

LIHEAP Home Energy Notebook

For Fiscal Year 2007



**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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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 2007 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.¹³

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

Table 2-1, 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.¹⁴ In FY 2007, average residential energy consumption for all households was 95.8 million British Thermal Units (mmBTUs) and average expenditures were \$1,986. The mean individual residential energy burden for all households was 7.0 percent of income.

Low income households had average residential energy consumption of 84.4 mmBTUs (11.9 percent less than all households) and average energy expenditures of \$1,715 (13.6 percent less than all households). Their mean individual residential energy burden was 13.5 percent, almost twice that for all households and almost four times that for non low income households.

Average residential energy expenditures for LIHEAP recipient households were \$1,900, about 11 percent higher than that for all low income households. The mean individual residential energy burden was 16.0 percent, 2.5 percentage points higher than that for low income households.

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 2007, home heating was 31 percent of the residential energy bill for low income households, and home cooling made up 12 percent.

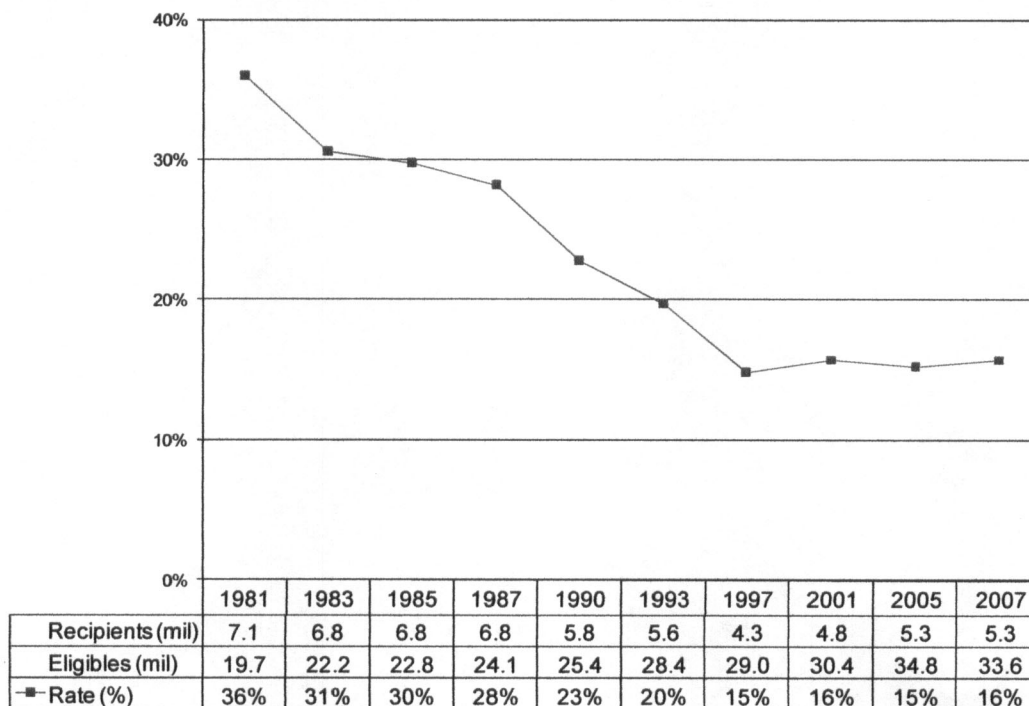
¹³ The FY 2007 *Notebook* is the first to use the 2005 RECS data. The FY 2006 *Notebook* used projections from the 2001 RECS, which had a different sample frame and different procedure than the 2005 RECS. The reader should exercise caution in comparing the results for FY 2007 to those for FY 2006, as some of the observed changes may be due to the changes in the base survey used.

¹⁴ 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's poverty income guidelines or 60 percent of State median income. Low income households represent those households with annual incomes under the LIHEAP income maximum of the greater of 150 percent of HHS's poverty income guidelines or 60 percent of State median income. LIHEAP recipient households represent those low income households that received Federal fuel assistance.

Trends in LIHEAP

Figures 3-20 through 3-24 furnish information on trends for HHS' energy assistance programs from FY 1981 through FY 2007. Figure 3-20 shows that the percentage of LIHEAP income eligible households that has been assisted has fallen significantly over time but has been steady at about 16 percent in recent years. In FY 1981, 36 percent of eligible households received heating and/or winter crisis assistance benefits, but this number fell to 15 percent in 1997.²⁷ By FY 2007, 16 percent of LIHEAP income eligible households received those benefits. Figure 3-21, on the next page, furnishes statistics on the count of recipients by benefit type.

