

Low Income Home Energy Data

For Fiscal Year 2020

U.S. DEPARTMENT OF
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ADMINISTRATION FOR
CHILDREN & FAMILIES

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For Fiscal Year 2020

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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
Mary E. Switzer Building, 5th Floor
330 C Street, SW
Washington, DC 20201

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's 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's Division of Energy Assistance
DOE	U.S. Department of Energy
EIA	DOE's Energy Information Administration
FY	Fiscal Year
HDD	Heating Degree Day
HHS	U.S. Department of Health and Human Services
LIHEAP	Low Income Home Energy Assistance Program
LPG	Liquefied Petroleum Gas
MMBtus	Million British thermal units
NC	No cases in sample
NOAA	National Oceanographic and Atmospheric Administration
OBRA	Omnibus Budget Reconciliation Act of 1981
OCS	ACF's Office of Community Services
Pub. L.	Public Law
PUMS	Public Use Microdata Sample
RECS	Residential Energy Consumption Survey

Executive Summary

This report presents home energy consumption and expenditure data. The primary information source for the data on residential energy is the 2015 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 2015. All Fiscal Year (FY) 2020 residential energy consumption and expenditures figures for this report have been derived from the 2015 RECS data that were adjusted to reflect FY 2020 weather and fuel prices, as described in Appendix A.

Residential Energy Data

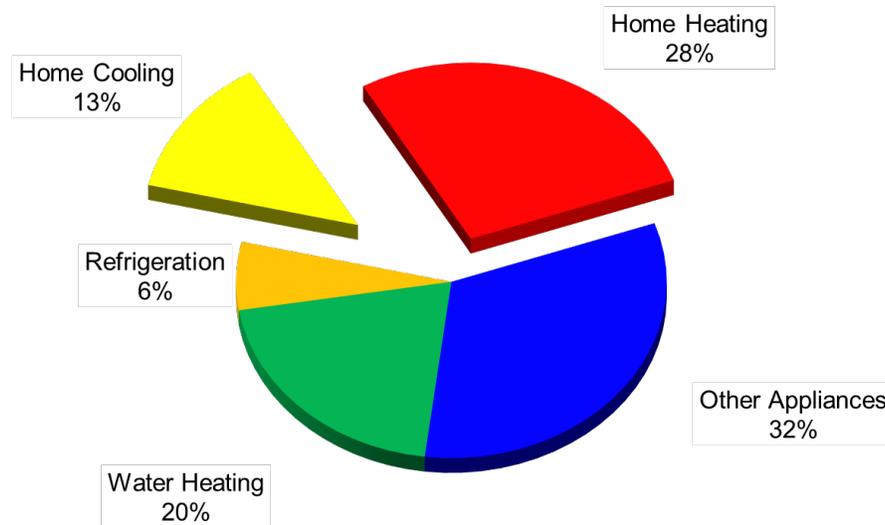
In FY 2020, average residential energy expenditures for all households were \$1,900 and the mean individual energy burden was 5.1 percent of income.¹ Low income households had average energy expenditures of \$1,612, about 15 percent lower than the average for all households.² The mean individual energy burden for low income households was 10.9 percent, over twice the mean individual energy burden of all households. Low Income Home Energy Assistance Program (LIHEAP) beneficiary households had average residential energy expenditures of \$1,807, about 12 percent higher than the average for all low income households. The mean individual energy burden for LIHEAP beneficiaries was 11.7 percent, 0.8 percentage points higher than the mean individual energy burden for low income households.

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 represented about 41 percent of residential energy expenditures for low income households in FY 2020. Refrigerators and freezers represented about 6 percent of residential energy expenditures, water heating represented about 20 percent of residential energy expenditures, and other appliances represented about 32 percent of residential energy expenditures.

¹ The mean is the sum of all values divided by the number of values. The mean is also referred to as the average.

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 (HHSPG) and 60 percent of state median income (SMI)). 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.

Figure 1. Percent of United States Residential Energy Expenditures by Low Income Households, by End Use, FY 2020



Home Heating Data

The three most common heating fuels in 2015 were natural gas (49 percent), electricity (35 percent), and fuel oil (5 percent). In the decade 2000-2009, the share of households using electricity as a main heating fuel increased significantly, while the share using fuel oil declined. From 2009 to 2015, the share of households using electricity as a main heating fuel increased by a single percentage point, while the share using fuel oil declined by the same amount. There were only small deviations from this pattern in main heating fuel choice by income group.

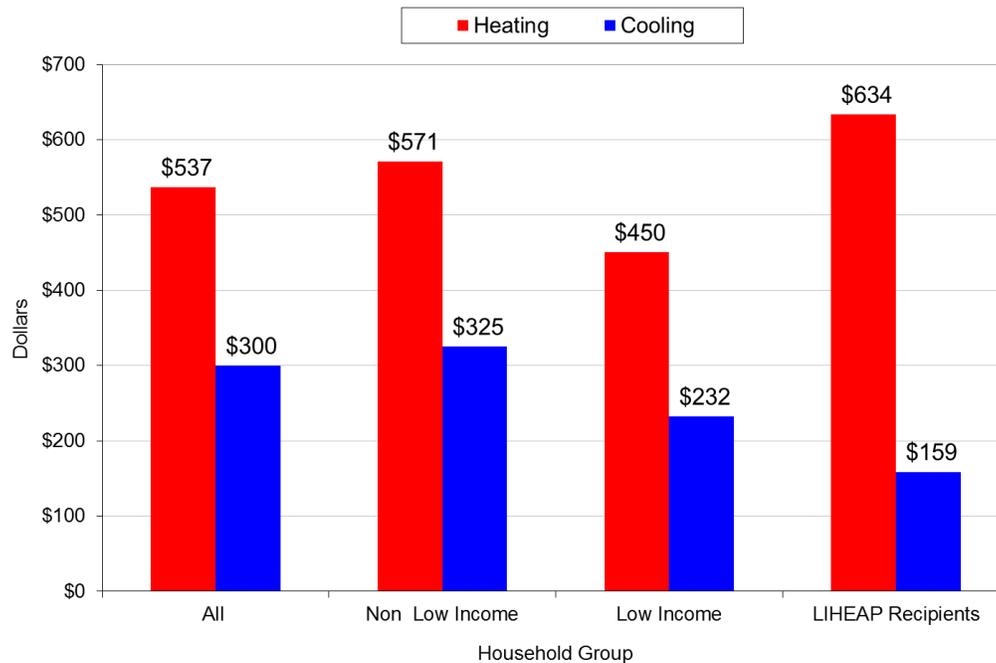
In FY 2020, as shown in Figures 2 and 3, average home heating expenditures for all households were \$537 and the mean individual home heating burden was 1.5 percent. Low income households had average home heating expenditures of \$450; this average was about 16 percent lower than that for all households. The mean individual home heating burden for low income households was 3.1 percent, over twice as much as the mean individual home heating burden for all households. The average home heating expenditures for LIHEAP beneficiary households was \$634, about 41 percent higher than the average for low income households and about 18 percent higher than the average for all households. Mean individual home heating burden for LIHEAP beneficiary households was 4.2 percent, almost 3 times the average for all households and 35 percent higher than that for all low income households. Average home heating expenditures (and consumption) for LIHEAP beneficiary households were greater than that for all low income households because LIHEAP heating assistance beneficiary households tend to live in colder climate regions.

Home Cooling Data

In 2015, nearly 94 percent of all households cooled their homes using one of the methods recorded by the RECS.³ Low income and LIHEAP beneficiary households were less likely to cool their homes than were non-low income households; 90.4 percent of low income households and 92.9 percent of LIHEAP beneficiary households cooled their homes using one of these methods.

As Figures 2 and 3 show, in FY 2020, for households that cooled, average home cooling expenditures for all households were \$300 and the mean individual home cooling burden was 0.8 percent. Low income households had average home cooling expenditures of \$232; this average was about 23 percent lower than that for all households. The mean individual home cooling burden for low income households was 1.6 percent, twice as much as the mean individual home cooling burden for all households. Average home cooling expenditures for LIHEAP beneficiary households were \$159, about 31 percent lower than the average for low income households and about 47 percent lower than the average for all households. The mean individual home cooling burden for LIHEAP beneficiary households was 1.0 percent, 25 percent higher than the mean individual home cooling burden for all households.

