LIHEAP Home Energy Notebook

For Fiscal Year 2011

U.S. DEPARTMENT OF
HEALTH AND HUMAN SERVICES
Administration for Children and Families
Office of Community Services
Division of Energy Assistance
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Copies of this document can be obtained by contacting Peter Edelman of the Division of Energy Assistance at the following address:

Administration for Children and Families
Office of Community Services
Division of Energy Assistance
370 L'Enfant Promenade SW
Washington, DC 20447

E-mail: peter.edelman@acf.hhs.gov
Web site: http://www.acf.hhs.gov/programs/ocs/liheap/

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List of Acronyms and Abbreviations

ACF	HHS' Administration for Children and Families
ACS	American Community Survey
ASEC	CPS Annual Social and Economic Supplement
Btu	British Thermal Unit
CDD	Cooling Degree Day
CPI	Consumer Price Index
CPS	Current Population Survey
DEA	OCS' Division of Energy Assistance
DOE	U.S. Department of Energy
EIA	DOE's Energy Information Administration
EMEU	EIA's Office of Energy Markets and End Use
FY	Fiscal Year
GPRA	Government Performances and Results Act of 1993 (Public Law 103-62)
HDD	Heating Degree Day
HHS	U.S. Department of Health and Human Services
LIHEAP	Low Income Home Energy Assistance Program
LIEAP	Low Income Energy Assistance Program
MMBtus	Million British Thermal Units
NC	No cases in sample
NOAA	National Oceanographic and Atmospheric Administration
OCS	ACF's Office of Community Services
RECS	Residential Energy Consumption Survey

Executive Summary

The Low Income Home Energy Assistance Program (LIHEAP) is authorized by Title XXVI of the Omnibus Budget Reconciliation Act of 1981 (OBRA), Public Law 97-35, as amended. The Administration for Children and Families (ACF) within the U.S. Department of Health and Human Services (HHS) administers LIHEAP at the Federal level.

In 1994, Congress amended the purpose of LIHEAP to clarify that LIHEAP is "to assist low income households, particularly those with the lowest income, that pay a high proportion of household income for home energy, primarily in meeting their immediate home energy needs." (The Human Services Amendments of 1994, Public Law 103-252, Sec. 2602(a) as amended.) The Energy Policy Act of 2005 (Public Law 109-58) reauthorized LIHEAP through Fiscal Year (FY) 2007 without substantive changes. Reauthorization of LIHEAP is currently pending.

The *LIHEAP Home Energy Notebook* focuses on the home energy mission of LIHEAP by providing LIHEAP grantees with the latest national and regional data on home energy consumption, expenditures, and burden; low income home energy trends; and the LIHEAP performance measurement system. This summary highlights information presented in the *Notebook*.

Home energy data

The primary information source for the data on residential energy is the 2005 Residential Energy Consumption Survey (RECS), which is administered by the Department of Energy's (DOE's) Energy Information Administration (EIA). The RECS covers all residential housing units that are primary residences in the United States and contains data for consumption and expenditures for calendar year 2005. All FY 2011 residential energy consumption and expenditures figures for this report have been derived from the 2005 RECS data that were adjusted to reflect FY 2011 weather and fuel prices.

Residential energy data

In FY 2011, average residential energy expenditures for all households were $2,205, and the mean individual energy burden was 7.0 percent of income.[1] Low income households had average energy expenditures of $1,913, about 13.2 percent lower than the average for all households.[2] The mean individual energy burden for low income households was 13.4 percent, nearly twice the mean individual energy burden of all households. LIHEAP recipient households had average residential energy expenditures of $2,106, 10.1 percent higher than the average for all low income households. The mean individual energy burden for LIHEAP recipients was 15.7 percent, 8.7 percentage points higher than the mean individual energy burden for all households and 2.3 percentage points higher than the mean individual energy burden for low income households.

Nationally, all households increased their average energy expenditures by 4.0 percent, from $2,120 in FY 2010 to $2,205 in FY 2011. Low income households increased theirs by 4.5 percent, from $1,830

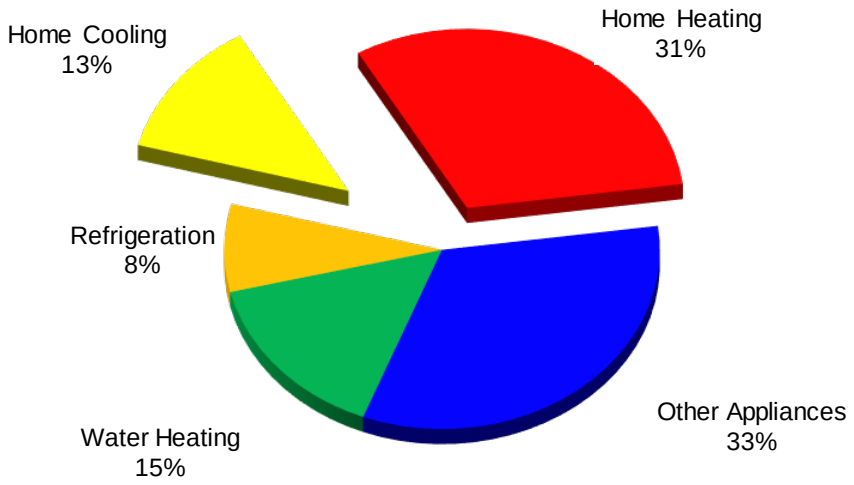
[1] The mean is the sum of all values divided by the number of values. The mean is also referred to as the average. See Appendix A for a discussion of the computation of energy burden statistics.

[2] Unless otherwise indicated, "low income" refers to households with income at or below the Federal maximum LIHEAP eligibility standard (i.e., the greater of 150 percent of HHS Poverty Guidelines and 60 percent of State median income). The terms "low income" and "LIHEAP income eligible" are, unless otherwise indicated, equivalent in the Executive Summary. "Non-low income" refers to those households with incomes above the Federal maximum LIHEAP eligibility standard.

in FY 2010 to $1,913 in FY 2011. LIHEAP recipient households increased theirs by 6.0 percent, from $1,986 in FY 2010 to $2,106 in FY 2011. The increase in expenditures in FY 2011 is partly due to a significant increase in fuel oil prices.

LIHEAP assists households with only that portion of residential energy costs that goes for home energy, i.e., home heating and home cooling. As shown in Figure 1, home heating and home cooling represent about 44 percent of residential energy expenditures for low income households. Refrigerators and freezers represent about 8 percent of residential energy expenditures, water heating represents about 15 percent of residential energy expenditures, and other appliances represent about 33 percent of residential energy expenditures.

Figure 1. Percent of U.S. residential energy expenditures by low income households, by end use, FY 2011



Home heating data

The three most common heating fuels in 2005, the most recent year for which household heating fuel usage data are available, were natural gas (53 percent), electricity (30 percent), and fuel oil (7 percent). Over the last decade, the share of households using electricity as a main heating fuel has increased significantly, while the share using fuel oil has declined. There were only small deviations from this pattern in main heating fuel choice by income group.

In FY 2011, as shown in Figures 2 and 3, average home heating expenditures for all households were $622, and the mean individual home heating burden was 2.2 percent. Low income households had average home heating expenditures of $597; this average was about 4.0 percent lower than that for all households. The mean individual home heating burden for low income households was 4.4 percent, twice as much as the mean individual home heating burden for all households. The average home heating expenditures for LIHEAP recipient households was $807, about 35 percent higher than the average for low income households and about 30 percent higher than the average for all households. Mean individual home heating burden for LIHEAP recipient households was 6.4 percent, nearly three

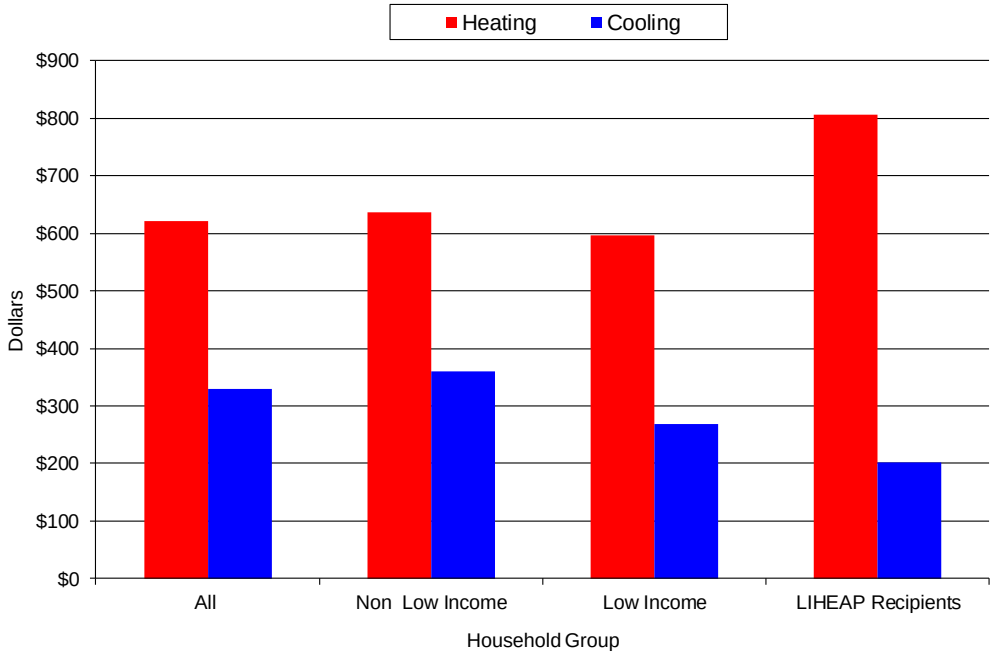
times the average for all households, and 2.0 percentage points higher than that for low income households. Average home heating expenditures (and consumption) for LIHEAP recipient households were greater than that for all low income households because LIHEAP heating assistance recipient households tend to live in colder climate regions.[3]

Home cooling data

In 2005, about 92 percent of all households cooled their homes using one of the methods recorded by the RECS.[4] Low income and LIHEAP recipient households were less likely to cool their homes than were non-low income households; 89 percent of low income households and 86 percent of LIHEAP recipient households cooled their homes using one of these methods.

As Figures 2 and 3 show, in FY 2011, for households that cooled, average home cooling expenditures for all households were $329, and the mean individual home cooling burden was 1.1 percent. Low income households had average home cooling expenditures of $269; this average was about 18 percent lower than that for all households. The mean individual home cooling burden for low income households was 2.3 percent, more than twice as much as the mean individual home cooling burden for all households. Average home cooling expenditures for LIHEAP recipient households were $202, about 25 percent lower than the average for low income households and almost 39 percent lower than the average for all households. The mean individual home cooling burden for LIHEAP recipient households was 1.5 percent, about 36 percent higher than the mean individual home cooling burden for all households.

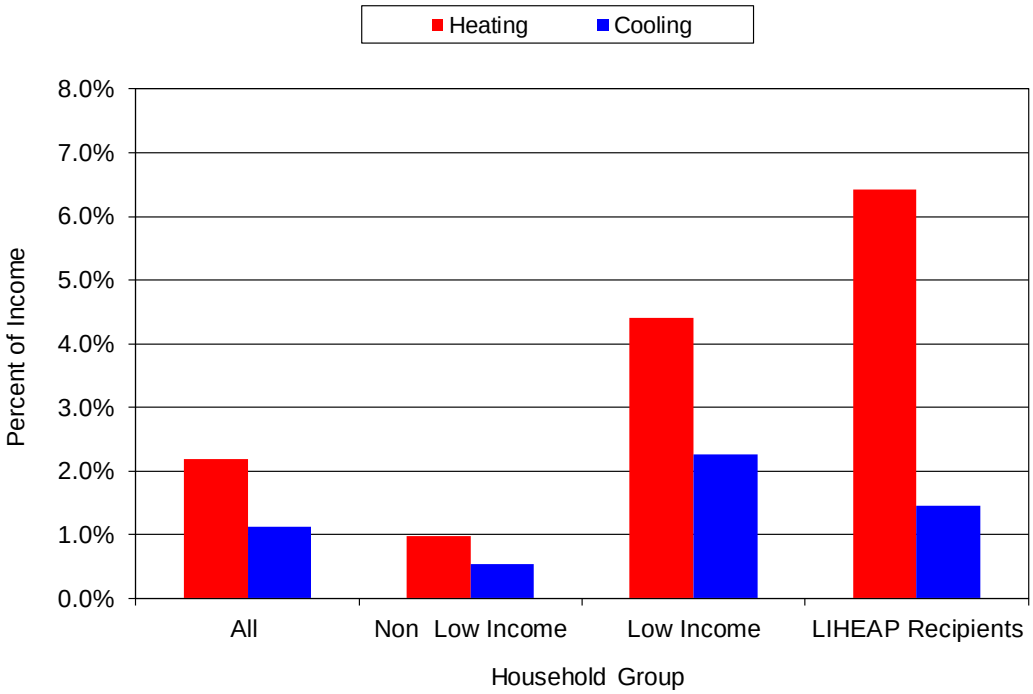
Figure 2. Mean home heating and home cooling expenditures by all households, non-low income households, low income households, and LIHEAP recipient households, FY 2011



[3] *LIHEAP Home Energy Notebook* for FY 2010.

[4] The 2005 RECS records cooling methods such as central or room air-conditioning as well as non air-conditioning cooling devices (e.g., ceiling fans and evaporative coolers). The 2005 RECS excludes several types of cooling, such as table and window fans.

Figure 3. Mean individual burden of heating and cooling expenditures for all households, non-low income households, low income households, and LIHEAP recipient households, FY 2011



Low income home energy trends

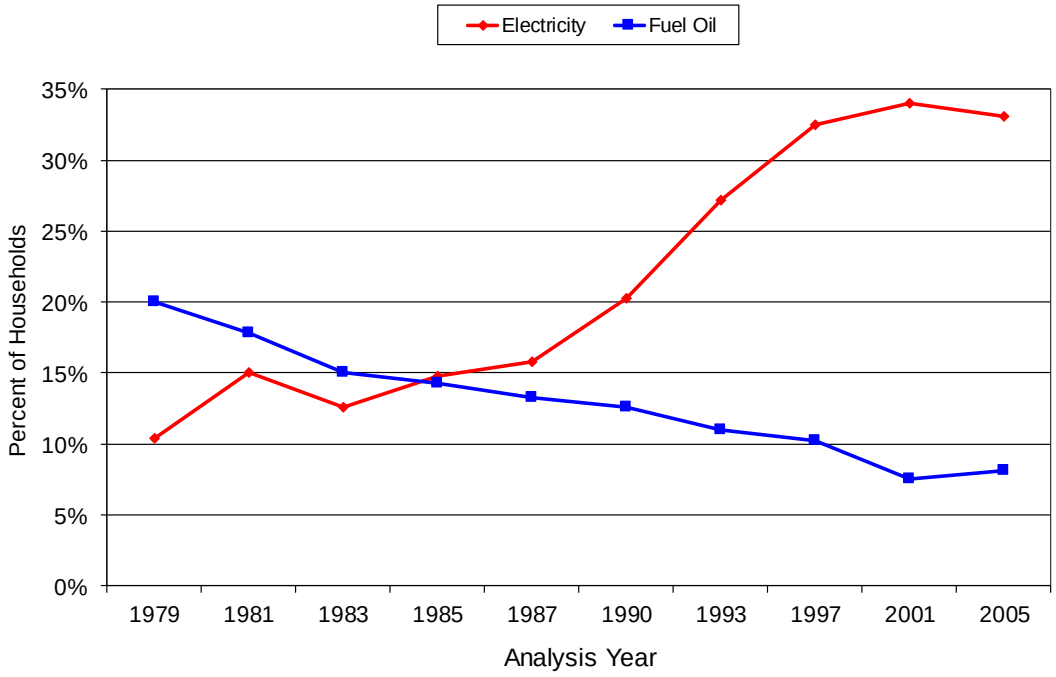
This section presents data on home energy trends for low income households from 1979 through 2005 or FY 2011, depending upon the latest year of availability.[5] Statistics are derived from a series of national residential energy consumption surveys (including the RECS) and from HHS' administrative statistics. The analyses show significant shifts since 1979 in the types and amounts of energy used by low income households.

Home heating and cooling trends

Figure 4 demonstrates that the share of low income households that used electricity as their main heating fuel increased from 10 percent in 1979 to 34 percent in 2001 and dropped slightly to 33 percent in 2005. In contrast, the share of low income households that used fuel oil as their main heating fuel declined from 20 percent in 1979 to 8.1 percent in 2005. Natural gas remained the dominant type of space heating fuel used over the 26-year period.

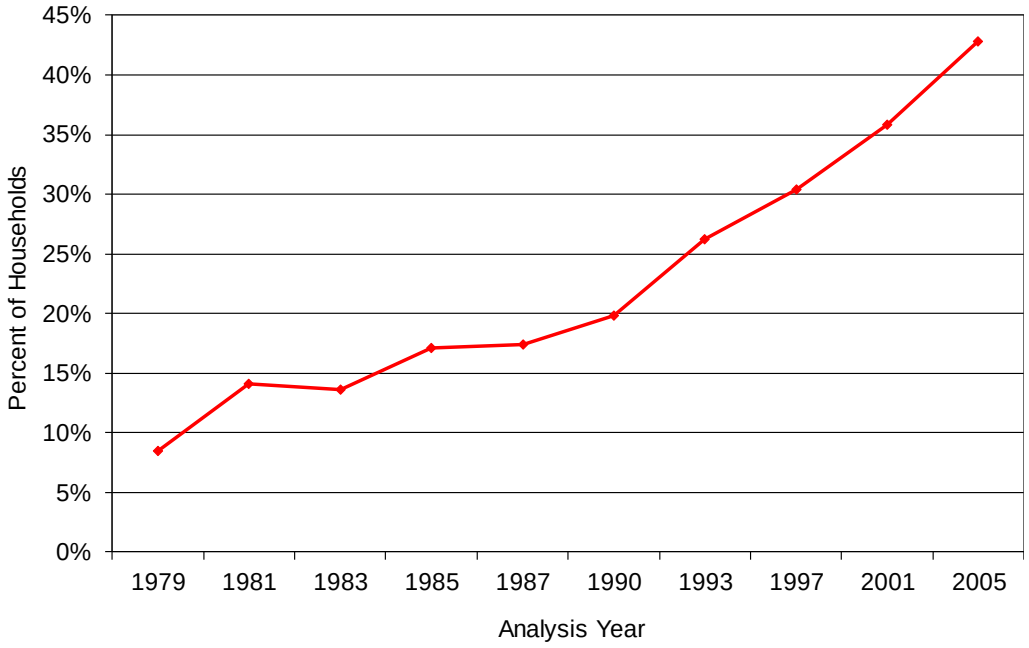
[5]In this section, low income households are defined as those households with incomes at or below 150 percent of HHS Poverty Guidelines.

Figure 4. Percent of low income households using electricity and fuel oil as main heating fuels, 1979 to 2005



As shown in Figure 5, the most important change in home cooling on the part of low income households has been in the percentage of households with central air-conditioning. The share of low income households who use central air-conditioning increased from 8.5 percent in 1979 to almost 43 percent in 2005.

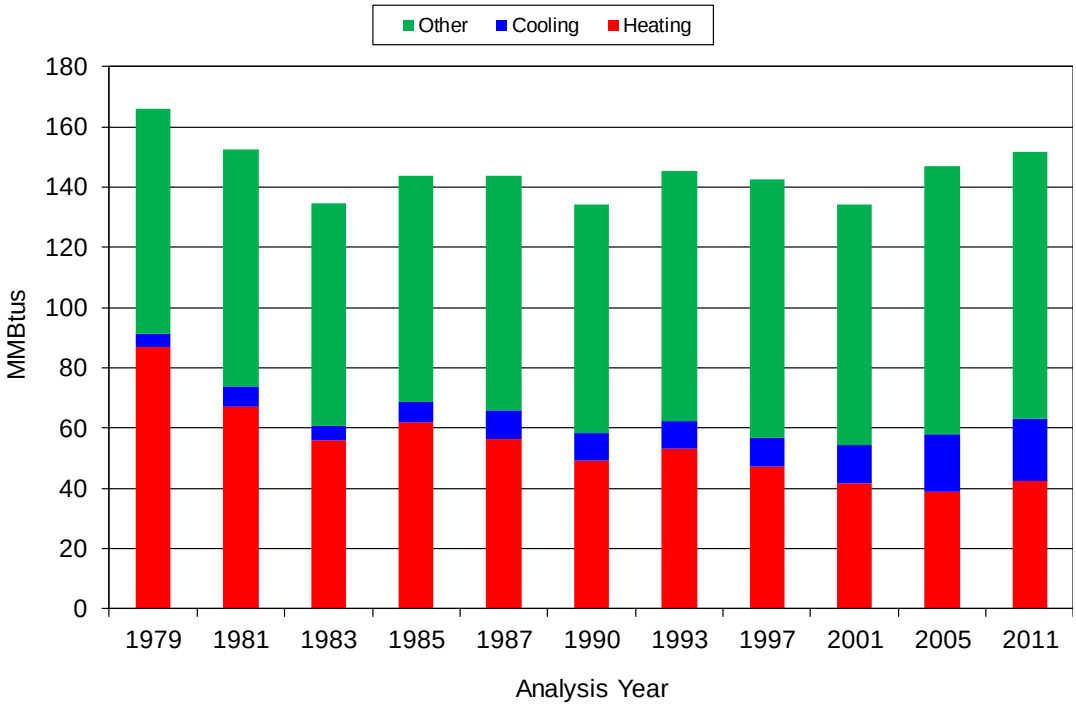
Figure 5. Percent of low income households using central air-conditioning, 1979 to 2005



Trends in mean residential consumption, expenditures, and energy burden

Low income households substantially decreased their mean residential energy consumption between 1979 and 1983, as shown in Figure 6. This suggests a significant increase in efficiency resulting from conservation measures or actions. From 1983 to 1990, mean residential energy consumption fluctuated from year to year, corresponding to expected changes in heating and cooling consumption because of changes in heating and cooling degree days. For 1993 through 2005, there appears to have been an increase in the use of energy for purposes other than home heating and home cooling. Between 2005 and FY 2011, the use of energy for home heating, home cooling, and for other purposes, appears to have remained fairly stable.

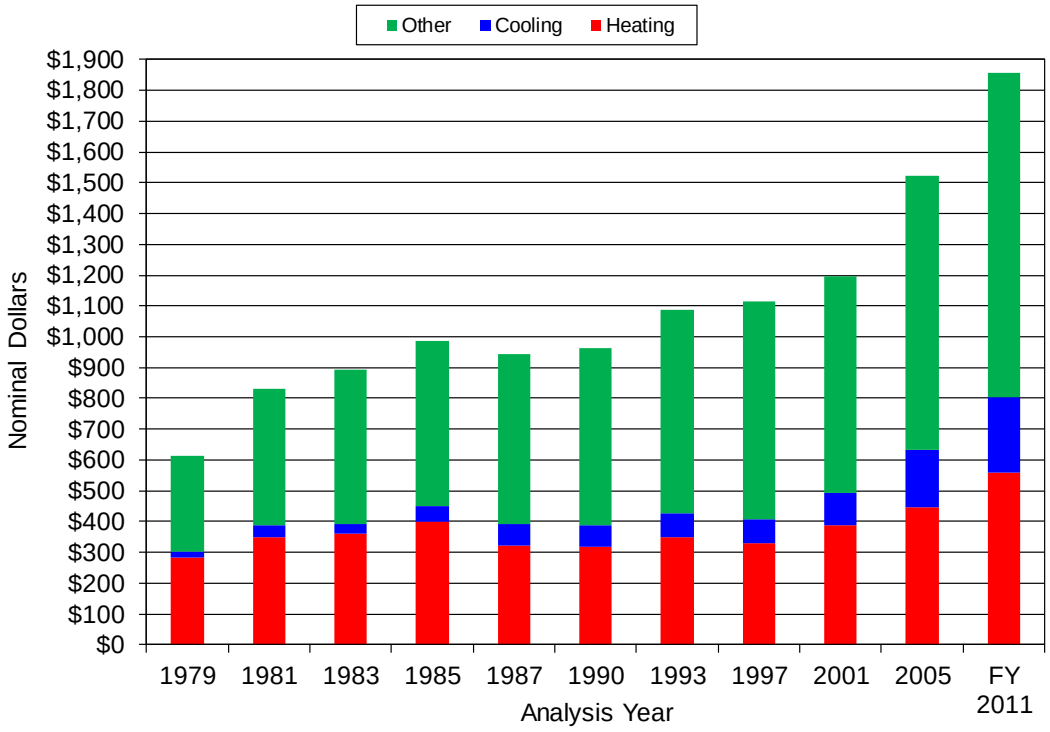
Figure 6. Mean residential energy consumption (in MMBtus) per low income household, 1979 to FY 2011[1/]



[1/] A British Thermal Unit (Btu) is the amount of energy necessary to raise the temperature of one pound of water one degree Fahrenheit. MMBtus, MmBTUs or mmBTUs refer to values in millions of Btus.

Mean residential energy expenditures increased rapidly between 1979 and 1985 because of fuel price increases, as shown in Figure 7. From 1987 through 1997, these expenditures rose moderately; however from 2001 through 2005, mean expenditures on heating increased dramatically as the result of fuel price increases and colder winter weather. Between 2005 and FY 2011, mean expenditures for home heating rose by almost 25 percent, again due to higher fuel prices. Mean expenditures on uses other than home heating or home cooling rose continuously from 1979 to FY 2011. Mean expenditures on cooling rose from 1979 to 2005, and rose again by over 32 percent from 2005 to FY 2011.

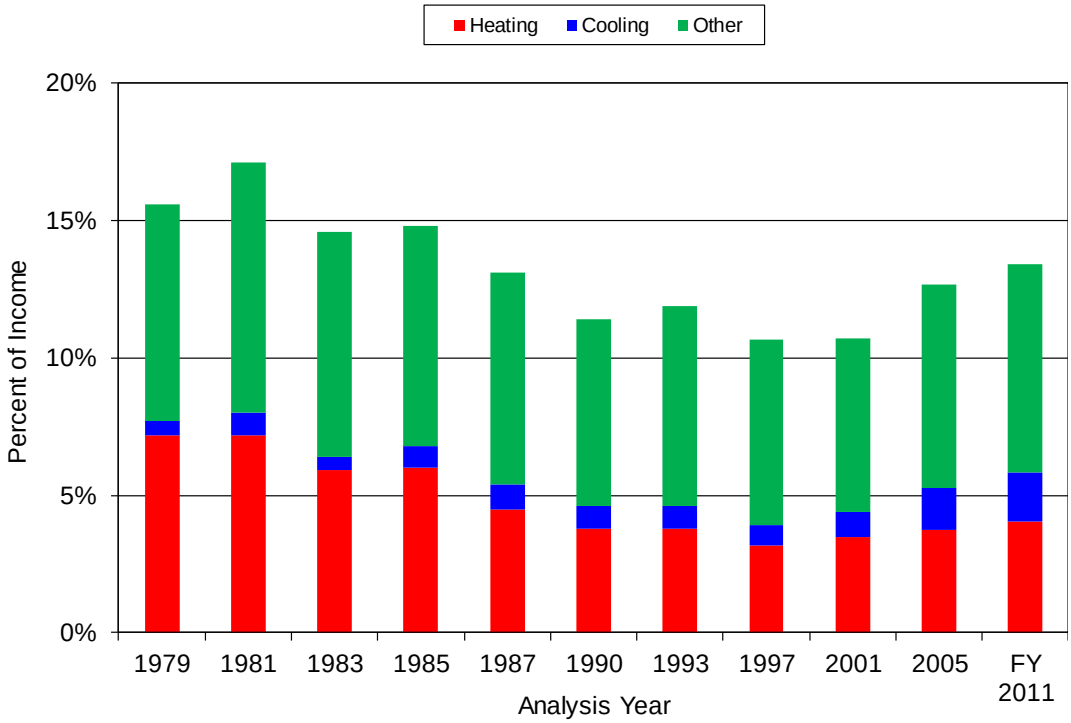
Figure 7. Mean residential energy expenditures for low income households, 1979 to FY 2011



As Figure 8 shows, the mean group home energy burden (i.e., burden associated with home heating and home cooling) declined from 7.7 percent in 1979 to 5.8 percent in FY 2011; this represented a decline of 1.9 percentage points.[6] The decline in mean group residential energy burden from 1979 to FY 2011 was 2.2 percentage points (from 15.6 percent to 13.4 percent). Most of the decline in residential energy burden is associated with a decline in home energy burden rather than a decline in the burden associated with energy use for other purposes (i.e., water heating, appliances, and refrigeration).

[6] Mean group burden is defined in Appendix A.

Figure 8. Mean group residential energy burden by end use for households with incomes at or below 150 percent of HHS poverty guidelines, 1979 to FY 2011



Analysis of fuel price and energy efficiency trends

Trends in energy consumption and expenditures are dependent on factors such as energy prices, weather, and energy efficiency. Fuel prices outpaced the Consumer Price Index (CPI) from 1979 through 1983, as shown in Figure 9 on the next page. While the CPI increased about 37 percent, the composite average of fuel prices (a weighted average of electric, natural gas, and fuel oil prices) increased by about 81 percent between 1979 and 1983. From 1985 through 1993, fuel prices rose at a slower rate than did the CPI (i.e., at a slower rate than the cost of other goods). From 1997 to through 2005 however, fuel prices rose at a higher rate than did the prices of other goods. In 2005, the composite energy price index was 321 while the CPI was 269. The impact of energy prices on energy expenditures resulted in low income household energy expenditures surging upward until 1985 even though energy consumption for these households declined over the same period. The 19 percent growth in composite fuel prices from 1985 to 1997 explains why residential energy expenditures per low income household rose slightly during that period. In 2001, fuel prices increased 17 percent over 1997 prices and in 2005, fuel prices increased by another 24 percent over 2001 prices. In FY 2011, fuel prices increased again. FY 2011 fuel prices were over 21 percent higher than 2005 fuel prices. The increases in fuel prices from 2005 through FY 2011 contributed to the rise in expenditures during that period.

Figure 9. Shifts in composite energy price index and Consumer Price Index (CPI), 1979 to FY 2011

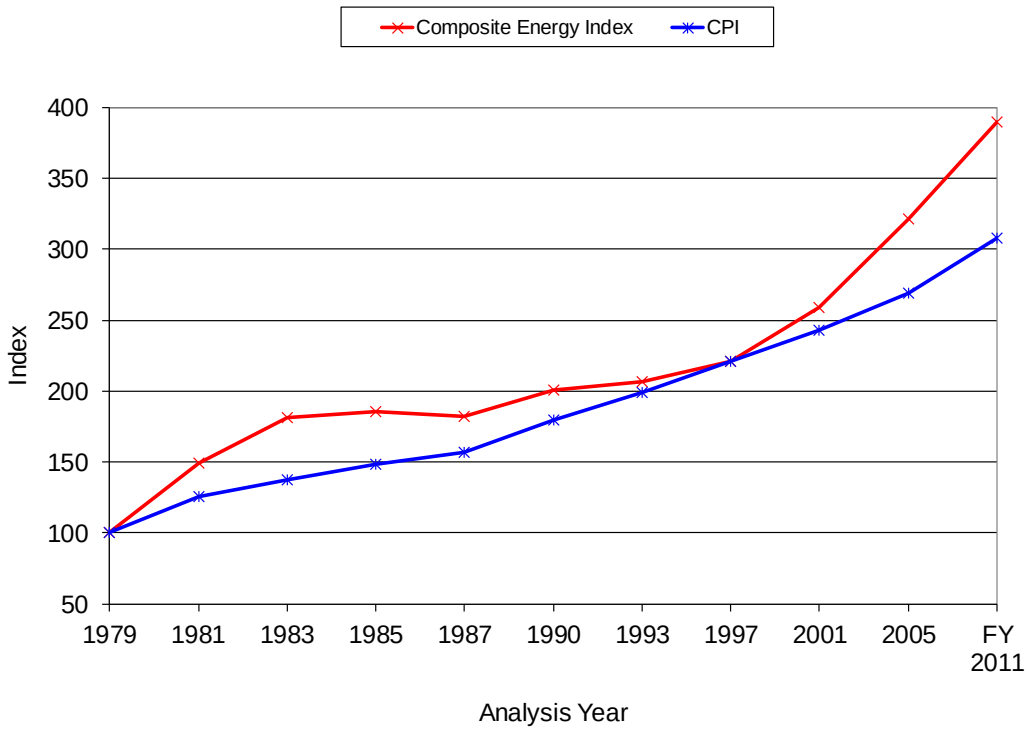
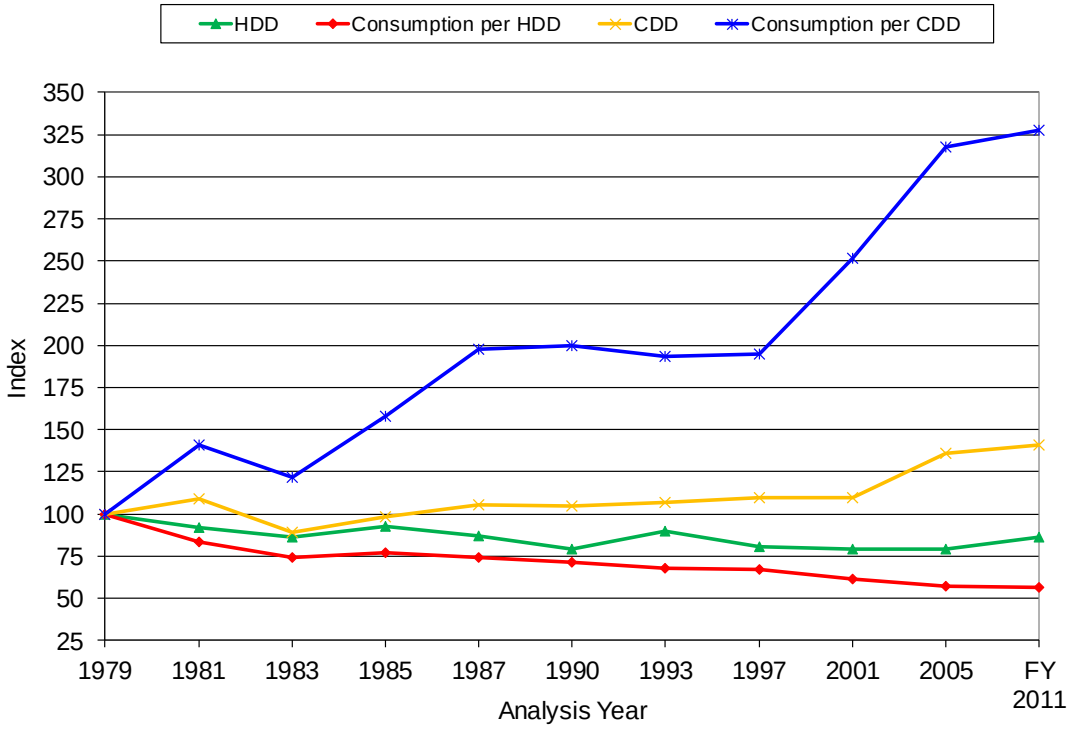


Figure 10 shows average energy consumption for heating and cooling compared to heating and cooling degree days from 1979 to FY 2011 for low income households. As shown, heating consumption per heating degree day generally declined from 1979 to FY 2011 probably at least in large part due to energy conservation efforts. In contrast, cooling consumption per cooling degree day rose sharply through FY 2011 because of a large increase in the availability of air-conditioning to low income households.[7] Only 37 percent of low income households had air-conditioning equipment in 1979, but by 2005 the number had risen to 80 percent.

[7]Air-conditioning equipment includes central air conditioners and window or wall units, ceiling fans, and evaporative coolers. The availability of all household appliances increased for low income households over this period due to the overall increase in the wealth of the nation and to the decrease in the cost of older technologies.

Figure 10. Index of heating degree days (HDD), average heating consumption for low income households per HDD, cooling degree days (CDD), and average cooling consumption for low income households per CDD, 1979 to FY 2011



The mean group home energy burden for low income households has remained considerably higher than the burden for all households. In 1979, the mean group home energy burden was 7.7 percent for low income households, while the mean group home energy burden for all households was 1.9 percent. In FY 2011, the mean group home energy burden for all households was 1.3 percent, while the mean group home energy burden for low income households was 5.8 percent. Again, this is over four times higher than that for all households.

Trends in LIHEAP

Between 1981 and FY 2011, as shown in Figure 11, the number of income eligible households has risen 104 percent, during which time Federal fuel assistance funds have increased by 146 percent.[8] Also during this period, the percentage of income eligible households receiving heating and/or winter crisis assistance has declined from 36 percent in 1981 to 19 percent in FY 2011 – though this figure has remained steady since 1997.[9] Before adjusting for inflation, average winter crisis and heating benefits per household increased until 1985, fell in 1987, stayed in the same range through 1997, increased significantly in 2001, dropped by over 16 percent in 2005, and then rose by 52 percent in FY 2011. Cooling benefits per household actually fell until 1985 and increased sharply from 1993 through 2001, and then fell by over 6 percent in 2005, and then increased by 60 percent in FY 2011. After adjusting for inflation, the mean value of combined Federal heating and winter crisis benefits

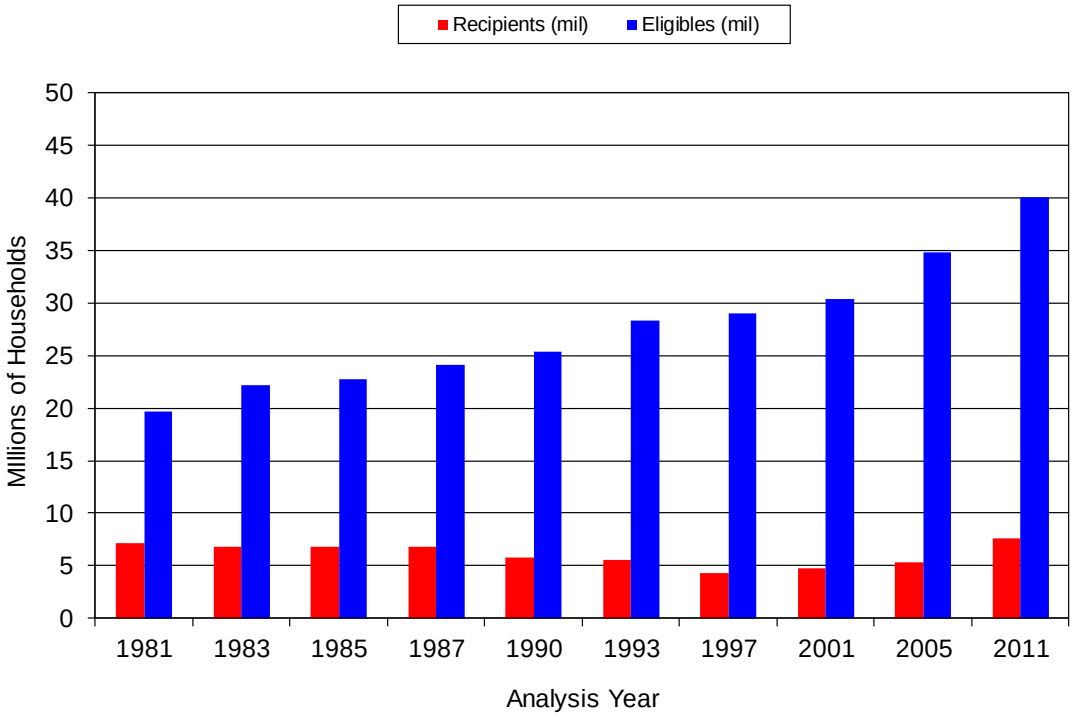
[8] Income eligible household estimates do not include those households with incomes greater than the statutory income standards but who may still qualify for LIHEAP benefits because they are categorically eligible for LIHEAP under section 8624 (b)(2)(A) of the LIHEAP statute.

[9] Note that The FY 1981 estimate of income eligible households are not directly comparable to those of the other years because the income eligibility guidelines for the FY 1981 program differed from those of other years.

fell (in 1981 dollars) from $213 in 1981 to $184 in FY 2011. Cooling benefits decreased (in 1981 dollars) from $129 in 1981 to $126 in FY 2011.

The percentage of the total home heating bill for LIEAP/LIHEAP income eligible households covered by LIEAP/LIHEAP heating and winter crisis benefits decreased from 23 percent in 1981 to 15 percent in FY 2011. The decrease resulted from the combination of higher home heating bills, a slightly smaller per-household amount of assistance benefits, and a rise in the size of income eligible population.

Figure 11. Number of LIEAP/LIHEAP income eligible and heating and/or winter crisis assistance recipient households, FY 1981 to FY 2011



The mean group home heating burden for LIEAP/LIHEAP assisted households is substantially reduced because of the LIHEAP benefits, but even with the assistance, it has historically been about twice the burden of all households.

Federal LIHEAP targeting performance

The Government Performance and Results Act of 1993 (GPRA) focuses on program results to provide Congress with objective information on the achievement of statutory objectives or program goals. The resulting performance data are to be used in making decisions on budget and appropriation levels.

ACF's budget justification for Congress, which contains the LIHEAP performance plan, takes into account the fact that the Federal government does not provide LIHEAP assistance to the public. Instead, the Federal government provides funds to States, Federal or State-recognized Indian Tribes and Tribal Organizations, and Insular Areas to administer LIHEAP at the local level. The LIHEAP performance plan also takes into account the fact that LIHEAP is a block grant whereby LIHEAP grantees have broad flexibility to design their programs, within very broad Federal guidelines, to meet the needs of their citizens.

LIHEAP program goals and performance goals

In FY 2011, 19 percent of federally income eligible households received assistance with their heating costs. Given that limitation, the LIHEAP statute requires LIHEAP grantees to provide, in a timely manner, that the highest level of assistance will be furnished to those households that have the lowest incomes and the highest energy costs or needs in relation to income, taking into account family size. The LIHEAP statute identifies two groups of low income households as having the highest needs:

- *Vulnerable Households*: Vulnerable households are those with at least one member that is a young child, an individual with disabilities, or a frail older individual.

- *High Burden Households*: High burden households are those with the lowest incomes and highest home energy costs.

Based on the national LIHEAP program goals, ACF has focused its annual performance goals and measurement on targeting income eligible vulnerable households. In addition, ACF has established an annual efficiency goal for LIHEAP. Subject to the availability of data, ACF also is interested in the performance of LIHEAP with respect to targeting households with the highest home energy burden.

Targeting Index performance measures

Performance goals must be measurable in order to determine if the goals are being achieved. ACF has developed a set of performance measures (i.e., targeting indexes) that show the extent to which LIHEAP meets its performance goals. These measures, which are presented below, show LIHEAP's performance in targeting vulnerable and high-burden households:

- The *recipiency targeting index* quantifies targeting with respect to receipt of LIHEAP benefits.

- The *benefit targeting index* quantifies targeting with respect to the level of LIHEAP benefits.

- The *burden reduction targeting index* quantifies targeting with respect to the burden reduction resulting from LIHEAP benefits.

The development of these indexes facilitates tracking of recipiency, benefit, and burden reduction performance for vulnerable and high burden households. Using these indexes, ACF established the following LIHEAP performance measures

- Increase the recipiency targeting index score of LIHEAP households having at least one member 60 years or older.

- Maintain the recipiency targeting index score of LIHEAP households having at least one member five years or younger.

There are no annual measures for the benefit targeting or burden reduction targeting indexes because the data that enter into these indexes are not available annually.

Outcome performance measures

ACF seeks to improve the way in which it measures LIHEAP's performance. The indicators that ACF uses to measure LIHEAP's performance, the young child and elderly recipiency targeting

indexes, serve only as proxies for LIHEAP's outcomes. ACF intended these proxies to be replaced by more outcome-focused measures.

In June 2008, ACF established the LIHEAP Performance Measures Planning Work Group, consisting of State LIHEAP Directors and ACF staff. The Work Group drafted a set of potential LIHEAP performance measures that could be useful to both the States and ACF.

In April 2010, ACF established a follow-up group, the LIHEAP Performance Measures Implementation Work Group, consisting of State LIHEAP Directors and ACF staff. The Work Group will be active through at least 2014 in overseeing the selection and implementation of the first Work Group's proposed LIHEAP outcome measures.

Performance measurement research

ACF has funded several studies to develop a better understanding of LIHEAP targeting performance measurement. Two of these studies recommended that ACF consider making changes in the performance measurement plan for LIHEAP.

- Validation Study – The performance measurement validation study examined the available data sources for estimating the targeting indexes required by the performance measurement plan for LIHEAP and identified the data sources that furnished the most reliable data. [10]

- Energy Burden Study – The energy burden evaluation study used the 2001 RECS LIHEAP Supplement to measure the baseline performance of LIHEAP in serving high burden households and to examine the competing demands associated with targeting vulnerable and high burden households. [11]

ACF has implemented the recommendations from the Validation Study. Additional resources would be required to implement the recommendations from the Energy Burden Study.

Performance measurement statistics

HHS' *Fiscal Year 2013 Annual Performance Report and Performance Plan* furnished measurements of targeting performance. The performance report showed the LIHEAP targets and performance results for FY 2011.

Classifying State LIHEAP Targeting Indexes

ACF commissioned a study to develop classifications of State LIHEAP targeting performance, evaluate States' recipiency targeting performance from one year to the next during Fiscal Year (FY) 2007 through FY 2010, and identify the factors related to targeting performance.

This targeting study had four main objectives:

1. **Performance Classification of States** – Classification of States in terms of their recipiency targeting performance for heating assistance for elderly and young child households for FY 2007 through FY 2010 in a meaningful and statistically robust way.

[10] *LIHEAP Targeting Performance Measurement Statistics: GPRA Validation of Estimation Procedures*, September 2004, Report prepared by APPRISE Incorporated under PSC Order No. 043Y00471301D.

[11] *LIHEAP Energy Burden Evaluation Study*, July 2005, Report prepared by APPRISE Incorporated under PSC Order No. 043Y00471301D.

2. **Changes in Targeting Performance** – Assessment of changes in State recipiency targeting indexes from FY 2007 through FY 2010.

3. **In-depth Interviews with State LIHEAP Directors** – In-depth interviews with a sample of State LIHEAP directors to study the factors related to the targeting performance, the reasons for recent improvement or decline in targeting performance, and the specific targeting strategies that the States are using.

4. **Factors Related to Targeting Performance** – Analysis of factors related to targeting performance.

Classification of States

The study defined five mutually exclusive categories to describe elderly and young child targeting performance, after taking into account the uncertainty around the estimates of income eligible households. The categories were chosen to be consistent from year to year (e.g. the categories would not need to be adjusted every year) and to also provide enough of a difference in targeting index classification from one group to the next (e.g. a Very High recipiency targeting index means that the State serves the target group at a rate that is at least 20 percent higher than that group's representation in the income eligible population). The categories are:

- Very High – A State is said to have a very high recipiency targeting index if the lower bound of the confidence interval of the recipiency targeting index is greater than 120.

- High – A State is said to have a high recipiency targeting index if the lower bound of the confidence interval of the recipiency targeting index is greater than 105 but less than or equal to 120.

- Moderate – A State is said to have a moderate recipiency targeting index if the upper bound of the confidence interval of the recipiency targeting index is greater than or equal to 95 and the lower bound of the confidence interval is less than or equal to 105.

- Low – A State is said to have a low recipiency targeting index if the upper bound of the confidence interval of the recipiency targeting index is less than 95 but greater than or equal to 80.

- Very Low – A State is said to have a very low recipiency targeting index if the upper bound of the confidence interval of the recipiency targeting index is less than 80.

