ORNL/CON-495

THE IMPACT OF FORECASTED ENERGY PRICE INCREASES ON LOW-INCOME CONSUMERS

Joel F. Eisenberg

ORNL/CON-495

THE IMPACT OF FORECASTED ENERGY PRICE INCREASES ON LOW-INCOME CONSUMERS

Joel F. Eisenberg

October 2005

Prepared for
U.S. Department of Energy
Office of the Weatherization and Intergovernmental Program
Budget Activity Number WI 04 02 00 0

Prepared by
OAK RIDGE NATIONAL LABORATORY
Oak Ridge, Tennessee 37831
Managed by
UT-BATTELLE, LLC
for the
U.S. DEPARTMENT OF ENERGY
under contract DE-AC05-00OR22725

CONTENTS

Page

LIST OF FIGURES iii

LIST OF TABLES iv

EXECUTIVE SUMMARY v

INTRODUCTION 1
NATIONAL FINDINGS 2
Aggregate Expenditures 3
Average Household Total Residential Energy Expenditures 5
Average Household Heating And Cooling Costs 6
REGIONAL FINDINGS 7
Total Residential Energy Expenditures 7
Heating And Cooling Costs 8

CONCLUSIONS 11

APPENDIX A 13
Methodology 13

APPENDIX B 16
Regional Results 16

LIST OF FIGURES

		Page
Figure 1	Rate Of Increase In Residential Energy Prices	4
Figure 2	Rate Of Increase In Heating Bills For Low-Income Households By Fuel Type	6
Figure 3	Primary Heating Fuel For Low-Income Households	7
Figure 4	Distribution Of Low-Income Expenditures For Households Heating With Gas In The MIDWEST	10
Figure B-1	Projected Total Residential Energy Expenditures For Low-Income Households NORTHEAST	16
Figure B-2	Projected Heating And Cooling Expenditures For Low-Income Households NORTHEAST	17
Figure B-3	Projected Total Residential Energy Expenditures For Low-Income Households MIDWEST	18
Figure B-4	Projected Heating And Cooling Expenditures For Low-Income Households MIDWEST	19
Figure B-5	Projected Total Residential Energy Expenditures For Low-Income Households SOUTH	20
Figure B-6	Projected Heating And Cooling Expenditures For Low-Income Households SOUTH	21
Figure B-7	Projected Total Residential Energy Expenditures For Low-Income Households WEST	22
Figure B-8	Projected Heating And Cooling Expenditures For Low-Income Households WEST	23

LIST OF TABLES

Table 1 Aggregate Low-Income Residential Energy Expenditures by Primary Heating Fuel 4

Table 2 Mean Low-Income Residential Energy Expenditures Per Household by Primary Heating Fuel 5

EXECUTIVE SUMMARY

The Department of Energy's Energy Information Administration (EIA) recently released its short term forecast for residential energy prices for the winter of 2005-2006. The forecast indicates significant increases in fuel costs, particularly for natural gas, propane, and home heating oil, for the year ahead. In the following analysis, the Oak Ridge National Laboratory has integrated the EIA price projections with the Residential Energy Consumption Survey (RECS) for 2001 in order to project the impact of these price increases on the nation's low-income households by primary heating fuel type, nationally and by Census Region. The statistics are intended for the use of policymakers in the Department of Energy's Weatherization Assistance Program and elsewhere who are trying to gauge the nature and severity of the problems that will be faced by eligible low-income households during the 2006 fiscal year.

The price increases for natural gas and home heating oil are part of an escalation in the price of carbon-based fuels over more than a decade that has outpaced the increase in purchasing power of low-income households. The long-term problem is further exacerbated by sharp energy price increases experienced last year and projected for the year ahead, in part due to the continuing impacts of Hurricanes Katrina and Rita on petroleum and natural gas supplies. The mid-range EIA price forecast foresees an increase in price of 43 percent for residential natural gas in 2006 compared to 2004 and of 47 percent over that time frame for home heating oil and propane.

The total aggregate cost of residential energy for low-income consumers, defined in the study as households with incomes at or below 150 percent of the federal Poverty Income Guidelines, will increase by $6.8 billion during the year ahead, from $33.5 billion to $40.3 billion, assuming normal weather conditions. Seventy-two percent of the increase will be borne by the 53 percent of low-income households that heat with natural gas.

The increase in aggregate cost for low-income consumers over five years, from 2001 through FY 2006, totals $9.4 billion, an increase of over 30 percent.

The price increases are expected to hit households using natural gas, propane, and fuel oil particularly hard. The average residential energy bill for low-income households heating with natural gas is expected to rise by 26 percent to $1,770 this coming year. For those who use propane as their primary heat source, approximately 5 percent of all low-income households, the increase is expected to be 16 percent to $2,028. For the 6 percent of low-income households that heat with fuel oil the increase will be 20 percent to $2,576. For those households heating with electricity, the increase is projected to be 9 percent to $1,129.

Average heating and cooling costs, excluding lighting, appliances, hot water, and refrigeration, will increase sharply on a percentage and dollar basis. For households heating with natural gas the increase is projected at 46 percent, rising from $599 to $872. Households heating with propane will find their heating and cooling costs jumping from $740 last year to $971 in the year ahead. Those heating with fuel oil will face an average heating and cooling bill of $1,354 in FY 2006, compared to $1,019 in FY 2005.

There will be substantial differences in the impact of these increases by Census Region. For example, approximately 80 percent of low-income households in the Midwest heat with natural gas and nearly all the rest heat with propane or fuel oil. The average residential energy bill for low-income consumers in the Midwest Region heating with all three fuel types will exceed $2,000 in the year ahead. In the Northeast more than 26 percent of low-income households use fuel oil for heat and they will face an average residential energy bill of $2,559 in the coming year, including a heating and cooling bill of $1,323.

The impact of rising prices will not be confined to the coldest parts of the country. In the South Region low-income natural gas consumers will experience an average residential energy expenditure of $1,926, an increase of 27 percent compared to last year. This includes a heating and cooling bill of $886. For those in the South who heat with propane the total residential energy expenditure will average $1,681 including a heating and cooling bill of $661.

It is important to keep in mind that the statistics reported in this analysis are averages for low-income households by primary heating fuel type and region. These averages mask considerable variation within these large blocks of consumers. Many low-income households, indeed a majority in each category, will face bills that are at or below the averages for that category. On the other hand, very substantial numbers will face bills well above these averages, in some cases totaling $3-4,000 and even higher. Millions of such households may be overwhelmed by the challenge of affordable energy in FY 2006.

