder bears the risk that funds dedicated to the repayment of revenue bonds will be insufficient to pay the principal and interest. Sources of funds historically have included user fees, tolls, concessions, municipal lease-back payments, or industrial lease payments. In the energy efficiency arena, the energy savings generated by the efficiency improvements can be devoted to paying off the bonds.[150]

***Private Placement Bonds*:** Large providers of low-income energy efficiency improvements (such as a WAP agency) should consider the use of private placement bonds as a means to generate private debt capital. The private placement of energy efficiency bonds with institutional investors should generate cost savings for that energy efficiency provider. Through the use of private placement bonds, the provider could use any number of institutions as the entity with whom the bonds are privately placed. In so doing, the provider may well be able to: (a) take advantage of the purchaser's lower cost of capital; (b) avoid the fees associated with getting the bonds rated; and (c) avoid the transaction costs associated with using an underwriter to vend the bonds on the market. With a private placement for energy efficiency bonds, there would be no underwriter, no bond market, no broker's fees.[151] In contrast, to the extent that no private placement has occurred by the particular company before, the issuing utility would need to become familiar with Regulation D[152] as well as its respective state securities regulations.[153] It is reasonable to expect such familiarity by bond counsel, however, with no particular transaction cost involved with developing such familiarity.

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148. Revenue bond financing has increased to more than three-fourths of all new issue bond volume in the tax exempt market.

149. *See generally*, Colton, R. (1985). *Municipal Utility Financing of Energy Conservation: Can Loans only be Made through an IOU?*. 64 ***Nebraska Law Review*** 189.

150. In fact, these would not be true revenue bonds. It is not a stream of revenue to be devoted to bond repayment, but rather a stream of avoided costs.

151. Because of the institutional expertise of investors purchasing such bonds, private placement bonds are exempt from most federal registration and disclosure requirements.

152. *See e.g.*, Robert Nash, ***Private Placements 1991: Current Developments in Private Financings***, Practising Law Institute, (April-May, 1991); Daniel Goldwasser, ***Opinions on Transfers of Restricted Securities***, Practising Law Institute (Jan. 1990); Cary Meer, *et al.*, ***Regulation D Offerings and Private Placements***, American Law Institute, American Bar Association (ALI-ABA) (March 1991).

153. *See generally*, Charles Gittleman and Anne Brown, ***Private Placements under State Securities Laws***, Practising Law Institute (April-May 1992).

Private placement bonds involve the direct sale by an energy efficiency provider of a bond issue to an investor.[154] In a private placement, the provider might come directly to a public sector pension plan, as the investor, to negotiate and obtain financing.[155] Since the terms of the bond issuance are more flexible under a private placement, negotiations would need to occur. For example, on the one hand, the issuing utility may seek flexibility in drawing down the loan as needed.[156] On the other hand, over the past several years, many private placement buyers of utility debt have been agreeing to rates on 30-year debt that are more favorable than those available in the public market.[157] However, the low cost is "paid for" through inclusion of either a no-call feature or a "make-whole" provision, which essentially eliminates any economic incentive for a utility to refinance should interest rates fall.[158] Even given these negotiations, however, the time frame for consummation of private placement financing has dropped to 10 - 45 days, with the result that a private placement can more readily compete in terms of time and transaction costs with a bank term loan as a source of funds for the issuer.

In the typical private placement, the closing conditions are not complex, consisting principally of evidence that the necessary corporate approval has been obtained for the issuance of the notes, a certificate down-dating the issuer's closing representations, evidence that the issuer is in compliance with the covenants in the note agreement, and a legal opinion of its counsel.

In sum, the use of privately placed dedicated bonds for low-income energy efficiency will generate several advantages for the

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154. Securities regulations are generally intended to protect investors by promoting full disclosure of information thought necessary to informed investment decisions. In light of the required sophistication of private placement investors, however, private placements are exempt from such requirements because there is no practical need for the protection of the Act. Investors who will purchase private placement financings, such as Fannie Mae, include persons with exceptional business experience and a position where they have regular access to all the information and records that would show the potential for the corporation. *See*, ***Lively v. Hirschfeld***, 440 F.2d 631, 633 (10th Cir. 1971); ***S.E.C. v. Ralston Purina Co.***, 346 U.S. 119, 124-125 (1953).

155. In contrast, a public bond issue would go through an underwriter, who would sell bonds to smaller investors with whom the utility never has direct contact.

156. Richards, ***Fundamentals of Development Finance***, at 57 (1983).

157. The covenants and related provisions in a private placement transaction will often be more detailed and stricter than in the case of the typical bank loan. One type of more typical restrictive covenant involves restrictions on prepayment. This arises because insurance companies are the primary purchasers of private placement. As long-term, fixed rate investors, these insurance companies have concerns about deferring or otherwise limiting prepayments by the issuer.

158. Mosbacher and Broderick, "The Elimination of the Refinancing Option," ***Public Utilities Fortnightly***, Vol. 127, No. 7, at 42 (April 1, 1991).

efficiency provider. It will reduce transaction costs. It will gain regulatory flexibility. It will gain the financing advantages associated with bonds of greater security. And, while these advantages are not unique to any particular investor's involvement in energy efficiency financing, certain investors (such as pension funds) might certainly pioneer the efforts in this regard.

***Mini-Municipal Bonds:*** A special small denomination revenue bond, often issued by municipal governments, can provide an excellent source of capital for low-income energy efficiency improvements. Often referred to as "mini-municipal bonds," these financial instruments were referred to by a 1979 *Barron's Weekly* article as "a quiet revolution in tax-exempt finance." According to one commentator, "regardless of whether one agrees with *Barron's* assessment, it is certain that these successful sales of $100, $500 and $1000 bonds attracted favorable attention in thousands of jurisdictions" since.

The direct marketing of mini municipal bonds offers several advantages for the state or local government unit: (1) these bonds can be used as a vehicle for promoting social and economic policy; (2) these bonds can raise modest amounts of capital at relatively lower interest and administrative costs; (3) these bonds can provide an outlet for citizens' civic impulses; and (4) these bonds can help citizens of modest means improve their economic position.

In addition to the social and economic advantages of the mini-municipal bonds, however, such bonds offer distinct financial advantages to the government. According to one researcher, officials "seem convinced that small-denomination bond sales can be managed and serviced at interest and expense costs that compare favorably with the costs of traditional issues."[159] The lower costs result from the facts: (1) that such bonds can be sold to the ultimate purchaser at interest rates which reflect the elimination of brokerage and underwriting fees; and (2) that coupons can be discarded (by selling discount bonds) or transformed into machine readable checks, thus reducing debt service costs. Moreover, jurisdictions issuing mini municipal bonds have shown little or no interest in obtaining rating agency reviews. It is believed that such reviews are not needed since local purchasers are thought to have good to excellent knowledge of the financial viability of their jurisdiction.[160]

***Public Sector Pension Plans:*** One of the most promising sources of new capital to be sought by low-income energy efficiency

159. *See generally*, Lehan, E., *The Case for Directly Marketed Small Denomination Bonds*, in Petersen J. and Hough W. (1983). ***Creative Capital Financing for State and Local Governments***, at 237 - 248, Municipal Finance Officers Association: Chicago.

160. Nevertheless, disclosure documents are required. Indeed, many local officials believed that the preparation of the disclosure documents was an opportunity to provide citizens with information about the government's programs and performance.

advocates is investment by public sector pension plans. Pension plans provide an ever increasing amount of the external capital raised each year. In 1978, for example, $35.3 billion in new bonds and stocks were issued by business corporations in the United States capital markets, $22.5 billion (63.7 percent) of which were acquired by pension funds. By 1995, it is projected that private pension funds will be worth $3 trillion; state/local funds will be worth "well over" $1 trillion. Together, they will own between 64 percent and 75 percent of all publicly traded corporate equities.

Consensus is emerging that public sector pension plans should supplement their traditional investment criteria with criteria encompassing promotion of the public interest.[161] While both legal and ethical considerations require that the *primary* purpose of the pension plan be to provide adequate retirement benefits to the plan's beneficiaries, public sector pension plans should seek, as well, to contribute to the development of the community. By 1985, for example, the state employee retirement funds in California and Kansas favored purchasing SBA- and FMHA-guaranteed loans for in state companies. Similarly, the Minnesota Employee Retirement Fund had invested in a venture capital fund created by several major Minneapolis corporations with the stated purpose to support small business in the state and generate jobs. Moreover, Michigan invests on the order of $30 to $40 million per year in venture capital investments in small firms, using public employee pension plans.

The approach of low-income energy advocates should be that pension plans should fill in the capital gaps in financing energy efficiency improvements as discussed above. Pension plans are particularly apt as sources for investments in energy efficiency improvements. From a policy perspective, public sector pension plans are often interested in contributing something back to the community. It is the community through its tax revenue, such fund managers reason, that paid the public employees their salary and benefits. From a financial perspective, pension plans have no particular need for high liquidity. Accordingly, unlike banks, who have very short payback requirements, pension plans can invest in programs that require a longer period of time to generate investment returns. Moreover, short-term fluctuations in market or economic factors do not affect pension plans, whose planning horizons most frequently extend beyond such fluctuations and remain relatively unscathed by such fluctuations, either up or down.

***Bank Community Development Corporations:*** In late 1987, the U.S. Department of Commerce's Economic Development

161. Private sector funds can do this as well. According to one report, Aetna, Equitable and Prudential have adopted "socially responsible investment strategies." Some banks, also, have created "regional funds" through which pension funds can invest in local businesses. The Pittsburgh Regional Assets Fund of Equibank and the Northwest Fund of Seattle First invest in the stock of small and medium-sized firms that favorably affect the state's economy.

Administration (EDA) began an outreach program to promote the use of Bank Community Development Corporations (Bank CDCs) as a means of securing economic development funds. "The goal of EDA's program," agency officials said, "was to educate bankers and local development officials about the value of Bank CDCs as mechanisms for generating private sector capital for a variety of local development activities in depressed areas." EDA pursued its promotion by entering into a contract with the Washington D.C.-based Development Finance Corporation.

Bank CDCs were first authorized by the 1970 amendments to the Bank Holding Company Act of 1956. Those amendments authorized the Board of Governors of the Federal Reserve Board to approve applications by bank holding companies to engage in nonbanking activities that involve holding debt and equity investments in corporations or projects "designed primarily to promote community welfare, such as the economic rehabilitation and development of low-income areas." A later interpretive ruling by the comptroller of the currency permitted national banks to make direct investments in Bank CDCs.[162]

Bank CDCs can be either for-profit or not-for-profit organizations. They can be structured as wholly owned subsidiaries of a single bank or bank holding company, or they can be funded by a number of banks and other financial institutions or corporate investors. They can be organized as partnerships and/or joint ventures linking banks or bank holding companies with community based and other private or public investors. No more than five percent of bank capital can be invested in a Bank CDC and no more than two percent of a bank's capital can be invested in any individual Bank CDC project.

Under the regulations of the Office of the Comptroller of the Currency (OCC) and the Federal Reserve System, the one limiting factor of Bank CDCs is that they must address the needs of low and moderate income neighborhoods and individuals and/or the needs of small businesses. Bank CDC investments are intended to stimulate the resources of other investors in circumstances where a project is unlikely to go forward in the absence of Bank CDC funding.
Bank CDCs can provide a variety of financing forms. They can provide equity investments through either stock purchases or limited partnerships. They can provide near equity investments through loans with warrants or through convertible loans. Bank CDCs may make loans or purchase bonds. In addition, Bank CDCs have a wide range of sizes. Historically, while most have been capitalized at under $500,000, they have ranged from as low as $40,000 to as high as $10 million. Finally, Bank CDCs have a wide range of purposes. According to one report:

162. A Bank CDC is not the same as a Community Development Corporation, which is a term that originated in the mid-1960s to describe other types of organizations involved in local development.

> Reflecting the almost universal need of depressed areas for business capital, Bank CDCs in Jacksonville, Illinois, McCreary County, Kentucky, and the Willamette Valley in Oregon were established for the express purpose of providing equity capital to small businesses. A related but more narrow focus is being addressed through the modification of an existing bank CDC in Seattle, Washington. The Seattle CDC, whose investments were previously limited to housing, expanded its scope to provide small business equity to fast-growing firms.[163]

The two Bank CDCs organized since submission of the Development Finance Corporation's final report are located in Ft. Collins, Colorado, and Hazleton, Pennsylvania. Both focus on revitalizing deteriorated downtown areas.

163. *Id.*

### *Gross Receipts Assessment*

One potential source of financing is for states to implement a gross receipts assessment for fuel oil providers to establish a fund through which to finance low-income conservation and weatherization programs. Such a fee should combine elements of similar programs adopted in Vermont[164] and Oregon.[165]

In 1989, the Oregon General Assembly created the Oil Heat Commission (OHC). The purposes of the OHC are, *inter alia*, to generate funds for low-income energy efficiency improvements. More specifically, the legislature said the OHC could provide:

1. * * *;

2. For programs to encourage energy conservation among oil heat users through home weatherization and through developing and disseminating educational materials regarding energy conservation.* * *

3. For programs to encourage energy conservation among oil heat users through the use of energy efficient oil heat equipment.

164. Vermont Statutes Annotated, §§ 2501, *et seq.* (1992).

165. Oregon Revised Statutes, §§ 469.228 - 469.286 (1992).

4. For programs to offer financial assistance to low-income oil heat users to help defray the cost of fuel, modern equipment installation and weatherization expenses.[166]

The Oregon OHC is financed through an assessment on each "oil marketer"[167] based on the "gross revenue derived from the business of being an oil marketer."[168] The maximum assessment was legislatively set at 1.25 percent of gross revenue.[169] The revenue collected was also limited so that it "will not substantially exceed the amount of the estimated expenditures stated in the final budget prepared by the commission."[170] The money collected through this assessment must be deposited in an account designed to promote energy education and conservation relating to oil heating.[171]

Amongst the programs provided through the Oregon OHC is a 100 percent rebate of the cost of an oil furnace replacement up to a maximum of $1,800 for households at or below 125 percent of the Federal Poverty Level. For these households, also, the OHC provides a 50 percent rebate of the cost of a flame retention burner installation up a maximum of $600. For households between 125 percent of Poverty and the state's median income, OHC will provide a grant equal to 50 percent of the cost, up to $600, for air infiltration measures, insulation, and flame retention burners. As of April 1992, more than 100 furnaces had been provided to low-income households in Oregon, at a cost of roughly $200,000.[172] An additional $50,000 had been transmitted to the state for fuel assistance.[173]

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166. ORS, §469.230.

167. "Oil marketer" was defined as "a person who supplies heating oil at retail in this state." ORS, 469.228((6). "Heating oil" was defined as "number 1 or 2 heating oil that is delivered to a tank and used to create heat."

168. ORS, 469.254.

169. Gross revenue does *not* include gross revenue from equipment sales or other unrelated products or services.

170. ORS, §469.254(3).

171. ORS, § 469.267.

172. OHC also operates a loan program for non-low-income households.

173. Oregon Oil Heat Commission (1991). ***Another Oregon First: Annual Report of the Oregon Oil Heat Commission***, Salem: Oregon Oil Heat Commission.

Oil dealers in Vermont, too, were brought into the financing of low-income conservation by legislative mandate. In a statute effective July 1990, the state General Assembly created the Home Weatherization Trust Fund.[174] This Vermont Trust Fund is administered by the director of the state WAP agency, the Vermont Office of Economic Opportunity. Pursuant to the statute, funds generated for the Trust Fund are to be commingled with WAP appropriations and are to be expended "* * *in accordance with federal law and this chapter."[175]

The Vermont Trust Fund is financed in part by a gross receipts tax of 0.5 percent on the retail sale of certain types of fuel by sellers receiving more than $10,000 annual for the sale of such fuels.[176] The fuels include heating oil and kerosene not used to propel a motor vehicle, propane, natural gas, electricity and coal.

It is important to note the difference between the Vermont and Oregon assessments. The Oregon assessment is "not to exceed" 1.25 percent of gross revenue (as established annually by the OHC), while the Vermont assessment is simply set equal to 0.5 percent of gross revenue.

To account for ongoing low-income conservation programs offered by public utilities in Vermont, however, the Vermont statute provides that:

> natural gas and electric utility companies providing demand side management programs that meet the goals of the weatherization program in an alternative manner approved by the public service board[177] may be eligible for credits against the fuel gross receipts tax* * *.[178]

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174. Vermont Statute Annotated, §2501.

175. VSA, §2501(a).

176. VSA, §2503(a).

177. In Vermont, the state public utilities commission is called the Public Service Board. This is to be distinguished, too, from the Public Service Department, which serves in the capacity of a state consumer advocate.

178. VSA, §203(d). In the 1992 reauthorization, the available credits were limited to 12.5 percent of the total funds collected through the assessment. If claimed credits exceed this 12.5 percent limit, they are to be granted on a *pro rated* basis.

The utility must file with the Board a request for such credits. The Board is directed to "authorize" the credits

> provided that such expenditures were prudently incurred and cost-effective as part of the utility's energy efficiency plan, that they provided basic weatherization services following a comprehensive energy audit and workplan, and that they were targeted to households at or below 150 percent of the federally-established poverty guidelines.[179]

Moreover, utility expenditures for "enhanced weatherization services," such as appliance and lighting upgrades and water heating repairs, upgrades and replacements, are to be eligible for the utility credits "upon a showing that they were prudently incurred and cost-effective as part of the utility's approved least cost plan *and* installed *in addition to* the provision of basic weatherization services to an eligible housing unit." (emphasis added).[180]

In general, the funds generated by the gross receipts assessments in Vermont are to be used to supplement federal WAP dollars.[181] In addition, however, the statute authorizes a state program providing an "enhanced weatherization amount" up to $3,000 if those amounts are cost-effective under rules promulgated by the state OEO. The statute finally permits the state to provide "amounts for low-income customers utilizing any high operating cost fuel, to convert to another fuel source under rules adopted by the [state OEO] director based on the cost-effectiveness of the converted facility over the life cycle of the equipment."[182]

The Vermont Trust Fund generated roughly $3.2 million in its first full year of operation, making it the primary source of funding for the state's weatherization program. The assessment began generating revenue in October, 1990, so calendar year 1991 was that first full year. Vermont's federal WAP allocation for FY 1992 was roughly $1.2 million. Combined with federal WAP dollars, Vermont now weatherizes roughly 1,300 homes a year, double its prior production. (Moreover, since under the Trust Fund statute, homes may be weatherized up to $3,000 per dwelling, the Trust Fund has permitted doubling the production *and* doubling

179. *Id.*

180. *Id.*

181. VSA, §2502. "Under such rules, regulations, funding and funding requirements as may be imposed by federal law."

182. *Id.*

the investment per home at the same time.)

According to a report to the state General Assembly in January 1992,[183] the state OEO said that the purposes of the gross receipts tax were "to provide a stable funding source for weatherization and to enhance the ability of the program beyond the restrictions of the existing federal DOE program."[184] In reporting on the progress of the Trust Fund to date (January 1992), the state OEO said:

> Approximately 1200 Vermont homes will be weatherized in the current program year, using both DOE and Trust Fund dollars. By the end of this program year, almost 1300 homes will have been weatherized by Trust Fund dollars alone since the program's inception.
>
> The Trust Fund portion of the weatherization program has truly been an enhancement. As provided in the statute, the Trust Fund allows considerably more to be spent on conservation in each housing unit than had been possible under the federal program alone. The Trust Fund has also allowed significant work to be done in replacing inefficient and/or unsafe heating systems, an activity not permitted using DOE funds.[185]

In reauthorizing the Trust Fund in 1992, the Vermont legislature relied on the observations by the OEO that if the Trust were *not* reauthorized, "there will be a 66% reduction in weatherization funds available to provide services to low income Vermonters" and "there will be 50% fewer homes weatherized with those remaining homes receiving a lower level of services."

States would be well-served by the creation of a similar Weatherization Trust Fund. This fund should incorporate various aspects of both the Oregon and Vermont programs. Such a program should include the following components:

1. It should be funded by an assessment of 0.5 percent of gross revenue. The funds to be generated by this assessment should not exceed reasonably budgeted annual expenditures;

2. The dollars generated by this assessment should be administered by the state weatherization agency;

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183. The original legislation directed that such a report be prepared and submitted.

184. Vermont State Office of Economic Opportunity (1992). ***The Vermont Weatherization Assistance Program: Report to the General Assembly***, State of Vermont: Montpelier.

185. *Id.*, at 3.

3. The State should permit enhanced weatherization up to $3,000, including heating (and/or domestic hot water) conversions for high operating cost fuels if cost-effective based on life cycle costs and benefits; and furnace replacements and retrofits;

4. Public utilities providing natural gas and/or electric service should be exempted from this assessment providing that the expenditures by such were prudently incurred and cost-effective as part of the utility's energy efficiency plan as approved by the state PUC, that they provided basic weatherization services following a comprehensive energy audit and workplan, and that they were targeted to households at or below 150 percent of the federally-established poverty guidelines. Moreover, to be exempt, the alternative utility programs must meet the goals of the weatherization program in an alternative manner approved by the state PUC and the state weatherization program.[186]

186. While the extensive efforts by utilities in some states in the area of low-income DSM should be recognized, the warning of the Vermont OEO must be heeded, as well: "Utilities are mandated to invest in certain conservation measures which are deemed to be in the best interest of the utility and the ratepayers as a whole. A utility's interest is to reduce consumption of the power it sells (*i.e.*, electricity in most cases), whereas the weatherization program's goal is to save the individual low income household money or improve their (*sic*) living standard by increasing energy efficiency, regardless of energy source (*i.e.*, oil, propane, gas, electricity, wood, etc.). The credit provision presently in the law has the potential for reducing funds available for weatherization without providing comparable services to the recipient." ***OEO Weatherization Report***, at 6.

### *Unclaimed Deposits*

Unclaimed utility deposits are a source for funds that can be used to supplement existing low-income weatherization funding. In this fashion, rather than letting this ratepayer supplied money escheat to the state's general fund, by using it to provide energy efficiency investments, not only will the funds be returned to benefit the class likely to have paid them in the first place, but those funds will provide continuing benefits to the low-income households and remaining customers.

In Arizona, which now requires unclaimed deposits to be used as a supplemental source of LIHEAP benefits, state officials estimate that from $400,000 to $600,000 ***per year*** will be generated. In Colorado, which enacted a similar provision in 1990, estimates are that unclaimed residential and commercial deposits will add $300,000 to LIHEAP coffers.[187]

It is reasonable to devote unclaimed deposits to low-income programs. Deposit refunds most often go unclaimed when households move and leave no forwarding address; it then becomes impossible for the utility to find these households. Those mobile households will tend to be poor. One 1991 report looking at low-income households considered the mobility of low-income households.[188] According to that report, compared to the roughly twelve percent of the total population that changed residences each year, nearly one-quarter (23 percent) of the low-income population moved. Disproportionately represented in the "mover" households are recipients of public assistance, minorities, and female-headed households.

The forced mobility of low-income households is in no sense a theoretical problem. Research in Pennsylvania confirms both the existence and the extent of the problem. Columbia Gas of Pennsylvania, for example, certainly found that its low-income payment troubled customers[189] tend to be households who have recently connected to the system. It is possible to take a look at the tenants

187. An additional amount, hard to estimate according to Colorado officials, will be acquired from unrefunded interim rate increases.

188. Colton, R. (1991). ***The Forced Mobility of Low-Income Households: The Indirect Impacts of Shutoffs on Utilities and Their Customers***, National Consumer Law Center: Boston.

189. These are defined to be households who enter into the Budget Plus payment plans. Under Budget Plus, Columbia Gas determines a household's monthly ability to pay toward its arrears. The outstanding bill is then divided by the ability to pay. That process yields the payment plan length, whatever that might be. Thus, for example, if a household has a $200 arrears and an ability to pay $20 per month toward her arrears, the payment plan length is 10 months. Similarly, however, if the arrears is $600 and the household has a monthly ability to pay of $5, the payment plan length is 120 months.

in the Columbia Gas Budget Plus households to test this hypothesis.[190] This examination is undertaken because it seems less likely that a home owner would easily move. There were 1,991 tenants in the sample of 3,907 Budget Plus households. Forty percent of those tenants (N=678) had a connect date on the Columbia Gas system of 1989 or later.[191]

The Pennsylvania data is not unique. A 1983 Wisconsin study found, for example, that among its poorest payment-troubled customers, the combination of home payments and utility bills often makes housing unaffordable.[192] As a result, 24 percent of these households had moved within the past year and an additional 26 percent planned to move in the next year. Wisconsin Public Service reported that "the main reason they are moving is because they can't afford to live where they do." In a second group of low-income payment-troubled customers, Wisconsin Public Service found that more than one-third (36%) had lived in their current home for less than six months. In addition, more than four of ten (42%) planned to move in the next year, citing the unaffordability of their current housing as the reason for the move.