The main findings are the following:

- In FY 2010, only three States had a very high elderly targeting index and only two States had a high elderly targeting index. Twenty-four States had a very low elderly targeting index. In contrast, 20 States had a very high and another 14 had a high young child targeting index. Only four States had a low or very low young child targeting index. The findings clearly indicate that young child households are targeted in many States, and that it is more challenging for States to effectively target elderly households.

- The States that had a very low young child index, Texas and Georgia, had a very high elderly targeting index. These States successfully targeted their benefits to elderly, but were not able to serve young child households at the same high rate.

- Seventeen out of 24 States that had a very low elderly targeting index had a very high young child index. In these States, the strategies that resulted in targeting the young child households may have had an impact on the effectiveness of targeting the elderly.

- One State, Tennessee, had both a very high elderly and a very high young child targeting index.

Results were similar when the State maximum LIHEAP Eligibility Standard was used, in comparison to when the Federal LIHEAP Income Standard was used. The main differences are the following:

- Elderly Household Targeting – Using the State LIHEAP Standard slightly improves the targeting performance results. The reason for this is that in many States, the incidence of elderly in the group of households with income above the State standard but at or below the Federal standard is higher than the incidence of elderly in the group of households with income at or below the State standard.

- Young Child Household Targeting – Using the State LIHEAP Standard slightly diminishes the targeting performance results. The reason for this is that in many States, the incidence of households with a young child in the group of households with income above the State standard but at or below the Federal standard is lower than the incidence of households with a young child in the group of households with income at or below the State standard.

Changes in Targeting Performance Over Time

One of the other main objectives of the study was to assess the changes in State recipiency targeting performance over time. The main findings included the following:

- For most States, the targeting performance with respect to both elderly and young child households was stable over time.

- In general, the States that increased their targeting performance with respect to one vulnerable group decreased their performance with respect to the other vulnerable group.

- Only a very small number of States were able to increase their targeting performance with respect to both groups over time. Tennessee, for example, has shown a strong improvement in targeting both groups over time.

- In FY 2010, while a slightly larger number of States had a very high young child household targeting index, a slightly smaller number of States had a very high elderly household targeting index, compared to other years.

In-depth Interviews with State LIHEAP Directors

In-depth interviews were conducted with eight State LIHEAP Directors in order to study factors related to State targeting performance, reasons for recent improvement or decline in targeting indexes, and to learn more about specific targeting strategies that States are using. Key findings from the in-depth interviews included the following:

1. Automatic cross-checks conducted with other social programs of eligible households seem to positively correlate with young child targeting performance. Moreover, one State that recently began cross checking clients enrolled in Medicaid Part D and automatically enrolling these clients in LIHEAP increased its elderly targeting index.

2. Special enrollment periods for the elderly seem to positively correlate with elderly targeting performance, but there were no States which had special enrollment periods for young child households during this period of analysis.

3. Four of the eight interviewed State LIHEAP Directors noted that the economic recession caused changes in the numbers in targeted populations, due to changes in the demographic composition of the applicants. They indicated that the recession and the change in the income eligibility guidelines resulted in a different pool of applicants compared to prior years.

4. There is no clear correlation between outreach conducted through agencies that serve the targeted households and elderly or young child targeting indexes.

5. Targeted outreach materials did not clearly impact elderly targeting performance, but there seems to be a positive correlation between young child/working family outreach materials and young child targeting performance.

6. The States which offered higher benefit amounts to targeted groups did not necessarily have a high targeting index for the targeted group that received higher benefits.

7. While it is sometimes difficult to observe a direct correlation between certain procedures and recipiency targeting indexes, it is important to remember that the recipiency targeting indexes are affected by multiple factors at any given time.

Summary of Findings on State LIHEAP Outreach and Intake Practices

The interviews with State LIHEAP programs asked whether the State had explicit outreach plans in place which targeted young child or elderly households. Seven of eight States either had specific targeted outreach plans meant to target elderly and/or young child households or purposely partnered with specific agencies (e.g. Offices on Aging, Head Start, senior centers) which conducted targeted outreach for them.

Also noteworthy is the fact that the majority of States conducted outreach solely through local agencies (e.g. Community Action Agencies and other local partners). Three States noted that they granted local agencies sole autonomy in designing outreach plans, and that the States did not necessarily need to approve of the plans before outreach took place.

The study found that some States have implemented procedures that are designed to reduce program application barriers for elderly and young child households. However, in the research, there were no *consistent* relationships between States that implemented procedures and States with high recipiency targeting indexes. This does not necessarily mean that the recommended barrier reduction measures (e.g., conducting outreach at agencies that serve elderly households or young child households) are not effective. Rather, it is possible that such measures have an incremental impact on targeting, and that other factors are responsible for the dominant targeting outcome.

Although some States which have implemented procedures designed to reduce program barriers for elderly and young child households have low or very low targeting index classifications for either targeted population, the study concluded that multiple outlying factors may still be negatively affecting the targeting indexes in these States. Also, it is possible that the procedures which these States have taken to reduce the program barriers kept the targeting indexes from falling to even lower levels. In order to more closely examine the relationships between various outlying variables and targeting indexes, the study has performed multiple regression analyses, as described in the following section of this report.

Factors Related to Targeting Index Performance

There are many State LIHEAP program factors that can simultaneously affect the targeting outcomes. The researchers do not have complete data on these State factors. A data-mining exercise that involves a multivariate analysis of factors associated with targeting indexes using the data available to researchers for FY 2007 though FY 2010 was completed.

The main findings from the regression analyses included the following:

- State fixed effects[12] can explain about 85 percent of variation in elderly targeting indexes and around 80 percent of variation in young child targeting indexes. This means that the variation across States in targeting indexes is significantly greater than the variation within States over time in the last four years. The variation within States over time in the last four years may not be large enough to help detect factors that have a statistically significant impact on targeting indexes. That being said, there were a few factors identified as statistically significant.

- Increased Federal LIHEAP funding is associated with a decrease in the elderly targeting indexes and an increase in the young child targeting indexes after controlling for State fixed effects. This means that an increase in Federal funding in a particular year is likely to be associated with an increase in the share of non-elderly households in the LIHEAP recipient population.

- In contrast, increased non-Federal LIHEAP funding such as State, local, and ratepayer assistance program funding, is associated with an increase in the elderly targeting indexes and a decrease in the young child targeting indexes after controlling for State fixed effects. This means that income eligible non-elderly, especially the young child households, could be served at a higher rate with these non-Federal energy assistance funds than elderly households, which allows States to use a relatively larger share of Federal funds towards serving elderly households and relatively smaller share of these funds towards serving young child households.

- The percent of the total Federal LIHEAP funds spent on heating assistance explains only a very small portion of the variation in targeting indexes once State fixed effects are controlled for, mainly because there is little to no variation in percent spent on heating within States over time.

- The elderly and young child targeting indexes have a very strong inverse relationship with one another. That means that, generally, if a State had a high elderly targeting index, the young child targeting index would be lower, and vice versa. This also means that States generally targeted one group over the other because their program design allows them to serve one group more efficiently than they can serve the other.

- Finally, the elderly targeting indexes generally declined over time, while the young child targeting indexes increased over time. FY 2010 generally showed the most pronounced increases/decreases in the described targeting indexes.

[12] See Section V for more detail on State fixed effects.

I. Introduction

The Administration for Children and Families (ACF) within the U.S. Department of Health and Human Services (HHS) administers at the Federal level the Low Income Home Energy Assistance Program (LIHEAP). ACF awards annual LIHEAP block grants to assist eligible low income households in meeting their home energy costs. ACF issues such grants to the 50 States and the District of Columbia, certain Indian Tribes and Tribal organizations, and certain U.S. insular areas.

In 1994, Congress amended the purpose of LIHEAP to clarify that LIHEAP is "to assist low-income households, particularly those with the lowest incomes, that pay a high proportion of household income for home energy, primarily in meeting their immediate home energy needs" (The Human Services Amendments of 1994, P.L. 103-252, Sec. 302). Congress further indicated that LIHEAP grantees need to reassess their LIHEAP benefit structures to ensure that they are actually targeting those low income households that have the highest energy costs or needs. The Energy Policy Act of 2005 (P.L. 109-58) reauthorized LIHEAP through FY 2007 without substantive changes. LIHEAP's reauthorization is currently pending.

For LIHEAP grantees to reassess their LIHEAP benefit structures, they need performance statistics on LIHEAP applicants and eligible households. In addition, they need technical assistance in how to make use of the performance statistics in planning and implementing changes to their programs.

Purpose of Notebook

ACF furnishes information and technical assistance to LIHEAP grantees. As part of that mission, ACF funded the development of this *Notebook* to assist LIHEAP grantees in meeting the requirements established by the 1994 amendments.

The *LIHEAP Home Energy Notebook* focuses on the home energy mission of LIHEAP by providing LIHEAP grantees with the latest national and regional data on home energy consumption, expenditures, and burden; low income home energy trends; and the LIHEAP performance measurement system.

The FY 2011 home energy data presented in this *Notebook* were derived from existing data sources and analytic procedures. These include the following:

- For household-level data on home energy: the national Residential Energy Consumption Surveys (RECS) for 2005, which is administered by the Department of Energy (DOE), Energy Information Administration (EIA).
- For household-level data on income: the national Current Population Survey's (CPS's) Annual Social and Economic Supplement (ASEC), which is administered by the Department of Commerce, Bureau of the Census (Census).
- For national and State-level data on residential energy prices: EIA's publications *Monthly Energy Review* and *Petroleum Marketing Monthly*.
- Other publicly available sources of data such as weather data from the Department of Commerce, National Oceanographic and Atmospheric Administration (NOAA).

- End use disaggregation procedures developed by EIA's Office of Energy Markets and End Use (EMEU).

- Data on States' expenditure of funds by component and numbers of households served by type: Office of Community Services' Division of Energy Assistance's (DEA's) administrative data from the *LIHEAP Household Report--Federal Fiscal Year 2011* and the *LIHEAP Grantee Survey for Federal Fiscal Year (FFY) 2011*.

Organization of Notebook

The remaining sections in this *Notebook* are organized as follows.

- Section II – Home energy data. This section presents national energy statistics and analyses for FY 2011. Tabulations are presented for all, low income, non-low income, and LIHEAP recipient households. Statistics are developed for residential energy consumption, home heating, and home cooling. Statistics include estimates of home energy consumption, expenditures, and energy burden.

- Section III – Low income home energy trends. This section furnishes data and analyses on low income home energy trends for the period from 1979 to FY 2011. Subsections include trends in consumption, expenditures, and burden; analysis of energy price and energy efficiency trends; trends in LIHEAP; and analysis of LIHEAP benefits.

- Section IV –Federal LIHEAP targeting performance. This section describes ACF's approach to LIHEAP performance measurement. It describes the performance measurement procedures and furnishes baseline data on targeting performance for LIHEAP.

- Section V– Classifying State LIHEAP Targeting Indexes. This section presents the findings from an ACF-commissioned study that developed classifications of State LIHEAP targeting performance, evaluated States' recipiency targeting performance from one year to the next during Fiscal Year (FY) 2007 through FY 2010, and identified the factors related to targeting performance.

- Appendix A documents the procedures used to prepare the FY 2011 energy statistics; these include projecting changes in energy consumption and expenditures, disaggregating energy consumption and expenditures into end use components, and computing energy burden statistics. Appendix A also includes detailed tabulations on residential energy use, expenditures, and burden at the national and regional level by main heating fuel for all, low income, non-low income, and LIHEAP recipient households.

- Appendix B furnishes averages of State-level estimates of the numbers of households that are income eligible for LIHEAP at both the Federal and State income standards. These averages are presented by vulnerability and income group.

II. Home Energy Data

Section II presents home energy consumption and expenditure data. The primary data source for this section is the 2005 RECS, which has energy consumption and expenditures data for calendar year 2005. For this *Notebook*, the 2005 space heating and cooling consumption and expenditures have been adjusted to reflect FY 2011 weather and fuel prices, as described in Appendix A. Therefore, any residential energy or home energy consumption and expenditure data presented in this section for years after 2005 have been adjusted from the 2005 RECS.

National data on total residential energy, home heating, and home cooling are presented below. Regional variations in the national data are included in Appendix A. Home energy trend data are presented in section III.

Residential energy data

Tables 2-1a to 2-1d, on the next page, presents data on average annual residential energy consumption, expenditures, and burden by fuel type for all, non-low income, low income, and LIHEAP recipient households.[13] In FY 2011, average residential energy consumption for all households was 99.1 million British Thermal Units (MMBtus) and average expenditures were $2,205. The mean individual residential energy burden for all households was 7.0 percent of income.

Low income households had average residential energy consumption of 87.5 MMBtus (11.7 percent less than all households) and average energy expenditures of $1,913 (13.2 percent less than all households). Their mean individual residential energy burden was 13.4 percent, nearly twice that for all households and nearly four times that for non-low income households.

Average residential energy expenditures for LIHEAP recipient households were $2,106, over 10 percent higher than that for all low income households. The mean individual residential energy burden was 15.7 percent, 2.3 percentage points higher than that for low income households.

Nationally, all households increased their average energy expenditures by 4.0 percent, from $2,120 in FY 2010 to $2,205 in 2011. Low income households increased theirs by 4.5 percent, from $1,830 in FY 2010 to $1,913 in FY 2011. LIHEAP recipient households increased theirs by 6.0 percent, from $1,986 in FY 2010 to $2,106. The increase in expenditures in FY 2011 is partly due to a significant increase in fuel oil prices.

Households consume residential energy for a variety of uses that include space heating, water heating, space cooling (air-conditioning or circulation), refrigeration, and other appliances. Table 2-2 furnishes data on the percentage of the residential energy bill that is attributable to each of these five end uses. By statute, LIHEAP targets assistance to home energy expenditures, i.e., to home heating and home cooling expenditures. In FY 2011, home heating was 31 percent of the residential energy bill for low income households, and home cooling made up 13 percent.

[13]Comparisons are made among the four income groups of all, non-low income, low income, and LIHEAP recipient households. All households represent the total number of households in the U.S. Non-low income households represent those households with annual incomes above the LIHEAP income maximum of the greater of 150 percent of HHS Poverty Guidelines and 60 percent of State median income. Low income households represent those households with annual incomes at or under the LIHEAP income maximum of the greater of 150 percent of HHS Poverty Guidelines and 60 percent of State median income. LIHEAP recipient households represent those low income households that received Federal fuel assistance.

Table 2-1a. Residential energy: Average annual household consumption, expenditures, and burden by all households, by main heating fuel type, United States, FY 2011[1/] (See also Tables A-3a – A-3c, Appendix A)

Main heating fuel	Fuel consumption (MMBtus)[2/]	Fuel expenditures	Mean individual burden[3/]	Median individual burden[4/]	Mean group burden[5/]
All fuels	99.1	$2,205	7.0%	4.2%	3.3%
Natural gas	115.4	$2,015	5.6%	3.6%	3.0%
Electricity	62.7	$1,936	7.0%	4.0%	2.9%
Fuel oil	151.7	$4,298	14.1%	8.3%	6.4%
Kerosene	55.7	$1,676	10.2%	7.5%	2.5%
LPG[6/]	112.5	$3,216	10.1%	6.8%	4.8%

Table 2-1b. Residential energy: Average annual household consumption, expenditures, and burden by non low income households, by main heating fuel type, United States, FY 2011[1/] (See also Tables A-3a – A-3c, Appendix A)

Main heating fuel	Fuel consumption (MMBtus)[2/]	Fuel expenditures	Mean individual burden[3/]	Median individual burden[4/]	Mean group burden[5/]
All fuels	105.3	$2,363	3.5%	3.0%	2.6%
Natural gas	120.1	$2,172	3.1%	2.7%	2.4%
Electricity	67.6	$2,087	3.3%	2.9%	2.3%
Fuel oil	160.9	$4,600	6.4%	5.7%	5.0%
Kerosene	62.1*	$1,724*	4.7%	4.8%	1.9%
LPG[6/]	120.0	$3,345	5.4%	4.8%	3.6%

Table 2-1c. Residential energy: Average annual household consumption, expenditures, and burden by low income households, by main heating fuel type, United States, FY 2011[1/] (See also Tables A-3a – A-3c, Appendix A)

Main heating fuel	Fuel consumption (MMBtus)[2/]	Fuel expenditures	Mean individual burden[3/]	Median individual burden[4/]	Mean group burden[5/]
All fuels	87.5	$1,913	13.4%	9.0%	10.0%
Natural gas	105.5	$1,680	11.0%	8.0%	8.8%
Electricity	54.4	$1,679	13.3%	8.3%	8.8%
Fuel oil	137.7	$3,834	25.9%	19.8%	20.0%
Kerosene	54.5	$1,668	11.3%	8.9%	8.7%
LPG[6/]	98.4	$2,973	18.9%	15.2%	15.5%

Table 2-1d. Residential energy: Average annual household consumption, expenditures, and burden by LIHEAP recipient households, by main heating fuel type, United States, FY 2011[1/] (See also Tables A-3a – A-3c, Appendix A)

Main heating fuel	Fuel consumption (MMBtus)[2/]	Fuel expenditures	Mean individual burden[3/]	Median individual burden[4/]	Mean group burden[5/]
All fuels	107.3	$2,106	15.7%	10.0%	13.1%
Natural gas	117.9	$1,786	13.2%	9.2%	11.1%
Electricity	50.5	$1,364	14.9%	8.9%	8.5%
Fuel oil	155.6	$4,350	28.7%	28.6%	27.0%
Kerosene	78.3*	$1,902*	19.2%	15.1%	11.8%
LPG[6/]	112.0	$3,591	18.7%	11.9%	22.3%

[1/]Data are derived from the 2005 RECS, adjusted to reflect FY 2011 heating degree days, cooling degree days, and fuel prices. Data represent residential energy used from October 2010 through September 2011.
[2/]A British Thermal Unit (Btu) is the amount of energy necessary to raise the temperature of one pound of water one degree Fahrenheit. MMBtus, MmBTUs or mmBTUs refer to values in millions of Btus.
[3/]Mean individual burden is calculated by taking the mean, or average, of individual energy burdens, as calculated from FY 2011 adjusted RECS data. See Appendix A for information on calculation of energy burden.
[4/]Median individual burden is calculated by taking the median of individual energy burdens, as calculated from FY 2011 adjusted RECS data.
[5/]Mean group energy burden has been calculated by (1) calculating average residential energy expenditures from the 2005 RECS for each group of households; (2) adjusting those figures for FY 2011; and (3) dividing the adjusted figures by the average income for each group of households from the 2011 CPS ASEC.
[6/]Liquefied petroleum gas (LPG) refers to any fuel gas supplied to a residence in liquid compressed form, such as propane or butane.
* = This figure should be viewed with caution because of the small number of sample cases.

Residential energy expenditures of low income households are distributed in roughly the same way as those of all households. However, LIHEAP recipients spent a higher proportion of their annual residential expenditures for space heating and a lower proportion for space cooling than did other groups. LIHEAP recipient households spent 38 percent of their annual residential expenditures for space heating, 7 percentage points more than did the average low income household. LIHEAP recipient households spent 8 percent for space cooling, about 62 percent of the proportion spent by low income households.

Table 2-2. Residential energy: Percent of residential energy expenditures for each of the major end uses by all, non-low income, low income, and LIHEAP recipient households, United States, FY 2011[1/]

End Use	All households	Non-low income households	Low income households	LIHEAP recipient households
Space heating	28%	27%	31%	38%
Space cooling	14%	14%	13%	8%
Water heating	14%	14%	15%	15%
Refrigeration	8%	8%	8%	7%
Appliances	36%	37%	33%	31%
All uses	100%	100%	100%	100%

[1/]Data are derived from the 2005 RECS, adjusted to reflect FY 2011 heating degree days, cooling degree days. Percentages may not add to 100 percent due to rounding.

Home heating data

This section presents data on main heating fuel type, home heating consumption, home heating expenditures, and home heating burden.

Main heating fuel type

Table 2-3 shows that, in 2005, about half of the households in each income group used natural gas as their main heating fuel. LIHEAP recipient households used natural gas at the highest rate, 60.0 percent. Almost 30 percent of households in each group, except LIHEAP recipient households, used electricity as their main heating fuel. Low income households used electricity at the highest rate among all groups, 31.8 percent, and LIHEAP recipient households used electricity at the lowest rate among all groups, 19.0 percent. LIHEAP recipient households tended to use fuel oil and kerosene more frequently than did households in other groups.

Table 2-3. Home heating: Percent of households using major types of heating fuels by all, non-low income, low income, and LIHEAP recipient households, United States, April 2005[1/] (See also Table A-4, Appendix A)

Heating fuel	All households	Non-low income households	Low income households	LIHEAP recipient households
Natural gas	52.6%	55.0%	48.1%	60.0%
Electricity	30.1%	29.2%	31.8%	19.0%
Fuel oil	6.9%	6.5%	7.8%	12.0%
Kerosene	0.6%	0.1%	1.5%	2.4%
LPG	5.5%	5.5%	5.4%	5.2%
Other[2/]	3.2%	2.9%	3.7%	1.2%

[1/]Data are derived from the 2005 RECS. Percentages may not add to 100 percent due to rounding.
[2/]Households using wood, coal, and other minor fuels are categorized together under "Other."

Non-low income households increased their use of electricity for home heating from 24.1 percent of households in September 1990 to 29.2 percent in April 2005.[14] Low income households increased their use of electricity as the main heat source from 20.0 percent in September 1990 to 31.8 percent in April 2005. LIHEAP recipient households' use of electricity as their main heat source rose from 14.4 percent in September 1990 to 19.0 percent in April 2005.

Home heating consumption, expenditures, and burden

Average annual home heating consumption, expenditures, and burden by fuel type for all, non-low income, low income, and LIHEAP recipient households are presented in Tables 2-4a through 2-4d. In FY 2011, average home heating consumption for all households was 41.7 MMBtus, average expenditures were $622, and mean individual home heating burden was 2.2 percent.

Low income households had average home heating consumption of 39.6 MMBtus (5.0 percent less than the average for all households) and average home heating expenditures of $597 (4.0 percent less than the average for all households). The mean individual home heating burden for low income households was 4.4 percent, twice as much as the average home heating burden for all households and more than four times the average home heating burden for non-low income households.

[14]Findings from the 2005 RECS, Energy Information Administration, U.S. Department of Energy.

Average home heating consumption for LIHEAP recipient households was 56.6 MMBtus (36 percent higher than the average for all households), and average home heating expenditures were $807 (about 30 percent higher than the average for all households). Mean individual home heating burden for LIHEAP households was 6.4 percent, 2 percentage points higher than the average for low income households and nearly three times the average for all households. Average home heating consumption for LIHEAP recipient households was 43 percent greater than that for all low income households, because LIHEAP heating assistance recipient households tend to live in colder climate regions.[15]

FY 2011 heating season was slightly colder than the FY 2010 heating season. Between FY 2010 and FY 2011, home heating consumption increased 1.3 percent for all households, 1.6 percent for low income households, and 2.6 percent for LIHEAP recipient households.

Compared to FY 2010, the FY 2011 prices for natural gas stayed about the same, while electricity prices increased by 1.9 percent, fuel oil/kerosene prices increased by 27.9 percent, and LPG prices increased by 14.6 percent in nominal terms.[16] Average home heating expenditures for all households, low income households, and LIHEAP recipient households heating with natural gas increased very slightly as a result of a relatively stable natural gas prices and a colder heating season. Also, the expenditures for households heating LPG have increased because of the increase in prices and the expenditures for households heating with fuel oil have increased because of the increase in prices and increase in consumption.

The change in home heating expenditures from FY 2010 to FY 2011 varied considerably across the three major home heating fuels. Expenditures for all households heating with natural gas increased by less than 0.4 percent. Expenditures for all households heating with electricity decreased by 2.0 percent, while expenditures for all households heating with fuel oil increased 35.3 percent.

Table 2-4a. Home heating: Average annual household consumption, expenditures, and burden by all households, by fuel type, United States, FY 2011[1/] (See also Tables A-5, A-6a, A-6b, and A-6c, Appendix A)

Main heating fuel	Fuel consumpton (MMBtus)[2/]	Fuel expenditures	Mean individual burden[3/]	Median individual burden[4/]	Mean group burden[5/]
All fuels	41.7	$622	2.2%	0.8%	0.9%
Natural	54.0	$516	1.7%	0.8%	0.8%
Electricity	9.4	$300	1.2%	0.6%	0.4%
Fuel oil	100.9	$2,440	9.1%	4.8%	3.6%
Kerosene	22.0	$504	2.9%	2.2%	0.7%
LPG[6/]	55.4	$1,456	4.7%	2.8%	2.2%

[15] *LIHEAP Home Energy Notebook for FY 2010.*

[16] Price data obtained from the Energy Information Administration's *Monthly Energy Review*, November 2012, for natural gas and electricity for the entire FY 2011 and for other fuels until February 2011. Due to EIA budget restrictions in 2011, LPG and fuel oil price data was not available in March 2011 and subsequent months. An estimate of LPG prices was derived by examining historical patterns and utilizing trends to estimate LPG price movement. An estimate of fuel oil prices was derived by examining trends in fuel oil prices as reported by the Bureau of Labor Statistics.

Table 2-4b. Home heating: Average annual household consumption, expenditures, and burden by non low income households, by fuel type, United States, FY 2011[1/] (See also Tables A-5, A-6a, A-6b, and A-6c, Appendix A)

Main heating fuel	Fuel consumpton (MMBtus)[2/]	Fuel expenditures	Mean individual burden[3/]	Median individual burden[4/]	Mean group burden[5/]
All fuels	42.9	$636	1.0%	0.6%	0.7%
Natural	53.5	$516	0.8%	0.6%	0.6%
Electricity	9.9	$318	0.5%	0.4%	0.3%
Fuel oil	104.6	$2,537	3.7%	3.2%	2.7%
Kerosene	26.4*	$599*	1.8%	1.1%	0.6%
LPG[6/]	61.2	$1,556	2.5%	2.1%	1.7%

Table 2-4c. Home heating: Average annual household consumption, expenditures, and burden by low income households, by fuel type, United States, FY 2011[1/] (See also Tables A-5, A-6a, A-6b, and A-6c, Appendix A)

Main heating fuel	Fuel consumpton (MMBtus)[2/]	Fuel expenditures	Mean individual burden[3/]	Median individual burden[4/]	Mean group burden[5/]
All fuels	39.6	$597	4.4%	2.0%	3.1%
Natural	55.2	$517	3.7%	2.3%	2.7%
Electricity	8.4	$271	2.3%	1.2%	1.4%
Fuel oil	95.2	$2,291	17.2%	11.7%	12.0%
Kerosene	21.2	$487	3.0%	2.2%	2.5%
LPG[6/]	44.4	$1,267	8.7%	6.9%	6.6%

Table 2-4d. Home heating: Average annual household consumption, expenditures, and burden by LIHEAP recipient households, by fuel type, United States, FY 2011[1/] (See also Tables A-5, A-6a, A-6b, and A-6c, Appendix A)

Main heating fuel	Fuel consumpton (MMBtus)[2/]	Fuel expenditures	Mean individual burden[3/]	Median individual burden[4/]	Mean group burden[5/]
All fuels	56.6	$807	6.4%	3.0%	5.0%
Natural	65.7	$618	5.4%	2.9%	3.8%
Electricity	9.4	$283	3.7%	1.7%	1.8%
Fuel oil	102.1	$2,460	16.2%	13.2%	15.3%
Kerosene	26.0*	$566*	5.4%	5.7%	3.5%
LPG[6/]	48.0	$1,369	8.3%	4.6%	8.5%

[1/]Data are derived from the 2005 RECS, adjusted to reflect FY 2011 heating degree days and fuel prices. Data represent home energy used from October 2010 through September 2011.

[2/]A British Thermal Unit (Btu) is the amount of energy necessary to raise the temperature of one pound of water one degree Fahrenheit. MMBtus, MmBTUs or mmBTUs refer to values in millions of Btus.

[3/]Mean individual burden is calculated by taking the mean, or average, of individual heating energy burdens, as calculated from FY 2011 adjusted RECS data. See Appendix A for information on energy burden calculation.

[4/]Median individual burden is calculated by taking the median of individual heating energy burdens, as calculated from FY 2011 adjusted RECS data.

[5/]Mean group heating energy burden is calculated by (1) computing average home heating energy expenditures from the 2005 RECS for each group of households; (2) adjusting those figures for FY 2011; and (3) dividing the adjusted figures by the average income for each group of households from the 2011 CPS ASEC.

[6/]Liquefied petroleum gas (LPG) refers to any fuel gas supplied to a residence in liquid compressed form, such as propane or butane.

* = This figure should be viewed with caution because of the small number of sample cases.

Home cooling data

This section presents data on home cooling type, home cooling consumption, home cooling expenditures, and home cooling burden.

Cooling type

As shown in Table 2-5, about 92 percent of households in 2005 cooled their homes in ways recorded by the 2005 RECS (i.e. with air-conditioners or with non air-conditioning cooling devices such as ceiling fans and evaporative coolers). Low income households were less likely to cool their homes than were non-low income households.

Table 2-5. Home cooling: Percent of households with home cooling by all, non-low income, low income, and LIHEAP recipient households, United States, April 2005[1/] (See also Table A-7, Appendix A)

Presence of Cooling	All Households	Non-low income households	Low income households	LIHEAP recipient households
Cooling[2/]	92%	94%	89%	86%
None[3/]	8%	6%	11%	14%

[1/] Data are derived from the 2005 RECS.
[2/] Represents households that cool with central or room air-conditioning as well as non air-conditioning cooling devices (e.g., ceiling fans and evaporative coolers).
[3/] Represents households that do not cool or cool in ways other than those recorded by the 2005 RECS (e.g., the use of table and window fans).

Home cooling consumption, expenditures, and burden

Average annual home cooling consumption, expenditures, and burden for all, non-low income, low income, and LIHEAP recipient households that cooled are presented in Table 2-6. In FY 2011, average home cooling consumption for households that cooled was 9.3 MMBtus, average expenditures were $329, and mean individual home cooling burden was 1.1 percent.

For households that cooled, low income households had average home cooling energy consumption of 7.5 MMBtus (about 19 percent less than the average for all households) and average home cooling expenditures of $269 (about 18 percent less than the average for all households). The mean individual home cooling burden for low income households was 2.3 percent, more than twice the average home cooling burden of all households and more than four times that of non-low income households.

For households that cooled, average home cooling consumption for LIHEAP recipient households was 5.6 MMBtus (about 40 percent less than all households and 25 percent less than low income households), and average home cooling expenditures were $202 (about 39 percent less than all households). Mean individual home cooling burden for LIHEAP recipient households was 1.5 percent, 36 percent higher than the average for all households.

The FY 2011 cooling season was similar to the FY 2010 cooling season. From FY 2010 to FY 2011, home cooling stayed about the same for all households, decreased by 1.2 percent for low income households, and decreased by 2.4 percent for LIHEAP recipient households.

Nationally, average home cooling expenditures for all households increased by 1.6 percent, while the average home cooling expenditures increased by 1.3 percent for low income households. Average

home cooling expenditures for LIHEAP recipient households stayed the same. The cooling expenditures remained similar to FY 2010 expenditures due to a similar cooling season.

Table 2-6. Home cooling: Average annual household consumption, expenditures, and percent of income by all, non-low income, low income and LIHEAP recipient households that cooled, by fuel type, United States, FY 2011[1/] (See also Table A-7, Appendix A)

Household group	Fuel consumption (MMBtus)[2/]	Fuel expenditures	Mean individual burden[3/]	Median individual burden[4/]	Mean group burden[5/]
All households	9.3	$329	1.1%	0.4%	0.5%
Non-low income households	10.2	$360	0.5%	0.3%	0.4%
Low income households	7.5	$269	2.3%	0.9%	1.4%
LIHEAP recipient households	5.6	$202	1.5%	0.6%	1.3%

[1/]Data are derived from the 2005 RECS, adjusted to reflect FY 2011 cooling degree days and fuel prices. Data represent residential energy used from October 2010 through September 2011.

[2/]A British Thermal Unit (Btu) is the amount of energy necessary to raise the temperature of one pound of water one degree Fahrenheit. MMBtus, MmBTUs or mmBTUs refer to values in millions of Btus.

[3/]Mean individual burden is calculated by taking the mean, or average, of individual cooling energy burdens, as calculated from FY 2011 adjusted RECS data. See Appendix A for information on energy burden calculation.

[4/]Median individual burden is calculated by taking the median of individual cooling energy burdens, as calculated from FY 2011 adjusted RECS data.

[5/] Mean group cooling energy burden is calculated by (1) computing average home cooling energy expenditures from the 2005 RECS for each group of households; (2) adjusting those figures for FY 2011; and (3) dividing the adjusted figures by the average income for each group of households from the 2011 CPS ASEC.

III. Low Income Home Energy Trends

Important shifts in energy prices and consumption have occurred since the 1973 oil embargo. As a result, the energy expenditures and energy burdens of low income households have changed significantly.

In the *LIHEAP Report to Congress for FY 1989,* Appendix K presented the results of a national study of residential energy consumption, expenditures, and burden for low income households from 1973 to 1989. Selected tables from that study were updated and published as a regular appendix in annual LIHEAP reports to Congress for FY 1991 through FY 1996. Beginning with the FY 1997-FY 1999 report, the tables are only published in the annual *LIHEAP Home Energy Notebook*. The tables present data for low income households and, for comparison purposes, include statistics on all households. Beginning with 1979, the year before HHS' first energy assistance program was enacted, trend data are furnished on the following:

- Home energy consumption, expenditures, and burden.
- Factors affecting consumption, expenditures, and burden.
- The impact of LIHEAP assistance on net home energy expenditures.

A number of special terms are used throughout this section. Table 3-1 on the next page defines these special terms. One such term is "low income," which is defined as having income at or below 150 percent of HHS poverty guidelines. Because of limitations on the availability of data, this definition is more restrictive than that used in other parts of the *Notebook*. In those sections, "low income" refers to LIHEAP income eligible households, which are households that would be income-eligible for LIHEAP if their States set the income-eligibility guidelines at the Federal maximum (the greater of 150 percent of HHS poverty guidelines or 60 percent of State median income). Based on estimates from the 2011 CPS ASEC, the definition based solely on 150 percent of HHS poverty guidelines excludes 13 million households of the 40 million households that meet the definition of LIHEAP income eligible households. Therefore, differences in FY 2011 home energy data reported in this section and that reported in other parts of this *Notebook* are the result of the difference in the definition of "low income."[17]

Unless indicated otherwise, the energy data in this section are based on ten national residential energy surveys of occupied residential housing units and their fuel suppliers. Table 3-2 identifies the surveys used, the date on which household interviews began, the time period in which residential energy bills were collected from fuel suppliers, the time frame for household income, and the number of households included in the survey.

For each survey, a national sample of residential housing units was selected, and interviewers attempted personal contacts with the householder. For those housing units where an authorization form was completed, the household's fuel supplier was contacted and asked to supply fuel costs and consumption data.

The collection of income data is not a primary focus of the residential energy surveys. Income statistics from the CPS ASEC are used to improve income data.

[17] As noted in Table 3-2, the data files used in this study include surveys from 1979 and 1981. The variable that designates LIHEAP income eligibility was not coded for those data files.

Table 3-1. Definition of special terms

Term	Definition
Billing data	Energy cost and consumption data furnished by the household's fuel supplier.
Composite price	The weighted average price of electricity, natural gas, and fuel oil used for residential purposes.
Real dollar expenditures	Costs adjusted for changes in the price of a market basket of consumer goods between two years (i.e.,adjusted for inflation or deflation).
Cooling degree days	Daily cooling degree days are computed by subtracting a base temperature (65 degrees Fahrenheit) from a day's mean temperature when it exceeds 65 degrees Fahrenheit. If the mean temperature on a day is 70, the number of cooling degree days experienced on that day is 5 (70 minus 65). In this *Notebook*, we refer to annual cooling degree days, or the sum of all cooling degree days experienced during a year.
(Nominal) Dollar expenditures	Actual costs as reported in the year of the energy survey (unadjusted for inflation or deflation). Unless noted otherwise all dollar expenditures are unadjusted.
Energy burden	The share or percentage of annual household income that is used to pay annual energy bills.[1/]
Energy end uses	The specific use of energy in the home for home heating, home cooling or ventilation, water heating, and appliances.
Fuel assistance	LIHEAP heating, cooling, and crisis assistance.
Heating degree days	Daily heating degree days are computed by subtracting the mean temperature for a day, when that temperature falls below 65 degrees Fahrenheit, from a base temperature (65 degrees Fahrenheit). For example, if the mean temperature on a day is 60 and the base temperature is 65, the number of heating degree days experienced on that day is 5 (65 minus 60). In this *Notebook*, we refer to annual heating degree days, or the sum of all heating degree days experienced during a year.
Home energy expenditures	Expenditures for home space heating and home space cooling .
LIHEAP burden offset	The reduction in mean group home heating burden as a result of LIHEAP benefits.
LIHEAP coverage rate	The percentage of the aggregate home energy bills for low income households that is covered by LIHEAP fuel assistance.
LIHEAP income eligible households	Households with incomes at or below the Federal maximum LIHEAP income standard – at or below the greater of 150 percent of HHS poverty guidelines or 60 percent of State median income.
LIHEAP participation rate	The percentage of LIHEAP income eligible households that receive fuel assistance.
LIHEAP recipient households	Households that indicated receiving home heating, cooling, or energy crisis benefits during the 12 months prior to a particular household survey.
Low income households	Households with incomes at or below 150 percent of HHS' poverty guidelines.
Mean	The mean is the sum of all values divided by the number of values, or what is commonly called the average.
Median	The median is the value at the midpoint in the distribution of values.
MMBtus	A British Thermal Unit (Btu) is the amount of energy necessary to raise the temperature of one pound of water one degree Fahrenheit. MMBtus refers to millions of Btus. An average household uses about 100 MMBtus per year.
Residential energy expenditures	Fuel expenditures for all residential uses, including home heating, home cooling or ventilation, water heating, refrigeration, clothes drying, etc.

[1/]Three different energy burden statistics are used in this section: mean group burden, mean individual burden, and median individual burden. The definitions of these statistics are presented on page 15.

Table 3-2 presents information on the series of surveys that were used to prepare this *Notebook*. The reader should note that the in-home interview dates lag behind the analysis year for the years 1979 through 1985. In those years, the energy supplier survey included data from the year following the in-home interview. In all cases, the analysis year coincides with the end of the energy consumption history.

Table 3-2. Data used for the study of low income home energy trends

Analysis Year[1/]	1979	1981	1983	1985	1987	1990	1993	1997	2001	2005	FY 2011
Survey[2/]	NIECS	RECS	RECS	RECS	RECS	RECS	RECS	RECS	RECS	RECS	RECS
Interview date[3/]	9/78	9/80	9/82	9/84	9/87	9/90	10/93	5/97	5/01	8/05	[4/]
Billing data[5/]	4/78 to 3/79	4/80 to 3/81	4/82 to 3/83	4/84 to 3/85	1/87 to 12/87	1/90 to 12/90	1/93 to 12/93	1/97 to 12/97	1/01 to 12/01	1/05 to 12/05	1/05 to 12/05
Income data[6/]	1979	1981	1983	1985	1987	1990	1993	1997	2001	2005	2011
Sample size	4,081	6,051	4,724	5,682	6,229	5,095	7,111	5,900	5,318	4,382	4,382

[1/] Represents the year that includes the last month for which billing data were collected from fuel suppliers.
[2/] Surveys include the National Interim Energy Consumption Survey (NIECS) and the RECS.
[3/] Month and year in which household interviews began.
[4/] Data projected from the 2005 RECS using changes in weather and prices. See Appendix A for the procedure used to calculate the projections.
[5/] Time period in which residential energy bills were collected from fuel suppliers.
[6/] Mean income computed using calendar year data from the CPS ASEC.

Trends in energy use, consumption, expenditures, and burden

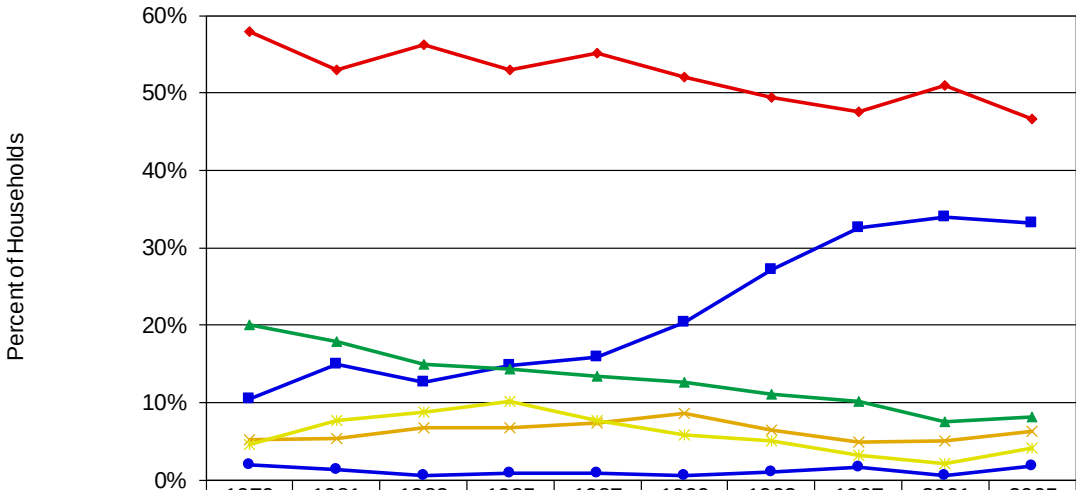
Since 1979, there have been important changes in the fuels used by households, the amount of energy consumed for specific residential end uses (i.e., home heating, water heating, home cooling, and for other appliances), total residential energy expenditures, and the burden that residential energy expenditures represent for low income households. This section presents data that illustrate these changes.

Figures 3-1 and 3-2, on the next page, furnish information on the fuel choices by low income households. Figure 3-1 shows that low income households have increased their use of electricity as a main heating fuel, from 10.4 percent in 1979 to 33.1 percent in 2005, while they have reduced their use of fuel oil as a main heating fuel, from 20.0 percent in 1979 to 8.1 percent in 2005.[18] In addition, the use of wood or coal as a main heating fuel (included under "Other") peaked in 1985, declined substantially through 2001, then almost doubled by 2005.

Figure 3-2 shows that low income households increased their use of central air-conditioning systems from 8.5 percent in 1979 to 42.8 percent in 2005.[19] The proportion of low income households with no air-conditioning fell from 62.8 percent in 1979 to 20.1 percent in 2005. Other things being equal, increased use of air-conditioning equipment among low income households can be expected to increase home cooling expenditures.

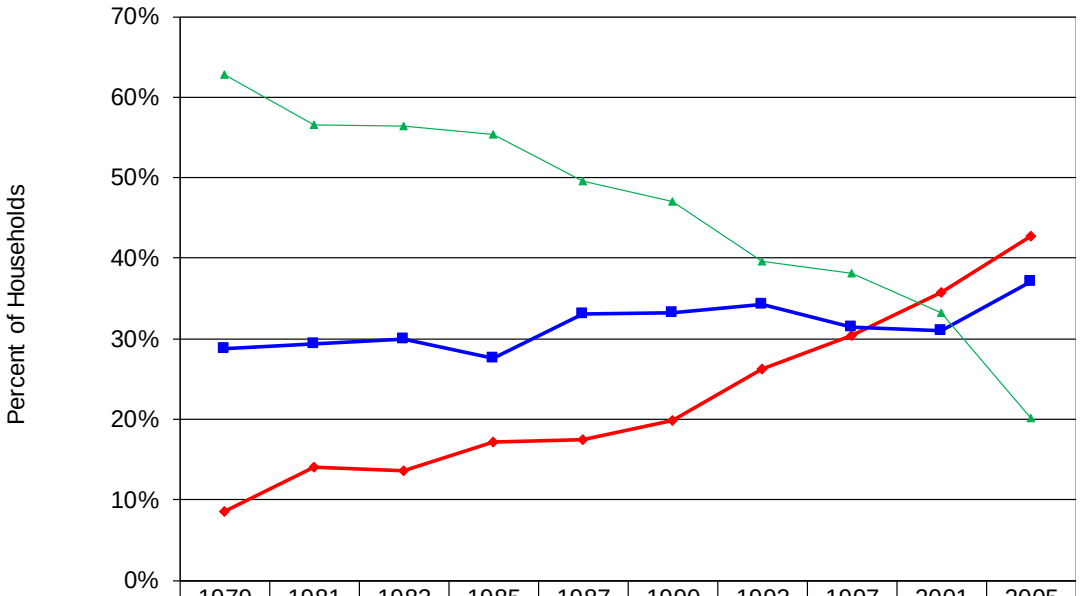
[18] For all households, the share using electricity as their main heating fuel grew from 15.8 percent in 1979 to 30.1 percent in 2005, and the share using fuel oil as their main heat fell from 22.1 percent to 6.9 percent.
[19] For all households, the share using electric central air-conditioning grew from 23 percent in 1979 to 58 percent in 2005.

Figure 3-1. Main heating fuel for households with incomes at or below 150 percent of HHS poverty guidelines, 1979 to 2005



	1979	1981	1983	1985	1987	1990	1993	1997	2001	2005
Natural Gas	57.9	52.9	56.2	53.0	55.2	52.0	49.4	47.5	50.9	46.7
Electricity	10.4	15.0	12.6	14.8	15.8	20.3	27.2	32.5	34.0	33.1
Fuel Oil	20.0	17.8	15.0	14.3	13.3	12.6	11.0	10.2	7.5	8.1
LPG	5.2	5.4	6.7	6.7	7.3	8.6	6.4	4.8	5.1	6.2
Other	4.5	7.6	8.8	10.2	7.6	5.8	5.0	3.2	2.1	4.1
No Main Fuel	1.9	1.3	0.6	0.9	0.8	0.5	1.0	1.7	0.5	1.8

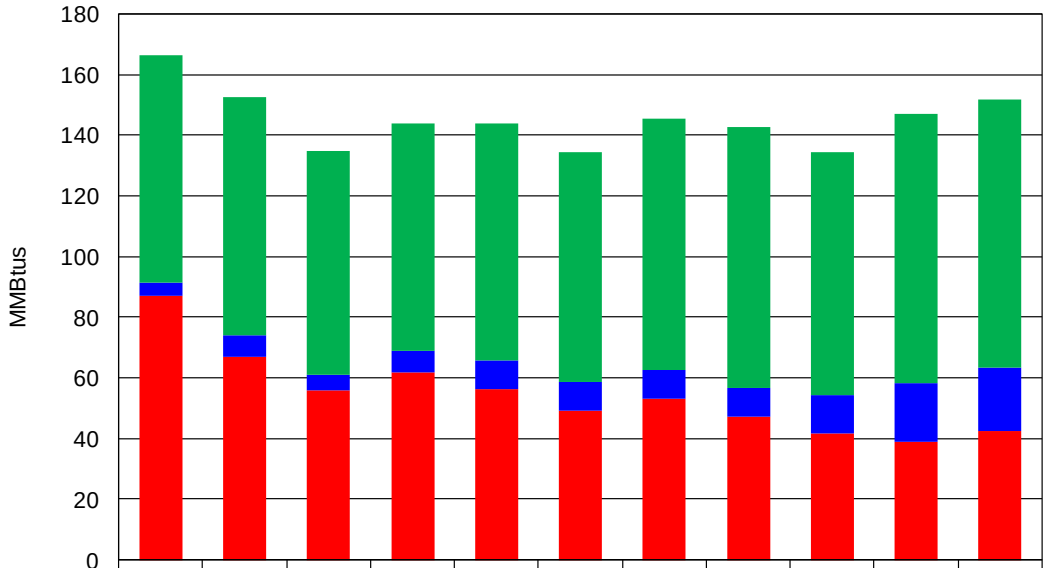
Figure 3-2. Air-conditioning type for households with incomes at or below 150 percent of HHS poverty guidelines, 1979 to 2005



	1979	1981	1983	1985	1987	1990	1993	1997	2001	2005
Central AC	8.5	14.1	13.6	17.1	17.4	19.8	26.2	30.4	35.8	42.8
Room AC	28.7	29.3	30.0	27.6	33.0	33.2	34.2	31.4	31.0	37.1
None	62.8	56.6	56.4	55.3	49.6	47.0	39.6	38.1	33.2	20.1

Figures 3-3 and 3-4 furnish information on the trends in mean residential energy consumption and expenditures for low income households from 1979 to FY 2011. Figure 3-3 shows that low income households substantially reduced their residential energy consumption between 1979 and 1983. This suggests a significant increase in efficiency resulting from conservation measures or actions. Examination of the components of residential energy consumption indicates that the reduction was the result of reductions in home heating consumption. From 1983 to 1990, mean residential energy consumption fluctuated from year to year, corresponding to expected changes in heating and cooling consumption that resulted from changes in heating and cooling degree days.[20] For 1993 through 1997, there appears to have been a significant increase in the use of energy for purposes other than home heating and home cooling. In 2001, the use of energy for purposes other than heating and cooling dropped but then increased by over 10 percent in 2005 through FY 2011.