Figure 3-20. Percentage of LIHEAP/LIHEAP Federally eligible households receiving LIHEAP/LIHEAP heating and/or winter crisis assistance, FY 1981 to FY 2007



NOTE: The FY 1981 estimate of LIHEAP income eligible households is not directly comparable to those of the other years.

SOURCE: HHS Administrative Data — such data for FY 2007 are preliminary; thus the actual figures may differ.

²⁷Note that the Federal income eligibility guidelines for the FY 1981 Low Income Energy Assistance Program (LIEAP) were different from those for subsequent LIHEAP programs included in the table.

Table 2-1. Residential energy: Average annual household consumption, expenditures, and burden by all, non low income, low income, and LIHEAP recipient households, by main heating fuel type, United States, FY 2007^{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/} |
|------------------------------------|---|-------------------|--------------------------------------|--|---------------------------------|
| <i>All households</i> | | | | | |
| All fuels | 95.8 | \$1,986 | 7.0% | 4.2% | 3.0% |
| Natural gas | 111.4 | \$1,956 | 6.2% | 3.9% | 2.9% |
| Electricity | 61.2 | \$1,696 | 6.9% | 3.9% | 2.5% |
| Fuel oil | 145.6 | \$3,248 | 12.1% | 7.2% | 4.9% |
| Kerosene | 53.8 | \$1,392 | 9.6% | 6.9% | 2.1% |
| LPG ^{6/} | 108.6 | \$2,640 | 9.3% | 6.3% | 4.0% |
| <i>Non low income households</i> | | | | | |
| All fuels | 101.9 | \$2,132 | 3.6% | 3.1% | 2.5% |
| Natural gas | 116.1 | \$2,098 | 3.4% | 2.9% | 2.4% |
| Electricity | 66.0 | \$1,828 | 3.3% | 2.9% | 2.1% |
| Fuel oil | 154.5 | \$3,489 | 5.5% | 4.9% | 4.0% |
| Kerosene | 60.8 | \$1,419 | 4.3% | 4.6% | 1.6% |
| LPG ^{6/} | 115.8 | \$2,742 | 5.0% | 4.5% | 3.2% |
| <i>Low income households</i> | | | | | |
| All fuels | 84.4 | \$1,715 | 13.5% | 9.3% | 9.9% |
| Natural gas | 101.4 | \$1,653 | 12.2% | 8.8% | 9.5% |
| Electricity | 53.1 | \$1,471 | 13.1% | 8.2% | 8.5% |
| Fuel oil | 131.9 | \$2,879 | 22.3% | 16.1% | 16.6% |
| Kerosene | 52.5 | \$1,387 | 10.6% | 8.6% | 8.0% |
| LPG ^{6/} | 94.9 | \$2,449 | 17.4% | 13.8% | 14.1% |
| <i>LIHEAP recipient households</i> | | | | | |
| All fuels | 103.2 | \$1,900 | 16.0% | 10.5% | 13.3% |
| Natural gas | 112.9 | \$1,770 | 14.6% | 10.3% | 12.4% |
| Electricity | 49.7 | \$1,219 | 14.9% | 9.1% | 8.5% |
| Fuel oil | 149.9 | \$3,290 | 24.8% | 23.8% | 23.0% |
| Kerosene | 76.8 | \$1,612 | 18.7% | 13.8% | 11.3% |
| LPG ^{6/} | 107.8 | \$2,970 | 17.1% | 11.3% | 20.8% |

^{1/}Data are derived from the 2005 RECS, adjusted to reflect FY 2007 heating degree days, cooling degree days, and fuel prices. Data represent residential energy used from October 2006 through September 2007.

^{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 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 2007 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 2007 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 2007; and (3) dividing the adjusted figures by the average income for each group of households from the 2007 CPS ASEC.

