

STRUCTURING A LOW-INCOME "WIRES CHARGE"

FOR OHIO

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Prepared By:

Roger D. Colton
Fisher, Sheehan & Colton
Public Finance and General Economics
34 Warwick Road, Belmont, MA 02178
617-484-0597 / 617-484-0594 (FAX)

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Roger Colton (M.A., J.D.) is a principal in the firm Fisher, Sheehan & Colton, Public Finance and General Economics (FSC) of Belmont, MA. In 1995, Colton was hired by the National Council on Competition and the Electric Industry (a joint undertaking of the National Conference of State Legislatures and the National Association of Regulatory Utility Commissioners) to prepare an evaluation of the impacts of restructuring on small users. The results of that research, published as the paper *Electric Competition and the Small User: Its Impacts on Small Commercial, Residential and Low-Income Consumers*, can be obtained from FSC in Belmont.

In addition, Colton has authored four books on low-income energy policy, including *On the Brink of Disaster: A State-by-State Analysis of Low-Income Natural Gas Winter Heating Bills*; *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*; *Energy Efficiency and the Low-Income Consumer: Planning, Designing and Financing*; and *Funding Fuel Assistance: State and Local Strategies to Help Pay Low-Income Home Energy Bills*. Each of these four books is available from FSC Publications in Belmont, MA.

INTRODUCTION

This paper considers the outlines of a "wires charge" within the State of Ohio. Prepared at the request of Ohio State Legal Services Corporation for presentation to the Universal Service Subcommittee of the Ohio legislative committee considering electric industry restructuring issues, the paper will present a detailed outline, using Ohio-specific data, of a wires charge through which the State may generate revenues for low-income home energy assistance. The charge is not intended to address the broader issues of how activities such as research and development (R&D), non-low-income energy efficiency investments, and the like, might be funded in a restructured, competitive electric industry.

More specifically, the discussion below will concentrate on three major issues:

oWhat is the need for a low-income wires charge in the State of Ohio?

oWho should pay for the wires charge? and

oHow might a wires charge be structured?

Clearly, subsumed within these broader issues are other important discussions. How can a wires charge be made competitively neutral? On what basis should a wires charge be imposed? Who should collect and distribute the revenues generated by a wires charge? These other issues are highlighted in the text below.

Finally, the "decision points" identified by the discussion below will be collected in Appendix A and recommendations advanced on what is most appropriate from a public policy, and administrative feasibility, perspective. Tables are included in Appendix B.

THE NEED FOR LOW-INCOME ENERGY AFFORDABILITY ASSISTANCE IN OHIO

An Ohio wires charge should seek to fill two needs for the State's low-income residents: (1) the need for cash fuel assistance; and (2) the need for energy efficiency improvements. Both of these needs will be considered below. The conclusion will be that there is a substantial need for cash assistance as well as for energy efficiency improvements.

The Need for Generating Cash Fuel Assistance through a Wires Charge

Ohio has a significant number of low-income households, most of which experience unaffordable home energy burdens. A home energy burden is the home energy bill as a percentage of income. In determining the need for fuel assistance, it is appropriate to look at low-income energy burdens. This is the approach now incorporated into the federal statute creating the Low-Income Home Energy Assistance Program (LIHEAP), which mandates that LIHEAP benefits be targeted to households who have the lowest incomes and the highest bills in relation to income taking into account household size. Moreover, in 1994, Congress described "highest home energy needs" as taking into

consideration energy burdens and defined "energy burden" as "the expenditures of the household for home energy divided by the income of the household."

Within this framework of home energy burdens, the provision of cash fuel assistance (including utility rate discounts) should focus on total home energy bills for low-income households. While public policy traditionally has focused attention on home *heating* needs, this policy is too narrow in its coverage. Instead, two aspects of home energy should be considered: (1) home heating on the one hand; and (2) home electric usage (including home cooling) on the other hand. National figures show that home heating represents less than fifty percent (50%) of total low-income home energy consumption. State-specific studies by FSC have found, too, that while low-income heating *consumption* is less than non-heating consumption, low-income heating *bills* represent even a smaller percentage of total low-income energy bills.¹¹ Hence, for example, while heating consumption may represent 45 percent of total consumption, heating bills might represent 35 percent of total bills.

In short, the home energy needs of low-income households in Ohio consist of two different components: (1) heating bills on the one hand; and (2) non-heat electric bills on the other hand. A discussion of the need for cash assistance should take both into account.

Home Heating Bills in Ohio

Winter home heating bills in Ohio impose unaffordable burdens on low-income households when considered in light of household income. For purposes of demonstrating this conclusion, several populations will be used as a surrogate for the entire "low-income" population: (a) households who receive LIHEAP benefits; (b) households who receive benefits through Aid to Families with Dependent Children (AFDC);¹² (c) households who receive Supplemental Security Income (SSI); and (d) households who receive Social Security (retired widows and widowers).¹³

As Table 1¹⁴ demonstrates, each of these populations of households experiences a winter home heating burden --these figures do not include winter non-heat electric burdens-- which likely push them beyond "affordable" levels. While LIHEAP recipients experience winter home heating burdens of roughly 17 percent, the home heating burden of AFDC households is nearly 30 percent. Social Security recipients have burdens which are somewhat lower.

¹¹See e.g., Colton, Sheehan, *et al.* (1995). *An Assessment of Low-Income Energy Needs in Washington State*, Fisher, Sheehan & Colton, Public Finance and General Economics: Scappoose, OR; Colton (1996). *Home Energy Assistance Review and Reform in Colorado*, Fisher, Sheehan & Colton, Public Finance and General Economics: Belmont, MA.

¹²AFDC is what most people think of as "welfare."

¹³Thus, not included in Social Security are disability recipients.

¹⁴All Tables are set forth in Appendix B.

These home heating burdens can be beneficially compared to the "shelter" burdens which the U.S. Department of Housing and Urban Development (HUD) has defined to be "affordable." According to HUD, if a household faces a *shelter* burden exceeding 30 percent of income, that household is over-extended. Shelter burdens include rent/mortgage payments plus all utility payments other than telephone.⁵⁾ A household that is paying 17 percent of its income simply toward home heating --again, not taking into account electricity as well-- will not be able to fall below this 30 percent limit.

The significance of the home heating burdens imposed on low-income households is even more apparent when one considers the full range of incomes at which low-income residents of Ohio live. Most households who qualify for LIHEAP in Ohio by living at or below 150 percent of Poverty live *below* the ceiling rather than *at* the ceiling. Table 2 sets forth the actual distribution of winter heating burdens for Ohio LIHEAP recipients for the most recent year in which data is available. While it is a simple matter of arithmetic that energy burdens as a percentage of income will increase as dollar incomes decrease, the *magnitude* of the burden at the lower income levels may be somewhat stunning. As Table 2 shows, a household with an annual income of \$0 to \$2000 will have winter heating burdens⁶⁾ of nearly 120 percent; households living with annual incomes of \$2000 to \$4000 will have winter heating burdens of roughly 40 percent; and households living with annual incomes of \$4000 to \$6000 will have winter heating burdens of nearly 25 percent.

The number of households with these extremely low levels of annual incomes (and thus high heating burdens) is not small. Table 3 shows that amongst the roughly 330,000 Ohio LIHEAP participants, more than 156,000 (47 percent) lived with incomes of less than \$6,000 in Fiscal Year 1990 - 1991.

Non-Heating Home Energy Bills in Ohio

Focusing attention only on heating bills generally results in inadequate attention being devoted to the impacts of *electric* policy on low-income households. This focus is misplaced. Low-income electric *non*-heating consumption represents roughly 35 - 40 percent of low-income usage and 60 - 65 percent of low-income bills. As shown in Table 4, this is true nationwide as well as for each region of the country.

As can be seen, even for low-income households (who have less discretionary electric consumption than the population as a whole), heating bills are only roughly 35 - 40 percent of total energy bills. What happens to the price of electricity is thus important to low-income consumers.

Summer electric bills can be just as unaffordable to low-income households as winter heating bills are. As Table 5 shows, summer electric bills (500 kWh/month) for Ohio's eight largest electric companies impose burdens as a percentage of income ranging from 12 percent to more than 22 percent of income for public assistance recipients.⁷⁾

⁵⁾Hence, for example, the utility payments would include home heating, electricity, water/sewer, and garbage and/or trash pick-up where appropriate.

⁶⁾Remember, these do *not* include electric bills in addition to heating bills. Taking electric bills into account would drive burdens even higher.