Figure 3-3. Mean residential energy consumption per household in MMBtus by end use for households with incomes at or below 150 percent of HHS poverty guidelines, 1979 to FY 2011



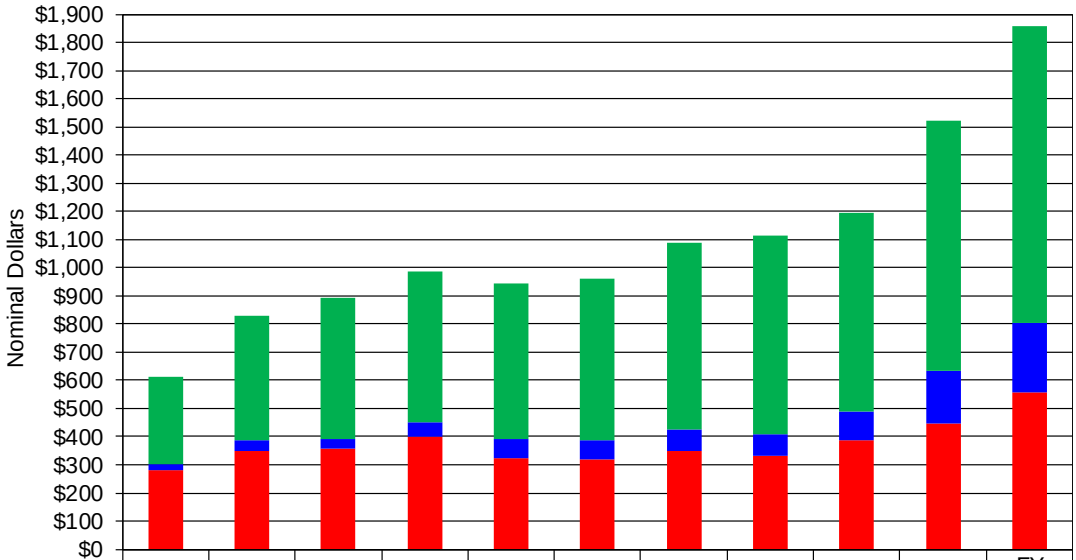
	1979	1981	1983	1985	1987	1990	1993	1997	2001	2005	2011
Total	166	153	135	144	143	134	145	143	134	147	152
Other	75	79	74	75	78	76	83	86	80	89	89
Cooling	5	7	5	7	9	9	9	10	12	19	21
Heating	87	67	56	62	56	49	53	47	42	39	43

Figure 3-4, on the next page, shows that mean residential energy expenditures for low income households increased rapidly from 1979 to 1985; the increases were the result of fuel price increases. Examination of the components of energy expenditures indicates that the greatest increases were in home cooling and other residential expenditures, while increases in home heating expenditures were more moderate until 2005. Mean residential energy expenditures increased at a moderate rate from $943 in 1987 to $1,196 in 2001. From 2001 to 2005, mean residential energy expenditures increased by 27 percent to $1,522. From 2005 to FY 2011, mean residential energy expenditures rose by over 22 percent to $1,857. Mean home heating expenditures fell from $399 in 1985 to $318 in 1990, then rose and fell moderately until 1997. Home heating expenditures saw an 18 percent increase in 2001

[20]The numbers presented in this table are not directly comparable to the statistics that appear in Appendix A. In this figure, electricity Btus have been adjusted to be comparable to Btus for other fuels. This adjustment procedure is used to account for Btus lost in the generation and transmission of electricity to the housing unit and to thereby furnish a better picture of changes in energy efficiency over time.

over 1997, a 15 percent increase in 2005 over 2001, and a 25 percent increase in FY 2011 over 2005. The increase in expenditures in 2005 and FY 2011 were the result of higher fuel prices. Mean home cooling expenditures rose continuously from $51 in 1985 to $187 in 2005. In FY 2011 mean home cooling expenditures were $246.

Figure 3-4. Mean residential energy expenditures by end use for households with incomes at or below 150 percent of HHS poverty guidelines, 1979 to FY 2011



	1979	1981	1983	1985	1987	1990	1993	1997	2001	2005	FY 2011
Total	$612	$830	$891	$987	$943	$963	$1,088	$1,113	$1,196	$1,522	$1,857
Other	$311	$444	$499	$537	$552	$574	$661	$705	$705	$887	$1,053
Cooling	$20	$38	$33	$51	$68	$71	$77	$78	$103	$187	$246
Heating	$281	$348	$360	$399	$323	$318	$350	$330	$388	$448	$558

The next series of Figures, 3-5 through 3-7, furnishes information on energy burden for low income households.[21] Three different energy burden summary statistics are presented in the three figures: mean group energy burden, mean individual energy burden, and median individual energy burden. Each of the statistics offers somewhat different information and gives somewhat different results. All three are valid from a statistical perspective. The statistics are defined as follows.

- *Mean Group Burden*: Computed as the ratio between mean energy expenditures and mean income for a given set of households, such as low income households. Energy expenditures are computed from RECS and income is derived from the CPS ASEC.

- *Mean Individual Burden*: Computed by finding, using the RECS data, the energy burden for each individual household in a given set (such as low income households) and then taking the mean of these energy burdens for all households in that set.

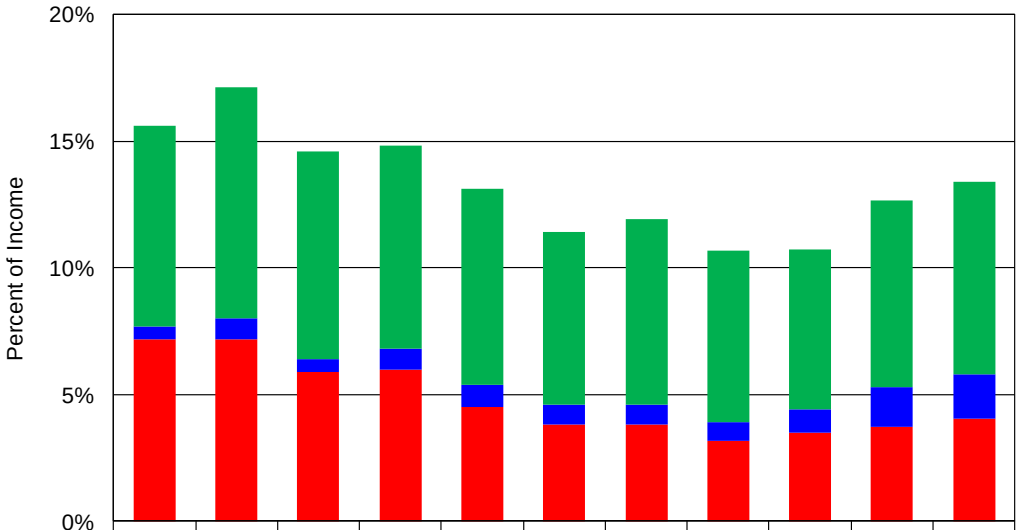
- *Median Individual Burden*: Computed by finding, using the RECS data, the energy burden for each individual household in a given set (such as low income households) and finding the median, or middle point, of the distribution of these household-level energy burdens in the set.

[21]These figures present gross burden statistics; they do not present net burden statistics, which account for the reduction in burden attributable to the receipt of LIHEAP benefits. Figure 3-26 compares gross burden and net burden for LIHEAP recipient households.

Mean group burden is the burden statistic that has been used in the series of *LIHEAP Annual Reports to Congress*. Recent technical research has furnished additional insights on the range of alternative burden summary statistics.[22]

Figure 3-5 shows the time series for mean group energy burdens by end use for low income households. Mean group home energy burden, the sum of mean heating and cooling burden from Figure 3-5, grew from 7.7 percent of income in 1979 to 8.0 percent in 1981, and then fell considerably after 1981 to 3.9 percent in 1997. From 1981 through 1997 mean group home energy burden declined because mean home energy expenditures for low income households fell, while mean incomes for low income households rose. Mean group home energy burden rose to 4.4 percent in 2001 and 5.3 percent in 2005 and 5.8 percent in FY 2011 as a result of increases in fuel prices. Home energy burden for FY 2011 was 32 percent higher than in 2001, nearly 10 percent higher than in 2005, but was 28 percent below the level in 1981.

Figure 3-5. Mean group residential energy burden by end use for households with incomes at or below 150 percent of HHS poverty guidelines, 1979 to FY 2011

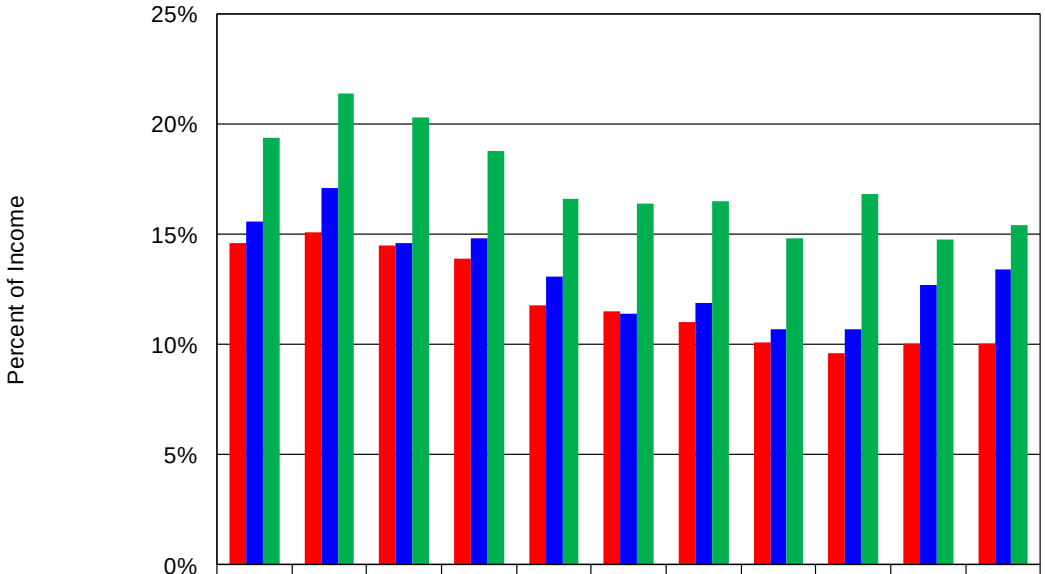


	1979	1981	1983	1985	1987	1990	1993	1997	2001	2005	FY 2011
Total	15.6	17.1	14.6	14.8	13.1	11.4	11.9	10.7	10.7	12.7	13.4
Other	7.9	9.1	8.2	8.0	7.7	6.8	7.3	6.8	6.3	7.4	7.6
Cooling	0.5	0.8	0.5	0.8	0.9	0.8	0.8	0.7	0.9	1.6	1.8
Heating	7.2	7.2	5.9	6.0	4.5	3.8	3.8	3.2	3.5	3.7	4.0

Figures 3-6 and 3-7 show how the mean individual and median individual energy burden statistics compare to the group energy burden statistics. Figure 3-6 shows the trends in residential energy burden for low income households, and Figure 3-7 shows the trends in home energy burden for low income households. In 2005, the mean individual residential energy burden was 14.8 percent, significantly higher than the median individual burden of 10.1 percent and the mean group burden of 12.7 percent. In 2005, the mean individual home energy burden was 6.8 percent, the median individual burden was 3.9 percent, and the mean group burden was 5.3 percent. For all three summary statistics, the highest home energy burden occurred in 1981 and the lowest home energy burden occurred in 1997. For FY 2011, median individual residential energy burden was 33 percent lower, group mean burden was 28 percent lower, and individual mean burden was 30 percent lower than the 1981 peak.

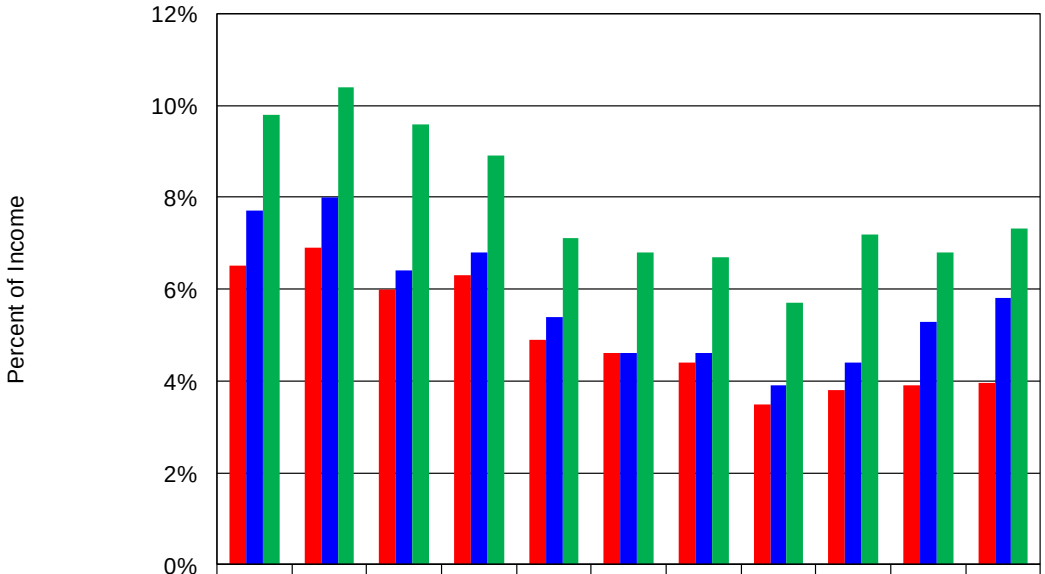
[22] See Appendix A for additional information on the interpretation of alternative burden statistics.

Figure 3-6. Comparison of mean group, mean individual, and median individual residential energy burden for households with incomes at or below 150 percent of HHS poverty guidelines, 1979 to FY 2011



	1979	1981	1983	1985	1987	1990	1993	1997	2001	2005	FY 2011
Individual Median	14.6	15.1	14.5	13.9	11.8	11.5	11.0	10.1	9.6	10.1	10.1
Group Mean	15.6	17.1	14.6	14.8	13.1	11.4	11.9	10.7	10.7	12.7	13.4
Individual Mean	19.4	21.4	20.3	18.8	16.6	16.4	16.5	14.8	16.8	14.8	15.4

Figure 3-7. Comparison of mean group, mean individual, and median individual home energy burden for households with incomes at or below 150 percent of HHS' poverty guidelines, 1979 to FY 2011



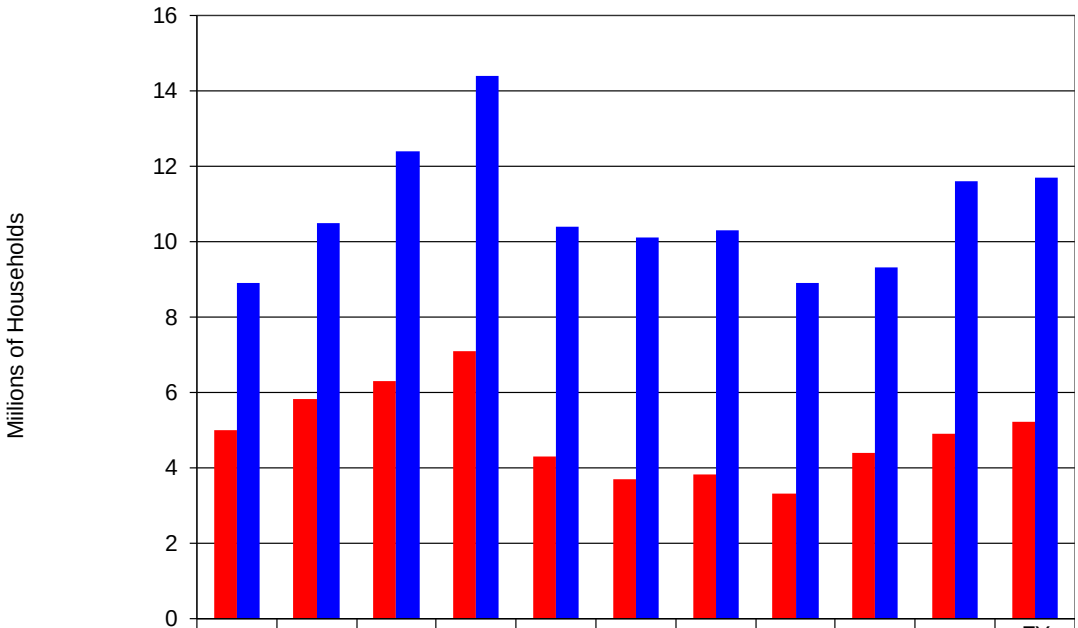
	1979	1981	1983	1985	1987	1990	1993	1997	2001	2005	FY 2011
Individual Median	6.5	6.9	6.0	6.3	4.9	4.6	4.4	3.5	3.8	3.9	4.0
Group Mean	7.7	8.0	6.4	6.8	5.4	4.6	4.6	3.9	4.4	5.3	5.8
Individual Mean	9.8	10.4	9.6	8.9	7.1	6.8	6.7	5.7	7.2	6.8	7.3

Figures 3-8 and 3-9 present information on the number and percent of low income households that had home energy burdens that exceeded specified levels. The levels are reference points and do not represent any judgment regarding an "affordable" level of energy burden.

As shown in Figure 3-8, the number of low income households with home energy burdens exceeding 10 percent of income grew from 5.0 million in 1979 to 7.1 million in 1985, an increase of 42 percent. The number of low income households with home energy burdens exceeding 5 percent of income grew by 62 percent from 1979 to 1985. These increases were primarily the result of growth in the total number of low income households. As Figure 3-9 shows on the next page, the percentage of low income households with home energy burdens exceeding 5 percent remained quite stable from 1979 through 1985. However, the percentage of low income households with home energy burdens exceeding 10 percent dropped by 17 percent over that same period.

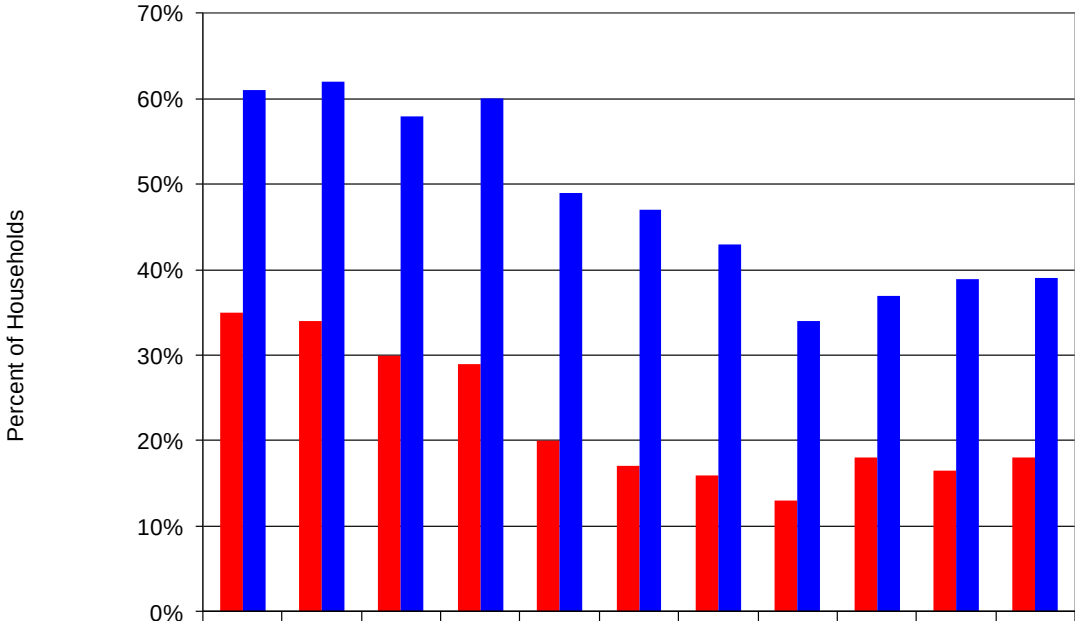
For the period 1985 through 1997, however, both the number and percentage of low income households exceeding specified levels fell significantly from previous levels. For these years, both a reduction in home energy expenditures and increased incomes caused burden to decrease for low income households. In 2001, both the number and percent of households exceeding the specified levels rose. From 2001 to FY 2011, while the percent of households exceeding the specified levels remained relatively stable, the number of households exceeding the specified levels increased by at least 23 percent. The number of low income households with home energy burdens exceeding 10 percent of income in FY 2011 was almost 27 percent less than the 1985 level and 4 percent more than the 1979 level.

Figure 3-8. Number of low income households (in millions) spending over 5 percent and 10 percent of income on home energy, 1979 to FY 2011



	1979	1981	1983	1985	1987	1990	1993	1997	2001	2005	FY 2011
More than 10%	5.0	5.8	6.3	7.1	4.3	3.7	3.8	3.3	4.4	4.9	5.2
More than 5%	8.9	10.5	12.4	14.4	10.4	10.1	10.3	8.9	9.3	11.6	11.7

Figure 3-9. Percent of low income households spending over 5 percent and 10 percent of income on home energy, 1979 to FY 2011

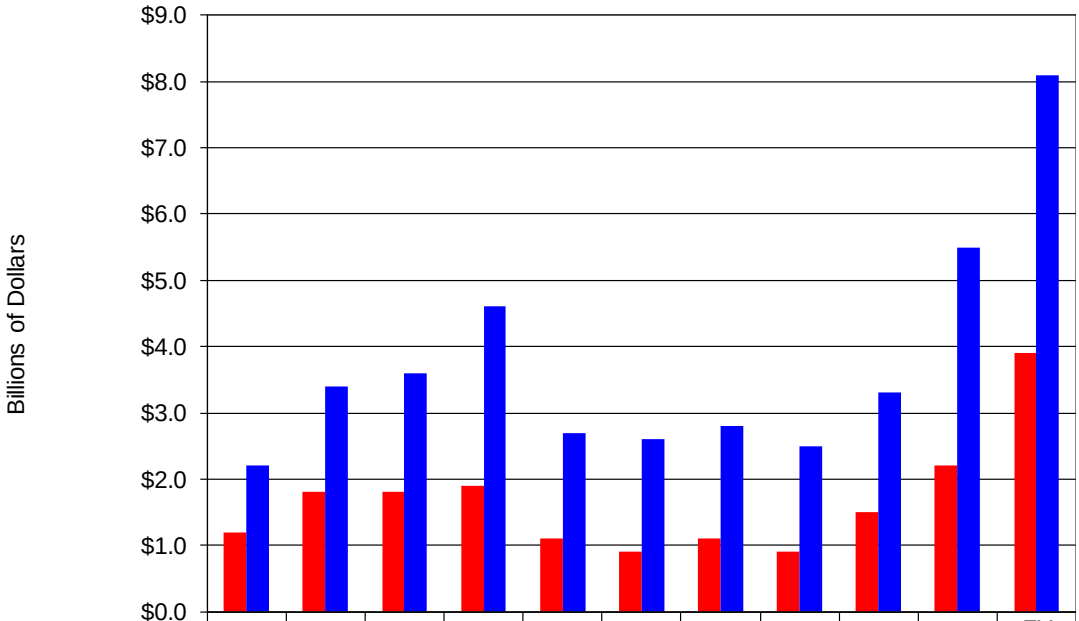


	1979	1981	1983	1985	1987	1990	1993	1997	2001	2005	FY 2011
More than 10%	35	34	30	29	20	17	16	13	18	17	18
More than 5%	61	62	58	60	49	47	43	34	37	39	39

Figure 3-10 shows the total assistance funding that would be required to reduce the home energy burden for all low income households to 10 percent of income and 5 percent of income.[23] The amount required for a reduction in the home energy burden of low income households to 5 percent of income was $2.2 billion in 1979, $4.6 billion by 1985, $3.3 billion in 2001, $5.5 billion in 2005, and $8.1 billion in FY 2011. The number of households with home energy burdens exceeding 5 percent of income fell between 1985 and 1997. The total dollars of assistance funding required to reduce the home energy burden of low income households to 5 percent also fell through 1997. From 1997 to 2005, increased expenditures caused the number of low income households exceeding the percent of income reference points to rise. Accordingly, the total dollars of assistance funding required to reduce the home energy burden to 5 percent also rose substantially. In FY 2011, both the number of low income households exceeding the percent of income reference points and their average expenditures increased. Therefore, total dollars of assistance funding required to reduce home energy burdens rose substantially.

[23] This is calculated first by finding the amount of funds for each low income household that would be required to reduce its home energy burden to the specified percent of income. This amount is the difference between the household's actual home energy burden and the specified home energy burden (the dollar amount of the specified percent of household income). Then the household amounts are aggregated to produce the total assistance funding that is needed for all low income households.

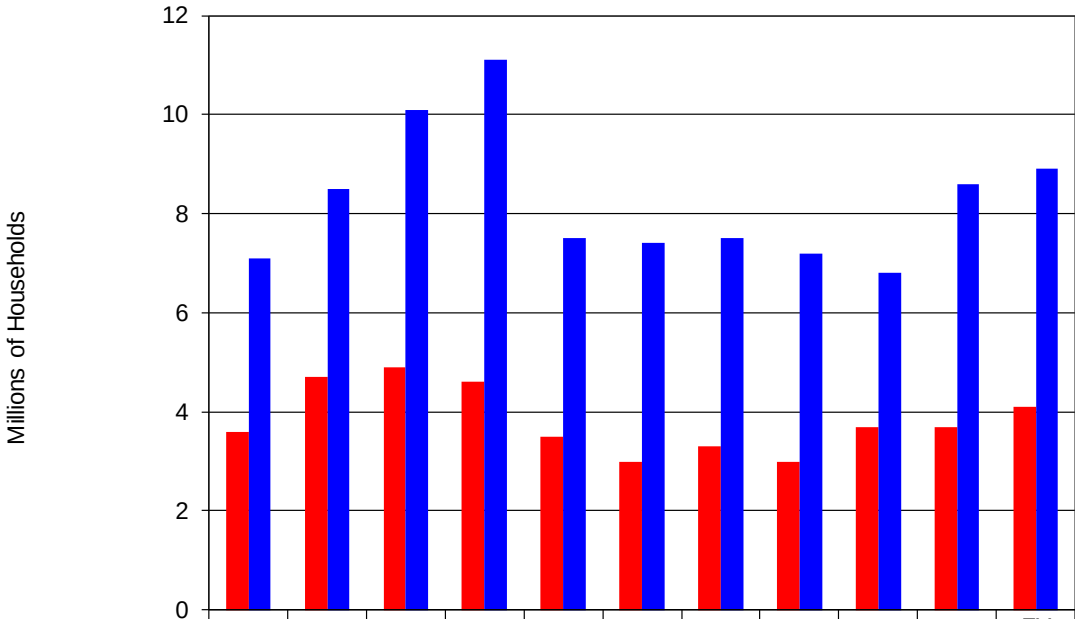
Figure 3-10. Total fuel assistance dollars (in billions) needed to reduce low income household spending on home energy to 5 percent and 10 percent of income, 1979 to FY 2011



	1979	1981	1983	1985	1987	1990	1993	1997	2001	2005	FY 2011
More than 10%	$1.2	$1.8	$1.8	$1.9	$1.1	$0.9	$1.1	$0.9	$1.5	$2.2	$3.9
More than 5%	$2.2	$3.4	$3.6	$4.6	$2.7	$2.6	$2.8	$2.5	$3.3	$5.5	$8.1

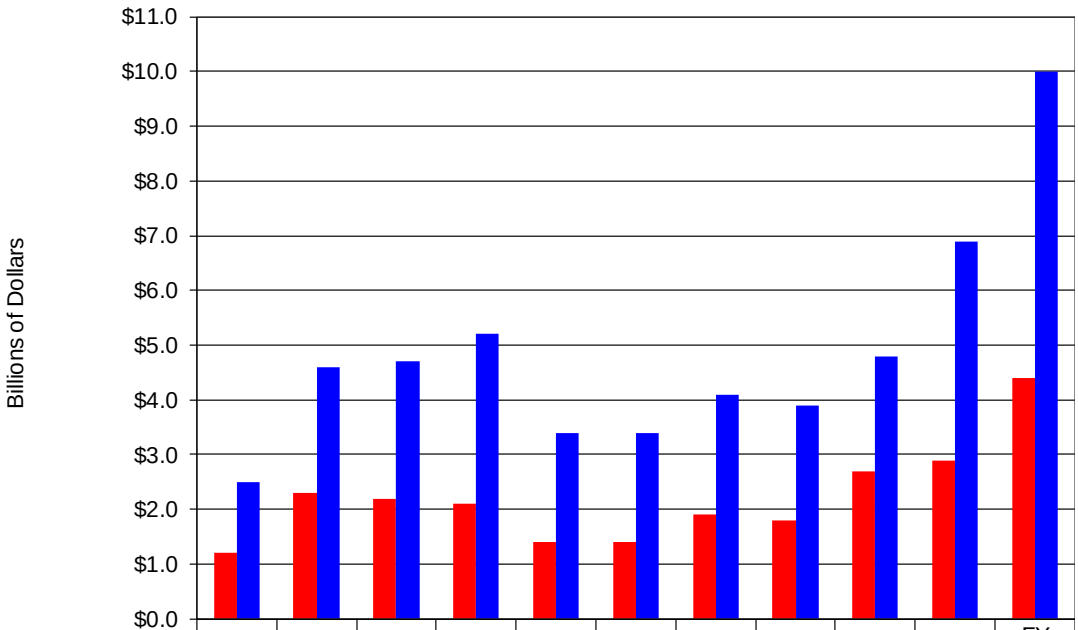
Figure 3-11 on the next page furnishes statistics on the number of low income households that had residential energy expenditures that exceeded specified levels. Figure 3-12 furnishes statistics on total fuel assistance dollars needed to reduce residential energy burden to specified levels. Figure 3-11 shows that the number of households spending over 15 and 25 percent of their income on residential energy followed a pattern similar to that observed in Figure 3-8. The largest number of households exceeded the specified percentages in 1983 and 1985. While the numbers exceeding 15 and 25 percent of income were lower in FY 2011 than during the peak years, they were higher in FY 2011 than at any time since the peak years. Figure 3-12 demonstrates that the funds required to reduce all low income households to the specified percentages reached their highest levels in FY 2011.

Figure 3-11. Number of low income households (in millions) spending over 15 percent and 25 percent of income on residential energy, 1979 to FY 2011



	1979	1981	1983	1985	1987	1990	1993	1997	2001	2005	FY 2011
More than 25%	3.6	4.7	4.9	4.6	3.5	3.0	3.3	3.0	3.7	3.7	4.1
More than 15%	7.1	8.5	10.1	11.1	7.5	7.4	7.5	7.2	6.8	8.6	8.9

Figure 3-12. Total fuel assistance dollars (in billions) needed to reduce low income household spending on residential energy to 15 percent and 25 percent of income, 1979 to FY 2011

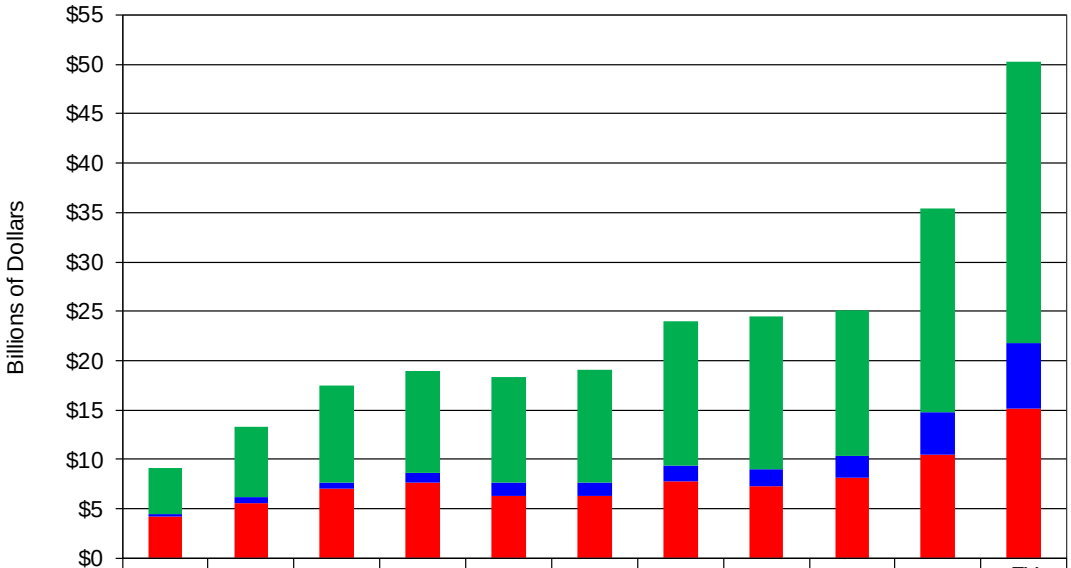


	1979	1981	1983	1985	1987	1990	1993	1997	2001	2005	FY 2011
More than 25%	$1.2	$2.3	$2.2	$2.1	$1.4	$1.4	$1.9	$1.8	$2.7	$2.9	$4.4
More than 15%	$2.5	$4.6	$4.7	$5.2	$3.4	$3.4	$4.1	$3.9	$4.8	$6.9	$10.0

Figure 3-13 shows how the aggregated residential energy bill for all low income households has changed from 1979 to FY 2011. In 1979, the aggregated home energy bill (heating costs plus cooling costs) for low income households was $4.5 billion. By FY 2011, the aggregated home energy bill had grown to $21.8 billion. This growth results from both the increase in average home energy bills and growth in the size of the low income population.

Figure 3-13 also shows that in 1979, home energy costs accounted for about half of the total low income residential energy bill. In FY 2011, home energy costs accounted for 43.3 percent of the total low income residential energy bill.

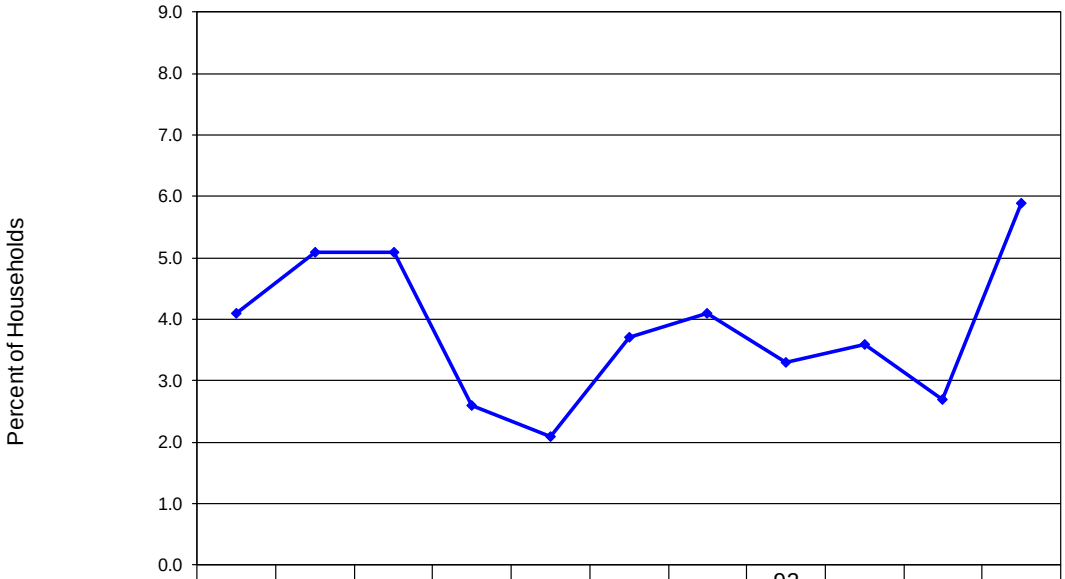
Figure 3-13. Aggregated residential energy expenditures (in billions of dollars) by end use for households with incomes at or below 150 percent of HHS poverty guidelines, 1979 to FY 2011



	1979	1981	1983	1985	1987	1990	1993	1997	2001	2005	FY 2011
Total	$9.1	$13.3	$17.5	$19.0	$18.3	$19.1	$24.0	$24.5	$25.1	$35.5	$50.3
Other	$4.6	$7.1	$9.8	$10.3	$10.7	$11.4	$14.6	$15.5	$14.8	$20.7	$28.5
Cooling	$0.3	$0.6	$0.6	$1.0	$1.3	$1.4	$1.6	$1.7	$2.2	$4.3	$6.7
Heating	$4.2	$5.6	$7.1	$7.7	$6.3	$6.3	$7.8	$7.3	$8.2	$10.4	$15.1

Figure 3-14, on the next page, demonstrates the impact of the inability to afford home energy on LIHEAP income eligible households. It shows the number of LIHEAP income eligible households that reported that they were unable to use their main source of heat for a period of two hours or more during the heating season because they were unable to pay for their main heating fuel. In 1981-82, 984 thousand LIHEAP income eligible households (4.1 percent of LIHEAP income eligible households) had heat interruptions during the heating season. The number and percentage grew to 1.34 million (5.1 percent) in 1983-84 and then fell consistently to 547 thousand (2.1 percent) in 1987-1988. In 1989-90 there was a sharp increase to 1.0 million (3.7 percent). This higher level of heat interruptions was sustained in 1990-91 when 1.1 million (4.1 percent) LIHEAP income eligible households had heat interruptions and in 1992-93 when 1.0 million (3.3 percent) LIHEAP income eligible households had heat interruptions. The number and percentage increased to 1.2 million (3.6 percent) in 1996-97. In 2000-01, the number and percentage of LIHEAP income eligible households with heat interruptions decreased to 904 thousand (2.7 percent). The number and percentage increased substantially to 2.1 million (5.9 percent) in 2004-2005.

Figure 3-14. Percentage of LIHEAP income eligible households with heat interruptions of two hours or more caused by an inability to pay for energy to run the household's main heating system, 1981-82 heating season to 2004-05 heating season[24]



	81-82	83-84	84-85	86-87	87-88	89-90	90-91	92-93	96-97	00-01	04-05
Rate (%)	4.1	5.1	5.1	2.6	2.1	3.7	4.1	3.3	3.6	2.7	5.9
Number(000)	984	1,343	1,333	678	547	1,001	1,110	1,023	1,223	904	2,097

Analysis of energy price and energy efficiency trends

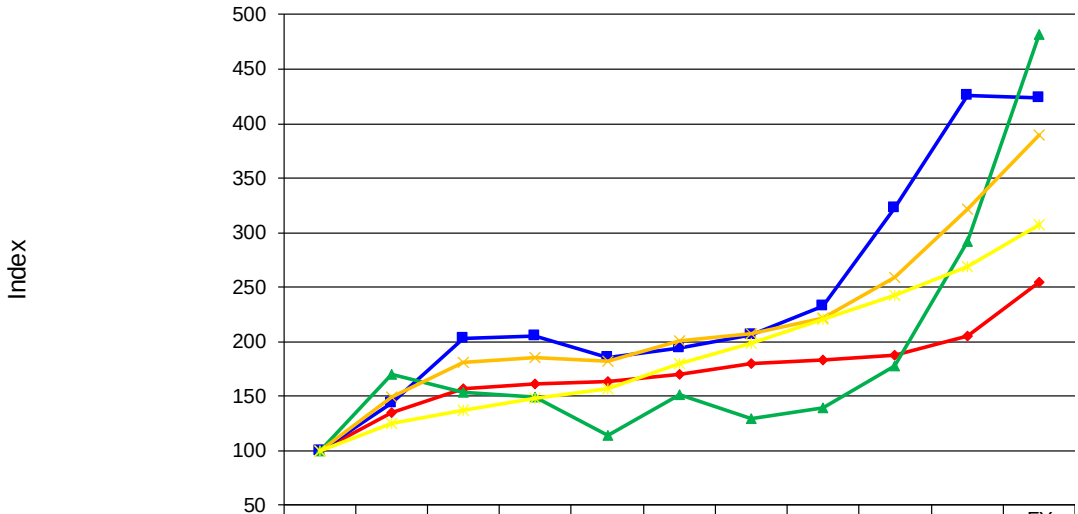
A number of factors underlie the energy consumption and expenditures trends. Three of the most important factors are fuel prices, weather, and energy efficiency. Figures 3-15, 3-16, and 3-17 furnish information on trends in these factors.

Figure 3-15, on the next page, furnishes an index of average fuel prices compared to an index of inflation that is based upon the Consumer Price Index (CPI). The fuel price index shows the percentage change from 1979 to FY 2011. For example, the CPI-based inflation index grew from 100 in 1979 to 125 in 1981, indicating a 25 percent increase in consumer prices. Figure 3-15 shows that fuel prices outpaced the overall level of inflation from 1979 through 1983. The CPI increased by 37 percent during that period, while the composite average of fuel prices increased by 81 percent. From 1983 through 1997, the increase in the composite average of fuel prices moderated somewhat and generally grew more slowly than the CPI. However, from 1997 to 2005, the pattern was reversed; the composite average fuel price index grew by over 45 percent while the CPI grew by only 22 percent. The rapid growth of prices from 1979 through 1983 explains why residential energy expenditures per low income household rose so rapidly (Figure 3-4) while consumption was declining (Figure 3-3). The moderate growth in fuel prices from 1985 to 1997 (19 percent) explains why residential energy expenditures per low income household rose slightly during that period. In 2005, fuel prices increased by 45 percent over 1997 prices. The increase in fuel prices explains why expenditures also

[24]Data for 2004-2005 heating season refer to heat interruptions of any length. Data for the 1981-82 heating season refer to heat interruptions of one day or more. Between 10 and 15 percent of heat interruptions for LIHEAP income eligible households last at least 2 hours but less than 24 hours. The procedures for analyzing heat interruption data have changed since the issuance of the *LIHEAP Report to Congress for FY 1993*. The heat interruption rates for 1983-84 through 1987-88 are slightly higher with this new analysis.

rose. In FY 2011, fuel prices increased by nearly 21.5 percent over 2005 prices and once more contributed to an increase in expenditures.

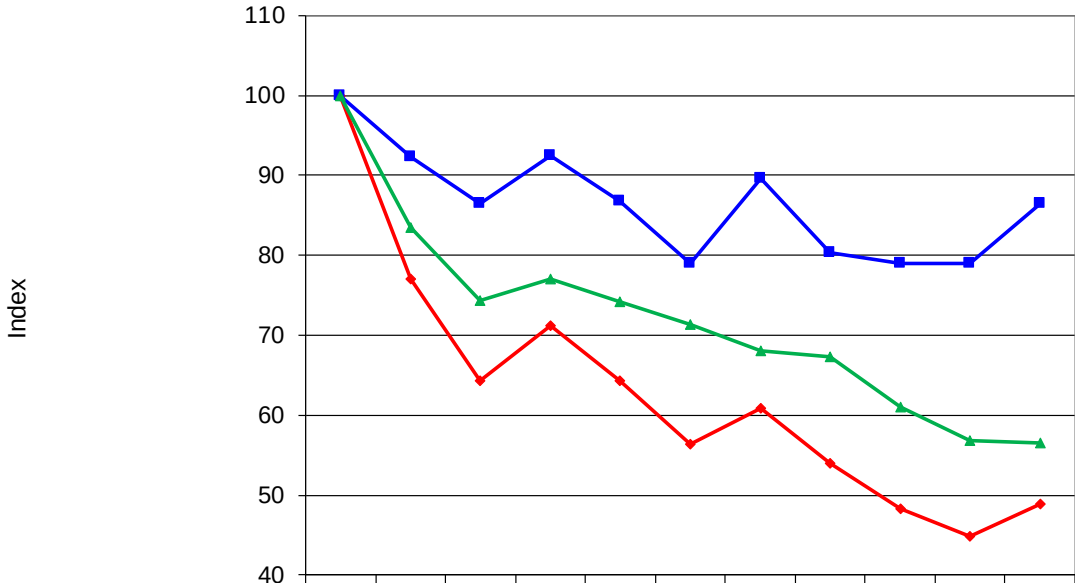
Figure 3-15. Index of dollar prices for fuel oil, natural gas, electricity, and a composite compared to the Consumer Price Index (CPI), 1979 to FY 2011



	1979	1981	1983	1985	1987	1990	1993	1997	2001	2005	FY 2011
Electricity	100	135	157	161	163	170	180	183	187	205	255
Natural Gas	100	144	203	205	186	195	207	233	323	426	424
Fuel Oil	100	170	153	150	114	151	129	140	178	291	482
Composite Energy Index	100	150	181	186	182	201	207	221	259	321	390
CPI	100	125	137	148	156	180	199	221	243	269	308

Figure 3-16 demonstrates how changes in heating energy consumption among low income households from 1979 to FY 2011 compared to changes in heating degree days for the same period. From 1979 to 1983, home heating consumption fell more rapidly than did heating degree days, suggesting a significant increase in efficiency as a result of conservation measures or actions. Consumption per heating degree day dropped rapidly for that period. From 1983 to 1997, there was only a moderate reduction in consumption per heating degree day. Thus, heating consumption fluctuations appear to be primarily a result of the changes in the weather for those years. From 1997 to 2005, home heating consumption again fell more rapidly than did heating degree days, suggesting a moderate increase in efficiency as a result of conservation measures or actions. This was perhaps driven by the high fuel prices experienced in 2001 and 2005. From 2005 to FY 2011, there was a slight reduction in consumption per heating degree day.