^{6/}Liquefied petroleum gas (LPG) refers to any fuel gas supplied to a residence in liquid compressed form,

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 2007

| Census Region | Main heating fuel | | | | | | | | | | | |
|---|-----------------------|-----------------------|-------------|---------|-------------|---------|----------|---------|----------|---------|----------|---------|
| | All fuels | | Natural gas | | Electricity | | Fuel oil | | Kerosene | | LPG | |
| | Dollars ^{1/} | Percent ^{2/} | Dollars | Percent | Dollars | Percent | Dollars | Percent | Dollars | Percent | Dollars | Percent |
| United States | | | | | | | | | | | | |
| All households | \$1,986 | 3.0% | \$1,956 | 2.9% | \$1,696 | 2.5% | \$3,248 | 4.9% | \$1,392 | 2.1% | \$2,640 | 4.0% |
| Non low income households | \$2,132 | 2.5% | \$2,098 | 2.4% | \$1,828 | 2.1% | \$3,489 | 4.0% | \$1,419* | 1.6% | \$2,742 | 3.2% |
| Low income households ^{3/} | \$1,715 | 9.9% | \$1,653 | 9.5% | \$1,471 | 8.5% | \$2,879 | 16.6% | \$1,387 | 8.0% | \$2,449 | 14.1% |
| LIHEAP recipient households ^{4/} | \$1,900 | 13.3% | \$1,770 | 12.4% | \$1,219 | 8.5% | \$3,290 | 23.0% | \$1,612* | 11.3% | \$2,970 | 20.8% |
| Northeast | | | | | | | | | | | | |
| All households | \$2,519 | 3.4% | \$2,212 | 3.0% | \$1,616 | 2.2% | \$3,385 | 4.6% | \$1,091 | 1.5% | \$3,261 | 4.4% |
| Non low income households | \$2,765 | 2.8% | \$2,435 | 2.5% | \$1,693 | 1.7% | \$3,692 | 3.7% | \$2,120* | 2.2% | \$3,304 | 3.4% |
| Low income households | \$2,148 | 11.4% | \$1,841 | 9.8% | \$1,530 | 8.1% | \$2,936 | 15.6% | \$919* | 4.9% | \$3,147* | 16.7% |
| LIHEAP recipient households | \$2,364 | 15.3% | \$1,926 | 12.5% | \$1,455 | 9.4% | \$3,345 | 21.7% | \$1,890* | 12.3% | \$2,140* | 13.9% |
| Midwest | | | | | | | | | | | | |
| All households | \$1,933 | 3.0% | \$1,943 | 3.1% | \$1,344 | 2.1% | \$2,679 | 4.2% | \$1,786* | 2.8% | \$2,802 | 4.4% |
| Non low income households | \$2,059 | 2.5% | \$2,050 | 2.5% | \$1,476 | 1.8% | \$2,929 | 3.5% | NC | NC | \$2,788 | 3.4% |
| Low income households | \$1,721 | 9.9% | \$1,760 | 10.1% | \$1,180 | 6.8% | \$2,364 | 13.6% | \$1,786* | 10.2% | \$2,856 | 16.4% |
| LIHEAP recipient households | \$1,803 | 12.2% | \$1,861 | 12.5% | \$1,156 | 7.8% | \$2,810* | 18.9% | \$1,510* | 10.2% | \$2,522* | 17.0% |
| South | | | | | | | | | | | | |
| All households | \$1,956 | 3.2% | \$2,129 | 3.5% | \$1,811 | 2.9% | \$2,553 | 4.1% | \$1,463 | 2.4% | \$2,467 | 4.0% |
| Non low income households | \$2,098 | 2.6% | \$2,297 | 2.9% | \$1,930 | 2.4% | \$2,384 | 3.0% | \$1,189* | 1.5% | \$2,566 | 3.2% |
| Low income households | \$1,686 | 10.8% | \$1,714 | 10.9% | \$1,588 | 10.1% | \$2,921* | 18.7% | \$1,540 | 9.8% | \$2,343 | 15.0% |
| LIHEAP recipient households | \$1,842 | 15.6% | \$1,785 | 15.1% | \$1,319 | 11.2% | \$3,022* | 25.6% | \$1,562* | 13.2% | \$3,372* | 28.6% |
| West | | | | | | | | | | | | |
| All households | \$1,637 | 2.3% | \$1,609 | 2.2% | \$1,508 | 2.1% | \$2,965 | 4.1% | \$1,288* | 1.8% | \$2,530 | 3.5% |
| Non low income households | \$1,792 | 1.9% | \$1,756 | 1.9% | \$1,656 | 1.8% | \$2,952* | 3.2% | NC | NC | \$2,765 | 3.0% |
| Low income households | \$1,278 | 6.9% | \$1,168 | 6.3% | \$1,272 | 6.8% | \$3,040* | 16.3% | \$1,288* | 6.9% | \$2,133 | 11.4% |
| LIHEAP recipient households | \$1,195 | 8.1% | \$1,129 | 7.7% | \$993 | 6.7% | \$2,968* | 20.1% | NC | NC | \$2,706* | 18.4% |

^{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 2007. Expenditures represent the costs for fuel oil, kerosene, and LPG delivered and billed costs for natural gas and electricity. 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 2007 CPS ASEC, which reports income for calendar year 2006. Mean group residential burden is computed as mean group energy expenditures (from RECS) by mean group income (from CPS ASEC). See text in Appendix A for a discussion of energy burden.