⁷⁾Again, according to HUD, if total shelter costs exceed 30 percent, a household is financially overextended.

The conclusions from this data are several fold *vis a vis* a wires charge for Ohio. The need for cash fuel assistance is great in Ohio, both in terms of dollars and in terms of the number of households in need. Second, with many of these households, the need for cash assistance cannot be alleviated through reduced bills generated by improvements in energy efficiency. Third, given the income of these households, virtually *any* energy bill will impose unaffordable burdens. Fourth, the energy problems of these households are not household budgeting problems. There is, instead, an absolute mismatch between household resources and expenses. Finally, given the energy burdens facing low-income households, there will be an inevitable need for a crisis intervention fund to prevent the loss of service due to inability-to-pay.

The Need for Low-Income Energy Efficiency Assistance through a Wires Charge

In addition to the need for cash fuel assistance to be funded through a wires charge, a significant number of low-income households in Ohio are in need of energy efficiency improvements. It is difficult, if not impossible, to quantify the precise number of low-income units in Ohio that are in need of energy efficiency improvements. Some rough estimates can be made, however, for the year 1990. In 1995, there were roughly 840,000⁸⁾ low-income households in Ohio.⁹⁾ According to state Weatherization Assistance Program (WAP) officials, Ohio has weatherized roughly 210,000 homes from 1989 through 1995.¹⁰⁾ Due to decreased funding levels, however, the number of units per year has dropped dramatically.

1989	1990	1991	1992	1993	1994	1995	1996
16,880	17,223	15,759	13,961	12,604	11,942	10,438	7,297

In addition, much of the total weatherization funding is in jeopardy over the long-term. Of the \$19,529,053 spent in Fiscal Year 1996, for example, \$9,388,170 involved a block grant transfer from the federal LIHEAP program; an additional \$3,040,649 involved Stripper Well "oil overcharge" funds. Oil overcharge funds represent a finite funding source. Moreover, should the LIHEAP program continue to be substantially reduced, it is reasonable to expect transfers to weatherization to be curtailed or eliminated.

⁸⁾This is a calculated number. In 1990, there were roughly 810,000 low-income households (at or below 150% Poverty) in Ohio. According to HUD, Ohio experiences roughly 40,000 new housing units per year authorized by building permits, of which approximately 15 percent (6,000/year) are likely to be inhabited by low-income households. There will some duplicated households here, since some of the inhabitants of the new housing will come from the 810,000 existing low-income households. Nonetheless, the range of low-income households will be 835,000 to 845,000 households. The 840,000 presented here is simply the mid-point of that range.

⁹⁾For these purposes only, "low-income" is defined to be at or below 150 percent of the federal Poverty Level. If, as recommended below, "low-income" is instead defined to include all households at or below 200 percent of Poverty, this total population would need to be increased.

¹⁰⁾Due to changes in technology and program requirements, homes weatherized prior to 1988 are assumed to be in need of re-weatherization.

In addition to units weatherized through WAP, in September 1992, the state Board of Building Standards adopted the 1990 BOCA energy standards along with the 1989 Council of American Building Officials Model Energy Code (CABO MEC).¹¹¹ In July 1995, the state adopted the 1993 CABO MEC as the Ohio energy conservation code for new construction. The low-income households living in units constructed in 1993 and later,¹¹² therefore, are assumed to not be in need of additional weatherization.¹¹³ Assuming no unduplicated fully weatherized homes treated by utilities in that time,¹¹⁴ roughly 610,000 low-income housing units thus remain to be weatherized in Ohio.¹¹⁵

Assuming continuing WAP production levels of 7,000 units per year, assuming further that no weatherized house will ever need to be re-weatherized, and assuming finally that no expansion in Ohio's low-income population will occur, these un-weatherized homes will all be treated with energy efficiency improvements by the year 2082, roughly 87 years. Clearly, an additional source of low-income energy efficiency funding is needed.

Age of Low-Income Housing Units in Ohio

Two additional ways exist to develop a surrogate for energy efficiency needs in low-income housing in Ohio. While, as mentioned above, no direct measurement exists of the number of energy inefficient low-income housing units in Ohio, some correlation can be drawn between energy inefficiency and the age of housing units. Table 6 sets out the number of Ohio households, at different levels of "being poor," distributed by the age of the housing units in which they live. As can be seen, while it is impossible to conclude with any specificity the actual *extent* of energy inefficiency, it *is* possible to see the potential that hundreds of thousands of low-income Ohio households live in old, and presumptively energy inefficient, housing units. Roughly 230,000 households living at or below 50 percent of median income live in housing that was constructed before 1940. More than 550,000 households living at or below 80 percent of median income live in housing that was constructed before 1940, more than 55 years ago.

Moreover, these households do not refer to all housing units, but rather simply to housing units that are affordable (i.e., yield total shelter burdens at or below 30 percent of income) at those income levels.

¹¹¹Ohio Administrative Code, §4101:2-31-99.

¹¹²There are roughly 18,000 of these (3 years --1993, 1994 and 1995-- x 6,000 per year).

¹¹³According to state officials, local enforcement of building codes, including energy efficiency codes, frequently does not exist. In those places, it is unlikely that new construction complies with administrative regulations regarding "mandatory" energy efficiency.

¹¹⁴Homes treated by utility DSM programs are assumed either to be done in cooperation with the WAP program, or assumed, in the alternative, not to have been provided heating efficiency improvements.

¹¹⁵This is calculated as follows: 840,000 minus 212,000 weatherized homes minus 18,000 homes built after the energy efficiency code adopted. This yields roughly 610,000 units.

Affordability of Housing Units

A different surrogate to be used to identify the need for energy efficiency improvements involves shelter burden. The starting point again is HUD's rule that a household which devotes in excess of 30 percent of income toward shelter costs are over-extended.¹⁶⁾ Table 7 presents the number of Ohio households who are called upon to pay either more than 30 percent of their income or more than 50 percent of their income toward their shelter costs. As this Table shows, roughly 760,000 Ohio households living at or below 80 percent of median income pay more than 30 percent of their income, and nearly 360,000 households at those income levels pay more than 50 percent of their income toward their total shelter costs.

Given the discussion above as to home energy burdens, it is clear that home energy bills contribute to the lack of shelter affordability. A review of monthly Fair Market Rents (FMRs),¹⁷⁾ and the extent to which utility bills contribute to those monthly shelter costs, is set forth in Table 8.¹⁸⁾ This Table shows utility bills in relation to total shelter costs in the six major Ohio cities for which data is available. Utility bills represent from roughly 45 to nearly 60 percent of total shelter costs. To the extent that energy efficiency can reduce these bills, overall shelter affordability will improve. Conversely, the lack of shelter affordability indicates a potential for beneficial energy efficiency improvements.

Finally, Table 9 presents the number of Ohio units that are "affordable" but which have some type of physical problem associated with them. As can be seen, three-in-ten affordable units for Ohio households at 0 - 30 percent of median income (28%), one-in-three affordable units for Ohio households at 31 - 50 percent of median income (33%), and one-in-four affordable units for Ohio households at 51 - 80 percent of median income (23%) have some type of physical problem. If one engages in the assumption that households with "physical problems" are likely to have energy efficiency problems as well, the extent of the acute need for low-income energy efficiency improvements in Ohio is evident.

Utility Benefits from Low-Income Energy Efficiency

In addition to looking at energy efficiency from the household perspective, it is necessary to examine the benefits of a low-income energy efficiency program from the perspective of the utility offering such a program. Extensive research has found that low-income energy efficiency programs result

¹⁶⁾As discussed above, shelter costs include rent/mortgage payments plus all utilities except telephone service.

¹⁷⁾FMRs concededly do not include mortgage payments. FMRs set by HUD are based on area rents at the 40th percentile.

¹⁸⁾R.Colton (1994). *The Role of Utility Costs in Setting Fair Market Rents For Section 8 Housing*, presented in, *Section 8 Housing Assistance Payments Program--Fair Market Rent (FMR) Schedules for Use in the Rental Certificate Programs, Loan Management and Property Disposition Programs, Moderate Rehabilitation Program and Rental Voucher Program*, HUD Docket No. N-94-3754 (October 1994) (presented on behalf of ten Legal Services Corporation offices) (looking at data from 100 cities in 38 states and the District of Columbia).

in substantial non-energy savings to utilities. These non-energy savings include reductions in working capital expense, uncollectible accounts, credit and collection expenses, and the like.¹⁹ The results of one of the most recent studies are summarized in Table 10. Table 10 shows the results of the Pennsylvania Low-Income Usage Reduction Program (LIURP) for all Pennsylvania utilities. The Table presents pre-treatment and post-treatment payment patterns for the low-income households to whom energy efficiency was delivered. A payment of less than 100 percent means that the low-income household was not even paying the current month's utility bill. In contrast, a payment *exceeding* 100 percent means that the low-income household was not only paying the current bill, but was paying off its arrears as well.