Figure 3-16. Index of heating consumption, heating degree days, and heating consumption per heating degree day for households with incomes at or below 150 percent of HHS poverty guidelines, 1979 to FY 2011

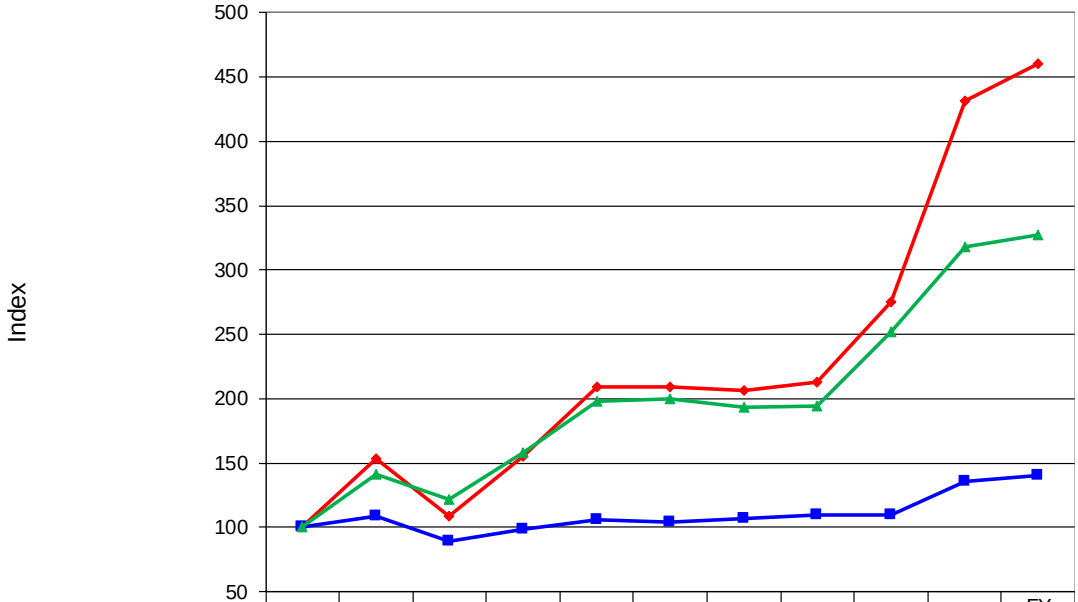


	1979	1981	1983	1985	1987	1990	1993	1997	2001	2005	FY 2011
Consumption	100	77	64	71	64	56	61	54	48	45	49
HDD	100	92	87	93	87	79	90	80	79	79	86
Consumption per HDD	100	83	74	77	74	71	68	67	61	57	56

Figure 3-17 shows that home cooling consumption trends among low income households are somewhat more complex than are home heating consumption trends. In FY 2011, mean home cooling consumption was much higher than it was in 1979, even though households experienced relatively smaller increase in cooling degree days. Thus, mean consumption per cooling degree day increased substantially from 1979 to FY 2011, making it appear as though there was a reduction in efficiency. However, the primary cause of the increase in mean home cooling consumption was the large increase in the availability of air-conditioning among low income households.[25] As shown in Figure 3-2, only 37 percent of low income households had air-conditioning in 1979, while in 2005, 80 percent of low income households had air-conditioning. Because of this fundamental change in the number of households that use air-conditioning, it is very difficult to assess either changes in efficiency from 1979 to FY 2011 or year-to-year changes in consumption in response to changes in cooling degree days.

[25]Air-conditioning equipment includes central air conditioners and window or wall units, ceiling fans, and evaporative coolers. The availability of all household appliances increased for low income households over this period due to the overall increase in the wealth of the nation and the decrease in the cost of older technologies.

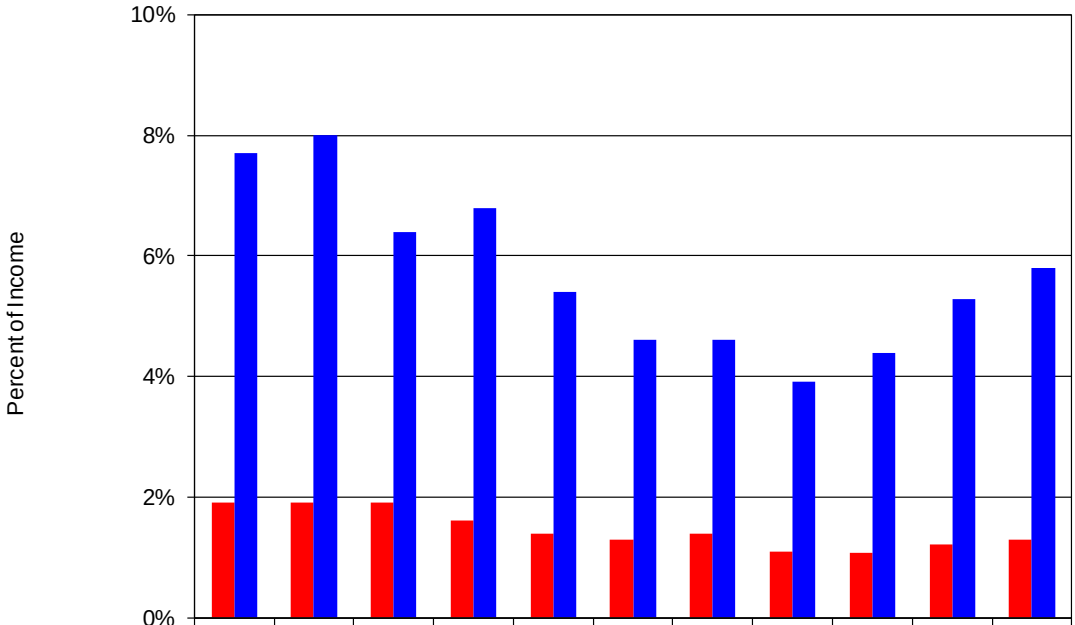
Figure 3-17. Index of cooling consumption, cooling degree days, and cooling consumption per cooling degree day for households with incomes at or below 150 percent of HHS poverty guidelines, 1979 to FY 2011



	1979	1981	1983	1985	1987	1990	1993	1997	2001	2005	FY 2011
Consumption	100	153	109	156	209	209	207	213	276	431	460
CDD	100	109	89	99	106	104	107	110	109	136	141
Consumption per CDD	100	141	122	158	198	200	194	195	252	318	327

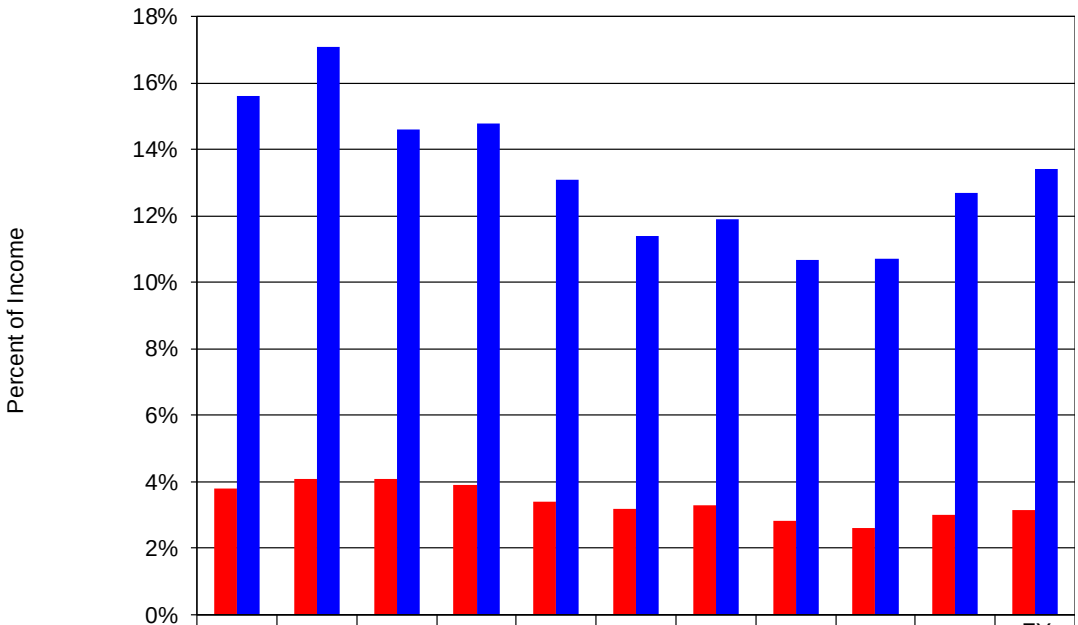
Figures 3-18 and 3-19, on the next page, show that the mean group energy burden for low income households is substantially higher than that for all households. In FY 2011, the mean group home energy burden for all households was 1.3 percent, and that for low income households was 5.8 percent. In FY 2011, the mean group residential burden was 3.1 percent for all households and 13.4 percent for low income households. Over time, the gap between the burden for low income and all households has fluctuated somewhat. Figure 3-18 shows that in 1979, the mean group home energy burden for low income households was just over 4 times that of all households, while in 1993, the mean group burden for low income households was close to 3.5 times that of all households. However in FY 2011, the mean group burden for low income households was again over 4 times that of all households.

Figure 3-18. Mean group home energy burden for all households and for households with incomes at or below 150 percent of HHS poverty guidelines, 1979 to FY 2011



	1979	1981	1983	1985	1987	1990	1993	1997	2001	2005	FY 2011
All Households	1.9	1.9	1.9	1.6	1.4	1.3	1.4	1.1	1.1	1.2	1.3
Low-Income	7.7	8.0	6.4	6.8	5.4	4.6	4.6	3.9	4.4	5.3	5.8

Figure 3-19. Mean group residential energy burden for all households and for households with incomes at or below 150 percent of HHS poverty guidelines, 1979 to FY 2011

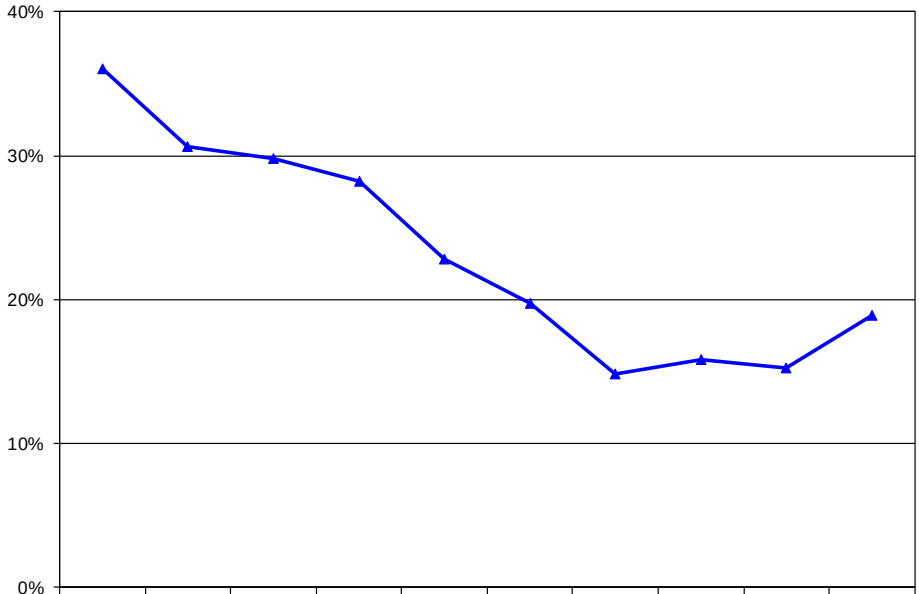


	1979	1981	1983	1985	1987	1990	1993	1997	2001	2005	FY 2011
All Households	3.8	4.1	4.1	3.9	3.4	3.2	3.3	2.8	2.6	3.0	3.1
Low-Income	15.6	17.1	14.6	14.8	13.1	11.4	11.9	10.7	10.7	12.7	13.4

Trends in LIHEAP

Figures 3-20 through 3-24 furnish information on trends for HHS' energy assistance programs from FY 1981 through FY 2011. Figure 3-20 shows that the percentage of LIHEAP income eligible households that have received heating and/or winter crisis assistance had fallen steadily until 1997 but has remained steady at about 16 percent since then. In FY 1981, 36 percent of eligible households received heating and/or winter crisis assistance benefits; this number fell to 15 percent in 1997. In FY 2011, 19 percent of LIHEAP income eligible households received those benefits.[26] Figure 3-21, on the next page, furnishes statistics on the count of recipients by benefit type.

Figure 3-20. Percentage of LIEAP/LIHEAP Federally income eligible households receiving LIEAP/LIHEAP heating and/or winter crisis assistance, FY 1981 to FY 2011

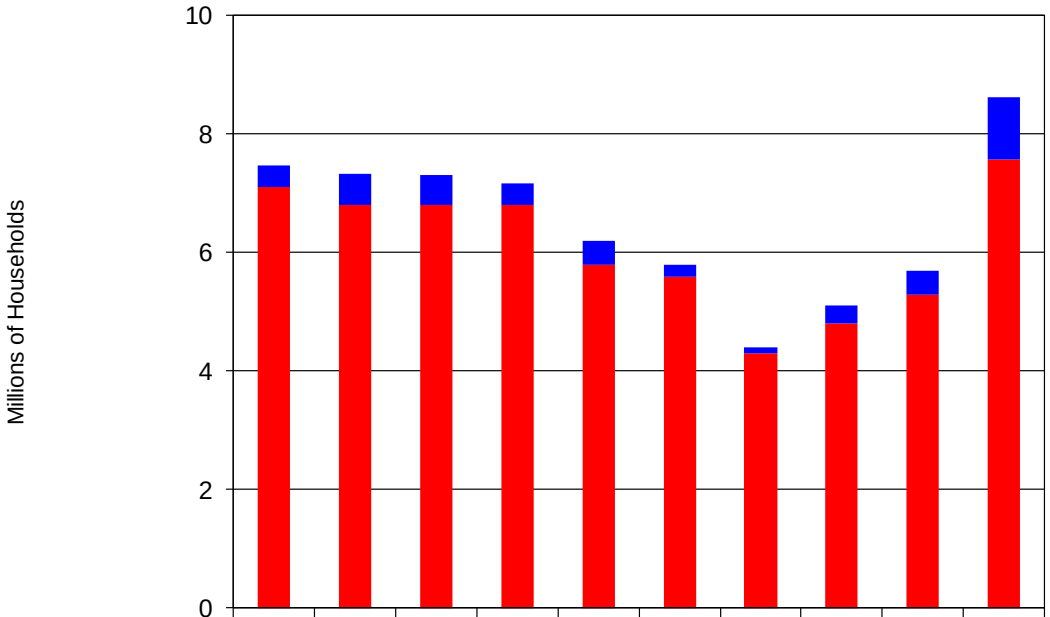


	1981	1983	1985	1987	1990	1993	1997	2001	2005	2011
Recipients (mil)	7.1	6.8	6.8	6.8	5.8	5.6	4.3	4.8	5.3	7.6
Eligibles (mil)	19.7	22.2	22.8	24.1	25.4	28.4	29.0	30.4	34.8	40.1
Rate (%)	36%	31%	30%	28%	23%	20%	15%	16%	15%	19%

NOTE: The FY 1981 estimate of income eligible households is not directly comparable to those of the other years because the income eligibility guidelines for the FY 1981 program differed from those of other years.
SOURCE: HHS Administrative Data — such data for FY 2011 are preliminary; thus the actual figures may differ.

[26]Note that the Federal income eligibility guidelines for the FY 1981 Low Income Energy Assistance Program (LIEAP) were different from the LIHEAP programs in other years included in the table.

Figure 3-21. Number of households receiving LIEAP/LIHEAP heating and/or winter crisis assistance or cooling and/or summer crisis assistance, FY 1981 to FY 2011

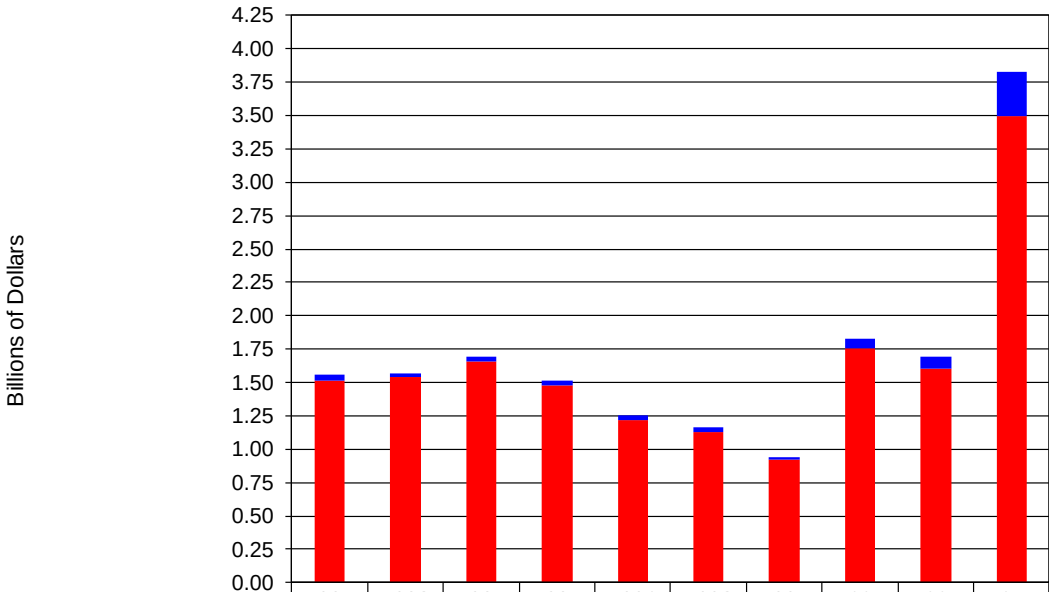


	1981	1983	1985	1987	1990	1993	1997	2001	2005	2011
Cooling/Crisis	0.4	0.5	0.5	0.4	0.4	0.2	0.1	0.3	0.4	1.1
Heating/Crisis	7.1	6.8	6.8	6.8	5.8	5.6	4.3	4.8	5.3	7.6

NOTE: Cooling assistance/summer crisis figures cannot be added to heating assistance/winter crisis figures to generate total assistance + crisis figures for each year because households can receive more than one type of assistance.
SOURCE: HHS Administrative Data — such data for FY 2011 are preliminary; thus the actual figures may differ.

Figure 3-22, on the following page, shows that the total funds used for fuel assistance benefits have fluctuated over time. For the years shown, funding was highest in FY 2011, when $3.83 billion dollars were used for heating and cooling assistance benefits, and lowest in FY 1997 when $0.94 billion dollars were used for assistance benefits.

Figure 3-22. Funds used for LIEAP/LIHEAP fuel assistance, FY 1981 to FY 2011

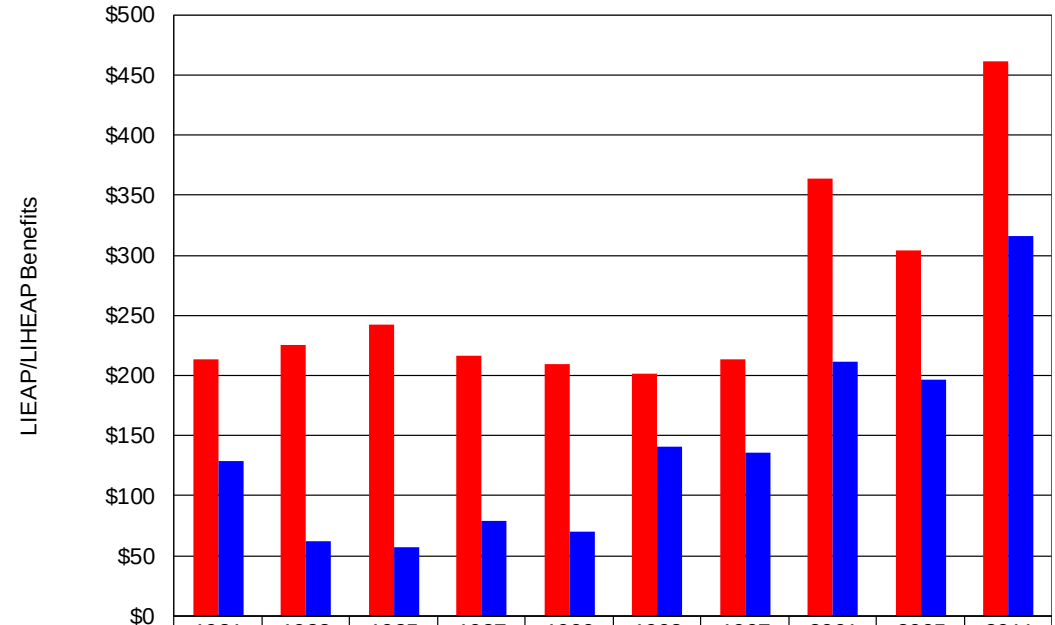


	1981	1983	1985	1987	1990	1993	1997	2001	2005	2011
Total Fuel Assistance	$1.56	$1.57	$1.69	$1.51	$1.25	$1.16	$0.94	$1.83	$1.69	$3.83
Cooling/Crisis	$0.05	$0.03	$0.03	$0.03	$0.03	$0.03	$0.02	$0.07	$0.09	$0.33
Heating/Crisis	$1.51	$1.54	$1.66	$1.48	$1.22	$1.13	$0.92	$1.76	$1.60	$3.50

SOURCE: HHS Administrative Data — such data for FY 2011 are preliminary; thus the actual figures may differ.

Figure 3-23 on the following page shows that, for the years shown, mean heating/winter crisis benefits were $213 in FY 1981, grew to $242 in FY 1985, fell back to $213 in 1997, rose to $364 in FY 2001, dropped to $304 in FY 2005, and then rose substantially to $462 in FY 2011. Figure 3-24 shows that, after adjusting for inflation, with the exception of FY 2011, the mean value of benefits has fallen substantially. The mean value of heating and/or winter crisis benefits, in 1981 dollars, fell from $213 in FY 1981 to $140 in FY 2005. In FY 2011, mean heating benefits increased considerably to $184. With the exception of FY 1981, mean cooling benefits ranged, in 1981 dollars, from $49 to $90 through FY 1997, then rose to $107 in FY 2001, then fell to $91 in FY 2005. In FY 2011, mean cooling benefits increased substantially to $126. In FY 1993, one State made program changes that significantly increased the mean benefit and decreased the total number of recipients.

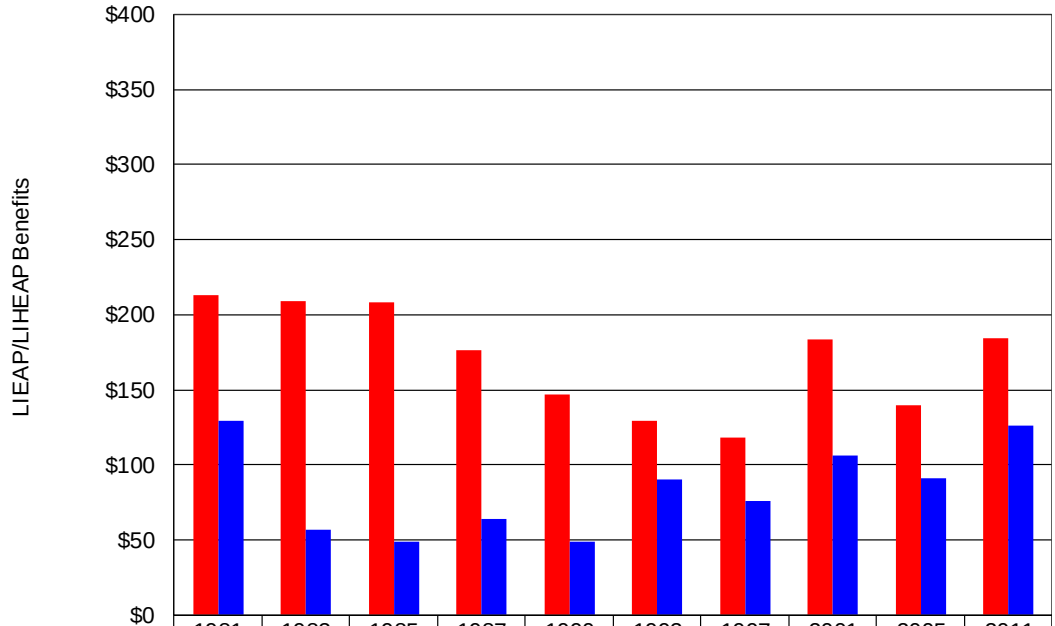
Figure 3-23. Mean combined LIEAP/LIHEAP heating and/or winter crisis benefits and mean cooling and/or summer crisis benefits, in nominal dollars, FY 1981 to FY 2011



	1981	1983	1985	1987	1990	1993	1997	2001	2005	2011
Heating/Crisis	$213	$225	$242	$216	$209	$201	$213	$364	$304	$462
Cooling /Crisis	$129	$62	$57	$79	$70	$141	$136	$211	$197	$316

SOURCE: HHS Administrative Data — such data for FY 2011 are preliminary; thus the actual figures may differ.

Figure 3-24. Mean combined LIEAP/LIHEAP heating and/or winter crisis benefits and mean cooling benefits, in real 1981 dollars, FY 1981 to FY 2011



	1981	1983	1985	1987	1990	1993	1997	2001	2005	2011
Heating/Crisis	$213	$209	$208	$176	$147	$129	$118	$184	$140	$184
Cooling /Crisis	$129	$57	$49	$64	$49	$90	$76	$107	$91	$126

SOURCE: HHS Administrative Data — such data for FY 2011 are preliminary; thus the actual figures may differ.

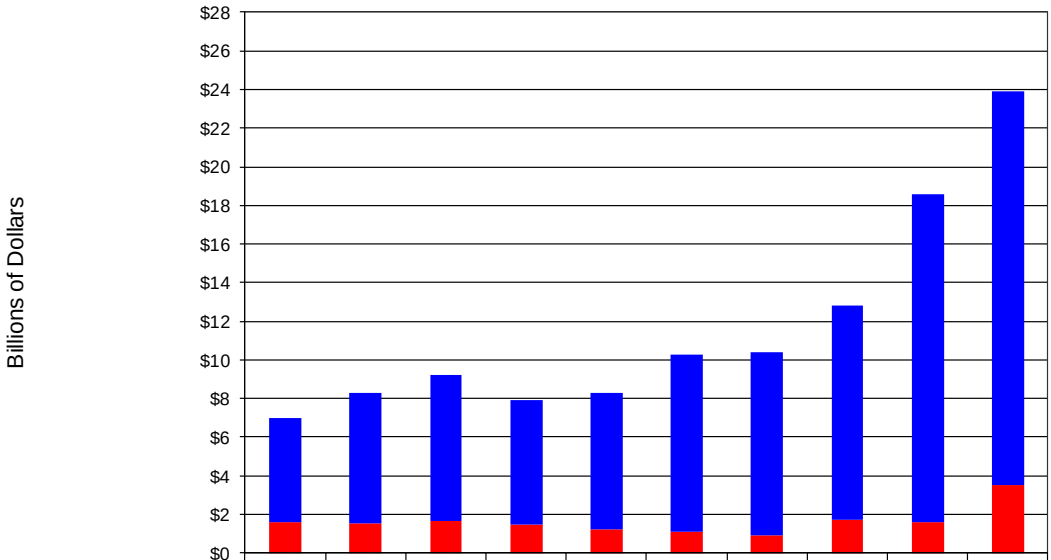
Analysis of LIHEAP benefits

The impact of LIHEAP heating benefits can be examined in at least two ways. Figure 3-25 shows the share of the aggregated total of low income home heating costs covered by LIHEAP heating and winter crisis benefits (LIHEAP heating coverage). Figure 3-26, on the next page, shows the reduction in mean group home heating burden as a result of LIHEAP benefits (LIHEAP burden offset).

Figure 3-25 shows that the LIHEAP heating coverage rate fell from 23 percent in FY 1981 to 15 percent in FY 2011. An increase in the size of the total bill and an increase in the number of households that are income eligible for assistance benefits in FY 2011 caused this reduction.

Figure 3-26 shows that the net effect of LIHEAP has been to lower recipient group home heating burdens to levels that are much closer to the levels of the average household. In FY 1981, the gross mean group home heating burden for LIEAP recipient households was 8.5 percent, while the net mean group home heating burden (with home heating expenditures taken after deducting LIHEAP benefits) was 2.9 percent. In FY 2011, the gross mean group home heating burden for LIHEAP recipients was 4.3 percent, while the net mean group home heating burden was 1.8 percent. It is interesting to note that, while the gross mean group home heating burden for LIHEAP recipients fell from 8.5 percent in FY 1981 to 4.0 percent in FY 1997, decreases in mean LIHEAP benefits in relation to household income caused the net mean group home heating burden to range between 1.4 and 2.2 times as high as the gross mean group home heating burden for all households except for FY 2005 when that ratio was more than 3 to 1. In FY 2001, significant increases in the mean heating benefit caused the net mean group home heating burden for LIHEAP recipients to fall to 1.7 percent, however it remained twice as high as the mean group burden for all households. In FY 2005, the mean heating benefit decreased by 16 percent, and net mean group home heating burden almost doubled, increasing by 94 percent. The changes in net mean group heating burden resulted from the combination of mean heating benefit decrease and much higher fuel prices in FY 2005. In FY 2011, the net mean group home heating burden for LIHEAP recipients decreased to 1.8 percent.

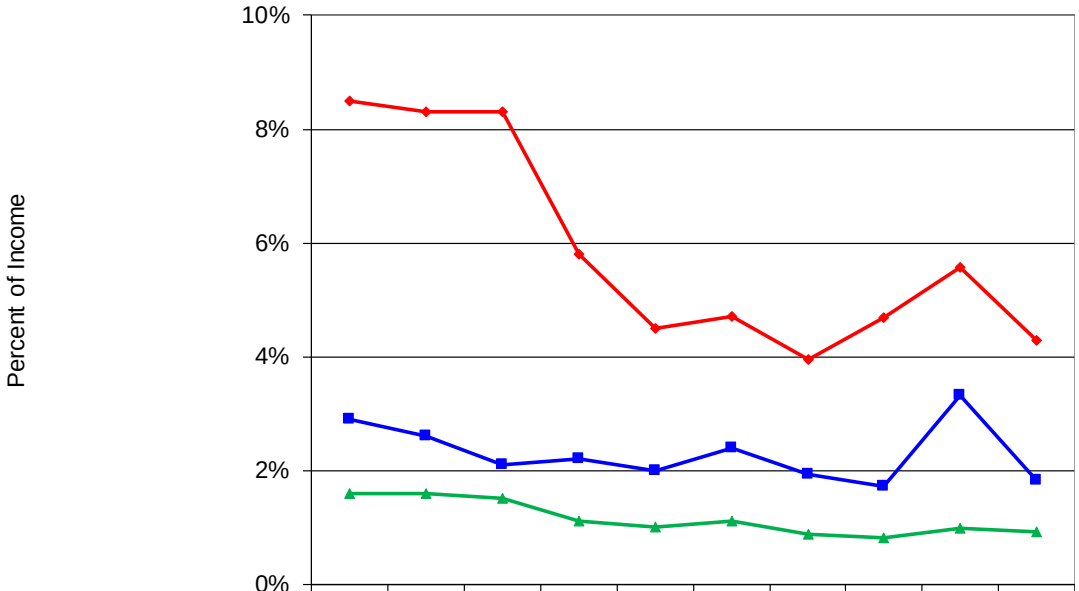
Figure 3-25. Amount and percentage of total home heating billed amounts for LIEAP/LIHEAP income eligible households covered by LIEAP/LIHEAP heating and winter crisis benefits, FY 1981 to FY 2011



	1981	1983	1985	1987	1990	1993	1997	2001	2005	2011
Percent Covered	23%	18%	18%	19%	15%	11%	9%	14%	9%	15%
Total Bill	$7.0	$8.3	$9.2	$7.9	$8.3	$10.3	$10.4	$12.8	$18.6	$23.9
Not Assisted	$5.4	$6.8	$7.6	$6.4	$7.1	$9.2	$9.5	$11.1	$17.0	$20.4
Assisted	$1.6	$1.5	$1.6	$1.5	$1.2	$1.1	$0.9	$1.7	$1.6	$3.5

SOURCE: Assistance number from HHS data and heating bill estimates from RECS — HHS data for FY 2011 are preliminary; thus the actual figures may differ.
NOTE: The FY 1981 estimate of income eligible households is not directly comparable to those of the other years because the income eligibility guidelines for the FY 1981 program differed from those of other years.

Figure 3-26. Mean group home heating burden for all households and LIEAP/LIHEAP heating and winter crisis recipient households, FY 1981 to FY 2011



	1981	1983	1985	1987	1990	1993	1997	2001	2005	2011
Gross (Recipients)	8.5%	8.3%	8.3%	5.8%	4.5%	4.7%	4.0%	4.7%	5.6%	4.3%
Net (Recipients)	2.9%	2.6%	2.1%	2.2%	2.0%	2.4%	1.9%	1.7%	3.3%	1.8%
Gross (All Households)	1.6%	1.6%	1.5%	1.1%	1.0%	1.1%	0.9%	0.8%	1.0%	0.9%

SOURCE: Mean burden uses heating expenditures from RECS and income from CPS ASEC.
Net Burden = (Mean Expenditures - Mean Benefit) / Mean Income
NOTE: The FY 1981 estimate of income eligible households is not directly comparable to those of the other years because the income eligibility guidelines for the FY 1981 program differed from those of other years.

IV. Federal LIHEAP Targeting Performance

The Government Performance and Results Act of 1993 (GPRA), as amended, focuses on program results to provide Congress with objective information on the achievement of statutory objectives or program goals. The resulting performance data are to be used in making decisions on budget and appropriation levels.

ACF's budget justification for Congress, which contains the LIHEAP performance plan takes into account the fact that the Federal government does not provide LIHEAP assistance to the public. Instead, the Federal government provides funds to States, certain Federal- or State-recognized Indian Tribes and Tribal Organizations, and Insular Areas to administer LIHEAP at the local level. The LIHEAP performance plan also takes into account the fact that LIHEAP is a block grant whereby LIHEAP grantees have broad flexibility to design their programs, within very broad Federal guidelines, to meet the needs of their citizens.

This section of the *Notebook* describes ACF's approach to LIHEAP performance measurement and discusses the findings from ACF-funded research on performance measurement for LIHEAP, including:

- LIHEAP Performance Plan – Review of national LIHEAP program goals, national LIHEAP performance goals, and LIHEAP performance measures.
- Performance Measurement Research – Discussion of the findings from a study to assess the validity of performance measurement estimation procedures and from an evaluation of the performance of LIHEAP with respect to serving the lowest-income households with the highest energy burdens.
- LIHEAP Performance Statistics – Statistics that document the performance of LIHEAP in serving low income vulnerable and high burden households.

LIHEAP program goals and performance goals

LIHEAP is not an entitlement program. Therefore, the program's grantees are unable to serve all of the households that are income eligible under the Federal maximum income eligibility standard. In FY 2011, 19 percent of income eligible households received heating and/or winter crisis assistance. Given that limitation, the LIHEAP statute requires LIHEAP grantees to provide, in a timely manner, that the highest level of assistance will be furnished to those households that have the lowest incomes and the highest energy costs or needs in relation to income, taking into account family size. The LIHEAP statute identifies two groups of low income households as having the highest home energy needs:

- *Vulnerable Households*: Vulnerable households are those with at least one member that is a young child, an individual with disabilities, or a frail older individual. The statute does not define the terms "young children," "individuals with disabilities," and "frail older individuals." The primary concern is that such households face serious health risks if they do not have adequate heating or cooling in their homes. Health risks can include death from hypothermia or hyperthermia, and increased susceptibility to other health conditions such as stroke and heart attacks**.**
- *High Burden Households*: High burden households are those with the lowest incomes and highest home energy costs. The primary concern is that such households will face safety risks in trying to heat or cool their homes if they cannot pay their heating or cooling bills**.**

Safety risks can include the use of makeshift heating sources or inoperative/faulty heating or cooling equipment that can lead to indoor fires, sickness, or asphyxiation**.**

The authorizing legislation requires States to design outreach procedures that target LIHEAP recipiency to income eligible vulnerable and high burden households, and to design benefit computation procedures that target higher LIHEAP benefits to higher burden households.

Based on the authorizing legislation, LIHEAP's goal is to provide LIHEAP assistance to vulnerable households and high-energy burden households whose health and/or safety are endangered by living in homes without sufficient heating or cooling.

Based on the national LIHEAP program goals, ACF has focused its annual performance goals on targeting the availability of LIHEAP heating assistance to vulnerable low income households. Subject to the availability of data, ACF also is interested in the performance of LIHEAP with respect to targeting benefits to the highest-burden households.

Targeting index performance measures

Performance goals must be measurable in order to determine if the goals are being achieved. ACF has developed a set of developmental performance measures (i.e., targeting indexes) that show the extent to which LIHEAP meets its performance goals. These measures, which are presented below, show LIHEAP's performance in targeting vulnerable and high-burden households:

- The **recipiency targeting index** quantifies recipiency targeting performance. The index is computed for a specific group of households by dividing the percent of LIHEAP recipient households that are members of the target group by the percent of all income eligible households that are members of the target group and then multiplying the result by 100. For example, if 25 percent of LIHEAP recipients are high burden households and 20 percent of all income eligible households are high burden, the recipiency targeting index for high burden households is 125 (100 times 25 divided by 20).

  An index greater than 100 indicates that the target group's incidence in the LIHEAP recipient population is higher than that group's incidence in the income eligible population. An index less than 100 indicates that the target group's incidence in the LIHEAP-recipient population is lower than that group's incidence in the income eligible population.

- The **benefit targeting index** quantifies benefit targeting performance. The index is computed by dividing the mean LIHEAP benefit for a target group of recipients by the mean LIHEAP benefit for all recipient households and then multiplying the result by 100. For example, if high burden household recipients have a mean benefit of $250 and the mean benefit for all households is $200, the benefit targeting index is 125 (100 times $250 divided by $200).

  An index greater than 100 indicates that the target group is, on average, receiving more benefits than the overall recipient population. An index less than 100 indicates that the target group is, on average, receiving fewer benefits than the overall recipient population.

- The **burden reduction targeting index** quantifies burden reduction targeting performance. The index is computed by dividing the percent reduction in the median individual energy burden due to LIHEAP for a specified group of recipients by the percent reduction in the median individual energy burden due to LIHEAP for all recipients and then multiplying the

result by 100.[27] For example, if high burden recipients have their median individual energy burden reduced by 25 percent (e.g., from 8 percent of income to 6 percent of income) and all recipient households have their median individual energy burden reduced by 20 percent (e.g., from 5 percent of income to 4 percent of income), the burden reduction targeting index is 125 (100 times 25 divided by 20).

An index greater than 100 indicates that the specified group experiences, on average, a greater median individual energy burden reduction than the overall recipient population. An index less than 100 indicates that the specified group experiences, on average, a smaller median individual energy burden reduction than the overall recipient population.

The development of these indexes facilitates tracking of recipiency, benefit, and burden reduction performance for vulnerable and high burden households.

- The recipiency performance data allow for outreach initiatives to improve recipiency targeting performance.

- The benefit and burden reduction performance data facilitate analysis of how different kinds of benefit determination procedures lead to different levels of benefit and burden reduction targeting performance.

The benefit targeting index and the burden reduction targeting index are both useful measures, but they measure different aspects of benefit targeting.

- The benefit targeting index requires fewer data elements; it is a simple measure of how benefits for a particular group of recipient households compare to benefits for all recipient households.

- The burden reduction index is more comprehensive; it accounts for differences in both energy costs and benefit levels for the group of recipient households compared to energy costs and benefit levels for all recipient households.

The baseline data serve as a starting point against which the degree of change in LIHEAP targeting can be measured, analyzed, and attributed to Federal performance enhancement initiatives. The baseline data also provide a roadmap from which ACF can set realistic recipiency performance targets (a quantitative statement of the degree of desired change) for those parts of the country in which targeting performance can be improved.

ACF's annual LIHEAP performance measures are:

- Increase the recipiency targeting index score of LIHEAP households having at least one member 60 years or older.

- Maintain the recipiency targeting index score of LIHEAP households having at least one member five years or younger.

There are no annual measures for the benefit targeting or burden reduction targeting indexes because the data that enter into these indexes are not available annually. The baseline value for the burden

[27] In general, the mean (or average) is preferred to the median (or midpoint), as it is more informative. The mean, which is commonly called the average, is the sum of all values divided by the number of values. The median is the value at the midpoint in the distribution of values. LIHEAP benefit recipiency variables are not highly skewed (or distorted); therefore, mean benefits are used to compute the benefit targeting index. Energy burden variables, however, are highly skewed; thus the median energy burden, which is less affected by extreme values, is used to calculate the burden reduction index.

reduction targeting index was computed for 2001 using the Residential Energy Consumption Survey (RECS) LIHEAP Supplement. However, this index can be updated only as often as the RECS occurs, which is generally every four years. The last update to this index came from the 2005 RECS data.

Outcome performance measures

ACF seeks to improve the way in which it measures LIHEAP's performance. LIHEAP supports Objective B of HHS' Goal 3: Promote economic and social well-being for individuals, families, and communities. However, the indicators that ACF uses to measure LIHEAP's performance, the young child and elderly recipiency targeting indexes, serve only as proxies for LIHEAP's outcomes. ACF intended these proxies to be replaced by more outcome-focused measures.

In June 2008, ACF established the LIHEAP Performance Measures Planning Work Group, consisting of State LIHEAP Directors and ACF staff. The Work Group developed a logic model which identifies the long-term goal of LIHEAP as providing LIHEAP recipients with continuous, safe, and affordable home energy service. The Work Group completed its work in January 2010 when it drafted a set of over 36 potential LIHEAP performance measures that could be useful to both the States and ACF. These draft measures are grouped into one of four tiers by type of LIHEAP assistance. Performance measures in tiers 1-3 are to be State-reported based on each State's ability to collect increasingly complex data. Tier 4 data are to be collected at the federal level.

In April 2010, ACF established a follow-up group, the LIHEAP Performance Measures Implementation Work Group, consisting of State LIHEAP Directors and ACF staff. The Work Group works with stakeholders to evaluate grantees' ability to collect and report on newly established measures and also establishes definitions relating to the new measures. For FY2011, the Work Group engaged in the following activities:

- In summer 2010, the Work Group administered to States a LIHEAP performance measures needs assessment.

- In fall 2010, the Work Group analyzed and reported on the results of the needs assessment, developed objectives for implementing the proposed performance measures, and began creating the tools and resources to allow State grantees to measure LIHEAP program performance.

The Work Group will be active at least through 2014 and will oversee the selection and implementation of four new, developmental annual performance measures. These four measures include: 1) the benefit targeting index for high-burden LIHEAP recipient households; 2) the burden reduction targeting index for high-burden LIHEAP recipient households; 3) the number of LIHEAP recipient households for which LIHEAP restored home energy service; and 4) the number of LIHEAP recipient households for which LIHEAP prevented loss of home energy service.

Performance measurement research

ACF has funded several studies to develop a better understanding of LIHEAP targeting performance measurement. Two of these studies recommended that ACF consider making changes in the performance measurement plan for LIHEAP.

- Validation Study – The performance measurement validation study examined the available data sources for estimating the targeting indexes required by the performance measurement plan for LIHEAP and identified the data sources that furnished the most reliable data. [28]

- Energy Burden Study – The energy burden evaluation study used the 2001 RECS LIHEAP Supplement to measure the baseline performance of LIHEAP in serving high burden households and to examine the competing demands associated with targeting vulnerable and high burden households. [29]

Performance measurement data sources

The ACF performance measurement plan for LIHEAP requires the development of recipiency targeting indexes for elderly households (i.e., households having at least one member age 60 years or older), young child households (i.e., households having at least one member age 5 years or younger), and high burden households (i.e., households having an energy burden that exceeds an energy burden threshold). Data elements needed to compute the recipiency targeting indexes are:

- The target group's income eligible population – The number of elderly, young child, and high burden households that are income eligible for LIHEAP.

- Target group recipients – The number of elderly, young child, and high burden households that are LIHEAP heating recipients.

- The income eligible population – The number of all LIHEAP income eligible households.

- LIHEAP heating recipients – The number of all LIHEAP heating assistance recipients.

The performance measurement validation study and the energy burden study identified the most reliable data sources for the required data elements. The studies found that a number of different data sources were needed to furnish the most reliable data for the computation of targeting indexes, including:

- The income eligible population – According to the Census Bureau, the CPS ASEC furnishes the most reliable national estimates of the number of income eligible households.[30]

- Income eligible vulnerable households – The CPS ASEC furnishes the most reliable estimates of the number of income eligible vulnerable households (i.e., elderly households and young child households).

- LIHEAP heating recipients – The annual State *LIHEAP Household Reports* furnished by State LIHEAP administrators to ACF furnish the most reliable estimates of the number of heating assistance recipient households.

- Vulnerable household heating recipients – The annual State *LIHEAP Household Reports* furnished by State LIHEAP administrators to ACF furnish the most reliable estimates of the number of vulnerable heating assistance recipient households.

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[28] *LIHEAP Targeting Performance Measurement Statistics: GPRA Validation of Estimation Procedures*, September 2004, prepared by APPRISE Incorporated under PSC Order No. 043Y00471301D. http://acf.gov/programs/ocs/resource/gpra-validation-of-estimation-procedures-2004

[29] *LIHEAP Energy Burden Evaluation Study*, July 2005, prepared by APPRISE Incorporated under PSC Order No. 043Y00471301D. http://www.acf.hhs.gov/programs/ocs/resource/liheap-energy-burden-evaluation-study

[30] "Guidance about Income Sources." U.S. Census Bureau. Housing and Household Economics Statistics Division. November 1, 2011. http://www.census.gov/hhes/www/income/method/guidance/index.html.

- Income eligible high burden households – The RECS furnishes the most reliable estimates of the number of income eligible high burden households.

- High burden heating recipients – The RECS LIHEAP Supplement furnishes the most reliable estimates of the number of high burden recipient households.

The following data sources are used in reporting on LIHEAP targeting performance for this Notebook:

- CPS ASEC – The CPS ASEC is a national household sample survey that is conducted monthly by the Bureau of the Census. The CPS ASEC includes data that allow one to characterize household demographic characteristics. The CPS ASEC is the best source of annual national data for estimating the number of income eligible households and the number of income eligible vulnerable households. The CPS ASEC data needed to prepare performance statistics for FY 2011 were available in November 2011.

- State annual LIHEAP Household Report – The preliminary LIHEAP Household Reports for FY 2011 were due from the States by September 1, 2011, when the States' LIHEAP block grant applications for FY 2012 were due. ACF set a goal for the States to submit their final LIHEAP Household Report for FY 2011 by December 2011. Each LIHEAP Household Report needs to be received, reviewed, processed, and compared against data from each State's Federal LIHEAP Grantee Survey for FY 2011 that was conducted in February 2012. The data on the number of LIHEAP households assisted in FY 2011 will be included in the *LIHEAP Report to Congress* for FY 2011.

- The RECS – The EIA's RECS is a national household sample survey that is conducted once every four years. The most recent survey for which the necessary data is available was conducted in 2005. The RECS data were used in 2001 for baseline measurement of targeting performance for high energy burden households and can track longer-term changes in performance over time (2001 to 2005). However, the RECS currently cannot furnish annual updates on LIHEAP targeting performance for high energy burden households.

Targeting performance for high burden households

With the available data, the annual reporting of LIHEAP recipiency targeting index scores includes updates for vulnerable households but not for high energy burden households. To develop a better understanding of the value of targeting performance data for high energy burden households, ACF commissioned the *LIHEAP Energy Burden Evaluation Study* (2005). The purposes of that study included:

- Targeting – Measure the extent to which LIHEAP is serving the lowest income households that have the highest energy burdens.

- Performance goals – Assessment of the importance of the performance goal of increasing the percent of LIHEAP recipient households having the lowest incomes and the highest energy costs.

- Measurement – Identification of procedures that can be used to measure performance of LIHEAP with respect to the goal of increasing the percentage, among LIHEAP recipient households, of those households with the lowest incomes and the highest energy costs (i.e. high energy burden households).