^{3/}Households with annual incomes under 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-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 2007^{1/}

| | All Fuels ^{2/} | Natural Gas | Electricity | Fuel Oil | Kerosene | LPG |
|---|---------------------------|-------------|-------------|----------|----------|-------|
| | (In MmBTUs) ^{3/} | | | | | |
| United States | | | | | | |
| All households | 38.9 | 50.4 | 8.5 | 95.1 | 20.2 | 51.8 |
| Non low income households | 40.0 | 50.0 | 9.0 | 98.6 | 25.2* | 57.4 |
| Low income households ^{4/} | 36.9 | 51.4 | 7.7 | 89.8 | 19.3 | 41.4 |
| LIHEAP recipient households ^{5/} | 52.9 | 61.1 | 8.8 | 96.8 | 24.4* | 45.2 |
| Northeast | | | | | | |
| All households | 69.6 | 66.7 | 12.4 | 96.9 | 15.7 | 74.6 |
| Non low income households | 74.1 | 69.3 | 13.4 | 102.2 | 22.9* | 81.3 |
| Low income households | 62.8 | 62.5 | 11.3 | 89.3 | 14.5* | 57.3* |
| LIHEAP recipient households | 68.2 | 63.6 | 11.4 | 94.6 | 15.7* | 46.5* |
| Midwest | | | | | | |
| All households | 57.7 | 66.6 | 13.9 | 80.4 | 46.2* | 64.4 |
| Non low income households | 59.0 | 66.9 | 15.7 | 72.8 | NC | 66.9 |
| Low income households | 55.5 | 66.1 | 11.8 | 90.1 | 46.2* | 55.4 |
| LIHEAP recipient households | 64.3 | 72.8 | 10.8 | 119.2* | 4.9* | 53.4* |
| South | | | | | | |
| All households | 20.8 | 37.0 | 7.6 | 90.8 | 16.5 | 42.5 |
| Non low income households | 22.1 | 37.7 | 8.2 | 93.5 | 25.9* | 43.6 |
| Low income households | 18.4 | 35.2 | 6.5 | 84.9* | 13.9 | 41.1 |
| LIHEAP recipient households | 33.4 | 47.8 | 7.1 | 90.0* | 28.5* | 43.4* |
| West | | | | | | |
| All households | 23.5 | 29.9 | 7.8 | 100.4 | 18.5* | 43.6 |
| Non low income households | 25.3 | 30.3 | 7.9 | 93.5* | NC | 55.7 |
| Low income households | 19.2 | 28.6 | 7.7 | 137.0* | 18.5* | 23.0 |
| LIHEAP recipient households | 27.5 | 37.2 | 8.1 | 145.8* | NC | 41.7* |

^{1/}Developed from the 2005 Residential Energy Consumption Survey (RECS), Energy Information Administration, U.S. Department of Energy, and adjusted for FY 2007.

^{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.

LIHEAP Home Energy Notebook for FY 2007: Appendix B: Income Eligible Household Estimates

Table B-3. Average of 2006, 2007, and 2008 State-level estimates of the number of LIHEAP income eligible households using the Federal maximum LIHEAP income standard classified by HHS poverty guidelines^{1/2/}

(Three-Year Average of CPS ASEC 2006-2008)