INTRODUCTION

The Department of Energy's Energy Information Administration (EIA) recently released its short-term forecast for residential energy prices for the winter of 2005-2006. These price forecasts indicate significant increases in fuel costs, particularly for natural gas, propane, and home heating oil, for the year ahead. In an effort to understand the distributive effect of these price increases on low-income consumers who are eligible for the Department of Energy's Weatherization Assistance Program, the Oak Ridge National Laboratory has developed projections of the probable impact of these price increases on energy bills nationally, by region, and by fuel type. These projections were created by integrating the EIA's price forecasts for the coming year into a weather-normalized data base derived from the EIA Residential Energy Consumption Survey for 2001. This data base, with records for over 4,800 households, provides the most accurate available national picture of energy usage and expenditures for the nation's households by fuel type, income, region, and other energy-related criteria. For purposes of this analysis, low-income households are defined as those at or below 150 percent of federal Poverty Level, comprising approximately 26.4 million households in 2001.[1]

The projections contained in this report may prove useful for those trying to gauge the impact of the current energy price escalation on low-income consumers at the federal and regional level. Great caution should be exercised in trying to translate these increases to state or local levels, let alone to individual consumers. Price increases at the national or regional level for wholesale natural gas, propane, home heating oil, and electricity often flow down to end consumers at very different rates depending on state regulations, local market conditions, and the purchasing strategies of individual local gas and electric distribution companies. Average price increases projected by EIA for a given fuel for one of the four Census Regions or nine Census Divisions are useful for understanding the broad policy impacts of national price trends but they

[1] For details of the methodology used to make these projections please see Appendix A.

may not reflect significant variations from state to state and even from utility to utility within a state.[2]

Furthermore, the price forecast by EIA is produced by a predictive model that does not attempt to capture the potential impact of price speculation in the event of real or perceived supply shortfalls as the winter progresses. The projections do take Hurricane Katrina and its impact on crude oil and natural gas production and refinery capacity into account. The projections assume that most production and refining capacity is restored to service by December, 2005. They make no attempt to take into account the impact of price volatility and speculation in potentially tight natural gas futures and spot markets that might be caused by further disruptions or severe early winter weather. These estimates should never-the-less provide a reasonable basis for understanding the national and regional impacts of the rapid increase in energy prices on the nation's low-income consumers.

NATIONAL FINDINGS[3]

The price increases for natural gas and home heating oil are part of a persistent escalation in the prices of carbon-based fuels over the past thirteen years that has outstripped the increase in purchasing power of low-income households, as shown in Figure 1. During the interval 1992 through 2004, the price of residential natural gas rose by 82 percent and that of home heating oil by more than 77 percent. During that same period, incomes of those in the lowest fifth of all U.S. households increased by 41 percent, only slightly more than the consumer price index of 35 percent. Simply put, low-income resources have not kept pace with energy price inflation for many consumers.

---

[2] For an explanation of how resource acquisition by gas distribution companies and price volatility vary from state to state please see "Natural Gas Price Volatility: Regulatory Policies to Assure Affordable and Stable Gas Supply Prices for Residential Consumers" by Barbara Alexander, January 2004.

[3] All figures are in nominal dollars unless specifically noted.

This long-term problem is further exacerbated by energy price increases experienced last year and projected for the year ahead in part due to the continuing impacts of Hurricanes Katrina and Rita on petroleum and natural gas supplies. The mid-range EIA price forecast foresees an increase in price of 43 percent for residential natural gas in 2006 compared to 2004 with increases of 47 percent in the national prices of home heating oil and propane since that year. [4] Many low-income households will lack sufficient discretionary income to absorb price increases on this scale.

Aggregate Expenditures

1. The total cost of residential energy for low-income consumers will increase by $6.8 billion during the year ahead compared to last year, from $33.5 billion to $40.3 billion, assuming normal weather conditions.

2. Approximately 72 percent of this increase is projected to occur among the nation's low-income natural gas consumers whose total energy bill will rise by an estimated $4.9 billion. The majority of low-income consumers heat their homes with natural gas.

3. The sharp year-to-year increase for natural gas consumers is paralleled by significant increases for propane and home heating oil users, estimated at $382 million and $655 million respectively.

4. The cost of residential energy to home heating oil consumers has been rising steadily over the past five years and is now expected to be $1.4 billion higher than it was five years ago in nominal dollars, an increase of 59 percent.

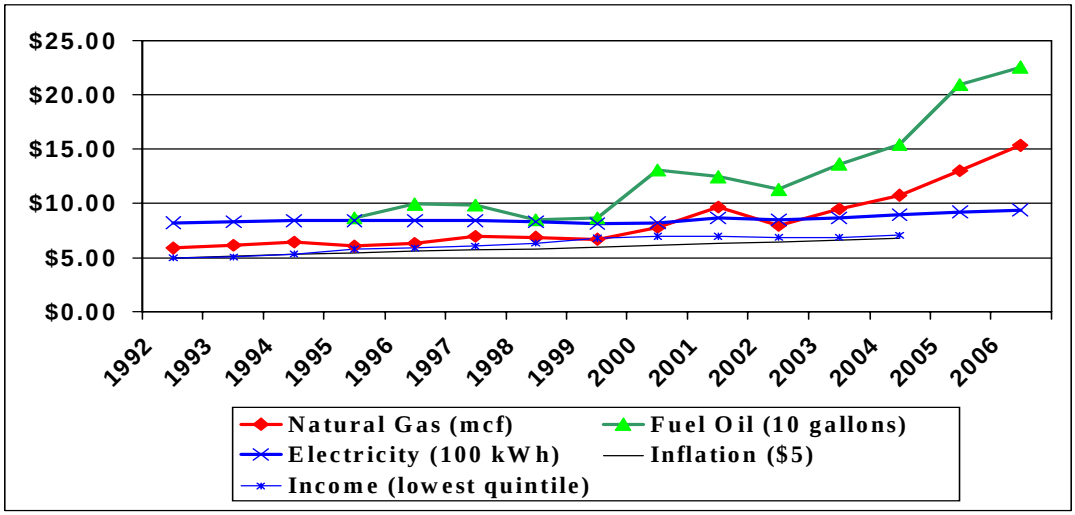
5. Low-income consumers who heat with electricity will experience an increase of $820 million next year and $1.2 billion over the same 2001-2006 time period.

Please see Table 1 for further details on aggregate expenditures by low-income households.