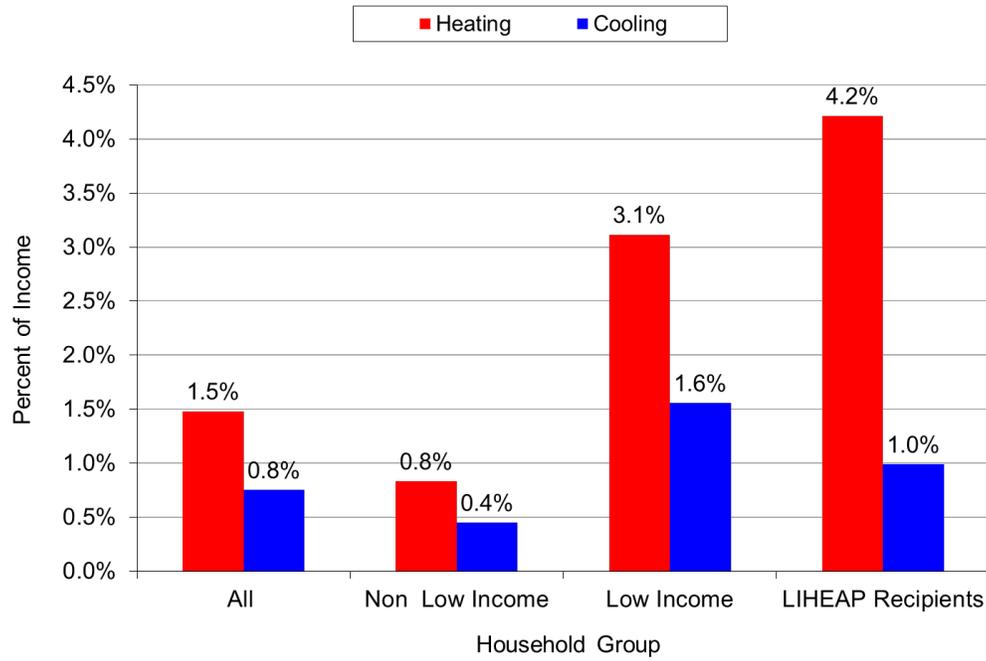
Figure 2. Mean Home Heating and Cooling Expenditures by All Households, Non-Low Income Households, Low Income Households, and LIHEAP Beneficiary Households, FY 2020



³ The 2015 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).

Low Income Home Energy Data for FY 2020:

Figure 3. Mean Individual Burden of Heating and Cooling Expenditures for All Households, Non-Low Income Households, Low Income Households, and LIHEAP Beneficiary Households, FY 2020



I. Introduction

The Low Income Home Energy Assistance Program (LIHEAP) is authorized by Title XXVI of the Omnibus Budget Reconciliation Act of 1981 (OBRA), Public Law (Pub. L.) 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. 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 United States 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, Pub. L. 103-252, Sec. 302). Congress further indicated that LIHEAP grant recipients 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 (Pub. L. 109-58) reauthorized LIHEAP through Fiscal Year (FY) 2007 without substantive changes. LIHEAP’s reauthorization is currently pending.

For LIHEAP grant recipients 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.

The *Low Income Home Energy Data Report* focuses on the home energy mission of LIHEAP by providing LIHEAP grant recipients with the latest national and regional data on home energy consumption, expenditures, and burden, and by providing data on the characteristics of the low income population in each state. Previously, the *Low Income Home Energy Data Report* was published as part of the *LIHEAP Home Energy Notebook*, which included additional sections on low income home energy trends, federal LIHEAP targeting performance, and special studies of important issues related to LIHEAP and low income home energy needs. Beginning with data for FY 2015, the individual sections from the *LIHEAP Home Energy Notebook* have been published separately in an effort to make the data available to LIHEAP grant recipients in a more timely fashion.

The following sections present home energy consumption and expenditure data. The primary data source for these sections is the 2015 Residential Energy Consumption Survey (RECS), which has energy consumption and expenditures data for calendar year 2015. For this report, the 2015 residential energy, home heating, and home cooling consumption and expenditures have been adjusted to reflect FY 2020 weather and fuel prices and are described in Appendix A. National data on total residential energy, home heating, and home cooling are presented in the following section, with regional variations in the national data included in Appendix A. Information on the characteristics of the low income population, by state, is presented in Appendix B.

II. Residential Energy Data

Tables 1a to 1d present data on average annual residential energy consumption, expenditures, and burden by fuel type for all, non-low income, low income, and LIHEAP beneficiary households.⁴ In FY 2020, average residential energy consumption for all households was 76.6 million British thermal units (MMBtus) and average expenditures were \$1,900. The mean individual residential energy burden for all households was 5.1 percent of income.

Low income households had average residential energy consumption of 63.8 MMBtus (about 17 percent less than all households) and average energy expenditures of \$1,612 (about 15 percent less than all households). Their mean individual residential energy burden was 10.9 percent, over twice that for all households and over 3 times that for non-low income households.

Average residential energy expenditures for LIHEAP beneficiary households were \$1,807, about 12 percent higher than that for all low income households. The mean individual residential energy burden was 11.7 percent, 0.8 percentage points higher than that for all low income households.

Households consume residential energy for a variety of uses that includes space heating, water heating, space cooling (air-conditioning or circulation), refrigeration, and other appliances. Table 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 costs. In FY 2020, home heating was 28 percent of the residential energy bill for low income households and home cooling made up 13 percent.

⁴ Comparisons are made among the four income groups of all, non-low income, low income, and LIHEAP beneficiary households. All households represent the total number of households in the United States. Non-low income households represent those households with annual incomes above the LIHEAP income maximum of the greater of 150 percent of HHSPG and 60 percent of the SMI. Low income households represent those households with annual incomes at or under the LIHEAP income maximum of the greater of 150 percent of HHSPG and 60 percent of the SMI. LIHEAP beneficiary households represent those low income households that received federal fuel assistance.

Low Income Home Energy Data for FY 2020: II. Residential Energy Data

Table 1a. Residential Energy: Average Annual Household Consumption, Expenditures, and Burden by All Households, by Main Heating Fuel Type, United States, FY 2020ⁱ

Main Heating Fuel	Fuel Consumption (MMBtus) ⁱⁱ	Fuel Expenditures	Mean Individual Burden ⁱⁱⁱ	Median Individual Burden ^{iv}	Mean Group Burden ^v
All fuels	76.6	\$1,900	5.1%	3.2%	1.9%
Natural gas	95.4	\$1,939	4.7%	2.9%	2.0%
Electricity	50.8	\$1,714	4.7%	3.4%	1.7%
Fuel oil/kerosene	107.5	\$2,920	7.9%	4.6%	3.0%
Liquefied petroleum gas (LPG) ^{vi}	93.0	\$2,565	5.9%	3.8%	2.6%

ⁱ Data are derived from the 2015 RECS, adjusted to reflect FY 2020 heating degree days, cooling degree days, and fuel prices. Data represent residential energy used from October 2019 through September 2020. See also Tables A-2, A-3a – A-3c, and Appendix A.

ⁱⁱ A British thermal unit (Btu) is the amount of energy necessary to raise the temperature of 1 pound of water 1 degree Fahrenheit. MMBtus refer to values in millions of Btus.

ⁱⁱⁱ Mean individual burden is calculated by taking the mean, or average, of individual energy burdens, as calculated from FY 2020 adjusted RECS data. See Appendix A for information on calculation of energy burden.

^{iv} Median individual burden is calculated by taking the median of individual energy burdens, as calculated from FY 2020 adjusted RECS data.

^v Mean group energy burden has been calculated by (1) calculating average residential energy expenditures from the 2015 RECS for each group of households; (2) adjusting those figures for FY 2020; and (3) dividing the adjusted figures by the average income for each group of households from the 2020 CPS ASEC.

^{vi} Liquefied petroleum gas (LPG) refers to any fuel gas supplied to a residence in liquid compressed form, such as propane or butane.