As Table 10 shows, for every Pennsylvania utility but one, the delivery of energy efficiency substantially improves the payment patterns of the treated low-income households. Indeed, the general impact of the delivery of energy efficiency was a *substantial* increase in the payment coverage of the household energy bill. In most cases the low-income household moved from a situation where that customer was falling further and further behind by failing to pay the current bill to a situation where the household was paying the entire current bill and beginning to retire the arrears.

Summary

A wires charge to fund low-income programs in Ohio should be used for two different purposes. Each purpose is not only appropriate, but essential. The first purpose of a wires charge in Ohio is to generate cash fuel assistance to be delivered to low-income households. This cash assistance should include both a basic grant component and a crisis intervention component. The second purpose is to generate funding for the delivery of low-income energy efficiency improvements.

THE COST OF AN ALL FUELS "WIRE CHARGE" IN OHIO

Having established the need for a "wires charge" in Ohio, the next question to be addressed is the cost which creating such a charge would impose on Ohio ratepayers. The assumption behind this analysis is that a "wires charge" is to be imposed on end-use consumption involving electricity and natural gas. The term "wires charge" is thus used for simplicity's sake, and not used to indicate that the entire burden of the charge is to be imposed on electric customers. In addition, however, one scenario examined below involves an electric only wires charge.

Tables 11 and 12 below are each set forth in four parts. The four parts assume differing levels of low-income assistance funding. Tables 11 and 12 assume funding at 100 percent of the 1986 Ohio LIHEAP appropriation (in 1995 dollars), as well as 125 percent, 150 percent and 200 percent.²⁰

¹⁹Colton (1995). *Energy Efficiency and the Low-Income Consumer: Planning, Designing and Financing*, at Chapter 7, Fisher, Sheehan & Colton, Public Finance and General Economics: Belmont, MA (summarizing existing utility research examining non-energy benefits).

²⁰The recommendation is to address total home energy bills, not simply home heating bills. Since LIHEAP is primarily a heating assistance program, a total home energy program is assumed to require additional funding.

Table 13, the Table which includes the electric only analysis, has a fifth part. The electric only analysis examines funding at 50 percent, as well as 100 percent, 125 percent, 150 percent, and 200 percent of the 1986 LIHEAP appropriation (1995 dollars).¹²¹⁾ More particularly:

oTable 11 assumes that an electric/natural gas wires charge in Ohio is imposed only on residential ratepayers.

oTable 12 assumes that, in the alternative, an electric/natural gas wires charge in Ohio is imposed on all end-use consumption of the stated fuels for industrial, commercial and residential customers.

oTable 13 assumes that an electric-only wires charge is imposed in Ohio. The Table considers a charge on residential consumption alone on the one hand, and a charge on all end-use consumption for industrial, commercial and residential customers on the other hand.

The Tables are intended to generate four pieces of data on a state-specific basis for Ohio: (a) the per unit of energy cost of a wires charge of the specified amounts for each fuel type; (b) the *total* cost allocated to each fuel type arising out of a wires charge of the specified amounts; (c) the difference caused by allocating program costs only to residential versus allocating program costs to aggregate residential, commercial and industrial end-use; and (d) the dollar contribution of each class of customers if spread over residential, commercial and industrial customers.

Methodology

The methodology employed in Tables 11 through 13 begins with the estimated funds that are desired to be generated through the wires charge. The estimated funds are tied to the 1986 LIHEAP appropriation (adjusted to 1995 dollars).¹²²⁾ The estimates are then incrementally adjusted upwards to provide information should decisionmakers wish to generate additional dollars beyond historic LIHEAP levels to assist in meeting total home energy needs rather than simply home heating needs. The electric-only analysis, however, adds a fifth scenario (50%) to provide a basis for evaluating the impacts should the assistance provided through an electric-only wires charge be scaled back to reflect a decision to limit the use of the funds only to electric assistance. The inclusion of this 50% scenario should be construed only as an effort to help provide decisionmakers with information; it does not represent an endorsement of this approach.

¹²¹⁾The lesser proportion is to provide an alternative which involves scaling back benefits to address only electric usage. This scenario is to provide a basis for some consideration of the impact of not developing a source of funds to provide benefits for any consumption using natural gas or bulk fuels.

¹²²⁾The 1986 LIHEAP appropriation was the highest appropriation for the nation as a whole. In 1986, Ohio received \$106,738,516 in LIHEAP funds. U.S. Department of Health and Human Services, *Low Income Home Energy Assistance Program, Report to Congress for Fiscal Year 1986*, at Table C-4, page 67 (July 1987).

The funds estimated through the various scenarios are then distributed via an allocator. In the scenario where the funds are distributed solely to the residential class, the funds are divided by the total number of mmBtu consumed by the residential customer class in Ohio to derive a cost per Btu. That cost per Btu is then multiplied by the Btu's per unit of fuel to derive a per unit of fuel cost (*i.e.*, cost per MCF, cost per kWh). The cost per Btu is further multiplied by the number of Btu consumed within each fuel class at the end-use level to determine the total dollars to be derived from each fuel source. The effect of this methodology is to assign a responsibility to each fuel source equal to the proportion of end use residential energy supplied by that fuel source of a per Btu basis.

The same process is used for the section that distributes the cost over all residential, commercial and industrial end-use consumption. The total dollars desired are divided by the total end use consumption from those three customer classes. The per Btu cost is then multiplied by the number of Btu in each type of fuel unit to derive a per unit of fuel cost, and multiplied by the total number of Btu consumed at the end use level to derive the total contribution which each fuel type would make to the bottom line. This results in an allocation based not on the proportion of end use fuel type within only the residential class, but by the proportion of end use fuel type within all customer classes combined.

The 100% scenario is set forth in Tables 11A, 12A, and 13A; the 125% scenario is set forth in Tables 11B, 12B and 13B; the 150% scenario is set forth in Tables 11C, 12C and 13C; and the 200% scenario is set forth in Tables 11D, 12D and 13D. Table 13E reflects the electric-only 50% scenario.^{123\}

Allocating Costs Only to Residential Customers

A wires charge designed to generate 100 percent of the 1986 LIHEAP appropriation in Ohio (1995\$) imposed only on the residential customer class would result in a price increase of the following for natural gas and electric users in Ohio:

roughly 1.9 cents per CCF for natural gas users. Assuming a consumption of roughly 1,100 CCF per year, this results in an annual bill increase of roughly \$21, or about \$1.74 per month.

roughly six one-hundredths of a cent per kWh for electricity users. Assuming a consumption of 9,000 kWh per year, this results in an annual bill increase of \$5.67, or about 47 cents per month.

In contrast, a wires charge designed to generate 200 percent of the 1986 LIHEAP appropriation in Ohio (1995\$) imposed only on the residential class would result in a price increase of the following for natural gas and electricity in Ohio:

^{123\}There is no corresponding Table 11E or 12E.

roughly 3.8 cents per CCF for natural gas users. Again, assuming an annual consumption of roughly 1,100 CCF, this results in an annual bill increase of roughly \$42, or about \$3.50 per month.

roughly 12 one-hundredths of a cent per kWh for electricity. Again, assuming a consumption of 9,000 kWh per year, this results in an annual bill increase of about \$11.25, or roughly 94 cents a month.

Clearly, the costs of generating 125 percent and 150 percent of the 1986 LIHEAP appropriation (1995\$) from the residential class alone fall somewhere in between. The precise costs for these two scenarios are set forth in Tables 11B and 11C respectively.

Allocating Costs to Residential, Commercial and Industrial Customers

A wires charge designed to generate 100 percent of the 1986 LIHEAP appropriation in Ohio (1995\$) imposed on the combined residential, commercial and industrial customer base would result in a price increase of the following for natural gas and electric residential fuel users in Ohio:

roughly six tenths of a cent per CCF for natural gas users. Assuming a consumption of roughly 1,100 CCF per year, this results in an annual bill increase of roughly \$7.04, or about 60 cents per month for the average residential consumer.

roughly 3.9 one-hundredths of a cent per kWh for electricity users. Assuming a consumption of 9,000 kWh per year, this results in an annual bill increase of \$3.42, or less than 30 cents per month for the average residential customer.