[4]Department of Energy, Energy Information Administration, Short Term Energy Outlook, September, 2005. www.eia.doe.gov/emeu/steo/pub/contents.html

Figure 1

RATE OF INCREASE IN RESIDENTIAL ENERGY PRICES
BY FUEL TYPE
Since 1992
(Nominal dollars)



Sources: DOE/EIA Short Term Energy Outlook, September 2005, Bureau of Labor Statistics, Bureau of the Census

Table 1

Aggregate Low-Income Residential Energy Expenditures by Primary Heating Fuel (Millions)					
Year	Natural Gas	Propane	Fuel Oil	Electricity	Total
2001	$17,517	$2,102	$2,439	$8,782	$30,840
2004	$17,999	$2,284	$2,922	$9,046	$32,251
2005	$18,761	$2,365	$3,225	$9,134	$33,485
2006	$23,689	$2,747	$3,880	$9,954	$40,250

The statistics below estimating average household energy expenditures are presented in two forms. Residential energy expenditures describe all of a household's home energy spending

including heating, cooling, hot water, refrigeration, lighting, and appliances. Heating and cooling expenditures, a subset of total residential energy expenditures, deals only with those two components of residential energy usage.

Average Household Total Residential Energy Expenditures

6. The expected mean national residential energy expenditure for households heating with natural gas will rise 26 percent to $1,770 this coming year with normal weather, an increase of $367 from last year and $460 since 2001.

7. The average annual residential energy bill for those heating with propane will rise to $2,028, an increase of $282 from last year and $476 since 2001.

8. The average bill for heating oil consumers is projected at $2,576, up $435 from last year and $957 over five years.

9. The average bill for low-income consumers heating with electricity is projected at $1,129, up $93 from last year and $133 since 2001.

For further details on average residential energy expenditures please see Table 2.

Table 2

Mean Low-Income Residential Energy Expenditures
Per Household by Primary Heating Fuel

Year	Natural Gas	Propane	Fuel Oil	Electricity
2001	$1,310	$1,552	$1,619	$ 996
2004	$1,346	$1,686	$1,940	$1,026
2005	$1,403	$1,746	$2,141	$1,036
2006	$1,770	$2,028	$2,576	$1,129

Average Household Heating and Cooling Costs

10. Heating and cooling costs for households that heat with natural gas, excluding the cost of cooking, hot water, appliances, and lighting, are projected at $872 in FY 2006, an increase of 46 percent this year compared to last year and 53 percent higher then in 2001.

11. For those heating with propane, heating and cooling costs in the year ahead are estimated at $971, an increase of 31 percent compared to last year and 44 percent higher then in 2001.

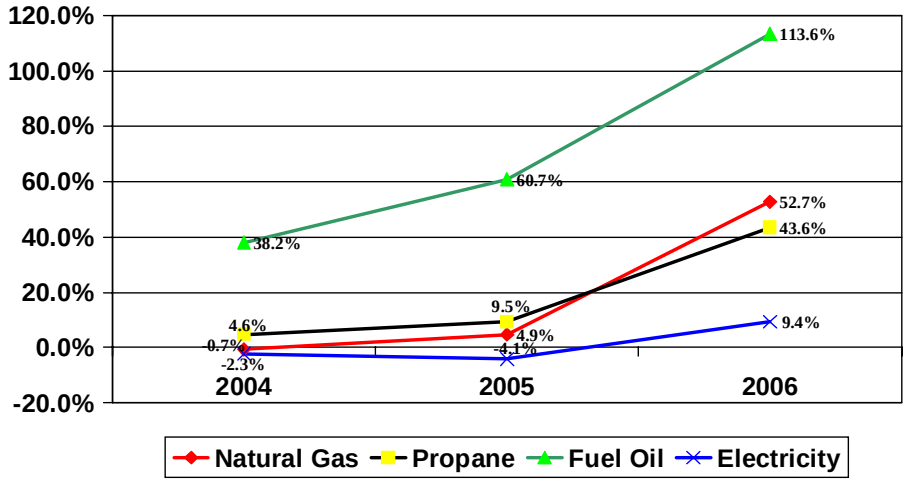
12. The cost of heating and cooling for fuel oil users will rise 33 percent compared to last year to $1,354 and will be 114 percent higher then in 2001.

13. Those that heat with electricity will see a 14 percent annual increase in their heating and cooling expenditures during the coming year and a cumulative increase of 9 percent since 2001.

See Figure 2 for further details on the percentage increase in heating and cooling costs since 2001.

Figure 2

RATE OF INCREASE IN HEATING BILLS FOR LOW-INCOME HOUSEHOLDS BY FUEL TYPE
Since 2001



Source: DOE/EIA Short Term Energy Outlook, September 2005

REGIONAL FINDINGS

1. The impact of these price increases on low-income households will vary considerably by region. The most severe energy price inflation is occurring for natural gas and fuel oil which will disproportionately impact the Northeast and Midwest.

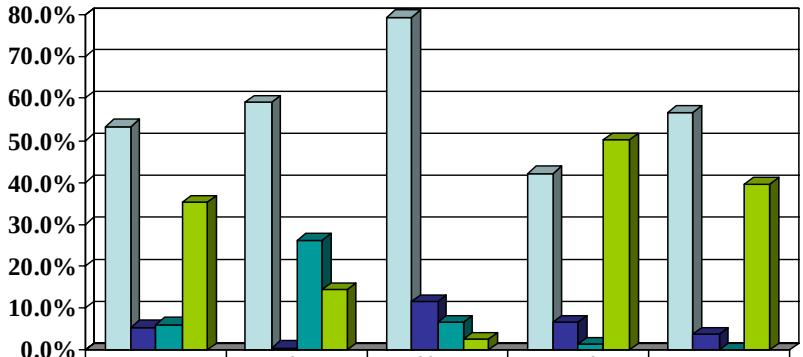
2. Nearly 80 percent of low-income households in the Midwest Region have natural gas as their primary heat source compared to 53 percent nationwide, as shown in Figure 3.

3. More than 26 percent of low-income households in the Northeast have fuel oil as their primary heat source compared to 6 percent nationwide.

Figure 3

PRIMARY HEATING FUEL FOR LOW-INCOME HOUSEHOLDS

Percent Of Households At Or Below 150% of Poverty By Region



	U.S.	Northeast	Midwest	South	West
Natural Gas	53.4%	59.1%	79.6%	42.2%	56.7%
Propane	5.4%	0.4%	11.4%	6.4%	3.7%
Fuel Oil	6.0%	26.2%	6.5%	1.3%	0.0%
Electricity	35.2%	14.4%	2.4%	50.1%	39.6%

Source: DOE/EIA Residential Energy Consumption Survey for 2001

Total Residential Energy Expenditures

4. Low-income households in the Northeast that heat with fuel oil will face an average residential energy expenditure for all purposes of $2,559 in the year ahead given normal

weather conditions while those heating with natural gas in the region will face an average expenditure of $1,746. This represents an increase of 20 percent in the case of fuel oil and 24 percent in the case of natural gas compared to last year.

5. Households in the Northeast that heat with electricity, a relatively small proportion, are expected to have price stability with an average expenditure of $1,202 for all residential energy expenditures, an increase of 4 percent compared to last year.