Low Income Home Energy Data for FY 2020: II. Residential Energy Data

Table 1b. Residential Energy: Average Annual Household Consumption, Expenditures, and Burden by Non-Low Income Households, by Main Heating Fuel Type, United States, FY 2020ⁱ

Main Heating Fuel	Fuel Consumption (MMBtus) ⁱⁱ	Fuel Expenditures	Mean Individual Burden ⁱⁱⁱ	Median Individual Burden ^{iv}	Mean Group Burden ^v
All fuels	81.7	\$2,015	2.8%	2.4%	1.6%
Natural gas	99.5	\$2,031	2.7%	2.3%	1.6%
Electricity	54.0	\$1,828	2.7%	2.4%	1.5%
Fuel oil/kerosene	115.7	\$3,167	4.2%	3.6%	2.5%
LPG ^{vi}	99.4	\$2,711	3.6%	3.1%	2.2%

ⁱ Data are derived from the 2015 RECS, adjusted to reflect FY 2020 heating degree days, cooling degree days, and fuel prices. Data represent residential energy used from October 2019 through September 2020. See also Tables A-2, A-3a – A-3c, and Appendix A.

ⁱⁱ A Btu is the amount of energy necessary to raise the temperature of 1 pound of water 1 degree Fahrenheit. MMBtus refer to values in millions of Btus.

ⁱⁱⁱ Mean individual burden is calculated by taking the mean, or average, of individual energy burdens, as calculated from FY 2020 adjusted RECS data. See Appendix A for information on calculation of energy burden.

^{iv} Median individual burden is calculated by taking the median of individual energy burdens, as calculated from FY 2020 adjusted RECS data.

^v Mean group energy burden has been calculated by (1) calculating average residential energy expenditures from the 2015 RECS for each group of households; (2) adjusting those figures for FY 2020; and (3) dividing the adjusted figures by the average income for each group of households from the 2020 CPS ASEC.

^{vi} LPG refers to any fuel gas supplied to a residence in liquid compressed form, such as propane or butane.

Low Income Home Energy Data for FY 2020: II. Residential Energy Data

Table 1c. Residential Energy: Average Annual Household Consumption, Expenditures, and Burden by Low Income Households, by Main Heating Fuel Type, United States, FY 2020ⁱ

Main Heating Fuel	Fuel Consumption (MMBtus) ⁱⁱ	Fuel Expenditures	Mean Individual Burden ⁱⁱⁱ	Median Individual Burden ^{iv}	Mean Group Burden ^v
All fuels	63.8	\$1,612	10.9%	9.2%	7.5%
Natural gas	82.8	\$1,650	10.7%	8.8%	7.7%
Electricity	44.9	\$1,498	10.7%	9.3%	7.0%
Fuel oil/kerosene	88.9	\$2,357	16.5%	13.7%	11.0%
LPG ^{vi}	71.0	\$2,059	13.8%	13.8%	9.6%

ⁱ Data are derived from the 2015 RECS, adjusted to reflect FY 2020 heating degree days, cooling degree days, and fuel prices. Data represent residential energy used from October 2019 through September 2020. See also Tables A-2, A-3a – A-3c, and Appendix A.

ⁱⁱ A Btu is the amount of energy necessary to raise the temperature of 1 pound of water 1 degree Fahrenheit. MMBtus refer to values in millions of Btus.

ⁱⁱⁱ Mean individual burden is calculated by taking the mean, or average, of individual energy burdens, as calculated from FY 2020 adjusted RECS data. See Appendix A for information on calculation of energy burden.

^{iv} Median individual burden is calculated by taking the median of individual energy burdens, as calculated from FY 2020 adjusted RECS data.

^v Mean group energy burden has been calculated by (1) calculating average residential energy expenditures from the 2015 RECS for each group of households; (2) adjusting those figures for FY 2020; and (3) dividing the adjusted figures by the average income for each group of households from the 2020 CPS ASEC.

^{vi} LPG refers to any fuel gas supplied to a residence in liquid compressed form, such as propane or butane.

Low Income Home Energy Data for FY 2020: II. Residential Energy Data

Table 1d. Residential Energy: Average Annual Household Consumption, Expenditures, and Burden by LIHEAP Beneficiary Households, by Main Heating Fuel Type, United States, FY 2020ⁱ

Main Heating Fuel	Fuel Consumption (MMBtus) ⁱⁱ	Fuel Expenditures	Mean Individual Burden ⁱⁱⁱ	Median Individual Burden ^{iv}	Mean Group Burden ^v
All fuels	81.1	\$1,807	11.7%	10.5%	9.8%
Natural gas	100.9	\$1,842	11.4%	10.4%	10.0%
Electricity	44.5	\$1,482	11.4%	10.2%	8.0%
Fuel oil/kerosene* ^{vi}	88.9	\$2,266	14.7%	13.3%	12.3%
LPG* ^{vi} ^{vii}	81.3	\$2,384	12.5%	11.7%	12.9%

ⁱ Data are derived from the 2015 RECS, adjusted to reflect FY 2020 heating degree days, cooling degree days, and fuel prices. Data represent residential energy used from October 2019 through September 2020. See also Tables A-2, A-3a – A-3c, and Appendix A.

ⁱⁱ A Btu is the amount of energy necessary to raise the temperature of 1 pound of water 1 degree Fahrenheit. MMBtus refer to values in millions of Btus.

ⁱⁱⁱ Mean individual burden is calculated by taking the mean, or average, of individual energy burdens, as calculated from FY 2020 adjusted RECS data. See Appendix A for information on calculation of energy burden.

^{iv} Median individual burden is calculated by taking the median of individual energy burdens, as calculated from FY 2020 adjusted RECS data.

^v Mean group energy burden has been calculated by (1) calculating average residential energy expenditures from the 2015 RECS for each group of households; (2) adjusting those figures for FY 2020; and (3) dividing the adjusted figures by the average income for each group of households from the 2020 CPS ASEC.

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

^{vii} LPG refers to any fuel gas supplied to a residence in liquid compressed form, such as propane or butane.

Low Income Home Energy Data for FY 2020: III. Home Heating Data

Residential energy expenditures of low income households are distributed similar to those of all households. However, LIHEAP beneficiaries spent a higher proportion of their annual residential expenditures for space heating and a lower proportion for space cooling than did other groups. LIHEAP beneficiary households spent 35 percent of their annual residential expenditures for space heating, 7 percentage points more than did the average low income household. LIHEAP beneficiary households spent eight percent for space cooling, five percentage points less than did the average low income household.

Table 2. Residential Energy: Percent of Residential Energy Expenditures for Each of the Major End Uses by All, Non-Low income, Low Income, and LIHEAP Beneficiary Households, United States, FY 2020ⁱ

End Use	All Households	Non-Low Income Households	Low Income Households	LIHEAP Beneficiary Households
Space heating	28%	28%	28%	35%
Space cooling	15%	15%	13%	8%
Water heating	16%	15%	20%	19%
Refrigeration	7%	7%	6%	6%
Appliances	34%	35%	32%	32%
All uses	100%	100%	100%	100%

ⁱ Data are derived from the 2015 RECS, adjusted to reflect FY 2020 heating degree days, cooling degree days, and fuel prices. Data represent residential energy used from October 2019 through September 2020. Percentages may not add to 100 percent due to rounding.

III. 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 3 shows that, in 2015, about half of the non-low income households and LIHEAP beneficiary households used natural gas as their main heating fuel, while about 41.8 percent of low income households used natural gas as their main heating fuel. LIHEAP beneficiary households used natural gas at the highest rate among household groups, 52.6 percent. More than 30 percent of households in each group, except LIHEAP beneficiary households, used electricity as their main heating fuel. Low income households used electricity at the highest rate among household groups, 42.2 percent, and LIHEAP beneficiary households used electricity at the lowest rate among household groups, 29.2 percent. LIHEAP beneficiary households tended to use fuel oil/kerosene and propane more frequently than did households in other groups.

Table 3. Home Heating: Percent of Households Using Major Types of Heating Fuels by All, Non-Low Income, Low Income, and LIHEAP Beneficiary Households, United States, 2015ⁱ

Heating Fuel	All Households	Non-Low Income Households	Low Income Households	LIHEAP Beneficiary Households
Natural gas	48.8%	51.6%	41.8%	52.6%
Electricity	34.6%	31.6%	42.2%	29.2%
Fuel oil/kerosene	4.9%	4.8%	5.3%	9.6%
LPG	4.2%	4.6%	3.3%	4.9%
Other ⁱⁱ	3.1%	3.4%	2.3%	2.7%

ⁱ Data are derived from the 2015 RECS. Percentages may not add to 100 percent due to rounding. See also Table A-4, Appendix A.