### *Data from Two States*

Studies in two different states provide some indication of the extent of the funds that might be generated by such a recapture provision. To recapture unclaimed deposits, unclaimed rate refunds and the like in North Carolina, for example, would generate substantial funds. Four regulated utilities provided data when asked to provide the amount of unrefunded deposits escheated to the state for the three years 1988 - 1990. Those four utilities, alone, would have provided nearly $120,000 in additional funds in 1990:[193]

190. A random sample of 3,907 Columbia Gas Budget Plus customers was drawn to serve as the basis for evaluation in that company's 1990 rate case.

191. The study was prepared in March 1990 for presentation in April 1990. Thus, a connect date of 1989 was very recent.

192. Bergo and Matousek, ***Wisconsin Pubic Service Corporation Lifestyle Study*** (July 1983). More than eight of ten of these households had incomes of less than $10,000 per year.

193. Prior years would have generated the same general amounts.

| Table 5-1. 1990 Escheated Deposits<br>Selected North Carolina Utilities | |
|---|---|
| **COMPANY** | **ESCHEATED DEPOSITS** |
| **DUKE POWER** | $50,025 |
| **NORTH CAROLINA POWER** | $1,663 |
| **CAROLINA POWER AND LIGHT** | $62,142 |
| **NORTH CAROLINA NATURAL GAS** | $4,971 |
| **TOTAL:** | $118,801 |

Assuming a weatherization cost of $1,800 per household, nearly 70 additional low-income customers a year would be served by such a program.

In Connecticut, too, capturing the escheated dollars from public utilities would generate a substantial sum of additional weatherization dollars for the state. The source and amounts of escheated dollars for the past three years is provided below.[194]

194. The data presented was provided by the Connecticut state Office of the Treasurer by memo dated June 2, 1992.

| Table 5-2. Escheated Deposits (1989 - 1991)<br>Selected Connecticut Utilities | | | | | |
|---|---|---|---|---|---|
| **TYPE** | **NAME** | **1991** | **1990** | **1989** | **TOTAL** |
| **ELECTRIC** | Bozrah L&P | $0 | $0 | $348.82 | $348.82 |
| **ELECTRIC** | CL&P | $233,024.57 | $15,506.09 | $31,393.32 | $279,923.98 |
| **ELECTRIC** | UI | $16,123.93 | $13,144.80 | $25,198.11 | $54,466.84 |
| **GAS** | CNG | $10,986.34 | $7,748.41 | $4,942.25 | $23,677.00 |
| **GAS** | So.Conn.Gas | $23,483.51 | $22,541.31 | $14,590.27 | $60,615.09 |
| **TELEPHONE** | SNET | $19,244.89 | $139,769.72 | $90,092.33 | $249,106.94 |
| **TELEPHONE** | Woodbury Tel. | $882.93 | $438.17 | $112.98 | $1,434.08 |
| **WATER** | Ct. Water Co. | $0 | $3,149.89 | $3,136.16 | $6,286.05 |
| **ANNUAL TOTALS** | | $303,746.17 | $202,298.39 | $169,814.24 | $675,858.80 |

As can be seen, while the capture of escheated fund for low-income weatherization would not generate "millions" of dollars per year for a state's WAP program, it would, in fact, increase the WAP program resources by some modest amount.

### *Rate Refund Donations*

One means of providing an opportunity for the general public to contribute to low-income conservation and weatherization assistance is to permit the donation of rate refunds to a fund established for such purposes.[195] Public Service Company of Colorado recently sought such donations from its customers and generated more than $1.7 million in donations to the Colorado Energy Assistance Foundation.[196]

195. The fund could be used, in the alternative, to provide winter emergency or "crisis" assistance to income-eligible households.

196. CEAF is a public/private fuel fund. In October 1988, Colorado Governor Romer took the initiative through executive order of establishing the Commission on Low-Income Energy Assistance, appointing 11 volunteer commissioners to "use all avenues available to and seek new ways to raise funds for LEAP." The Commission in turn established the non-profit Colorado Energy Assistance Foundation as a fund-raising entity.

Importantly, these funds are over and beyond any funds generated through customer contributions made in response to bill-stuffers or through additions to monthly bills. Rather than replacing regular contributions made as a part of a program whereby customers add to their bills, the Colorado program seeks to take advantage of the special situation that occasionally arises with regard to rate refunds to customers.

In January 1992, Public Service of Colorado (PSCo) began to notify its customers of a refund to which they were entitled as a result of an overcharge from one of its natural gas suppliers. The refund was owed to natural gas consumers in certain parts of the state who were consumers from January 1, 1985 through December 31, 1988. Refund amounts varied depending on the length of time the consumer received gas during those four years and the amount of gas they used.

One of PSCo's natural gas suppliers was found to have been improperly pricing gas to include a gas search charge which resulted in a $67.75 million overcharge. A portion of that money was returned through the purchased gas adjustment clause on the company's bills, but an additional $45 million was to be refunded as a credit on each customer's March 1992 bill. The potential refund amounts averaged about $35 per household and $261 per business.

In the notification letter that Public Service of Colorado sent with regard to the refund, the company asked its consumers to donate their refund amounts to CEAF. The notification letter from the utility stated in relevant part:

> We are very pleased to be returning this money (which includes taxes and interest) and would like to introduce you to an agency which would appreciate a donation of all or a portion of this refund to be used for a very worthy purpose.
>
> The Colorado Energy Assistance Foundation (CEAF) is a non-profit agency helping the Low-Income Energy Assistance Program (LEAP) provide funds to people who need help paying their energy bills. CEAF's operation costs are paid entirely through corporate donations, so all private donations go directly to the people who need help.
>
> This is a great way to give! Just check the box on the tear-off form below, mail it in the enclosed return envelope so that it reaches us by February 26, 1992, and your tax deductible donation will be sent to CEAF. You have the option of donating all or a part

(..continued)

of your refund amount.[197]

The refund program was promoted primarily through the local print[198] and broadcast media.[199] Moreover, more than 200 local churches were asked to solicit the donation of all or part of the PSCo refund through their congregation's newsletters or bulletins.

In *toto*, CEAF spent roughly $39,000 for 114 30-second television spots on local news shows, and roughly $9,200 for eight (8) insertions into local newspapers. Total expenditures for the media/public relations campaign reached $58,951, according to CEAF.

The refund donation program recovered $1,126,638 of the $29,657,910 refunds owed to "active" PSCo customers, or about 3.8 percent of the total refund. The two month campaign, directed toward 466,678 total customers, resulted in 43,711 donations, averaging $25.77 per donation. Nearly one-in-ten (9.4%) of the total number of customers eligible to receive refunds donated *some*thing through the program.

In addition to these active customers, while CEAF warns that its data from "inactive" PSCo customers is "not final yet," "preliminary figures are 57,516 donations totaling $591,593.36 --an average of $10.29 per inactive donation."

According to the Executive Director of CEAF, the refunds were considered to be "found money" by ratepayers, thus making it easier for them to make the requested donation. In contrast, the *highest* percentage of bill insert response CEAF had received during the preceding 2.5 years was 9/10ths of 1 percent. PSCo placed inserts into the November and February bills during 1990 and 1991. In 1991, 6,987 donations were obtained from a total of 1,127,298 customers receiving the inserts. The bill inserts generated $285,087 in 1991. The rate refund solicitation thus generated 10 times the response that the annual winter bill insert solicitation generates. CEAF found that it obtained a return of 16:1 on its administrative investment.

Given the experience with PSCo's rate refund donation program, it is reasonable for low-income advocates to work with their state's public utilities to institutionalize a similar program to be associated with future refunds of interim rate increases which are ultimately denied or

197. The company then agreed to match all contributions generated through the refund donation program dollar-for-dollar up to a maximum of $2.5 million.

198. Advertisements were placed in the *Denver Post* and the *Rocky Mountain News*.

199. Ads were placed on four local television stations.

reduced by the state PUC. Such refund donations could be directed to providing cash supplement or crisis assistance. The rate refunds could, however, be used to supplement the longer term benefits associated with low-income energy efficiency improvements.

In many states, rate increases sought by public utilities may be collected under bond subject to refund. Interim rate increases are primarily permissible if the state PUC finds that such an interim rate increase is necessary to prevent substantial and material deterioration of the financial condition of a public service company or to prevent substantial deterioration of the adequacy and reliability of service to its customers. Interim rate increases are permissible, however, only if the utility files an assurance with the state PUC of the company's ability and willingness to refund to its customers with interest such amounts as the company may collect from such interim rates in excess of the rates approved by the department. Statutes providing for interim rate increases generally provide that the state PUC shall order a refund in an amount equal to the excess, if any, of the amount collected pursuant to the interim rates over the amount which would have been collected pursuant to the rates finally approved by the PUC.

In sum, advocates should work with the state's public utilities to establish a mechanism through which ratepayers may contribute some or all of any rate refund which they are entitled to receive back to low-income weatherization. Public Service Company of Colorado, in conjunction with the Colorado Energy Assistance Foundation, has found that ratepayers are generous in their assistance, particularly when their contribution involves not-out-of-pocket money such as refund checks.

### *Income Tax Check-Off*

Increasingly today, states are using "check-offs" on their income tax forms that enable taxpayers to donate funds for political elections, charitable programs, and other special purposes. According to the U.S. Federation of Tax Administrators,[200] 40 states now use a check-off system for 124 programs, which allows taxpayers to allocate part of their refund or tax liability to a variety of special purposes. This is an increase from 110 programs supported in 38 states in 1988. In 1989, states raised $28.9 million for these programs.

Income tax check-offs can be of two general types, according to the FTA. The first type permits the taxpayer to direct a portion of her tax liability toward a particular purpose. This type of check-off does not change the tax liability of the individual. In essence, the taxpayer earmarks part of her tax payment for specific payments by the state. The second type permits the taxpayer to make a donation to a specific purpose, adding the funds for the donation to the tax liability. Under this approach, the donation would either reduce the refund or increase the tax payment. It does not earmark the fund from the otherwise existing tax revenue. A majority of the state check-offs only permit the taxpayer to direct the state to retain all or a portion of the refund to which the taxpayer is entitled, and to devote that retained amount to a specified use. In every instance, the purposes for which a check-off may be made have been predetermined by the state.[201]

Check-offs are an increasingly popular means of generating funds for both long-term and short-term projects. Check-offs to benefit nongame wildlife, the FTA says, are "the granddaddy of all check-offs," with 37 states now providing a means to donate funds to help preserve nongame wildlife.[202] Aside from the three most common check-offs, FTA continues, eighteen states have 30 different check-offs on their 1989 tax forms beyond the three (most common) types mentioned above.[203] This is up from five states and only five funds in 1983.

Since 1988, 16 new programs have been added to checkoffs in ten states. These new programs include a focus on education, with four states (Arkansas, Utah, Mississippi and Utah) adding such programs. California has added a new program under which a special tax credit offered by the state to senior citizens can be donated to senior citizen programs.

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200. 55 ***Tax Administrators News*** 2 (March 1991).

201. Most donations are considered to be charitable contributions, and are thus deductible for both state and federal income tax purposes.

202. Of the 40 states with checkoffs, only Maryland, Missouri and Hawaii do not have nongame wildlife checkoff funds.

203. These include political check-offs, child abuse prevention check-offs, and nongame wildlife check-offs.

There is a wide variation in the amount of money collected through the income tax check-off. The most money collected in a single year for any individual fund was the New York wildlife fund, at $1.9 million; the Minnesota political check-off was second with $1.8 million. The most successful state in total amount collected in one year for *all* check-offs was California, raising $4.8 million; Michigan was second, raising $3 million.

Perhaps more indicative of the potential of such funds is the average contribution and the percentage of taxpayers making contributions. The FTA reported in 1989:

> In states where all or portions of the refund could be donated, average contributions ranged from a high of $11.30 in Virginia and $10.20 in Delaware to a low of $2.08 in Rhode Island and $2.61 in Maine. The number of taxpayers contributing varied fairly widely from .3 percent in California and .4 percent in Montana to highs of 41 percent in Hawaii and 24.2 percent in Ohio.

The aggregate funds generated by check-offs can be substantial. A 1991 study determined that there were an estimated 1.6 million taxpayers in Connecticut.[204] If the state could generate a contribution at the national average contribution (2.0% at $6.90 a contribution), the state would generate roughly $220,000 a year for low-income weatherization. Each additional one percent (1%) increase in the number of contributions made would add $110,000. Each dollar ($1) increase in average contribution would add $35,000 a year.[205]

One advantage of check-off programs is their inexpensive cost of administration. Sixteen states reported administrative costs in 1989. The states with the highest annual administrative costs included New York ($210,000) and Maryland ($180,000). The state with the lowest administrative costs was North Dakota ($1,000).

In contrast, in response to the 1988 survey, three of the twenty-six states reporting administrative costs said simply that such costs were "minimal" (Arkansas, Colorado, Hawaii). The states with the highest annual administrative costs ranged from New York ($120,000) and Wisconsin ($76,000) to New Jersey and Kansas (each with $40,00)). The states with the lowest administrative costs ranged from Utah ($1,000) to Delaware ($4,000). The ratio of money collected to annual administrative costs averaged 30:1.

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204. This figure was provided by Tito Santana, Research Analyst, Connecticut Department of Revenue Services (May 22, 1992).

205. Colton, R. (1992). ***Filling The Gaps: Financing Low-Income Energy Assistance in Connecticut***, at 158 - 159, National Consumer Law Center: Boston.

States should consider implementation of an income tax check-off for its low-income weatherization program. The tax check-off should emphasize that funding low-income weatherization is good for the state in many respects:

- It helps the poor of each state to meet their home winter heating costs;
- It helps to keep utility costs at lower levels, saving millions of dollars a year that thus need not be paid by other ratepayers;
- It helps clean-up the air of the state, preventing the emission of million of pounds of toxic pollutants a year from being spewed forth by power plants;
- It helps promote economic development in the state, keeping dollars in the state to circulate in the state's economy rather than being exported for the use by others;
- It helps the state to address its unemployment problem, with hundreds, if not thousands, of jobs being created in both the short-term and long-term;
- It helps prevent homelessness; and
- It helps prevent housing abandonment and other forms of neighborhood deterioration.

An income-tax check-off for low-income weatherization, in other words, will permit the state to sell low-income weatherization as the means to bring about all of the social goods that conservation advocates in general have been promoting for so long.

***Partnerships with CDBG Programs***

Since 1975, Congress has appropriated more than $50 billion for urban areas through the Community Development Block Grant program (CDBG). Although there have been major budget cuts since 1981, nonetheless, over $2 billion was appropriated for CDBG for FY 1991. Providing "decent housing," ensuring "a suitable living environment," and "expanding economic opportunities* * **principally for persons of low and moderate income*" (emphasis added) are among the primary objectives of CDBG as declared by Congress.

This latter requirement has specific operational guidelines by which it must be implemented. More specifically, the statute requires that *at a minimum*, 70 percent of all CDBG funding must be spent to benefit *low-income* households. However, in order for any single project to be considered one that benefits low-income people, only 51 percent of the funds must be used "for the support of activities that benefit persons of low and moderate income." The 51 percent is measured over a three year period. This means that if less than a minimum of 51 percent is used in one year, then the local government must spend enough during the next two years so that the total for all three years is at least 51 percent.

The term "low and moderate income" is defined as individuals and households with incomes below 80 percent of the median income for the Standard Metropolitan Area (SMA). The term "low income" means individual and households with incomes below 50 percent of the median income for the SMA.

There is a three-pronged test for the use of CDBG monies. Local governments must pledge each year that the proposed use of the CDBG money will give "maximum feasible priority" to activities that will:

- Benefit lower income families, or
- Aid in the prevention or elimination of slums or blight, or
- Meet an urgent need.

Activities must meet one of these three criteria.

***Money Available and How it is Divided***

CDBG money is distributed to "entitlement cities" and other small cities. The entitlement cities get their money automatically based on a funding formula determined by the number of low and moderate income people in the city, as well as other similar factors. The other, small cities, must compete with each other for the non-entitlement funds.

According to the Center for Community Change, a nationwide organization specializing in community development issues, "CDBG can be used for just about anything a developer or city official wants." Among the activities that can be funded through CDBG are as follows:

1. Real property can be bought with CDBG funds;

2. Code enforcement can be funded, if carried out in "deteriorating" areas;

3. Public services can be paid with CDBG funds, although there is a 15 percent cap on these activities. "Public services" might include, for example, employment services, health services, child care services and recreation;

4. CDBG funds can be used as the local match for other federal programs;

5. Community development plans can be funded through CDBG; and

6. Rehabilitation of buildings can be funded through CDBG.

Perhaps of most interest to persons involved with low-income energy efficiency is the last section, that involving "rehabilitation." In recent years, jurisdictions have spent roughly 36 percent of their CDBG money on housing related activities. The types of buildings eligible for rehabilitation include, but are not limited to:

- Privately owned residential buildings;
- Publicly-owned residential buildings, including public housing;
- Manufactured housing (*e.g.*, mobile homes), if it is part of the permanent housing stock; and
- Commercial buildings.[206]

Section 202(b) of the CDBG statute makes quite clear that CDBG funds can be in the form of grants, loans, loan guarantees, interest supplements, or "other means." The following are relevant, eligible activities:

1. Property acquisition to rehabilitate it for residential use. The structure can then be used by the person doing the rehabilitation or can be resold. Private individuals, not-for-profit agencies, or for-profit entities can buy or rehabilitate using CDBG funds;

206. It is not clear when multi-family residential dwellings become "commercial," rather than "residential," buildings.

2. Labor, materials, and other costs of rehabilitation are eligible. "Rehabilitation" can mean repairs, replacement, installations, or additions;[207]

3. Loans to refinance existing debt on a building being rehabilitated. However, the jurisdiction must determine such help is "necessary or appropriate" to its "community development objectives";

4. Improvements to increase energy efficiency;

5. Improvements to increase the efficient use of water;

6. Water or sewer hook-ups, as well as hook-ups for other "essential" utilities;

7. Rehab services, such as rehab counseling, energy audits, preparing work specs, loan processing, inspections, or other services.

The advantages of working with local governments in the pursuit of low-income energy efficiency programs have been explored in detail above.

**SUMMARY AND CONCLUSIONS**

Persons interested in planning, designing and financing low-income energy efficiency programs need not rely solely upon utility DSM or federal WAP dollars as a source of funding. Indeed, opportunity exists to bring a wide range of investor dollars to bear on low-income energy efficiency. While these dollars may need to be supplemented with utility and WAP funds for administrative purposes, the private dollars can ultimately be returned to the investor with an interest rate payment.

In addition to these private investment dollars, there are innovative sources of non-traditional utility and government dollars that can be tapped for low-income energy efficiency programs. These programs can involve institutional funds as well as developing mechanisms to facilitate private contributions toward energy efficiency initiatives.

207. HUD's ***Guide to Eligible Activities*** (Oct. 1988) clarifies that stoves and refrigerators are eligible, but washers, dryers and window air conditioners are not.

# CHAPTER 6: A COMPREHENSIVE LOW-INCOME DSM PROGRAM

When low-income advocates intervene in a utility DSM proceeding, they are best served by proactively offering a comprehensive program for consideration. While an intervenor will undoubtedly be called upon to respond to the proposals offered by the company and others, the intervenor should *not* be held hostage by the limits created by other.

A comprehensive low-income conservation program would include at least eleven components, as follows:

## 1. SETTING FUNDING LEVELS FOR LOW-INCOME UTILITY DSM PROGRAMS

One of the key questions, perhaps *the* key question, for low-income advocates to pose to regulators considering utility-financed DSM programs is the proper funding of the low-income component. Low-income intervenors should advocate that a utility DSM program include a low-income component with adequate scope and funding. Adequate "scope" of a utility low-income DSM program means that the utility should seek to serve a wide-range of low-income constituencies. Adequate "funding" means that a utility's low-income DSM budget should increase until the company exhausts its cost-effective measures, or until it exhausts the institutional capacity to deliver cost-effective measures, whichever comes first.

Determining the funding of low-income programs presents somewhat of a problem. While, in theory, a utility should continue to fund its DSM programs until the programs' marginal costs equal the marginal benefits, in reality, no such "full" funding is ever provided. In light of this, there

seems to be no principled basis upon which to set a low-income DSM budget. Why should Public Service Company of Colorado, in other words, spend $8.0 million a year and not $9.0 million? Why should PSCO serve 4,500 households rather than 5,000 households?

***The Funding Principle***

Nonetheless, one principle does seem appropriate for low-income advocates to advance. The extent of low-income DSM funding should be sufficient to ensure that there are no lost opportunities in any given year.

***Lost Opportunities***

Lost opportunities arise when the accomplishment of some given task precludes the future accomplishment of additional work at that same dwelling. Some of the lost opportunities involved with existing programs include:

**WAP weatherization:** To the extent that WAP invests $1,800 in a home that has the potential for $3,000 of cost-effective conservation, there is a lost opportunity. It is highly unlikely that the home will be revisited by the local utility to subsequently "finish" the remaining $1,200 of conservation improvements. Moreover, federal regulations generally prohibit WAP from retrofitting a home in which WAP dollars have previously been invested.

**Low-income housing developments:** 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.

**Unused institutional capacity:** Assume the institutional capacity of low-income service providers is 8,000 homes per year in a given utility service territory. These service providers might include local contractors, CAAs, CDCs and other profit or non-profit institutions. If the combined budget of low-income programs funds only 6,000 homes a year, there is a lost opportunity to increase the energy efficiency in 2,000 homes. By assumption, the maximum capacity is 8,000 homes per year. That capacity thus cannot be pushed to 10,000 for a year to "make-up" the earlier lost opportunity.

The institutional capacity for delivering low-income DSM, of course, should include the capacity of the utility in addition to the private non-utility contractors.

***Institutional Capacity Inventory***

As can be seen, one component of a utility low-income DSM program is a periodic inventory of the institutional capacity to deliver low-income DSM measures. The inventory should cover the planning period of the utility. If the utility files three year DSM plans with state regulators, in other words, its inventory should include the existing and projected capacity to deliver low-income services over that three year period. The budget for low-income DSM should thus be sufficient to finance full utilization of the inventoried capacity.[208]

***The Decision Rule***

In sum, the upper limit on a utility's budget for delivering low-income conservation measures 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 for the extent of low-income conservation funding by a utility.

The proposed decision rule is that utility funding (when combined with WAP) should be of sufficient magnitude to ensure that there is no unused institutional capacity to deliver cost-effective low-income conservation service. Stated another way, funding should be adequate such that no lost opportunities occur within the realm of low-income DSM.

A utility's low-income DSM budget should increase until the company exhausts its cost-effective measures, or until it exhausts the institutional capacity to deliver cost-effective measures, whichever comes first.

## 2. RECOGNIZING AND IDENTIFYING NON-TRADITIONAL AVOIDED COSTS

208. A utility needs to make commitments to fully fund the institutional capacity over an announced time frame. This type of commitment is necessary for low-income service providers to plan and develop their own capacity.

Low-income intervenors should advocate that a utility DSM program consider non-traditional avoided costs in its assessment of the cost-effectiveness of low-income DSM measures. This proposal recognizes that expenses associated with delinquent payment, or nonpayment, are avoidable costs to the system just as energy and capacity costs are. To the extent that conservation measures can help reduce delinquent payment expenses, those reduced expenses should be included in the calculus of "avoided costs." These expenses would include, for example, avoided bad debt, avoided working capital, avoided credit and collection expenses, and the like.

Non-traditional avoided costs will be referred to, for the purposes of this analysis, as "delinquent payment" expenses. These expenses arise when ratepayers demand power from the system and then do not pay for it on a timely basis. The system incurs the costs of production and delivery of power as well as billing and collection costs. If those costs are not paid by the delinquent ratepayers, then they must be borne by other ratepayers.

Accordingly, under the principle of cost-effective planning, a utility should invest in conservation measures that cost less than the costs they are designed to avoid. Traditional avoided cost analysis looks at such items as production, transmission and distribution costs. However, it is clear that some customers impose a cost on the system ratepayers in general that is beyond the production, transmission and distribution costs. Delinquent payment expenses are a cost of service and raise rates to all ratepayers just as new plant and associated investment. To the extent that these expenses can be reduced, therefore, there will be systemwide savings which inure to the benefit of all ratepayers.