6. In the Midwest low-income consumers of all three primary carbon-based heating fuels- natural gas, propane, and fuel oil- will face average residential energy bills for all purposes exceeding $2,000 this coming year.

7. Those who heat with propane in the Midwest, like fuel oil users in the Northeast, will be particularly hard hit and face an average bill for residential energy expenditures of $2,593. This is an increase of 17 percent compared to last year.

8. The impact of rising prices will not be confined to the coldest parts of the country. In the South Region low-income natural gas consumers will experience an average residential energy expenditure of $1,926, an increase of 27 percent compared to last year.

9. Those who heat with electricity in the South will have an average residential energy expenditure of $1,334 while propane users will be spending an average of $1,681. These represent annual increases of 11 percent and 17 percent respectively.

10. In the West Region those heating with propane will have an average bill of $1,978, up 13 percent from last year.

11. Those in the West with natural gas as their primary heating fuel will pay $1,273 for total residential energy, an increase of 17 percent.

12. Households heating with electricity in the West will see an average residential energy bill of $723, up 6 percent from last year.

Heating And Cooling Costs

13. Low-income households heating with home heating oil in the Northeast will face average heating and cooling expenditures in the year ahead of $1,323, approximately 31 percent higher than last year.

14. Heating and cooling costs for those in the Northeast that heat with natural gas will average $928 compared to $675 last year, an increase of 38 percent.

15. In the Midwest the heating and cooling costs for those who heat with natural gas will rise to $1,244 and for propane it will jump to $1,477. These estimates contain annual increases of 53 percent and 29 percent respectively when compared to last year.

16. The cost of heating and cooling for those who heat with fuel oil in the Midwest will rise to $1,287 from $956 last year, an increase of 35 percent.

17. The cost of heating and cooling for those who heat with natural gas in the South Region will rise to $886, and for those who heat with propane, heating and cooling costs will rise to $661. In the case of natural gas this is an increase of 46 percent compared to last year and in the case of propane the increase is 37 percent.

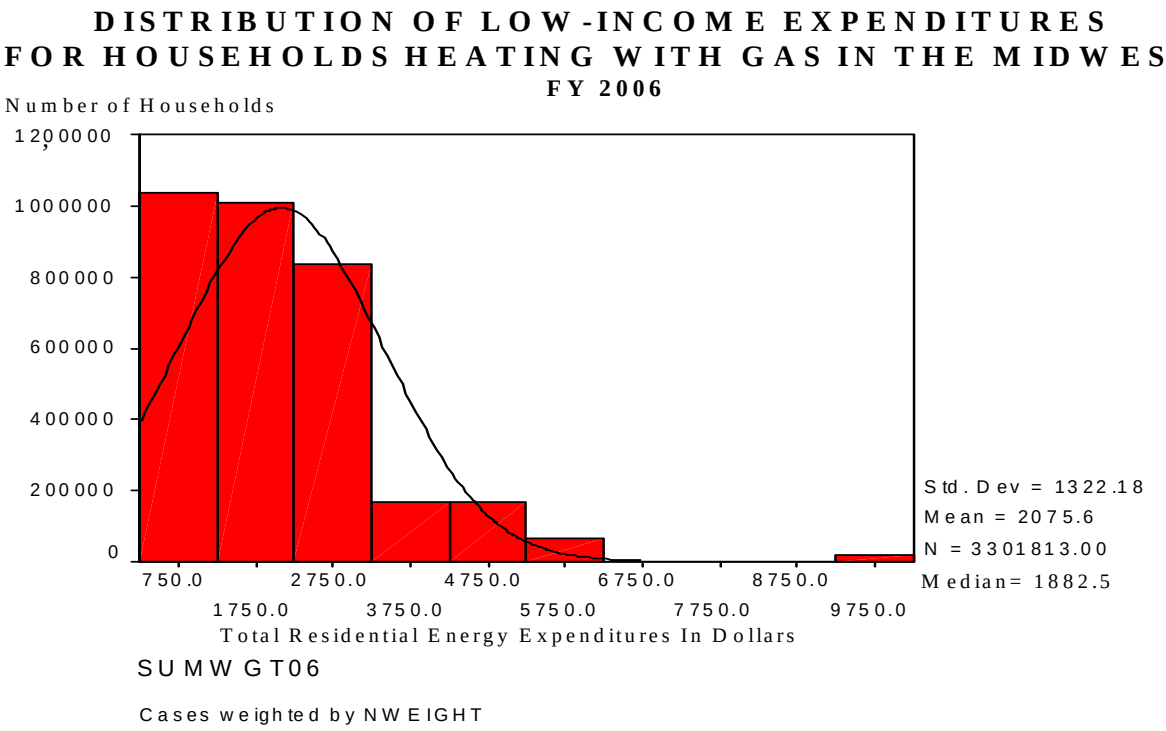
18. Heating and cooling costs for those who heat with propane will rise to $851 in the West Region, a jump of 26 percent.

For annual expenditure projections by region and fuel please see Appendix B.

It is important to keep in mind that the statistics reported in this analysis are averages for low-income households by primary heating fuel type, nationally and by region. These averages mask considerable variation within these large blocks of consumers. On the one hand, while the average energy expenditure for those heating with natural gas is projected to be $1,770 in the year ahead the median expenditure is expected to be somewhat lower, at $1,594.

The median represents the midpoint in the distribution of expected residential energy bills, with half the households facing higher bills and half the households expected to pay less then this figure. The standard deviation for the national distribution, a measure of the variance in the sample, is $1,030, which means that a substantial number of low-income households will face bills that are well above the median, and indeed well above the averages described above. For illustrative purposes Figure 4 below shows the distribution for natural gas consumers in the Midwest.

Figure 4



Source: ORNL Tabulation

The figure indicates that the average expenditure in this region is expected to be $2,076 and that half the households will have residential energy expenditures of less then $1,883. It also indicates that a large number of households will be facing bills of $3-4,000 and even higher in the year ahead.

CONCLUSIONS

The combination of long-term trends in residential energy prices with the impacts of Hurricanes Katrina and Rita on energy supplies are likely to cause significant increases in residential energy prices in the year ahead. The residential prices of natural gas, propane, and home heating oil are projected by EIA to be over 40 percent higher in 2006 than they were in 2004. These increases will be particularly burdensome for low-income households, many of which lack the discretionary income to adjust to the rising costs of home energy.

The aggregate cost of residential energy for low-income households is projected to rise by $6.8 billion during the year ahead and will have increased by nearly $10 billion since 2001, an increase of more than 30 percent. These costs far exceed the rate of increase in income for low-income households.