ⁱⁱ Households using wood, coal, and other minor fuels are categorized together under "Other."

Based on the 2009 RECS and 2015 RECS, the percent of non-low income households using electricity as their main heating source stayed about the same in 2015 (31.6 percent) compared to 2009 (31.9 percent). In contrast, low income households increased their use of electricity as the main heat source from 36.7 percent in April 2009 to 42.2 percent in 2015. Use of electricity as the main heat source by LIHEAP beneficiary households remained about the same in 2015 (29.2 percent) compared to 2009 (29.3 percent).

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 beneficiary households are presented in Tables 4a to 4d. In FY 2020, average home heating consumption for all households was 33.5 MMBtus, average expenditures were \$537 and mean individual home heating burden was 1.5 percent.

Low income households had average home heating consumption of 25.9 MMBtus (about 23 percent less than the average for all households) and average home heating expenditures of \$450 (about 16 percent less than the average for all households). The mean individual home heating burden for low income households was 3.1 percent, over twice as much as the average home heating burden for all households and almost 4 times the average home heating burden for non-low income households.

Average home heating consumption for LIHEAP beneficiary households was 41.3 MMBtus (about 23 percent higher than the average for all households), and average home heating expenditures were \$634 (about 18 percent higher than the average for all households). Mean individual home heating burden for LIHEAP households was 4.2 percent, about 35 percent higher (or 1.1 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 beneficiary households was about 59 percent greater than that for all low income households because LIHEAP heating assistance beneficiary households tend to live in colder climate regions.

Low Income Home Energy Data for FY 2020: III. Home Heating Data

Table 4a. Home Heating Average Annual Household Consumption, Expenditures, and Burden by All Households, by Fuel Type, United States, FY 2020ⁱ

Main Heating Fuel	Fuel Consumption (MMBtus) ⁱⁱ	Fuel Expenditures	Mean Individual Burden ⁱⁱⁱ	Median Individual Burden ^{iv}	Mean Group Burden ^v
All fuels	33.5	\$537	1.5%	0.8%	0.5%
Natural gas	48.0	\$555	1.4%	0.8%	0.6%
Electricity	13.5	\$457	1.5%	0.7%	0.5%
Fuel oil/Kersoene	66.0	\$1,276	3.5%	1.9%	1.3%
LPG ^{vi}	44.4	\$902	2.2%	1.3%	0.9%

ⁱ Data are derived from the 2015 RECS, adjusted to reflect FY 2020 heating degree days and fuel prices. Data represent home heating energy used from October 2019 through September 2020. See also Tables A-5, A-6a – A-6c, and Appendix A.

ⁱⁱ A Btu is the amount of energy necessary to raise the temperature of 1 pound of water 1 degree Fahrenheit. MMBtus refer to values in millions of Btus.

ⁱⁱⁱ Mean individual burden is calculated by taking the mean, or average, of individual heating energy burdens, as calculated from FY 2020 adjusted RECS data. See Appendix A for information on energy burden calculation.

^{iv} Median individual burden is calculated by taking the median of individual heating energy burdens, as calculated from FY 2020 adjusted RECS data.

^v Mean group heating energy burden is calculated by (1) computing average home heating energy expenditures from the 2015 RECS for each group of households; (2) adjusting those figures for FY 2020; and (3) dividing the adjusted figures by the average income for each group of households from the 2020 CPS ASEC.

^{vi} LPG refers to any fuel gas supplied to a residence in liquid compressed form, such as propane or butane.

Low Income Home Energy Data for FY 2020: III. Home Heating Data

Table 4b. Home Heating: Average Annual Household Consumption, Expenditures, and Burden by Non-Low Income Households, by Fuel Type, United States, FY 2020ⁱ

Main Heating Fuel	Fuel Consumption (Mmbtus) ⁱⁱ	Fuel Expenditures	Mean Individual Burden ⁱⁱⁱ	Median Individual Burden ^{iv}	Mean Group Burden ^v
All fuels	36.5	\$571	0.8%	0.6%	0.5%
Natural gas	50.5	\$582	0.8%	0.6%	0.5%
Electricity	14.3	\$483	0.8%	0.5%	0.4%
Fuel oil/kerosene	72.6	\$1,410	2.0%	1.5%	1.1%
LPG ^{vi}	47.5	\$953	1.3%	1.0%	0.8%

ⁱ Data are derived from the 2015 RECS, adjusted to reflect FY 2020 heating degree days and fuel prices. Data represent home heating energy used from October 2019 through September 2020. See also Tables A-5, A-6a – A-6c, and Appendix A.

ⁱⁱ A Btu is the amount of energy necessary to raise the temperature of 1 pound of water 1 degree Fahrenheit. MMBtus refer to values in millions of Btus.

ⁱⁱⁱ Mean individual burden is calculated by taking the mean, or average, of individual heating energy burdens, as calculated from FY 2020 adjusted RECS data. See Appendix A for information on energy burden calculation.

^{iv} Median individual burden is calculated by taking the median of individual heating energy burdens, as calculated from FY 2020 adjusted RECS data.

^v Mean group heating energy burden is calculated by (1) computing average home heating energy expenditures from the 2015 RECS for each group of households; (2) adjusting those figures for FY 2020; and (3) dividing the adjusted figures by the average income for each group of households from the 2020 CPS ASEC.

^{vi} LPG refers to any fuel gas supplied to a residence in liquid compressed form, such as propane or butane.

Low Income Home Energy Data for FY 2020: III. Home Heating Data

Table 4c. Home Heating: Average Annual Household Consumption, Expenditures, and Burden by Low Income Households, by Fuel Type, United States, FY 2020ⁱ

Main Heating Fuel	Fuel Consumption (MMBtus) ⁱⁱ	Fuel Expenditures	Mean Individual Burden ⁱⁱⁱ	Median Individual Burden ^{iv}	Mean Group Burden ^v
All fuels	25.9	\$450	3.1%	2.0%	2.1%
Natural gas	40.1	\$473	3.1%	2.1%	2.2%
Electricity	12.1	\$409	3.0%	1.9%	1.9%
Fuel oil/kerosene	50.8	\$970	6.9%	4.7%	4.5%
LPG ^{vi}	33.6	\$729	5.2%	3.5%	3.4%

ⁱ Data are derived from the 2015 RECS, adjusted to reflect FY 2020 heating degree days and fuel prices. Data represent home heating energy used from October 2019 through September 2020. See also Tables A-5, A-6a – A-6c, and Appendix A.

ⁱⁱ A Btu is the amount of energy necessary to raise the temperature of 1 pound of water 1 degree Fahrenheit. MMBtus refer to values in millions of Btus.

ⁱⁱⁱ Mean individual burden is calculated by taking the mean, or average, of individual heating energy burdens, as calculated from FY 2020 adjusted RECS data. See Appendix A for information on energy burden calculation.

^{iv} Median individual burden is calculated by taking the median of individual heating energy burdens, as calculated from FY 2020 adjusted RECS data.

^v Mean group heating energy burden is calculated by (1) computing average home heating energy expenditures from the 2015 RECS for each group of households; (2) adjusting those figures for FY 2020; and (3) dividing the adjusted figures by the average income for each group of households from the 2020 CPS ASEC.

^{vi} LPG refers to any fuel gas supplied to a residence in liquid compressed form, such as propane or butane.

Low Income Home Energy Data for FY 2020: III. Home Heating Data

Table 4d. Home Heating: Average Annual Household Consumption, Expenditures, and Burden by LIHEAP Beneficiary Households, by Fuel Type, United States, FY 2020ⁱ

Main Heating Fuel	Fuel Consumption (MMBtus) ⁱⁱ	Fuel Expenditures	Mean Individual Burden ⁱⁱⁱ	Median Individual Burden ^{iv}	Mean Group Burden ^v
All fuels	41.3	\$634	4.2%	3.1%	3.4%
Natural gas	56.1	\$628	4.0%	2.8%	3.4%
Electricity	15.9	\$552	4.2%	3.3%	3.0%
Fuel oil/kerosene* ^{vi}	48.1	\$896	5.9%	4.1%	4.9%
LPG* ^{vi,vii}	40.0	\$920	5.5%	3.5%	5.0%

ⁱ Data are derived from the 2015 RECS, adjusted to reflect FY 2020 heating degree days and fuel prices. Data represent home heating energy used from October 2019 through September 2020. See also Tables A-5, A-6a – A-6c, and Appendix A.