The study furnished the following information to ACF with respect to targeting of high energy burden households.[31]

- Targeting – The study found that, for FY 2001, the recipiency targeting index for high home energy burden households was 170, indicating that households with a high home energy burden were served at a significantly higher rate than were other income-eligible households. The study furnished a baseline statistic from which changes in targeting to high energy burden households can be compared.

- Performance goals – The study demonstrated that it is important to include a goal of targeting high energy burden households in the performance plan for LIHEAP. The LIHEAP statute gives equal status to the goals of targeting vulnerable households and high energy burden households. Performance goals that are limited to targeting of elderly and young child households encourage LIHEAP grantees to give preference to low burden vulnerable households over high burden households that do not have a vulnerable household member.

- Measurement – The study identified options for collecting annual data on high energy burden recipient households.

In addition, the *LIHEAP Energy Burden Evaluation Study* (2005) examined two other performance indicators – the benefit targeting index and the burden reduction targeting index. The study furnished baseline measures for these indicators and discussed the value and challenges of including those benefit and burden reduction targeting indicators in the performance plan for LIHEAP. These indexes were updated for FY 2005 using the 2005 RECS.

Performance measurement statistics

Tables 4-1a and 4-1b shows the LIHEAP recipiency targeting performance measures from FY 2003 through FY 2011. The first column in the table restates the performance goal. The second column shows performance targets (to be reached), and the third column shows the targeting index scores that were achieved. FY 2003 was the baseline year for both measures.

For measure 1A, the baseline targeting index score of 79 indicates that income eligible elderly households were not being effectively targeted within the income eligible population of elderly households in FY 2003. The FY 2004 through FY 2010 targeting index scores fluctuated between 73 and 79. In FY 2011, the targeting index for households with elderly increased to 78, exceeding the target. However, this still indicates that there was no improvement over the baseline targeting index score in those years.

For measure 1B, the baseline targeting index score of 122 for households with a young child indicates that such households were being effectively targeted within the income eligible population of households with young children in FY 2003. The FY 2004 through FY 2008 targeting index scores

[31] The study developed an operational definition of "high burden," though the statute offers no such definition. The study's definition is used here. This study defined high energy burden as the "energy share" of severe housing (shelter) burden. Severe housing burden is considered by some researchers to be 50% of income. (See Cushing N. Dolbeare. 2001. "Housing Affordability: Challenge and Context." Cityscape: A Journal of Policy Development and Research, (5)2:111-130. A Publication of the U.S. Department of Housing and Urban Development, Office of Policy Development and Research.) The median total residential energy costs for households at or below 150 percent of the HHS' Poverty Guidelines are 21.8 percent of housing costs. This study defined a residential energy burden of 10.9 percent of income as a high burden, moderate energy burden as costs at or above 6.5 percent of income but less than 10.9 percent of income, and low energy burden as costs less than 6.5 percent of income. Heating and cooling expenditures comprise 39.3 percent of total residential energy expenditures for all households. Therefore, high home energy burden is defined for purposes of this study as heating and cooling costs that exceed 4.3 percent of income. Moderate home energy burden is defined as heating and cooling costs above 2.6 percent of income but less than 4.3 percent of income.

showed a decrease in targeting households with young children. However, in FY 2010, the targeting index for households with a young child increased to 118, and in FY 2011, it increased further to122.

Table 4-1a. LIHEAP recipiency targeting performance measure 1A: Increase the recipiency targeting index score of LIHEAP households having at least one member 60 years or older (reported for FY 2003 – FY 2011)

Fiscal Year	Target	Result
FY 11	75	78
FY 10	77	73
FY 09	96	76
FY 08	96	76
FY 07	94	78
FY 06	92	77
FY 05	84	79
FY 04	82	78
FY 03	Baseline	79

Table 4-1b. LIHEAP recipiency targeting performance measure 1B: Maintain the recipiency targeting index score of LIHEAP households having at least one member five years or younger (reported for FY 2003 – FY 2011)

Fiscal Year	Target	Result
FY 11	110	122
FY 10	110	118
FY 09	122	117
FY 08	122	110
FY 07	122	110
FY 06	122	112
FY 05	122	113
FY 04	122	115
FY 03	Baseline	122

SOURCE: HHS Administrative Data — such data for FY 2011 are preliminary; thus the actual figures may differ.

As noted above, the *LIHEAP Energy Burden Evaluation Study* developed baseline statistics on high energy burden household targeting. That study recommended that measurement of targeting to high energy burden households is important since LIHEAP's statutory mandate is to serve the households "with the lowest incomes, that pay a high proportion of household income for home energy, primarily in meeting their immediate home energy needs."

Table 4-2 shows the national and regional recipiency targeting indexes for high home energy burden households for FY 2001 and FY 2005. The 2001 RECS, the 2001 RECS LIHEAP Supplement, and the 2005 RECS were used to develop these statistics. These statistics demonstrate that, except for the Northeast region in FY 2005, LIHEAP was targeting high burden households.[32] However, FY 2005 targeting index scores indicate a significant decrease in targeting high burden households compared to the FY 2001 baseline scores.

Table 4-2. LIHEAP recipiency targeting index for high burden households by region for FY 2001 from the 2001 RECS and the 2001 RECS LIHEAP Supplement, and for FY 2005 from the 2005 RECS

Region	FY 2001	FY 2005
Northeast	163	99
Midwest	132	116
South	155	119
West	293	184
United States	170	122

The energy burden evaluation study also furnished estimates of the benefit and burden reduction targeting indexes for FY 2001. These indexes were updated for FY 2005 using the 2005 RECS data. Benefit and burden reduction targeting are not part of the performance plan for LIHEAP. However, the study concluded that those indexes were consistent with the statutory mandate to furnish the highest benefits "to those households which have the lowest incomes and the highest energy costs or needs in relation to income."

Table 4-3 shows national and regional benefit targeting indexes and Table 4-4 shows national and regional burden reduction targeting indexes. In FY 2001, at the national level and in all regions, high burden households received slightly higher average benefits than did households that did not have high burdens. The benefit targeting index scores were slightly lower at the national level and in most regions in FY 2005 compared to FY 2001. However, Table 4-4 shows that at the national level and in all regions, high burden households experienced lower burden reductions than did households that did not have a high burden. From FY 2001 to FY 2005, burden reduction index scores decreased for all regions.

[32] The RECS LIHEAP Supplement was first introduced into the RECS in 2001. Because the design was experimental, no variance models were developed for the data file. As a result, it is difficult to develop a precise estimate of variances for statistics developed from the RECS LIHEAP Supplement. Preliminary analysis indicates that the FY 2001 targeting indexes in Table 4-2 are statistically different from 100 while the FY 2001 targeting indexes shown in Tables 4-3 and 4-4 are not statistically different from 100. Therefore, the null hypothesis that high burden households and households that are not high burden are served at the same rate can be rejected, while the null hypothesis that LIHEAP benefits and burden reduction are the same for high burden households and households that are not high burden cannot be rejected. The FY 2005 targeting indexes in Table 4-2 and 4-4 are statistically different from 100 at the national level but not at the regional level, while the targeting indexes shown in Tables 4-3 are not statistically different from 100 at either regional or national level.

Table 4-3. LIHEAP benefit targeting index of high burden households by region for FY 2001 from the 2001 RECS and the 2001 RECS LIHEAP Supplement, and for FY 2005 from the 2005 RECS

Region	FY 2001	FY 2005
Northeast	103	104
Midwest	108	104
South	110	81
West	124	119
United States	109	101

Table 4-4. LIHEAP burden reduction targeting index of high burden households by region for FY 2001 from the 2001 RECS and the 2001 RECS LIHEAP Supplement, and for FY 2005 from the 2005 RECS

Region	FY 2001	FY 2005
Northeast	96	74
Midwest	93	70
South	98	84
West	86	60
United States	94	71

Uses of LIHEAP performance data

Performance targeting index data can be useful for both LIHEAP grantees and ACF, as described below.

LIHEAP grantee use of targeting indexes

Individual LIHEAP grantees can use the recipiency targeting indexes to examine the effectiveness of their outreach to households with vulnerable members.[33]

- In absolute terms, if a given group has a recipiency targeting index over 100, then that group's incidence in the LIHEAP-recipient population is higher than that group's incidence in the income eligible population.

- In relative terms, if a given group has a higher recipiency targeting index than another group, then the given group has been targeted relative to the other group. For example, if the index for elderly households is 90 and the index for non-vulnerable households is 75, then elderly households are targeted at a higher rate than non-vulnerable households are.

[33] LIHEAP grantees have the ability to create these recipiency targeting indexes using recipient counts from the State Household Reports and the estimated income eligibility counts provided in Appendix B of this report. For FY 2006 and 2007, ACF released information on the rankings of the States in terms of recipiency targeting indexes. ACF has recently funded a study that classified States' targeting performance in FY 2007 through FY 2010 in five broad categories. The findings of this study are presented in Section V of this *Notebook*.

Individual LIHEAP grantees can use the benefit and burden reduction targeting indexes to examine the effectiveness of their benefit determination procedures in serving households with vulnerable members and households with high energy burdens.[34]

- In absolute terms, if a given group has a benefit or burden reduction targeting index greater than 100, then that group has a higher average benefit (benefit targeting index) or experiences a greater median burden reduction (burden reduction index) than the recipient population has or experiences. If a group has a benefit or burden reduction targeting index less than 100, then that group has a lower average benefit (benefit targeting index) or experiences a smaller median burden reduction (burden reduction index) than the recipient population has or experiences.

- In relative terms, if a given group has a higher benefit or burden reduction targeting index than another group, then the given group has been targeted relative to the other group. For example, if the benefit targeting index for elderly households is 90 and the benefit targeting index for non-vulnerable households is 75, then elderly households have higher average benefits than non-vulnerable households. Likewise, if the burden reduction targeting index for elderly households is 90 and the burden reduction targeting index for non-vulnerable households is 75, then elderly households have greater percentage reduction in median energy burden.

Grantees can use the targeting measures to gauge their current targeting performance and to track changes in targeting performance over time.

ACF's use of targeting indexes

ACF is using national targeting indexes to examine the targeting performance of LIHEAP and to measure changes in performance over time. In so doing, ACF found that the national recipiency targeting indexes indicate that elderly households face difficulty in enrolling in LIHEAP as compared to young child households. A review of the literature indicates that other federal social programs also have limited success in serving eligible elderly households, especially in comparison to households with young children. Program participation barriers appear to be most significant when elderly households have not made previous use of public assistance programs. For this reason, ACF is an active federal partner with the National Center for Outreach and Benefit Enrollment that is funded by the Administration on Aging. LIHEAP is one of five federal benefit programs for which the Center is seeking to develop innovative ways to increase enrollment of the elderly.

ACF is continuing to examine the reliability and validity of targeting indexes in making the following comparisons:

- ACF can compare recipiency targeting measures among groups of households and identify which groups are not effectively targeted by LIHEAP. For example, if the national LIHEAP recipiency targeting index for elderly households is 85 and the national LIHEAP recipiency targeting index for households with young children is 110, then households with young children are targeted at a higher level than are elderly households. ACF might conclude from these statistics that a greater share of the technical assistance efforts should be allocated to increasing targeting to elderly households.

- ACF can compare recipiency targeting measures among areas of the country to assess which areas are in greatest need of technical assistance and to determine the type of technical assistance that is required. For example, if the recipiency targeting index for elderly

[34] LIHEAP grantees have the benefit data needed to create benefit targeting indexes. If they calculate household energy burdens for their recipients, LIHEAP grantees can also create burden reduction indexes.

households in the New England Census Division is 75, while the recipiency indexes for elderly households in all other divisions are over 100, then elderly households are targeted at a lower level in New England than in other parts of the country. ACF might conclude from these statistics that a greater share of the technical assistance efforts should be allocated to increasing targeting to elderly households among one or more grantees in New England.

- ACF can compare national targeting measures over time to measure changes in targeting performance. For example, if the targeting indicator for elderly households was 75 in one fiscal year and was 85 in a later fiscal year, then it would demonstrate that LIHEAP targeted elderly households at a higher level over time.

Targeting performance measurement issues

As presented above, targeting indexes are statistical tools that allow ACF to examine targeting across groups of households, across regions of the country, and over time. It is reasonable to expect that the greatest increases in targeting performance can be realized by supporting the targeting efforts for those areas of the country that are currently serving targeted households at the lowest rate.

A major challenge in executing the LIHEAP performance plan is in finding an effective way to gather the data that enter into vulnerable and high burden targeting indexes in a timely way. ACF has found the timeliness of such collection to be challenging, e.g. the LIHEAP Household Report's early deadlines. In addition, the RECS' relative infrequency presents an ongoing challenge.

For FY 2011, ACF required States to report for the first time on the LIHEAP Household Report an unduplicated count of households receiving all types of LIHEAP benefits. This data is to allow ACF to indicate the targeting of all types of LIHEAP benefits, rather than just the targeting of heating benefits. However, there were a number of States that could not report these unduplicated counts for FY 2011. ACF are working with such States to have a system in place to report these data.

V. Classifying State LIHEAP Targeting Indexes

The Low Income Home Energy Assistance Program (LIHEAP) Statute requires that grantees "provide, in a timely manner, that the highest level of assistance will be furnished to those households which have the lowest incomes and the highest energy costs or needs in relation to income, taking into account family size" (LIHEAP Statute, Section 8624(b)(5)). The Statute identifies "vulnerable households" (i.e., households with at least one member that is a young child, an individual with disabilities, or a frail older individual) as one of two groups of households having the highest home energy needs. To address that mandate, the Administration for Children and Families (ACF), which administers the LIHEAP program, has focused its performance goals and measurement on targeting income eligible vulnerable households --particularly households with at least one member 60 years or older and households having at least one member 5 years or younger. This section of the Notebook presents information from a study commissioned by ACF to study State LIHEAP targeting performance during Fiscal Year (FY) 2007 through FY 2010.

Purpose of the Study

The national targeting performance measurement statistics for both elderly households and young child households, as presented in Table 4-1 of the Notebook, have shown that the LIHEAP program has fallen short of performance targets during the period from FY 2004 through FY 2010, especially for elderly households. While the national elderly and young child targeting indexes were relatively stable during this time period, there were significant differences in targeting performance among States during particular fiscal years and also significant changes in State-level targeting performance. The ACF-commissioned State targeting study develops classifications of State LIHEAP targeting performance, evaluates States' recipiency targeting performance from one year to the next during FY 2007 through FY 2010, and identifies the factors related to targeting performance. This study builds upon the study commissioned by ACF in 2008 to help State LIHEAP programs enhance their targeting of these two vulnerable households groups.[35]

This targeting study had four main objectives:

1. **Performance Classification of States** – Classification of States in terms of their recipiency targeting performance for heating assistance for elderly and young child households for FY 2007 through FY 2010 in a meaningful and statistically robust way.

2. **Changes in Targeting Performance** – Assessment of changes in State recipiency targeting indexes from FY 2007 through FY 2010.

3. **In-depth Interviews with State LIHEAP Directors** – In-depth interviews with a sample of State LIHEAP directors to study the factors related to the targeting performance, the reasons for recent improvement or decline in targeting performance, and the specific targeting strategies that the States are using.

4. **Factors Related to Targeting Performance** – Analysis of factors related to targeting performance.

[35] *Recipiency Targeting Analysis for Elderly and Young Child Households*, December 2008, prepared by APPRISE Incorporated under contract #HHSP23320070081P. A summary of this report was published in the *FY 2007 Home Energy Notebook.*

Classification of States

One of the main objectives of the study was to identify a meaningful and statistically robust way of categorizing States in terms of their elderly and young child recipiency targeting performance that considers both the point and interval estimates for the targeting indexes and uses both Federal and State maximum LIHEAP eligibility standards.[36] The purpose of this classification is to provide States with feedback on how well they are targeting these vulnerable households relative to other States. Furthermore, this classification provides an opportunity to examine the program design features of LIHEAP programs that achieve high, moderate, and low targeting performance. Such an examination can provide States with information on how to improve their LIHEAP targeting performance.

Methodology

The recipiency targeting index quantifies recipiency targeting performance. The index is computed for a specific group of households by dividing the percent of LIHEAP recipient households that are members of the target group by the percent of all income eligible households that are members of the target group and then multiplying the result by 100.

In the computation of the targeting indexes, household data on LIHEAP assistance are limited to heating assistance, the largest component of LIHEAP assistance. The data for each State include the number of households receiving heating assistance and, of those households, the number of heating assistance households having at least one vulnerable person as reported to OCS in each State's annual *LIHEAP Household Report*.

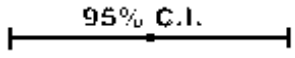
Section 8624(b)(2) of the LIHEAP statute allows grantees to serve low income households that have incomes at or below the Federal maximum LIHEAP income eligibility standard, i.e., the greater of 150 percent of the HHS Poverty Guidelines or 60 percent of a State's median income.[37] In the computation of the targeting indexes, the number of income eligible households that are members of the target group is estimated using the data from the Census Bureau's American Community Survey (ACS). These eligible population estimates, and hence the targeting index estimates, are subject to survey sampling error. In the classification of States by their targeting performance, the study used the confidence interval estimates[38] of the targeting indexes, which take into account the uncertainty associated with the estimates of the number of income eligible households from ACS.

The study defined five mutually exclusive categories to describe elderly and young child targeting performance, after taking into account the uncertainty around the estimates of income eligible households. The categories were chosen to be consistent from year to year (e.g. the categories would not need to be adjusted every year) and to also provide enough of a difference in targeting index classification from one group to the next (e.g. a Very High recipiency targeting index means that the

[36] See Methodology section for an explanation of the point and interval estimator and regarding the accuracy of State-reported data.

[37] States may set their LIHEAP maximum eligibility standards equal to or lower than the Federal maximum LIHEAP income eligibility standard as long as their eligibility standards are not set below 110 percent of the HHS Poverty Guidelines.

[38] A confidence interval is the range wherein the true population value for a point estimate based on a random sample falls with a certain level of confidence. The wider the confidence interval the less precise is the estimate. The confidence level is expressed as a percentage, usually 90 or 95 percent. The recipiency targeting index data use a 95 percent confidence interval. This means that there is a 95 percent chance that the true targeting index falls within the estimated lower and upper bounds of the confidence interval (CI), as shown below:



Lower Bound | Point Estimate | Upper Bound

The confidence intervals are also expressed as Point Estimate ± Margin of Error. In this expression, lower bound is the same as Point Estimate minus Margin of Error and upper bound is the same as Point Estimate plus Margin of Error.

State serves the target group at a rate that is at least 20 percent higher than that group's representation in the income eligible population). The categories are:

- Very High – A State is said to have a very high recipiency targeting index if the lower bound of the confidence interval of the recipiency targeting index is greater than 120. As also stated above, this means that the State serves the target group at a rate that is at least 20 percent higher than that group's representation in the income eligible population even after the margin of error is taken into account.

- High – A State is said to have a high recipiency targeting index if the lower bound of the confidence interval of the recipiency targeting index is greater than 105 but less than or equal to 120. This means that the State serves the target group at a rate that is at least 5 percent higher than that group's representation in the income eligible population even after the margin of error is taken into account.

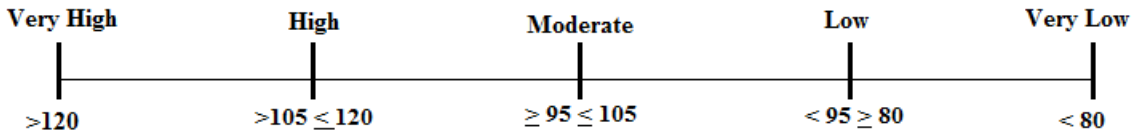
- Moderate – A State is said to have a moderate recipiency targeting index if the upper bound of the confidence interval of the recipiency targeting index is greater than or equal to 95 and the lower bound of the confidence interval is less than or equal to 105. This means that the State serves the target group at a rate that is between 5percent lower and 5 percent higher than that group's representation in the income eligible population after the margin of error is taken into account.

- Low – A State is said to have a low recipiency targeting index if the upper bound of the confidence interval of the recipiency targeting index is less than 95 but greater than or equal to 80. This means that the State serves the target group at a rate that is at least 5percent lower than that group's representation in the income eligible population even after the margin of error is taken into account.

- Very Low – A State is said to have a very low recipiency targeting index if the upper bound of the confidence interval of the recipiency targeting index is less than 80. This means that the State serves the target group at a rate that is at least 20 percent lower than that group's representation in the income eligible population even after the margin of error is taken into account.

Figure 5-1 summarizes the targeting index thresholds that the study used to classify State targeting performance. The same classification methodology is used to categorize the State's targeting performance with respect to both elderly and young child households.

Figure 5-1. Categories of Targeting Performance



Results

Figure 5-2 and Figure 5-3 show the classification of States with respect to their elderly and young child recipiency targeting performance results for FY 2010 using the Federal maximum LIHEAP

Income Eligibility Standard. The results are shown on a U.S. State map to allow for an easy comparison of States. The detailed set of results is presented in Appendix A, Table A7.

The main findings are the following:

- In FY 2010, only three States had a very high elderly targeting index and only two States had a high elderly targeting index. Twenty-four States had a very low elderly targeting index. In contrast, 20 States had a very high and another 14 had a high young child targeting index. Only four States had a low or very low young child targeting index. The findings clearly indicate that young child households are targeted in many States, and that it is more challenging for States to effectively target elderly households.

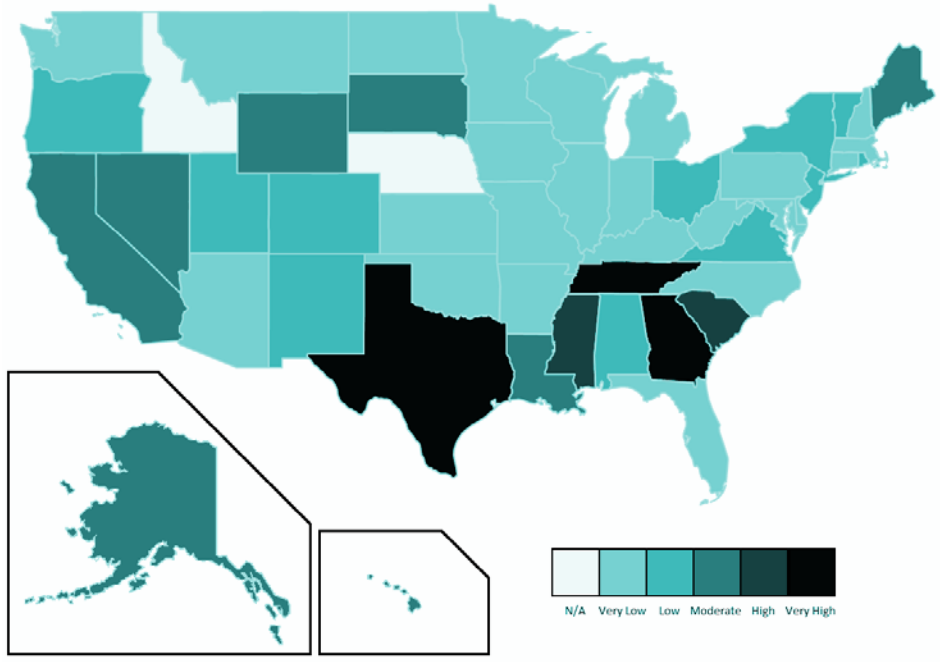
- The States that had a very low young child index, Texas and Georgia, had a very high elderly targeting index. These States successfully targeted their benefits to elderly, but were not able to serve young child households at the same high rate.

- Seventeen out of 24 States that had a very low elderly targeting index had a very high young child index. In these States, the strategies that resulted in targeting the young child households may have had an impact on the effectiveness of targeting the elderly.

- One State, Tennessee, had both a very high elderly and a very high young child targeting index.

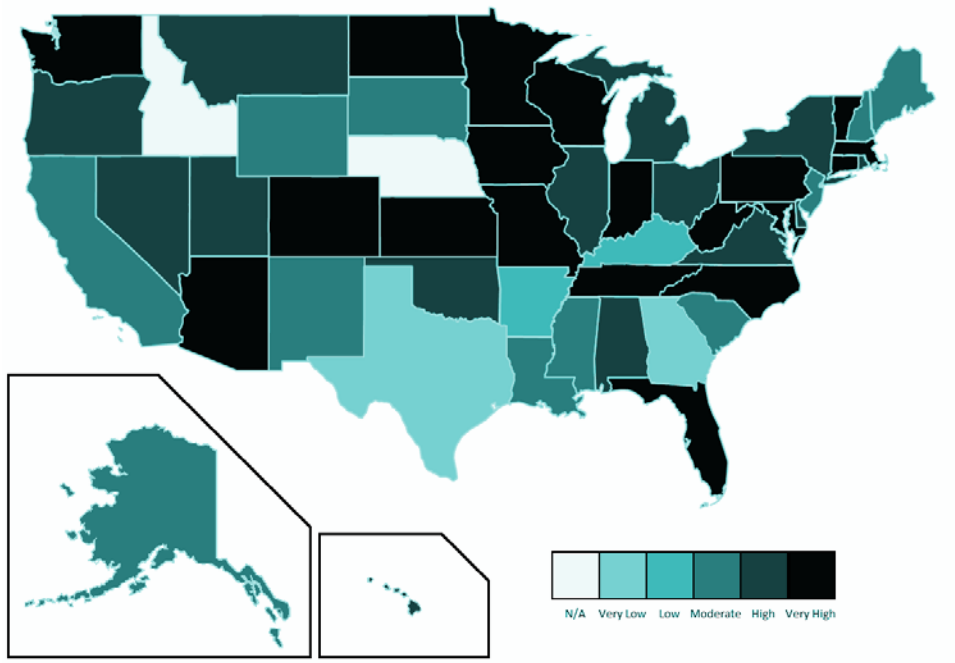
By comparing Figure 5-2 to 5-3, it is easy to see that many more States have high child targeting rates as indicated by the shading on the maps. Regional patterns are also evident. For example, the Midwest and the Northeast Census regions have higher young child targeting indexes, on average, than the other regions. Also, the highest elderly targeting indexes are in the South Census region.

Figure 5-2. State LIHEAP Elderly Household Recipiency Targeting Performance Results for Heating Assistance, Using Federal LIHEAP Income Eligibility Standard, FY 2010 (See also Tables 5-1a, 5-10a and 5-12a)



Source: FFY 2010 States' LIHEAP Household Reports and Census Bureau's 2008-2010 American Community Survey
Note: N/A means that the data were unavailable or contained reporting errors.

Figure 5-3. State LIHEAP Young Child Household Recipiency Targeting Performance for Heating Assistance, Using Federal LIHEAP Eligibility Standard, FY 2010 (See also 5-1b, 5-10b and 5-12b)



Source: FFY 2010 States' LIHEAP Household Reports and Census Bureau's 2008-2010 American Community Survey
Note: N/A means that the data were unavailable or contained reporting errors.

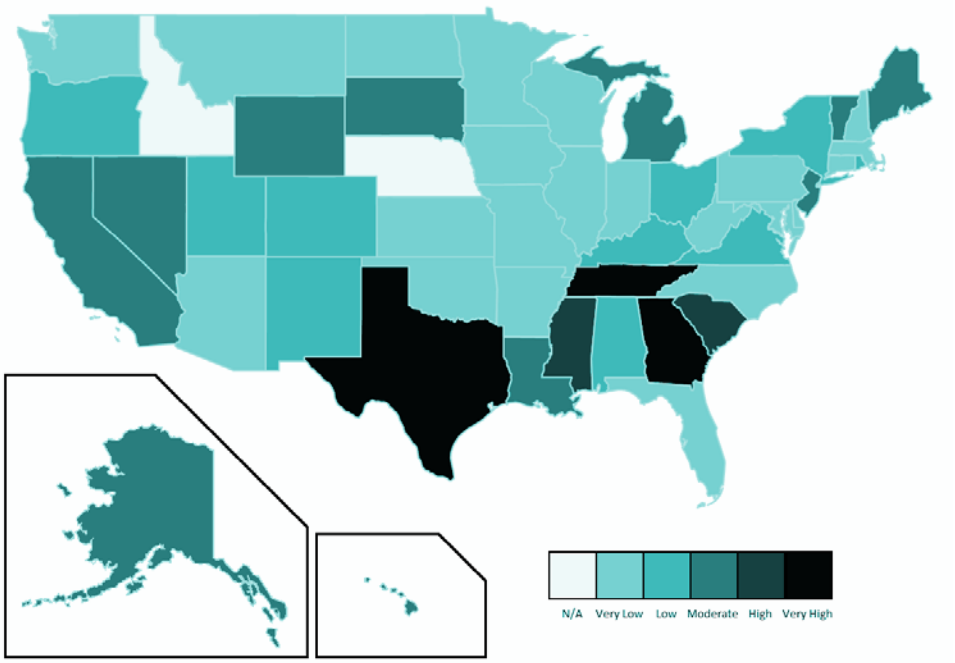
Figure 5-4 and Figure 5-5 show the classification of the States with respect to their elderly and young child recipiency targeting indexes for FY 2010 using the State maximum LIHEAP income eligibility standard. The results are, in general, very similar to those obtained using the Federal LIHEAP Income Standard.

The main differences are the following:

- Elderly Household Targeting – Using the State LIHEAP income eligibility standard slightly improves the targeting performance results. The reason for this is that in many States, the incidence of elderly in the group of households with income above the State standard but at or below the Federal standard is higher than the incidence of elderly in the group of households with income at or below the State standard.

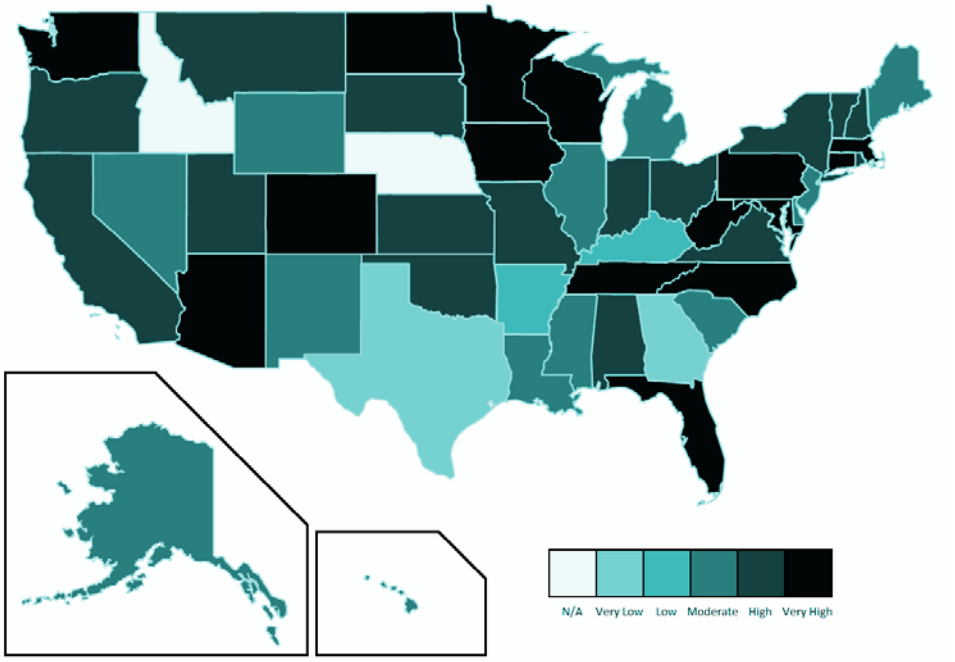
  Young Child Household Targeting – Using the State LIHEAP Standard slightly diminishes the targeting performance results. The reason for this is that in many States, the incidence of households with a young child in the group of households with income above the State standard but at or below the Federal standard is lower than the incidence of households with a young child in the group of households with income at or below the State standard.

Figure 5-4. State LIHEAP Elderly Household Recipiency Targeting Performance for Heating Assistance, Using State LIHEAP Income Eligibility Standard, FY 2010 (See also 5-11a and 5-13a)



Source: FFY 2010 States' LIHEAP Household Reports and Census Bureau's 2008-2010 American Community Survey
Note: N/A means that the data were unavailable or contained reporting errors.

Figure 5-5. State LIHEAP Young Child Household Recipiency Targeting Performance for Heating Assistance, Using State LIHEAP Income Eligibility Standard, FY 2010 (See also Tables 5-11b and 5-13b)



Source: FFY 2010 States' LIHEAP Household Reports and Census Bureau's 2008-2010 American Community Survey
Note: N/A means that the data were unavailable or contained reporting errors.

Changes in Targeting Performance Over Time

One of the other main objectives of the study was to assess the changes in State recipiency targeting performance over time. Table 5.1, on the next page, shows how the classifications of States with respect to their elderly and young child targeting indexes, using the Federal maximum LIHEAP Eligibility Standard, changed from FY 2007 through FY 2010.

The main findings included the following:

- For most States, the targeting performance with respect to both elderly and young child households was stable over time.

- In general, the States that increased their targeting performance with respect to one vulnerable group decreased their performance with respect to the other vulnerable group.

- Only a very small number of States were able to increase their targeting performance with respect to both groups over time. Tennessee, for example, has shown a strong improvement in targeting both groups over time.

- In FY 2010, while a slightly larger number of States had a very high young child household targeting index, a slightly smaller number of States had a very high elderly household targeting index, compared to other years.

As shown in Appendix A, Table A-10, the trends were similar when the State maximum LIHEAP eligibility standard is used the calculations of the targeting indexes.

Table 5-1a. Changes in Elderly Recipiency Targeting Performance Classifications for Heating Assistance, Using Federal LIHEAP Income Eligibility Standard, FY 2007- 2010 (See also Tables 5-4a, 5-6a, 5-8a, 5-10a and 5-12a)

State	2007	2008	2009	2010
Alabama	low	moderate	low	low
Alaska	moderate	high	moderate	moderate
Arizona	very low	very low	very low	very low
Arkansas	low	low	very low	very low
California	moderate	high	moderate	moderate
Colorado	moderate	moderate	low	low
Connecticut	very low	very low	very low	very low
Delaware	very low	very low	very low	very low
Dist. of Col.	moderate	low	moderate	moderate
Florida	very low	very low	very low	very low
Georgia	very high	very high	very high	very high
Hawaii	high	moderate	high	moderate
Idaho	very low	n/a	n/a	n/a
Illinois	very low	very low	very low	very low
Indiana	very low	very low	very low	very low
Iowa	low	low	very low	very low
Kansas	very low	very low	very low	very low
Kentucky	very low	low	low	very low
Louisiana	low	high	moderate	moderate
Maine	moderate	moderate	moderate	moderate
Maryland	low	low	very low	very low
Massachusetts	very low	low	very low	very low
Michigan	very low	low	low	very low
Minnesota	low	low	very low	very low
Mississippi	high	very high	very high	high
Missouri	very low	very low	very low	very low
Montana	very low	low	low	very low
Nebraska	n/a	n/a	n/a	n/a
Nevada	very high	high	moderate	moderate
New Hampshire	very low	very low	very low	very low
New Jersey	low	very low	moderate	low
New Mexico	moderate	moderate	moderate	low
New York	low	low	low	low
North Carolina	very low	very low	very low	very low
North Dakota	very low	very low	very low	very low
Ohio	high	high	low	low
Oklahoma	very low	very low	very low	very low
Oregon	high	moderate	low	low
Pennsylvania	very low	low	low	very low
Rhode Island	moderate	low	low	low
South Carolina	very high	very high	high	high
South Dakota	moderate	moderate	moderate	moderate
Tennessee	high	very high	moderate	very high
Texas	very high	very high	very high	very high
Utah	moderate	moderate	moderate	low
Vermont	low	very low	low	low
Virginia	moderate	moderate	low	low
Washington	very low	very low	very low	very low
West Virginia	very low	very low	very low	very low
Wisconsin	very low	very low	very low	very low
Wyoming	moderate	moderate	moderate	moderate

Source: FFY 2007-2010 LIHEAP Household Reports and 2005-2010 American Community Surveys

Table 5-1b. Changes in Young Child Recipiency Targeting Performance Classifications for Heating Assistance, Using Federal LIHEAP Income Eligibility Standard, FY 2007- 2010 (See also Tables 5-4b, 5-6b, 5-8b, 5-10b and 5-12b)

State	2007	2008	2009	2010
Alabama	high	moderate	high	high
Alaska	moderate	moderate	moderate	moderate
Arizona	moderate	very high	very high	very high
Arkansas	low	low	low	low
California	moderate	moderate	moderate	moderate
Colorado	very high	high	very high	very high
Connecticut	very high	very high	very high	very high
Delaware	very high	moderate	moderate	high
Dist. of Col.	very high	very high	very high	very high
Florida	very high	very high	very high	very high
Georgia	very low	very low	very low	very low
Hawaii	moderate	moderate	moderate	high
Idaho	n/a	n/a	n/a	n/a
Illinois	high	high	high	high
Indiana	very high	very high	very high	very high
Iowa	very high	very high	very high	very high
Kansas	moderate	moderate	high	very high
Kentucky	low	moderate	low	low
Louisiana	moderate	moderate	moderate	moderate
Maine	moderate	moderate	moderate	moderate
Maryland	very high	high	very high	very high
Massachusetts	very high	very high	very high	very high
Michigan	high	moderate	high	high
Minnesota	high	very high	moderate	very high
Mississippi	moderate	moderate	moderate	moderate
Missouri	high	high	very high	very high
Montana	high	high	high	high
Nebraska	n/a	n/a	n/a	n/a
Nevada	low	moderate	moderate	moderate
New	very high	high	high	high
New Jersey	high	high	moderate	moderate
New Mexico	moderate	moderate	moderate	moderate
New York	very high	very high	very high	high
North Carolina	very high	very high	very high	very high
North Dakota	very high	very high	very high	very high
Ohio	very low	very low	high	high
Oklahoma	high	high	high	high
Oregon	moderate	high	very high	high
Pennsylvania	very high	high	high	very high
Rhode Island	high	high	n/a	high
South Carolina	very low	very low	very low	moderate
South Dakota	high	high	moderate	moderate
Tennessee	very low	very low	very high	very high
Texas	very low	very low	very low	very low
Utah	moderate	moderate	moderate	high
Vermont	very high	very high	very high	very high
Virginia	high	moderate	high	high
Washington	very high	very high	very high	very high
West Virginia	high	high	very high	very high
Wisconsin	very high	very high	very high	very high
Wyoming	moderate	moderate	n/a	moderate

Source: FFY 2007-2010 LIHEAP Household Reports and 2005-2010 American Community Surveys

In-depth Interviews with State LIHEAP Directors

In-depth interviews were conducted with eight State LIHEAP Directors in order to study factors related to State targeting performance, reasons for recent improvement or decline in targeting indexes, and to learn more about specific targeting strategies that States are using. These eight States were chosen for in-depth interviews for their variety of targeting indexes and geography. Appendix B includes the survey instrument that was used to collect this data.

Key findings from the in-depth interviews included the following:

1. Automatic cross-checks conducted with other social programs of eligible households seem to positively correlate with young child targeting performance. However, there is no clear relation between elderly targeting index classifications and automatic-cross checks conducted with other social programs. One State that recently began cross checking clients enrolled in Medicaid Part D and automatically enrolling these clients in LIHEAP increased its elderly targeting index.

2. Special enrollment periods for the elderly seem to positively correlate with elderly targeting performance, but there were no States which had special enrollment periods for young child households during this period of analysis.

3. Four of the eight interviewed State LIHEAP Directors noted that the economic recession caused changes in the numbers in targeted populations, due to changes in the demographic composition of the applicants. They indicated that the recession and the change in the income eligibility guidelines resulted in a different pool of applicants compared to prior years.

4. There is no clear correlation between outreach conducted through agencies that serve the targeted households and elderly or young child targeting indexes.

5. Targeted outreach materials did not clearly impact elderly targeting performance, but there seems to be a positive correlation between young child/working family outreach materials and young child targeting performance.

6. The States which offered higher benefit amounts to targeted groups did not necessarily have a high targeting index for the targeted group that received higher benefits.

7. While it is sometimes difficult to observe a direct correlation between certain procedures and recipiency targeting indexes, it is important to remember that the recipiency targeting indexes are affected by multiple factors at any given time. Although it may not seem that one particular procedure directly affects the targeting indexes, the appearance of correlation could be have been diminished by the affects of outlying factors/variables. For these reasons, regression analyses have been conducted and will be discussed later in this analysis.

Table 5-2 shows the targeting index classifications for elderly households and the specific targeting strategies States are using to target such households in the eight interviewed States.

Table 5-2. Recipiency Targeting Index Performance Classifications for Elderly Households in FY 2010, Using the Results of In-Depth Interviews with Eight State LIHEAP Directors

Targeting Index Classification	# States in this category	Automatically cross-checks with other social programs for eligible participants	Enrollment periods targeted to elderly households only	Mentioned economic recession as a cause for increased/ decreased elderly targeting index	Conduct outreach through agencies serving the elderly	Outreach materials target the elderly	Higher benefits for elderly
Very High >120	**2**	0	1	1	0	0	1
High 106-120	**1**	0	0	1	1	0	1
Moderate 95-105	**0**	---	---	---	---	---	---
Low 80-94	**2**	1*	0	0	2	1	1
Very Low <80	**3**	2*	1†	2	1	1	1

*The State with a low elderly targeting index classification showed a dramatic increase in its elderly recipiency targeting index after the implementation of this cross-check system. The States with the very low elderly targeting classifications noted other unrelated causes for their continually decreasing elderly recipiency targeting indexes. Also noteworthy are the same States' higher young child targeting classifications, which show a possible emphasis on young child vs. elderly targeting in these States.

† This State allows elderly to re-apply before all other groups, but this option is not available to new elderly applicants.

Table 5-3 shows the targeting index classifications for young child households and the specific targeting strategies States are using to target such households in the eight interviewed States.

Table 5-3. Recipiency Targeting Index Performance Classifications for Young Child Households in FY 2010, Using the Results of In-Depth Interviews with Eight State LIHEAP Directors

Targeting Index Classification	# States in this category	Automatically cross-checks with other social programs for eligible participants	Enrollment periods targeted to young child households only	Mentioned economic recession as a cause for increased/ decreased young child targeting index	Conduct outreach through agencies serving young children	Outreach materials target young child house-holds and/or working house-holds	Higher benefits for young child house-holds
Very High >120	**2**	1*	0	1	0	1	1
High 106-120	**2**	1*	0	1	1	2	0
Moderate 95-105	**2**	1*	0	1	2	1	1
Low 80-94	**0**	---	---	---	---	---	---
Very Low <80	**2**	0	0	1	1	0	1

*These States had a much higher young child recipiency targeting index classification than elderly targeting index classification, as mentioned previously. This shows a possible emphasis on young child household targeting over elderly household targeting.

Detailed Information on State Responses in the Described Categories:

1) *State automatically cross-checks with other social assistance programs for eligible participants*

Some programs screen the recipients of other social assistance programs to assess eligibility for LIHEAP. This may allow these States to either automatically enroll those found eligible through the automatic screening, or it may instead allow States to target the population found to be eligible through outreach. There were three State LIHEAP Directors who stated that they automatically cross-check with other social programs for eligible participants. The States that did do these automatic cross-checks tended to have much higher young child targeting indexes than elderly targeting indexes (all three had a young child targeting index that is moderate or better). This suggests that these particular States possibly placed more emphasis on reaching young child households with the program.

The two States that automatically cross-check with other social programs which are listed as having very low elderly targeting index classifications also had other listed reasons as causing a decreased elderly targeting indexes. The State with a low elderly targeting index classification and the automatic cross-check in place improved its elderly targeting index dramatically in the year that the automatic-cross check began. This particular State specified that they accept certain other social programs' (e.g. SNAP, various Department of Health and Human Services programs) participants automatically, as they honor their sister agencies' applications.

2) *State has enrollment periods open only for targeted households*

The literature from other social welfare programs suggests that enrollment periods designated solely for targeted populations may increase the targeting index for this population. Such designated

enrollment periods may allow targeted populations to apply and receive benefits before the general population.

There were no States with enrollment periods specifically targeted to young child households. Two States had an application period open to elderly households before the general population. One State which had an enrollment period specifically for elderly individuals had a very low elderly targeting index classification, and the other State with such a procedure in place had a very high elderly targeting index classification. This State with the very high elderly targeting index classification allowed both homebound and elderly individuals to apply for assistance one month before the rest of the population. In this way, elderly and homebound individuals were the first to be considered for and to receive assistance in this State.

The State which had enrollment periods specifically for elderly households and a very low elderly targeting index classification allowed only the elderly individuals who were *previous recipients* to re-enroll by mail in the summer, ahead of the general population. However, this was not available to new elderly participants.

3) *State mentioned the economic recession as a cause for changes in the targeting indexes*

The 2008 economic recession was cited by four of eight States as a reason for changes in their targeting indexes. Generally, a decrease in targeting index due to the economic recession pointed to a large volume of other populations applying for assistance through the LIHEAP program. In other words, the demographics of the applicants changed. For instance, one State with a very low elderly targeting index classification and a high (though declining) young child targeting index classification noted that they had an increased volume of "working poor" who needed assistance during this time, and often they were not classified as either young child or elderly households. This reduced both their young child and elderly targeting index classifications.

Another example of this demographic change in applicants occurred in a State with a very low elderly targeting index classification and a very high young child targeting index. This State cited "job loss during the recession" as the reason behind the fluctuations in both their elderly and young child targeting indexes.

The third State which cited the economic recession as a cause for fluctuation in targeting indexes had a very high elderly targeting index and a very low young child targeting index. This particular State noted that the economic downturn seemed to have caused decline in outside funding levels, which affected how they served both targeted populations.

The final State in this category had both a high elderly targeting index classification and a moderate young child targeting index classification. This State noted that in 2009, many families in the State moved in together (combined) due to foreclosure and high costs. This would affect the count of households served. While their young child targeting index increased each year of this analysis (FY2007-FY2010), their elderly targeting index declined each year.

4) *State conducts outreach through organizations that serve the targeted group*

Based on research on other Federal social programs, it was hypothesized that a State LIHEAP program could increase the effectiveness of outreach to elderly and young child households by conducting outreach through agencies serving those particular populations (e.g. Office on Aging,

senior centers, and AARP for elderly households and Head Start and Community Health Centers for young child households).[39]

One State with a high elderly targeting index classification and one State with a high young child targeting index classification utilized outreach through agencies serving the targeted populations. However, two of the two States with moderate young child targeting index classifications and two of the two States with low elderly targeting index classifications utilized this method of outreach as well.

5) *State has outreach materials targeting the specific populations (elderly or young child households/working families)*

By tailoring outreach materials to explicitly focus on targeted households, targeted clients may be more likely to pay attention to the information furnished by the materials.[40] The only two States which utilize outreach materials specifically targeted to elderly households had either low or very low elderly targeting index classifications. Like the automatic cross-checks, the study does not conclude that targeted outreach materials decrease targeting indexes or are associated with low targeting index classifications. These States may have created these targeted outreach materials part-way through the analyzed time period, or there may be outlying factors affecting their targeting indexes. The absence of such targeted outreach materials could have caused an even lower targeting index as well.

By comparison, one State with a very high young child targeting index classification, two of two States with high young child targeting index classifications, and one State with a moderate young child targeting index classification utilize outreach materials targeted specifically to young child or working families. There are no States with very low young child targeting index classifications which have outreach materials targeted to young child families. There seems to be a positive correlation between outreach materials targeted to young child/working families and young child targeting indexes, but again, it is difficult to attribute this solely to these outreach materials.