Accordingly, a utility can target some additional conservation measures to payment troubled customers, which measures may not have found their way into the mix under an evaluation system that did not consider the enhanced system benefits of dealing with the bad debt problem through conservation measures. Measures would be offered to cost-effectively reduce the consumption of these households to the extent that the bills rendered to them would be affordable and thus within the ability of the customer to pay in a timely and complete fashion.

***Not a Subsidy***

It is important to remember, however, that while the program may result in targeting additional conservation measures to low-income households, the purpose of the program is not to provide a subsidy but to achieve system savings and cost reductions to ratepayers in general. So long as the program is cost-effective in reducing system costs, as defined in terms of lowered revenue requirements, it makes no difference who individually might benefit. At all times, the level of expenditure would depend on what is cost-effective to spend.

In sum, while income-driven, low-income DSM programs are not social welfare programs at all. Welfare does not enter into the picture. An example from a different perspective demonstrates this point. Consider a situation where the utility found it to be cost-effective to reduce line losses in order to delay the need for new capacity. Conducting a survey, the utility finds that in the older, and incidentally poorer, neighborhoods in town, many of the lines are undersized relative to the power being drawn through them. As a result, the potential for substantially reducing line losses is great in those areas. The replacement of those lines would hardly be considered a "welfare program" just because the system improvements happen to be concentrated in the poorer neighborhoods. As long as the goal and the effect of the program is to reduce system costs in a cost-effective way, the spatial or class distribution of the cost-saving activities cannot legitimately be attacked on the grounds that they constitute a "welfare program."

A detailed discussion of avoided delinquent payment expenses is included in Appendices A and B below.

## 3. COORDINATING UTILITY PROGRAM WITH WAP

Low-income intervenors should advocate that a utility low-income DSM program should not operate in parallel with WAP, but rather that the utility program and WAP should combine so as to maximize utility investment in cost-effective energy savings measures and maximize WAP investment in the non-energy savings measures that depress utility benefit-cost ratios. Through such a combined effort, utility-financed programs that might be *not* cost-effective from the perspective of the company and its ratepayers may be made cost-effective. Moreover, by targeting its funding in a joint effort with local utilities, WAP subgrantees can leverage millions of dollars in additional low-income DSM funds.

***The Problems***

Two particular challenges are presented by low-income conservation programs: (1) the high relative transaction costs; and (2) the need for non-energy-saving home repairs.

**High transaction costs:** A minimum amount of energy savings is considered necessary in order for the utility providing the conservation measures to recoup sufficient cost savings to overcome the fixed costs of program outreach and administration. Experience shows that the costs of program outreach and administration do not vary depending upon the amount of savings generated at a particular dwelling unit. The time devoted to intake is the same, the time devoted to oversight and monitoring is the same, the time devoted to travel is the same.

If anything, transaction costs for low-income households may be somewhat higher than for moderate and upper income households. For example, low-income households tend to be renters. Because of this situation, there exists a "split incentive" regarding energy conservation measures. While the bill savings will go to the low-income tenant, the utility must approach and gain the consent of the property owner before any work can be done on the dwelling. Since the owner has no incentive for the conservation work to occur, the effort necessary to obtain the necessary consent may be somewhat greater.

These fixed costs are referred to as transaction costs. With the small energy savings potential for low-income households, utilities often find that there is insufficient potential for savings to overcome the transactions costs of providing the conservation measures to the low-income household in the first instance.

**Non-energy-savings repairs:** A second problem experienced by low-income conservation programs is the frequent need for home repairs to occur before energy savings measures will have any impact. It makes no sense, in other words, to install insulation into a roof when there are holes in the roof with which to begin. Similarly, installing a new or repaired heating system will have no impact if there are structural problems with the house that eliminate the new system's effectiveness.

The problem can be substantial. Philadelphia's Energy Coordinating Agency (ECA), for example, is the non-profit organization that administers the Philadelphia Gas Works (PGW) Conservation Works Program (CWP). ECA reported that in 1992, roughly 40 percent of the low-income households who would otherwise have been eligible for CWP were rejected from the program because of the need for major roof repair or replacement.

The problem is that while these home repairs may be a necessary precondition to the effective installation of energy savings devices, they do not save energy unto themselves. Every dollar spent on such repairs, therefore, adds a dollar of expense that must be offset by the energy savings generated by the conservation measures themselves. Given the problem first discussed above --that low-income households most often present small savings potential with which to begin-- the probability is remote that the cost of home repairs can be added to the utility program and have that program remain cost-effective.

The utility is thus caught in a classic Catch-22 with low-income households. Without the home repairs, the energy conservation measures will not be effective, and thus cannot meet the cost-effectiveness tests. However, with the home repairs, the overall cost of the program will likely outstrip the overall savings, again with the program thus failing a cost-effectiveness test.

***The Solution***

The solution to this dilemma is for WAP dollars to be combined with utility dollars to form a single comprehensive program. In this fashion, utility funds can be used on cost-effective energy savings measures. In contrast, WAP dollars will be used as the source of financing for the non-energy savings components of the total program.

Since WAP funds are under no necessary constraint to be spent only in a cost-effective fashion, these funds can be earmarked for funding administration, outreach and intake, and major non-energy-saving home repairs.

The combination of WAP and utility dollars will eliminate parallel programs by the utility and the government.[209] Instead, a single program will be created serving the combined populations of what the two programs would have served separately. The allocation of particular expenses to WAP responsibility or to utility responsibility will be an accounting function of which the low-income household is not aware.

***The Colorado Program***

In December 1992, the Colorado Public Service Commission approved a targeted low-income program jointly advanced by Public Service Company of Colorado (PSCO), the Colorado Department of Housing (which administers the state's WAP funds), the Colorado Office of Consumer Counsel, and a variety of low-income and environmental groups. The PSCO program provided as follows:

209. However, there is some need for a "parallel" program. Utility investments in DSM can help accomplish some efficiency improvements that cannot be funded through WAP. Moreover, utility investments can reach some low-income households that cannot be reached using WAP dollars.

1. WAP funds would be used for the non-energy-saving components of the comprehensive program. For example, outreach and intake as well non-energy-saving home and heating system repairs would be paid for using WAP dollars;

2. PSCO and the WAP program would list all potential energy conservation measures in order of their cost-effectiveness. PSCO funds would be used for the most cost-effective measures first. PSCO would continue to fund cost-effective conservation measures, moving down the list of cost-effectiveness, until the PSCO budget for the dwelling was exhausted.

3. At the point at which PSCO funds were exhausted, WAP funds would be used to complete all cost-effective conservation measures until the WAP budget for a particular house was exhausted, or until all cost-effective measures were completed, whichever came first.

Public Service Company of Colorado agreed to invest $8.0 million a year in low-income DSM programs. The commission granted PSCO a few years to ramp up its investment to this level.[210]

210. A copy of the stipulation setting forth the PSCO program, along with the PUC order approving the program, can be obtained by writing Fisher, Sheehan & Colton, Public Finance and General Economics (FSC) in Belmont, Massachusetts.

## 4. FILLINGS GAPS LEFT BY WAP

Low-income intervenors should advocate that a utility low-income DSM program target households that fall in "gaps" not reached by the federally-funded Weatherization Assistance Program. These gaps include households that have been inadequately weatherized using WAP funds, but which cannot be "re-weatherized"; multi-family dwellings that have insufficient numbers of low-income households to be treated by WAP; and households that have non-heating efficiency measures that could be cost-effectively installed.

Public utilities should target conservation programs to fill gaps in services provided to low-income households by the federally-funded Weatherization Assistance Program (WAP). In this fashion, utilities can promote the melding of WAP and utility-financed efforts into a program serving more households than either program could serve operating independently.

***Recent Advances***

Substantial changes have occurred in WAP in the past few years. Technologies, in particular, have improved. Projections of energy savings arising from particular measures have been reassessed as well, with a determination made that some previously installed measures offered an inadequate savings potential.

**Blower door audits:** One substantial increase in the efficiency of WAP technology has been the rapid expansion of blower door audits. By depressurizing the interior of the house, auditors can determine where significant infiltration leaks are occurring. Interior air sealing has been found to be one of the most efficient, as well as one of the most cost-effective, means of energy conservation.

Blower door audits by WAP sub-grantees, however, are of relatively recent origin. Only since 1989 has this technology become particularly widespread. Today, most WAP audits are accomplished using blower door technology, as compared to only a few percent as recently as in 1989.

**Window replacement:** In contrast to the expansion of blower door technology, the significant expenditure of WAP funds on window replacements has been curtailed in recent years. Experience has revealed that window replacement does not yield significant energy savings. Accordingly, in recent years, WAP dollars have been diverted from the installation of new windows to the installation of measures with greater energy savings potential.

In sum, technological advances in weatherization in the last several years have substantially improved the quality and performance of the Weatherization Assistance Program. Techniques such as the use of blower doors, infrared scanning, and interior sealing have increased the ability of weatherization operators to provide a quality product.

Through better research and technology, it also has become evident that old weatherization techniques of caulking and storm window/door replacements were not as effective as sidewall insulation alone.

***Previously Completed Retrofits***

Notwithstanding the recent advances in weatherization technology, federal regulations restrict, if not outright prohibit, the use of WAP dollars to retrofit properties previously weatherized with WAP funds. Two tiers of restrictions apply.

1. **Prohibited retrofits:** Federal Department of Energy (DOE) regulations completely prohibit the use of WAP dollars to retrofit dwelling units that have been treated using WAP funds since 1979. Under these DOE regulations, it does not matter that the previous work may be considered "inadequate" under current knowledge and technology. These homes, inadequately weatherized with WAP funds subsequent to 1979, present the first gap in WAP services that utilities can fill.

2. **Restricted retrofits:** In contrast to the post-September 1979 homes, federal regulations do not prohibit, but they *do* discourage, revisiting homes that were weatherized *before* 1979. While these homes can be done again, the state may not "count" them in their reports to the federal government as part of the work performed in a program year. As a practical matter, therefore, these homes are not likely to receive WAP-funded retrofits. These homes, inadequately weatherized using WAP funds in the pre-1979 period, represent a second gap in WAP services that a utility can fill.

***Predominantly Low-Income***

Multi-family dwellings that are not occupied exclusively by low-income households present a third gap in WAP services provided to low-income households. DOE regulations dictate that multi-family dwellings must have minimum rates of low-income occupancy in order to be eligible for WAP funding.[211] These regulations require, for example, the following minimum occupancy rates.

| | |
|---|---|
| 2 units | 50% |
| 3 units | 66% |
| 4 units | 50% |
| 5 units | 66% |
| 6 units | 66% |

Multi-unit dwellings that are occupied by low-income households at less than the rate required by DOE in order to be WAP-eligible can be targeted for treatment pursuant to a utility's general residential DSM program. Low-income families living in such situations will not otherwise receive conservation services.

***Heating Efficiency***

Use of WAP funding is restricted to improving the heating efficiency of a low-income program participant's home. The WAP statute sets out a specific list of measures for which federal funds can be used. The list found its genesis in the early versions of the WAP statute, which specifically provided that "the term `weatherization materials' means items *primarily designed to improve the heating or cooling efficiency of a dwelling unit*, including, but not limited to, * * *" (setting forth a limited itemized list). (emphasis added)[212] The final language somewhat

211. 10 ***C.F.R.*** §440.22(b)(2) (1994).

212. Section 412, Energy Conservation and Production Act, Public Law 94-385, 90 Stat. 1125, 1152 (1976).

backed away from even stricter restrictions. For example, the original House language expressly indicated that the funds were to be used for "weatherization materials (*e.g.*, ceiling insulation, storm windows, caulking, and weather stripping, *but not mechanical equipment*)." (emphasis added). The original Senate language limited the program to "residential insulation assistance for low-income persons."[213] The Conference Committee inserted the term "weatherization materials" and defined it to mean "items designed *primarily* to improve the heating or cooling efficiency of a dwelling* * *." (emphasis added).

The history of the WAP statute seems clear that what Congress had in mind were "items designed *primarily* to improve the heating or cooling efficiency of a dwelling* * *." Among the items that are not on the list of WAP-fundable measures, therefore, are measures that do not fall within the space heating emphasis of the current statute, including:

- Lighting measures;
- High efficiency domestic hot water (DHW) heaters; and
- Plumbing repairs.[214]

### 5. UTILITY INCENTIVES TO PROMOTE ENERGY EFFICIENCY

Low-income intervenors should advocate that a utility low-income DSM program should generally *not* include incentives to be paid to the utility. However, in the event that incentives are to be approved, low-income intervenors should recommend that they be targeted in a manner consistent with affecting utility decisions. Incentives which involve an upward boost in a utility's rate of return fail this functional test. Instead, if a utility wishes to reward its management for innovations in the pursuit of DSM, that reward should be accomplished through the salary structure, which, in turn, would be subject to a review for reasonableness in a general rate case.

Moreover, low-income intervenors should recommend that incentives be preconditioned on more than meeting preset spending or saving goals. They should be made dependent on providing adequate conservation services to low-income households as well. In contrast, low-

213. 1976 ***U.S. Code Congressional and Administrative News*** 2005, 2064, 2065 94th Congress, 2d Session (1976).

214. This is particularly unfortunate since repairs of hot water leaks can be one of the most cost-effective energy conserving strategies available.

income intervenors should recommend that if a utility is to receive an incentive for meeting certain preset performance standards, it should be subject to a countervailing penalty in the event that such performance standards are *not* met.

Finally, low-income intervenors should recommend that a utility only be permitted to obtain an incentive for offering DSM investments if a reciprocal incentive is provided to low-income households for accepting such measures and engaging in energy saving behavior.

***Basis for Incentives***

Incentives provided to utilities generally take one of three forms. These include:

**Expenditure-based incentives:** This type of incentive provides a financial reward to the utility if preset DSM spending goals are reached. The incentive is provided irrespective of the amount of savings generated by these expenditures.

**Savings-based incentives:** A somewhat more rational basis for awarding incentives involves tying incentives to the amount of energy savings generated by a utility's DSM program. This approach provides a financial reward to the utility if preset savings goals are met.

**Spread-based incentives:** The least common incentive ties the financial reward to the utility to obtaining a pre-set "spread" between the cost of delivered conservation and the avoided costs of the utility. This incentive not only encourages the utility's investment in DSM, but encourages the utility to be cost-efficient in its delivery of DSM.

### *Types of Incentives*

The "financial reward" provided to a utility can take one of several forms. Most common perhaps is an upward adjustment in the utility's rate of return should performance goals be met. This boost on the rate of return, of course, should be limited to the utility's investment in DSM. It should not be provided for the utility's entire rate base.

A second and more rational incentive structure is to allow the utility to share in the savings generated by DSM efforts. By definition, a cost-effective DSM measure costs less to the utility (and its ratepayers) than it would cost to produce and deliver the equivalent amount of electricity or natural gas. To permit a sharing of the savings, therefore, would provide an incentive both to increase the units of energy saved and to increase the spread between the utility's avoided costs and the cost of conserved energy.

### *Adverse Impacts on the Poor*

DSM incentive structures will tend to adversely affect the interests of low-income households when they result in a utility's concentration of effort on large scale savings with the highest level of cost-effectiveness. There can be little question, even by low-income advocates, that the greatest savings for the least cost can be obtained from utility investments in industrial and commercial DSM measures.

To tie rewards, therefore, to the extent of savings, to the extent of expenditures, or to the extent of the "spread" between DSM costs and avoided costs, would be to use financial rewards to encourage utilities to service these large scale energy users while downplaying (or outright ignoring) the residential customers (particularly the *low-income* residential customers) whose savings are smaller while being more expensive to generate at the same time.

Accordingly, incentives tend to have three adverse impacts on the poor.

1. First, they add a specific increment to the rates paid by residential customers. The dollar value of incentives must be paid by *some*one, and clearly that someone will be ratepayers. Moreover, since the "incentives" really are simply increases in net income to the respective utility, there will be an income tax effect associated with each dollar of incentive.[215]

215. Hence, every $1.0 of incentive will translate into $1.72 of revenue requirement, assuming a combined federal/state tax rate of 42 percent.

2. Second, the increased expenses will be borne by a decreasing consumption base. That decreasing base will tend to be residential ratepayers. Since low-income households tend to be disproportionately nonparticipants, the customers who can least afford to pay these non-cost-based additions to rates will be those most likely called upon to pay them.

3. Finally, the direct benefits of conservation, in reduced bills through reduced consumption, will be denied to residential customers in general and low-income customers in particular. Hence, not even the programs which arise out of payment of the incentives will be available to those customer most likely paying the incentives.

Incentives that are tied to expenditure levels, savings levels, or the spread between DSM costs and avoided costs, without more, adversely affect low-income households and should be opposed.

***General Reasons to Oppose***

Whether or not DSM incentives have a particular adverse impact on the poor, public utility ratepayers should not be required to pay their utility companies an "incentive" to engage in conservation programs. Opposition to incentives should be based on several regulatory principles.

**Disaggregating management actions:** First, a utility's management actions should not be disaggregated for consideration of special rewards. Any agreement to reward management initiative in pursuing DSM measures isolates management action in that regard from its actions in all other operations of the company. State regulators could not consider, for example, whether the management DSM initiative is significant within the larger scheme of total company operations. Similarly, regulators could not consider whether management initiative in this area is offset, perhaps, by less than ideal management in other aspects of company operations. A utility should not be rewarded on a piecemeal basis. If incentives are to be provided through rate of return adjustments, state regulators should adopt a total regulatory structure through which to review incentives for efficient and innovative management actions and penalties for inefficient actions based on objective criteria.

**No impact on management:** Second, in essence, all that an increase in the rate of return does is to provide a free upward kick in the rate of return provided to *investors*. Yet such a boost can find no conceptual justification. A return on equity has two components: (1) a component designed to compensate the investor for the time value of her money; and (2) a risk premium. Particular management initiative regarding the pursuit of DSM affects neither of these two components.

It should be apparent that providing *investors* with an additional rate of return bears no relationship at all to the performance of a utility's *management.* On issues of micro-management such as setting DSM budgets, targeting DSM expenditures, and the like, investors will have little, if any, say. It is certainly the case that investors will not track the level of DSM savings, or investments, to the extent necessary to make decisions that may affect whether incentive goals are met.

**Not a discretionary activity:** Finally, legitimate objection can be made to paying incentives for investment in DSM measures since utilities are *required* to make such investments whether or not incentives are paid. Whatever the aspect of the utility business in question, a regulated utility is required to operate with all reasonable efficiencies. Moreover, a utility is required to provide least-cost service (with an adequacy of service constraint).

To provide a financial reward to a utility to "convince" it to undertake an activity that it is required by law to do even in the absence of the reward should give rise to objection.

***Targeting Incentives***

Should incentives be approved, they should be targeted in a manner consistent with affecting utility decisions. Incentives which involve an upward boost in a utility's rate of return fail this functional test. Instead, if a utility wishes to reward its management for innovations in the pursuit of DSM, that reward should be accomplished through the salary structure, which, in turn, would be subject to a review for reasonableness in a general rate case. In that fashion, regulators could perform all of their various functions in protection of the public: (1) to determine whether the "benefits" of the management action merited the size of the management bonus; (2) to determine whether any bonus provided to management was reasonable in light of total management responsibilities; and (3) to determine whether any bonus for management innovations in these regards is offset by less than ideal management attention to other aspects of utility operations.

In short, if innovative management in the pursuit of DSM is "worth more" to a utility, its investors and its ratepayers, that worth should be reflected in higher salaries commensurate with the increased worth. No basis exists, however, for giving *all investors* a gift in effectively increasing the rate of return.

***Basis for Incentives***

Should incentives be approved, they should be preconditioned on more than meeting preset spending or saving goals. They should be made dependent on providing adequate conservation services to low-income households, as well.

The means to measure the adequacy of serving low-income households is through application of the decision rule advanced above. That rule posits that a utility should spend on low-income DSM until either the company exhausts its cost-effective low-income DSM potential, or until it exhausts the institutional capacity of delivering such measures, whichever comes first.

In addition to other preconditions for earning a DSM incentive, the utility should be required to meet this low-income DSM decision rule. Without this precondition, any incentive structure will encourage utilities to concentrate their DSM investment in high savings potential, high return, industrial and commercial projects. As discussed above, this redounds to the detriment of the utility's low-income population. If a utility is to receive an incentive, it must be kept "on track" so that it does not adversely affect those customers least able to protect themselves. If a utility is to receive an incentive, the receipt of that monetary reward must be made contingent on the company's fair treatment of its low-income customers.

***Incentives and Penalties***

If a utility is to receive an incentive for meeting certain preset performance standards, it should be subject to a countervailing penalty in the event that such performance standards are *not* met. There is no reason in law or policy to permit a utility to have the potential for upside gain while protecting it from the risk of downside loss.

## 6. LOW-INCOME INCENTIVES TO MAXIMIZE SAVINGS

Low-income intervenors should recommend that low-income households be provided incentives both to participate in the DSM program and to maximize their energy savings behavior once they engage in such participation. Such incentives can involve either earned credits toward pre-program arrears or earned credits toward fixed monthly customer charges.

Low-income advocates should propose, as part of any utility-financed DSM program, that low-income households be provided incentives both to participate in the DSM program and to maximize their energy savings behavior once they engage in such participation. Advocates should propose a low-income "conservation rate" to serve as an incentive for income-eligible households to participate in the proffered energy conservation programs or, in the alternative, in the WAP program.

***Availability of Incentive***

The rate would be available to all households who are income-eligible and who participate in the named conservation activities. The rate should be available for all households who meet the income qualifications for any one of the following programs: (a) Supplemental Security Income (SSI); (b) Food Stamps; (c) LIHEAP; (d) Women, Infants and Children (WIC); (e) Aid to Families with Dependent Children (AFDC); and (f) Medicaid. Proof of participation in any one of these programs would sufficiently income-qualify these households for the rate. In this fashion, the utilities offering the rate would need not become involved with intake, income verification and the like.

In order to qualify for the conservation rate, the household would need, within a time certain of accepting the rate, to do one of two things: (a) either participate in the conservation program to be offered by the respective utility; or (b) apply for the WAP program administered by the local Community Action Agency. Both programs should qualify for the conservation rate because of the interconnection recommended above.

Making the mere application for one of the two conservation programs, as opposed to participation itself, the trigger for conservation rate availability is intentional. The incentive is designed to modify consumer behavior. If the customer takes affirmative action, but cannot participate for reasons that inhere in the program, itself, that failure to participate cannot be ascribed to the consumer. The mere fact of application means that the incentive has done what it was intended to do, to motivate the consumer to seek out conservation treatments.

***Incentive to Maximize Savings***

Households should be provided an incentive to maximize the savings they experience after installation of the conservation measures, as well. This incentive can be provided by giving these households the opportunity to earn a reduction in their preprogram arrearages. The extent of the reduction will be tied directly to the extent of the savings accomplished.

Conservation program participants will be allowed to "earn" a reduction in their preprogram arrears at a predesignated rate associated with their level of savings. This proposal posits that for each year household energy use is 20 percent less than the base year, they will earn a 50 percent reduction in preprogram arrears. For each year household energy use is 10 - 20 percent less than the base year, they will earn a 33 percent reduction in preprogram arrears. For each year household energy use is 0 - 10 percent less, they earn a 20 percent reduction in preprogram arrears. If the household has no preprogram arrears, the reduction is applied first to the monthly fixed customer charge and next to the consumption charge.

If the household experiences no energy savings, it will receive no reduction in their preprogram arrears or other bills through this incentive program.

***Wisconsin Gas Incentives***

Wisconsin Gas Company has a similar incentive structure in place. Wisconsin Gas Company and a local community action agency (CAP Services, Inc.) developed a program that combined weatherization and arrearage forgiveness. This program is offered in eight rural counties of central Wisconsin. It began in the summer of 1985 and offers several options to low-income customers who are in arrears at least two months.

Pursuant to the Wisconsin Gas programs, households could earn the forgiveness of arrears through any one of a number of options:

- Weatherization and Credit for Payments
- Credit for Payments
- Energy Counseling and Credit for Conservation
- Energy Counseling, Credit for Payment and Conservation

Under the Credit for Payment option, a customer's arrearage would be reduced by 1/36th for each month the current bill is paid. Under the Credit for Conservation option, a customer's arrearage is reduced by the cost of each therm saved on a weather-adjusted basis.[216]

The Wisconsin program established a criteria that current bills *must* be paid. Whether the customer chose the payment or conservation credit option, her arrearages were placed on hold only as long as bills for current month's usage were paid. Otherwise, collection efforts were to be renewed.[217]

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216. If a customer is more than 90 days in arrears, he or she is eligible for both payment and conservation credits.

217. LIHEAP was distributed in such a way in Wisconsin, however, to limit current month bills to an affordable percentage of household income.