ⁱⁱ A Btu is the amount of energy necessary to raise the temperature of 1 pound of water 1 degree Fahrenheit. MMBtus refer to values in millions of Btus.

ⁱⁱⁱ Mean individual burden is calculated by taking the mean, or average, of individual heating energy burdens, as calculated from FY 2020 adjusted RECS data. See Appendix A for information on energy burden calculation.

^{iv} Median individual burden is calculated by taking the median of individual heating energy burdens, as calculated from FY 2020 adjusted RECS data.

^v Mean group heating energy burden is calculated by (1) computing average home heating energy expenditures from the 2015 RECS for each group of households; (2) adjusting those figures for FY 2020; and (3) dividing the adjusted figures by the average income for each group of households from the 2020 CPS ASEC.

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

^{vii} LPG refers to any fuel gas supplied to a residence in liquid compressed form, such as propane or butane.

IV. 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 5, about 94 percent of all households in 2015 cooled their homes in ways recorded by the 2015 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 5. Home Cooling: Percent of Households with Home Cooling by All, Non-Low Income, Low Income, and LIHEAP Beneficiary Households, United States, 2015ⁱ

Presence of Cooling	All Households	Non-Low Income Households	Low Income Households	LIHEAP beneficiary Households
Coolingⁱⁱ	94.1%	95.6%	90.4%	92.9%
Noneⁱⁱⁱ	5.9%	4.4%	9.6%	7.1%

ⁱ Data are derived from the 2015 RECS. See also Table A-7, Appendix A.

ⁱⁱ 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).

ⁱⁱⁱ Represents households that do not cool or cool in ways other than those recorded by the 2015 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 beneficiary households that cooled are presented in Table 6. In FY 2020, average home cooling consumption for all households that cooled was 7.7 MMBtus, average expenditures were \$300 and mean individual home cooling burden was 0.8 percent.

For low income households that cooled, average home cooling energy consumption was 6.0 MMBtus (about 22 percent less than the average for all households) and average home cooling expenditures were \$232 (about 23 percent less than the average for all households). The mean individual home cooling burden for low income households was 1.6 percent, twice the average home cooling burden of all households and four times that of non-low income households.

For households that cooled, average home cooling consumption for LIHEAP beneficiary households was 3.9 MMBtus—about half of that for all households and 35 percent less than that for the average low income household—and average home cooling expenditures were \$159, about 47 percent less than that for all households and 31 percent less than that for the average low income household). Mean individual home cooling burden for LIHEAP beneficiary households was 1.0 percent, 25 percent higher than the average for all households.

Low Income Home Energy Data for FY 2020: IV. Home Cooling Data

Table 6. Home Cooling: Average Annual Household Consumption, Expenditures, and Percent of Income by All, Non-Low Income, Low Income, and LIHEAP Beneficiary Households That Cooled, United States, FY 2020ⁱ

Household Group	Fuel Consumption (MMBtus) ⁱⁱ	Fuel Expenditures	Mean Individual Burden ⁱⁱⁱ	Median Individual Burden ^{iv}	Mean Group Burden ^v
All households	7.7	\$300	0.8%	0.4%	0.3%
Non-low income households	8.3	\$325	0.4%	0.3%	0.3%
Low income households	6.0	\$232	1.6%	0.9%	1.1%
LIHEAP beneficiary households	3.9	\$159	1.0%	0.6%	0.9%

ⁱ Data are derived from the 2015 RECS, adjusted to reflect FY 2020 cooling degree days and fuel prices. Data represent residential energy used from October 2019 through September 2020. See also Table A-7, Appendix A.

ⁱⁱ 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.

ⁱⁱⁱ Mean individual burden is calculated by taking the mean, or average, of individual cooling energy burdens, as calculated from FY 2020 adjusted RECS data. See Appendix A for information on energy burden calculation.

^{iv} Median individual burden is calculated by taking the median of individual cooling energy burdens, as calculated from FY 2020 adjusted RECS data.

^v Mean group cooling energy burden is calculated by (1) computing average home cooling energy expenditures from the 2015 RECS for each group of households; (2) adjusting those figures for FY 2020; and (3) dividing the adjusted figures by the average income for each group of households from the 2020 Current Population Survey Annual Social and Economic Supplement (CPS ASEC).

Appendix A: Home Energy Estimates

Appendix A provides information on how estimates of home energy data were derived from the 2015 Residential Energy Consumption Survey (RECS) and updated for FY 2020. 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. Typically, this survey is conducted every four to six years. The most recent RECS was conducted in 2015. Significant methodological changes were introduced in the 2015 RECS, including changes to end-use modeling procedures, particularly for electricity usage and changes that impact the ability to characterize low income households. Therefore, readers should use caution when comparing this report to prior versions, which utilized prior iterations of the RECS.

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 who rent their homes. 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.¹

The 2015 RECS is the fourteenth survey in the series of surveys.² For the 2015 RECS, 5,686 households were interviewed, including 321 verified LIHEAP beneficiary households. For the tabulations in this report, 2015 RECS consumption and expenditure data were updated using price and weather data to represent consumption and expenditures for FY 2020.

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 RECS includes usage data for all residential fuels. [In the 2015 RECS, heating fuel categories for fuel oil and kerosene were combined, whereas in the 2009 RECS, these heating fuel categories were presented separately.]
- Energy suppliers provide information on actual residential energy consumption and expenditures of RECS sample households 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 2015 RECS data provide the most comprehensive data on residential energy use by low income households, several significant limitations must be addressed:³

- The 2015 RECS data for calendar year 2015 were updated to FY 2020 (October 1, 2019 to September 30, 2020), using procedures that adjust the 2015 data to reflect the weather and fuel prices for FY 2020. These procedures are comparable to those used for the FY 1986 - FY 2019 annual *LIHEAP Reports to Congress*. However, the reader should exercise caution in comparing the data in this report 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).
- EIA introduced significant methodological changes in the 2015 RECS, including changes to end-use modeling procedures, particularly for electricity usage and changes to the income categories used to collect income information from respondents. The less detailed income information that was collected compared to prior iterations of the RECS makes it difficult to accurately characterize which households are low income versus which households are not. Therefore, readers should use caution when comparing this report to prior versions, which utilized prior iterations of the RECS.
- 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 beneficiary households and the fuel oil/kerosene and 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 2020 CPS ASEC is used to develop estimates of the number of low income households. In addition, mean income statistics from the CPS ASEC are used in the calculation of group energy burden for this report.⁴
- Because income information was collected in less detail in the 2015 RECS, households were classified in the 2015 RECS as eligible or ineligible for LIHEAP based on whether their income was above or below the approximate. This differs from prior versions of this report based on the 2009 RECS, where the income information that was collected was sufficient to classify households as eligible or ineligible for LIHEAP based on the federal maximum statutory income eligibility criteria (the greater of 150 percent of U.S. Department of Health and Human Services (HHS) Poverty Guidelines or 60 percent of the state median income). The change in the income categories in the 2015 RECS likely results in an undercounting of LIHEAP income eligible households; therefore, households identified as LIHEAP beneficiaries in the 2015 RECS, but not classified as income eligible based on their income category, were reclassified as income eligible for LIHEAP based on having received LIHEAP assistance during the time period of the 2015 RECS.
- As with prior versions of this report, the estimates of households classified as income eligible for LIHEAP do not include households whose incomes may have exceeded the statutory income standards but who would be eligible to receive LIHEAP benefits because they (1) were categorically eligible for LIHEAP under Section 2605 (b)(2)(A) of the LIHEAP Act, 42 U.S.C. § 8624(b)(2)(A); (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 beneficiaries 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 2020 were calculated at national and regional levels for all, non-low income, low income, and LIHEAP beneficiary households, for various fuels. The heating and cooling estimates were updated for each 2015 RECS sample case using FY 2020 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 2015 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 beneficiary 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, Section III, and Section IV of this report.