6) *State has higher benefits available to the targeted households.*

Many States have a point system in place for designating benefits to eligible households, meaning that households with more points would receive higher benefits. Four States have higher benefits available to young child households, and four States have higher benefits available to elderly households. Although research of other Federal programs pointed to this procedure as a possible way to increase applications from the targeted households due to increased motivation to apply, each State which had increased benefits to elderly participants had a different targeting index classification. The case was the same for young child targeting index classifications.

Summary of Findings on State LIHEAP Outreach and Intake Practices

The starting point for targeting in any program is to create a broad-based awareness of the program through general population outreach. Once that basic awareness has been established, the program can then apply specialized outreach that enhances the awareness and understanding of targeted groups, as well as the intake and benefit determination procedures that lower the barriers to participation experienced by targeted groups.

The interviews with State LIHEAP programs asked whether the State had explicit outreach plans in place which targeted young child or elderly households. Seven of eight States either had specific targeted outreach plans meant to target elderly and/or young child households or purposely partnered with specific agencies (e.g. Offices on Aging, Head Start, senior centers) which conducted targeted

[39] *Recipiency Targeting Analysis for Elderly and Young Child Households*, December 2008, prepared by APPRISE Incorporated under contract #HHSP23320070081P.

[40] *Recipiency Targeting Analysis for Elderly and Young Child Households*, December 2008, prepared by APPRISE Incorporated under contract #HHSP23320070081P.

outreach for them. The one State without such a plan in place noted that their LIHEAP program was already oversubscribed without conducting targeted outreach. This State had very low elderly targeting index classification and very high young child targeting index classification. Without a higher level of program awareness, it is difficult for LIHEAP programs to increase the level of applications by targeted groups, even if more directed outreach to targeted groups is conducted.

Also noteworthy is the fact that the majority of States conducted outreach solely through local agencies (e.g. Community Action Agencies and other local partners). Three States noted that they granted local agencies sole autonomy in designing outreach plans, and that the States did not necessarily need to approve of the plans before outreach took place. These three States ranged from having very high to low elderly targeting index classifications and high to very low young child targeting index classifications.

The study found that some States have implemented procedures that are designed to reduce program application barriers for elderly and young child households. However, in the research, there were no *consistent* relationships between States that implemented procedures and States with high recipiency targeting indexes. This does not necessarily mean that the recommended barrier reduction measures (e.g., conducting outreach at agencies that serve elderly households or young child households) are not effective. Rather, it is possible that such measures have an incremental impact on targeting, and that other factors are responsible for the dominant targeting outcome.

The conclusion from the in-depth interviews is that there are many factors which can affect the recipiency targeting indexes at any given time. Although some States which have implemented procedures designed to reduce program barriers for elderly and young child households have low or very low targeting index classifications for either targeted population, the study concluded that multiple outlying factors may still be negatively affecting the targeting indexes in these States. Also, it is possible that the procedures which these States have taken to reduce the program barriers kept the targeting indexes from falling to even lower levels. In order to more closely examine the relationships between various outlying variables and targeting indexes, the study has performed multiple regression analyses, as described in the following section of this report.

Factors Related to Targeting Index Performance

There are many State LIHEAP program factors that can simultaneously affect the targeting outcomes. The researchers do not have complete data on these State factors. The analysis in this section is a data-mining exercise that involves a multivariate analysis of factors associated with targeting indexes using the data available to researchers for FY 2007 though FY 2010. The study explores how the following factors affect the State targeting indexes:

- Federal LIHEAP funds obligated for heating assistance.
- Availability of non-LIHEAP energy assistance funds to States.[41]
- State's treatment of heating and crisis assistance funds.

A multivariate analysis allows one to see how all these factors simultaneously affect the State Targeting Indexes. The study used multiple regression analysis[42] to examine the effects of multiple factors on State Targeting Indexes. The regression coefficient of each explanatory variable provides an estimate of its influence on targeting index, controlling for the effects of all the other explanatory variables included in the model.

[41] Information on the availability and amount of non-Federal Funds for States was obtained from the LIHEAP Clearinghouse's State Supplement Tables.

[42] Multiple regression analysis is a statistical tool for evaluating the relationship of multiple explanatory variables to a single continuous dependent variable.

A series of regression analyses have been conducted in order to understand the relationship between funding variables, varying amounts of assistance given by the State, and the recipiency targeting indexes. In the models, State fixed effects are controlled for in order to document the effect of a specific factor on the targeting index. These State fixed effects serve as proxies for observable and unobservable program factors that are not included in the regression models as explanatory variables.[43]

The main findings from the regression analyses included the following:

- State fixed effects can explain about 85 percent of variation in elderly targeting indexes and around 80 percent of variation in young child targeting indexes. This means that the variation across States in targeting indexes is significantly greater than the variation within States over time in the last four years. The variation within States over time in the last four years may not be large enough to help detect factors that have a statistically significant impact on targeting indexes. That being said, there were a few factors identified as statistically significant.

- Increased Federal LIHEAP funding is associated with a decrease in the elderly targeting indexes and an increase in the young child targeting indexes after controlling for State fixed effects. This means that an increase in Federal funding in a particular year is likely to be associated with an increase in the share of non-elderly households in the LIHEAP recipient population.

- In contrast, increased non-Federal LIHEAP funding such as State, local, and ratepayer assistance program funding, is associated with an increase in the elderly targeting indexes and a decrease in the young child targeting indexes after controlling for State fixed effects. This means that income eligible non-elderly, especially the young child households, could be served at a higher rate with these non-Federal energy assistance funds than elderly households, which allows States to use a relatively larger share of Federal funds towards serving elderly households and relatively smaller share of these funds towards serving young child households.

- The percent of the total Federal LIHEAP funds spent on heating assistance explains only a very small portion of the variation in targeting indexes once State fixed effects are controlled for, mainly because there is little to no variation in percent spent on heating within States over time.

- The elderly and young child targeting indexes have a very strong inverse relationship with one another. That means that, generally, if a State had a high elderly targeting index, the young child targeting index would be lower, and vice versa. This also means that States generally targeted one group over the other because their program design allows them to serve one group more efficiently than they can serve the other.

- Finally, the elderly targeting indexes generally declined over time, while the young child targeting indexes increased over time. FY 2010 generally showed the most pronounced increases/decreases in the described targeting indexes.

[43] There are two types of variation in State targeting indexes: across State variation in a given fiscal year and within State variation over time. Since the researchers had incomplete data on the program factors that can affect the targeting outcomes, they decided to control for State fixed effects. State fixed effects are controlled for by adding State indicator variables to the regression model. State fixed effects can be interpreted as unmeasured characteristics of a given State that leads the State to have a particular targeting index that does not vary over time. The State fixed effects model exploits within-State variation over time. Across-State variation is not used to estimate regression coefficients because this variation might reflect omitted variable bias, i.e., the bias that is created when the explanatory variables included in the model are correlated with the important explanatory factors that are omitted from the regression.

Caveats

It is important to note that the data quality issues can affect the calculation of the targeting indexes. Firstly, this study is limited to LIHEAP heating assistance. Secondly, some States had difficulty in counting the number of elderly or young child recipient households in some years. These States either had young child or elderly definitions which were different from the federal data definitions, or they did not have the mechanisms in place to accurately separate recipients into federally defined data categories.

Also, many States mentioned the strong increase in "working poor" or newly unemployed families due to the 2008 fiscal crisis. Many States experienced a much larger pool of applicants and a very high amount of households who urgently needed assistance. Many of these "working poor" households did not include young child or elderly household members. This negatively impacted some targeting indexes, which could have skewed some of the observed results.

Finally, the researchers had incomplete data on the program factors that can affect the targeting outcomes and only exploited the variation within States over time with a limited set of explanatory variables. If more data on program characteristics and design can be made available, then regression models that exploit across State variation in a given year can be run to study the impact of these additional factors on the targeting indexes. Such a study can help identify the program elements that positively impact the targeting performance. The State LIHEAP programs can then use some of these elements to enhance their targeting of these two vulnerable households groups.

Study Implications

This targeting study met the four main objectives.

1. **Performance of States** – The study developed a consistent method to classify the States in terms of their recipiency targeting performance for heating assistance for elderly and young child households for FY 2007 through FY 2010. Detailed State-level tables were developed to allow LIHEAP Program managers to compare their State's targeting performance with other States in a given year or across multiple years.

2. **Changes in Targeting Performance** – The study assessed the changes in State recipiency targeting indexes from FY 2007- FY 2010. In general, the elderly targeting indexes declined over the years, while the young child targeting indexes increased over time. FY 2010 generally showed the most pronounced increases/decreases in the described targeting indexes.

3. **In-depth Interviews with State LIHEAP Directors** – The in-depth interviews provided details and insight into State targeting procedures. From these interviews, it was concluded that at any given time, multiple factors could impact the recipiency targeting indexes of both elderly and young child households. However, it is important to note that overall, the positive effects of utilizing barrier reduction measures through outreach or various application procedures were visible. Prior to the interview, the State LIHEAP directors were sent information on their targeting indexes in FY 2007-2010 and how these were computed using the data from the State's annual LIHEAP Household Report on the recipient households and the LIHEAP Home Energy Notebook on the income-eligible households. It is important to note many State LIHEAP directors were unaware of how targeting indexes were computed and did not necessarily know how successful they were in targeting of elderly or young child households.

4. **Factors Related to Targeting Performance** – It was necessary to perform a multivariate analysis to study how multiple factors simultaneously affect the recipiency targeting indexes. The analyses identified very strong State fixed effects that dominate the targeting performance with respect to elderly or young child households. The analyses also confirmed the strong inverse relationship between elderly and young child targeting indexes. Finally, the analyses provided insights into how the availability of non-Federal funds for energy assistance may affect the targeting statistics for elderly and young child households using Federal Funds. If more data on program characteristics and design can be made available for all States, then regression models that use across-State variation in a given year can be run to study the impact of these additional factors on the targeting indexes. Such a study can help identify the program elements that positively impact the targeting performance. The State LIHEAP programs can then use some of these elements to enhance their targeting of these two vulnerable households groups.

LIHEAP Targeting Study Tables

This Section of the Notebook contains detailed tables on the recipiency targeting indexes, the classification of States in terms of elderly and young child household targeting, and changes in targeting performance over time.

The odd-numbered tables show the results when the Federal maximum LIHEAP Eligibility Standard is used in the computation of the recipiency targeting indexes.

The even-numbered tables show the results when the State maximum LIHEAP Eligibility Standard is used in the computation of the recipiency targeting indexes.

In Tables 5-4 through 5-13, the interval estimates of the targeting indexes are shown in parentheses for each State using a 95 percent confidence interval. The confidence intervals are expressed as Point Estimate ± Margin of Error.

Table 5-4a. LIHEAP Elderly Recipiency Targeting Performance Classifications for Heating Assistance, Using Federal Maximum LIHEAP Income Eligibility Standard, FY 2007

Classification	Elderly Targeting
Very High	Georgia (223.8±4.9)
Very High	Texas (159.1±2.3)
Very High	South Carolina (140.0±4.0)
Very High	Nevada (139.6±7.4)
High	Mississippi (122.0±4.5)
High	Tennessee (119.0±3.1)
High	Ohio (117.9±2.2)
High	Hawaii (117.0±8.1)
High	Oregon (112.8±4.3)
Moderate	Dist. of Col. (110.9±9.0)
Moderate	California (105.4±1.1)
Moderate	Alaska (104.9±12.1)
Moderate	New Mexico (104.7±5.5)
Moderate	Maine (102.1±5.8)
Moderate	Utah (102.0±5.4)
Moderate	South Dakota (99.9±7.3)
Moderate	Virginia (97.3±2.1)
Moderate	Rhode Island (93.5±5.1)
Moderate	Colorado (93.0±2.8)
Moderate	Wyoming (92.2±8.8)
Low	Louisiana (90.5±3.2)
Low	New York (85.6±1.4)
Low	Minnesota (83.8±2.6)
Low	Arkansas (82.0±2.9)
Low	Alabama (80.1±2.1)
Low	Maryland (79.0±2.0)
Low	Iowa (78.7±3.2)
Low	New Jersey (78.7±1.5)
Low	Vermont (78.0±7.1)
Very Low	Massachusetts (78.2±1.7)
Very Low	Michigan (77.6±1.7)
Very Low	Pennsylvania (76.4±1.4)
Very Low	Kentucky (76.3±2.4)
Very Low	Wisconsin (73.7±2.0)
Very Low	Indiana (73.6±2.1)
Very Low	Montana (73.3±5.5)
Very Low	North Carolina (69.2±1.4)
Very Low	Oklahoma (69.1±2.4)
Very Low	Connecticut (68.8±2.0)
Very Low	Delaware (65.9±5.0)
Very Low	North Dakota (64.8±5.2)
Very Low	New Hampshire (63.1±4.2)
Very Low	Illinois (62.5±1.2)
Very Low	Florida (61.5±0.9)
Very Low	Washington (57.2±1.5)
Very Low	Kansas (56.9±2.2)
Very Low	Missouri (50.7±1.4)
Very Low	Arizona (37.0±1.2)
Very Low	West Virginia (29.5±1.2)
Very Low	Idaho (15.1±0.9)
N/A	Nebraska

Source: FFY 2007 Household Report and 2005-2007 American Community Survey

Table 5-4b. LIHEAP Young Child Recipiency Targeting Performance Classifications for Heating Assistance, Using Federal Maximum LIHEAP Income Eligibility Standard, FY 2007

Classification	Young Child Targeting
Very High	Florida (173.3±4.8)
Very High	North Dakota (161.7±23.9)
Very High	Colorado (155.6±6.4)
Very High	Dist. of Col. (155.1±19.1)
Very High	Wisconsin (150.7±8.3)
Very High	Delaware (148.2±19.8)
Very High	Massachusetts (145.9±6.9)
Very High	North Carolina (145.9±5.0)
Very High	Connecticut (145.0±8.3)
Very High	New Hampshire (142.8±15.4)
Very High	Vermont (142.2±21.8)
Very High	Iowa (138.8±9.6)
Very High	New York (132.3±3.6)
Very High	Indiana (129.9±5.0)
Very High	Maryland (126.8±5.8)
Very High	Washington (126.7±5.0)
Very High	Pennsylvania (123.9±3.8)
High	Montana (129.2±15.8)
High	West Virginia (127.9±9.9)
High	South Dakota (125.2±13.9)
High	Alabama (122.8±5.8)
High	Oklahoma (121.0±7.0)
High	Minnesota (120.6±6.5)
High	Rhode Island (119.8±11.9)
High	Michigan (116.0±3.8)
High	Missouri (115.7±4.8)
High	Illinois (115.2±3.4)
High	New Jersey (112.0±4.0)
High	Virginia (111.5±4.9)
Moderate	Wyoming (113.2±18.3)
Moderate	Mississippi (109.2±6.3)
Moderate	Kansas (108.8±7.2)
Moderate	Louisiana (108.1±5.0)
Moderate	Arizona (106.8±4.4)
Moderate	Oregon (106.2±6.7)
Moderate	Alaska (103.6±12.6)
Moderate	New Mexico (102.2±7.0)
Moderate	Hawaii (95.0±9.6)
Moderate	California (94.6±1.4)
Moderate	Maine (92.8±9.4)
Moderate	Utah (91.0±5.2)
Low	Arkansas (89.7±5.2)
Low	Kentucky (88.2±3.9)
Low	Nevada (77.6±5.0)
Very Low	Tennessee (63.6±2.6)
Very Low	South Carolina (57.2±2.7)
Very Low	Texas (48.3±0.9)
Very Low	Ohio (45.5±1.3)
Very Low	Georgia (27.9±0.9)
N/A	Nebraska
N/A	Idaho

Source: FFY 2007 Household Report and 2005-2007 American Community Survey

Table 5-5a. LIHEAP Elderly Recipiency Targeting Performance Classifications for Heating Assistance, Using State Maximum LIHEAP Income Eligibility Standard, FY 2007

Classification	Elderly Targeting
Very High	Georgia (225.7±5.8)
Very High	Texas (167.4±3.5)
Very High	Nevada (145.8±8.9)
Very High	South Carolina (142.4±4.7)
Very High	Tennessee (126.1±4.3)
Very High	Ohio (123.1±2.6)
High	Mississippi (122.9±4.6)
High	Hawaii (116.0±8.8)
High	Oregon (112.8±4.3)
Moderate	Utah (113.5±10)
Moderate	Dist. of Col. (110.9±9.0)
Moderate	New Mexico (106.0±5.7)
Moderate	California (105.4±1.1)
Moderate	Michigan (101.7±4.1)
Moderate	Alaska (101.3±13.6)
Moderate	South Dakota (100.6±8.3)
Moderate	Virginia (96.9±3.6)
Moderate	Maine (95.2±5.8)
Moderate	Colorado (94.2±3.3)
Moderate	Rhode Island (93.5±5.1)
Moderate	Wyoming (92.2±8.8)
Moderate	Vermont (84.1±11.9)
Low	Louisiana (90.5±3.2)
Low	Arkansas (85.6±3.5)
Low	New York (85.6±1.4)
Low	Minnesota (82.5±2.9)
Low	Iowa (81.9±4.1)
Low	Pennsylvania (81.6±1.9)
Low	Alabama (81.5±2.4)
Low	Kentucky (81.4±3.1)
Low	Indiana (78.9±2.7)
Low	New Jersey (78.3±2.1)
Low	Oklahoma (78.2±4.1)
Low	Wisconsin (77.3±2.9)
Low	Montana (76.5±6.2)
Very Low	Massachusetts (77.6±2.0)
Very Low	North Carolina (76.9±2.5)
Very Low	Maryland (76.4±2.5)
Very Low	Connecticut (68.8±2.0)
Very Low	Delaware (68.3±5.7)
Very Low	Illinois (67.5±1.7)
Very Low	Washington (65.5±3.3)
Very Low	North Dakota (64.8±5.2)
Very Low	New Hampshire (63.1±4.2)
Very Low	Florida (62.9±1.0)
Very Low	Kansas (60.0±3.3)
Very Low	Missouri (56.2±2.2)
Very Low	Arizona (36.9±1.2)
Very Low	West Virginia (32.1±1.6)
Very Low	Idaho (15.3±1.0)
N/A	Nebraska

Source: FFY 2007 Household Report and 2005-2007 American Community Survey

Table 5-5b. LIHEAP Young Child Recipiency Targeting Performance Classifications for Heating Assistance, Using State Maximum LIHEAP Income Eligibility Standard, FY 2007

Classification	Young Child Targeting
Very High	Florida (165.0±4.8)
Very High	North Dakota (161.7±23.9)
Very High	Dist. of Col. (155.1±19.1)
Very High	Massachusetts (149.1±7.9)
Very High	Wisconsin (147.2±10.1)
Very High	Colorado (147.1±7.0)
Very High	Connecticut (145.0±8.3)
Very High	New Hampshire (142.8±15.4)
Very High	Delaware (140.3±20)
Very High	North Carolina (135.4±6.1)
Very High	New York (132.3±3.6)
High	Vermont (142.0±34.1)
High	Iowa (130.3±11)
High	Maryland (126.9±8.0)
High	Indiana (122.9±5.3)
High	Montana (122.4±16.4)
High	Washington (121.7±7.1)
High	Minnesota (121.6±8.4)
High	South Dakota (121.2±15.5)
High	Rhode Island (119.8±11.9)
High	Alabama (118.2±5.6)
High	West Virginia (117.0±9.6)
High	Pennsylvania (116.0±4.1)
High	Virginia (113.2±7.0)
Moderate	Wyoming (113.2±18.3)
Moderate	Oklahoma (112.7±7.7)
Moderate	Louisiana (108.5±5.1)
Moderate	Mississippi (108.1±6.0)
Moderate	Arizona (108.0±4.5)
Moderate	Alaska (107.7±16.8)
Moderate	Illinois (106.7±3.9)
Moderate	Oregon (106.4±6.7)
Moderate	Missouri (106.2±5.8)
Moderate	New Jersey (106.1±5.0)
Moderate	Kansas (104.1±8.0)
Moderate	New Mexico (100.0±6.9)
Moderate	Michigan (98.1±4.8)
Moderate	Hawaii (96.5±11.2)
Moderate	California (94.8±1.5)
Moderate	Utah (94.1±7.4)
Moderate	Maine (90.2±11.1)
Low	Arkansas (86.0±6.2)
Low	Kentucky (84.6±4.7)
Very Low	Nevada (74.5±5.2)
Very Low	Tennessee (60.2±3.0)
Very Low	South Carolina (55.9±3.1)
Very Low	Texas (45.6±1.1)
Very Low	Ohio (42.9±1.2)
Very Low	Georgia (27.2±1.0)
N/A	Nebraska
N/A	Idaho

Source: FFY 2007 Household Report and 2005-2007 American Community Survey

Table 5-6a. LIHEAP Elderly Recipiency Targeting Performance Classifications for Heating Assistance, Using Federal Maximum LIHEAP Income Eligibility Standard, FY 2008

Classification	Elderly Targeting
Very High	Georgia (186.4±3.8)
Very High	Texas (165.6±2.6)
Very High	Tennessee (145.8±3.7)
Very High	South Carolina (140.1±4.2)
Very High	Mississippi (132.3±4.7)
High	Alaska (121.1±15)
High	Ohio (120.4±2.2)
High	Nevada (119.3±5.3)
High	Louisiana (109.8±3.7)
High	California (106.9±1.4)
Moderate	Hawaii (111.5±7.0)
Moderate	New Mexico (103.7±4.7)
Moderate	Wyoming (100.3±10.9)
Moderate	Maine (99.8±7.1)
Moderate	Oregon (99.0±3.6)
Moderate	Utah (97.9±6.2)
Moderate	South Dakota (97.6±7.9)
Moderate	Virginia (97.5±2.3)
Moderate	Colorado (95.0±3.2)
Moderate	Alabama (94.1±2.8)
Low	Rhode Island (90.1±4.8)
Low	Arkansas (88.9±3.2)
Low	New York (86.4±1.3)
Low	Minnesota (83.5±3.0)
Low	Maryland (80.0±2.2)
Low	Michigan (79.7±1.7)
Low	Pennsylvania (79.4±1.5)
Low	Kentucky (79.2±2.5)
Low	Massachusetts (78.7±1.9)
Low	Dist. of Col. (78.2±6.5)
Low	Iowa (77.7±3.5)
Low	Montana (75.3±6.3)
Very Low	New Jersey (77.9±1.5)
Very Low	Florida (72.5±1.1)
Very Low	Oklahoma (72.2±2.8)
Very Low	Wisconsin (71.7±2.0)
Very Low	Delaware (71.3±5.4)
Very Low	Connecticut (71.1±2.2)
Very Low	Indiana (70.0±1.8)
Very Low	North Carolina (68.2±1.7)
Very Low	North Dakota (65.0±5.6)
Very Low	New Hampshire (63.5±3.7)
Very Low	Vermont (62.0±6.1)
Very Low	Washington (61.8±1.7)
Very Low	Kansas (61.7±2.6)
Very Low	Illinois (60.8±1.2)
Very Low	Missouri (49.3±1.4)
Very Low	Arizona (45.4±1.2)
Very Low	West Virginia (29.3±1.4)
N/A	Nebraska
N/A	Idaho

Source: FFY 2008 Household Report and 2006-2008 American Community Survey

Table 5-6b. LIHEAP Young Child Recipiency Targeting Performance Classifications for Heating Assistance, Using Federal Maximum LIHEAP Income Eligibility Standard, FY 2008

Classification	Young Child Targeting
Very High	Dist. of Col. (224.9±35.8)
Very High	Arizona (160.2±6.7)
Very High	Florida (159.2±4.4)
Very High	North Dakota (152.6±25.4)
Very High	Vermont (152.2±26.9)
Very High	Wisconsin (151.8±7.8)
Very High	North Carolina (144.9±4.7)
Very High	Iowa (141.3±9.6)
Very High	Massachusetts (138.5±6.4)
Very High	Connecticut (138.1±8.4)
Very High	New York (133.6±3.5)
Very High	Washington (129.7±5.2)
Very High	Indiana (129.6±5.1)
Very High	Minnesota (127.1±6.3)
High	New Hampshire (132.3±15.6)
High	Rhode Island (127.7±13.7)
High	Maryland (125.2±5.4)
High	South Dakota (123.5±15.2)
High	Montana (123.2±16.4)
High	Pennsylvania (121.0±4.5)
High	West Virginia (120.8±8.9)
High	Colorado (119.8±4.9)
High	New Jersey (114.9±4.0)
High	Missouri (114.5±4.8)
High	Illinois (114.5±3.4)
High	Oregon (113.7±7.3)
High	Oklahoma (112.6±7.2)
Moderate	Kansas (110.8±7.3)
Moderate	Michigan (107.6±3.5)
Moderate	Hawaii (106.2±11.7)
Moderate	Alabama (106.1±5.3)
Moderate	Delaware (105.9±13)
Moderate	Virginia (105.7±4.5)
Moderate	New Mexico (103.1±7.6)
Moderate	Wyoming (99.7±13.6)
Moderate	Alaska (99.0±14.4)
Moderate	Kentucky (98.6±5.1)
Moderate	Utah (97.0±5.9)
Moderate	California (96.8±1.5)
Moderate	Nevada (93.0±6.3)
Moderate	Mississippi (92.6±5.3)
Moderate	Louisiana (90.8±4.5)
Moderate	Maine (88.0±9.8)
Low	Arkansas (77.8±5.2)
Very Low	South Carolina (61.9±2.6)
Very Low	Tennessee (61.2±2.8)
Very Low	Texas (58.6±1.2)
Very Low	Georgia (43.5±1.2)
Very Low	Ohio (37.3±1.1)
N/A	Nebraska
N/A	Idaho

Source: FFY 2008 Household Report and 2006-2008 American Community Survey

Table 5-7a. LIHEAP Elderly Recipiency Targeting Performance Classifications for Heating Assistance, Using State Maximum LIHEAP Income Eligibility Standard, FY 2008

Classification	Elderly Targeting
Very High	Georgia (189.5±4.5)
Very High	Texas (175.7±3.2)
Very High	Tennessee (156.5±5)
Very High	South Carolina (143.4±5)
Very High	Mississippi (132.3±4.7)
Very High	Nevada (128.7±6.6)
Very High	Ohio (126.3±2.5)
High	Hawaii (117.9±11.7)
High	Louisiana (110.3±3.7)
High	California (107.5±1.5)
Moderate	Alaska (123.8±23.6)
Moderate	Utah (108.5±9.2)
Moderate	Michigan (103.7±3.7)
Moderate	New Mexico (103.7±4.7)
Moderate	Maine (101.9±7.6)
Moderate	Wyoming (100.5±11.1)
Moderate	Oregon (100.1±3.6)
Moderate	Virginia (98.9±3.5)
Moderate	South Dakota (97.4±9.1)
Moderate	Colorado (96±3.6)
Moderate	Alabama (95.8±3.1)
Moderate	Arkansas (93.5±4.2)
Moderate	Rhode Island (90.8±4.8)
Low	New York (87±1.3)
Low	Pennsylvania (85.8±2)
Low	Kentucky (84.1±3.3)
Low	Minnesota (83.9±3.3)
Low	Oklahoma (82.4±4.3)
Low	Iowa (81.7±4.4)
Low	Montana (79.5±6.9)
Low	Massachusetts (78.8±2)
Low	Maryland (78.7±3)
Low	New Jersey (78.4±2.5)
Low	Dist. of Col. (78±6.6)
Low	North Carolina (77.6±2.9)
Very Low	Wisconsin (76.5±2.9)
Very Low	Indiana (75.7±2.7)
Very Low	Florida (74.9±1.3)
Very Low	Delaware (74±5.7)
Very Low	Washington (71.9±3.3)
Very Low	Connecticut (71.3±2.3)
Very Low	Vermont (68.4±10.4)
Very Low	Kansas (67.4±4.2)
Very Low	Illinois (65.8±1.6)
Very Low	North Dakota (65.2±5.7)
Very Low	New Hampshire (63.7±3.8)
Very Low	Missouri (54.6±2.3)
Very Low	Arizona (47.3±1.5)
Very Low	West Virginia (32.9±2)
N/A	Idaho
N/A	Nebraska

Source: FFY 2008 Household Report and 2006-2008 American Community Survey

Table 5-7b. LIHEAP Young Child Recipiency Targeting Performance Classifications for Heating Assistance, Using State Maximum LIHEAP Income Eligibility Standard, FY 2008

Classification	Young Child Targeting
Very High	Dist. of Col. (225.4±35.5)
Very High	Arizona (152.5±7.3)
Very High	North Dakota (149.3±24.8)
Very High	Florida (148.7±4.7)
Very High	Wisconsin (143.2±9.6)
Very High	Connecticut (136.2±8.3)
Very High	Massachusetts (132.9±6.6)
Very High	Iowa (132.3±10.2)
Very High	New York (132.3±3.5)
Very High	North Carolina (131.7±5.7)
High	Vermont (152.1±37.2)
High	New Hampshire (130.5±15.4)
High	Rhode Island (126±13.5)
High	Maryland (125.2±7.4)
High	Washington (124.2±6.4)
High	Indiana (123±5.4)
High	Minnesota (122.8±6.9)
High	Colorado (113.2±5.1)
High	Pennsylvania (110.8±4.7)
Moderate	South Dakota (117.6±15.8)
Moderate	Montana (114.1±16.4)
Moderate	Oregon (112±7.1)
Moderate	West Virginia (110.2±8.9)
Moderate	New Jersey (108.2±5.2)
Moderate	Illinois (106.3±3.7)
Moderate	Oklahoma (105.5±8)
Moderate	Delaware (105±13.7)
Moderate	Missouri (104.7±5.4)
Moderate	Hawaii (104.3±15.4)
Moderate	New Mexico (103.1±7.6)
Moderate	Virginia (103.1±6.2)
Moderate	Alabama (102.2±5.1)
Moderate	Kansas (101.2±9.3)
Moderate	Alaska (98.5±17.5)
Moderate	Wyoming (98.1±13.4)
Moderate	Utah (96.7±8.9)
Moderate	California (95.7±1.5)
Moderate	Mississippi (92.6±5.3)
Moderate	Michigan (92.4±4.7)
Moderate	Kentucky (92.4±5.3)
Low	Louisiana (90.1±4.5)
Low	Nevada (87.3±6.7)
Low	Maine (83.8±10.3)
Very Low	Arkansas (72.3±5.7)
Very Low	South Carolina (59.2±2.8)
Very Low	Tennessee (57.3±2.8)
Very Low	Texas (55.1±1.3)
Very Low	Georgia (42.2±1.4)
Very Low	Ohio (35.3±1)
N/A	Idaho
N/A	Nebraska

Source: FFY 2008 Household Report and 2006-2008 American Community Survey

Table 5-8a. LIHEAP Elderly Recipiency Targeting Performance Classifications for Heating Assistance, Using Federal Maximum LIHEAP Income Eligibility Standard, FY 2009

Classification	Elderly Targeting
Very High	Texas (145.9±2.2)
Very High	Georgia (136.7±2.8)
Very High	Mississippi (127.6±4.2)
High	South Carolina (122.7±3.5)
High	Hawaii (112.8±7.1)
Moderate	Dist. of Col. (107.6±9.0)
Moderate	Nevada (105.2±4.9)
Moderate	Alaska (104.5±11.8)
Moderate	Wyoming (104.2±10.4)
Moderate	Tennessee (102.9±2.3)
Moderate	South Dakota (101.5±8.1)
Moderate	Louisiana (101.2±2.8)
Moderate	New Jersey (101.1±1.8)
Moderate	California (99.8±1.0)
Moderate	Maine (97.9±5.3)
Moderate	New Mexico (96.6±4.8)
Moderate	Utah (90.4±5.1)
Low	Virginia (93.0±1.9)
Low	Alabama (86.6±2.0)
Low	Colorado (84.5±2.3)
Low	New York (82.2±1.0)
Low	Michigan (80.3±1.6)
Low	Pennsylvania (80.1±1.3)
Low	Ohio (80.0±1.4)
Low	Rhode Island (79.7±3.9)
Low	Kentucky (78.2±2.0)
Low	Oregon (77.9±2.5)
Low	Montana (77.3±5.0)
Low	Vermont (76.9±6.0)
Very Low	Massachusetts (77.0±1.6)
Very Low	West Virginia (76.7±3.3)
Very Low	Florida (75.4±0.9)
Very Low	Maryland (73.5±1.8)
Very Low	Arkansas (72.8±2.8)
Very Low	Iowa (72.6±2.4)
Very Low	Connecticut (70.4±2.1)
Very Low	Wisconsin (69.2±1.7)
Very Low	North Dakota (67.5±4.9)
Very Low	Oklahoma (66.9±2.2)
Very Low	Indiana (66.6±1.5)
Very Low	North Carolina (65.2±1.3)
Very Low	Minnesota (62.5±1.7)
Very Low	Delaware (62.4±3.7)
Very Low	New Hampshire (61.6±3.1)
Very Low	Missouri (59.4±1.3)
Very Low	Kansas (58.9±2.4)
Very Low	Illinois (58.1±1.0)
Very Low	Washington (54.8±1.4)
Very Low	Arizona (52.6±1.6)
N/A	Nebraska
N/A	Idaho

Source: FFY 2009 Household Report and 2007-2009 American Community Survey

Table 5-8b. LIHEAP Young Child Recipiency Targeting Performance Classifications for Heating Assistance, Using Federal Maximum LIHEAP Income Eligibility Standard, FY 2009

Classification	Young Child Targeting
Very High	Arizona (176.2±6.4)
Very High	Dist. of Col. (162.7±24.2)
Very High	Vermont (158.0±24.6)
Very High	Wisconsin (153.4±5.7)
Very High	North Dakota (148.4±19.4)
Very High	Iowa (145.9±10.1)
Very High	North Carolina (145.2±4.5)
Very High	Florida (144.7±3.4)
Very High	Oregon (142.4±7.2)
Very High	Massachusetts (140.6±5.8)
Very High	Connecticut (137.0±7.6)
Very High	New York (137.0±2.7)
Very High	Missouri (135.8±5.5)
Very High	Tennessee (131.9±5.4)
Very High	Indiana (131.6±4.9)
Very High	West Virginia (130.5±8.8)
Very High	Maryland (128.7±5.4)
Very High	Washington (127.7±5.2)
Very High	Colorado (127.3±5.3)
High	New Hampshire (129.7±14.6)
High	Kansas (126.9±8.5)
High	Montana (125.7±14)
High	Alabama (120.4±5.5)
High	Illinois (119.7±3.5)
High	Pennsylvania (117.9±3.5)
High	Oklahoma (113.9±6.2)
High	Ohio (113.8±3.3)
High	Virginia (110.8±4.3)
High	Michigan (109.5±2.8)
Moderate	South Dakota (112.2±13.9)
Moderate	Minnesota (108.2±6.1)
Moderate	Hawaii (107.9±10)
Moderate	Utah (106.5±6.2)
Moderate	Delaware (104.1±11.3)
Moderate	Nevada (102.9±6.9)
Moderate	California (102.2±1.3)
Moderate	New Mexico (102.0±7.3)
Moderate	Mississippi (101.2±5.9)
Moderate	Louisiana (99.3±4.6)
Moderate	Alaska (98.1±13.7)
Moderate	New Jersey (94.4±3.2)
Moderate	Maine (90.6±10)
Low	Kentucky (89.2±3.4)
Low	Arkansas (84.7±4.2)
Very Low	South Carolina (74.1±3.9)
Very Low	Georgia (71.0±2.2)
Very Low	Texas (62.6±1.1)
N/A	Idaho
N/A	Nebraska
N/A	Rhode Island
N/A	Wyoming

Source: FFY 2009 Household Report and 2007-2009 American Community Survey

Table 5-9a. LIHEAP Elderly Recipiency Targeting Performance Classifications for Heating Assistance, Using State Maximum LIHEAP Income Eligibility Standard, FY 2009

Classification	Elderly Targeting
Very High	Texas (154.2±3.1)
Very High	Georgia (139.8±3.1)
Very High	Mississippi (133.4±5.4)
Very High	South Carolina (125.3±4.1)
High	Hawaii (115.4±10)
High	Nevada (112.6±6.3)
High	Tennessee (110.5±3.3)
Moderate	Dist. of Col. (107.6±9.0)
Moderate	Wyoming (107.6±8.0)
Moderate	Alaska (105.3±13)
Moderate	Michigan (102.6±3.4)
Moderate	South Dakota (101.5±8.6)
Moderate	New Jersey (101.3±2.1)
Moderate	Louisiana (101.2±2.8)
Moderate	California (100.1±0.9)
Moderate	Maine (98.5±4.2)
Moderate	New Mexico (96.6±4.8)
Moderate	Virginia (96.0±3.1)
Moderate	Utah (93.8±6.5)
Moderate	Vermont (88.1±10.8)
Low	Alabama (87.6±2.0)
Low	Colorado (85.9±2.8)
Low	Kentucky (83.8±2.9)
Low	Ohio (83.0±1.6)
Low	New York (82.2±1.0)
Low	West Virginia (81.9±3.9)
Low	Pennsylvania (80.1±1.3)
Low	Rhode Island (79.7±3.9)
Low	Oregon (77.9±2.5)
Low	Iowa (77.0±3.0)
Very Low	Florida (77.3±1.1)
Very Low	Massachusetts (77.0±1.6)
Very Low	Montana (75.1±4.0)
Very Low	Wisconsin (74.5±2.7)
Very Low	North Carolina (73.2±2.3)
Very Low	Arkansas (72.6±2.6)
Very Low	Maryland (72.5±2.4)
Very Low	Indiana (71.9±2.2)
Very Low	Connecticut (70.4±2.1)
Very Low	Oklahoma (69.7±2.6)
Very Low	North Dakota (67.5±4.9)
Very Low	Kansas (65.2±3.7)
Very Low	Missouri (64.2±1.8)
Very Low	Washington (63.7±2.5)
Very Low	Delaware (63.4±4.4)
Very Low	Minnesota (63.1±2.0)
Very Low	Illinois (62.8±1.5)
Very Low	New Hampshire (61.6±3.1)
Very Low	Arizona (52.1±1.2)
N/A	Idaho
N/A	Nebraska

Source: FFY 2009 Household Report and 2007-2009 American Community Survey

Table 5-9b. LIHEAP Young Child Recipiency Targeting Performance Classifications for Heating Assistance, Using State Maximum LIHEAP Income Eligibility Standard, FY 2009

Classification	Young Child Targeting
Very High	Arizona (179.4±5.4)
Very High	Dist. of Col. (162.7±24.2)
Very High	North Dakota (148.4±19.4)
Very High	Oregon (142.4±7.2)
Very High	Wisconsin (141.7±7.4)
Very High	Massachusetts (140.6±5.8)
Very High	Connecticut (137.0±7.6)
Very High	New York (137.0±2.7)
Very High	Florida (136.8±3.4)
Very High	Iowa (135.1±10.9)
Very High	North Carolina (133.1±5.5)
Very High	Missouri (128.0±6.8)
High	Vermont (147.2±27.7)
High	Montana (130.6±13.1)
High	New Hampshire (129.7±14.6)
High	Maryland (126.7±6.9)
High	Tennessee (122.4±5.9)
High	Washington (121.6±7.4)
High	Indiana (121.4±5.2)
High	West Virginia (120.6±8.7)
High	Colorado (120.6±5.7)
High	Pennsylvania (117.9±3.5)
High	Alabama (117.1±5.3)
High	Kansas (114.8±9.7)
High	Illinois (110.3±3.8)
Moderate	Oklahoma (111.1±6.8)
Moderate	Utah (108.9±7.2)
Moderate	South Dakota (107.2±13.9)
Moderate	Ohio (107.2±3.1)
Moderate	California (104.3±1.2)
Moderate	Minnesota (104.0±6.6)
Moderate	Virginia (103.9±5.8)
Moderate	New Mexico (102.2±7.4)
Moderate	Hawaii (100.4±11.9)
Moderate	Delaware (100.1±11.3)
Moderate	Louisiana (99.3±4.6)
Moderate	Alaska (98.0±13.5)
Moderate	Mississippi (96.2±5.9)
Moderate	Nevada (95.2±7.5)
Moderate	Michigan (94.3±3.7)
Moderate	Maine (92.0±8.3)
Low	New Jersey (89.9±3.4)
Low	Arkansas (85.5±4.1)
Low	Kentucky (83.9±4.0)
Very Low	South Carolina (71.3±4.0)
Very Low	Georgia (67.5±2.5)
Very Low	Texas (58.7±1.2)
N/A	Wyoming
N/A	Rhode Island
N/A	Idaho
N/A	Nebraska

Source: FFY 2009 Household Report and 2007-2009 American Community Survey

Table 5-10a. LIHEAP Elderly Recipiency Targeting Performance Classifications for Heating Assistance, Using Federal Maximum LIHEAP Income Eligibility Standard, FY 2010

Classification	Elderly Targeting
Very High	Tennessee (143.2±3.0)
Very High	Georgia (134.0±2.1)
Very High	Texas (131.2±1.7)
High	South Carolina (116.1±3.1)
High	Mississippi (113.7±3.4)
Moderate	Louisiana (104.3±2.8)
Moderate	Dist. of Col. (101.4±8.1)
Moderate	Hawaii (100.3±5.2)
Moderate	Wyoming (100.0±8.6)
Moderate	California (97.1±1.0)
Moderate	Nevada (96.0±4.0)
Moderate	Alaska (93.7±10.3)
Moderate	Maine (92.9±4.6)
Moderate	South Dakota (89.8±5.8)
Low	New Jersey (92.3±1.6)
Low	New Mexico (90.2±4.2)
Low	Alabama (87.5±2.3)
Low	Virginia (85.7±1.6)
Low	Oregon (81.5±2.3)
Low	Utah (80.4±4.2)
Low	New York (80.0±1.1)
Low	Ohio (79.6±1.3)
Low	Rhode Island (78.9±3.6)
Low	Colorado (78.6±2.3)
Low	Vermont (75.0±5.9)
Very Low	Massachusetts (76.7±1.4)
Very Low	Kentucky (76.6±2.2)
Very Low	Michigan (76.6±1.5)
Very Low	Minnesota (74.0±1.9)
Very Low	Arkansas (72.2±2.3)
Very Low	Wisconsin (70.5±1.8)
Very Low	Iowa (69.3±2.3)
Very Low	Montana (69.1±4.7)
Very Low	Indiana (68.8±1.4)
Very Low	Maryland (68.5±1.5)
Very Low	Connecticut (67.6±1.9)
Very Low	North Carolina (65.8±1.3)
Very Low	North Dakota (64.0±5.2)
Very Low	Illinois (62.1±0.9)
Very Low	Oklahoma (61.6±1.8)
Very Low	Washington (61.6±1.4)
Very Low	Florida (58.8±0.7)
Very Low	Missouri (58.2±1.4)
Very Low	Delaware (57.5±3.3)
Very Low	New Hampshire (57.0±3.1)
Very Low	Pennsylvania (55.0±0.8)
Very Low	Arizona (54.4±1.4)
Very Low	West Virginia (25.1±1.0)
N/A	Idaho
N/A	Nebraska
N/A	Kansas

Source: FFY 2010 Household Report and 2008-2010 American Community Survey

Table 5-10b. LIHEAP Young Child Recipiency Targeting Performance Classifications for Heating Assistance, Using Federal Maximum LIHEAP Income Eligibility Standard, FY 2010

Classification	Young Child Targeting
Very High	Dist. of Col. (179.1±23.4)
Very High	West Virginia (176.8±13.9)
Very High	Vermont (159.5±25.3)
Very High	Pennsylvania (154.1±4.4)
Very High	Arizona (154.0±5.2)
Very High	Florida (153.6±2.9)
Very High	North Dakota (151.0±21.6)
Very High	Tennessee (149.8±4.7)
Very High	Iowa (148.1±8.5)
Very High	North Carolina (142.8±4.3)
Very High	Wisconsin (141.5±5.1)
Very High	Connecticut (140.9±7.0)
Very High	Massachusetts (137.0±4.5)
Very High	Washington (137.0±5.0)
Very High	Colorado (136.0±5.9)
Very High	Missouri (135.7±5.7)
Very High	Maryland (134.9±4.6)
Very High	Minnesota (134.6±6.3)
Very High	Kansas (132.9±7.5)
Very High	Indiana (127.1±4.7)
High	Montana (131.1±14)
High	New Hampshire (127.4±13.4)
High	Hawaii (127.4±12.8)
High	Virginia (122.8±4.2)
High	Rhode Island (122.1±10.8)
High	New York (121.4±2.4)
High	Oregon (120.0±5.3)
High	Oklahoma (119.1±6.0)
High	Delaware (119.0±12.9)
High	Michigan (117.0±3.6)
High	Illinois (117.0±2.9)
High	Alabama (116.9±4.9)
High	Ohio (115.5±3.5)
High	Utah (115.0±6.3)
Moderate	South Dakota (116.8±13.4)
Moderate	Nevada (111.9±7.1)
Moderate	Maine (111.4±10.5)
Moderate	Mississippi (108.9±5.3)
Moderate	New Mexico (106.5±7.2)
Moderate	California (105.8±1.5)
Moderate	Alaska (105.3±12.5)
Moderate	Wyoming (104.6±14.1)
Moderate	New Jersey (104.2±3.2)
Moderate	South Carolina (98.4±4.0)
Moderate	Louisiana (96.1±4.5)
Low	Arkansas (87.2±4.6)
Low	Kentucky (86.9±3.9)
Very Low	Texas (77.7±1.4)
Very Low	Georgia (71.6±1.7)
N/A	Idaho
N/A	Nebraska

Source: FFY 2010 Household Report and 2008-2010 American Community Survey

Table 5-11a. LIHEAP Elderly Recipiency Targeting Performance Classifications for Heating Assistance, Using State Maximum LIHEAP Income Eligibility Standard, FY 2010

Classification	Elderly Targeting
Very High	Tennessee (143.2±2.6)
Very High	Georgia (134.0±2.1)
Very High	Texas (131.9±1.4)
High	South Carolina (120.1±3.6)
High	Mississippi (113.9±3.4)
Moderate	Louisiana (104.3±2.8)
Moderate	Nevada (104.0±6.1)
Moderate	Michigan (103.9±3.5)
Moderate	Alaska (101.9±13.3)
Moderate	Dist. of Col. (101.4±8.1)
Moderate	Wyoming (100.0±8.6)
Moderate	Hawaii (99.8±7.5)
Moderate	California (96.6±0.9)
Moderate	Maine (94.5±4.4)
Moderate	New Jersey (93.4±1.8)
Moderate	South Dakota (92.5±5.6)
Moderate	Vermont (89.7±11.6)
Low	Virginia (91.4±2.6)
Low	New Mexico (90.2±4.2)
Low	Alabama (87.9±2.3)
Low	Utah (85.9±5.3)
Low	Kentucky (83.7±3.1)
Low	Oregon (81.5±2.3)
Low	Ohio (80.8±1.3)
Low	Colorado (80.5±2.6)
Low	New York (80.0±1.1)
Low	Rhode Island (78.9±3.6)
Very Low	Massachusetts (76.7±1.4)
Very Low	North Carolina (76.1±2.3)
Very Low	Indiana (75.4±2.0)
Very Low	Minnesota (74.8±2.4)
Very Low	Iowa (74.4±3.4)
Very Low	Arkansas (73.4±2.4)
Very Low	Washington (72.1±3.0)
Very Low	Wisconsin (70.5±1.8)
Very Low	Montana (69.0±4.1)
Very Low	Maryland (68.9±2.2)
Very Low	Illinois (68.6±1.4)
Very Low	Connecticut (67.6±1.9)
Very Low	Oklahoma (66.3±2.6)
Very Low	North Dakota (64.0±5.2)
Very Low	Missouri (63.1±1.9)
Very Low	Florida (61.1±0.9)
Very Low	Pennsylvania (59.9±1.2)
Very Low	Delaware (59.1±3.7)
Very Low	New Hampshire (57.0±3.1)
Very Low	Arizona (54.8±1.4)
Very Low	West Virginia (27.5±1.3)
Very Low	Kansas (11.1±0.6)
N/A	Idaho
N/A	Nebraska