***Prior Experience with Incentives***

The first year's experience in Wisconsin was positive. Only seven percent (7%) of all participants failed to keep their bills current. At the same time, 46% of participants completely eliminated their back bills. In the second year, only five percent (5%) of all participants failed to keep their bills current.

Part of the success of the program, according to Wisconsin Gas, was attributable to the success of the counseling provided to participants. The counseling takes place during four visits. At those times, the CAA shows the clients how to install low-cost/no-cost weatherization materials; provides free supplies; and gives the participating households tips on how to change behavior so as to reduce consumption. The agency continues to monitor client consumption for up to a year or until the arrearage subject to forgiveness has been retired.

The counselling has, in fact, resulted in substantial energy savings. The counseling portion of the program has resulted in an average of 10 percent energy savings. This 10 percent does *not* include energy savings attributable to weatherization received as a result of referral to the low-income weatherization program. In total, customers saved an average of 15 percent on their monthly bills; some saved as much as 26 percent.

***National Fuel Gas Incentives***

In contrast to the Wisconsin Gas incentives, National Fuel Gas Distribution Corporation provides DSM incentives by offering credits toward the monthly fixed customer charge of low-income households.

Under the NFG program, customers on the company's low-income rate discount program can earn credits on a fixed per-therm-saved basis. The utility designed the conservation incentive so that the average customer could expect to earn a waiver of her fixed monthly customer charge each month.

No limit is placed on the amount of credit to be earned, however. If the customer saves more than the estimated average, the monthly bill beyond the customer charge is reduced accordingly.

## 7. LOW-INCOME FUEL SWITCHING

Low-income intervenors should advocate proposals for utility-financed DSM to include fuel switching efforts. Whether offered by a natural gas utility, an Energy Service Company (ESCO), a solar energy contractor, or a developer of low- and moderate-income housing, fuel switching programs that present cost-effective bill-reducing potential to the residential customers served by such programs should be eligible for utility-financing.

Assessing whether utilities should be involved with programs that promote the conversion of electric appliances to natural gas requires a precise definition of what precisely regulators are being asked to decide. An important element of that definition, also, is defining with precision what regulators are *not* being asked to decide.[218]

218. Or, on a lesser scale, fuel oil appliances to natural gas. As discussed below, fuel switching is *not* simply an electric-to-natural-gas process.

***What the Issue is NOT***

The issue of utility-financed fuel switching is not one of whether a public utility --particularly an electric utility-- should be *forced* to finance fuel switching (electric heat to gas heat is one form of such switching).

Nor should the issue be presented in terms of whether regulators favor natural gas over electricity. The issue is not one simply of natural gas versus electricity. The issue of fuel switching, to be decided on a principled basis, must involve the full range of converting residential systems from one source of fuel to a competing source. *From* what fuel *to* what fuel does not determine the issue. Whether it is electricity to natural gas, natural gas to solar, or otherwise, is irrelevant.

***What the Issue IS***

Rather than the formulations rejected above, the issue is whether it is appropriate for regulators to decide as a matter of policy that they will *not* approve utility DSM programs involving the conversion of residential systems from one fuel to a competing fuel.[219]

***The Policy Implications***

From a policy perspective, regulators should be wiling to approve DSM programs that promote fuel switching in low-income buildings.[220] Reviewing the policy implications involves a two-step process. The first step is to define a regulator's interest in energy efficiency in low-income dwellings. The second is to determine the degree to which, if at all, that interest is promoted by financing the conversion of residential energy systems from one fuel to another.

High energy costs have a disproportionate impact on low-income households in particular and thus on their ability to pay their home energy bills. While the average American family spends roughly five percent of its income on home energy, low-income Americans are forced to spend roughly five times that amount.

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219. This analysis will assume an electric to natural gas space heating conversion since, notwithstanding the observation that the issue is not one *solely* of electricity to natural gas conversion, the issue is most easily conceptualized, and most generally presented, in those terms.

220. This is *not* to say that fuel switching is unimportant in non-residential buildings. It simply is to say that any non-residential issue is beyond the scope of a low-income discussion and is thus expressly set aside for purposes of this discussion.

> Families earning less than $5,000 per year spend on average 25 percent of their household income on energy, while higher income families (earning $15,000 or more) spend five percent or less of their income on energy.[221]

It is important to note the obvious in this regard. By definition, averages mask the extremes. Where *average* energy burdens are 25 percent for low-income households, some substantial portion of households pay much more than 25 percent (while, admittedly, some will also pay less).

### *The Costs of Gas and Electricity*

It can be said with confidence that the conversion of residential appliances from electricity to natural gas will result in bill savings to the affected households. A simple example will illustrate this point. The EIA's *Monthly Energy Review* for October 1992 shows that the cost of a mmBtu of natural gas delivered is approximately $5.82, while the corresponding cost for a mmBtu of electricity is $23.74. Offsetting the gas cost for its lower heating efficiency (assuming gas is only 75% as efficient as electricity for heating) increases the natural gas figure to $7.76. Nonetheless, it is clear that electricity is three times more expensive than natural gas on a uniform per-mmBtu basis.

If a typical midwestern home of 1500 to 1800 square feet uses about 100 mmBtu per year for space and water heating, the natural gas cost per mmBtu for space and water heating would be $7.76 while the electric cost per mmBtu for space and water heating would be $23.74. The total annual bills would thus be $776 and $2,374 respectively.

As this data shows, the difference in bills between electric and natural gas is roughly $1,600 per annum or $133 per month. In a situation where a family is about to purchase a new furnace and water heater, any bias introduced into the energy in favor of electric water and space heating will result in the family being $133 per month worse off than they should be. Such a bias would be introduced if regulators insist on approving only DSM efficiency improvements within the realm of electric appliances, but refuse to approve a conversion from electricity to natural gas.

The potential benefits from such fuel switching are not insignificant. A review of the data presented in the Public Use Tapes supporting the

221. OTA Project Staff, ***Building Energy Efficiency*** (Washington, D.C., Office of Technology Assessment, May 1992) at 96 (*citing*, Energy Information Administration, ***Household Energy Consumption and Expenditures 1987*** (Washington D.C., U.S.D.O.E., October 1989).

EIA's most recent *Residential Energy Consumption Survey* indicates the magnitude of the residential benefit that might arise --this indicates the increase in housing affordability that might be brought about by utility involvement in such conversion-- from converting from electricity to natural gas.

As shown in that data, natural gas is consistently less expensive at heating a home than electricity. Households devote fewer absolute dollars toward their heating and hot water bills, and devote a corresponding smaller portion of their income toward those bills, pay less on a per thousand Btu basis, and pay less on a per (heated) square foot basis. The conclusion to be drawn from this is that, given their interest in helping low-income households obtain more affordable utility bills, regulators should have a distinct interest in approving low-income fuel switching proposals.

## 8. OVERCOMING LOW-INCOME MARKET BARRIERS

Low-income intervenors should advocate that utility-financed low-income programs be specifically directed toward overcoming market barriers which prevent such households from implementing DSM measures on their own. Such market barriers would include, for example, the lack of investment capital and the high "hurdle rates" implicit in DSM investment decisions.

Market barrier issues are of particular importance to the low-income community. As discussed in detail below, low-income households inherently tend to be non-participants in utility-financed DSM programs. Accordingly, even though the savings generated by DSM measures are "system" benefits, and even though the low-income ratepayers are paying "their share" of the costs, they are systematically excluded from receiving "their share" of the benefits.

This discussion, of course, depends for its validity on the observation that low-income households tend to be systematically excluded from receiving the direct benefits of utility DSM measures. That observation has a clear basis in fact. For a utility effectively to design and offer DSM programs to its customers, it should have a clear grasp of what market barriers prevent the implementation of those measures without utility assistance. The utility program, accordingly, would most rationally be designed to effect the removal of the identified market barriers. If, for example, the market barrier is an unreasonably long payback period, the utility may offer direct subsidies to shorten that period. If, in contrast, the market barrier is a lack of affordable investment capital, the utility may offer a low-interest/no-interest loan fund.

Market barriers are discussed in greater detail below.

## 9. INABILITY-TO-PAY "EXTERNALITIES

Low-income intervenors should advocate that regulators take into account low-income payment "externalities" in much the same fashion that they consider environmental externalities. Such externalities would include, for example, the adverse impact of inability-to-pay on customer health and safety, the impact that inability-to-pay has on promoting housing abandonment, and the impact that inability-to-pay has on causing homelessness.

Generally, many Public Utility Commissions today are looking to cost-justify utility DSM programs by seeking to quantify the environmental "externalities" that are created by energy production. The "traditional" externalities examination involves seeking to quantify the air and water pollution impacts of energy production. By moving to DSM, the reasoning goes, the energy production (and thus the pollution associated with such production) are avoided.

Just like there are environmental externalities that can be avoided through the implementation of utility DSM measures, there are inability-to-pay externalities involving low-income households as well. Some of those affordability issues, while not explicitly "energy" problems, might nonetheless still be addressed through utility DSM programs. This analysis stands on the proposition that targeting DSM measures to low-income households represents an appropriate and effective strategy to use in seeking to stabilize low-income utility bills, to make those bills more affordable, and thus to eliminate these inability-to-pay externalities.

Low-income inability-to-pay externalities are discussed in greater detail below.

## 10. TIE-IN TO PAYMENT PLANS OFFERED TO PAYMENT-TROUBLED HOUSEHOLDS

Low-income intervenors should advocate a direct tie-in between a utility's low-income DSM program and the offer of deferred payment arrangements. Low-income deferred payment arrangements seldom offer a serious opportunity for households to retire arrears. The cause of the payment troubles in the first instance was a mismatch between household income and home energy expenses. Any arrangement by which a low-income customer agrees to pay arrears over time should be coupled with the installation of all cost-effective utility-financed DSM measures to bring current bills into a more affordable range.

The "niche marketing" of low-income DSM, as well as the need to seek out non-traditional DSM partners, have been discussed in more detail above.

## 11. TIE-IN TO NON-TRADITIONAL PARTNERS SERVING LOW-INCOME HOUSEHOLDS

Low-income advocates should recommend that public utilities seek out "non-traditional partnerships" in furtherance of comprehensive energy efficiency programs. Historically, utilities have tended to limit themselves to developing piggyback programs with other energy institutions. These might include Community Action Agencies, fuel assistance agencies, and the like. As discussed in detail above, however, utilities have ample opportunity to work with banks to develop programs to piggyback with CRA efforts, to work with housing developers, to work with municipal governments, and the like. These non-traditional partnerships should be pursued.

# CHAPTER 7: THE BENEFITS ARISING FROM LOW-INCOME ENERGY EFFICIENCY

This Chapter examines some of the non-energy benefits arising from the implementation of energy efficiency programs targeted toward low-income households.

## "INDIRECT" UTILITY FINANCIAL BENEFITS

The existence of indirect financial benefits to utilities arising from energy efficiency programs targeted specifically to low-income households was first postulated in 1987. In that analysis, low-income advocates stated that targeted energy efficiency programs had advantages that went beyond the traditional energy and capacity savings associated with DSM measures:

> The cost-effective reduction of system costs is relevant and important in every part of the business operations of the utility, not simply to the power supply function. Accordingly, a utility should be concerned with the problem of nonpayment, overdue payment, and partial payment of utility bills. Bad debt[222] arises when ratepayers demand power from the system and then do not pay for it on a timely basis.* * *[A] new conservation program [can be proposed] that is justified on an avoided cost basis. The proposal rejects the historical view that avoided costs include only an energy and a capacity component. Instead, it

222. "Bad debt" was specifically defined in the article as the costs associated with delinquent payments. "The term `bad debt' in this article, therefore, is to be distinguished from its general usage as synonymous with `uncollectibles.'"

> introduces the notion of avoided bad debt. As long as the conservation program costs less than the bad debt it will avoid, the program is cost-justified.[223]

The theory gained credence when two researchers in Minnesota and Wisconsin began to empirically find such savings associated with delinquent payments. According to Quaid and Pigg, traditionally, impact evaluations of low-income weatherization programs had focused on measuring energy savings, and had neglected quantification of other potential benefits.

> One such benefit relates to the financial aspect of reducing energy use. Low-income households often get behind in paying their bills. Reducing energy consumption in these households may set off a chain of impacts: lower, more affordable utility bills; fewer unpaid utility bills; lower past-due bills (arrearages); and ultimately, lower utility costs to process past-due accounts, and lower utility write-offs from uncollectible debts.[224]

Further work then sought to develop a taxonomy of the types of savings that might be found. A description of the savings arising from low-income programs generally, including low-income energy efficiency, is set forth in Appendix A. Appendix B sets forth the savings that arise exclusively from working capital reductions associated with low-income programs, including energy efficiency initiatives.

As discussed conceptually in those Appendices, the offer of utility-financed energy efficiency measures will generate advantages far beyond traditional avoided costs. The benefits identified, however, are far from conceptual. Some utilities are beginning to capitalize on this recognition of the expanded avoided costs associated with conservation programs targeted to payment troubled households. The discussion below will set forth some of the research that has been done, or is being done, by various utilities in furtherance of this concept.

223. Colton, R. and Sheehan, M. "A New Basis for Conservation Programs for the Poor: Expanding the Concept of Avoided Costs," 21 ***Clearinghouse Review*** 135, 139 (1987).

224. Quaid, M. and Pigg, S. (1991). ***Measuring the Effects of Low-Income Energy Services on Utility Customer Payments***, Washington State Energy Office: Olympia, WA.

### *Columbia Gas Company of Pennsylvania*

Columbia Gas of Pennsylvania has performed perhaps the most sophisticated analysis of arrears reduction associated with energy efficiency strategies directed toward low-income households. Columbia Gas began its evaluation with the proposition that:

> the realization that fuel savings often lead to reduced billings warrants the study of secondary and tertiary non-energy impacts. If reduced customer billings result from energy conservation programs, then it is reasonable to suggest that the utility has made its service more affordable for program participants.[225]

Before non-energy impacts can be incorporated into the "stream of benefits" generated by usage-reduction programs, Columbia Gas said, the methods to study these non-energy impacts must be developed. In furtherance of that task, Columbia Gas said:

> From [an] experimental model, we isolated important measures to help us quantify both energy and non-energy impacts resulting from the 1990 [Low-Income Usage Reduction Program]. In the extended analysis of LIURP, we examined* * *the correlation between reduced usage and revenue billings, changes in customer payment behavior, customer billing deficits, utility shortfall, and arrearage levels prior to and just following program services.[226]

Columbia Gas reported finding that the low-income population actually consists of several sub-populations and that "program impacts vary across these populations."[227]

In its evaluation of the company's usage reduction efforts, evaluators introduced two measures: utility shortfall and customer billing deficit.[228] Utility shortfall is the difference between the billings and the total amounts applied to the account. Customer billing deficit is the difference between the billings and the amount paid directly by the customer (as opposed to being paid by public assistance and the like).

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225. Monte de Ramos, K., *et al.*, "An Assessment of Energy and Non-Energy Impacts Resulting from the 1990 Columbia Gas Low-Income Usage-Reduction Program," ***Proceedings of the 1993 Energy Program Evaluation Conference***, at 771, Energy Program Evaluation Conference: Chicago.

226. *Id.*., at 771.

227. *Id.*

228. *Id.*, at 775.

> We found that both utility shortfall and customer billing deficit were improved as a result of the 1990 LIURP. The control group had an average monthly utility shortfall equal to 3% of the average monthly billing during the pre-program period; this rose to a 10% surplus during post-program period. A similar change occurred for program participants, who went from a 3% utility shortfall to a surplus of 15 percent in the post-program period. This represents a control-adjusted improvement of 5%, which proved to be statistically significant.[229]

The *actual* expected improvement should be even more, Columbia Gas noted.

> Given that the average utility bill for program participants in the post-program period was $62, the expected total payments for the month would be $65 ($62 + 5%). We feel this amount could be improved. The LIURP participants lost significant amounts of state and federal [fuel] assistance relative to the control population. Since the change in assistance amounts is unexplained, it is possible to hypothesize that the levels of public assistance could remain constant between the pre- and post-program period. If that were the case, the expected monthly payment would have been $79--a surplus of $17 per month per participant.[230]

In addition to the utility shortfall, Columbia Gas had its second measure of payment improvement: the customer billing deficit. The utility found that this deficit was improved by 14 percent of the average monthly billing when compared to the control group. Participants of LIURP paid 58 percent of the average monthly billing in the pre-program period, while in the post-program period, LIURP participants paid 75 percent of the average monthly billing. This compared with the control group, which went from paying 64 percent of the average billing to 67 percent of the average billing. While the reduced billing deficit was statistically significant for the program participants, the control group change was not.[231]

> We found the levels of customer payment remained significantly constant for both the study group and control population

229. *Id.*, at 775.

230. *Id.*

231. *Id.*

> through the pre- and post-program periods. As a result of LIURP, monthly billings were reduced for the program participants while the monthly billings remained constant for the control group. This allows the participants' payments, which remained constant, to represent a higher portion of the overall bill. This suggests that Columbia Gas of Pennsylvania improved the affordability of service for LIURP participants without substantive changes in customer payment behavior.[232]

In sum, Columbia Gas said, "the two key impacts of this study are utility shortfall and customer billing deficit. These are important measurements because they provide insight to arrearage impacts and the affordability of service." In addition:

> although customer payment levels remained constant between program periods, customer billings were reduced. This reduction in customer billings allowed the program participants to pay a higher proportion of their bill. This lowers the customer billing deficit, which suggests that the customer has more affordable utility service following program services. In this study, customer billing deficit was improved by 15% of the average monthly billing when compared to the control group.
>
> We also found utility shortfall was changed to a surplus in the post-program period. Although this can be partially attributed to warmer weather, we can discount weather impacts by utilizing a representative control group. We found utility shortfalls were improved by a margin of 5% of the average monthly billing, which proved statistically significant. In fact, this change proved substantive by creating a utility surplus which could be used to reduce existing arrearage levels.
>
> Even with this, we feel that LIURP may have had a more significant impact than is stated here. The larger control-adjusted reductions in public assistance yielded a large takeback effect on utility shortfall. Since we cannot say with certainty that this reduction in public assistance results from LIURP, we must conclude that there is a good opportunity to improve utility shortfalls. If levels of public assistance can be maintained between program periods, we project that utility shortfalls could be improved 26.1%.[233]

Finally, Columbia Gas found that "different classes exist within the low-income population.* * *We found that several subclasses did not

232. *Id.*

233. *Id.*, at 777 - 778.

improve their utility shortfalls, while other groups improved significantly."[234] The groups that tended to respond better to the LIURP program were customers who have "high arrearages" (*e.g.*, over $1,000) which were trending upwards. "For this group, we found significant reductions in utility shortfall and customer billing deficit. This would suggest that LIURP succeeded in avoiding arrearage growth, while enhancing the customer's affordability of service."[235]

### *Wisconsin Gas*

Wisconsin Gas Company has implemented a pilot program explicitly designed to use conservation measures as a means to reduce the costs associated with delinquent payments and bad debt. The purpose of the study, Wisconsin Gas said, was "to examine the effects of Wisconsin Gas Company's Weatherization Program on the arrearages of low-income customers."[236] Wisconsin Gas divided its study homes into two groups: (a) single family homes; and (b) two-family homes.[237]

For single family homes, Wisconsin Gas experienced an overall therm savings of 23.4 percent.[238] Moreover, therm savings based on heat load were computed. The company produced "an overall single family heat load savings rate of 30.7 percent* * *."[239] Two-family homes generated similar results.[240]

Wisconsin Gas found that not only did the program reduce arrears for households, but the company recognized significant savings from the

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234. *Id.*, at 778.

235. *Id.*

236. *See*, ***Weatherization Arrears Savings***, Wisconsin Gas Company (April 1988).

237. The company stated, however, that "due to the integrat ed nature of two-family energy use and weatherization measures, two-family accounts were treated as one dwelling unit." *Id.*, at 1.

238. While the savings ranged widely between units, the company noted that 64 percent of the single family homes fell in the 10 percent to 35 percent savings range. *Id.*, at 2.

239. *Id.* Again, while the savings ranged widely between units, 60.2 percent of the single family homes fell in a range of 25 percent to 50 percent savings.

240. *Id.*, at 5. Over 70 percent of the dwellings fell in the 10 percent to 35 percent savings range.

program as well. According to the company, the program reduced the customers with $100 of annual arrears by nearly 300 percent.[241] Moreover, Wisconsin Gas found that it received a 20 percent return on its weatherization investment, strictly from the reduced nonpayment, and before considering traditional avoided costs, in the first year of the program.

In sum, Wisconsin Gas concluded from its study:

> The study indicates that single family dwellings generated on average $353 less annual arrears after weatherization. For the two family group, weatherization reduced arrears $502 annually. Taken a step further, for 1,300 dwellings weatherized annually and split evenly between single and two-family jobs, over $550,000 in billed arrears or approximately $360,000 in gas cost would have been avoided.[242]

Finally, Wisconsin Gas concluded, "within the parameters of this study, 20 percent of the study group would have generated $0 or less annual arrears with weatherization as compared to 5 percent without. This reflects favorably on weatherization potential as an arrears eliminator."[243]

***Connecticut Light and Power Company***

The use of DSM as an "arrears avoidance" technique is not limited to utilities that may have high uncollectibles. Consider Connecticut Light and Power (CL&P), a Connecticut subsidiary of Northeast Utilities (NU), for example, a utility that has a bad debt ratio of less than one percent (0.67%). In NU's December 1991 evaluation of the CL&P low-income DSM program, the utility found:

> Overall, the data indicated an improvement in the average *monthly* change in arrearage of $9.73 for the 1989 participants and $18.77 in 1990.* * *(One plan)[244] was specifically targeted to payment-troubled customers, with the express purpose of reducing arrearages.* * *(This plan) was highly successful in this regard. The average (monthly) improvement in arrearages

241. *Id.*, at 2.

242. *Id.*, at 6.

243. *Id.*

244. This plan was called Plan E4.

among plan E4 participants was approximately $40.00 for 1989 and $28.00 for 1990.[245]

The Northeast Utilities effort, begun in 1989 in conjunction with other interested parties in Connecticut, implemented a pilot weatherization program directed at low-income payment-troubled customers.[246] The program, called Plan E4, provided for a maximum investment in energy efficiency of $1500. Participants must have annual income at or below 200 percent of the Federal Poverty Level and the customer's account must be "seriously delinquent." An account having $200 or more in arrears qualified.

***Niagara Mohawk Power Company***

In a different program, participants in an energy education program offered by Niagara Mohawk Power Company in conjunction with its company-financed weatherization program improved their payment patterns in two ways, according to Niagara Mohawk's evaluation.[247] "First," the utility's report said, "through the affordable payment plan --which guaranteed that their utilities would not be shut off as long as they made a mutually agreed-upon payment amount-- they increased the frequency of their monthly utility payments to almost 100 percent. In contrast, Groups 1 and 2 participants made their monthly utility payments about 50 percent of the time."[248] Second, although the monthly payment amount was as low as $10 per month for participants with very low incomes (and as high as $190), Education participants "increased the average amount of total dollars paid to the utility over the pre-treatment period." [249]

According to the company's evaluation, while all low-income households incurred new arrears, those who had received the weatherization services had fewer new arrears than those who did not.[250] Moreover, the company found, the new arrears for the weatherized households

245. ICF Resources (1991). ***Program Evaluation: Weatherization Residential Assistance Partnership (WRAP) Program: Volume I, Final Report,*** Northeast Utilities: Berlin, CT.

246. Other programs were implemented at the same time directed toward other populations.

247. Harrigan, M. (1992). ***Evaluating the Benefits of Comprehensive Energy Management for Low-Income, Payment-Troubled Customers*** Alliance to Save Energy: Washington D.C.

248. *Id.*, at 2, 47 - 61.

249. *Id.*

250. *Id.*

likely arose because the provision of weatherization services was matched with a decrease in fuel assistance. "If those [fuel assistance] dollars had been received at the previous level, it is probable that [the weatherized] households would on average *not* have built up new arrears."[251]

### *Commonwealth Electric Company*

Similar results can be obtained for electric companies. One *electric* company in Massachusetts, for example, has considered an arrears control program using conservation as the mechanism. COM/Electric found that "from the analysis, a Bad Debt Program appears to be not only theoretically sound, but also empirically supported for electrically heated homes and for homes having electric water heaters. It also appears beneficial to offer the program to `other' homes in the Commonwealth service territory."[252] According to SRC, "the main source of economic value to COM/Electric is the reduced carrying costs for late payments."[253]

SRC found for COM/Electric that the Bad Debt Conservation program had, from a system perspective (*i.e.*, based upon system "avoided cost" savings), a benefit-cost ratio of 1.857 (for electrically heated homes), of 2.290 (for homes with electric hot water but not electric heat), and 1.944 (for all "other" --non-electric heat, non-electric hot water-- homes).