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.⁵

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).

Computational Procedures

There are two ways to compute mean energy burden for households.⁶ 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.⁷ 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.

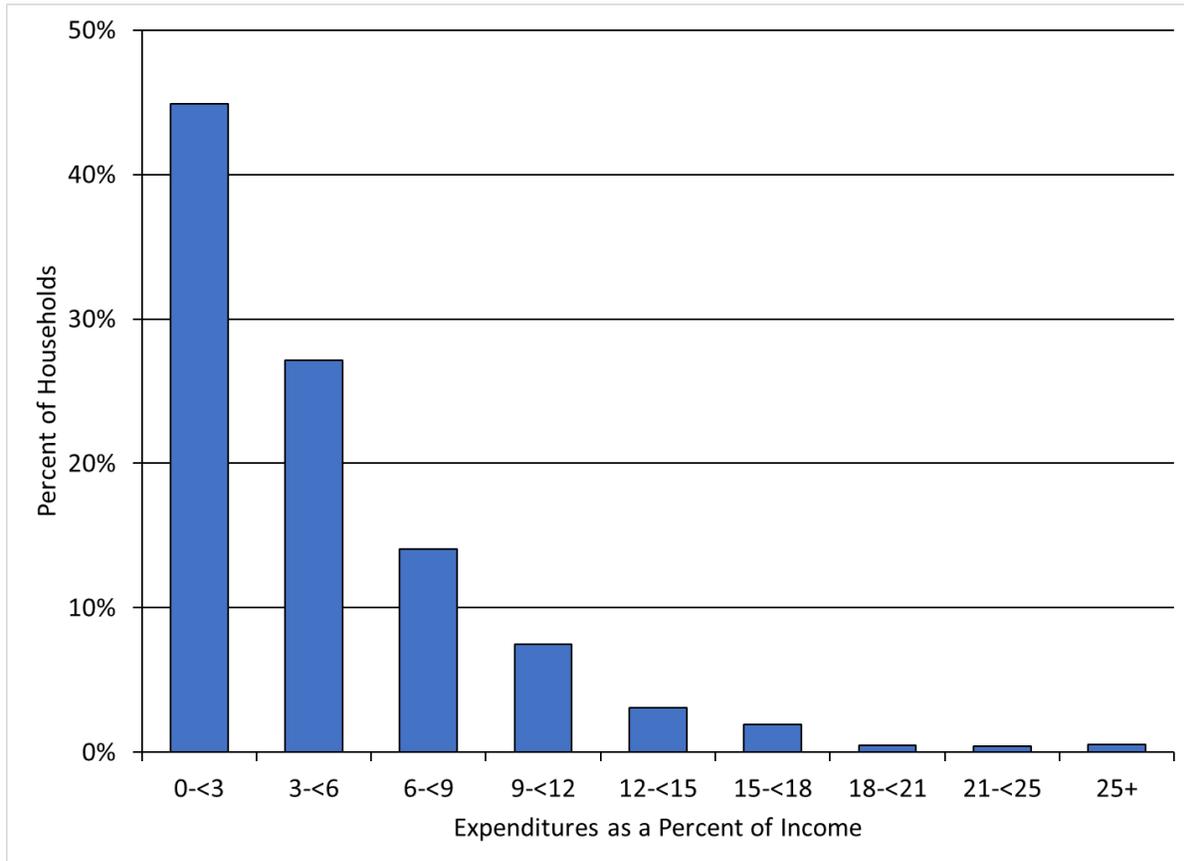
1. First, total annual energy expenditures for households and total annual income for households in a specified population are computed
2. Then, the ratio of total energy expenditures to total income is computed for the specified population. For example, consider the situation where a group consists of 4 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 2015 RECS, the mean residential energy burden for all LIHEAP federally eligible households, in 2015, using the first approach (mean individual burden) was 11.6 percent. Using the energy bill estimates from the 2015 RECS and income estimates from the 2015 CPS ASEC, the mean residential energy burden under the second approach (mean group burden) was 8.4 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.⁸ 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 several 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 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 11.6 percent. The median of the distribution of residential energy burdens from the 2015 RECS survey was 9.7 percent. The disparity between these two statistics is the result of the skewed distribution of energy burden ratios. Figure A-1 demonstrates a skewed distribution of LIHEAP income eligible households by home energy (heating and cooling) burden.

Figure A-1. Distribution of LIHEAP Income Eligible Households by Home Energy Burden, 2015



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.

Historically, the income collection procedures in the RECS have resulted in categorizing more households as income eligible for LIHEAP than the CPS ASEC. However, given the limitations with how the income information was collected in the 2015 RECS, the procedures to classify households in the 2015 RECS as income eligible for LIHEAP result in too few households being categorized as low income. Based on the 2015 RECS, 33.5 million households were estimated to be LIHEAP income eligible households in 2015. Based on the 2015 CPS ASEC, the estimate of LIHEAP income eligible households for 2015 was 38.3 million households.

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.

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 report’s tables to fully inform the reader. Beginning with the *LIHEAP Report to Congress for FY 1992*, 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 report 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. 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 2015 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 2015 were adjusted for weather differences between 2015 and FY 2020. The following equation was applied to each household in the microsimulation data file.

$$\text{FY 2020 Projected Btus} = (2015 \text{ estimated heat use} * \text{HDD change}) + (2015 \text{ estimated cooling use} * \text{CDD change}) + (2015 \text{ estimated water heat use} + 2015 \text{ estimated appliance use})$$

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

$$\text{Preliminary Expenditures} = 2015 \text{ Expenditures} * (\text{FY 2020 Projected Usage} / 2015 \text{ Actual Usage})$$

$$\text{Final Expenditures} = \text{Preliminary Expenditures} * \text{Price Change}^9$$

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 2015 to FY 2020. For example, electricity prices increased by 3.6 percent from 2015 to FY 2020.

Table A-1. National Price Factors for FY 2020

Fuel	Price Factors for FY 2020 Projections
Electricity	1.0358
Natural gas	1.0185
Fuel oil/kerosene	1.0113

Low Income Home Energy Data for FY 2020: Appendix A: Home Energy Estimates

Fuel	Price Factors for FY 2020 Projections
Liquefied petroleum gas (LPG)	0.8842

Expenditure data were adjusted using national price factors for FY 2020. Earlier *LIHEAP Home Energy 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-level price data.

¹ 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).

² For more information about the RECS sample design, see [EIA's RECS webpage](#).

³ Information about the quality of RECS data is available from the EIA website: [RECS Methodology, Energy Information Administration](#).

⁴ Note that household-level energy and income data from RECS are used to calculate mean and median individual energy burden.

⁵ 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).

⁶ The mean is the sum of all values divided by the number of values. The mean is also referred to as the average.

⁷ For some households, residential energy expenditures appear to exceed income. Older adult 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.

⁸ For example, 2015 RECS households with incomes of \$20,000 or less had average residential energy expenditures of \$1,423, while those with incomes between \$40,000 and \$59,999 had average residential energy expenditures of \$1,781. Thus, households which had more than twice as much income spent only 25 percent more on energy.

⁹ Price factors were developed using price data obtained from the Energy Information Administration for electricity, natural gas, and LPG, and the BLS Consumer Price Index for fuel oil. Consumption data were obtained from the Energy Information Administration for all fuels. Electricity price data used for calculating price factors are from the *Monthly Energy Review*, January 2021, and electricity consumption data is from the *Electric Power Monthly*, January 2021. Natural gas price and consumption data used for calculating price factors are from the *Monthly Energy Review*, January 2021. Fuel oil/kerosene price data for calculating prices factors are from the United States City Average, Fuel Oil #2, Consumer Price Index of the Bureau of Labor Statistics, Series ID APU000072511. LPG price data were obtained from the [Energy Information Administration website](#). Fuel oil/kerosene and LPG consumption data are from the *Monthly Energy Review*, January 2021.