| State | Total number of LIHEAP eligible households ³ | Number of LIHEAP eligible households by intervals of HHS Poverty Guidelines | | | |
|----------------------|---|---|---------------------------------|---------------------------------|------------------------------|
| | | At or below poverty guidelines | >100% - 125% poverty guidelines | >125% - 150% poverty guidelines | Over 150% poverty guidelines |
| Alabama | 550,398 | 268,655 | 90,285 | 88,845 | 102,613 |
| Alaska | 69,686 | 28,735 | 11,785 | 12,312 | 16,854 |
| Arizona | 630,341 | 276,456 | 107,222 | 100,562 | 146,101 |
| Arkansas | 301,160 | 152,005 | 63,771 | 71,469 | 13,916 |
| California | 3,840,876 | 1,250,875 | 683,775 | 606,271 | 1,299,956 |
| Colorado | 514,153 | 174,858 | 72,016 | 73,174 | 194,105 |
| Connecticut | 457,617 | 112,788 | 49,257 | 53,170 | 242,402 |
| Delaware | 95,394 | 25,826 | 10,955 | 13,127 | 45,486 |
| District of Columbia | 69,861 | 40,304 | 10,410 | 8,712 | 10,435 |
| Florida | 2,013,483 | 801,536 | 322,202 | 357,400 | 532,345 |
| Georgia | 999,434 | 421,874 | 147,171 | 154,568 | 275,820 |
| Hawaii | 109,532 | 44,781 | 18,589 | 15,185 | 30,977 |
| Idaho | 123,765 | 48,832 | 27,618 | 30,030 | 17,284 |
| Illinois | 1,506,838 | 478,932 | 185,933 | 198,312 | 643,661 |
| Indiana | 729,137 | 274,514 | 94,248 | 124,771 | 235,603 |
| Iowa | 324,110 | 108,296 | 44,717 | 56,041 | 115,056 |
| Kansas | 313,277 | 113,219 | 41,872 | 50,365 | 107,822 |
| Kentucky | 508,792 | 242,598 | 96,132 | 97,183 | 72,879 |
| Louisiana | 476,654 | 246,416 | 91,088 | 90,345 | 48,804 |
| Maine | 154,662 | 56,366 | 21,945 | 28,121 | 48,230 |
| Maryland | 607,980 | 167,952 | 59,356 | 71,641 | 309,032 |
| Massachusetts | 872,740 | 284,158 | 103,708 | 92,455 | 392,420 |
| Michigan | 1,218,551 | 439,448 | 169,263 | 151,054 | 458,785 |
| Minnesota | 587,936 | 144,422 | 75,157 | 73,019 | 295,338 |
| Mississippi | 339,311 | 203,166 | 66,008 | 61,590 | 8,547 |
| Missouri | 683,461 | 242,575 | 110,098 | 120,449 | 210,340 |
| Montana | 96,489 | 47,064 | 23,967 | 15,093 | 10,365 |
| Nebraska | 191,140 | 60,197 | 33,254 | 32,164 | 65,525 |
| Nevada | 224,501 | 80,640 | 31,926 | 41,960 | 69,975 |
| New Hampshire | 134,222 | 28,881 | 17,649 | 16,139 | 71,552 |
| New Jersey | 1,037,955 | 258,259 | 109,985 | 111,478 | 558,233 |
| New Mexico | 208,290 | 111,815 | 42,373 | 45,535 | 8,567 |
| New York | 2,478,716 | 1,006,275 | 341,851 | 328,618 | 801,972 |
| North Carolina | 1,061,471 | 455,833 | 206,970 | 189,548 | 209,120 |
| North Dakota | 75,800 | 28,316 | 13,048 | 13,395 | 21,040 |
| Ohio | 1,363,060 | 532,399 | 183,472 | 190,520 | 456,669 |
| Oklahoma | 404,643 | 188,658 | 92,233 | 79,880 | 43,871 |
| Oregon | 401,851 | 148,920 | 77,975 | 66,546 | 108,410 |
| Pennsylvania | 1,489,149 | 507,619 | 196,275 | 236,252 | 549,003 |
| Rhode Island | 129,094 | 41,592 | 15,889 | 15,456 | 56,157 |
| South Carolina | 480,334 | 207,446 | 94,434 | 86,911 | 91,542 |
| South Dakota | 83,527 | 29,856 | 16,673 | 14,796 | 22,202 |
| Tennessee | 715,897 | 332,467 | 130,366 | 134,091 | 118,974 |
| Texas | 2,456,387 | 1,176,802 | 478,946 | 426,228 | 374,411 |
| Utah | 198,661 | 66,063 | 33,823 | 39,940 | 58,835 |
| Vermont | 75,913 | 22,377 | 10,988 | 13,123 | 29,425 |
| Virginia | 816,492 | 217,216 | 98,088 | 119,324 | 381,864 |
| Washington | 674,016 | 208,311 | 101,162 | 96,251 | 268,292 |
| West Virginia | 204,218 | 106,442 | 40,062 | 48,424 | 9,290 |
| Wisconsin | 661,315 | 207,459 | 103,466 | 95,510 | 254,880 |
| Wyoming | 56,989 | 19,632 | 9,182 | 9,543 | 18,632 |
| All States | 33,819,278 | 12,740,124 | 5,278,640 | 5,266,896 | 10,533,618 |

^{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 CPS ASEC average estimate of the total number of all U.S. households is 115,726,411.