The impact of these price increases will be felt most keenly by those who use natural gas, propane, and home heating oil as their primary heating source. For these households average heating and cooling expenditures will rise by over 30 percent with natural gas consumers particularly hard hit with a 46 percent increase. For heating oil users the increases are part of a continuing pattern that has witnessed an increase in heating and cooling costs of 114 percent in just five years.

The rising prices will have varied regional impacts. Low-income households in the Midwest will be particularly hard hit because of their disproportionate use of natural gas and propane for heating, though natural gas consumers in the South will also be impacted. Heating oil users in the Northeast, where petroleum is still widely used for home heating, will also face a difficult year.

It is also important to keep in mind that a significant minority of the low-income population will experience energy bills that are higher than these averages would suggest.

Within the low-income population there will be numerous households that will face residential energy bills in excess of $3,000 during the coming year. For these households residential energy costs may well be overwhelming.

APPENDIX A

Methodology

The method used to estimate the impact of projected price increases for residential energy on low-income households is based on the integration of two products from the Department of Energy's Energy Information Administration- the Residential Energy Consumption Survey (RECS) for 2001 and the Short Term Energy Outlook (STEO) for September, 2005. The former is the most recent EIA survey of U.S. households in an occasional series dating back to 1978 that provides detailed data on housing and energy characteristics, demographics, and energy consumption and expenditures verified through billing data. There are record on 4822 individual households in the data base. The STEO provides EIA's monthly estimate of energy prices in the 18-month period immediately ahead.

The RECS public use files identify the location of each household by Census Region, of which there are four, and by Census Division, of which there are nine. Heating and cooling degree days are provided for each household for 2001 based on the population-weighted data for each Census Division and the poverty status of each household is also provided. The survey provides actual fuel bills for each household and uses statistical techniques to allocate the usage and expenditures among major usage categories such as heating, cooling, hot water heating, refrigeration, etc. Long range climate normals for heating and cooling degree days for each of the Census divisions were calculated using statistics provided by the National Climatic Data Center of the National Oceanic and Atmospheric Administration, National Environmental Satellite, Data and Information Service. These data were employed to calculate an adjustment factor for each division so that RECS data on heating and cooling expenditures for 2001 could be adjusted to reflect normal weather conditions for the period October 1, 2005 through September 30, 2006. For example, in 2001 the population weighted heating degree days for New England were 6055. The long range normal for the region is 6655. A weighting factor of 1.099092 was developed as a multiplier to adjust expenditures for 2001 to normal weather conditions. Similar heating and cooling adjustment factors were developed for FY 2004 and FY 2005 based on actual weather conditions in those years.

Price adjustment factors were similarly calculated using quarterly price projections by division for natural gas and electricity and by region for propane and heating oil as provided by the STEO, September 2005, Table 8c and 5c.[5] These tables provided estimates of prices based on the medium recovery case for Hurricane Katrina. The quarterly prices were weighted by consumption for each quarter to calculate an annual price adjustment factor for the historical record for 2004 and 2005 and for the price projections for 2006. The average price for each energy source for each household record in RECS for 2001 was calculated by dividing actual expenditures by actual consumption.

The estimate of an individual household's expenditure for a given year n was then calculated using the following formula in SPSS:
(((Dolngsph * hddfact) + Dolngwth + Dolngapl) * pmng[d]) + (((Dollpsph * hddfact) + Dollpwth + Dollpapl)*pmlp[r]) + (((Dolkrsph*hddfact+Dolkrwth+Doldrapl)*pmfo[r]) + (((Dolfosph*hddfact)+ Dolfowth + Dolfoapl)*pmfo[r]) + (((Dolelsph * hddfact) + (Dolelcol * cddfact) +dolelapl+ dolelcdr i+ doleldwh + dolelfzz + dolelrfg + dolelwth)* pmel [d)] where:
'Dol' signifies the expenditure for 2001,
'ng' represents natural gas
'lp' represents propane
'kr' represents kerosene
'fo' represents fuel oil
'el' represents electricity
'hddfact' is the heating degree day adjustment factor for normalization
'cddfact' is the cooling degree day adjustment factor for normalization
'sph' is space heating
'wth' is water heating
'apl' is appliances
'col' is cooling,
'Cdr' is cloths drier

[5] Propane and fuel oil prices are projected by EIA only to the Census Region level.

‘dwh’ is dish washer
‘fzz’ is freezer
‘rfg’ is refrigerator
‘pm’ is price multiplier year ‘n’
‘r’ is Census region
‘d’ is Census division.

Regional estimates were then made using the sort functions of SPSS to select households by region and qualification of income at or below 150 percent of the federal Poverty Level and the ‘Explore’ statistical function to derive means, medians, and standard deviations by primary heating fuel type for total expenditures as well as heating and cooling expenditures for each year. Statistics were generated on a weather-normalized and historical basis for 2001, 2004, and 2005 and on a weather-normal projected basis for 2006.