Low Income Home Energy Data for FY 2020: Appendix A: Home Energy Estimates

Table A-2. Residential Energy: Average Consumption per Household, by All Fuels and Specified Fuels, by All, Non-Low Income, Low Income, and LIHEAP Beneficiary Households, by Census Region, FY 2020ⁱ

Census Region	All Fuelsⁱⁱ (MMBtus)ⁱⁱⁱ	Natural Gas (MMBtus)	Electricity (MMBtus)	Fuel Oil/Kerosene (MMBtus)	LPG (MMBtus)
US - All households	76.6	95.4	50.8	107.5	93.0
US - Non-low income households	81.7	99.5	54.0	115.7	99.4
US - Low income households ^{iv}	63.8	82.8	44.9	88.9	71.0
US - LIHEAP beneficiary households ^v	81.1	100.9	44.5	88.9* ^{vi}	81.3* ^{vi}
Northeast - All households	91.6	99.4	42.4	109.2	94.3
Northeast - Non-low income households	96.4	103.4	44.6	119.0	101.5
Northeast - Low income households	80.8	90.7	38.5	88.1	W ^{vii}
Northeast - LIHEAP beneficiary households	86.7	98.3	31.7* ^{vi}	89.9* ^{vi}	W ^{vii}
Midwest - All households	95.1	108.9	48.6	123.3	104.2
Midwest - Non-low income households	101.4	113.1	53.3	W ^{vii}	107.7
Midwest - Low income households	75.9	94.1	40.4	W ^{vii}	84.1* ^{vi}
Midwest - LIHEAP beneficiary households	94.6	115.1	42.7	W ^{vii}	W ^{vii}
South - All households	67.3	93.7	53.3	95.6	90.7
South - Non-low income households	72.0	99.3	56.3	99.1* ^{vi}	96.1
South - Low income households	56.2	77.3	47.2	W ^{vii}	72.3* ^{vi}
South - LIHEAP beneficiary households	62.7	83.3	47.6	NC ^{viii}	71.0* ^{vi}
West - All households	62.1	75.7	47.5	111.6	74.4
West - Non-low income households	66.1	78.8	50.0	W ^{vii}	83.8
West - Low income households	51.6	63.5	43.7	W ^{vii}	W ^{vii}
West - LIHEAP beneficiary households	66.9	81.6* ^{vi}	51.9* ^{vi}	NC ^{viii}	W ^{vii}

ⁱ Developed from the 2015 Residential Energy Consumption Survey (RECS), Energy Information Administration, U.S. Department of Energy, and adjusted for FY 2020 for heating and cooling degree days.

ⁱⁱ Weighted average of natural gas, electricity, fuel oil, and liquefied petroleum gas consumption. RECS consumption data are not collected for other fuels.

ⁱⁱⁱ A Btu is the amount of energy necessary to raise the temperature of 1 pound of water 1 degree Fahrenheit. MMBtus refer to values in millions of Btus.

^{iv} Households with income at or below the maximum in Section 2605(b)(2)(B) of the LIHEAP Act, Act, 42 U.S.C. § 8624(b)(2)(B).

^v Includes verified LIHEAP recipient households from the 2015 RECS.

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

^{vii} W = Withheld due to the small number of sample cases.

^{viii} NC = No cases in the 2015 RECS household sample.

Low Income Home Energy Data for FY 2020: Appendix A: Home Energy Estimates

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 Beneficiary Households, by Census Region and Main Heating Fuel, FY 2020

Census Region	All Fuels ⁱ	All Fuels ⁱⁱ	Natural Gas Heat	Natural Gas Heat	Electric Heat	Electric Heat	Fuel Oil/Kero Heat	Fuel Oil/Kero Heat	LPG Heat	LPG Heat
US - All households	\$1,900	1.9%	\$1,939	2.0%	\$1,714	1.7%	\$2,920	3.0%	\$2,565	2.6%
US - Non-low income households	\$2,015	1.6%	\$2,031	1.6%	\$1,828	1.5%	\$3,167	2.5%	\$2,711	2.2%
US - Low income households ⁱⁱⁱ	\$1,612	7.5%	\$1,650	7.7%	\$1,498	7.0%	\$2,357	11.0%	\$2,059	9.6%
US - LIHEAP beneficiary households ^{iv}	\$1,807	9.8%	\$1,842	10.0%	\$1,482	8.0%	\$2,266*	12.3%*	\$2,384*	12.9%*
Northeast - All households	\$2,285	2.1%	\$2,111	1.9%	\$1,810	1.7%	\$2,970	2.7%	\$2,837	2.6%
Northeast - Non-low income households	\$2,444	1.7%	\$2,216	1.5%	\$1,992	1.4%	\$3,270	2.3%	\$3,069	2.1%
Northeast - Low income households	\$1,934	7.9%	\$1,882	7.7%	\$1,485	6.1%	\$2,324	9.5%	W	W
Northeast - LIHEAP beneficiary households	\$1,959	9.5%	\$1,872	9.1%	\$1,279*	6.2%*	\$2,295*	11.1%*	W	W
Midwest - All households	\$1,831	2.0%	\$1,842	2.0%	\$1,576	1.7%	\$2,877	3.1%	\$2,605	2.8%
Midwest - Non-low income households	\$1,931	1.6%	\$1,911	1.6%	\$1,715	1.5%	W	0.0%	\$2,690	2.3%
Midwest - Low income households	\$1,525	7.0%	\$1,593	7.3%	\$1,336	6.1%	W	W	\$2,112*	9.7%*
Midwest - LIHEAP beneficiary households	\$1,797	10.5%	\$1,904	11.1%	\$1,494	8.7%	W	W	W	W
South - All households	\$1,935	2.1%	\$2,143	2.4%	\$1,817	2.0%	\$2,610	2.9%	\$2,508	2.8%
South - Non-low income households	\$2,051	1.8%	\$2,277	2.0%	\$1,924	1.7%	\$2,688*	2.3%*	\$2,588	2.2%
South - Low income households	\$1,662	8.7%	\$1,753	9.2%	\$1,598	8.4%	W	W	\$2,241*	11.7%*
South - LIHEAP beneficiary households	\$1,745	11.6%	\$1,826	12.1%	\$1,586	10.5%	NC	NC	\$2,428*	16.1%*
West - All households	\$1,605	1.5%	\$1,727	1.6%	\$1,447	1.4%	\$3,112	2.9%	\$2,309	2.2%
West - Non-low income households	\$1,717	1.3%	\$1,834	1.4%	\$1,516	1.1%	W	W	\$2,648	2.0%
West - Low income households	\$1,314	5.8%	\$1,311	5.8%	\$1,339	5.9%	W	W	W	W
West - LIHEAP beneficiary households	\$1,481	7.4%	\$1,467*	7.3%*	\$1,377*	6.9%*	NC	NC	W	W

ⁱ Estimates are derived from the 2015 Residential Energy Consumption Survey (RECS), Energy Information Administration, U.S. Department of Energy. The 2015 RECS data have been adjusted for heating degree days, cooling degree days, and fuel price estimates for FY 2020. Expenditures represent the costs for fuel oil, and LPG delivered and billed costs for natural gas and electricity. RECS expenditure data are not collected for other fuels.

ⁱⁱ Represents the percent of household's income used for residential energy expenditures. National and regional mean incomes are calculated from the 2020 CPS ASEC, which reports income for calendar year 2019. 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.

ⁱⁱⁱ Households with annual incomes at or below the maximum in Section 2605(b)(2)(B) of the LIHEAP Act, Act, 42 U.S.C. § 8624(b)(2)(B).

^{iv} Includes verified LIHEAP recipient households from the 2015 RECS.

NC = No cases in the 2015 RECS household sample.

W = Withheld due to the small number of sample cases.