In contrast, a wires charge designed to generate 200 percent of the 1986 LIHEAP appropriation in Ohio (1995\$) imposed on the combined residential, industrial and commercial classes would result in a price increase of the following for residential natural gas and electricity users in Ohio:

roughly 1.3 cents per CCF for natural gas users. Assuming an annual consumption of roughly 1,100 CCF, this results in an annual bill increase of roughly \$13.97, or about \$1.16 per month for the average residential customer.

roughly eight one-hundredths of a cent per kWh for electricity. Assuming a consumption of 9,000 kWh per year, this results in an annual bill increase of about \$6.84, or just over 55 cents a month for the average residential consumer.

Clearly, the costs of generating 125 percent and 150 percent of the LIHEAP appropriation from the combined residential, commercial and industrial classes fall somewhere in between. The precise costs for these latter two scenarios are set forth in Tables 12B and 12C respectively.

Allocating Costs only to Electric Consumption

A wires charge designed to generate 100 percent of the 1986 LIHEAP appropriation in Ohio (1995\$) imposed only on electric consumption would result in a price increase of the following for residential electric users in Ohio:

roughly three one-hundredths of one cent per kWh if spread over all electric classes (residential, commercial, industrial). Assuming an annual consumption of roughly 9000 kWh, this results in an annual bill increase of roughly \$2.88, or about 24 cents per month.

roughly eleven one-hundredths of a cent per kWh if spread over only residential consumption. Assuming a consumption of 9,000 kWh per year, this results in an annual bill increase of \$10.35 or about 86 cents per month.

In contrast, a wires charge designed to generate 200 percent of the 1986 LIHEAP appropriation in Ohio (1995\$) imposed only on electric consumption would result in a price increase of the following for residential electric users in Ohio:

roughly 6.5 one-hundredths of one cent per kWh if spread over all electric classes (residential, commercial, industrial). Assuming an annual consumption of roughly 9000 kWh, this results in an annual bill increase of roughly \$5.85, or about 50 cents per month.

roughly 23 one-hundredths of a cent per kWh for electricity. Again, assuming a consumption of 9,000 kWh per year, this results in an annual bill increase of about \$20.61, or roughly \$1.72 a month.

Clearly, the costs of generating 125 percent and 150 percent of the 1986 LIHEAP appropriation (1995\$) from electricity consumption alone fall somewhere in between. The precise costs for these two scenarios are set forth in Tables 13B and 13C respectively.

In addition, however, this analysis examines the impact of generating only 50 percent of the 1986 LIHEAP appropriation for Ohio (1995\$). A wires charge designed to generate 50 percent of that appropriation imposed only on electric consumption would result in a price increase of the following for residential electric users in Ohio:

roughly 1.6 one-hundredths of one cent per kWh if spread over all electric classes (residential, commercial, industrial). Assuming a consumption of roughly 9000 kWh per year, this results in an annual bill increase of roughly \$1.44, or about 12 cents per month.

roughly 5.7 one-hundredths of a cent per kWh for electricity. Again, assuming a consumption of 9,000 kWh per year, this results in an annual bill increase of about \$5.13, or roughly 43 cents a month.

This analysis of the 50% scenario is set forth in Table 13E. This Table considers costs for a residential only scenario as well as for a scenario involving combined residential, industrial and commercial consumption.

A PROPOSED STRUCTURE FOR AN OHIO WIRES CHARGE

A proposed structure for an Ohio wires charge to fund low-income programs should address five issues:

- (1) What benefits should the wires charge pay for;
- (2) Who should bear the cost of the wires charge;
- (3) What should the value of the wires charge be;
- (4) How can the wires charge be made immune to bypass; and
- (5) Who should collect and distribute the wires charge.

What Benefits Should the Wires Charge Pay For

For all of the reasons discussed in the first section of this paper, a wires charge should be developed to pay for: (a) basic cash fuel assistance; (b) crisis intervention assistance; and (c) energy efficiency programs.

Energy efficiency programs should include not only direct investment programs involving partnerships with local Community Action Agencies (or other WAP sub-grantees),^{124\} they should include innovative partnerships involving housing,^{125\} financial institutions,^{126\} community development financial institutions,^{127\} and other public and private housing programs.^{128\}

The Value of the Wires Charge

^{124\} See e.g., Colton (1994). *Energy Efficiency and the Low-Income Consumer: Planning, Designing and Financing*, Fisher, Sheehan & Colton, Public Finance and General Economics: Belmont, MA; Colton (1994). *Securitizing Utility Avoided Costs: Creating an Energy Efficiency "Product" for Private Investment in WAP*, Fisher, Sheehan & Colton, Public Finance and General Economics: Belmont, MA.

^{125\} See e.g., Colton (1995). *Funding Minority and Low-Income Energy Efficiency Programs in a Competitive Electric Industry*, Fisher, Sheehan & Colton, Public Finance and General Economics: Belmont, MA.

^{126\} See e.g., Colton (1995). *Energy Efficiency as a Credit Enhancement: Public Utilities and the Affordability of First-Time Homeownership*, Fisher, Sheehan & Colton, Public Finance and General Economics: Belmont, MA.

^{127\} See e.g., Colton and Sheehan (1994). *"Linked Deposits" as a Utility Investment in Energy Efficiency for Low-Income Housing*, Fisher, Sheehan & Colton, Public Finance and General Economics: Belmont, MA.

^{128\} See e.g., Colton (1996). *Changing Paradigms for Delivering Energy Efficiency to the Low-Income Consumer by Competitive Utilities: The Need for a Shelter-Based Approach*, Fisher, Sheehan & Colton, Public Finance and General Economics: Belmont, MA.

The value of the wires charge to be collected should be based on the total amount of funds desired by the state. The cost per Btu, and thus the per unit of energy charge, should flow from this broader decision. Hence, for example, the state should decide whether it wishes to generate funding at 100 percent, 125 percent, 150 percent or 200 percent of LIHEAP levels, rather than deciding whether to increase rates by 1.0%, 1.5% or some other factor. One difficulty with increasing rates by a uniform percentage is the inherent unfairness of the distribution of the levy. As shown by Tables 11 and 12, a one percent increase in natural gas rates is not equal in burden to a one percent increase in electric rates on a per unit of energy basis. Moreover, it seems most reasonable to decide what end result is desired before addressing the mechanism (*i.e.*, the per unit of energy charge) to be used to achieve that result.

This is not to say, of course, that the final dollar figure desired should not always be tempered by the impact which such fundraising has on rates. It is merely to state that the state should have an end-in-view as to total dollars desired before beginning the cost allocation process.

The value of the wires charge depends upon several underlying decisions. The first issue was addressed above. The wires charge should be sufficient to generate funds for: (a) basic cash fuel assistance; (b) crisis intervention grants; and (c) energy efficiency programs.

The Value of Cash Fuel Assistance: Basic Grants and Crisis Intervention

The amount of money needed to provide basic cash fuel assistance grants, as well as crisis intervention, depends upon four factors.

oDefining the "energy bill" to be covered: For all of the reasons outlined in the first section of this paper, a wires charge should be designed to address both heating and non-heating components of low-income bills. This focus supplants and replaces the current focus on heating bills with a new focus on total home energy bills (excluding transportation).

oDefining "low-income": The state must next define what it means by "low-income." Historically, the cap for LIHEAP participation has been established by federal statute as being either 150 percent of the federal Poverty Level *or* 60 percent of median income, at the state's discretion. In contrast, most HUD programs define "low-income" as extending up to 80 percent of median income. Table 14 below presents statewide figures on how this decision affects the number of families^{29\} deemed to be "low-income" in Ohio. Based on the historical inadequacy of 150

^{29\}"Families" and "households" are not synonymous.

percent of Poverty as an indicator of inability-to-pay,^{30\} our recommendation is that "low-income" be set at 200 percent of the federal Poverty Level.^{31\}

oMaking assumptions as to participation levels: The third decision which goes into making a determination of how much money to raise through a wires charge involves the participation rate from amongst the eligible population. Nationwide, LIHEAP participation rates range from roughly 20 percent to roughly 40 percent of the eligible population. An assumed participation rate of 30 to 35 percent in low-income fuel assistance programs funded through an Ohio wires charge would not be unreasonable.

oTargeting assistance: The final decision that goes into making a determination of how much money to raise through a wires charge in Ohio involves the decision rule for targeting assistance. The most commonly used benchmark is to establish lowering low-income energy burdens (*i.e.*, energy bills as a percent of income) to the total population average as the "ideal." This goal, however, often involves expenditures beyond a magnitude that would be politically acceptable. Lowering total energy burdens to a range of 10 - 12 percent allows for reasonable success in making payments by low-income households while staying within reasonable budgetary constraints.^{32\}

As part of the decision on how much money to raise through a wires charge, it would be appropriate, also, to establish a cap on administrative expenses for both the fuel assistance and energy efficiency components of the program. A cap based on existing LIHEAP statutory restrictions (10 percent) is not unreasonable.