Source: FFY 2010 Household Report and 2008-2010 American Community Survey

Table 5-11b. LIHEAP Young Child Recipiency Targeting Performance Classifications for Heating Assistance, Using State Maximum LIHEAP Income Eligibility Standard, FY 2010

Classification	Young Child Targeting
Very High	Dist. of Col. (179.1±23.4)
Very High	West Virginia (157.9±13.3)
Very High	North Dakota (151.0±21.6)
Very High	Arizona (150.0±4.8)
Very High	Tennessee (149.4±4.3)
Very High	Florida (141.7±3.1)
Very High	Wisconsin (141.5±5.1)
Very High	Connecticut (140.9±7.0)
Very High	Pennsylvania (139.9±5.1)
Very High	Iowa (137.7±10.3)
Very High	Massachusetts (137.0±4.5)
Very High	Washington (127.8±7.1)
Very High	Maryland (127.5±5.9)
Very High	Colorado (127.0±5.9)
Very High	Minnesota (126.7±6.4)
Very High	North Carolina (125.6±5.3)
High	Vermont (148.3±33.8)
High	Montana (130.5±11.9)
High	New Hampshire (127.4±13.4)
High	Missouri (125.8±6.4)
High	Rhode Island (122.1±10.8)
High	New York (121.4±2.4)
High	Oregon (120.0±5.3)
High	Kansas (117.5±8.4)
High	South Dakota (117.5±12.4)
High	Alabama (114.9±4.4)
High	Indiana (114.4±4.8)
High	Utah (113.1±7.1)
High	Virginia (111.9±5.1)
High	Ohio (111.7±3.3)
High	Oklahoma (111.6±6.0)
High	California (109.0±1.4)
Moderate	Hawaii (116.9±15.1)
Moderate	Delaware (112.5±12.3)
Moderate	Mississippi (108.5±5.3)
Moderate	Maine (107.1±9.2)
Moderate	Illinois (106.0±3.1)
Moderate	New Mexico (105.8±7.2)
Moderate	Wyoming (104.6±14.1)
Moderate	Nevada (101.6±7.4)
Moderate	New Jersey (98.2±3.3)
Moderate	Alaska (97.0±13.4)
Moderate	Michigan (96.3±4.1)
Moderate	Louisiana (96.1±4.5)
Moderate	South Carolina (93.5±4.0)
Low	Arkansas (84.7±4.5)
Low	Kentucky (80.6±4.5)
Very Low	Texas (78.0±1.2)
Very Low	Georgia (71.6±1.7)
N/A	Idaho
N/A	Nebraska

Source: FFY 2010 Household Report and 2008-2010 American Community Survey

Table 5-12a. Changes in the Eldery Recipiency Targeting Performance Classifications for Heating Assistance, Using Federal Maximum LIHEAP Income Eligibility Standard, FY 2007- 2010

State	2007	2008	2009	2010
Alabama	80.1	94.1	86.6	87.5
Alaska	104.9	121.1	104.5	93.7
Arizona	37.0	45.4	52.6	54.4
Arkansas	82.0	88.9	72.8	72.2
California	105.4	106.9	99.8	97.1
Colorado	93.0	95.0	84.5	78.6
Connecticut	68.8	71.1	70.4	67.6
Delaware	65.9	71.3	62.4	57.5
Dist. of Col.	110.9	78.2	107.6	101.4
Florida	61.5	72.5	75.4	58.8
Georgia	223.8	186.4	136.7	134.0
Hawaii	117.0	111.5	112.8	100.3
Idaho	15.1	N/A	N/A	N/A
Illinois	62.5	60.8	58.1	62.1
Indiana	73.6	70.0	66.6	68.8
Iowa	78.7	77.7	72.6	69.3
Kansas	56.9	61.7	58.9	9.8
Kentucky	76.3	79.2	78.2	76.6
Louisiana	90.5	109.8	101.2	104.3
Maine	102.1	99.8	97.9	92.9
Maryland	79.0	80.0	73.5	68.5
Massachusetts	78.2	78.7	77.0	76.7
Michigan	77.6	79.7	80.3	76.6
Minnesota	83.8	83.5	62.5	74.0
Mississippi	122.0	132.3	127.6	113.7
Missouri	50.7	49.3	59.4	58.2
Montana	73.3	75.3	77.3	69.1
Nebraska	N/A	N/A	N/A	N/A
Nevada	139.6	119.3	105.2	96.0
New Hampshire	63.1	63.5	61.6	57.0
New Jersey	78.7	77.9	101.1	92.3
New Mexico	104.7	103.7	96.6	90.2
New York	85.6	86.4	82.2	80.0
North Carolina	69.2	68.2	65.2	65.8
North Dakota	64.8	65.0	67.5	64.0
Ohio	117.9	120.4	80.0	79.6
Oklahoma	69.1	72.2	66.9	61.6
Oregon	112.8	99.0	77.9	81.5
Pennsylvania	76.4	79.4	80.1	55.0
Rhode Island	93.5	90.1	79.7	78.9
South Carolina	140.0	140.1	122.7	116.1
South Dakota	99.9	97.6	101.5	89.8
Tennessee	119.0	145.8	102.9	143.2
Texas	159.1	165.6	145.9	131.2
Utah	102.0	97.9	90.4	80.4
Vermont	78.0	62.0	76.9	75.0
Virginia	97.3	97.5	93.0	85.7
Washington	57.2	61.8	54.8	61.6
West Virginia	29.5	29.3	76.7	25.1
Wisconsin	73.7	71.7	69.2	70.5
Wyoming	92.2	100.3	104.2	100.0

Source: FFY 2007-2010 Household Reports and 2005-2010 American Community Surveys

Table 5-12b. Changes in the Young Child Recipiency Targeting Performance Classifications for Heating Assistance, Using Federal Maximum LIHEAP Income Eligibility Standard, FY 2007- 2010

State	2007	2008	2009	2010
Alabama	122.8	106.1	120.4	116.9
Alaska	103.6	99.0	98.1	105.3
Arizona	106.8	160.2	176.2	154.0
Arkansas	89.7	77.8	84.7	87.2
California	94.6	96.8	102.2	105.8
Colorado	155.6	119.8	127.3	136.0
Connecticut	145.0	138.1	137.0	140.9
Delaware	148.2	105.9	104.1	119.0
Dist. of Col.	155.1	224.9	162.7	179.1
Florida	173.3	159.2	144.7	153.6
Georgia	27.9	43.5	71.0	71.6
Hawaii	95.0	106.2	107.9	127.4
Idaho	N/A	N/A	N/A	N/A
Illinois	115.2	114.5	119.7	117.0
Indiana	129.9	129.6	131.6	127.1
Iowa	138.8	141.3	145.9	148.1
Kansas	108.8	110.8	126.9	132.9
Kentucky	88.2	98.6	89.2	86.9
Louisiana	108.1	90.8	99.3	96.1
Maine	92.8	88.0	90.6	111.4
Maryland	126.8	125.2	128.7	134.9
Massachusetts	145.9	138.5	140.6	137.0
Michigan	116.0	107.6	109.5	117.0
Minnesota	120.6	127.1	108.2	134.6
Mississippi	109.2	92.6	101.2	108.9
Missouri	115.7	114.5	135.8	135.7
Montana	129.2	123.2	125.7	131.1
Nebraska	N/A	N/A	N/A	N/A
Nevada	77.6	93.0	102.9	111.9
New Hampshire	142.8	132.3	129.7	127.4
New Jersey	112.0	114.9	94.4	104.2
New Mexico	102.2	103.1	102.0	106.5
New York	132.3	133.6	137.0	121.4
North Carolina	145.9	144.9	145.2	142.8
North Dakota	161.7	152.6	148.4	151.0
Ohio	45.5	37.3	113.8	115.5
Oklahoma	121.0	112.6	113.9	119.1
Oregon	106.2	113.7	142.4	120.0
Pennsylvania	123.9	121.0	117.9	154.1
Rhode Island	119.8	127.7	N/A	122.1
South Carolina	57.2	61.9	74.1	98.4
South Dakota	125.2	123.5	112.2	116.8
Tennessee	63.6	61.2	131.9	149.8
Texas	48.3	58.6	62.6	77.7
Utah	91.0	97.0	106.5	115.0
Vermont	142.2	152.2	158.0	159.5
Virginia	111.5	105.7	110.8	122.8
Washington	126.7	129.7	127.7	137.0
West Virginia	127.9	120.8	130.5	176.8
Wisconsin	150.7	151.8	153.4	141.5
Wyoming	113.2	99.7	N/A	104.6

Source: FFY 2007-2010 Household Reports and 2005-2010 American Community Surveys

Table 5-13a. Changes in the Elderly Recipiency Targeting Performance Classifications for Heating Assistance, Using State Maximum LIHEAP Income Eligibility Standard, FY 2007- 2010

State	2007	2008	2009	2010
Alabama	81.5	95.8	87.6	87.9
Alaska	101.3	123.8	105.3	101.9
Arizona	36.9	47.3	52.1	54.8
Arkansas	85.6	93.5	72.6	73.4
California	105.4	107.5	100.1	96.6
Colorado	94.2	96.0	85.9	80.5
Connecticut	68.8	71.3	70.4	67.6
Delaware	68.3	74.0	63.4	59.1
Dist. of Col.	110.9	78.0	107.6	101.4
Florida	62.9	74.9	77.3	61.1
Georgia	225.7	189.5	139.8	134.0
Hawaii	116.0	117.9	115.4	99.8
Idaho	15.3	N/A	N/A	N/A
Illinois	67.5	65.8	62.8	68.6
Indiana	78.9	75.7	71.9	75.4
Iowa	81.9	81.7	77.0	74.4
Kansas	60.0	67.4	65.2	11.1
Kentucky	81.4	84.1	83.8	83.7
Louisiana	90.5	110.3	101.2	104.3
Maine	95.2	101.9	98.5	94.5
Maryland	76.4	78.7	72.5	68.9
Massachusetts	77.6	78.8	77.0	76.7
Michigan	101.7	103.7	102.6	103.9
Minnesota	82.5	83.9	63.1	74.8
Mississippi	122.9	132.3	133.4	113.9
Missouri	56.2	54.6	64.2	63.1
Montana	76.5	79.5	75.1	69.0
Nebraska	N/A	N/A	N/A	N/A
Nevada	145.8	128.7	112.6	104.0
New Hampshire	63.1	63.7	61.6	57.0
New Jersey	78.3	78.4	101.3	93.4
New Mexico	106.0	103.7	96.6	90.2
New York	85.6	87.0	82.2	80.0
North Carolina	76.9	77.6	73.2	76.1
North Dakota	64.8	65.2	67.5	64.0
Ohio	123.1	126.3	83.0	80.8
Oklahoma	78.2	82.4	69.7	66.3
Oregon	112.8	100.1	77.9	81.5
Pennsylvania	81.6	85.8	80.1	59.9
Rhode Island	93.5	90.8	79.7	78.9
South Carolina	142.4	143.4	125.3	120.1
South Dakota	100.6	97.4	101.5	92.5
Tennessee	126.1	156.5	110.5	143.2
Texas	167.4	175.7	154.2	131.9
Utah	113.5	108.5	93.8	85.9
Vermont	84.1	68.4	88.1	89.7
Virginia	96.9	98.9	96.0	91.4
Washington	65.5	71.9	63.7	72.1
West Virginia	32.1	32.9	81.9	27.5
Wisconsin	77.3	76.5	74.5	70.5
Wyoming	92.2	100.5	107.6	100.0

Source: FFY 2007-2010 Household Reports and 2005-2010 American Community Surveys

Table 5-13b. Changes in the Young Child Recipiency Targeting Performance Classifications for Heating Assistance, Using State Maximum LIHEAP Income Eligibility Standard, FY 2007- 2010

State	2007	2008	2009	2010
Alabama	118.2	102.2	117.1	114.9
Alaska	107.7	98.5	98.0	97.0
Arizona	108.0	152.5	179.4	150.0
Arkansas	86.0	72.3	85.5	84.7
California	94.8	95.7	104.3	109.0
Colorado	147.1	113.2	120.6	127.0
Connecticut	145.0	136.2	137.0	140.9
Delaware	140.3	105.0	100.1	112.5
Dist. of Col.	155.1	225.4	162.7	179.1
Florida	165.0	148.7	136.8	141.7
Georgia	27.2	42.2	67.5	71.6
Hawaii	96.5	104.3	100.4	116.9
Idaho	N/A	N/A	N/A	N/A
Illinois	106.7	106.3	110.3	106.0
Indiana	122.9	123.0	121.4	114.4
Iowa	130.3	132.3	135.1	137.7
Kansas	104.1	101.2	114.8	117.5
Kentucky	84.6	92.4	83.9	80.6
Louisiana	108.5	90.1	99.3	96.1
Maine	90.2	83.8	92.0	107.1
Maryland	126.9	125.2	126.7	127.5
Massachusetts	149.1	132.9	140.6	137.0
Michigan	98.1	92.4	94.3	96.3
Minnesota	121.6	122.8	104.0	126.7
Mississippi	108.1	92.6	96.2	108.5
Missouri	106.2	104.7	128.0	125.8
Montana	122.4	114.1	130.6	130.5
Nebraska	N/A	N/A	N/A	N/A
Nevada	74.5	87.3	95.2	101.6
New Hampshire	142.8	130.5	129.7	127.4
New Jersey	106.1	108.2	89.9	98.2
New Mexico	100.0	103.1	102.2	105.8
New York	132.3	132.3	137.0	121.4
North Carolina	135.4	131.7	133.1	125.6
North Dakota	161.7	149.3	148.4	151.0
Ohio	42.9	35.3	107.2	111.7
Oklahoma	112.7	105.5	111.1	111.6
Oregon	106.4	112.0	142.4	120.0
Pennsylvania	116.0	110.8	117.9	139.9
Rhode Island	119.8	126.0	N/A	122.1
South Carolina	55.9	59.2	71.3	93.5
South Dakota	121.2	117.6	107.2	117.5
Tennessee	60.2	57.3	122.4	149.4
Texas	45.6	55.1	58.7	78.0
Utah	94.1	96.7	108.9	113.1
Vermont	142.0	152.1	147.2	148.3
Virginia	113.2	103.1	103.9	111.9
Washington	121.7	124.2	121.6	127.8
West Virginia	117.0	110.2	120.6	157.9
Wisconsin	147.2	143.2	141.7	141.5
Wyoming	113.2	98.1	N/A	104.6

Source: FFY 2007-2010 Household Reports and 2005-2010 American Community Surveys

Appendix A: Home Energy Estimates

Appendix A provides information on how estimates of home energy data were derived from the 2005 Residential Energy Consumption Survey (RECS) and updated for FY 2011. The following topics are covered in this Appendix.

- Description of RECS.
- Strengths and limitations of RECS data.
- National and regional average home energy consumption and expenditures.
- Energy burden.

Description of RECS

The RECS is a national household sample survey that provides information on residential energy use. It has been conducted by the Energy Information Administration (EIA) of the U.S. Department of Energy (DOE) since 1978. It is designed to provide reliable data at the national and Census regional levels. The RECS includes information on energy consumption and expenditures, household demographics, housing characteristics, weatherization/conservation practices, home appliances, and type of heating and cooling equipment. Currently, this survey is conducted every four years.

The survey consists of three parts:

- EIA interviews households for information about which fuels are used, how fuels are used, energy-using appliances, structural features, energy-efficiency measures taken, demographic characteristics of the household, heating interruptions, and receipt of energy assistance.
- EIA interviews rental agents for households whose rent includes some portion of their energy bill. This information augments information from those households that may not be knowledgeable about the fuels used for space heating or water heating.
- After obtaining permission from respondents, EIA mails questionnaires to their energy suppliers to collect the actual billing data on energy consumption and expenditures. This fuel supplier survey eliminates the inaccuracy of self-reported data. When a household does not consent or when fuel consumption records are unusable or nonexistent, regression analysis is used to impute missing data.[44]

The 2005 RECS is the twelfth survey in the series of surveys.[45] For the 2005 RECS, 4,382 households were interviewed, including 434 verified LIHEAP recipient households. For the tabulations in this *Notebook*, 2005 RECS consumption and expenditure data were updated using price and weather data to represent consumption and expenditures for FY 2011.

[44]Regression analysis is a statistical tool for evaluating the relationship of one or more independent variables to a single continuous dependent variable. Formulas developed from regression analysis are used to predict the value of the dependent variable under varying conditions of the independent variable(s).

[45]More information about the RECS sample design, see Energy Information Administration, *Sample Design for the Residential Energy Consumption Survey*, DOE/EIA-0555 (94)/1, Washington, DC, August 1994. The data collected from the 2005 RECS are available from the EIA website: *RECS Survey Data*, Energy Information Administration, http://www.eia.gov/consumption/residential/data/2005/

Strengths and limitations of RECS data

The RECS provides the most recent, comprehensive data on home energy consumption and expenditures. The strengths of using RECS to derive home energy estimates are as follows.

- RECS uses a representative national household sample, providing statistically reliable estimates for all, non-low income, and low income households.
- The 2005 RECS included an oversample of LIHEAP recipient households that is representative of the population of LIHEAP heating and cooling assistance recipients.
- The RECS includes usage data for all residential fuels.
- Energy suppliers provide information on actual residential energy consumption and expenditures of RECS sample households in order to eliminate the inaccuracy of self-reported data.
- Regression analyses of RECS data provide estimates of the amounts of fuels going to various end uses, including home heating and cooling.

While the updated 2005 RECS data provide the most current and comprehensive data on residential energy use by low income households, several significant limitations must be addressed:[46]

- The 2005 RECS data for calendar year 2005 were updated to FY 2011 (October 1, 2010 to September 30, 2011), using procedures that adjust the 2005 data to reflect the weather and fuel prices for FY 2011. These procedures are comparable to those used for the FY 1986 - FY 2010 annual LIHEAP Reports to Congress. However, the reader should exercise caution in comparing the data in this *Notebook* with data in annual LIHEAP Reports to Congress prior to FY 1986, in which consumption and expenditure data were estimated from the RECS year (April 1 to March 31).
- For some variables, disaggregation of data into subgroups at the regional level results in estimates made from a small number of sample cases. This is particularly true of the LIHEAP recipient households and the liquefied petroleum gas and kerosene heating subgroups. This affects the reliability of the estimates.
- The household is a basic reporting unit for RECS and LIHEAP. RECS defines a household as all individuals living in a housing unit, whether related or not, who (1) share a common direct access entry to the unit from outside the building or from a hallway, and (2) do not normally eat their meals with members of other units in the building. A household does not include temporary visitors or household members away at college or in the military. LIHEAP defines a household as one or more individuals living together as an economic unit who purchase energy in common or make undesignated payments for energy in their rent. Some variation in the count of households, particularly those containing renters or boarders, may result from the difference in definitions.
- The Current Population Survey Annual Social and Economic Supplement (CPS ASEC), conducted by the Bureau of the Census, provides, at national and regional levels, data on total household income as a specific dollar amount. CPS's larger sample size and method of collecting income data result in more accurate income data than RECS income data. Therefore, the 2011 CPS ASEC is used to develop estimates of the number of low income

[46]Information about the quality of RECS data is available from the EIA website: *RECS Methodology*, Energy Information Administration, http://www.eia.gov/consumption/residential/data/2005/index.cfm?view=methodology.

households. In addition, mean income statistics from the CPS ASEC are used in the calculation of group energy burden for this *Notebook*.[47]

- Households were classified in the 2005 RECS as eligible or ineligible for LIHEAP based on whether their income was above or below the maximum statutory income eligibility criteria (the greater of 150 percent of HHS' poverty guidelines or 60 percent of State median income). These estimates do not include households whose incomes may have exceeded the statutory income standards but who received LIHEAP benefits because they (1) were categorically eligible for LIHEAP under section 8624 (b)(2)(A) of the LIHEAP statute; (2) became income-ineligible for LIHEAP at the time of the survey; or (3) were deemed eligible for LIHEAP based on incorrectly-reported income. However, the tabulations of LIHEAP households also include survey respondents who were identified as LIHEAP recipients from State LIHEAP administrative data but who reported incomes higher than the maximum statutory income in the RECS survey.

Average home energy consumption and expenditures

Average heating and cooling consumption and expenditure estimates for FY 2011 were calculated at national and regional levels for all, non-low income, low income, and LIHEAP recipient households, for various fuels. The heating and cooling estimates were updated for each 2005 RECS sample case using FY 2011 heating degree days, cooling degree days, and price inflators applied to the original expenditure data, as well as the multiple regression formula developed from the 2005 RECS. Home energy consumption and expenditure data were developed by aggregating and averaging home heating and cooling estimates for the sample cases that represented all, non-low income, low income, and LIHEAP recipient households.

Tables A-2 through A-3c display national and regional consumption and expenditure data for residential energy (including energy used for space heating, water heating, space cooling, and appliances). Tables A-4 through A-6c display national and regional usage, consumption, and expenditure data for home heating. Table A-7 displays national and regional usage, consumption, and expenditure data for home cooling. Analysis and discussion of home energy consumption and expenditures appear in Section II of this *Notebook*.

Energy burden

Energy burden is an important statistic for policymakers who are considering the need for energy assistance. Energy burden can be defined broadly as the burden placed on household incomes by the cost of residential energy. However, there are different ways to compute energy burden and different interpretations of the energy burden statistics. The purpose of this section is to examine alternative energy burden statistics and discuss the interpretation of each.[48]

Different "measures of central tendency" can be used to describe energy burden. The most commonly used measures are the mean and the median. As previously noted, the mean or average is computed as the sum of all values divided by the number of values. The median is computed as the value that is at the center of the distribution of values (i.e., 50 percent of the values are greater than the median and 50 percent are less).

[47] Note that household-level energy and income data from RECS are used to calculate mean and median individual energy burden.

[48] More detailed information is available in the Division of Energy Assistance's (DEA's) technical report, *Characterizing the Impact of Energy Expenditures on Low Income Households: An Analysis of Alternative Energy Burden Statistics*, (November, 1994).

Computational procedures

There are two ways to compute mean energy burden for households.[49] The first is the "mean individual" approach, and the second is the "mean group" approach. While these approaches appear to be similar, they give quite different values.

Using the "mean individual burden" approach, energy burden is computed as follows.

1. First, the ratio of energy expenditures to annual income for each household in a specified population is computed.

2. Then, the mean of these energy burden ratios is computed for the population.[50] For example, consider the situation where there are four households with energy burdens of 4, 5, 7, and 8 percent.

3. The mean of these energy burdens is calculated by adding the percentages (24 percentage points) and dividing by the number of households (four households), resulting in a mean individual burden of 6 percent.

Using the "mean group burden" approach, energy burden is computed as follows.

1. First, total annual energy expenditures for households and total annual income for households in a specified population are computed.

2. Then, the ratio of total energy expenditures to total income is computed for the specified population. For example, consider the situation where a group consists of four households that have a total income of $100,000 and a total energy bill of $4,000.

3. Dividing the $4,000 in total energy bills by $100,000 in total income results in a mean group burden of 4 percent.

According to the 2005 RECS, the mean residential energy burden for all LIHEAP Federally eligible households, in 2005, using the first approach was 12.9 percent and using the second approach was 9.6 percent. The disparity between the two statistics is because the lowest income households spend a greater share of their income on residential energy than do higher income households.[51] If the relationship between income and residential energy expenditures is linear (i.e., a 10 percent increase in income is associated with a 10 percent increase in residential energy expenditures), the two statistics would be equal. However, since a number of low income households spend a large share of their income on energy, the relationship between income and residential energy expenditures is not linear (i.e., a 10 percent increase in income is associated with a considerably smaller increase in energy expenditures). Therefore, there is a substantial difference between the two statistics.

In the discussion of computational procedures, the "mean individual burden" was examined. It is also possible to look at the "median individual burden." As noted above for LIHEAP income eligible households, the mean residential energy burden computed as the "mean individual burden" was 12.9 percent. The median of the distribution of residential energy burdens from the 2005 RECS survey was 8.8 percent. The disparity between these two statistics is the result of the skewed distribution of

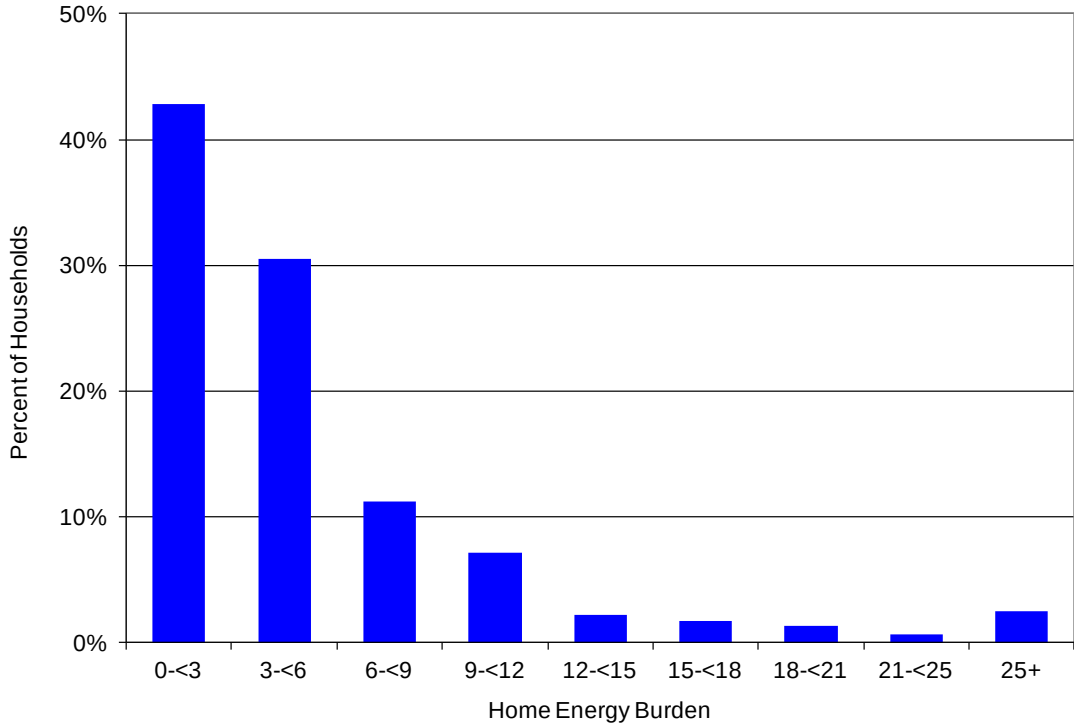
[49]The mean is the sum of all values divided by the number of values. The mean is also referred to as the average.

[50]For some households, residential energy expenditures appear to exceed income. Elderly households living on their savings are an example of such households. In calculating mean individual burden, the energy burden figures for such households have been limited to 100 percent.

[51]For example, 2005 RECS households with incomes of $10,000 or less had average residential energy expenditures of $1,357, while those with incomes between $20,000 - $35,000 had average residential energy expenditures of $1,601. Thus, households which had more than twice as much income spent only 18 percent more on energy.

energy burden ratios. Figure A-1 demonstrates a skewed distribution of LIHEAP income eligible households by home energy burden.

Figure A-1. Distribution of LIHEAP income eligible households by home energy burden, 2005



Data files

The data files used to make estimates of energy burden also have some impact on the statistic. The RECS data file is the only reliable source of national information on energy expenditures. However, the income reported on the RECS is known to be deficient in several ways. First, it is generally true that income is underreported on household surveys. Second, the RECS collects income data less precisely through the use of income intervals. Finally, the CPS ASEC collects income more precisely by asking a series of detailed questions on income than the RECS does and also has a larger sample size than the RECS.

The RECS, which categorizes more households as income eligible for LIHEAP than the CPS ASEC, thus categorizes too many households as income eligible for LIHEAP. Based on the 2005 RECS, in calendar year 2005, 38.6 million households were estimated to be LIHEAP income eligible households. Based on the 2005 CPS ASEC, the estimate of LIHEAP income eligible households for calendar year 2005 was 34.8 million households. Since some households that were not LIHEAP income eligible were categorized by RECS as LIHEAP income eligible, the RECS overestimated the average energy expenditures for LIHEAP income eligible households.[52]

Data interpretations

The statistic used to describe energy burden depends on the question being asked. Each statistic offers some data on energy burden while not telling the whole story by itself.

[52]The estimates of average energy burden may be overstated since RECS, like other surveys, understates income. Comparisons between the estimates of the number of LIHEAP income eligible households from the 1990 RECS and the March 1991 CPS suggest that the probable range of the overestimate in mean group energy burden is from 5-10 percent.

The key difference between "mean individual burden" and "mean group burden" is that the first statistic focuses on the experience of individual households and the second on the experience of a group of households. The "mean individual burden" furnishes more information on how individual households are affected by energy burden (i.e., it computes a mean by using each household's burden). The "mean group burden" furnishes more information on group burden (i.e., it computes the share of all income earned by LIHEAP income eligible households that goes to pay for energy). Both statistics are useful, though the individual burden statistic puts more emphasis on the experience of individual households, and the group burden puts more emphasis on the share of group income that is used for energy.

The key difference between the "mean individual burden" and the "median individual burden" is that the first statistic furnishes information on all LIHEAP income eligible households at the expense of overstating what is happening to the "average" LIHEAP income eligible household. The second statistic furnishes information on the "average" LIHEAP income eligible household at the expense of disregarding what is happening to households at either end of the distribution.

The best way to furnish information on energy burden is to use all available statistics. For example, it would be informative to show the "mean individual burden," the "median individual burden," and the "distribution of individual energy burdens," for all LIHEAP income eligible households, to indicate how individual households are affected by energy costs. In addition, it would be useful to show the "mean group burden" to indicate what share of income is going to pay energy bills for the group as a whole.

However, when doing an analysis of energy burden among several groups of households, it is very difficult to present the entire spectrum of available statistics. Thus, we usually limit the analysis to a comparison of one statistic between groups. In general, if only one statistic is used, either the "mean individual burden" or the "mean group burden" is preferred, since a mean is a more complete statistic than is a median. The choice between the two means is dictated by which of the following types of analysis is being conducted.

- If funding levels are being examined, the group burden is probably more useful. This statistic furnishes information on the size of the energy bill of LIHEAP income eligible households and the portion of income for this group that is spent on energy. Using this statistic allows direct examination of the relationship between the total energy bill and total LIHEAP funding.

- If targeting decisions are being examined, the mean or median individual burden is probably more useful. These statistics furnish information on the distribution of burdens among households in a group. Using these statistics helps to target those groups where a significant number of households have high energy burdens.

All three energy burden statistics are presented in this *Notebook*'s tables to fully inform the reader. Beginning with the *FY 1992 LIHEAP Report to Congress*, the mean individual energy burden and mean group burden statistics have been furnished in the reports. Previous reports to Congress presented only the mean group burden. The text of this *Notebook* references mean group burden to maintain consistency with the previous reports to Congress.

Projecting energy consumption and expenditures

Projections were developed using microsimulation techniques that adjusted consumption and energy expenditures for changes in weather and prices. Consumption amounts for each household were adjusted for changes in heating and cooling degree days. Projected expenditures for each household were estimated as a function of projected consumption changes and actual changes in fuel prices. In order to make these projections, it was assumed that households did not change their energy use

behavior (that is, their tendency to seek a specific indoor temperature) as a result of weather, price, or other changes.

Consumption projections utilized end use consumption estimates that were developed with the 2005 RECS data. These estimates were based on models for each fuel, using households that had actual (not imputed) consumption records for the fuel. The models used nonlinear estimation techniques to estimate parameters that described the relationship of consumption to end uses, housing characteristics, weather, and demographics.

To develop consumption projections, heating and cooling end use estimates for Calendar Year 2005 were adjusted for weather differences between 2005 and Fiscal Year 2011. The following equation was applied to each household in the microsimulation data file.

FY 2011 Projected Btus = (2005 estimated heat use * HDD change) +
(2005 estimated cooling use * CDD change) +
(2005 estimated water heat use + 2005 estimated appliance use)

Expenditure projections were a function of projected changes in consumption and actual changes in prices. The following equations were used.

Preliminary Expenditures = 2005 Expenditures *
(FY 2011 Projected Usage/2005 Actual Usage)

Final Expenditures = Preliminary Expenditures * Price Change[53]

Table A-1 shows the national price factors that were used. The price factors show the actual change in the average price of a fuel from calendar year 2005 to FY 2011. For example, electricity prices increased by 24 percent from 2005 to FY 2011.

Table A-1. National price factors for FY 2011

Fuel	Price Factors for FY 2011 Projections
Electricity	1.2401
Natural gas	0.8563
Fuel oil / kerosene	1.6314
Liquefied petroleum gas (LPG)	1.4357

Expenditure data were adjusted using national price factors for FY 2011. Earlier *Notebooks* used State-level price factor data. For FY 1993/1994, State-level data did not vary much from the national average for electricity and natural gas. For electricity, price changes varied between 0.3 percent and 1.2 percent; the national average was 0.8 percent. For natural gas, price changes varied between 1.7 percent and 2.8 percent; the national average was 2 percent. Expenditure projections using national price data do not appear to be significantly different from those obtained using State price data.

[53]Price factors were developed using price data obtained from the Energy Information Administration's Monthly Energy Review, November 2012, for all fuels. Electricity and natural gas consumption data used for calculating price factors are from the Energy Information Administration website (http://www.eia.doe.gov). Fuel Oil and LPG consumption data used for calculating price factors are from the Monthly Energy Review, November 2012.

Table A-2. Residential energy: Average consumption in MMBtus per household, by all fuels and specified fuels, by all, non-low income, low income and LIHEAP recipient households, by Census region, FY 2011[1/]

Census Region	Natural Gas[2/] (MMBtus)[3/]	Electricity (MMBtus)	Fuel Oil (MMBtus)	Kerosene (MMBtus)	LPG (MMBtus)	Other (MMBtus)
US - All households	99.1	115.4	62.7	151.7	55.7	112.5
US - Non-low income households	105.3	120.1	67.6	160.9	62.1*	120.0
US - Low income households[4/]	87.5	105.5	54.4	137.7	54.5	98.4
US - LIHEAP recipient households[5/]	107.3	117.9	50.5	155.6	78.3*	112.0
Northeast - All households	125.9	125.8	49.1	155.5	38.5	127.9
Northeast - Non-low income households	137.2	135.0	54.9	167.0	64.3*	138.3
Northeast - Low income households	108.9	110.3	42.6	138.7	34.2*	100.9*
Northeast - LIHEAP recipient households	121.0	113.9	49.3	155.9	76.4*	84.1*
Midwest - All households	120.2	132.5	61.3	131.6	92.2*	131.1
Midwest - Non-low income households	126.0	137.0	67.5	139.2	NC	132.6
Midwest - Low income households	110.4	124.7	53.7	122.0	92.2*	125.7
Midwest - LIHEAP recipient households	124.0	136.6	50.5	153.5*	90.0*	107.7*
South - All households	84.3	113.1	65.4	133.3	55.0	101.8
South - Non-low income households	91.3	120.0	70.5	130.6	61.4*	108.6
South - Low income households	70.8	96.1	56.0	139.2*	53.2	93.3
South - LIHEAP recipient households	90.2	109.3	51.7	147.7*	77.4*	120.2*
West - All households	78.6	87.9	57.6	154.4	60.3*	99.9
West - Non-low income households	84.2	92.5	60.1	148.4*	NC	108.6
West - Low income households	65.8	74.1	53.6	186.4*	60.3*	85.3
West - LIHEAP recipient households	69.8	78.4	49.3	171.1*	NC	112.2*

[1/]Developed from the 2005 Residential Energy Consumption Survey (RECS), Energy Information Administration, U.S. Department of Energy, and adjusted for FY 2011 for heating and cooling degree days.

[2/]Weighted average of natural gas, electricity, fuel oil, kerosene, and liquefied petroleum gas consumption. RECS consumption data are not collected for other fuels.

[3/]A British Thermal Unit (Btu) is the amount of energy necessary to raise the temperature of one pound of water one degree Fahrenheit. MMBtus refer to values in millions of Btus.

[4/]Households with income under the maximum in section 2605(b)(2)(B) of Public Law 97-35.

[5/] Includes verified LIHEAP recipient households from the 2005 RECS.

* = This figure should be viewed with caution because of the small number of sample cases.

NC = No cases in the 2005 RECS household sample.

Table A-3a. Residential energy: Average annual expenditures, by amount (dollars) and mean group burden (percent of income), for all, non-low income, low income, and LIHEAP recipient households, by Census region and main heating fuel, FY 2011

Census Region	All fuels[1/]	All fuels[2/]	Natural gas	Natural gas	Electricity	Electricity	Fuel Oil	Fuel Oil	Kerosene	Kerosene	LPG	LPG
US - All households	$2,205	3.3%	$2,015	3.0%	$1,936	2.9%	$4,298	6.4%	$1,676	2.5%	$3,216	4.8%
US - Non-low income households	$2,363	2.6%	$2,172	2.4%	$2,087	2.3%	$4,600	5.0%	$1,724*	1.9%	$3,345	3.6%
US - Low income households[3/]	$1,913	10.0%	$1,680	8.8%	$1,679	8.8%	$3,834	20.0%	$1,668	8.7%	$2,973	15.5%
US - LIHEAP recipient households[4/]	$2,106	13.1%	$1,786	11.1%	$1,364	8.5%	$4,350	27.0%	$1,902*	11.8%	$3,591	22.3%
Northeast - All households	$2,913	3.9%	$2,243	3.0%	$1,866	2.5%	$4,470	6.0%	$1,306	1.8%	$3,995	5.4%
Northeast - Non-low income households	$3,186	3.1%	$2,475	2.4%	$1,968	1.9%	$4,861	4.7%	$2,478*	2.4%	$4,061	3.9%
Northeast - Low income households	$2,499	11.9%	$1,855	8.8%	$1,750	8.3%	$3,898	18.6%	$1,110*	5.3%	$3,822*	18.2%
Northeast - LIHEAP recipient households	$2,762	16.5%	$1,953	11.7%	$1,612	9.6%	$4,403	26.3%	$2,069*	12.3%	$2,603*	15.5%
Midwest - All households	$2,058	3.2%	$1,971	3.1%	$1,510	2.4%	$3,540	5.5%	$2,194*	3.4%	$3,452	5.4%
Midwest - Non-low income households	$2,199	2.5%	$2,089	2.4%	$1,657	1.9%	$3,780	4.3%	NC	NC	$3,446	3.9%
Midwest - Low income households	$1,818	9.3%	$1,769	9.1%	$1,327	6.8%	$3,237	16.6%	$2,194*	11.3%	$3,472	17.8%
Midwest - LIHEAP recipient households	$1,857	11.6%	$1,847	11.6%	$1,306	8.2%	$3,963*	24.8%	$1,503*	9.4%	$3,062*	19.2%
South - All households	$2,223	3.5%	$2,292	3.6%	$2,093	3.3%	$3,482	5.5%	$1,757	2.8%	$3,020	4.8%
South - Non-low income households	$2,379	2.7%	$2,486	2.9%	$2,228	2.6%	$3,309	3.8%	$1,476*	1.7%	$3,136	3.6%
South - Low income households	$1,924	11.1%	$1,813	10.5%	$1,841	10.6%	$3,861*	22.3%	$1,836	10.6%	$2,873	16.6%
South - LIHEAP recipient households	$2,074	15.2%	$1,870	13.7%	$1,494	11.0%	$3,962*	29.1%	$1,909*	14.0%	$4,089*	30.0%
West - All households	$1,729	2.4%	$1,633	2.3%	$1,640	2.3%	$3,919	5.4%	$1,544*	2.1%	$2,969	4.1%
West - Non-low income households	$1,890	1.9%	$1,788	1.8%	$1,808	1.9%	$3,862*	4.0%	NC	NC	$3,248	3.3%
West - Low income households	$1,356	6.6%	$1,167	5.7%	$1,374	6.7%	$4,222*	20.6%	$1,544*	7.5%	$2,497	12.2%
West - LIHEAP recipient households	$1,271	6.9%	$1,124	6.1%	$1,082	5.9%	$4,144*	22.6%	NC	NC	$3,176*	17.3%

[1/]Estimates are derived from the 2005 Residential Energy Consumption Survey (RECS), Energy Information Administration, U.S. Department of Energy. The 2005 RECS data have been adjusted for heating degree days, cooling degree days, and fuel price estimates for FY 2011. Expenditures represent the costs for fuel oil, kerosene, and LPG delivered and billed costs for natural gas and electricity. RECS expenditure data are not collected for other fuels.

[2/]Represents the percent of household's income used for residential energy expenditures. National and regional mean incomes are calculated from the 2011 CPS ASEC, which reports income for calendar year 2010. Mean group residential burden is computed as mean group energy expenditures (from RECS) divided by mean group income (from CPS ASEC). See text in Appendix A for a discussion of energy burden.

[3/]Households with annual incomes at or below the maximum in section 2605(b)(2)(B) of Public Law 97-35.

[4/] Includes verified LIHEAP recipient households from the 2005 RECS.

* = This figure should be viewed with caution because of the small number of sample cases.

NC = No cases in the 2005 RECS household sample.

Table A-3b. Residential energy: Average annual expenditures, by amount (dollars) and mean individual burden (percent of income), for all, non-low income, low income, and LIHEAP recipient households, by Census region and main heating fuel, FY 2011

Census Region	All fuels[1/]	All fuels[2/]	Natural gas	Natural gas	Electricity	Electricity	Fuel oil	Fuel Oil	Kerosene	Kerosene	LPG	LPG
US - All households	$2,205	7.0%	$2,015	5.6%	$1,936	7.0%	$4,298	14.1%	$1,676	10.2%	$3,216	10.1%
US - Non-low income households	$2,363	3.5%	$2,172	3.1%	$2,087	3.3%	$4,600	6.4%	$1,724*	4.7%	$3,345	5.4%
US - Low income households[3/]	$1,913	13.4%	$1,680	11.0%	$1,679	13.3%	$3,834	25.9%	$1,668	11.3%	$2,973	18.9%
US - LIHEAP recipient households[4/]	$2,106	15.7%	$1,786	13.2%	$1,364	14.9%	$4,350	28.7%	$1,902*	19.2%	$3,591	18.7%
Northeast - All households	$2,913	9.0%	$2,243	6.3%	$1,866	7.5%	$4,470	14.5%	$1,306	9.9%	$3,995	10.6%
Northeast - Non-low income households	$3,186	4.4%	$2,475	3.5%	$1,968	3.0%	$4,861	6.5%	$2,478*	4.4%	$4,061	5.5%
Northeast - Low income households	$2,499	16.1%	$1,855	11.1%	$1,750	12.6%	$3,898	26.3%	$1,110*	10.8%	$3,822*	23.9%
Northeast - LIHEAP recipient households	$2,762	18.2%	$1,953	12.5%	$1,612	16.7%	$4,403	27.9%	$2,069*	23.5%	$2,603*	12.4%
Midwest - All households	$2,058	6.5%	$1,971	6.4%	$1,510	5.7%	$3,540	12.7%	$2,194*	9.1%	$3,452	7.4%
Midwest - Non-low income households	$2,199	3.3%	$2,089	3.0%	$1,657	2.9%	$3,780	6.1%	NC	NC	$3,446	4.8%
Midwest - Low income households	$1,818	12.1%	$1,769	12.2%	$1,327	9.2%	$3,237	21.2%	$2,194*	9.1%	$3,472	16.9%
Midwest - LIHEAP recipient households	$1,857	16.3%	$1,847	15.3%	$1,306	20.2%	$3,963*	34.1%	$1,503*	5.7%	$3,062*	14.9%
South - All households	$2,223	7.6%	$2,292	6.2%	$2,093	7.6%	$3,482	13.7%	$1,757	11.0%	$3,020	12.3%
South - Non-low income households	$2,379	3.8%	$2,486	3.7%	$2,228	3.6%	$3,309	6.8%	$1,476*	4.8%	$3,136	6.4%
South - Low income households	$1,924	14.9%	$1,813	12.4%	$1,841	15.2%	$3,861*	28.8%	$1,836	12.8%	$2,873	19.8%
South - LIHEAP recipient households	$2,074	16.5%	$1,870	13.3%	$1,494	16.2%	$3,962*	43.7%	$1,909*	19.8%	$4,089*	23.4%
West - All households	$1,729	4.5%	$1,633	3.6%	$1,640	5.5%	$3,919	9.1%	$1,544*	7.6%	$2,969	9.0%
West - Non-low income households	$1,890	2.5%	$1,788	2.4%	$1,808	2.5%	$3,862*	6.0%	NC	NC	$3,248	4.6%
West - Low income households	$1,356	9.1%	$1,167	7.4%	$1,374	10.2%	$4,222*	25.6%	$1,544*	7.6%	$2,497	16.5%
West - LIHEAP recipient households	$1,271	8.0%	$1,124	8.2%	$1,082	7.6%	$4,144*	4.1%	NC	NC	$3,176*	9.7%

[1/]Estimates are derived from the 2005 Residential Energy Consumption Survey (RECS), Energy Information Administration, U.S. Department of Energy. The 2005 RECS data have been adjusted for heating degree days, cooling degree days, and fuel price estimates for FY 2011. Expenditures represent the costs for fuel oil, kerosene, and LPG delivered and billed costs for natural gas and electricity. RECS expenditure data are not collected for other fuels.

[2/]Represents the percent of household income used for residential energy expenditures. For individual households, FY 2011 income is estimated by inflating income reported in the 2005 RECS by the consumer price index (CPI) and FY 2011 energy expenditures are estimated by adjusting energy expenditures reported in the 2005 RECS for changes in weather and energy prices. FY 2011 residential energy burden for each household is computed as estimated FY 2011 residential energy expenditures divided by estimated FY 2011 annual income. Mean individual residential burden is computed by computing the mean of the individual values. See text in Appendix A for a discussion of energy burden.

[3/]Households with annual incomes at or below the maximum in section 2605(b)(2)(B) of Public Law 97-35.

[4/] Includes verified LIHEAP recipient households from the 2005 RECS.

* = This figure should be viewed with caution because of the small number of sample cases.

NC = No cases in 2005 RECS household sample.