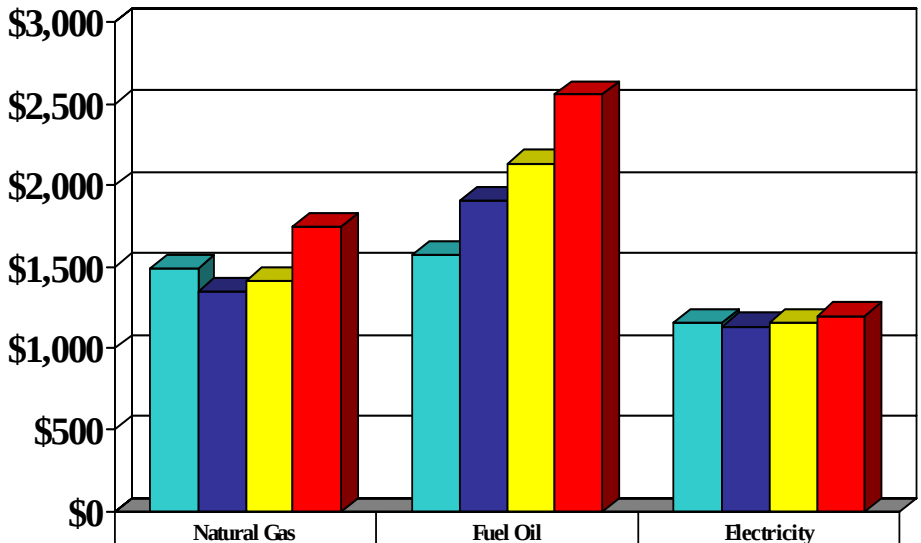
APPENDIX B

Regional Results

Figure B-1

PROJECTED TOTAL RESIDENTIAL ENERGY EXPENDITURES FOR LOW-INCOME HOUSEHOLDS By Primary Heating Fuel

NORTHEAST



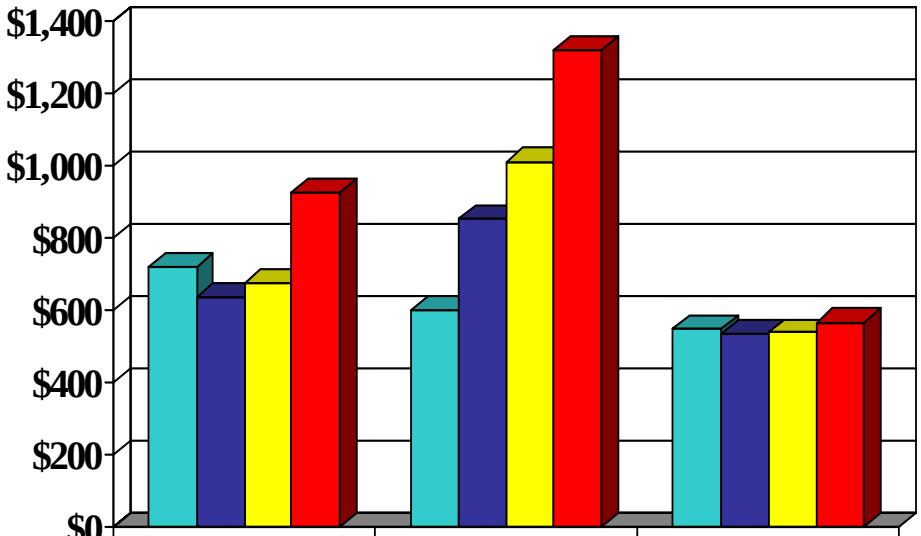
	Natural Gas	Fuel Oil	Electricity
2001	$1,490	$1,577	$1,161
2004	$1,354	$1,907	$1,139
2005	$1,413	$2,133	$1,152
2006	$1,746	$2,559	$1,202

Source: ORNL Tabulation from EIA STEO & RECS

Figure B-2

PROJECTED HEATING AND COOLING EXPENDITURES FOR LOW-INCOME HOUSEHOLDS
By Primary Heating Fuel

NORTHEAST



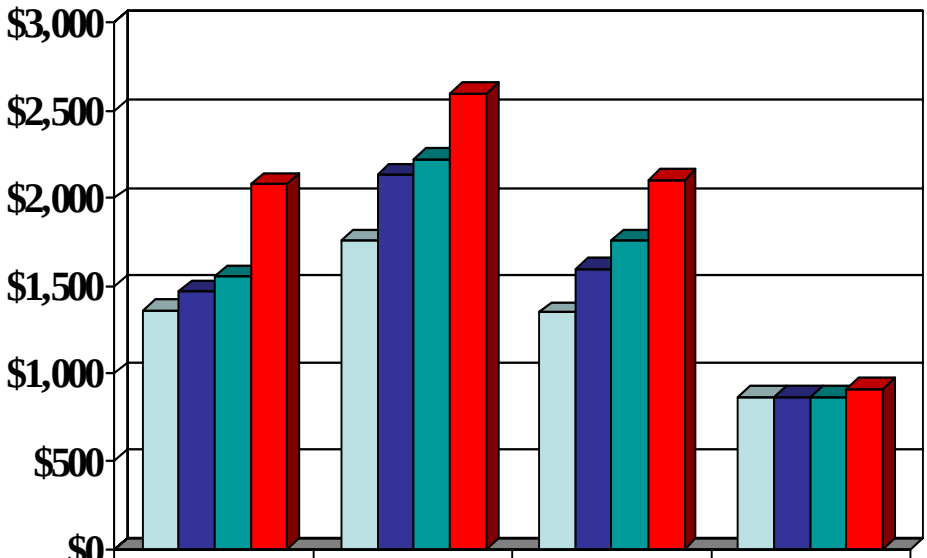
	Natural Gas	Fuel Oil	Electricity
2001	$719	$598	$547
2004	$634	$853	$534
2005	$675	$1,012	$537
2006	$928	$1,323	$566

Source: ORNL Tabulation from EIA STEO & RECS

Figure B-3

PROJECTED TOTAL RESIDENTIAL ENERGY EXPENDITURES FOR LOW-INCOME HOUSEHOLDS By Primary Heating Fuel

MIDWEST



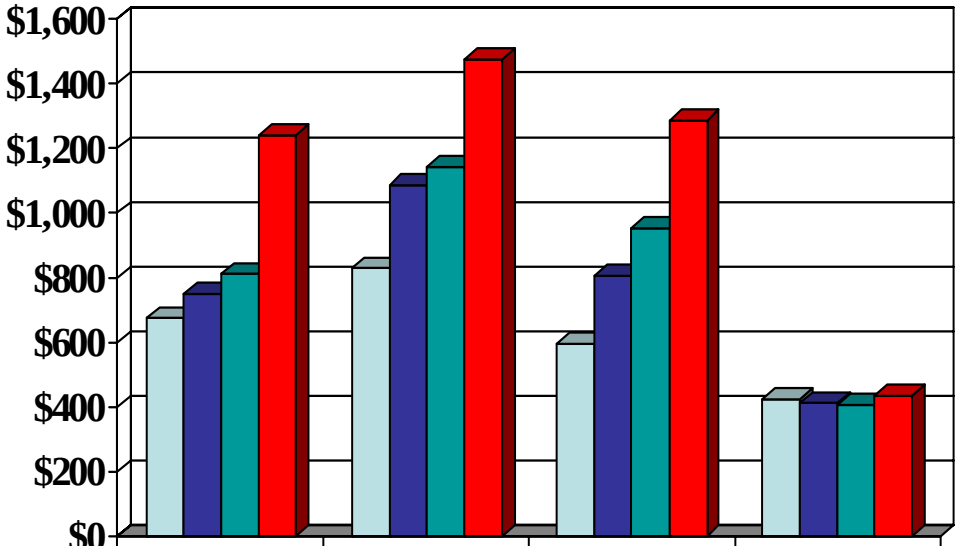
	Natural Gas	Propane	Fuel Oil	Electricity
2001	$1,361	$1,757	$1,344	$869
2004	$1,472	$2,138	$1,597	$867
2005	$1,553	$2,219	$1,760	$868
2006	$2,076	$2,593	$2,107	$904

Source: ORNL Tabulation from EIA STEO & RECS

Figure B-4

PROJECTED HEATING AND COOLING EXPENDITURES FOR LOW-INCOME HOUSEHOLDS
By Primary Heating Fuel