The Value of Low-Income Energy Efficiency Assistance

The low-income energy efficiency program funded through a wires charge should involve both adequate scope and funding. Adequate "scope" of the low-income energy efficiency program means that the state should seek to serve a wide-range of low-income constituencies. Adequate "funding" means that the low-income energy efficiency budget should increase until the program exhausts the available cost-effective measures, or until it exhausts the institutional capacity to deliver cost-effective measures, whichever comes first.

^{30\}While not having space to document the discussions in the literature, it should be noted that 150 percent of Poverty does not reach many of the "working poor" who do not qualify for public assistance, but who nonetheless lack the financial ability to pay ongoing household expenses. In addition, many Social Security recipients also fall over (not far over, but nevertheless over) the 150 percent of Poverty Level ceiling.

^{31\}As a rule of thumb, 200 percent of the federal Poverty Level is considered roughly equal to 50 percent of median income. The statewide data in Ohio tends to bear this out. While roughly 840,000 families live at 200 percent of Poverty, roughly 960,000 families live at 50 percent of median income.

^{32\}It would be reasonable, also, to vary the target energy burden by household size. Ten percent of income is more important to a household with eight persons than it is to a household with two persons.

Determining the funding of low-income energy efficiency programs presents somewhat of a problem. While, in theory, a program should continue to fund energy efficiency measures until the marginal costs of those measures 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 energy efficiency budget. Why should the State of Ohio, in other words, spend \$8.0 million a year and not \$9.0 million? Why should the State serve 5,000 households rather than 6,000 households?

One principle does seem appropriate to guide low-income energy efficiency funding decisions. The extent of low-income energy efficiency funding should be sufficient to ensure that there are no lost opportunities in any given year. 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 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 the state or 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 Ohio. 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 energy efficiency, of course, should include the capacity of the state's utilities in addition to the private non-utility contractors.

As can be seen, one component of a low-income energy efficiency program funded through a wires charge is a periodic inventory of the institutional capacity to deliver low-income energy efficiency measures. The inventory should cover the planning period of the non-profit agency administering the wires charge funds. If that agency develops three year energy efficiency plans, 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 energy efficiency should thus be sufficient to finance full utilization of the inventoried capacity.¹³³⁾

In sum, the upper limit on the budget for delivering low-income energy efficiency measures through an Ohio wires charge should be the point at which the marginal costs of such measures equal the marginal benefits. In reality, however, low-income programs rarely, if ever, spend to the margin. A substitute principle thus needs to be developed as a decision rule for the extent of low-income energy efficiency funding. The proposed decision rule is that funding through the wires charge¹³⁴⁾ should be of sufficient magnitude to ensure that there is no unused institutional capacity to deliver cost-effective low-income energy efficiency services. Stated another way, funding should be adequate such that no lost opportunities occur within the realm of low-income energy efficiency.

How to Make the Wires Charge Immune to Bypass

The recommendation inherent in this analysis is that a wires charge be imposed "at the meter." This recommendation stands in contrast to some recommendations that propose to impose the wires charge at the provider level. The primary goal of such proposals, it appears, is to try to force responsibility for some portion of the wires charge back on the shareholders, as competitive energy providers choose not to pass on the charge in retail rates. That goal, standing alone, represents an insufficient reason to impose a wires charge at the provider level.

Moreover, full responsibility for a wires charge should not be subject to bypass, in whole or in part, by a customer switching fuels. For this reason, the wires charge should not be imposed on a flat percentage of revenue (or a flat per unit of energy charge) basis. As Tables 11 and 12 show, imposing the wires charge on a per Btu basis is not only "equitable" in that it assigns cost responsibility based on the proportion of fuel consumed, it creates the situation where a customer switching from one fuel to another does not change the proportionate responsibility he or she bears as a user of that fuel.

Proposals for a flat per customer charge are somewhat summarily rejected. Under such a scheme, each unit in a 50-unit multi-family building that is individually metered (50 customers) would pay the same wires charge as the entire 50-unit building which is master-metered (one customer). There is little equity in such a proposal.

How to Make the Wires Charge Competitively Neutral

The proposed wires charge for Ohio is competitively neutral. In this sense, the term "competitively neutral" means that the imposition of the wires charge does not change the competitive position of fuels that would otherwise exist in the absence of such a charge. This competitive neutrality is

¹³³⁾The non-profit agency which administers the wires charge then 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.

¹³⁴⁾Combined with WAP and other sources of revenues.

enforced by imposing the wires charge on a per Btu basis. As a result, there is no greater or lesser incentive to purchase one fuel rather than another because of the wires charge. Nor is there any incentive to purchase from one supplier rather than another (within the same type) as a result of the wires charge.

Who Should Collect and Distribute the Wires Charge

A wires charge should be collected through, and distributed by, a private non-profit agency modelled after an institution such as the Colorado Energy Assistance Foundation. Such an institution is a private, non-profit agency with an independent Board of Directors, who is subject to the additional oversight of a publicly accountable commission.

The Colorado Energy Assistance Foundation (CEAF) is a non-profit fundraising organization under the direction of the Colorado Commission for Low-Income Energy Assistance created by Governor Romer in 1988. In turn, in 1989, that Commission created CEAF, which was designed to bridge the gap between the growing need for heating assistance statewide and the decreasing availability of federal funds. In addition to its own Board of Directors, therefore, CEAF is subject to oversight by the Commission which consists of gubernatorial appointments from the various stakeholders in low-income assistance. Representatives of public and private utilities, relevant state agencies, and community-based organizations sit on the Commission.

Unlike a private non-profit agency organized to administer a wires charge fund, as a public/private partnership, CEAF's fundraising involves regulated and non-regulated energy providers, the public, and both the state and federal governments. CEAF's fundraising involves legislation, customer contributions, special requests during utility refunds, company matching programs, the Combined Federal Campaign, investment and interest earnings, events, corporate contributions, and settlement agreements. Nonetheless, CEAF awards an annual contribution to the state LIHEAP agency for winter energy assistance as well as for approved special projects.

Oversight of the private non-profit organization can be modelled after the oversight of the universal service fund created for telephone service in Illinois. The Illinois Telephone Assistance Program was created by state law and is based on voluntary contributions to fund assistance to low-income families who need basic local phone service. UTAC is the non-profit organization comprised of phone company and consumer, as well as low-income, representatives and created under direction of the Illinois State Commerce Commission to administer the new telephone assistance program.

Beginning February 1, 1993, inserts were included in Illinois phone bills soliciting contributions for UTAC. After the first nine months of the program (September 1993), and every six months thereafter, UTAC files a petition with the Illinois Commerce Commission asking the Commission to determine the type and amount of assistance, if any, that can be provided to eligible consumers. Depending on the amount of the fund, the Commission, after hearings, will order that the fund be used to provide additional assistance on installation, assistance on the customer's monthly bill, or both.

In a similar fashion, oversight of a wires charge non-profit should rest with a state commission created along the lines of the Colorado Commission for Low-Income Energy Assistance. Jurisdiction should not rest with the Ohio Utility Regulatory Commission, since that Commission does not have experience in dealing with bulk fuels or fuel assistance generally. Nor should the wires charge be subject to the jurisdiction of either the state LIHEAP office or the state WAP office, since neither of those agencies has authority over --nor does it make sense to grant them authority over-- *both* low-income fuel assistance and energy efficiency programs.

A third model of the type of public oversight possible for such a public commission lies with the Oregon Oil Heat Commission. 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.
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.^{135\}

The Oregon OHC is financed through an assessment on each "oil marketer"^{136\} based on the "gross revenue derived from the business of being an oil marketer."^{137\} The revenue collected is limited so that it "will not substantially exceed the amount of the estimated expenditures stated in the final budget prepared by the commission."^{138\}

In sum, the recommended public commission to oversee a private non-profit wires charge organization would *not* be designed to develop detailed work plans for distribution of the wires charge funds. Instead, the commission would be charged with accomplishing three tasks:

^{135\}ORS, §469.230.