### *Philadelphia Water Company*

The approach holds true for water utilities as well. A 1989 Philadelphia Water Department evaluation of the Department's Water Conservation Pilot, for example, found that 62 percent of the participants realized "significant reductions in their daily water consumption since treatment, some saving spectacular amounts." The Company's evaluation of its Water Conservation Pilot found:[254]

> Savings for the entire group (savers and losers together) averaged 9.1 cubic feet per day (68 gallons per day or 3.7 thousand cubic feet per year). Overall water consumption for the entire study group of 390 households was 25.8% lower in the post

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251. *Id.* (emphasis added).

252. Synergic Resources Corporation (1988). ***Evaluation of the Cost-Effectiveness of a Bad Debt Conservation Program: Final Report***, Northeast Utilities Co.: Berlin, CT.

253. SRC did not study collection costs.

254. Energy Coordinating Agency of Philadelphia (1989). ***Philadelphia Water Department Conservation Pilot: Final Evaluation***, ECA: Philadelphia.

> treatment year. The median percentage savings was 19.7% of pre-treatment consumption.
>
> The resulting average reduction in annual billed costs is $50 per household. Total contractor program costs averaged $90 per participants in this sample, for a simple payback of 22 months. Average water heating energy savings are estimated at 4.3 mmBtu, yielding additional possible savings of $60 for gas or $150 for electric.

Moreover, the Department's Pilot evaluation found that "this analysis probably significantly underestimates the total impact of the program measures on water consumption in many of the houses, due to limitations in the available data caused by meter reading practices." More importantly for purposes here, the Department's evaluation of its Water Conservation Pilot "studied payment behavior for this [treated] group as a first step to better understanding how a program could be designed to improve payment practice." The evaluation found that:

> Customers whose bills held steady or did go down in the post treatment year tended to show significantly better payment behavior than those whose bills went up. In other words, as water bills decline, or even are held steady, customers* * *do tend to put resources toward paying their bill off rather than just paying a smaller portion of the new bill.* * *Therefore, to the extent that the program can help customers hold their bills down, it may be expected to result overall in improved payment behavior.

The Water Department found that for those households for whom the conservation measures reduced consumption, while unpaid bills averaged $62 a year before treatment, unpaid bills averaged only $17 after treatment. While households paid 86 percent of their bill on average before treatment, they paid 97 percent of their bill on average after treatment. The Department realized a $45 savings per year (on an average bill of $248) just from increased revenue. This does not account for reduced working capital expenses, credit and collection expenses, and the like.

***Central Maine Power Company***

Hart evaluated the impact of Central Maine Power Company's Electric Lifeline Program (ELP).[255] This evaluation included an estimate of

255. Under the CMP program, the utility provides a fixed credit to the bills of income-eligible households. The credit is designed to reduce the bill to an affordable percentage of income, given historical consumption by that household. If household consumption increases, the fixed credit will cover a smaller portion of the bill. If consumption goes down, the fixed credit will cover a larger portion of the bill.

both the "direct and indirect benefits" of the program. These "indirect savings," she said, include "the avoided costs of credit and collection."[256] Hart premised her evaluation methodology on the observation that the benefit calculations for most low-income energy efficiency programs:

> generally rest on estimates of more efficient energy use by customers, savings from efficiency measures, and reduced arrearages from the payment arrangement. This approach captures the direct effects on a customer's bill, but it misses the additional savings of the costs of collection and other services that may be avoided by this kind of intervention program.[257]

In seeking to quantify these "indirect" benefits, the evaluation of CMP's ELP, Hart said, had five different "interrelated components," three of which directly address the delinquent payment impacts of reducing low-income energy use.[258] They include:

- o An arrearage analysis;
- o An avoided credit and collection cost analysis; and
- o A payment behavior analysis.

According to Hart:

> The arrearage analysis looks at the difference in arrearage accrual after participation in the program by estimating the size of arrearages, and by identifying the continuity and timing of bill payments. The costs of credit and collection activity are estimated and analyzed for changes in activity levels for the participants in the program. Finally, the results of each of the previous analyses are used to describe customer payment behavior, using regression analysis to express the relationship

256. Hart, P., "A Methodology for Measuring the Full Benefits of Low-Income Assistance Programs," ***Proceedings: 1993 Energy Program Evaluation Conference***, at 758, Energy Program Evaluation Conference: Chicago.

257. *Id.*, at 758.

258. The other two components include examining (1) customer energy usage; and (2) customer demographics. As Hart said, these are clearly "interrelated" to delinquent payments, but they are set aside for purposes of this discussion.

between arrearages and customer characteristics and behaviors.[259]

The data used in the arrearage and credit and collection analyses involve the group of ELP customers who had complete years of pre- and post-participation experience at the time of the study.[260] The data on payment behavior included: (1) billing transaction history; (2) credit and collection activity; and (3) customer/CMP contact history. The customers studied, on average, carried an outstanding balance of $297 into the program. Five percent of the customers were more than $1000 in arrears while 20 percent had no outstanding arrears.

The CMP arrearage study began with the proposition that "for every day lapsed between the time of billing and customer payment, there is a cost to the utility."[261] According to Hart: "these costs are estimated by calculating the days lapsed on the average payment as well as the average outstanding balance carried."[262] The evaluation noted that at CMP, it takes the typical customer 29 days to pay the bill, with 31 percent taking up to 90 days. These outstanding balances represent almost 40 percent of total revenues at any given time. There is a carrying charge of almost 15 percent to the company.[263]

The arrearage study calculated three measures of payment for the ELP customers studied: (1) consistency of payment; (2) size of arrearage accruals; and (3) the aging on accruals. Hart said:

> The objective was to see if customers made more payment to the utility, if they were meeting their monthly obligations in [their] entirety, and if the payments were timely.[264]

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259. *Id.*, at 759.

260. Of the 5,772 customers for whom demographic data was available, only 20 percent had a complete year of energy use data, due to moving and other service changes. *Id.*, at 761. There is no discussion as to whether this limitation, to households with complete years of pre- and post-participation data, biases the evaluation by excluding the more severely payment-troubled customers.

261. *Id.*, at 762.

262. *Id.*

263. *Id.*

264. *Id.*

In contrast to the arrearage study, the cost-of-collection estimation "looked at the change in credit and collection costs resulting from implementation of the program."[265] According to Hart: "The costs of collection are two-fold: the costs of carrying outstanding balances and the costs of credit and collection interaction with the customer."[266] CMP calculated the costs of various credit and collection activities as follows:[267]

| **Table 7-1. Credit and Collection Service Costs<br>Central Maine Power Company: 1992** | |
|---|---|
| **Telephone calls** | $4.61 |
| **Special Payment Arrangement** | $5.75 |
| **Premise visit** | $18.64 |
| **Disconnect notice** | $0.50 |
| **Disconnection/Reconnection** | $18.17 |
| **DSM service referral** | $3.09 |

After calculating these "per unit" costs, the evaluation determined the number of credit and collection contacts made with each customer before the program, and then determined the extent to which, if at all, they changed after enrollment in the ELP.[268]

While not setting forth any quantification of the results from the analysis described above, Hart ultimately concluded that:

265. *Id.*

266. *Id.*

267. *Id.*, at 763.

268. *Id.*, at 762 - 763.

> there are indirect benefits from low-income assistance programs, which should be considered in a comprehensive program evaluation. These effects, however, are not easy to estimate due to standard data processing procedures at utilities.[269]

She continued, however: "Since the benefit of reducing the costs of credit and collection may apply to any customer-service-related activity, such as conservation programs and special rate structures, methods of data management and accounting of these benefits should be established."[270]

***Detroit Edison***

In early 1991, the Detroit Edison Company began a concerted marketing and energy management effort to improve the payment practices of the company's low-income customers.[271] The company decided to concentrate attention on addressing issues involving, among other things, the effect of usage reductions on payment behavior. The company had identified high electric use and high arrearages amongst low-income customers as a substantial problem for the utility.

> While these problems were by no means new, the unfolding of the Michigan state budget process made action to address them particularly urgent. In the proposed budget, income support grants to families who received Aid to Families with Dependent Children (AFDC) were to be decreased, as were categorical grants (CAP payments) available to AFDC recipients to pay electric bills.[272]

The need for the corrective action by Detroit Edison was made apparent by internal company analyses showing that "positive billing customers," which involved most of the company's AFDC customers, represented roughly three percent of all residential customers, but

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269. *Id.*, at 763.

270. *Id.*

271. Rosenberg, M. and Feblowitz, J. (1993), "The Detroit Edison Low-Income Customer Service Program: Evaluation in Action," ***Proceedings of the 1993 Energy Program Evaluation Conference***, at 764, Energy Program Evaluation Conference: Chicago.

272. *Id.*, at 764.

accounted for 29 percent of all residential arrears over 30 days old.[273]

Detroit Edison responded by offering an extensive energy management program --called Energy Options-- directed toward these high use, high arrears, customers. As part of the program, Detroit Edison said:

> Energy Options participants received reports with each bill, comparing usage for the month with usage for the same month a year ago. Furthermore, outstanding arrearages were reduced by $0.10 for each kWh of usage reduction(;) the reduction was doubled if the customer paid his or her bill on time.[274]

Detroit Edison's evaluation found significant problems with data collection as to payment and collection histories. According to their evaluators:

> Most of the analyses of the effects of energy efficiency programs on customers' payment patterns have run into the same kinds of data problems we experienced. In our case, the published experience of other investigators enabled us to anticipate what some of those problems might be, but we ran afoul of them nonetheless. For example, we dutifully examined the record layout for the Shop File and conferred with Detroit Edison's analysts on the availability of payment information. All of us thought that we had identified fields that contained historical payment records, but it turned out these fields recorded something else entirely. Moreover, due to the sheer volume of transaction details recorded for each customer, the [data processing system] holds only a few months of historical information. We gather the situation is similar at other utilities.[275]

Despite these data problems, Detroit Edison concluded that on average, program participants reduced the amount of their account balance by $150 over the period from July 7, 1992 to December 12, 1992.[276] Moreover, the evaluators found, "concentrating on high-use households will maximize energy savings and cost-effectiveness. Given the demonstrated relationship between high bills and payment problems, targeting

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273. *Id.*

274. *Id.*, at 766 - 767.

275. *Id.*, at 769 - 770.

276. *Id.*, at 769.

high-use customers will also pay off in terms of reduced financial stress."[277]

**LOW-INCOME PAYMENT "EXTERNALITIES"**

Many Public Utility Commissions today are looking to cost-justify utility DSM programs by seeking to quantify the environmental "externalities" that are created by energy production. The "traditional" externalities examination involves seeking to quantify the air and water pollution impacts of energy production. By moving to DSM, the reasoning goes, the energy production (and thus the pollution associated with such production) are avoided.

Just like there are environmental externalities that can be avoided through the implementation of utility DSM measures, there are inability-to-pay externalities involving low-income households as well. This section will identify some of those affordability issues which, while not explicitly "energy" problems, might nonetheless still be addressed through utility DSM programs. The analysis stands on the proposition that targeting DSM measures to low-income households represents an appropriate and effective strategy to use in seeking to stabilize low-income utility bills, to make those bills more affordable, and thus to eliminate these inability-to-pay externalities.

### *Health and Safety*

The unaffordability of energy, or looking at it another way, the inability-to-pay of some households, has the impact of creating a substantial threat to the health, safety and perhaps even life of the household. Households depend upon an uninterrupted and reliable supply of energy to heat their homes, to cook their food, to provide light, to pump water, to cool their milk, and to do the numerous other things that are done today in modern homes through the use of utility-supplied energy. The threat to the health, safety and welfare of low-income households is an externality to be considered.

The extent of the threat health and safety of low-income households is an impact that can be measured. Health and safety concerns are raised, for example, by the disconnection of service as low-income households move to alternative sources of primary heat. A recent report prepared under contract to the North Carolina General Assembly found that seven percent of all households in that state lost their primary heating service for a variety of reasons in the winter of 1990-1991.[278]

277. *Id.*

278. Colton, R. and Leviton, R. (1991). ***Energy and Poverty in North Carolina: Combining Public and Private Resources to Solve a Public and Private Problem***, National

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 their 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.

Even those households who didn't lack heat altogether, however, faced major disruptions in their ability to keep warm. Of those households losing their primary fuel during the winter months, 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. The dangers inherent in any reliance upon portable electric or kerosene heaters, as well as in any reliance upon fireplaces, as a primary source of heat are well-recognized.

### *Housing Abandonment*

Moreover, 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),[279] over five years, an 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.

(..continued)

Consumer Law Center: Boston.

279. Energy Coordinating Committee and Institute for Public Policy Studies of Temple University (1991). ***An Examination of the Relationship Between Utility Terminations, Housing Abandonment and Homelessness***, Temple University: Philadelphia.

Clearly housing abandonment is an externality that imposes a cost on society that should be considered, just as environmental externalities are considered. To the extent that utility bills can be stabilized through DSM, and made more affordable to low-income households, these externality costs can be reduced. Housing abandonment not only has an impact on the household, but on the neighborhood *qua* neighborhood, and on the city *qua* city.

### *Homelessness*

There is a relationship, also, between utility disconnections and homelessness. The Philadelphia research found that "the relationship between termination 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, which found in a recent study that the disconnection of utility service was one of the reasons consistently cited as a cause of homelessness.[280]

280. Applied Information Resources (1990). ***Homelessness & Low-Cost Housing in Northern Kentucky: An Analysis and a Strategic Action Plan***, Northern Kentucky Coalition for the Homeless: Covington, Kentucky.

### *Legal Burdens*

To the extent that home energy bills can be made more affordable through DSM programs directed toward low-income households, there will be a reduction in the strain which unaffordable energy bills places on our legal system. According to research by the American Bar Association, having a utility turned off is the legal problem most frequently reported by low-income households.[281] Nearly one in eight (11.4 percent) of the households surveyed had faced a shutoff.

### *Customer Hostility*

To the extent that home energy bills can be made more affordable through DSM programs directed toward low-income households, there will be a reduction in the historical hostility between low-income consumers and utility companies, an increase in the self-sufficiency of the low-income household, and a reduction in societal resources devoted to collection on the part of the utility and to the avoidance of payment on the part of the household.

A Rhode Island study of the participating customers' attitudes to that state's Percentage of Income Payment Plan (PIPP) found that one of the most often cited results of the PIPP, which reduced low-income energy bills to an affordable level, was to remove the worry that every knock on the door might be the knock of the service representative there to disconnect service for nonpayment.[282]

### *Summary*

As can be seen, pursuing energy efficiency for low-income households generates a reduction in inability-to-pay externalities. By stabilizing energy costs in low- and moderate-income housing through the implementation of energy efficiency measures, utilities will help promote the health and safety of affected households, will help prevent housing abandonment, and will help address homelessness. These impacts are all associated with unaffordable energy bills. To the extent that the energy bills of low- and moderate-income households can be reduced, and thus made more affordable, through DSM, there will be positive community-wide impacts.

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281. Spangenburg, R. (1989). ***National Survey of the Civil Legal Needs of the Poor***, American Bar Association: Chicago.

282. Barnes, N. (1987). ***Percentage of Income Payment Plan Client Satisfaction Survey***, Rhode Island Governor's Office of Energy Assistance: Providence.

## OTHER CALCULATIONS OF NON-ENERGY BENEFITS

Other calculations have been made of benefits arising from residential energy efficiency programs generally and of low-income programs in particular. Perhaps most significant is the calculation set forth in the U.S. Department of Energy (DOE) evaluation of the national Weatherization Assistance Program (WAP).[283] That study concluded that "non-energy impacts of low-income weatherization are numerous and can be grouped into five major categories:

- Preservation of affordable housing
- Comfort, health and safety impacts
- Impacts on household budgets
- Employment and economic impacts
- Environmental externality impacts"[284]

283. Brown, M. *et al.*, "DOE's Weatherization Assistance Program: National Impacts and Regional Variations," ***Proceedings of the 1993 Energy Program Evaluation Conference***, at 694, Energy Program Evaluation Conference: Chicago.

284. *Id.*, at 698.

The monetized benefits found by DOE included:[285]

| TABLE 7-2. Net Present Value of Non-Energy Impacts of the Weatherization Assistance Program | |
|---|---|
| **Type of Nonenergy Impact** | **Net Present Value of the Impact per Dwelling (1989$)** |
| **Enhanced property value and extended lifetime of dwelling** | $126 |
| **Reduced fires** | $3 |
| **Reduced arrearages** | $32 |
| **Federal taxes generated from direct employment** | $55 |
| **Income generated from indirect employment** | $506 |
| **Avoided costs of unemployment benefits** | $82 |
| **Environmental externalities** | $172 |
| **Total net present value of nonenergy impacts** | $976 |

The net present value of $976 found by DOE for these impacts, DOE said, "is an underestimate" since other benefits could have been, but were not, included. For example, reduced household mobility was expressly identified as imposing a cost that could be avoided by low-income weatherization.

Moreover, the DOE study did not seek to identify, let alone quantify, the indirect utility benefits of reduced working capital, credit and collection expenses, and the like, that have been discussed by the utility evaluations in the text above. Finally, for all nonenergy impacts other

285. *Id.*, at 699.

than environmental externalities, DOE assumes that the benefit occurs only in the first year after weatherization.[286] Projecting those benefits over the useful life of the weatherization measures, and discounting them to present value would clearly yield a high figure.

## SUMMARY AND CONCLUSIONS

Low-income energy efficiency programs have impacts that far transcend the traditional analysis of energy and capacity savings. Indeed, today, many utilities are beginning to accept the conclusion that energy efficiency targeted to low-income households will reduce arrears, generate credit and collection savings, reduce working capital requirements, and the like. These are advantages to the utility itself. In addition, from a societal perspective, low-income energy efficiency will have positive community impacts. These impacts relate to neighborhood preservation, housing preservation, homelessness prevention, and the like. Just as utility planners take environmental externalities into consideration in their DSM program design, so, too, should they take these inability-to-pay externalities into consideration.

286. In contrast, the environmental externalities were calculated over an assumed 20 year life of the weatherization measures, and discounted using a 4.7 percent discount rate.

# CHAPTER 8: ENVIRONMENTAL SUPPORT FOR LOW-INCOME DISCOUNTS

The purpose of this Chapter is to identify the reasons why environmental advocates interested in promoting energy efficiency should also be interested in promoting low-income discount rates. Historically, environmental and poverty advocates have viewed each other with disinterest at best and outright hostility at worst. On the one hand, poverty advocates have often viewed the promotion of energy efficiency as involving the pursuit of environmental goals "at any cost." Low-income advocates were hesitant because of their concerns that utility-financed energy efficiency may drive rates for all customers up even while reducing bills to a few customers. Some households simply cannot afford a clean environment, they pointed out.[287]

On the other hand, environmentalists were concerned that utilities were not changing their traditional planning methodologies quickly enough to make a difference. Institutional inertia supported the continued construction of large, central station generating plants which lacked economic justification in the long-term, flexibility to meet changing load patterns and growth rates in the short-term, and environmental clean-up goals in whatever term decisionmakers cared to define.

The thesis of the discussion below is that these seemingly contradictory interests need not compete, let alone clash, in the regulatory arena. The discussion is divided into two parts.

287. For another example of how this poverty/environmental conflict might arise, *see generally*, Sheehan, M. and Colton, R. (1994), ***A Case Study in Environmental and Poverty Conflict: "Cash for Clunkers" as a Clean Air Act Strategy***, Fisher, Sheehan & Colton, Public Finance and General Economics: Scappoose, OR.

*Part I* discusses why poverty advocates may view the promotion of utility-financed energy efficiency with skepticism, if not outright hostility. It posits that the adoption of affordable low-income rates will assuage this opposition. Without affordable low-income rates, in other words, environmental advocates promoting utility-financed energy efficiency may face political opposition from low-income advocates. An even more significant challenge lies in the fact that energy efficiency planning and implementation occurring without consideration of low-income interests would face the threat of legal challenge alleging *de facto*, if not *de jure*, discrimination.

*Part II* discusses the possible interactions between energy efficiency investments and low-income rates. The section concludes that the two strategies can, and should, be mutually reinforcing.

## LOW-INCOME CONCERNS WITH UTILITY-FINANCED ENERGY EFFICIENCY

There are both substantive and legal challenges that low-income advocates may bring to utility-financed energy efficiency programs in those instances when the resulting harms to low-income interests are not addressed in a reasonable fashion. The first set of challenges involves the adverse distribution impacts which utility-financed energy efficiency imposes upon low-income households.

### *The Distributional Issues*

When some households pay all or part of the costs of a DSM measure but, due to the nature of capturing and distributing the benefits, receive none of those benefits, a distributional problem arises.[288] In order to understand this line of reasoning, it is important first to understand the nature of the distributional questions at issue. A DSM measure is cost-effective if it results in lower total revenue requirements to a utility. The cost which is avoided by implementing the DSM measure is a systemwide benefit and, at least in theory, inures to the benefit of all ratepayers. This is true even though each specific DSM measure is installed in a particular individual's home or in a particular factory, school or commercial business. Despite the individual nature of the placement of the measure, the measure represents a systemwide investment in providing adequate service at least-cost and the savings represent a systemwide savings.

That all customers are better off in such an instance is illustrated by two simple examples using a hypothetical utility:

288. While often confused with cost-effectiveness considerations, this problem is quite different from any measure of cost-effectiveness.

1. The production cost of Utility A is currently $0.05 per kWh. Incremental production costs are $0.04 per kWh. There are ten ratepayers (RP1 - RP10), each of whose bill is $100 per month. The utility's revenue requirement is $1,000 per month.

   Utility A has identified an opportunity to reduce revenue requirement by $40 by installing radio control devices on the water heaters of customers with a certain class of water heaters. Ratepayers 1 and 2 (RP1 and RP2) have this kind of water heater but Ratepayers 3 through 10 do not. By assumption, there would be no installation of these devices without a utility program to purchase and install them. The equipment and all other program costs are $25. The installation on the heaters of RP1 and RP2 results in a savings to the system of $40. This $40 is made up of a reduction in the kWh used by each RP1 and RP2 of $20/$0.04 = 500 kWh (or 1,000 kWh when both are summed). The cost of the program per kWh saved is $25/1,000 kWh = $0.025. Since the savings of the program exceed the cost ($0.04 savings vs. $0.025 cost) , the program is cost-effective.

2. Utility A has ten ratepaying customers (RP1 through RP10). Each pays a bill of $100 per month. The total revenue requirement of Utility A is $1,000. Demand for electricity from the ten ratepayers is forecast to increase by 10 percent in the next month. Assume that the incremental cost of meeting this 10 percent increase in demand through the least-cost supply-side alternative is the same as the existing cost per kWh.

   Utility A has a choice of either implementing this new supply-side measure for $100 total, thereby raising its revenue requirement to $1,100 or solving the problem by passing out "free" water heater blankets costing $9.99 each to each ratepayer. If the supply measure is adopted, the revenue requirement will be $1,100, and the average bill will be $110. If the water heater blankets are passed out, the revenue requirement will be $1099.90 and the average bill will be $1099.90/10 = $109.99. Here, the water heater blanket is a perfectly adequate substitute for the supply-side action but costs less; it is the cost-effective alternative.

These two hypotheticals have a direct relationship to the distributional concerns raised above. Notwithstanding the theory of systemwide savings, in practice, it is administratively difficult to capture and distribute the savings generated by any given DSM measure on a systemwide basis. Instead, as a general rule, while all ratepayers on the system contribute to the cost of the measure, the savings are captured by the individual in whose home or factory or commercial establishment the measure is installed. Again it is simple to illustrate:

> The revenue requirement for Utility A is $500, paid by each of five ratepayers who each pay $100 for 1000 kWh. The utility, the "agent" for the ratepayers as a group, determines that an investment of $30 in new, more efficient lighting for Ratepayer 1 will reduce system costs by $40.

> The investment is cost-effective for the ratepayers as a group if the utility's revenue requirement is reduced more than the cost of effecting the reduction. Here the total costs to serve all ratepayers before the program is $500 reduced to $460 ($500 less the $40 saving). Adding back in the $30 cost of the program, the net total cost after the program is thus $490. Since the total cost of serving all ratepayers has been reduced after the cost of the program is considered, the program is cost-effective from an economic standpoint taking the group of all ratepayers, *i.e.*, "the system," as the unit of analysis. The system spent $30 to save $40.