Table A-3c. Residential energy: Average annual expenditures, by amount (dollars) and median individual burden (percent of income), for all, non-low income, low income, and LIHEAP recipient households, by Census region and main heating fuel, FY 2011

Census Region	All fuels[1/]	All fuels[2/]	Natural gas	Natural gas	Electricity	Electricity	Fuel oil	Fuel Oil	Kerosene	Kerosene	LPG	LPG
US - All households	$2,205	4.2%	$2,015	3.6%	$1,936	4.0%	$4,298	8.3%	$1,676	7.5%	$3,216	6.8%
US - Non-low income households	$2,363	3.0%	$2,172	2.7%	$2,087	2.9%	$4,600	5.7%	$1,724*	4.8%	$3,345	4.8%
US - Low income households[3/]	$1,913	9.0%	$1,680	8.0%	$1,679	8.3%	$3,834	19.8%	$1,668	8.9%	$2,973	15.2%
US - LIHEAP recipient households[4/]	$2,106	10.0%	$1,786	9.2%	$1,364	8.9%	$4,350	28.6%	$1,902*	15.1%	$3,591	11.9%
Northeast - All households	$2,913	5.4%	$2,243	4.0%	$1,866	4.6%	$4,470	8.4%	$1,306	8.9%	$3,995	6.4%
Northeast - Non-low income households	$3,186	3.7%	$2,475	2.9%	$1,968	2.6%	$4,861	5.6%	$2,478*	4.2%	$4,061	5.9%
Northeast - Low income households	$2,499	10.5%	$1,855	8.0%	$1,750	8.2%	$3,898	19.0%	$1,110*	8.9%	$3,822*	22.9%
Northeast - LIHEAP recipient households	$2,762	11.5%	$1,953	7.0%	$1,612	12.0%	$4,403	28.6%	$2,069*	15.2%	$2,603*	10.4%
Midwest - All households	$2,058	4.1%	$1,971	3.8%	$1,510	3.8%	$3,540	7.9%	$2,194*	6.7%	$3,452	4.9%
Midwest - Non-low income households	$2,199	2.9%	$2,089	2.6%	$1,657	2.3%	$3,780	5.3%	NC	NC	$3,446	4.6%
Midwest - Low income households	$1,818	9.0%	$1,769	8.9%	$1,327	6.9%	$3,237	19.9%	$2,194*	6.7%	$3,472	17.5%
Midwest - LIHEAP recipient households	$1,857	10.0%	$1,847	9.7%	$1,306	10.7%	$3,963*	34.9%	$1,503*	5.7%	$3,062*	19.7%
South - All households	$2,223	4.6%	$2,292	4.3%	$2,093	4.4%	$3,482	9.4%	$1,757	7.0%	$3,020	8.7%
South - Non-low income households	$2,379	3.3%	$2,486	3.2%	$2,228	3.2%	$3,309	7.5%	$1,476*	5.9%	$3,136	5.9%
South - Low income households	$1,924	9.9%	$1,813	9.4%	$1,841	9.6%	$3,861*	19.6%	$1,836	9.9%	$2,873	15.2%
South - LIHEAP recipient households	$2,074	14.4%	$1,870	14.4%	$1,494	9.6%	$3,962*	51.9%	$1,909*	15.1%	$4,089*	20.5%
West - All households	$1,729	2.8%	$1,633	2.5%	$1,640	3.0%	$3,919	5.8%	$1,544*	8.1%	$2,969	5.7%
West - Non-low income households	$1,890	2.2%	$1,788	2.0%	$1,808	2.2%	$3,862*	5.8%	NC	NC	$3,248	4.1%
West - Low income households	$1,356	5.6%	$1,167	5.3%	$1,374	5.6%	$4,222*	29.1%	$1,544*	8.1%	$2,497	10.1%
West - LIHEAP recipient households	$1,271	6.9%	$1,124	6.9%	$1,082	7.2%	$4,144*	4.1%	NC	NC	$3,176*	5.1%

[1/]Estimates are derived from the 2005 Residential Energy Consumption Survey (RECS), Energy Information Administration, U.S. Department of Energy. The 2005 RECS data have been adjusted for heating degree days, cooling degree days, and fuel price estimates for FY 2011. Expenditures represent the costs for fuel oil, kerosene, and LPG delivered and billed costs for natural gas and electricity. RECS expenditure data are not collected for other fuels.

[2/]Represents the percent of household income used for residential energy expenditures. For individual households, FY 2011 income is estimated by inflating income reported in the 2005 RECS by the consumer price index (CPI) and FY 2011 energy expenditures are estimated by adjusting energy expenditures reported in the 2005 RECS for changes in weather and energy prices. FY 2011 residential energy burden for each household is computed as estimated FY 2011 residential energy expenditures divided by estimated FY 2011 annual income. Median individual residential burden is computed by computing the median of the individual values.

[3/]Households with annual incomes at or below the maximum in section 2605(b)(2)(B) of Public Law 97-35.

[4/] Includes verified LIHEAP recipient households from the 2005 RECS.

* = This figure should be viewed with caution because of the small number of sample cases.

NC = No cases in the 2005 RECS household sample.

Table A-4. Home heating: Percent of households using major types of heating fuels, by all, non-low income, low income, and LIHEAP recipient households, by Census region and main heating fuel type, April 2005[1/]

Census Region	Natural Gas[2/]	Electricity	Fuel Oil	Kerosene	LPG	Other[3/]
US - All households	52.6%	30.1%	6.9%	0.6%	5.5%	3.2%
US - Non-low income households	55.0%	29.2%	6.5%	0.1%	5.5%	2.9%
US - Low income households[4/]	48.1%	31.8%	7.8%	1.5%	5.4%	3.7%
US - LIHEAP recipient households[5/]	60.0%	19.0%	12.0%	2.4%	5.2%	1.2%
Northeast - All households	55.5%	7.9%	30.1%	0.9%	2.1%	3.1%
Northeast - Non-low income households	57.7%	6.9%	29.7%	0.2%	2.6%	2.9%
Northeast - Low income households	52.3%	9.3%	30.8%	1.9%	1.5%	3.2%
Northeast - LIHEAP recipient households	53.8%	8.4%	33.6%	1.3%	2.4%	0.5%
Midwest - All households	72.6%	13.2%	2.7%	0.3%	7.4%	3.5%
Midwest - Non-low income households	73.0%	11.6%	2.4%	NC	9.3%	3.5%
Midwest - Low income households	72.0%	15.8%	3.2%	0.9%	4.2%	3.6%
Midwest - LIHEAP recipient households	80.2%	13.4%	2.5%	0.7%	2.8%	0.5%
South - All households	33.7%	53.9%	1.3%	0.9%	6.6%	2.6%
South - Non-low income households	36.6%	53.7%	1.4%	0.3%	5.6%	1.8%
South - Low income households	28.2%	54.5%	1.2%	2.0%	8.5%	4.0%
South - LIHEAP recipient households	44.9%	31.1%	2.4%	7.7%	12.4%	1.5%
West - All households	60.7%	26.7%	1.1%	0.2%	4.3%	3.9%
West - Non-low income households	65.3%	23.4%	1.3%	NC	3.9%	3.8%
West - Low income households	50.2%	34.2%	0.6%	0.7%	5.3%	4.1%
West - LIHEAP recipient households	54.6%	34.0%	1.4%	NC	4.6%	3.6%

[1/]Data derived from the 2005 Residential Energy Consumption Survey (RECS), Energy Information Administration, U.S. Department of Energy. Represents main heating fuel used in April 2005.
[2/]The sum of percentages across fuel types may not equal 100%, due to rounding.
[3/]This category includes households using wood, coal, and other minor fuels as a main heating source and households reporting no main fuel.
[4/]Households with income under the maximum in section 2605(b)(2)(B) of Public Law 97-35.
[5/] Includes verified LIHEAP recipient households from the 2005 RECS.
NC = No cases in the 2005 RECS household sample.

Table A-5. Home heating: Average consumption per household, by all fuels and specified fuels, by all, non-low income, low income and LIHEAP recipient households, by Census region, FY 2011[1/]

Census Region	All Fuels[2/] (MMBtus)[3/]	Natural Gas (MMBtus)	Electricity (MMBtus)	Fuel Oil (MMBtus)	Kerosene (MMBtus)	LPG (MMBtus)
US - All households	41.7	54.0	9.4	100.9	22.0	55.4
US - Non-low income households	42.9	53.5	9.9	104.6	26.4*	61.2
US - Low income households[4/]	39.6	55.2	8.4	95.2	21.2	44.4
US - LIHEAP recipient households[5/]	56.6	65.7	9.4	102.1	26.0*	48.0
Northeast - All households	73.9	71.1	13.2	102.4	16.3	78.6
Northeast - Non-low income households	78.6	73.8	14.2	108.0	23.0*	85.6
Northeast - Low income households	66.7	66.7	12.0	94.3	15.1*	60.5*
Northeast - LIHEAP recipient households	72.2	67.5	12.1	99.5	16.1*	48.7*
Midwest - All households	62.9	72.6	15.2	87.4	49.5*	70.6
Midwest - Non-low income households	64.3	72.9	17.1	79.3	NC	73.3
Midwest - Low income households	60.4	72.0	12.8	97.8	49.5*	60.4
Midwest - LIHEAP recipient households	70.1	79.4	11.8	129.0*	5.3*	58.5*
South - All households	22.3	39.0	8.5	98.0	18.7	45.5
South - Non-low income households	23.7	39.8	9.2	100.4	27.5*	46.5
South - Low income households	19.8	37.0	7.2	92.7*	16.3	44.1
South - LIHEAP recipient households	35.5	50.7	7.6	96.4*	30.5*	46.0*
West - All households	24.6	31.3	8.3	107.0	19.4*	43.6
West - Non-low income households	26.5	31.7	8.4	99.7*	NC	55.3
West - Low income households	20.2	29.9	8.1	146.1*	19.4*	23.9
West - LIHEAP recipient households	28.5	38.5	8.5	152.5*	NC	42.3*

[1/]Developed from the 2005 Residential Energy Consumption Survey (RECS), Energy Information Administration, U.S. Department of Energy, and adjusted for FY 2011 for heating degree days.

[2/]Weighted average of natural gas, electricity, fuel oil, kerosene, and liquefied petroleum gas space heating consumption. Consumption data are not collected for other fuels.

[3/]A British Thermal Unit (Btu) is the amount of energy necessary to raise the temperature of one pound of water one degree Fahrenheit. MMBtus refer to values in millions of Btus.

[4/]Households with income under the maximum in section 2605(b)(2)(B) of Public Law 97-35.

[5/] Includes verified LIHEAP recipient households from the 2005 RECS.

* = This figure should be viewed with caution because of the small number of sample cases.

NC = No cases in the 2005 RECS household sample.

Table A-6a. Home heating: Average annual expenditures by amount and mean group burden, by all, non-low income, low income, and LIHEAP recipient households, by Census region and main heating fuel type, FY 2011

Census Region	All fuels[1/]	All fuels[2/]	Natural gas	Natural gas	Electricity	Electricity	Fuel oil	Fuel Oil	Kerosene	Kerosene	LPG	LPG
US - All households	$622	0.9%	$516	0.8%	$300	0.4%	$2,440	3.6%	$504	0.7%	$1,456	2.2%
US - Non-low income households	$636	0.7%	$516	0.6%	$318	0.3%	$2,537	2.7%	$599*	0.6%	$1,556	1.7%
US - Low income households[3/]	$597	3.1%	$517	2.7%	$271	1.4%	$2,291	12.0%	$487	2.5%	$1,267	6.6%
US - LIHEAP recipient households[4/]	$807	5.0%	$618	3.8%	$283	1.8%	$2,460	15.3%	$566*	3.5%	$1,369	8.5%
Northeast - All households	$1,255	1.7%	$733	1.0%	$541	0.7%	$2,471	3.3%	$378	0.5%	$1,982	2.7%
Northeast - Non-low income households	$1,330	1.3%	$772	0.7%	$519	0.5%	$2,614	2.5%	$541*	0.5%	$2,051	2.0%
Northeast - Low income households	$1,142	5.4%	$667	3.2%	$564	2.7%	$2,262	10.8%	$350*	1.7%	$1,803*	8.6%
Northeast - LIHEAP recipient households	$1,240	7.4%	$663	4.0%	$465	2.8%	$2,394	14.3%	$323*	1.9%	$1,422*	8.5%
Midwest - All households	$728	1.1%	$658	1.0%	$394	0.6%	$2,122	3.3%	$1,146*	1.8%	$1,700	2.6%
Midwest - Non-low income households	$755	0.9%	$665	0.8%	$438	0.5%	$1,932	2.2%	NC	NC	$1,729	2.0%
Midwest - Low income households	$682	3.5%	$646	3.3%	$339	1.7%	$2,363	12.1%	$1,146*	5.9%	$1,589	8.2%
Midwest - LIHEAP recipient households	$735	4.6%	$714	4.5%	$325	2.0%	$3,172*	19.9%	$90*	0.6%	$1,447*	9.1%
South - All households	$412	0.7%	$396	0.6%	$281	0.4%	$2,420	3.8%	$422	0.7%	$1,300	2.1%
South - Non-low income households	$424	0.5%	$407	0.5%	$301	0.3%	$2,467	2.8%	$618*	0.7%	$1,308	1.5%
South - Low income households	$389	2.2%	$369	2.1%	$243	1.4%	$2,318*	13.4%	$368	2.1%	$1,291	7.4%
South - LIHEAP recipient households	$594	4.4%	$542	4.0%	$221	1.6%	$2,306*	16.9%	$673*	4.9%	$1,410*	10.4%
West - All households	$325	0.4%	$280	0.4%	$257	0.4%	$2,600	3.6%	$443*	0.6%	$1,193	1.6%
West - Non-low income households	$348	0.4%	$287	0.3%	$278	0.3%	$2,438*	2.5%	NC	NC	$1,487	1.5%
West - Low income households	$271	1.3%	$261	1.3%	$225	1.1%	$3,467*	16.9%	$443*	2.2%	$695	3.4%
West - LIHEAP recipient households	$375	2.0%	$324	1.8%	$245	1.3%	$3,654*	19.9%	NC	NC	$1,020*	5.6%

[1/]Expenditures shown in this table are derived from the 2005 Residential Energy Consumption Survey (RECS), Energy Information Administration, U.S. Department of Energy. The 2005 RECS data have been adjusted for heating degree days and fuel price estimates for FY 2011. Expenditures represent the costs for fuel oil, kerosene, and LPG delivered, and billed costs for natural gas and electricity used. RECS expenditure data are not collected for other fuels.

[2/]Represents the percent of household income used for home heating energy expenditures. National and regional mean incomes are calculated from the 2011 CPS ASEC, which reports income for calendar year 2010. Mean group home heating burden is computed as mean group energy expenditures (from RECS) divided by mean group income (from CPS ASEC). See Appendix A for a discussion of energy burden.

[3/]Households with annual incomes at or below the maximum in section 2605(b)(2)(B) of Public Law 97-35.

[4/] Includes verified LIHEAP recipient households from the 2005 RECS.

* = This figure should be viewed with caution because of the small number of sample cases.

NC = No cases in the 2005 RECS household sample.

Table A-6b. Home heating: Average annual expenditures by amount and mean individual burden, by all, non-low income, low income, and LIHEAP recipient households, by Census region and main heating fuel type, FY 2011

Census Region	All fuels[1/]	All fuels[2/]	Natural gas	Natural gas	Electricity	Electricity	Fuel oil	Fuel oil	Kerosene	Kerosene	LPG	LPG
US - All households	$622	2.2%	$516	1.7%	$300	1.2%	$2,440	9.1%	$504	2.9%	$1,456	4.7%
US - Non-low income households	$636	1.0%	$516	0.8%	$318	0.5%	$2,537	3.7%	$599*	1.8%	$1,556	2.5%
US - Low income households[3/]	$597	4.4%	$517	3.7%	$271	2.3%	$2,291	17.2%	$487	3.0%	$1,267	8.7%
US - LIHEAP recipient households[4/]	$807	6.4%	$618	5.4%	$283	3.7%	$2,460	16.2%	$566*	5.4%	$1,369	8.3%
Northeast - All households	$1,255	4.4%	$733	2.3%	$541	2.8%	$2,471	9.2%	$378	2.6%	$1,982	5.5%
Northeast - Non-low income households	$1,330	1.9%	$772	1.2%	$519	0.8%	$2,614	3.6%	$541*	0.9%	$2,051	2.9%
Northeast - Low income households	$1,142	8.3%	$667	4.2%	$564	5.0%	$2,262	17.3%	$350*	2.9%	$1,803*	12.3%
Northeast - LIHEAP recipient households	$1,240	8.3%	$663	4.7%	$465	5.6%	$2,394	15.1%	$323*	3.7%	$1,422*	7.1%
Midwest - All households	$728	2.6%	$658	2.5%	$394	1.5%	$2,122	8.7%	$1,146*	4.6%	$1,700	3.7%
Midwest - Non-low income households	$755	1.2%	$665	1.0%	$438	0.8%	$1,932	3.3%	NC	NC	$1,729	2.4%
Midwest - Low income households	$682	5.0%	$646	5.1%	$339	2.4%	$2,363	15.5%	$1,146*	4.6%	$1,589	8.4%
Midwest - LIHEAP recipient households	$735	7.5%	$714	7.3%	$325	5.6%	$3,172*	27.5%	$90*	0.3%	$1,447*	7.8%
South - All households	$412	1.5%	$396	1.2%	$281	1.1%	$2,420	9.2%	$422	2.6%	$1,300	5.7%
South - Non-low income households	$424	0.8%	$407	0.7%	$301	0.5%	$2,467	5.2%	$618*	2.1%	$1,308	2.8%
South - Low income households	$389	3.1%	$369	2.7%	$243	2.1%	$2,318*	17.7%	$368	2.8%	$1,291	9.5%
South - LIHEAP recipient households	$594	5.1%	$542	4.1%	$221	3.0%	$2,306*	25.8%	$673*	6.3%	$1,410*	9.9%
West - All households	$325	0.9%	$280	0.7%	$257	1.0%	$2,600	6.7%	$443*	2.2%	$1,193	3.3%
West - Non-low income households	$348	0.5%	$287	0.4%	$278	0.4%	$2,438*	4.0%	NC	NC	$1,487	2.1%
West - Low income households	$271	1.8%	$261	1.5%	$225	1.8%	$3,467*	20.8%	$443*	2.2%	$695	5.4%
West - LIHEAP recipient households	$375	2.3%	$324	2.5%	$245	1.8%	$3,654*	3.6%	NC	NC	$1,020*	3.3%

[1/]Expenditures shown in this table are derived from the 2005 Residential Energy Consumption Survey (RECS), Energy Information Administration, U.S. Department of Energy. The 2005 RECS data have been adjusted for heating degree days and fuel price estimates for FY 2011. Expenditures represent the costs for fuel oil, kerosene, and LPG delivered, and billed costs for natural gas and electricity used. RECS expenditure data are not collected for other fuels.

[2/]Represents the percent of household income used for home heating energy expenditures. For individual households, FY 2011 income is estimated by inflating income reported in the 2005 RECS by the consumer price index (CPI) and FY 2011 energy expenditures are estimated by adjusting energy expenditures reported in the 2005 RECS for changes in weather and energy prices. FY 2011 home heating energy burden for each household is computed by computing the mean of the individual values. See text in Appendix A for a discussion of energy burden.

[3/]Households with annual incomes at or below the maximum in section 2605(b)(2)(B) of Public Law 97-35.

[4/] Includes verified LIHEAP recipient households from the 2005 RECS.

* = This figure should be viewed with caution because of the small number of sample cases.

NC = No cases in the 2005 RECS household sample.

Table A-6c. Home heating: Average annual expenditures by amount and median individual burden, by all, non-low income, low income, and LIHEAP recipient households, by Census region and main heating fuel type, FY 2011

Census Region	All fuels[1/]	All fuels[2/]	Natural gas	Natural gas	Electricity	Electricity	Fuel oil	Fuel oil	Kerosene	Kerosene	LPG	LPG
US - All households	$622	0.8%	$516	0.8%	$300	0.6%	$2,440	4.8%	$504	2.2%	$1,456	2.8%
US - Non-low income households	$636	0.6%	$516	0.6%	$318	0.4%	$2,537	3.2%	$599*	1.1%	$1,556	2.1%
US - Low income households[3/]	$597	2.0%	$517	2.3%	$271	1.2%	$2,291	11.7%	$487	2.2%	$1,267	6.9%
US - LIHEAP recipient households[4/]	$807	3.0%	$618	2.9%	$283	1.7%	$2,460	13.2%	$566*	5.7%	$1,369	4.6%
Northeast - All households	$1,255	2.0%	$733	1.3%	$541	1.2%	$2,471	4.6%	$378	1.8%	$1,982	3.7%
Northeast - Non-low income households	$1,330	1.3%	$772	0.9%	$519	0.9%	$2,614	3.1%	$541*	1.1%	$2,051	2.9%
Northeast - Low income households	$1,142	4.0%	$667	2.9%	$564	2.6%	$2,262	11.0%	$350*	1.8%	$1,803*	9.6%
Northeast - LIHEAP recipient households	$1,240	4.6%	$663	2.3%	$465	3.3%	$2,394	13.2%	$323*	2.4%	$1,422*	6.2%
Midwest - All households	$728	1.3%	$658	1.2%	$394	0.9%	$2,122	4.9%	$1,146*	2.4%	$1,700	2.7%
Midwest - Non-low income households	$755	0.8%	$665	0.8%	$438	0.7%	$1,932	3.0%	NC	NC	$1,729	2.1%
Midwest - Low income households	$682	2.9%	$646	3.0%	$339	1.8%	$2,363	15.0%	$1,146*	2.4%	$1,589	9.1%
Midwest - LIHEAP recipient households	$735	3.6%	$714	3.7%	$325	2.2%	$3,172*	26.5%	$90*	0.3%	$1,447*	11.3%
South - All households	$412	0.6%	$396	0.6%	$281	0.5%	$2,420	6.6%	$422	1.9%	$1,300	3.5%
South - Non-low income households	$424	0.4%	$407	0.4%	$301	0.4%	$2,467	6.3%	$618*	3.1%	$1,308	2.2%
South - Low income households	$389	1.5%	$369	1.8%	$243	1.2%	$2,318*	12.1%	$368	1.9%	$1,291	6.9%
South - LIHEAP recipient households	$594	2.5%	$542	2.9%	$221	1.7%	$2,306*	27.2%	$673*	5.7%	$1,410*	3.0%
West - All households	$325	0.4%	$280	0.4%	$257	0.4%	$2,600	3.5%	$443*	2.2%	$1,193	2.0%
West - Non-low income households	$348	0.3%	$287	0.3%	$278	0.3%	$2,438*	3.5%	NC	NC	$1,487	1.9%
West - Low income households	$271	0.9%	$261	1.0%	$225	0.9%	$3,467*	23.6%	$443*	2.2%	$695	3.4%
West - LIHEAP recipient households	$375	1.4%	$324	1.9%	$245	1.3%	$3,654*	3.6%	NC	NC	$1,020*	0.9%

[1/] Expenditures shown in this table are derived from the 2005 Residential Energy Consumption Survey (RECS), Energy Information Administration, U.S. Department of Energy. The 2005 RECS data have been adjusted for heating degree days and fuel price estimates for FY 2011. Expenditures represent the costs for fuel oil, kerosene, and LPG delivered, and billed costs for natural gas and electricity used. RECS expenditure data are not collected for other fuels.

[2/] Represents the percent of household income used for home heating energy expenditures. For individual households, FY 2011 income is estimated by inflating income reported in the 2005 RECS by the consumer price index (CPI) and FY 2011 energy expenditures are estimated by adjusting energy expenditures reported in the 2005 RECS for changes in weather and energy prices. FY 2011 home heating energy burden for each household is computed by computing the median of the individual values. See text in Appendix A for a discussion of energy burden.

[3/] Households with annual incomes at or below the maximum in section 2605(b)(2)(B) of Public Law 97-35.

[4/] Includes verified LIHEAP recipient households from the 2005 RECS.

* = This figure should be viewed with caution because of the small number of sample cases.

NC = No cases in the 2005 RECS household sample.

Table A-7. Home cooling: Percent of households that cool, average annual consumption per household, average annual expenditures per household, mean group burden, mean individual burden, and median individual burden for households that cooled, by all, non-low income, low income, and LIHEAP recipient households, by Census region, FY 2011

Census Region	Percent that cool[1/]	Consumption[2/] *(in MMBtus)*	Expenditures[2/]	Mean group burden[3/]	Mean individual burden[3/]	Median individual burden[3/]
US - All households	92.1%	9.3	$329	0.5%	1.1%	0.4%
US - Non-low income households	93.8%	10.2	$360	0.4%	0.5%	0.3%
US - Low income households[4/]	89.1%	7.5	$269	1.4%	2.3%	0.9%
US - LIHEAP recipient households[5/]	85.5%	5.6	$202	1.3%	1.5%	0.6%
Northeast - All households	88.6%	3.8	$183	0.2%	0.6%	0.3%
Northeast - Non-low income households	93.6%	4.2	$201	0.2%	0.3%	0.2%
Northeast - Low income households	81.2%	3.1	$152	0.7%	1.2%	0.5%
Northeast - LIHEAP recipient households	84.1%	3.3	$163	1.0%	1.0%	0.5%
Midwest - All households	96.7%	5.6	$175	0.3%	0.5%	0.3%
Midwest - Non-low income households	97.3%	6.1	$189	0.2%	0.3%	0.2%
Midwest - Low income households	95.7%	4.9	$150	0.8%	0.9%	0.6%
Midwest - LIHEAP recipient households	88.8%	4.0	$128	0.8%	1.2%	0.6%
South - All households	98.1%	15.8	$552	0.9%	2.0%	1.0%
South - Non-low income households	99.4%	17.3	$599	0.7%	0.9%	0.8%
South - Low income households	95.5%	12.9	$458	2.6%	4.2%	2.2%
South - LIHEAP recipient households	92.1%	11.8	$400	2.9%	2.7%	1.3%
West - All households	80.3%	5.4	$208	0.3%	0.5%	0.2%
West - Non-low income households	81.7%	5.9	$230	0.2%	0.3%	0.1%
West - Low income households	77.1%	4.2	$152	0.7%	1.0%	0.3%
West - LIHEAP recipient households	70.5%	2.3	$74	0.4%	0.4%	0.2%

[1/]Cooling includes central and room air-conditioning, as well as non-air-conditioning cooling devices (e.g., ceiling fans, evaporative coolers). Excludes households that do not cool or cool in ways other than those recorded by the 2005 RECS (e.g., table and window fans.)

[2/]Consumption and expenditures are derived from the 2005 Residential Energy Consumption Survey (RECS), Energy Information Administration, U.S. Department of Energy. The 2005 RECS data have been adjusted for cooling degree days and electricity price estimates for FY 2011. Expenditures represent billed costs for electricity used.

[3/]Represents the percent of household income used for home cooling energy expenditures. See text in Appendix A for definitions of different energy burden statistics.

[4/]Households with annual incomes at or below the maximum in section 2605(b)(2)(B) of Public Law 97-35.

[5/] Includes verified LIHEAP recipient households from the 2005 RECS.

Appendix B: Income Eligible Household Estimates

ACF encourages LIHEAP grantees to use performance measurement systems to manage LIHEAP programs. ACF has developed targeting performance indicators to support measurement of LIHEAP targeting at the grantee level. For a number of years, ACF has furnished State grantees with State level estimates of the number of LIHEAP income eligible households, including the number of vulnerable households and the number of households by poverty level. State grantees can use these estimates with their own data on LIHEAP recipient characteristics to compute recipiency targeting performance statistics.

State-level estimates of the number of income eligible households for FY 2011 were developed using the American Community Survey (ACS). The Census Bureau recommends the use of the ACS for the State-level income and poverty analysis.[54] ACF also uses the estimates from the ACS and household recipient data from the States' *LIHEAP Household Report* to develop State-level targeting indexes.

The 2009-2011 ACS three-year Public Use Microdata Sample (PUMS) data are used to develop more precise estimates of the number of income eligible households than those that would have been obtained using the 2011 single-year ACS PUMS data.[55]

After fiscal years 2009 and 2010, Congress changed the Federal maximum LIHEAP income standard back to what it was previously, the greater of 60 percent of State median income or 150 percent of HHS Poverty Guidelines.

Tables B-1 and B-2 show estimates of the number of LIHEAP income eligible households by vulnerability group,[56] derived from the 2009-2011 ACS, using the using the Federal Maximum Income Standard and the State Income Standards, respectively. The State Income Standards are the income levels that the States set to define LIHEAP income eligibility. These Standards may vary by LIHEAP component; however, they must fall between 110 percent of HHS Poverty Guidelines and the Federal Maximum Income Standard.

Similarly, Tables B-3 through B-4 show estimates of the number of LIHEAP income eligible households by poverty group, derived from the 2009-2011 ACS, using the using the Federal Maximum Income Standard and the State Income Standards, respectively.

[54] For an explanation, and to better understand the differences between the ACS and CPS ASEC, please visit "Guidance about Income Sources" at http://www.census.gov/hhes/www/income/method/guidance/.

[55] The Census Bureau recommends data estimates from the three-year ACS instead of the one-year ACS when precision of the estimates are of primary importance. See http://www.census.gov/acs/www/guidance_for_data_users/estimates/.

[56] The Census Bureau changed the questions on disability in ACS in 2008. Since the new questions were not comparable to those in previous years, the reader should exercise caution in comparing the estimates of households with disabled individuals with those in previous *Notebooks*.

Table B-1. State-level estimates of the number of LIHEAP income eligible households using the Federal maximum LIHEAP income standard by vulnerability category[1/2/4/]

(Three-Year ACS 2009-2011)

State	Total number of LIHEAP eligible households[3/]	LIHEAP eligible households with at least one person 60+ years	LIHEAP eligible households with at least one child less than 6 yrs. old	LIHEAP eligible households with at least one person with a disability [5/]	LIHEAP eligible households with no vulnerable members
Alabama	618,693	226,267	112,312	287,301	164,892
Alaska	62,060	17,522	16,158	23,447	18,725
Arizona	729,566	247,941	162,626	231,585	241,569
Arkansas	343,888	122,079	71,439	154,785	89,501
California	3,972,995	1,365,365	915,693	1,269,068	1,324,081
Colorado	579,321	183,475	116,121	176,548	212,574
Connecticut	446,544	185,881	74,089	156,269	135,339
Delaware	101,632	41,279	18,622	36,734	29,342
District of Columbia	64,182	22,526	9,567	24,248	22,281
Florida	2,256,727	941,603	364,288	777,269	717,273
Georgia	1,161,262	373,861	251,043	408,601	390,835
Hawaii	133,230	54,001	25,354	42,272	43,431
Idaho	169,526	52,854	42,379	57,382	52,864
Illinois	1,532,107	559,363	299,121	503,954	514,674
Indiana	769,995	258,016	156,972	290,192	240,463
Iowa	352,806	135,839	64,941	122,702	110,272
Kansas	330,807	113,700	67,761	121,452	104,677
Kentucky	568,737	206,947	104,944	278,582	139,692
Louisiana	569,823	205,600	108,825	242,278	166,721
Maine	168,263	70,043	22,869	79,948	41,544
Maryland	645,736	247,943	120,340	216,901	209,006
Massachusetts	851,512	366,332	124,528	335,996	239,582
Michigan	1,302,893	461,065	230,467	508,148	405,201
Minnesota	650,339	244,047	117,182	216,566	212,094
Mississippi	365,603	128,448	75,395	169,053	97,415
Missouri	738,106	266,150	140,526	299,426	214,044
Montana	115,278	41,526	22,008	43,239	36,903
Nebraska	210,290	74,010	41,205	70,606	69,669
Nevada	285,780	96,222	63,256	83,924	98,330
New Hampshire	155,378	66,263	20,525	59,885	46,642
New Jersey	1,044,279	440,102	180,869	342,486	324,838
New Mexico	210,699	72,106	47,979	78,917	63,111
New York	2,387,114	948,350	416,341	845,589	745,946
North Carolina	1,196,872	410,222	243,118	459,769	372,108
North Dakota	78,937	30,174	12,087	25,755	28,874
Ohio	1,496,769	548,034	269,643	593,618	443,002
Oklahoma	420,055	143,052	91,872	178,930	116,891
Oregon	471,988	165,112	86,507	177,035	151,194
Pennsylvania	1,605,457	691,557	241,429	656,236	437,117
Rhode Island	142,459	58,952	22,559	60,383	39,483
South Carolina	573,531	208,043	114,673	228,993	169,231
South Dakota	89,994	34,112	17,825	31,774	27,825
Tennessee	784,319	286,646	146,543	340,408	220,595
Texas	2,621,495	802,767	681,340	903,544	847,910
Utah	233,516	61,638	68,594	65,933	78,840
Vermont	68,505	27,877	9,853	30,103	18,912
Virginia	865,843	327,868	157,526	315,526	275,207
Washington	769,625	259,592	153,613	275,526	249,129
West Virginia	232,736	93,675	33,157	119,058	56,401
Wisconsin	715,648	267,366	127,043	243,058	232,173
Wyoming	61,996	22,903	11,802	22,003	18,960
All States	36,324,916	13,276,316	7,094,929	13,283,005	11,307,383

[1/]State estimates are subject to sampling error, and may not sum to U.S. total due to rounding.
[2/]The greater of 60 percent of State median income estimates or 150 percent of the HHS Poverty Guidelines.
[3/]The three-year ACS estimate of the total number of all U.S. households is 114,931,864.
[4/]A household can be counted under more than one vulnerability category.
[5/]The Census Bureau changed the questions on disability in ACS in 2008. The definition above includes individuals aged 15 years and older with any of the six difficulty types (hearing, vision, cognitive, ambulatory, self-care, and independent living) reported in ACS and individuals ages 15 through 64 who received Supplemental Security Income in the past year, and non-widowed individuals ages 19 through 61 who received Social Security income in the past year. The reader should exercise caution in comparing these estimates with those in previous *Notebooks*.

Table B-2. State-level estimates of the number of LIHEAP income eligible households using State LIHEAP income standards by vulnerability category[1/2/4/]

(Three-Year ACS 2009-2011)

State	State Income Guidelines for 4-Person Household as % of HHS Poverty Guidelines	Total number of LIHEAP eligible households[3/]	LIHEAP eligible households with at least one person 60+	LIHEAP eligible households with at least one child less than 6 yrs. old	LIHEAP eligible households with at least one person with a disability[5/]	LIHEAP eligible households with no vulnerable members
Alabama	150%	512,661	177,176	98,344	242,980	133,800
Alaska	150%	47,914	12,340	13,881	18,515	13,466
Arizona	200%	728,250	247,328	162,626	231,318	240,922
Arkansas	150%	325,523	112,323	70,497	146,613	84,566
California	217%[6/]	3,971,409	1,364,748	914,246	1,268,456	1,324,037
Colorado	185%	465,577	141,825	100,409	147,317	165,791
Connecticut	150%[7/]	274,954	120,279	54,894	113,156	59,661
Delaware	200%	83,935	32,948	16,339	30,974	23,842
District of Columbia	186%[6/]	53,534	18,296	8,278	21,032	18,262
Florida	150%	1,646,709	649,928	288,541	582,517	517,477
Georgia	191%[6/]	1,160,974	373,737	250,829	408,442	390,835
Hawaii	150%	84,111	33,947	18,272	28,970	24,406
Idaho	173%[6/]	169,038	52,818	42,064	57,219	52,702
Illinois	150%	948,134	306,134	207,415	324,011	316,736
Indiana	150%	540,986	160,719	125,389	210,592	164,716
Iowa	150%	237,318	84,447	47,314	86,321	73,225
Kansas	130%	181,049	53,501	42,517	70,203	55,624
Kentucky	130%	400,949	129,077	81,688	200,350	97,939
Louisiana	179%[6/]	466,637	159,904	96,300	200,910	134,682
Maine	228%	168,263	70,043	22,869	79,948	41,544
Maryland	175%	360,751	137,186	72,061	136,221	104,031
Massachusetts	268%[6/]	851,512	366,332	124,528	335,996	239,582
Michigan	110%	580,475	145,949	129,097	237,106	184,362
Minnesota	197%[6]	524,581	197,550	95,531	183,546	164,142
Mississippi	150%	349,417	119,608	74,570	161,686	92,587
Missouri	135%	474,172	153,126	97,824	201,475	134,289
Montana	200%	115,278	41,526	22,008	43,239	36,903
Nebraska	116%	97,765	29,812	21,611	34,852	32,106
Nevada	150%	197,318	61,216	49,077	58,604	65,913
New Hampshire	254%[6/]	155,378	66,263	20,525	59,885	46,642
New Jersey	200%	705,977	290,120	135,409	248,813	202,401
New Mexico	150%	206,415	69,605	47,897	77,405	61,783
New York	223%[6/]	2,386,859	948,341	416,111	845,580	745,921
North Carolina	110%	599,056	169,577	143,721	236,448	182,872
North Dakota	199%[6/]	78,937	30,174	12,087	25,755	28,874
Ohio	200%	1,453,926	521,561	269,391	578,927	429,660
Oklahoma	130%	301,414	92,938	71,162	130,657	83,480
Oregon	195%[6/]	471,819	165,082	86,346	176,945	151,194
Pennsylvania	160%	1,084,969	430,511	180,950	469,301	288,641
Rhode Island	234%[6/]	142,459	58,952	22,559	60,383	39,483
South Carolina	150%	468,830	163,190	100,060	190,613	135,058
South Dakota	200%	89,994	34,112	17,825	31,774	27,825
Tennessee	200%	784,319	286,646	146,543	340,408	220,595
Texas	200%	2,621,495	802,767	681,340	903,544	847,910
Utah	150%	169,050	40,055	51,240	48,424	57,974
Vermont	185%	59,611	23,686	9,245	27,217	15,876
Virginia	130%	408,843	140,880	82,155	163,433	122,879
Washington	125%	362,774	103,193	80,467	140,670	112,614
West Virginia	130%	173,651	62,556	28,037	89,503	42,621
Wisconsin	214%[6/]	715,636	267,366	127,031	243,058	232,173
Wyoming	215%[6/]	61,996	22,903	11,802	22,003	18,960
All States	Not applicable	29,522,602	10,344,301	6,090,922	10,973,315	9,083,584

[1/] State estimates are subject to sampling error, and may not sum to U.S. total due to rounding.

[2/] State income guidelines can vary from 110 percent of the HHS Poverty Guidelines up to the Federal maximum LIHEAP income standard and can be different for different components of LIHEAP assistance. The table shows the estimates of LIHEAP income eligible households for heating assistance. The State maximum LIHEAP income standards for a family of four were obtained from ACF's LIHEAP grantee survey.

[3/] The three-year ACS average estimate of the total number of all U.S. households is 114,931,864.

[4/] A household can be counted under more than one vulnerability category.

[5/] The Census Bureau changed the questions on disability in ACS in 2008. The definition above includes individuals aged 15 years and older with any of the six difficulty types (hearing, vision, cognitive, ambulatory, self-care, and independent living) reported in ACS and individuals ages 15 through 64 who received Supplemental Security Income in the past year, and non-widowed individuals ages 19 through 61 who received Social Security income in the past year. The reader should exercise caution in comparing these estimates with those in previous *Notebooks*.

[6/] These States use a percent of State median income. The figures reported are the conversion to a percent of the HHS Poverty Guidelines.

[7/] The State income guideline is 200% of HHS Poverty Guidelines for households with young children, elderly, disabled members.

Table B-3. State-level estimates of the number of LIHEAP income eligible households using the Federal maximum LIHEAP income standard categorized by income as a percentage of HHS poverty guidelines[1/2/]

(Three-Year ACS 2009-2011)

State	Total number of LIHEAP eligible households[3/]	Number of LIHEAP eligible households At or below poverty guidelines	Number of LIHEAP eligible households >100% - 125% poverty guidelines	Number of LIHEAP eligible households >125% - 150% poverty guidelines	Number of LIHEAP eligible households Over 150% poverty guidelines
Alabama	618,693	302,251	104,726	105,684	106,032
Alaska	62,060	25,832	10,948	11,134	14,146
Arizona	729,566	314,785	110,898	118,128	185,755
Arkansas	343,888	182,008	73,438	70,077	18,365
California	3,972,995	1,456,611	578,737	565,343	1,372,304
Colorado	579,321	205,366	78,070	76,933	218,952
Connecticut	446,544	120,330	40,396	45,372	240,446
Delaware	101,632	30,566	12,108	13,012	45,946
District of Columbia	64,182	37,821	8,078	7,635	10,648
Florida	2,256,727	922,570	355,284	368,855	610,018
Georgia	1,161,262	518,808	178,132	175,516	288,806
Hawaii	133,230	51,398	16,083	16,630	49,119
Idaho	169,526	71,255	30,286	37,181	30,804
Illinois	1,532,107	548,267	193,288	206,579	583,973
Indiana	769,995	302,809	111,720	126,457	229,009
Iowa	352,806	122,780	55,659	58,879	115,488
Kansas	330,807	119,948	51,719	50,141	108,999
Kentucky	568,737	283,349	98,062	93,421	93,905
Louisiana	569,823	278,298	94,141	94,198	103,186
Maine	168,263	65,032	29,452	29,168	44,611
Maryland	645,736	174,274	58,257	63,436	349,769
Massachusetts	851,512	260,565	93,419	91,979	405,549
Michigan	1,302,893	513,031	177,166	180,248	432,448
Minnesota	650,339	201,609	76,758	83,295	288,677
Mississippi	365,603	209,809	72,160	67,448	16,186
Missouri	738,106	309,982	116,246	118,734	193,144
Montana	115,278	45,258	20,086	23,231	26,703
Nebraska	210,290	75,377	34,126	34,653	66,134
Nevada	285,780	109,861	42,217	45,240	88,462
New Hampshire	155,378	38,240	16,730	18,574	81,834
New Jersey	1,044,279	272,102	104,966	110,230	556,981
New Mexico	210,699	121,941	42,129	42,345	4,284
New York	2,387,114	928,164	297,513	309,225	852,212
North Carolina	1,196,872	524,110	196,631	200,946	275,185
North Dakota	78,937	29,838	11,437	11,785	25,877
Ohio	1,496,769	611,366	204,708	216,671	464,024
Oklahoma	420,055	205,840	79,752	83,317	51,146
Oregon	471,988	184,518	71,454	75,778	140,238
Pennsylvania	1,605,457	557,160	220,863	219,869	607,565
Rhode Island	142,459	49,539	18,023	17,857	57,040
South Carolina	573,531	274,762	98,588	95,480	104,701
South Dakota	89,994	37,248	15,865	14,916	21,965
Tennessee	784,319	372,198	136,106	137,994	138,021
Texas	2,621,495	1,245,294	445,231	444,798	486,172
Utah	233,516	91,520	36,322	41,208	64,466
Vermont	68,505	22,676	11,050	11,144	23,635
Virginia	865,843	284,760	103,180	110,199	367,704
Washington	769,625	267,560	95,214	103,880	302,971
West Virginia	232,736	119,907	45,594	45,615	21,620
Wisconsin	715,648	240,795	95,722	101,748	277,383
Wyoming	61,996	18,761	8,331	9,118	25,786
All States	36,324,916	14,358,149	5,277,069	5,401,304	11,288,394

[1/] State estimates are subject to sampling error, and may not sum to U.S. total due to rounding.
[2/] The greater of 60 percent of State median income estimates or 150 percent of the HHS Poverty Guidelines.
[3/] The three-year ACS estimate of the total number of all U.S. households is 114,931,864.

Table B-4. State-level estimates of the number of LIHEAP income eligible households using the State maximum LIHEAP income standards categorized by income as a percentage of HHS poverty guidelines[1/2/]

(Three-Year ACS 2009-2011)

State	State Income Guidelines for 4-Person Household as % of HHS Poverty Guidelines	Total number of LIHEAP eligible Households[3]	Number of LIHEAP eligible households At or below poverty guidelines	Number of LIHEAP eligible households >100%-125% poverty guidelines	Number of LIHEAP eligible households >125%-150% poverty guidelines	Number of LIHEAP eligible households Over 150% poverty guidelines
Alabama	150%	512,661	302,251	104,726	105,684	0
Alaska	150%	47,914	25,832	10,948	11,134	0
Arizona	200%	728,250	314,785	110,898	118,128	184,439
Arkansas	150%	325,523	182,008	73,438	70,077	0
California	217%[4/]	3,971,409	1,456,611	578,644	563,850	1,372,304
Colorado	185%	465,577	205,366	78,070	76,933	105,208
Connecticut	150%[5/]	274,954	120,330	40,396	45,372	68,856
Delaware	200%	83,935	30,566	12,108	13,012	28,249
District of Columbia	186%[4/]	53,534	37,821	8,078	7,635	0
Florida	150%	1,646,709	922,570	355,284	368,855	0
Georgia	191%[4/]	1,160,974	518,808	178,064	175,296	288,806
Hawaii	150%	84,111	51,398	16,083	16,630	0
Idaho	173%[4/]	169,038	71,255	30,241	36,738	30,804
Illinois	150%	948,134	548,267	193,288	206,579	0
Indiana	150%	540,986	302,809	111,720	126,457	0
Iowa	150%	237,318	122,780	55,659	58,879	0
Kansas	130%	181,049	119,948	51,719	9,382	0
Kentucky	130%	400,949	283,349	98,062	19,538	0
Louisiana	179%[4/]	466,637	278,298	94,141	94,198	0
Maine	228%	168,263	65,032	29,452	29,168	44,611
Maryland	175%	360,751	174,274	58,257	63,436	64,784
Massachusetts	268%[4/]	851,512	260,565	93,419	91,979	405,549
Michigan	110%	580,475	513,031	67,444	0	0
Minnesota	197%[4/]	524,581	201,609	76,758	83,109	163,105
Mississippi	150%	349,417	209,809	72,160	67,448	0
Missouri	135%	474,172	309,982	116,246	47,944	0
Montana	200%	115,278	45,258	20,086	23,231	26,703
Nebraska	116%	97,765	75,377	22,388	0	0
Nevada	150%	197,318	109,861	42,217	45,240	0
New Hampshire	254%[4/]	155,378	38,240	16,730	18,574	81,834
New Jersey	200%	705,977	272,102	104,966	110,230	218,679
New Mexico	150%	206,415	121,941	42,129	42,345	0
New York	223%[4/]	2,386,859	928,164	297,513	308,970	852,212
North Carolina	110%	599,056	524,110	74,946	0	0
North Dakota	199%[4/]	78,937	29,838	11,437	11,785	25,877
Ohio	200%	1,453,926	611,366	204,708	216,671	421,181
Oklahoma	130%	301,414	205,840	79,752	15,822	0
Oregon	195%[4/]	471,819	184,518	71,454	75,609	140,238
Pennsylvania	160%	1,084,969	557,160	220,863	219,869	87,077
Rhode Island	234%[4/]	142,459	49,539	18,023	17,857	57,040
South Carolina	150%	468,830	274,762	98,588	95,480	0
South Dakota	200%	89,994	37,248	15,865	14,916	21,965
Tennessee	200%	784,319	372,198	136,106	137,994	138,021
Texas	200%	2,621,495	1,245,294	445,231	444,798	486,172
Utah	150%	169,050	91,520	36,322	41,208	0
Vermont	185%	59,611	22,676	11,050	11,144	14,741
Virginia	130%	408,843	284,760	103,180	20,903	0
Washington	125%	362,774	267,560	95,214	0	0
West Virginia	130%	173,651	119,907	45,594	8,150	0
Wisconsin	214%[4/]	715,636	240,795	95,722	101,736	277,383
Wyoming	215%[4/]	61,996	18,761	8,331	9,118	25,786
All States	Not applicable	29,522,602	14,358,149	5,033,718	4,499,111	5,631,624

[1/] State estimates are subject to sampling error, and may not sum to U.S. total due to rounding.
[2/] State income guidelines can vary from 110 percent of the HHS Poverty Guidelines up to the Federal maximum LIHEAP income standard and can be different for different components of LIHEAP assistance. The table shows the estimates of LIHEAP income eligible households for heating assistance. The State maximum LIHEAP income standards for a family of four were obtained from ACF's LIHEAP grantee survey.
[3/] The three-year ACS estimate of the total number of all U.S. households is 114,931,864.
[4/] These States use a percent of State median income. The figures reported are the conversion to a percent of the HHS Poverty Guidelines.
[5/] The State income guideline is 200% of HHS Poverty Guidelines for households with young children, elderly, disabled members.