^{136\}"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."

^{137\}ORS, 469.254.

^{138\}ORS, §469.254(3).

- o Providing direction on the general division of revenue between basic cash assistance, crisis intervention, and energy efficiency improvements;
- o Approving, after hearing, a proposed annual work plan developed and submitted by the private non-profit agency administering the funds; and
- o Providing oversight such that the revenue collected will not substantially exceed the amount of the estimated expenditures stated in the final work plan approved by the commission.

Finally, the most reasonable means of local distribution of all types of assistance (basic cash grants, crisis intervention, and energy efficiency) would seem to be through existing LIHEAP and WAP distribution networks. In addition, however, the private non-profit and the commission should consider whether it is reasonable to expand the delivery network for crisis intervention beyond the existing LIHEAP sub-grantees.

Creation of a State Leveraging Incentive Fund

As part of the process of establishing a wires charge, the state legislature should create and fund a state leveraging incentive fund akin to the LIHEAP leveraging incentive fund created at the national level. This incentive fund would encourage local communities to bring local resources to bear on low-income energy affordability issues. Whether through energy efficiency programs through volunteer house repairs,^{139\} crisis assistance initiatives such as utility fuel funds, or some other mechanisms), the state should commit to encouraging (and rewarding) local initiatives.^{140\}

SUMMARY AND CONCLUSIONS

For all of the reasons outlined in this paper, a wires charge is a necessary and appropriate public policy response for low-income households in Ohio. A summary of the various decisions that might comprise the design of an Ohio wires charge is set forth in Appendix A below.

^{139\}The "Florida Fix" program coordinated and promoted by the Florida Housing Coalition (Tallahassee) is an excellent example of such a volunteer partnership. Florida Fix involves local groups of volunteers working to repair low-income housing.

^{140\}A broad ranging discussion of state and local fundraising initiatives can be found at Colton (1996). *Funding Fuel Assistance: State and Local Strategies to Help Pay Low-Income Home Energy Bills*, Fisher, Sheehan & Colton, Public Finance and General Economics: Belmont, MA. A listing of the programs described in that publication is attached as Appendix C.

**APPENDIX A:
SUMMARY OF RECOMMENDATIONS
STRUCTURE OF WIRES CHARGE IN OHIO**

1.A WIRES CHARGE SHOULD FUND TWO COMPONENTS OF LOW-INCOME ASSISTANCE.

- a.Cash fuel assistance.
- b.Energy efficiency assistance.

2.WHO PAYS FOR THE WIRES CHARGE.

- a.All customer classes (residential, industrial, commercial) should pay the wires charge.
- b.The "wires charge" should be imposed on all fuel sources.
 - i.Natural gas, electricity, propane, fuel oil, propane.
 - ii.The responsibility should be apportioned in proportion to usage of each fuel.

3.THE VALUE OF A WIRES CHARGE SHOULD CONSIDER THREE FACTORS.

- a.A "wires charge" should include a component for both:
 - i.Fuel assistance
 - (1)Define who is poor;
 - (2)Determine percent who will participate;
 - (3)Targeting assistance: affordable percentage of income.
 - ii.Energy efficiency.
 - (1)Exhaust the institutional capacity;
 - (2)Eliminate lost opportunities.

**APPENDIX A:
SUMMARY OF RECOMMENDATIONS
STRUCTURE OF WIRES CHARGE IN OHIO**

b.A "wires charge" should fund assistance directed toward total home energy bills, including non-heat electric, not simply home heating.

c. There should be an administrative dollar cap.

4. HOW TO MAKE THE WIRES CHARGE NON-BYPASSABLE.

a. Impose the wires charge "at the meter," not at the provider level.

b. The charge should be calculated on a per Btu basis.

i. Not a flat percentage basis.

ii. Not on a flat per customer basis.

5. WHO COLLECTS AND DISTRIBUTES THE WIRES CHARGE.

a. The wires charge revenue should be distributed through a statewide private non-profit organization.

i. Similar to existing institutions:

(1) Colorado Energy Assistance Foundation

(2) Universal Telephone Access Corporation (Illinois)

(3) Oregon Oil Heat Commission

b. The non-profit should be overseen by a publicly-accountable agency.

i. Again, similar to Colorado Energy Assistance Foundation, Universal Telephone Access Corporation (Illinois), Oregon Oil Heat Commission.

c. Distribute through existing networks.

i. LIHEAP network for cash fuel assistance.

(1) May consider expanding distribution network for crisis assistance to crisis providers in addition to LIHEAP sub-grantees.

ii. WAP network for energy efficiency investments.

**APPENDIX A:
SUMMARY OF RECOMMENDATIONS
STRUCTURE OF WIRES CHARGE IN OHIO**

6.MISCELLANEOUS "OTHER" ISSUES.

a. There should be a state-funded leveraging incentive fund.

i. Akin to federal LIHEAP leveraging incentive fund.

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

TABLE 1: AVERAGE WINTER NATURAL GAS HEATING BURDENS VARIOUS OHIO LOW-INCOME POPULATIONS WINTER 1990 - 1991			
	Average Winter Income	Average Winter Gas Bill	Bill as Income Percent
LIHEAP Recipients	\$1,737	\$299.11	17.2%
AFDC Recipients	\$1,002	\$299.11	29.9%
SSI Recipients	\$1,221	\$299.11	24.5%
Social Security:	\$1,852	\$299.11	16.1%

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

TABLE 2: WINTER GAS BILL AS PERCENTAGE OF INCOME: LIHEAP RECIPIENTS BY INCOME RANGE WINTER 1990 - 1991									
	AVERAGE WINTER NATURAL GAS BILL	INCOME \$0-1,999	INCOME \$2-3,999	INCOME \$4-5,999	INCOME \$6-7,999	INCOME \$8-9,999	INCOME \$10-11,999	INCOME \$12-14,999	INCOME \$15,000+
Ohio	\$299.11	119.6%	39.9%	23.9%	17.1%	13.3%	10.9%	8.9%	8.0%

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

TABLE 3: NUMBER OF LIHEAP RECIPIENTS BY INCOME RANGE WINTER 1990 - 1991									
	TOTAL STATE LIHEAP RECIPIENTS	INCOME \$0-1,999	INCOME \$2-3,999	INCOME \$4-5,999	INCOME \$6,-7,999	INCOME \$8-9,999	INCOME \$10-11,999	INCOME \$12-14,999	INCOME \$15,000+
Ohio	330,666	15,211	37,035	103,829	71,424	46,955	23,147	17,856	15,541

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

TABLE 4:
HEATING USAGE AS PERCENT OF TOTAL HOME ENERGY USAGE AND
HEATING BILLS AS PERCENTAGE OF TOTAL HOME ENERGY BILLS
NATIONAL DATA

	Usage (mmBtu)			Bills (\$\$\$)		
	Total	Heating	Percent	Total	Heating	Percent
All Households	103.9	56.5	54.4%	\$1,255	\$406	32.4%
Low-Income Households	90.9	50.6	55.7%	\$1,062	\$364	34.3%
LIHEAP Recipients	98.7	59.9	60.7%	\$1,067	\$412	38.6%

SOURCE:

Low-Income Home Energy Assistance Program Report to Congress for FY 1993, at 17 and 20 (Oct. 1994).

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

**TABLE 5:
UTILITY-BY-UTILITY
SUMMER ELECTRIC BILL (500 kWh)
AS PERCENT OF INCOME, PUBLIC ASSISTANCE RECIPIENTS**

State	Utility	Largest City Served	(June-Aug) Typical Bill	Avg Summer Public Assistance Income	Avg Summer Bill as Pct of Avg Income	No. of Public Assistance HHs in Largest Community
Ohio	Cincinnati Gas and Electric	Cincinnati	\$124.32	\$890	14.0%	22,095
	Cleveland Electric Illuminating	Cleveland	\$202.38	\$911	22.2%	43,808
	Columbus Southern Power	Columbus	\$138.33	\$942	14.7%	24,249
	Dayton Power and Light	Dayton	\$141.45	\$939	15.1%	11,237
	Monongohela Power	Marietta	\$98.07	\$806	12.2%	661
	Ohio Edison	Akron	\$181.41	\$934	19.4%	12,825
	Ohio Power	Canton	\$106.17	\$869	12.2%	4,905
	Toledo Edison	Toledo	\$191.58	\$939	20.4%	16,075

SOURCE:

Colton, *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* (1995).