The distributional question is raised by the mechanism used to capture and distribute these DSM costs and savings. The Table below again uses this example to exemplify the process. As can be seen in this Table, all ratepayers contributed to the $30 fund. Each was charged a *pro rata* portion of the costs of the conservation program. On a per kWh basis, the DSM program cost 6.52 cents ($30/4600 kWh). Not all ratepayers, however, shared in the $40 in benefits. In fact, in this example, the savings were allowed to inure solely to the benefit of the ratepayer in whose home the DSM measure was installed. In other words, RP1 saved $40 because the new lights reduced her bill by that amount. She was charged her share of the $30 (600 kWh x $0.0652/kWh = $3.92) but received the entire $40 benefit for a net savings of $36.08. Each of the nine non-participating ratepayers also contributed their *pro rata* share to the $30 for the program (1000 kWh x $0.0652 = $6.52), but received no share of the $40 savings.

| TABLE 8-1. Distributional Problems<br>Rates After Implementation of DSM Measures | |
|---|---|
| **RATEPAYER 1** | |
| **Usage** | 600 kWh |
| **Price for production** | $0.10/kWh |
| **Price for DSM measure** | $0.0652/kWh* |
| **Total bill** | $63.91** |
| **RATEPAYER 2** | |
| **Usage** | 1,000 kWh |
| **Price for production** | $0.10/kWh |
| **Price for DSM measure** | $0.0652/kWh |
| **Total bill** | $106.52*** |
| **RATEPAYER 3** | |
| **Usage** | 1,000 kWh |
| **Price for production** | $0.10/kWh |
| **Price for DSM measure** | $0.0652/kWh |
| **Total bill** | $106.52*** |
| **RATEPAYER 4** | |
| **Usage** | 1,000 kWh |
| **Price for Production** | $0.10/kWh |
| **Price for DSM measure** | $0.0652/kWh |
| **Total bill** | $106.52*** |

| | |
|---|---|
| **Ratepayer 5** | |
| **Usage** | 1,000 kWh |
| **Price for production** | $0.10/kWh |
| **Price for DSM measure** | $0.0652/kWh |
| **Total bill** | $106.52*** |
| **TOTAL COMPANY REVENUE REQUIREMENT:** | $490 |
| **TOTAL PRODUCTION:** | 4,600 kWh |
| **AVERAGE PRICE PER kWh:** | 10.652 |

**NOTES:**

*$30 divided by 4,600 kWh = $0.0652/kWh
**(600 kWh x $0.10/kWh) + (600 kWh x $0.0652/kWh) = $63.91
***(1000 kWh x $0.10/kWh) + (1000 kWh x $0.0652/kWh) = $106.52

These concerns are of particular importance to the low-income community. As discussed in detail below, low-income households inherently tend to be non-participants in utility-financed DSM programs. Accordingly, even though the savings generated by DSM measures are "system" benefits, and even though the low-income ratepayers are paying "their share" of the costs, they are systematically excluded from receiving "their share" of the benefits.[289]

The problem identified in this discussion is a cost allocation issue. And, whenever cost allocation questions arise, it would seem that the issue under discussion is rate design. Before placing a label on it, however, it is necessary to examine what is happening in concept. The issue which arises is distributional in nature: that is, how best can the costs of DSM measures be assigned and the benefits from DSM measures be collected and distributed. The means identified in the example (*i.e.*, to have the costs distributed on a per kWh basis and have the benefits flow directly to the ratepayer in whose home or factory the DSM measure is installed) is certainly one way to distribute the benefits and the costs, but there are other ways as well. For example, each ratepayer might contribute her share of the program costs ($30/4600 kWh=$0.0652/kWh) and receive in exchange her share of the program benefits ($40/4600 kWh=$0.087/kWh). This is a means to address the distributional problem through a rate design mechanism.

While addressing the distributional problem in this manner might be more satisfying in principle as a way to distribute benefits and costs, it would be more difficult to administer since there would have to be a mechanism for extracting from the directly benefitting ratepayer the benefits which should be shared among the group on a more or less *pro rata* basis. Again, in summary, the question is not whether adequate systemwide benefits exist so as to justify undertaking the DSM measure. The question is how best to capture and distribute those benefits. This is how it differs from a "no-loser's" test. A "no-loser's" analysis says that a program is not cost-effective if it is possible for rates to increase to non-participants. As is shown in the Table, however, so long as the cost of the DSM measure is less than the cost of the supply-side measure, the only reason that rates to some might go up is because of the means used to capture and distribute the savings. Using a different means of distributing the savings ensures that everyone gets "their share" of the more than ample benefits. If anything, this evaluation shows the fallacy in a "no-loser's" analysis.

A simple alternative to the rate design solution is for the utility simply to make special efforts to ensure that all populations have conservation programs designed to be within their grasp such that the direct benefits of DSM measures flow even to populations which, by the very nature of the characteristic defining the population (*e.g.*, poverty), would be *ex*cluded from participating in "ordinary" DSM programs. If, in other

289. Before addressing how to address this problem, however, it is important to understand what the problem is *not*. The problem is *not* a system planning issue. From a system planning perspective, there is no question but that the program is cost-effective and should be implemented. Total revenue requirements decrease.

words, a poor household would by the very fact of its poverty be systematically excluded from a utility's ordinary DSM programs, the utility should make special efforts to offer special programs designed to overcome that exclusion.

Moreover, discount rates would ameliorate these adverse impacts on low-income households. With a discount rate that is explicitly based on affordability, even the wrongful cost allocation decisions discussed above would not put low-income energy service in jeopardy.

### LOW-INCOME EXCLUSION FROM UTILITY DSM PROGRAMS

This discussion, of course, depends for its validity on the observation that low-income households tend to be systematically excluded from receiving the direct benefits of utility DSM measures. That observation has a clear basis in fact. For a utility effectively to design and offer DSM programs to its customers, it should have a clear grasp of what market barriers prevent the implementation of those measures without utility assistance. The utility program, accordingly, would most rationally be designed to effect the removal of the identified market barriers. If, for example, the market barrier is an unreasonably long payback period, the utility may offer direct subsidies to shorten that period. If, in contrast, the market barrier is a lack of affordable investment capital, the utility may offer a low-interest/no-interest loan fund.

In 1987, the National Consumer Law Center (along with Northeast Utilities) put substantial effort into identifying what market barriers exist to the implementation of DSM measures by consumers. A list of the results of that effort is set forth below:

**Table 8-2.**
**Residential Market Barriers**

1. Information access. Consumers do not have free access to information on capital/operating tradeoffs. There is an implicit cost in time and effort to obtain this information.

2. Uncertain technologies. Consumers have little direct, first-hand experience with new technologies, particularly concerning performance, reliability and operating costs. Information may often be supplied by manufacturers whose credibility is suspect.

3. Consumer credit. The ability to invest in DSM measures often depends on having access to credit. However, consumer credit is often limited by financial institutions that disregard the value of conservation investments.

4. Lack of knowledge: Energy reductions are not always identifiable in the customer's bill. Accordingly, it is sometimes not possible for a customer to make a decision as to the economic viability of conservation programs.

5. Unfavorable payback periods: Even though some conservation measures may be justified when viewed in light of systemwide savings, they may not be when viewed in terms of customer-specific savings.

6. High initial capital cost: 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 program will not be implemented.

7. Difficult installation: Just as there are implicit costs in time and effort to obtain conservation information, there are implicit costs of installation. As these costs go up, the extent of measures installed will go down.

8. Limited or no commercial availability: Even if cost-effective, some demand side measures have a limited (or no) commercial availability to a utility's customers. Often, availability will follow demand, but demand, in turn, is dependent upon availability.

In addition to market barriers common to all residential ratepayers, however, 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 more severely restrict the availability of DSM measures to low-income households than to residential households in general. A list of market barriers that make the direct benefits of conservation programs inaccessible to low-income households is set forth in the Table below.

To illustrate the meaning of the term "market barriers," three in particular are discussed below: (1) discount rates/payback periods; (2) liquidity; and (3) tenancy.

A. **DISCOUNT RATES:** Low-income households tend to have extremely high implicit discount rates (also sometimes known as hurdle rates or internal rates of return). A study for Northeast Utilities found that up to 90 percent of households in the service territories of its electric utilities required paybacks of less than one year. More generally, 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. For residential households in general, however, the hurdle rate for conservation investments is 30 percent; that translates into a payback period of roughly three years. To the extent that a utility DSM program thus strives to bring a conservation investment only within the 30-percent range, it excludes by implication all households which have a higher hurdle rate. One entire category of excluded households consists of low-income households.

B. **LIQUIDITY:** Low-income households tend to have extremely low liquidity. In these circumstances, the payback period for any particular DSM measure becomes irrelevant if the household does not have the investment capital with which to begin. The impact of this market barrier, for example, is often ignored in the reliance on appliance rebate programs. Such a program may pay the incremental cost of moving a customer from the purchase of a less energy efficient new refrigerator to a more energy efficient new refrigerator. In such a program, if the less efficient refrigerator costs $600 and the more efficient refrigerator costs $700, it may well be cost-effective for the utility to pay the $100 difference to prompt the purchase of the more efficient appliance. This program, however, will automatically exclude households that are not in the market to purchase new refrigerators with which to begin. It is axiomatic to note that not many low-income households recently spent $600 for a new refrigerator.

**TABLE 8-3.**
**Low-Income Market Barriers**

1. Low income homeowners are reluctant to borrow, even interest-free, to invest in conservation.

2. Low income homeowners have extremely high required returns on investment.

3. Given their lack of liquidity, low income residents cannot hire a contractor as readily as those with greater means.

4. Tenants have little or no incentive to improve the landlord's property.

5. Tenants often have insufficient tenure at a particular service address to cost-justify conservation improvements.

6. Landlords owning housing occupied by tenants whose electricity use is individually metered have little incentive to invest in conservation improvements.

7. Lower income households generally have less education than higher income households and, as a result, are perhaps less aware of the cost savings that energy investments can produce. The lack of education could also make it more difficult to perform the calculations necessary to determine whether a conservation investment is advantageous.

C. **TENANCY:** Low-income households tend to live in rental dwellings. Research in a variety of states has found, for example, that from 60 - 75 percent of all LIHEAP recipients tend to be tenants. This finding has significance in two respects for the design of DSM programs. First, 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. Second, these low-income tenants tend to be more mobile. Research by the National Social Science and Law Center (NSSLC), for example, found, for example, that compared to the roughly twelve percent of the total population that changed residences each year, nearly one-quarter (23) percent of the low-income population moved. Disproportionately represented in the "mover" households are recipients of public assistance, minorities, and female-headed households. As a result, even in those instances where a tenant may wish to invest in a DSM measure, and assuming a financial ability (*e.g.*, sufficient liquidity) to do so, the payback period required to justify such an investment would need to match the household's tenure. A low-income household, in other words, will not invest in a measure with a two-year payback if that household tends to move to a different dwelling every 12 months.

There are serious impacts of failing to recognize and affirmatively compensate for the market barriers that are unique to the poor in the offer of utility-sponsored DSM measures. More particularly, there are two impacts. First, as discussed above, distributional inequities arise; in effect, without compensating for these market barriers, a utility would have created an income transfer in the wrong direction. Second, from a resource planning perspective, the full potential of DSM measures would not be exhausted. If there are DSM measures to be implemented, but which are not being implemented because the market barriers that prevent their implementation have not been addressed, there remains some inefficiency on a utility's system.

### THE DISCRIMINATION ISSUES

One of the most well-established rules in public utility regulation today is that rates and services are to be offered on a "non-discriminatory" basis. Unfortunately, the claim of "discrimination" is often used only as a shield by regulators and other ratepayers to stop income-based programs designed to protect the poor. Moreover, the claim of "discrimination" has often been confined to "rates" while discrimination in the provision of service has been largely ignored.

Traditional discrimination analysis can be applied in new ways to protect vulnerable low-income populations. No alteration in the *nature* of the doctrine need be made, but rather simply a change in its application. Rather than looking only at discriminatory preferences, regulators would look also at discriminatory burdens. Rather than looking at discriminatory rate structures, regulators would look also at discriminatory services such as DSM. Rather than looking only at intentional discrimination, regulators would look also at *de facto* discrimination.

The primary attribute of using an effects test is that the results of a practice urged to be discriminatory can be separated from the intention held by the defending party. The "effects test" relies not upon any improper intention by the challenged party, but rather upon the measurement of disparate impacts. The good or bad faith of the defendant, in other words, is irrelevant to any showing that a challenged practice does or does not discriminate against a protected class. The focus, instead, is on discriminatory results. The effects test is used to challenge a pattern or practice of the defendant that results in discriminatory impacts on particular classes.

The offer of energy efficiency programs by public utilities frequently results in *de facto*, if not *de jure*, discrimination against low-income households. The Massachusetts Department of Public Utilities (DPU) has in recent years turned its attention to discrimination in the offer of electric[290] conservation programs.[291] Programs offered by utilities in the Commonwealth, the DPU found, unreasonably discriminated against the poor. Exclusion of low-income households from receiving the "direct benefits" of conservation programs, the DPU decided, is "unacceptable."[292]

The seminal case is *Re. Western Massachusetts Electric Company.*[293] In that case, the Hampshire Community Action Commission (HCAC), a local community action agency, challenged both the overall conservation planning of Western Mass Electric Company (WMECO) and the design of specific conservation programs. Both the planning and design components, HCAC argued, were marred by assumptions which, though perhaps unwittingly, nevertheless resulted in the *effect* of excluding low-income households from conservation programs.[294] This exclusion, HCAC said, not only denied the opportunity for the poor to reduce their bills by reducing their consumption,[295] but also resulted in

290. There is no need to limit the analysis to electric programs. The programs which the DPU happened to be examining were electric.

291. *See e.g.*, ***Re. Western Massachusetts Electric Company.*** 87 P.U.R.4th 306 (Mass. DPU 1987).

292. 87 P.U.R.4th at 417.

293. 87 P.U.R.4th 306 (Mass. DPU 1987); *see also*, ***Re. Cambridge Electric Light Co.***, DPU-87-221-A, at 173 (Mass. DPU 1988).

294. "Although WMECO asserts that its programs are designed to be income neutral, HCAC contends that the effect of WMECO's programs, intended or unintended, is to exclude low-income customers." *Id.*, at 404.

295. *Id.*, at 417.

the poor paying the costs of the conservation measures while receiving none of the benefits.[296]

WMECO's energy conservation planning resulted in a *de facto* discrimination because of its failure to consider market barriers that were unique to the poor. Three barriers were discussed in particular. Hurdle rates, that annual return on investment required for a household to invest in conservation measures, were set at levels that ignored low-income data.[297] In its conservation planning, WMECO assumed that any measure which met a hurdle rate of 30 percent would be implemented without financial assistance from the utility.[298] According to evidence presented by HCAC, however, low-income hurdle rates reached up to 90 percent. Second, HCAC said, low-income households do not have access to investment capital for conservation measures, even if those measures are recognized by customers as providing economic benefits.[299] If a household does not have $400 to invest in a new appliance, in other words, it makes no difference that the new appliance would return a savings of $500 to the household. Finally, low-income households have less education, which interferes with their ability to recognize the cost savings that conservation measures might induce.[300]

The Massachusetts DPU agreed that low-income customers of WMECO "receive few of the direct benefits of energy savings made available by Company-sponsored* * *programs."[301] Noting that low-income customers are "systematically excluded from participation" in Company conservation programs, in classic discrimination language, the DPU found that by its actions and inactions, the utility "excludes a specific group of customers from enjoying the direct benefits" of those programs.[302] The remedy, the DPU said, was for the utility affirmatively to "take into account and compensate for market failures that affect any customer group's participation" in the company's conservation

296. *Id.*, at 405. "It is HCAC's position that the exclusivity of the Company's programs has two undesirable results. First, it excludes low-income customers from the direct benefits of energy savings."

297. *Id.*, at 404.

298. *Id.*

299. *Id.*

300. *Id.*

301. *Id.*, at 417.

302. 87 P.U.R.4th at 417.

programs.[303] To eliminate the *de facto* discrimination, the DPU said, "it is appropriate to use factors such as range of income levels, customer rate classes, or levels of electricity use to target a program to a specific group."[304]

Eastern Edison Company,[305] too, was found to have a potential "bias in the selection process" for its conservation programs.[306] The Department noted "the particularly limited scope of programs" in finding that Eastern Edison was, through its planning and implementation, effectively excluding "hard-to-reach residential customers such as low-income customers and tenants."[307] In *Eastern Edison,* the Department found the lack of information to be a source of discrimination unto itself.[308] According to the DPU, "a company must have an adequate information base to determine the potential for [conservation] within each customer class."[309] To meet the directive that each utility must "take into account and compensate for market barriers that affect any customer group's participation in Company [conservation] programs,"[310] each utility in Massachusetts must now engage in a "systematic analysis" and must "document* * *consideration of program design to provide direct benefits to all customers including low-income and other residential customers."[311]

The discriminatory exclusion of low-income households from utility-financed energy efficiency programs as discussed in this section, when combined with the adverse financial consequences imposed on low-income households as discussed above, often leads to low-income

303. *Id.*

304. *Id.*, at 418.

305. ***Re. Eastern Edison Company***, 100 P.U.R.4th 379 (Mass.DPU 1988).

306. *Id.*, at 418.

307. *Id.* The DPU found that, other than a hot water insulation program, "the remaining programs target a very exclusive group of customers."

308. *Id.*, at 419. "Lack of information regarding the technical potential of [conservation] in the territory could be an additional source of bias in the process. Finally, the Company did not make any specific effort to consider the barriers to participating in [conservation] programs by certain residential and low-income customers."

309. *Id.*, at 419.

310. *Id.*, *quoting*, ***Western Mass***, *supra*.

311. *Id.*

opposition to utility financed energy efficiency measures. Support for affordable low-income energy rates as part and parcel of any effort to obtain energy efficiency improvements can mitigate the low-income problems associated with aggressive utility-financed energy efficiency as well as bring about substantive advantages to the environmentalist push for such efficiency improvements.

## COMBINING LOW-INCOME RATES AND UTILITY DSM

Both poverty advocates and environmentalists have reason to support low-income programs which involve an aggressive marketing of energy efficiency improvements to low-income households combined with low-income discount rates. Because of these convergent interests, energy efficiency should expand while maintaining affordable energy rates for the poor. The pursuit of energy efficiency will help offset low-income opposition to DSM generally while at the same time making discounted energy rates more affordable for remaining non-participating ratepayers. The basis for low-income opposition to utility DSM was discussed above. The impact of DSM programs on discounted rates is explored below.

### *Increasing the Affordability of Discount Rates*

Energy efficiency improvements can be judiciously used to reduce the costs to nonparticipants of low-income discount rates. The "costs" of a low-income discount involve the difference between the fully-embedded bill and the discounted bill.[312] Clearly, targeted energy efficiency measures can help to lessen that difference, both on an individual and on an aggregate basis. This has been the finding of a number of studies looking at low-income discount rates. A Cleveland State University study of Ohio's Percentage of Income Program (PIP), for example, found that conservation represented a primary means of controlling the growth in arrears and related costs.[313] According to the Cleveland State study, the *prime* cause of growth in Ohio's PIP arrears was the excessive consumption of a small group of customers. According to Cleveland State, *"this small group accounted for 40% and 34% of total gas and electric PIP debt respectively."* Cleveland State described these customers, saying:

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312. There is substantial belief now, however, that low-income rate discounts will not result in any net increase in costs to a utility. This belief is grounded in the notion that the costs of seeking to collect bills from the low-income consumer who cannot afford to pay, paying the working capital expense on those delinquent payments, writing off bad debt and the like, are more than simply providing a discount with which to begin. *See e.g.*, Colton, R. "A Cost-Based Response to Low-Income Energy Problems." ***Public Utilities Fortnightly*** (March 1, 1991).

313. Hexter, K., *et al.* (1989). ***Coordinating Ohio's Percentage of Income Payment Plan and Home Energy Assistance Program: A Guidebook***, at 4, Cleveland State University: Cleveland.

> The high debt segments are a relatively small percent of the total population. This small group has tended to accumulate debt at a high rate in the past; they begin the program with 2.6 times higher debt, they have accumulated 3 times as much total net debt, and their annual increase in debt is 3 times greater than the majority of the PIP households.

Cleveland State continued, stating: "Their annual usage (and their annual bills) are 1.6 times higher than the mid-range segments. * * *(T)heir bill/income ratios are about 1.7x higher." In reviewing the Ohio Percentage of Income Plan (PIP), Cleveland State University found that: *"Targeting weatherization and energy education to the high-debt group seems to hold the greatest potential for minimizing the growth in debt."* Cleveland State further found as to the natural gas company it studied: "almost all the households who used more than the mean amount of energy for their group fell into the high-debt group. . .If this group were targeted for weatherization, including education regarding energy efficiency, the model suggests that for EOG (East Ohio Gas-ms), for every MCF saved at the mean, a corresponding $4 decrease would be seen in debt." Similar findings were made for electricity.

Columbia Gas Company of Pennsylvania found this phenomenon, as well, in 1991. Columbia Gas studied 1,000 of its Budget Plus customers.[314] Some Budget Plus customers, Columbia found, were experiencing a growth in arrears despite the company's efforts to mold arrears payments to fit within household-specific budgets.[315] The customers with increasing arrears tend to be very high use customers, Columbia Gas found. These households demonstrated consumption 1.54x the residential average. The projected aggregate annual bill of $1,127,900 for these 1,000 increasing arrears customers translated into an annual bill per participant of $1,128. That compared to an average residential customer bill of $731.

Columbia found that the 1,000 customers it studied would begin a pilot program designed to address inability-to-pay problems with $1.6

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314. Budget Plus is the typical payment plan offered by Columbia Gas to its payment-troubled customers in Pennsylvania. Pursuant to a Budget Plus agreement, the utility and the customer calculate an amount that the customer can afford to pay toward its arrears each month. There is, however, a minimum payment of $5 per month. The total arrears is then divided by that calculated payment; this provides the length of the payment plan, regardless of the outcome. Thus, if a customer has a $500 arrears and an ability to pay $25 per month, the payment plan is 20 months long; if the customer has a $500 arrears and an ability to pay $5 per month, the payment plan is 100 months long. The household must also make levelized payments toward current bills.

315. There is considerable significance to this result. An increasing arrears means that not only does the customer pay nothing toward retiring the arrears underlying the Budget Plus agreement, but the customer is paying less than the full current bill as well. The belief is that customers with increasing arrears are those customers that do not have the ability to pay their full bill for current usage in a complete and timely fashion and thus pay nothing.

million in pre-program arrears as of October 1, 1990,[316] an average per household pre-program arrears of $1,610. In contrast, the average level of *all* "Budget Plus" arrears, including households with increasing *and* decreasing arrears, on that same date was only $618. As can be seen, therefore, while the 1,000 study customers represented eight percent (8%) of total Budget Plus customers, the arrears of the 1,000 represented 21 percent of total Budget Plus arrears (in dollars).[317] As the Figure below indicates, energy efficiency can help reduce these shortfalls and thus make discount rates more affordable.