MIDWEST



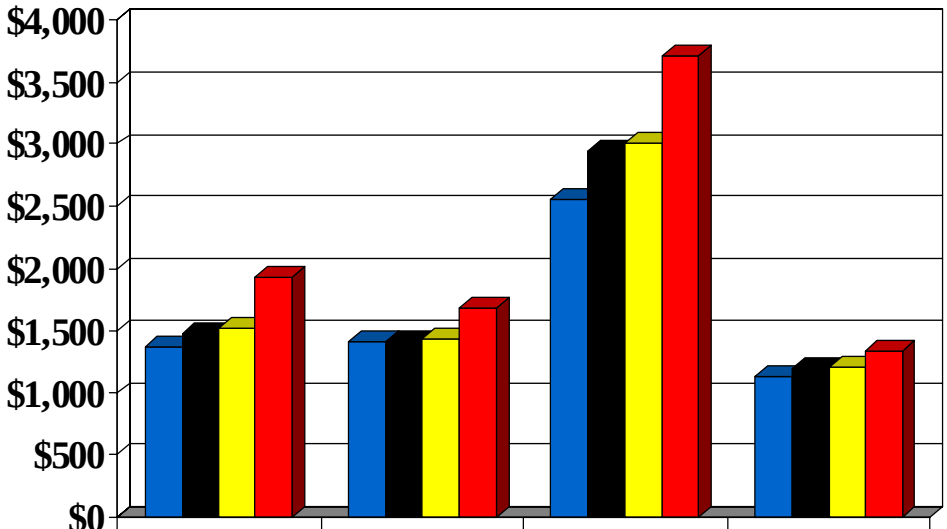
	Natural Gas	Propane	Fuel Oil	Electricity
2001	$674	$829	$592	$424
2004	$749	$1,085	$805	$408
2005	$811	$1,146	$956	$405
2006	$1,244	$1,477	$1,287	$432

Source: ORNL Tabulation from EIA STEO & RECS

Figure B-5

PROJECTED TOTAL RESIDENTIAL ENERGY EXPENDITURES FOR LOW-INCOME HOUSEHOLDS
By Primary Heating Fuel

SOUTH



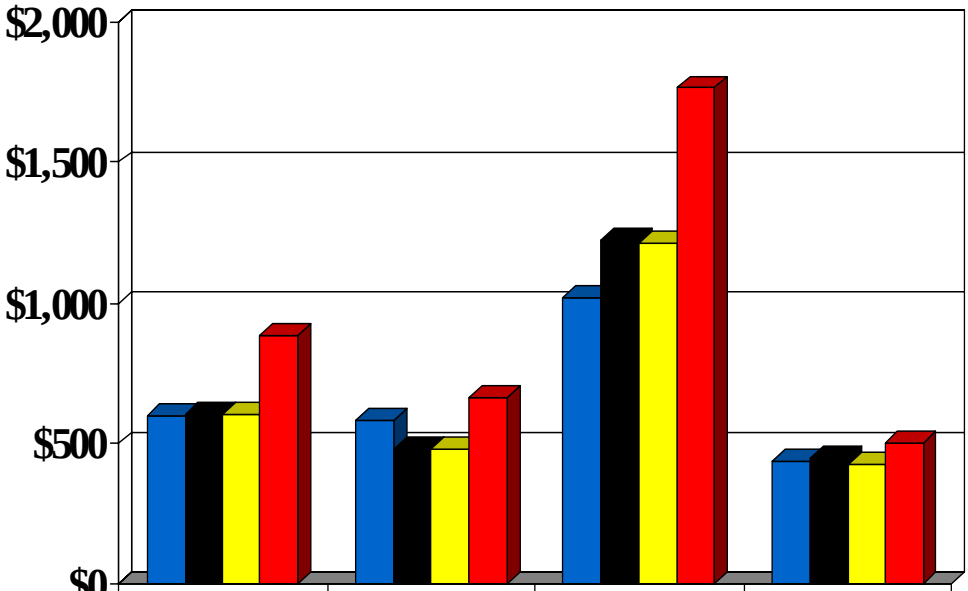
	Natural Gas	Propane	Fuel Oil	Electricity
2001	$1,366	$1,411	$2,561	$1,134
2004	$1,482	$1,413	$2,944	$1,199
2005	$1,520	$1,441	$3,006	$1,207
2006	$1,926	$1,681	$3,709	$1,334

Source: ORNL Tabulation from EIA STEO & RECS

Figure B-6

PROJECTED HEATING AND COOLING EXPENDITURES FOR LOW-INCOME HOUSEHOLDS
By Primary Heating Fuel

SOUTH



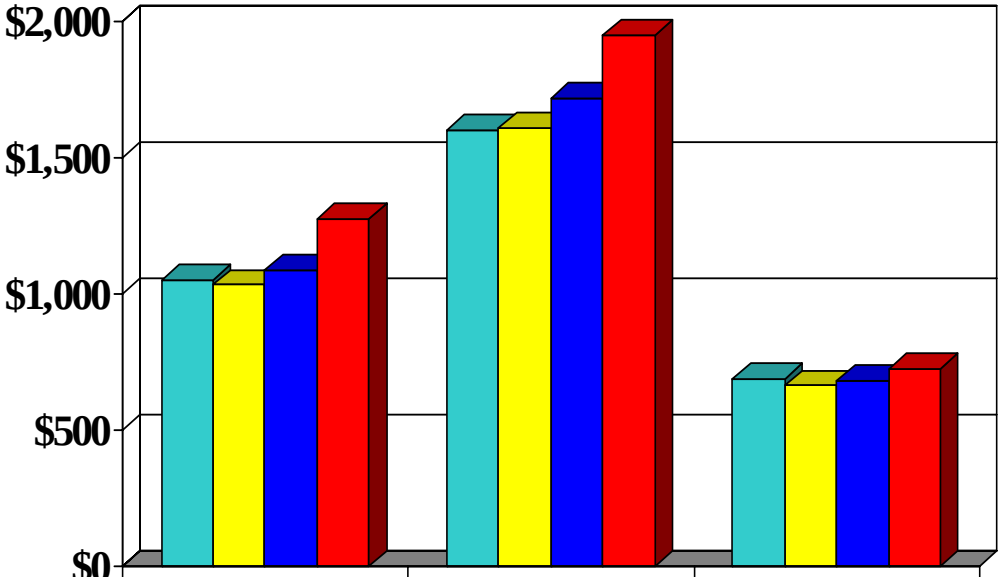
	Natural Gas	Propane	Fuel Oil	Electricity
2001	$595	$582	$1,024	$441
2004	$604	$483	$1,221	$444
2005	$607	$481	$1,214	$428
2006	$886	$661	$1,766	$504