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

TABLE 6:
UNITS OF HOUSING AFFORDABLE AT DIFFERENT LEVELS OF HUD-ADJUSTED MEDIAN FAMILY INCOME (HAMFI)
BY YEAR OF CONSTRUCTION

Year of Construction	0 - 30% Median Income			31 - 50% Median Income			51 - 80% Median Income		
	Renter	Owner	Total	Renter	Owner	Total	Renter	Owner	Total
Before 1940	73,050	133,260	206,310	156,871	186,370	343,241	100,012	224,208	324,220
1940 - 1949	24,830	28,604	53,434	56,518	68,408	124,926	42,519	122,296	164,815
1950 - 1959	26,361	29,434	55,795	65,165	89,890	155,055	61,912	249,471	311,383
1960 - 1979	88,783	96,455	185,238	167,393	84,151	251,544	236,136	281,289	517,425
1980 - 1990	29,252	36,660	65,912	38,957	19,611	58,568	93,174	48,425	141,599

Source: CHAS Data Base: HUD: 1990

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

TABLE 7: OHIO HOUSING AFFORDABILITY AT DIFFERENT LEVELS OF HUD-ADJUSTED MEDIAN FAMILY INCOME						
Income Range	Housing Burden > 30%			Housing Burden > 50%		
	Renter	Owner	Total	Renter	Owner	Total
0 - 30% HAMFI	248,832	124,150	372,982	191,407	77,572	268,979
31 - 50% HAMFI	137,417	86,721	224,138	36,587	29,638	66,225
51 - 80% HAMFI	73,610	92,012	165,622	5,793	15,574	21,367
Source: CHAS Data Base: HUD: 1990						

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

TABLE 8:
CONTRIBUTION OF UTILITY COSTS TO TOTAL SHELTER COSTS: SELECTED OHIO CITIES

State	City	FMR /a/	Monthly Winter Utility Bills for Selected Ohio Cities				Monthly Winter Utility Bill /b/	Percent of FMR Devoted to Utilities
			Natural Gas	Electricity	Water	Sewer		
Ohio	Akron	\$521	\$128	\$81	\$18	\$19	\$246	47%
Ohio	Canton	\$448	\$128	\$48	\$10	\$10	\$196	44%
Ohio	Cincinnati	\$495	\$135	\$50	\$12	\$17	\$214	43%
Ohio	Cleveland	\$517	\$132	\$79	\$8	\$11	\$230	44%
Ohio	Toledo	\$499	\$115	\$79	\$6	\$14	\$214	43%
Ohio	Youngstown	\$416	\$128	\$81	\$13	\$17	\$239	57%

NOTES:

/a/Fair Market Rents (FMRs) include contract rent plus all utilities. Determined and published by HUD on annual basis.

/b/May have minor differences from sum of individual columns due to rounding.

SOURCES:

Natural Gas:NARUC annual winter natural gas bill survey.

Electricity:NARUC annual winter electric bill survey.

Water:Ernst and Young annual water bill survey.

Sewer:Ernst and Young annual sewer bill survey.

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

TABLE 9: UNITS OF HOUSING AFFORDABLE AT DIFFERENT LEVELS OF HUD-ADJUSTED MEDIAN FAMILY INCOME WITH PHYSICAL PROBLEMS									
	0 - 30% HAMFI			31 - 50% HAMFI			51 - 80% HAMFI		
	Renter	Owner	Total	Renter	Owner	Total	Renter	Owner	Total
Total Units	242,276	302,413	544,689	484,904	458,430	943,334	533,733	925,689	1,459,422
Units With Physical Problems	75,953	78,545	154,498	207,283	87,779	295,062	203,761	130,412	334,173
Source: CHAS Data Base: HUD: 1990									

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

TABLE 10: BILL PAYMENT IMPACT FOR CUSTOMERS WITH ARREARAGES: LIURP: PENNSYLVANIA						
1992 LIURP	Heating Jobs		Water Heating Jobs		Baseload Jobs	
	Percent of Bill Paid Pre-Period	Percent of Bill Paid Post-Period	Percent of Bill Paid Pre-Period	Percent of Bill Paid Post-Period	Percent of Bill Paid Pre-Period	Percent of Bill Paid Post-Period
Duquesne	Not Applicable		91%	100%	78%	106%
Met Ed	78%	107%	79%	107%		
Pennelec	92%	95%	96%	99%		
Penn Power	Not Applicable		95%	93%		
PP&L	51%	95%	55%	105%		
PECO Electric	74%	118%	78%	109%		
UGI Electric	95%	105%	Not Applicable			
West Penn	126%	102%	129%	106%		
Columbia Gas	69%	133%				
Equitable	Not Applicable					
NFG	96%	125%				
PECO Gas	68%	133%				
PG&W	96%	106%				
Peoples	99%	106%				

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

T.W. Phillips	Not Available					
UGI Gas	89%	115%				
SOURCE: Pennsylvania PUC Evaluation of 1992 LIURP Program Results (1995).						

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

TABLE 11A: CHARGE NEEDED ON OHIO RESIDENTIAL CONSUMPTION TO GENERATE 100% OF 1986 LIHEAP APPROPRIATION (1995\$)			
Residential Only: 100% Scenario (\$149,433,922)	Natural Gas	Electricity	Total
Billion Btu Consumption	367.6	445.3	812.9
Fuel units	354,000,000	130,507,000,000	
Btu/fuel unit	1,038,418	3,412	
Dollars/btu	\$0.00000018	\$0.00000018	
Total dollars	\$67,575,236	\$81,858,686	\$149,433,922
Price per fuel unit	\$0.19089	\$0.00063	
NOTES:			
Fuel units:Natural Gas = MCF			
Electricity = kWh			

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

TABLE 11B: CHARGE NEEDED ON OHIO RESIDENTIAL CONSUMPTION TO GENERATE 125% OF 1986 LIHEAP APPROPRIATION (1995\$)			
Residential Only: 125% Scenario (\$186,792,403)	Natural Gas	Electricity	Total
Billion Btu Consumption	367.6	445.3	812.9
Fuel units	354,000,000	130,507,000,000	
Btu/fuel unit	1,038,418	3,412	
Dollars/btu	\$0.000000230	\$0.000000230	
Total dollars	\$84,469,046	\$102,323,357	\$186,792,403
Price per fuel unit	\$0.23861	\$0.00078	
NOTES:			
Fuel units:Natural Gas = MCF			
Electricity = kWh			

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

TABLE 11C: CHARGE NEEDED ON OHIO RESIDENTIAL CONSUMPTION TO GENERATE 150% OF 1986 LIHEAP APPROPRIATION (1995\$)			
Residential Only: 150% Scenario (\$224,150,883)	Natural Gas	Electricity	Total
Billion Btu Consumption	367.6	445.3	812.9
Fuel units	354,000,000	130,507,000,000	
Btu/fuel unit	1,038,418	3,412	
Dollars/btu	\$0.00000028	\$0.00000028	
Total dollars	\$101,362,855	\$122,788,028	\$224,150,883
Price per fuel unit	\$0.28634	\$0.00094	
NOTES:			
Fuel units:Natural Gas = MCF			
Electricity = kWh			

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

TABLE 11D: CHARGE NEEDED ON OHIO RESIDENTIAL CONSUMPTION TO GENERATE 200% OF 1986 LIHEAP APPROPRIATION (1995\$)			
Residential Only: 200% Scenario (\$298,867,844)	Natural Gas	Electricity	Total
Billion Btu Consumption	367.6	445.3	812.9
Fuel units	354,000,000	130,507,000,000	
Btu/fuel unit	1,038,418	3,412	
Dollars/btu	\$0.000000368	\$0.000000368	
Total dollars	\$135,150,473	\$163,717,371	\$298,867,844
Price per fuel unit	\$0.38178	\$0.00125	
NOTES:			
Fuel units:Natural Gas = MCF			
Electricity = kWh			