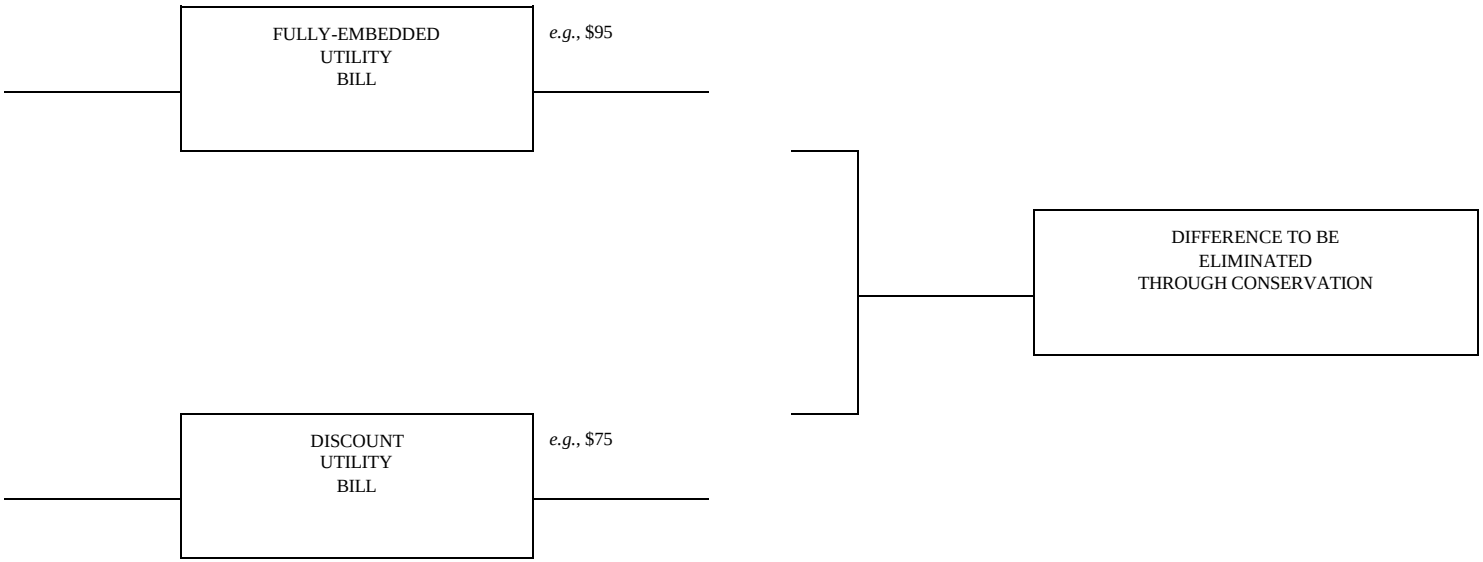
### *Increasing the Fixed Cost Contribution*

In addition to reducing the overall difference between discount and fully-embedded rates, low-income DSM programs have the advantage of increasing the fixed cost contribution made by low-income households who participate in an income-based rate. DSM, in other words, is particularly effective in controlling costs when used in combination with special low-income utility rate programs such as an income-based Energy Assurance Program (EAP). Under an EAP, participants pay a designated percent of their income toward their gas bills. The LIHEAP program also makes a contribution to those bills, the amount of which is ultimately limited by state and federal contributions to LIHEAP. A portion of the fully-embedded cost of providing a household service is covered by neither the household's payment nor by LIHEAP assistance.

316. ***Pennsylvania Public Utilities Commission v. Columbia Gas Company of Pennsylvania***, Docket No. R-901873, *Direct Testimony and Exhibits of Michael Martin*, Exhibit 104-D-1 (January 1991). This level of arrears was determined as of October 31, 1990.

317. The total Budget Plus arrears on that date was $7,731,937. The total Budget Plus customers on that date was 12,500.

FIGURE 8-1: USING UTILITY-FINANCED DSM TO ELIMINATE SHORTFALL BETWEEN AFFORDABLE LOW-INCOME RATES AND FULLY-EMBEDDED RATES



For any individual EAP household, in other words, the household's payments and LIHEAP benefits do not fully cover the utility's embedded costs. Since household payments under EAP remain constant, however, for each dollar reduction of variable costs, a greater contribution toward fixed costs is obtained. A reduction in usage reduces the costs of providing service to EAP customers and inures to the benefit of the utility's other customers. While it is true that the EAP participant may receive the benefit of increased comfort due to any conservation programs directed toward EAP participants, the real recipient of the benefits of such conservation programs are the other ratepayers. After all, the EAP participant's payment is a function of her income and thus remains the same even if the household's energy usage decreases.

It is thus easy to see why energy efficiency programs directed toward EAP participants provide particular benefits to the sponsoring utility. Assume that an EAP customer pays five percent (5%) of her annual income of $7,000 ($350) toward her utility bill. Further assume that the average EAP usage is 10 Mcf per month and that the fully embedded cost of serving EAP customers is $5.00 per Mcf. Of this, assume that $3.00 covers variable costs and $2.00 covers the company's fixed costs.

If the customer were billed for the fully embedded cost of service, the customer would be asked to pay a total of $600 per year, $360 of which would represent variable costs and $240 of which would represent fixed costs. The difference between the EAP customer's payment and the fully-embedded cost of service is as follows:

**TABLE 8-4. EAP Fixed Cost Contribution Without Conservation**

| | EAP PAYMENT | FULLY-EMBEDDED COST | DIFFERENCE |
|---|---|---|---|
| **TOTAL:** | $350 | $600 | $250 |

If the utility-sponsored conservation reduced the usage of the customer by 20 percent to 8 Mcf per month, the difference between the EAP customer's payment and the fully-embedded cost-of-service would shrink:

| TABLE 8-5. EAP Fixed Cost Contribution With Conservation | | | |
|---|---|---|---|
| | **EAP PAYMENT** | **FULLY-EMBEDDED COST** | **DIFFERENCE** |
| **TOTAL:** | $350 | $480 | $130 |

Not only does the energy efficiency result in a reduction in the difference between the EAP payment and the fully-embedded cost of service by $200, but it results in an increase of that portion of the EAP customer's payment that will go to fixed costs.

| TABLE 8-6. Increased EAP Fixed Cost Contribution With Conservation vs. Without Conservation | | | |
|---|---|---|---|
| | **EAP PAYMENT** | **VARIABLE COSTS** | **FIXED COST CONTRIBUTION** |
| **PRE-CONSERVATION** | $350 | $360 | ($10) |
| **POST-CONSERVATION** | $350 | $288 | $62 |

Thus, energy efficiency measures targeted to EAP customers has the added benefit of reducing the share of fixed costs other ratepayers must pay. An EAP program combined with an aggressive conservation investment program directed at EAP participants would yield significant benefits to participating utilities.

## SUMMARY AND CONCLUSIONS

Energy efficiency advocates should take a substantial interest in supporting and promoting affordable energy rates for low-income households. Without such an interest, low-income advocates may find themselves opposing increased utility spending on energy efficiency measures. Since low-income household tend to be nonparticipants in utility efficiency programs, they often find themselves paying the costs of such programs while deriving no benefits. Moreover, utility-financed energy efficiency programs are often subject to allegations of *de facto*, if not *de jure* discrimination. Support for affordable low-income energy rates by energy efficiency advocates would help address, and redress, each

of these problems.

Energy efficiency and poverty advocates, however, should not come together simply as a means of avoiding conflict. Indeed, affordable low-income energy rates and expanded utility-financing of energy efficiency measures should go hand-in-hand. Because of the unique avoided costs associated with low-income energy use, energy efficiency improvements directed toward low-income households might actually be greater than other residential efficiency improvements.

Finally, low-income advocates should recognize their interest in expanded utility-financed energy efficiency improvements. Such an expansion will help make affordable rates more politically attainable, will help improve low-income payment patterns, and will help improve the low-income community.

In sum, energy efficiency advocates should help promote affordable low-income rates. Poverty advocates should help promote increased energy efficiency investments.

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Appendix A: Savings Arising from Low-Income Programs

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# APPENDIX A: IDENTIFYING SAVINGS ARISING FROM LOW-INCOME PROGRAMS

Certain improvements in the treatment of low-income households will result in cost savings to the utility engaging in such efforts.[318] Different people view these savings differently. According to the *Public Utilities Fortnightly* article first positing such savings:

> There is no question but that this inability to pay is a *social* problem. There is also no question, however, but that this inability to pay represents a *utility* problem. For these households, regardless of the number of disconnect notices that are sent, regardless of the number of times service is disconnected, regardless of the type of payment plan that is offered, there will be insufficient household funds to pay. A utility can recognize this conclusion, and seek to collect what it can while minimizing its collection expenses, or a utility can deny the conclusion and devote its time and energy and attention to what will prove to be fruitless, and expensive, collection endeavors.[319]

Similarly, the Pennsylvania Public Utility Commission's Bureau of Consumer Services noted the costs of payment problems that are already

318. These might involve discount rate, targeted low-income DSM programs, direct vendoring programs (with forgivenes s of excess bills over direct vendor payments), or arrearage forgiveness programs.

319. Colton. "A Cost-Based Response to Low-Income Energy Problems." ***Public Utilities Fortnightly*** (March 1, 1991).

"embedded in existing rates."[320] The Vermont Public Service Department 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. 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."[321]

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."[322]

The purpose of the discussion below is not to assess whether the savings arising from certain low-income programs are sufficient to offset the costs of those programs. Nor is the purpose of this discussion to definitively articulate the magnitude of the savings involved. Instead, this discussion is simply to create a taxonomy of the types of savings that should be evaluated. This discussion will examine all savings other than working capital. Working capital is discussed in the document titled: *Low-Income Programs and Their Impact on Reducing Utility Working Capital Allowances.*

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

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

322. 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.

## CREDIT AND COLLECTION EXPENSES

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. Two observations should be made about this list. First, 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. Second, since the negotiation of payment plans is treated separately, this activity is not included in the list of credit and collection activities.

The best way to determine the credit and collection expenses associated with non-payment is to calculate the cost of each step of the process, to determine the extent to which each step is experienced on the utility system, and then to calculate the total cost. Hence, in testimony before the Pennsylvania PUC regarding Columbia Gas Company, the following calculation was made. The total cost to Columbia to disconnect and reconnect households as a collection device was found to be $65.71. The derivation of that cost is set forth below:

| TABLE A-1 Cost of Credit and Collection Activities: Columbia Gas Company of Pennsylvania (1989) | |
|---|---|
| **COLLECTION ACTIVITY** | **COST[\a\]** |
| **SHUTOFF NOTICE** | $ 0.75 |
| **TELEPHONE CONTACT** | $ 1.28 |
| **PREMISE VISIT** | $ 18.09 |
| **DISCONNECTION** | $ 21.92 |
| **RECONNECTION** | $ 43.84 |
| **TOTAL:[\b\]** | $ 65.71 |
| **NOTE:** **[\a\]Provided by the utility in response to discovery.** **[\b\]Does not include personal contact (either telephone or premise visit).** | |

A choice was made to not include personal contacts in the base calculation. While telephone contacts represent roughly 80 - 90 percent of the total personal contacts each month, the premise visits cost Columbia more in aggregate dollars. Thus, for example, while Columbia made 158 premise visits and 1,534 telephone contacts in December 1989, it spent $2,858 on premise visits and only $1,964 on telephone contacts. Suffice it to say that the Pennsylvania PUC requires utilities to make personal contact with households prior to the disconnection of service. In instances where premise visits are used by Columbia Gas in complying with that requirement, total cost of collection would be $65.71 + $18.09 = $83.80. Where telephone contact is made, the total cost is $65.71 + $1.28 = $66.99.

A total cost of Columbia Gas credit and collection activities was then calculated. The *total* 1989 expenditures by Columbia on the credit and collection activities outlined above were $486,881 while the total 1988 expenditures were $434,505. Columbia Gas reports to BCS its total number of shutoff notices, premise visits, telephone contacts, and the like. This total cost is thus the per unit cost (as set forth above)

multiplied times the number of each action reported to BCS.

A "reality check," both on the analyst's calculation of credit and collection savings as well as on any utility's self-reporting of credit and collection savings, is to compare the results of the calculations made above to the utility's regulatory reporting of credit and collection expenses. These expenses, of course, are in the "900" accounts. Thus, for example, the following accounts have credit and collection expenses in them:

**TABLE A-2. Credit and Collection Costs as Categorized by FERC Account**

| ACCOUNT NUMBER | EXPENSES INCLUDED |
|---|---|
| **901** | Supervision (major only): including the cost of labor and expenses incurred in the general direction and supervision of customer accounting and collecting activities. Does *not* include the direct supervision of a specific activity found in a different account (*e.g.*, "collection expenses" are found in account 903). |
| **903** | Cost of labor and materials "incurred in work on customer applications, contracts, orders, credit investigations, billing and accounting, collections and complaints. Includes all work on service disconnections, as well as "receiving, refunding or applying customer deposits and maintaining customer deposit* * *records." Also includes collecting revenues, "extending unpaid balances," "preparing, mailing, or delivering delinquent notices," final meter readings, and "disconnecting and reconnecting services because of nonpayment of bills."[323] |
| **904** | Uncollectible accounts. Includes "amounts sufficient to provide for losses from uncollectible utility revenues. Concurrent credits must be made to the accumulated provision for uncollectible accounts. |

323. Note that this account does *not* include expenses for disconnecting and reconnecting service for any reason other than "nonpayment of bills." Thus, this account does not include the expenses associated with disconnection of service for seasonal homes, for a change of homes by a residential customer, or similar purposes.

These expenses will be reported on an annual basis in an electric utility's FERC Form 1. Gas utilities file the same information in their FERC Form 2. There should not be a significant mismatch between the calculations described above and the expenses recorded in these 900 accounts. The 900 accounts, of course, will contain expenses for *all* customer classes. It should be possible, however, at least qualitatively, to gain a notion of the extent to which these expenses are residential by an examination of the extent of credit and collection activity directed toward other customer classes (*e.g.*, industrial, commercial).

## BAD DEBT

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.

Moreover, it is difficult to determine a solid number for the expenses to be avoided through bad debt. The New York Public Service Commission noted that one problem with the use of uncollectibles is that "the point at which an account is classified as uncollectible is somewhat arbitrary."[324] The ratio, in other words, is highly dependent upon management decisions rather than upon the energy needs of a company's low-income households. One company may write-off a debt as uncollectible when it is 120 days old, while a different utility may not write-off a debt as uncollectible for twelve months (365 days). Even if quantifiable and significant, it would be difficult, therefore, to isolate whether the existence of savings (or lack thereof) is attributable to the low-income rate or to some company policy.

## DEPOSIT MAINTENANCE

Reducing the inability-to-pay of low-income households presumably should reduce the need to collect and maintain deposits from those households as well. The collection of a cash deposit is one means to gain protection against the potential loss of revenue through bad debt. The deposit serves the function of security to protect against the risk of default.

To require deposits from customers, however, is not without cost to remaining ratepayers. The costs are of two types: (1) out-of-pocket expenses; and (2) interest expense. The collection of deposits involves out-of-pocket expenses to a utility. When a utility collects a deposit, it must undertake to do several things. It must obtain credit information from some source. Frequently that source will be a "consumer

324. Sawyer D. and Teumim P., (1990), ***Gas and Power Utility Uncollectibles and Collection Activity***, at 1, Albany: Consumer Services Division, New York Sate Public Service Commission.

reporting agency." In such instances, the utility must take particular actions to ensure compliance with the terms of the federal Fair Credit Reporting Act, a statute that imposes certain obligations on the users, as well as the distributors, of "consumer credit reports." Second, the utility must service its deposits. In particular, it must keep track of the deposits in such a manner that they can and will be refunded at the appropriate times.

A second *genre* of expense is the interest to paid on utility deposits. The common law, as well as state regulations, virtually universally hold that customers are entitled to interest on their deposits. While an argument might be made that even should a utility *pay* interest to the customer, it is at the same time avoiding the interest to be paid on capital not needed to be raised in the market (as customer contributed capital displaces investor-supplied capital). This argument is misplaced. A utility would only reduce its cost of capital through this displacement process in the event that its marginal cost of capital is greater than the interest it pays the customer. Since the marginal cost of capital is likely going to be short term borrowing --perhaps something as simple as commercial paper-- the odds are remote that the utility will benefit by a swap of customer deposits for short-term debt.

## REGULATORY EXPENSES

Regulatory expense savings should occur in three different arenas. First, the extent to which rate cases are devoted to issues generated by inability-to-pay should be reduced. Whether that rate case litigation involves bad debt calculations, rate discount proposals, cost allocations or some other related issue, the time and effort devoted to such issues should be reduced.

Second, regulatory rulemaking attention to inability-to-pay problems should be reduced. Issues that may finally be set by the way side include the appropriate winter shutoff protections, the types of appropriate deferred payment arrangements, notice requirements, and the like.

Finally, regulatory attention to individual complaints should be reduced. Complaints might involve allegations that a particular followed inappropriate procedures in effecting the disconnection of service. They might involve allegations that a utility refused to enter into a "reasonable" payment plan. It should be noted, however, that complaints asserting that bills are "in error" because they are "too high" may simply be an indirect way of asserting an inability-to-pay.

## PAYMENT PLAN NEGOTIATION

One major expense that should be avoided through the implementation of certain low-income programs is the negotiation of payment plans.

Again, Columbia Gas provided data on the cost of each individual payment plan negotiation:

| TABLE A-3. Cost of Negotiating Deferred Payment Plans<br>Columbia Gas of Pennsylvania (1990) | |
|---|---|
| **EXPENSE ITEM** | **COST** |
| **HOURLY RATE (customer service representative)** | $15.49 |
| **OVERHEAD (hourly rate x 39.589%)** | $ 6.13 |
| **HOURLY SUB-TOTAL:** | $21.62 |
| **TIME TO NEGOTIATE PLAN** | .50 hours |
| **SUB-TOTAL** | $10.81 |
| **CLERICAL TIME** | $ 3.83 |
| **TOTAL COST** | $14.64 |

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, stating:

> * * *for the poorest households with income considerably below the poverty line, existing initiatives do not enable these customers to pay their bills in full and to keep their service.* * *Consequently, to address realistically these customers' problem and to stop repeating 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, we believe that new approaches like* * *the OCA's proposed EAP

program should be tried.[325]

In general, NCLC's report for the Pennsylvania Office of Consumer Advocate, which examined the control of uncollectible accounts in that state, found that "Payment plans in Pennsylvania are simply not working."[326] In the ***Equitable Gas*** decision approving that company's low-income program,[327] the Pennsylvania Public Utility Commission found that "arrearages associated with the prospective EAP participants range between $9 million and $10 million. Those EAP-eligible customers who currently have payment arrangements either negotiated by BCS or the Company pay on average little more than 50 percent of the presubscribed amount." Moreover, other Pennsylvania utilities experienced similar failure rates as follows:[328]

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

326. Roger Colton, ***Controlling Uncollectible Accounts in Pennsylvania***, at 69 (Dec. 1990).

327. ***Pennsylvania Public Utility Commission v. Equitable Gas***, Docket No. R-901595, Decision and Order, at 71 (November 21, 1990).

328. ***Controlling Uncollectible Accounts***, at 71.

| TABLE A-4. Success Rate of Deferred Payment Plans<br>Selected Pennsylvania Utilities<br>(1987 - 1989) | | | |
|---|---|---|---|
| **COMPANY** | **SUCCESS RATE (%) 1987** | **SUCCESS RATE (%) 1988** | **SUCCESS RATE (%) 1989** |
| **UGI** | 33.3% | 32.9% | 36.6% |
| **PECO**[329] | 11.4% | 11.5% | 28.3% |
| **MET EDISON**[330] | 31.5% | 63.9% | 61.3% |
| **PENELEC** | 29.3% | 26.3% | 25.9% |

More recently, Connecticut Light and Power Company reported that more than 70 percent of the payment plans it negotiates with its "hardship" customers fail. Philadelphia Water reports that its payment plan failure rate is more than 70 percent as well.

In sum, therefore, to address the inability-to-pay of a single low-income customer will generate multiple savings from the avoidance of payment plan negotiations. Most payment plans fail. However, most utilities also negotiate repeated payment plans with low-income consumers. While each avoided payment plan may save the utility $15 or more, each low-income consumer whose payment problems are alleviated may avoid the need for several negotiated payment plans.

329. PECO reported that it "does not identify the individual customers who successfully maintain payment arrangements. However, we do track the overall success rate of special payment arrangements." IRR-APP-B-G.3

330. Metropolitan Edison does not separately track the success rate of Budget Plus customers from Current Plus customers. Moreover, its use of the Budget Plus process is quite limited, involving 615 accounts in 1987, 360 accounts in 1988, and 430 accounts in 1989.

## CREDIT AGENCY FEES

One expense associated with low-income inability to pay problems involves the fees paid by the utility to collection agencies to chase unpaid bills. Columbia Gas, for example, was found to have paid an average commission fee of 33.5 percent to each collection agency it used during the years 1987 through 1989. (OCA-II-51). While the use of these agencies was singularly ineffective (collecting less than 20 percent of the average referred bill for the three years in question), given the 33.5 percent commission, it is clear that Columbia Gas was *willing* to make a substantial investment in these agency collection efforts as indicated by the number and size of accounts referred to the agencies:

**TABLE A-5. Use of Credit Collection Agencies**
**Columbia Gas of Pennsylvania (1990)**

| **YEAR** | **1987** | **1988** | **1989** |
|---|---|---|---|
| **ACCOUNTS (###)** | 8,924 | 8,758 | 10,239 |
| **DOLLARS PER ACCOUNT** | $387 | $428 | $445 |

If households can be kept on the system by making their bills more affordable, the utility should be able to eliminate some portion of these accounts for which it uses a collection agency.

## LOST TIME VALUE IN ARREARS

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. To recognize the dollars that might end up in arrears, and pass those dollars through in rates *immediately*, therefore, will save the company (and thus its ratepayers) that lost time value in funds.

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.

It is important to note that the lost time value discussed in this section is the lost time value that arises only from the date of the payment plan. It does not incorporate the lost time value from the time the bill was first rendered to the time the customer enters into the payment plan. That time period can be substantial. It is not unusual for low-income households to enter into payment plans in April, for example, to address arrears that have been building for four or five months.

The major task in determining the lost time value of funds subject to payment plans is to accurately set the discount rate. Through application of an appropriate discount rate, a public utility can determine what immediate payment will represent the functional equivalent of a stream of payments over the life of a deferred payment plan. A great deal of confusion exists over the choice of the appropriate discount rate to use in determining the "present value" of a stream of payments. A discount rate is required so as to allow the numerical computation to find out if the immediate payment equals at least the value of the stream of deferred payments. The basic question, therefore, is: of all the discount rates available, which one is the proper one?

The easiest answer is that the appropriate rate must reduce the future stream of deferred payments to the value of the discounted current rates. There is a cornucopia of possible discount rate approaches, however, and the argument over which rate is "best" can become quite involved. It is important to remember nevertheless that the workload of the discount rate is still limited simply to ensuring that the utility gets the functional equivalent to what it would have received through a stream of future payment plan payments.

Two major factors go into making a determination of what the value of a future stream of payments is. The first determination involves the loss of time value associated with receipt of future payments. The second determination involves how to assess the risk of the future stream of payments. The determination of an appropriate discount rate, therefore, can be divided into two parts: first, to determine whether the payment stream provides sufficient value over capital recoupment to offset the loss of the time value of money; and second, to determine if the stream of payments is sufficiently large to offset the risk to the repayment.[331]

The prime lending rate and one of the various treasury bill rates[332] comprise the most often discussed direct surrogates for a discount rate. The

331. It is for these reasons that the discount factor is divided into two components: a risk free component and a risk premium.

332. Treasury securities are all graded by maturity. Interest on debt offered by the United States differs on the basis of the term of the debt. Interest rates for various maturities are available within the broad categories of "bonds" with maturities of more than ten years; "notes" with maturities of more than one but less than ten years; and "bills" with maturities of one year or less. Moreover, because they are not considered subject to default, United States government bonds or bills are a universally accepted standard of a riskless rate of

prime rate is the lowest rate offered by commercial banks to their best corporate customers, and is widely considered to be reasonably fluid with respect to current economic forces. The treasury bill rates have much the same attributes as the prime rate. In Chapter 11 reorganization proceedings, courts adopting this standard have generally accepted either the weekly or quarterly auction rate of treasury bills as the appropriate surrogate. Treasury note, bill and bond rates taken as a group form a much more comprehensive standard than the prime rate.[333]

Both the prime rate and the treasury bill rates are objectionable for discounting a utility deferred payment plan, however, for several quite good reasons. First, both the prime rate and the treasury bill rates are rates for short term borrowing. In contrast, utility deferred payment plans can last for several years. Second, while the prime rate is purported to be the *lowest* rate at which banks lend to their best corporate customers, in fact it is not.[334] Moreover, neither the prime rate nor the treasury bill rates involve risks analogous to those associated with the typical utility deferred payment plan. The treasury standard's weakness, in particular, is that all the rates involved are for securities with essentially zero risk of default, which is a clear bar to their use unless further adjusted.

Because of this, the choice of treasury securities as a standard still leaves the difficult problem of deriving a measure for judging the risk component of a plan. It is difficult to arrive at a firm analytical basis for quantifying this risk component. Problems of proof with establishing a risk premium are substantial. It is difficult, if not impossible, to obtain an objective measure of such subjective creditor characteristics as risk adversity and time preference.

In sum, a major problem inherent in starting with the market determination of either the prime rate or Treasury rates, and then adding a premium to account for the risk of a default on a utility deferred payment plan, is the difficulty of determining what the premium should be, and then providing a reasoned justification for the particular value chosen.

The utility's weighted cost of capital represents a second type of standard to use in making a determination of discount rates for determining

(..continued)

interest. For a description of these securities, see generally, U.S. General Accounting Office, "U.S. Treasury Securities: The Market's Structure, Risks and Regulations," GAO/GGD-86-80BR (August 1986).

333. These rates also have the substantial advantages of being subject to the broadest and most vigorous of market forces and of being published daily in every major newspaper in the country.