Source: ORNL Tabulation from EIA STEO & RECS

Figure B-7

PROJECTED TOTAL RESIDENTIAL ENERGY EXPENDITURES FOR LOW-INCOME HOUSEHOLDS
By Primary Heating Fuel

WEST



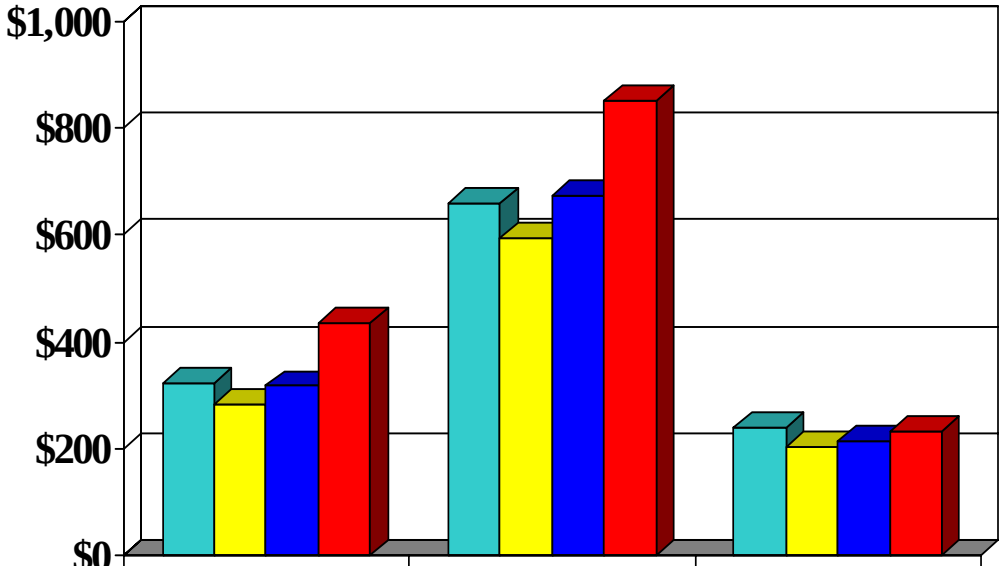
	Natural Gas	Propane	Electricity
2001	$1,049	$1,602	$688
2004	$1,033	$1,607	$663
2005	$1,090	$1,720	$681
2006	$1,273	$1,948	$723

Source: ORNL Tabulation from EIA STEO & RECS

Figure B-8

PROJECTED HEATING AND COOLING EXPENDITURES FOR LOW-INCOME HOUSEHOLDS
By Primary Heating Fuel

WEST



	Natural Gas	Propane	Electricity
2001	$321	$658	$238
2004	$282	$594	$204
2005	$317	$673	$214
2006	$434	$851	$232

Source: ORNL Tabulation from EIA STEO & RECS

INTERNAL DISTRIBUTION

1. M. A. Brown
2. W. G. Craddick
3-20. M.T. Eady
21-30. J. F. Eisenberg
31. E. C. Fox
32. M. B. Gettings
33. L. McCold
34. M. Schweitzer
35. R. B. Shelton
36. M. Ternes
37-41. B. E. Tonn
42. ORNL Central Research Library
43. ORNL Laboratory Records - RC

EXTERNAL DISTRIBUTION

44. Mr. Robert Adams, National Association for State Community Service Programs, 400 N. Capitol Street, NW, Suite 395, Washington, DC 20001.
45. Mr. Eric Beaton, U.S. DOE Boston Regional Office, Weatherization Program Manager, JFK Federal Building, Room 675, Boston, MA 02203-0002.
46. Ms. Beth M. Cahall, U.S. DOE Philadelphia Regional Office, Weatherization Program Manager, 1880 John F. Kennedy Boulevard, Suite 501, Philadelphia, PA 19103-8483.
47. Mr. James Child, U.S. DOE, EE-42, Room: *5E-066*, Office of Technology Assistance, 1000 Independence Avenue, SW, Washington, DC 20585.
48. Mr. Rob DeSoto, U.S. DOE Golden Regional Office, Weatherization Program Manager, 1617 Cole Boulevard, Golden, CO 80401.
49. Ms. Jean M. Diggs, U.S. DOE, EE-42, Room: *5E-080*, Office of Technology Assistance, 1000 Independence Avenue, SW, Washington, DC 20585.
50. Ms. Carole Gates, U.S. DOE Seattle Regional Office, Weatherization Program Manager, 800 Fifth Avenue, Suite 3950, Seattle, WA 98104.
51. Jeff Genzer, Duncan, Weinberg, Genzer, and Pembroke, 1615 M. Street, NW, Suite 800, Washington, DC 20036.
52. Mr. John Howat, National Consumer Law Center, 77 Summer Street, 10th Floor, Boston, MA 02110-1006.
53. Faith S. Lambert, U.S. DOE, EE-2K, Room: *5E-080*, Office of the Weatherization and Intergovermental Program, 1000 Independence Avenue, SW, Washington, DC 20585.
54. Mr. Jerrold Oppenheim, 57 Middle Street, Gloucester, MA 01930.

55. Mr. Michael Peterson, U.S. DOE Chicago Regional Office, Weatherization Program Manager, One South Wacker Drive, Suite 2380, Chicago, IL 60606.
56. Jim Powell, U.S. DOE, EE-2K, Room 5E-080, Office of the Weatherization and Intergovernmental Program, 1000 Independence Avenue, SW, Washington, DC 20585.
57. Dr. Margaret Power, Director EOS, 444 N. Capitol Street, Suite G-80, Washington, DC 20001.
58. Mr. Gregory M. Reamy, U.S. DOE, EE-42, Room: *5E-066*, Office of Technology Assistance, 1000 Independence Avenue, SW, Washington, DC 20585.
59. Mr. Jeff Riggert, TecMRKT Works, 165 W. Netherwood, Oregon, WI 53575.
60. Mr. P. Richard Rittelmann, FAIA, Executive Vice President, Burt Hill Kosar Associates, 400 Morgan Center, Butler, PA 16001-5977.
61. Melissa Gallagher-Rogers, U.S. DOE, EE-2K, 1000 Independence Avenue, SW, Washington, DC 20585.
62. Ms. Bernadette Ruffin, U.S. DOE Southeast Regional Office, Weatherization Program Manager, 75 Spring Street, Suite 200, Atlanta, GA 30308
63. Ronald Shaw, U.S. DOE Room EE-2K, 1000 Independence Avenue SW, Washington, DC 20585.
64. Dr. Lisa A. Skumatz, Skumatz Economic Research Associates, Inc., 762 Eldorado Drive, Superior, CO 80027.
65. Mr. David Terry, NASEO, 1414 Prince Street, Suite 200, Alexandria, VA 22314.
66. Dr. Susan F. Tierney, The Economic Resource Group, Inc., One Mifflin Place, Cambridge, MA 02138.