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

TABLE 12A: CHARGE NEEDED ON OHIO RESIDENTIAL, COMMERCIAL AND INDUSTRIAL CONSUMPTION TO GENERATE 100% OF 1986 LIHEAP APPROPRIATION (1995\$)			
Residential, Commercial, Industrial: 100% Scenario: (\$149,433,922)	Natural Gas	Electricity	Total
Billion Btu	852.0	1,576.7	2428.7
Fuel units	821,000,000	254,854,000,000	
Btu/fuel unit	1,037,759	6,187	
Dollars/btu	\$0.00000062	\$0.00000062	
Total dollars	\$52,422,161	\$97,011,761	\$149,433,922
Price per fuel unit	\$0.06385	\$0.00038	
NOTES:			
Fuel Units:Natural Gas = MCF			
Electricity = kWh			

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

TABLE 12B: CHARGE NEEDED ON OHIO RESIDENTIAL, COMMERCIAL AND INDUSTRIAL CONSUMPTION TO GENERATE 125% OF 1986 LIHEAP APPROPRIATION (1995\$)			
Residential, Commercial, Industrial: 125% Scenario (\$186,792,403)	Natural Gas	Electricity	Total
Billion Btu	852	1576.7	2428.7
Fuel units	821,000,000	254,854,000,000	
Btu/fuel unit	1,037,759	6,187	
Dollars/btu	\$0.000000077	\$0.000000077	
Total dollars	\$65,527,701	\$121,264,702	\$186,792,403
Price per fuel unit	\$0.07981	\$0.00048	
NOTES: Fuel Units:Natural Gas = MCF Electricity = kWh			

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

TABLE 12C: CHARGE NEEDED ON OHIO RESIDENTIAL, COMMERCIAL AND INDUSTRIAL CONSUMPTION TO GENERATE 150% OF 1986 LIHEAP APPROPRIATION (1995\$)			
Residential, Commercial, Industrial: 150% Scenario (\$224,150,883)	Natural Gas	Electricity	Total
Billion Btu	852.0	1,576.7	2428.7
Fuel units	821,000,000	254,854,000,000	
Btu/fuel unit	1,037,759	6,187	
Dollars/btu	\$0.000000092	\$0.000000092	
Total dollars	\$78,633,241	\$145,517,642	\$224,150,883
Price per fuel unit	\$0.09578	\$0.00057	
NOTES:			
Fuel Units:Natural Gas = MCF			
Electricity = kWh			

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

TABLE 12D: CHARGE NEEDED ON OHIO RESIDENTIAL, COMMERCIAL AND INDUSTRIAL CONSUMPTION TO GENERATE 200% OF 1986 LIHEAP APPROPRIATION (1995\$)			
Residential, Commercial, Industrial: 200% Scenario (\$298,867,844)	Natural Gas	Electricity	Total
Billion Btu	852	1576.7	2428.7
Fuel units	821,000,000	254,854,000,000	
Btu/fuel unit	1,037,759	6,187	
Dollars/btu	\$0.000000123	\$0.000000123	
Total dollars	\$104,844,321	\$194,023,523	\$298,867,844
Price per fuel unit	\$0.12770	\$0.00076	
NOTES:			
Fuel Units:Natural Gas = MCF			
Electricity = kWh			

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

TABLE 13A: CHARGE NEEDED ON OHIO ELECTRIC CONSUMPTION TO GENERATE 100% OF 1986 LIHEAP APPROPRIATION (1995\$)			
100% Scenario: \$149,433,922	All Classes	Residential Only	Total
Billion Btu	1,576.7	445.3	\$149,433,922
Fuel units	462,070,000,000	130,507,000,000	
Btu/fuel unit	3,412	3,412	
Dollars/btu	\$0.00000095	\$0.00000034	
Total dollars	\$149,433,922	\$149,433,922	
Price per fuel unit	\$0.00032	\$0.00115	
NOTES:			
Fuel Unit:Electricity = kWh			

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

TABLE 13B: CHARGE NEEDED ON OHIO ELECTRIC CONSUMPTION TO GENERATE 125% OF 1986 LIHEAP APPROPRIATION (1995\$)			
125% Scenario: \$186,792,403	All Classes	Residential Only	Total
Billion Btu Consumption	1,576.7	445.3	\$186,792,403
Fuel units	462,070,000,000	130,507,000,000	
Btu/fuel unit	3,412	3,412	
Dollars/btu	\$0.000000118	\$0.000000419	
Total dollars	\$186,792,403	\$186,792,403	
Price per fuel unit	\$0.00040	\$0.00143	
NOTES:			
Fuel Unit:Electricity = kWh			

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

TABLE 13C: CHARGE NEEDED ON OHIO ELECTRIC CONSUMPTION TO GENERATE 150% OF 1986 LIHEAP APPROPRIATION (1995\$)			
150% Scenario: \$224,150,883	All Classes	Residential Only	Total
Billion Btu Consumption	1,576.7	445.3	\$224,150,883
Fuel units	462,070,000,000	130,507,000,000	
Btu/fuel unit	3,412	3,412	
Dollars/btu	\$0.000000142	\$0.000000050	
Total dollars	\$224,150,883	\$224,150,883	
Price per fuel unit	\$0.00049	\$0.00172	
NOTES:			
Fuel Unit:Electricity = kWh			

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

TABLE 13D: CHARGE NEEDED ON OHIO ELECTRIC CONSUMPTION TO GENERATE 200% OF 1986 LIHEAP APPROPRIATION (1995\$)			
200% Scenario: \$298,867,844	All Classes	Residential Only	Total
Billion Btu Consumption	1,576.7	445.3	\$298,867,844
Fuel units	462,070,000,000	130,507,000,000	
Btu/fuel unit	3,412	3,412	
Dollars/btu	\$0.000000190	\$0.000000671	
Total dollars	\$298,867,844	\$298,867,844	
Price per fuel unit	\$0.00065	\$0.00229	
NOTES:			
Fuel Unit:Electricity = kWh			

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

TABLE 13E: CHARGE NEEDED ON OHIO ELECTRIC CONSUMPTION TO GENERATE 50% OF 1986 LIHEAP APPROPRIATION (1995\$)			
50% Scenario: \$74,716,961	All Classes	Residential Only	Total
Billion Btu Consumption	1576.7	445.3	\$74,716,961
Fuel units	462,070,000,000	130,507,000,000	
Btu/fuel unit	3,412	3,412	
Dollars/btu	\$0.000000047	\$0.00000017	
Total dollars	\$74,716,961	\$74,716,961	
Price per fuel unit	\$0.00016	\$0.00057	
NOTES:			
Fuel Unit:Electricity = kWh			

**APPENDIX B:
OHIO WIRES CHARGE DATA AND TABLES**

Table 14: Number of Low-Income Families in Ohio at Different Measures of "Low-Income"					
Number of Families					
Percent of federal Poverty Level /a/			Percent of Median Income /b/		
0 - 100%	0 - 150%	0 - 200%	0 - 30%	0 - 50%	0 - 80%
356,441	577,358	839,145	516,330	957,883	1,669,830
Sources:					
/a/Census Bureau (1990)					
/b/HUD CHAS data base (1990)					

APPENDIX C:
SUMMARY OF FUNDRAISING INITIATIVES DISCUSSED IN
FUNDING FUEL ASSISTANCE: STATE AND LOCAL STRATEGIES
TO HELP PAY LOW-INCOME HOME ENERGY BILLS

Table of Program Suggestions

1. Utility bill checkoffs for fuel funds
2. Electronic funds transfer (EFT) billing
3. Early payment agreements
4. Contributions of utility refunds
5. Recapture of unclaimed deposits
6. Recapture of unclaimed utility refunds
7. Ratepayer assistance trust fund
8. Franchise fees--rental payments
9. Rate discounts
10. "One Church--One Family"
11. Contributions in lieu of taxes
12. Universal Service Fund
13. Earned Income Tax Credit promotion
14. State Earned Income Tax Credit

APPENDIX C:
SUMMARY OF FUNDRAISING INITIATIVES DISCUSSED IN
FUNDING FUEL ASSISTANCE: STATE AND LOCAL STRATEGIES
TO HELP PAY LOW-INCOME HOME ENERGY BILLS

- 15.Promotion of circuit breaker property tax relief
- 16.State tax credits
- 17.Sales tax relief on home energy
- 18.Title IV-A: Emergency Assistance/Special Needs
- 19.Utility allowances in assisted housing: annual
- 20.Utility allowances in assisted housing: monthly
- 21.Bulk fuels: cash prices
- 22.Bulk fuels: across-the-board discount
- 23.Bulk fuels: margin over rack program
- 24.Bulk fuels: summer fill program
- 25.Bulk fuels: winter shutoff protections