334. A Greenwich Research Study showed that nearly 70 percent of large corporations are offered below-prime loans. The staff of the Committee on Banking, Finance and Urban Affairs of the House of Representatives released a report concluding that "the once clear barometer of interest rates has become a murky, ill-defined term that rarely reflects the lowest rates available to corporate customers." Cox, ***Bankers Desk Reference***, at 16 (1982).

the present value of a stream of payment plan payments. Use of the utility's weighted cost of capital would be easily ascertainable, having been established in its most recent rate case. The theory behind use of this figure is that it bases the discount factor on the cost to the utility of obtaining substitute funds for those whose payment is deferred through a payment plan. The underlying logic of this approach is that the cost to the utility of not getting paid immediately is the cost of acquiring substitute funds over the interim. This cost can be represented by the utility's cost of borrowing.

This logic might be appealing except for the fact that it only deals with compensating the utility for the time value of money and ignores all other relevant factors. In fact, use of a utility's weighted cost of capital has several fatal flaws. First, the touchstone of providing the present value of a claim to be paid in the future is responsiveness to current market conditions. There is no reason to suppose *a priori* that the utility's weighted cost of capital will in any way approximate those conditions. Indeed, given the blending of long-term and short-term debt with equity capital, as well as the blending of new and old debt issuance, the weighted cost of capital would approximate current market conditions only by sheer happenstance.

In addition to this fundamental weakness, a series of other equally valid objections exist. First, the rate at which a utility can borrow is determined by the credit characteristics of the loan and the utility. There is, for example, no reason that the risk involved with the utility, itself, will be the same as the risk involved with the payment plan. Indeed, there is every reason to believe that the risk involved with the payment plan will be much higher. Not only is the payment plan entered into with a household having confirmed payment problems, the payment plan is unsecured. Moreover, there is no reason to suppose that the term of repayment under a deferred payment agreement will be the same as, or even close to, the term of any utility company debt.

Despite its surface appeal, use of the utility's weighted cost of capital would be an inappropriate discount rate. The cost of capital bears no relation to providing compensation for the loss of time value plus providing a risk premium.

The most appropriate standard to use involves an inquiry into the rates of local lenders making a loan of the same type, duration and risk. This standard would be based on a series of local or regional rates collected from a cross-section of lenders. The agreement by a local utility to allow a customer to repay arrears through a deferred payment plan, in essence, is most akin to an unsecured consumer loan to a low-income household with acknowledged bill paying problems. Typical similar loans of this term and risk would perhaps be made by small loan finance companies. The appropriate discount factor to use is the interest rate imposed for consumer loans of similar size and duration. According to the standard reference book *The Cost of Personal Borrowing in the United States*, a small consumer loan of this nature would cost roughly 30 percent per year.

## FORCED MOBILITY

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 the Company's low-income households moves, however, it imposes a cost on the Company. There is the cost of disconnecting of service at the old address (even when the disconnection is "voluntary"). There is also the cost of reconnection of service at the new address.

Low-income households, however, 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 (or Budget Plus payments), household income is instead 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, 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.

There is ample basis to believe that this "forced mobility" happens in fact, and is not simply a theoretical problem. The forced mobility of households, for example, is a common theme of discussions with LIHEAP personnel and with Community Action Agency caseworkers who work with and counsel low-income households on their energy problems. Second, a 1984 study by the National Social Science and Law Center (NSSLC) considered the mobility of low-income households. NSSLC found that compared to the roughly twelve percent of the total population that changed residences each year, nearly one-quarter (23 percent) of the low-income population moved. Disproportionately represented in the "mover" households are recipients of public assistance, minorities, and female-headed households. The NSSLC study examined Pennsylvania-specific data. Third, it is known that households which have recently established service have poorer utility payment records than those who are more stable.

NCLC research confirm the existence of this phenomenon as well. A study by the National Consumer Law Center for the Maine Public Utilities Commission looked at the households for whom a disconnection of service was sought during the winter of 1986 - 1987. NCLC found that nearly 60 percent of the households initiating service on and after August 1st failed to make a payment of any sort toward their

utilities bill. Nearly 40 percent of the households who obtained service after August 1st had their service disconnected that winter. According to NCLC: "it can be concluded that the households initiating service on or after August 1, 1986 represent a more serious shutoff risk than those households having a record of service." Fourth, Pennsylvania utilities file reports with the Bureau of Consumer Services each fall pursuant to Rule 56-100, which reports look at the extent to which households that have been disconnected within the previous twelve months remain without heating service. The Columbia Gas reports examined for purposes of assessing a low-income rate for that company indicate that from January 1, 1989 through November 30, 1989, 1,807 "heat related properties" had their service terminated for nonpayment. As of December 13, 1989, 897 of those "heat-related residential properties" had not been reconnected. In turn, 380 of those 897 (42 percent) were vacant premises, indicating the household had moved subsequent to the shutoff. Similar results were experienced in 1988. From January through November, 1988, 1,902 households had service disconnected for nonpayment. As of December 13, 1988, 1,041 of those households were not reconnected. In turn, 439 of those 1,041 (42 percent) represented vacant premises.

In addition to the household expenses associated with forced mobility, there are other reasons why this forced mobility contributes to an inability to pay as well. First, low-income households which are forced into a pattern of mobility have less likelihood of entering into successful Level Billing Plans, under which bills are paid in 12 equal monthly installments. Here again, in Maine, NCLC discovered how low-income mobility serves, itself, to perpetuate low-income energy problems. In its Maine report, NCLC quoted Central Maine Power Company (CMP) as saying:

> We (CMP) support the intent to establish a predictable and manageable payment plan for customers. However, due to a number of factors, we find that the payment amounts that we determine with estimated figures for future use need adjustment several times during the term of the special payment arrangement.* * *After just a couple of months into summer payments, the levelized payment figure may be adjusted to accommodate actual as compared to estimated usage. *This is especially true when the Company has limited usage history on which to base the estimate.*

(emphasis added). NCLC agreed, noting that for the households with recently established service, "a utility may be hard-pressed to develop dwelling-specific, household-specific, estimates of future energy use* * *." As a result, the budgeting benefits, in particular, which should arise from such plans can not.

Second, one requirement for participation in many utility DSM programs is that households have twelve consecutive months of service at the same address. Accordingly, the forced mobility of low-income households tends to disqualify these households from receiving assistance to lower their energy bills through conservation.

## DIVERSION OF REVENUE

Addressing inability-to-pay problems through certain low-income programs will slow down, if not eliminate, the diversion of revenue from these customers to payment of fees other than current bills.

Even where the cost of the disconnect/reconnect process is paid for through a fee imposed on the delinquent customer, a customer which is not permanently removed from the system, but which instead merely has her service disconnected and then subsequently reconnected, ends up necessarily owing *more* than the arrears underlying the disconnection in the first instance. At the time of reconnection, in other words, in addition to the arrears which led to the disconnection, the customer is responsible also for paying any disconnect and reconnect fee. Because of these additional payment obligations, when the customer is poor, a utility might recognize that everyone loses under such circumstances and decide to forego the disconnection in the first instance.

Table A sets out a hypothetical detailing the impacts of imposing a disconnect/reconnect fee on a low-income household. One distinguishing characteristic of a low-income household is the limited *corpus* available to pay month-to-month utility bills. In Table A, the low-income household has an arrears at the time of disconnection of $75; the cost of disconnecting and reconnecting the account is $60 and is fully recovered through a disconnect/reconnect fee. After the process of disconnecting and reconnecting the household in this Table, therefore, the total bill owed by the customer is $135 ($75 arrears plus $60 disconnect/reconnect fee). The household is assumed to be capable of making only a partial payment. In the Table, the customer makes a payment of $55, leaving a total arrears after the disconnection and reconnection of $80.

| **TABLE A-6. The Impact of Disconnect/Reconnect Fees For Low-Income Payments** | |
|---|---|
| **CUSTOMER ARREARS AT TIME OF DISCONNECT** | $ 75 |
| **COST OF DISCONNECT AND RECONNECT** | $ 60[335] |

335. Assume that entire cost of disconnection/reconnection is compensated through some type of fee.

| | |
|---|---|
| **CUSTOMER BILL IN TOTAL AFTER DISCONNECT** | $135 |
| **CUSTOMER PAYMENT** | $ 55 |
| **CUSTOMER ARREARS AFTER PAYMENT** | $ 80 |

As can be seen, even when the disconnect/reconnect fee is "cost-based," charging such a fee does not necessarily serve the best interests of all customers. In Table A, the customer is $60 worse off. She started by owing $75 and now owes $80, despite having exhausted her ability to make a $55 payment to the utility. The utility is $60 worse off. It started with the customer $75 in debt and willing and able to make a $55 payment; that would have left a $20 arrears. Instead it has a customer $80 in arrears (with no further ability to make payments). The remaining ratepayers are worse off. Instead of devoting its limited resources to paying the bill for consumption, the low-income household has devoted its $55 in resources to paying the disconnect/reconnect fee, leaving the initial arrears plus the uncompensated cost of disconnection and reconnection to be passed on through rates.

As can be seen, even when the disconnect/reconnect fee is "cost-based," charging such a fee does not necessarily serve the best interests of all customers. In Table A, the customer is $5 worse off. She started by owing $75 and now owes $80, despite having exhausted her ability to make payments to the utility. The utility is $60 worse off. It started with the customer $75 in debt and willing and able to make a $55 payment; that would have left a $20 arrears. Instead it has a customer $80 in arrears (with no further ability to make payments). The remaining ratepayers are worse off. Instead of devoting its limited resources to paying the bill for consumption, the low-income household has devoted its $55 in resources to paying the disconnect/reconnect fee, leaving the initial arrears plus the uncompensated cost of disconnection and reconnection to be passed on through rates.

In sum, even in those instances where the customer makes full payment of the outstanding arrears after a service disconnection, the utility cannot be found *ipso facto* to have benefitted from the disconnect/reconnect process. So long as the late paying household has a limited *corpus*, if some part of the household's ability-to-pay is diverted to paying disconnect/reconnect fees, there is that much less left to pay current bills.

A similar analysis would apply to late payment charges. Like reconnect fees, the imposition of late payment charges would only serve to push households further into debt, thus diverting scarce household resources away from current payments to these extrinsic payments. Accordingly,

it would not redound to the benefit of all remaining households. One cannot simply add new charges on to a household that has an inability to pay current bills with the expectation that these new charges will be paid in full.

## SUMMARY

The implementation of low-income programs should generate substantial expense savings and substantial enhanced revenues to the utility. These impacts are discussed above. A summary list is presented here:

1. **Credit and collection savings:** A utility should be able to avoid expenses associated with negotiating deferred payment plans; sending shutoff notices; making personal contact; disconnecting and reconnecting service; post-disconnection collection activity; and the like.

2. **Bad debt:** As low-income customers increase their ability to pay by having energy bills made more affordable, a utility should experience a decrease in bad debt.

3. **Time value:** As a utility recognizes and recovers the unaffordable portion of bills more quickly, it will no longer experience the loss in time value of arrears.

4. **Regulatory expenses:** As households have monthly energy bills become more affordable, the strain on the regulatory system will be lessened, with attendant cost savings.

5. **Diverted revenue (reconnect fees):** As a utility moves away from the disconnection/reconnection process as a collection technique, there will be less revenue diverted from paying current monthly bills to paying reconnect fees.

6. **Diverted revenue (forced mobility):** As households have monthly energy bills become more affordable, their residency will become more stabilized and less revenue will be diverted from paying current monthly bills to paying mobility costs.

7. **Repeated payment plans:** Low-income programs will avoid the constant frustration of collection purposes. It will break the disconnect/reconnect cycle; it will break the constant cycle of negotiating unaffordable payment plans, abandoning such plans upon nonpayment, and negotiating yet another unaffordable plan.

8. **Targeted conservation:** Low-income households tend to live in bad housing stock. This results in those households wasting energy, which not only makes it more likely that these households will be unable to pay their utility bills, but is contrary to public policy from the energy and natural resource perspective as well. Utilities have a difficult time identifying their low-income customers, however. Moreover, a majority of low-income residents are tenants, which makes it extremely unlikely that they can or will install conservation and/or weatherization measures on their own. There is thus an acute need to fashion programs that will facilitate the targeting of low-income conservation and weatherization assistance.

# APPENDIX B: IDENTIFYING WORKING CAPITAL SAVINGS FROM LOW-INCOME PROGRAMS

This Appendix explains the working capital savings that are generated by the implementation of a low-income discount rate.[336] It has been argued that a discount rate directed toward low-income households who cannot afford to pay their bills will generate certain cost savings for the utility offering the rate. Whether or not these savings are sufficiently large to offset the costs of the discount is a question on which there is disagreement. Nonetheless, the existence of the savings cannot be disputed.

One of those savings is a reduction in the working capital allowance required by the utility offering the savings. The working capital allowance takes into consideration the fact that low-income households who do not pay their bills in a full and timely fashion force the utility to pay its own debts prior to the receipt of revenue from its customers.

336. The same savings will arise from targeted low-income DSM, from direct vendoring programs (such as with Section 8 housing), and the like.

## DEFINING WORKING CAPITAL

One utility financial text has explained "working capital" needs as follows:

> A part of the rate base is not for investment in property but for investment in working capital. Working capital allowance in the rate base includes any investor-contributed capital needed for cash balances to meet expenses as they come due, prepayments such as insurance premiums, materials and supplies inventories, and minimum or compensating bank balances.[337]

According to this text, "cash working capital is the amount of money necessary to meet bills as they come due between the rendition of service and the receipt of revenues therefrom."[338]

It makes no difference for purposes of calculating the working capital impact of low-income arrears whether a utility uses its own dollars or borrows money to pay its bills. If the utility does not fund its working capital allowance out of cash-on-hand, the working capital is made part of the company's rate base. The return on the working capital is thus the utility's weighted rate of return (debt, equity, preferred equity). In contrast, if the company is so "cash rich" that it does not have a working capital allowance, the prepayment of bills and the like discussed above will impose an opportunity cost on the company, denying it the return on investment that it *would have received* had it not been required to use some portion of its cash to prepay bills for which it had not yet received revenue from its customers.

## THE REVENUE REQUIREMENT IMPACT OF WORKING CAPITAL

The fact that working capital becomes part of a utility's rate base is significant in that its revenue requirement impact exceeds the actual dollars of working capital required. This increased revenue requirement results from the tax impact associated with the equity return received on the working capital. Let me explain through use of an illustration.

Assume that the company needs $1000 in working capital. Accordingly, there is an addition to rate base of $1000 on which the company will

337. Eugene Rasmussen and Keith Howe (1983), ***Public Utility Economics and Finance***, at 92-93, New York: Prentice-Hall.

338. *Id.*, at 93.

earn a return the same as any investment in property. Assume that the company has a 50/40/10 equity/debt/preferred equity split. This means that 60 percent ($600) of the working capital will receive an equity return. Assume finally that the annual cost of equity for the company is 12 percent (simply to make the calculation easier). The equity return on the working capital will thus be $72 ($600 x .12 = $72). The debt return, given an assumed weighted interest rate of nine percent (9%), will be $36 ($400 x .09 = $36). As is thus apparent, the total return on investment associated with this $1000 working capital is $108 ($72 + $36 = $108).[339]

The *revenue requirement* impact of this return, however, is quite different. The reason for this can be attributed to the tax effect on the equity return. A utility's equity return, of course, is its "profit" (or net income). As such, there will be both a federal and state income tax levied upon it. A generally accepted combined federal/state income tax rate today is 42 percent. What this means is that 42 percent of all net income generated by a utility will be paid to the state and federal governments in income taxes. In order for the utility to generate one dollar ($1) to distribute to investors as dividends, therefore, the utility must collect something *more* than one dollar in rates. In fact, what that "something more" is involves a dollar amount such that once the 42% tax is subtracted, what is left will be the one dollar. The easy way to determine what the dollar amount is involves simply dividing the desired return by (1 minus the tax rate). In the case of a $1 return, and a 42% tax rate, the calculation would be $1 / (1-.42) = $1 / .58 = $1.72.[340] What this means is that $1.72 - (.42 x $1.72) = $1.

To go back to our working capital discussion, in order to generate sufficient *pre*-tax dollars to provide an after-tax profit of $72, therefore, the company must charge $124.14. This involves the $72 profit *plus* a tax effect of $52.14. Remember, the tax is *not* 42 percent of the profit; simply multiplying $72 by .42 will give a tax of $30.24, which understates the tax liability by more than $20. Instead, the tax is 42 percent of the total billed revenue such that the profit is left after the 42 percent is subtracted.

In sum, the annual working capital requirement of $1000 will yield a total rate impact of more than $160 for the associated rate of return. This includes:

**TABLE B-1. Rate Impact of Annual Working Capital Return of $1000**

339. The same result would have been obtained by calculating the weighted cost of capital. The three assumptions for this analysis include: (1) a capital structure of 60/40 (equity/debt); (2) an equity return (common plus preferred) of 12%; and (3) an interest rate of nine percent (9%). The weighted cost of capital would thus be: (60% x .12) + (40% x .09) = .072 + .036 = .108. The weighted return would thus be $1000 x .108 = $108.

340. If the combined federal/state tax rate is only 35 percent, the calculation would be $1 / (1 - .35) = $1 / .65 = $1.54. What this means is that $1.54 - (.35 x $1.54) = $1.

| | |
|---|---|
| **Interest on debt** | $ 36.00 |
| **Return on equity** | $ 72.00 |
| **Tax on equity return** | $ 52.14 |
| **Total** | $160.14 |

## THE SIGNIFICANCE OF WORKING CAPITAL RETURN

In order to calculate the impact of this working capital analysis on a discount rate, it is necessary to convert the annual cost of capital into a daily cost of capital. An annual weighted rate of return of 10.8 percent will translate into a daily weighted rate of return of .02959 percent (10.8% / 365 = .02959%).

This daily rate is then multiplied times the dollar lag days associated with low-income arrears. A 30-day arrears of $100 thus translates into 3,000 dollar lag days (30 x 100 = 3,000). When multiplied by the daily rate of return of .02959%, we find that the working capital associated with this arrears is $0.89. The tax effect for the working capital associated with this arrears is $0.43.[341] The total working capital revenue requirement impact of the $100/30-day arrears is $1.32. This total revenue requirement has three components as laid out in the Table below:

| **TABLE B-2. Rate Impact of 30-Day Arrears of $100** | |
|---|---|
| **Interest on debt** | $0.30 |

341. The tax effect must be calculated separately. This will involve multiplying the lag days times the percent funded by equity. This must be multiplied by the daily equity return (12%/365) and divided by .58. This gives the entire revenue requirement associated with the equity return. To isolate the tax impact, one then subtracts out the equity return itself. Hence, for purposes here, the equation would be:

((3000 x .60 x (.12/365)) / .58) - (3000 x .60 x (.12/365)).

In this equation, the revenue lags days equal 3000. The .60 is the portion of the working capital funded by equity. The .12/365 is the daily rate of return. The .58 is the factor needed to generate the total revenue requirement that includes the tax effect.

| | |
|---|---|
| **Return on equity** | $0.59 |
| **Tax on equity return** | $0.43 |
| **Total** | $1.32 |

It is possible to project this analysis out to the entire company LIHEAP population.[342] While to do so now for illustration will require some specific assumptions, it should be possible to collect the actual empirical data to make quite specific determinations. The primary information that is unavailable now is the rate at which LIHEAP households pay over time. For the sake of illustration, therefore, I will take actual data from a Philadelphia utility and assume for our purposes now that this data will accurately reflect a range of actual conditions on other utility systems.

The calculation below considers the rate of payment for the residential class. It begins by tracking the age of arrears for each month.[343] An average lag day value is then assigned to each aging category. This average lag day is simply the mid-point of the range.[344] The lag days are multiplied times the average bill for the particular month to obtain a total number of revenue lag days associated with that age of arrears. A working capital requirement for bills rendered in each month is then obtained using the procedure discussed above.[345] The residential rate of payment is set forth in Table A below.[346]

I will assume a total LIHEAP population of 19,000 households. I have a collection scheme for only one month. Again, clearly, to do this for an entire year will be relatively easy with actual data. The method of calculation for a single month is set forth in Table B below.

342. This is simply using the LIHEAP population as a surrogate for "low-income."

343. In fact, it takes an 18-month average calculated for the Philadelphia utility and applies it to individual months. In an actual empirical study, it would be possible to determine the aging process for each month. The high bill heating months, in other words, could reasonably be expected to have slower payments. These slower payments are not reflected in this analysis.

344. Thus, the average lag days assigned to arrears 61 - 90 days old is 75 days.

345. *See*, notes **Error! Bookmark not defined.** - **Error! Bookmark not defined.**, *supra*, and accompanying text.

346. This includes the *total* residential class. It would be reasonable to expect that the low-income population would be somewhat slower in paying.

As can be seen, the total revenue requirement associated with the working capital return for this one month, given the collection scheme for the Philadelphia utility, will be in excess of $100,000. This is for billed revenues in that month of $3.8 million. This does not include the working capital associated with arrears carried over from any other month, only that associated with the revenue billed in this particular month. Of course, this is only the return component of working capital. There will be depreciation on this component of rate base, as well.

## SUMMARY

The elimination or reduction of arrears attributable to a low-income program will have a significant effect on a utility's working capital needs. For every dollar of arrears that a utility can eliminate, the utility will reduce its working capital needs by reducing its revenue lag days. In addition to the carrying cost savings that will be generated by this effort, there will be an expanded revenue requirement savings, as the combined federal/state income tax effect on the equity portion of the cost of capital for the working capital is eliminated or reduced as well.

This memo, however, has a limited purpose. It is not intended to quantify the extent of working capital savings for any particular utility. Instead, the actual numbers to run through this procedure, at this time, are not so important as recognizing and agreeing upon the appropriate procedure.

| TABLE B-3. Illustrative Aging of Accounts | |
|---|---|
| **AGE OF ARREARS** | **PERCENT OF RESIDENTIAL ACCTS** |
| **0 - 30 days** | 47.10% |
| **31 - 60 days** | 14.40% |
| **61 - 90 days** | 4.45% |
| **91 - 120 days** | 3.89% |
| **121 - 240 days** | 8.79% |
| **241 - 360 days** | 4.74% |
| **361 - 480 days** | 1.71% |
| **481 - 600 days** | 0.46% |
| **601 - 720 days** | 0.06% |
| **Remainder**[347] | 6.79% |

347. Since uncollectibles are funded in advance by creation of a reserve, there is no working capital associated with uncollectibles.

| TABLE B-4. One Month Working Capital Rate Impact on Illustrative Aging of Accounts | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AGE OF ARREARS | PCT RES CUSTS | MEAN LAG DAYS | DAILY WKG CAP | AVG BILL | LIHEAP CUSTS | TOT DOLLAR LAG DAYS | TOT WKG CAP RETURN | WORKING CAPITAL COMPONENTS | | TAX EFFECT | TOT. WKG. CAP. REV. REQURMT |
| | | | | | | | | WKG CAP. INT. RETURN | WKG CAP. EQUITY RETURN | | |
| **0-30** | 47.10% | 15 | 0.02959% | $200 | 19,000 | 26,847,000 | $7,944 | $2,648 | $5,296 | $3,835 | |
| **31-60** | 14.40% | 45 | 0.02959% | $200 | 19,000 | 24,624,000 | $7,286 | $2,429 | $4,857 | $3,517 | |
| **61-90** | 4.45% | 75 | 0.02959% | $200 | 19,000 | 12,682,500 | $3,753 | $1,251 | $2,502 | $1,812 | |
| **91-120** | 3.89% | 105 | 0.02959% | $200 | 19,000 | 15,521,100 | $4,593 | $1,531 | $3,062 | $2,217 | |
| **121-240** | 8.79% | 180 | 0.02959% | $200 | 19,000 | 60,123,600 | $17,790 | $5,930 | $11,860 | $8,588 | |
| **241-360** | 4.74% | 300 | 0.02959% | $200 | 19,000 | 54,036,000 | $15,989 | $5,330 | $10,659 | $7,719 | |
| **361-480** | 1.71% | 420 | 0.02959% | $200 | 19,000 | 27,291,600 | $8,075 | $2,692 | $5,384 | $3,898 | |
| **481-600** | 0.46% | 540 | 0.02959% | $200 | 19,000 | 9,439,200 | $2,793 | $931 | $1,862 | $1,348 | |
| **601-720** | 0.06% | 660 | 0.02959% | $200 | 19,000 | 1,504,800 | $445 | $148 | $297 | $215 | |
| **TOTALS:** | | | | | | | $68,667 | $22,889 | $45,778 | $33,150 | $101,817 |