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

Low Income Home Energy Data for FY 2020: Appendix A: Home Energy Estimates

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 Beneficiary Households, by Census Region and Main Heating Fuel, FY 2020

Census Region	All Fuels ⁱ	All Fuels ⁱⁱ	Natural Gas Heat	Natural Gas Heat	Electric Heat	Electric Heat	Fuel Oil/Kero Heat	Fuel Oil/Kero Heat	LPG Heat	LPG Heat
US - All households	\$1,900	5.1%	\$1,939	4.7%	\$1,714	5.5%	\$2,920	7.9%	\$2,565	5.9%
US - Non-low income households	\$2,015	2.8%	\$2,031	2.7%	\$1,828	2.8%	\$3,167	4.2%	\$2,711	3.6%
US - Low income households ⁱⁱⁱ	\$1,612	10.9%	\$1,650	10.7%	\$1,498	10.4%	\$2,357	16.5%	\$2,059	13.8%
US - LIHEAP beneficiary households ^{iv}	\$1,807	11.7%	\$1,842	11.4%	\$1,482	10.9%	\$2,266*	14.7%*	\$2,384*	12.5%*
Northeast - All households	\$2,285	6.1%	\$2,111	5.7%	\$1,810	5.0%	\$2,970	8.2%	\$2,837	5.3%
Northeast - Non-low income households	\$2,444	3.2%	\$2,216	2.8%	\$1,992	2.8%	\$3,270	4.3%	\$3,069	3.8%
Northeast - Low income households	\$1,934	12.5%	\$1,882	11.9%	\$1,485	8.9%	\$2,324	16.5%	W	W
Northeast - LIHEAP beneficiary households	\$1,959	12.2%	\$1,872	11.6%	\$1,279*	8.5%*	\$2,295*	14.9%*	W	W
Midwest - All households	\$1,831	4.8%	\$1,842	4.6%	\$1,576	5.4%	\$2,877	4.7%	\$2,605	5.2%
Midwest - Non-low income households	\$1,931	2.9%	\$1,911	2.9%	\$1,715	2.8%	W	W	\$2,690	3.9%
Midwest - Low income households	\$1,525	10.4%	\$1,593	10.6%	\$1,336	10.0%	W	W	\$2,112*	12.9%*
Midwest - LIHEAP beneficiary households	\$1,797	11.9%	\$1,904	12.0%	\$1,494	12.5%	W	W	W	W
South - All households	\$1,935	5.5%	\$2,143	5.3%	\$1,817	5.6%	\$2,610	7.2%	\$2,508	6.3%
South - Non-low income households	\$2,051	3.0%	\$2,277	3.0%	\$1,924	3.0%	\$2,688*	3.4%*	\$2,588	3.6%
South - Low income households	\$1,662	11.4%	\$1,753	11.9%	\$1,598	11.0%	W	W	\$2,241*	15.3%*
South - LIHEAP beneficiary households	\$1,745	11.0%	\$1,826	10.5%	\$1,586	10.8%	NC	NC	\$2,428*	13.8%*
West - All households	\$1,605	4.1%	\$1,727	3.5%	\$1,447	5.2%	\$3,112	6.8%	\$2,309	7.1%
West - Non-low income households	\$1,717	2.2%	\$1,834	2.3%	\$1,516	2.2%	W	W	\$2,648	2.7%
West - Low income households	\$1,314	9.0%	\$1,311	8.1%	\$1,339	9.9%	W	W	W	W
West - LIHEAP beneficiary households	\$1,481	10.7%	\$1,467*	9.3%*	\$1,377*	10.9%*	NC	NC	W	W

ⁱ Estimates are derived from the 2015 Residential Energy Consumption Survey (RECS), Energy Information Administration, U.S. Department of Energy. The 2015 RECS data have been adjusted for heating degree days, cooling degree days, and fuel price estimates for FY 2020. Expenditures represent the costs for fuel oil, and LPG delivered and billed costs for natural gas and electricity. RECS expenditure data are not collected for other fuels.

ⁱⁱ Represents the percent of household income used for residential energy expenditures. For individual households, FY 2020 income is estimated by inflating income reported in the 2015 RECS by the consumer price index (CPI) and FY 2020 energy expenditures are estimated by adjusting energy expenditures reported in the 2015 RECS for changes in weather and energy prices. FY 2020 residential energy burden for each household is computed as estimated FY 2020 residential energy expenditures divided by estimated FY 2020 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.

ⁱⁱⁱ Households with annual incomes at or below the maximum in Section 2605(b)(2)(B) of the LIHEAP Act, Act, 42 U.S.C. § 8624(b)(2)(B).

^{iv} Includes verified LIHEAP recipient households from the 2015 RECS.

NC = No cases in the 2015 RECS household sample.

W = Withheld due to the small number of sample cases.

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

Low Income Home Energy Data for FY 2020: Appendix A: Home Energy Estimates

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 Beneficiary Households, by Census Region and Main Heating Fuel, FY 2020

Census Region	All Fuels ⁱ	All Fuels ⁱⁱ	Natural Gas Heat	Natural Gas Heat	Electric Heat	Electric Heat	Fuel Oil/Kero Heat	Fuel Oil/Kero Heat	LPG Heat	LPG Heat
US - All households	\$1,900	3.2%	\$1,939	2.9%	\$1,714	3.4%	\$2,920	4.6%	\$2,565	3.8%
US - Non-low income households	\$2,015	2.4%	\$2,031	2.3%	\$1,828	2.4%	\$3,167	3.6%	\$2,711	3.1%
US - Low income households ⁱⁱⁱ	\$1,612	9.2%	\$1,650	8.8%	\$1,498	9.3%	\$2,357*	13.7%	\$2,059	13.8%
US - LIHEAP beneficiary households ^{iv}	\$1,807	10.5%	\$1,842	10.4%	\$1,482	10.2%	\$2,266	13.3%*	\$2,384*	11.7%*
Northeast - All households	\$2,285	3.8%	\$2,111	3.4%	\$1,810	3.1%	\$2,970	4.7%	\$2,837	3.6%
Northeast - Non-low income households	\$2,444	2.6%	\$2,216	2.3%	\$1,992	2.4%	\$3,270	3.7%	\$3,069	3.0%
Northeast - Low income households	\$1,934	10.2%	\$1,882	9.5%	\$1,485	9.5%	\$2,324	13.5%	W	W
Northeast - LIHEAP beneficiary households	\$1,959	10.4%	\$1,872	10.4%	\$1,279*	8.9%*	\$2,295*	13.3%*	W	W
Midwest - All households	\$1,831	3.1%	\$1,842	3.0%	\$1,576	3.5%	\$2,877	3.8%	\$2,605	3.8%
Midwest - Non-low income households	\$1,931	2.5%	\$1,911	2.5%	\$1,715	2.2%	W	W	\$2,690	3.5%
Midwest - Low income households	\$1,525	8.8%	\$1,593	8.8%	\$1,336	8.8%	W	W	\$2,112*	9.6%*
Midwest - LIHEAP beneficiary households	\$1,797	10.7%	\$1,904	10.7%	\$1,494	12.3%	W	W	W	W
South - All households	\$1,935	3.5%	\$2,143	3.5%	\$1,817	3.6%	\$2,610	4.2%	\$2,508	4.0%
South - Non-low income households	\$2,051	2.6%	\$2,277	2.7%	\$1,924	2.6%	\$2,688*	3.6%*	\$2,588	3.1%
South - Low income households	\$1,662	9.8%	\$1,753	10.2%	\$1,598	9.7%	W	W	\$2,241*	16.7%*
South - LIHEAP beneficiary households	\$1,745	10.5%	\$1,826	10.2%	\$1,586	10.0%	NC	NC	\$2,428*	11.7%*
West - All households	\$1,605	2.4%	\$1,727	2.3%	\$1,447	2.8%	\$3,112	6.5%	\$2,309	4.2%
West - Non-low income households	\$1,717	1.8%	\$1,834	1.8%	\$1,516	1.8%	W	W	\$2,648	2.4%
West - Low income households	\$1,314	7.2%	\$1,311	6.6%	\$1,339	8.2%	W	W	W	W
West - LIHEAP beneficiary households	\$1,481	9.6%	\$1,467	9.5%	\$1,377	9.5%	NC	NC	W	W

ⁱ Estimates are derived from the 2015 Residential Energy Consumption Survey (RECS), Energy Information Administration, U.S. Department of Energy. The 2015 RECS data have been adjusted for heating degree days, cooling degree days, and fuel price estimates for FY 2020. Expenditures represent the costs for fuel oil, and LPG delivered and billed costs for natural gas and electricity. RECS expenditure data are not collected for other fuels.

ⁱⁱ Represents the percent of household income used for residential energy expenditures. For individual households, FY 2020 income is estimated by inflating income reported in the 2015 RECS by the consumer price index (CPI) and FY 2020 energy expenditures are estimated by adjusting energy expenditures reported in the 2015 RECS for changes in weather and energy prices. FY 2020 residential energy burden for each household is computed as estimated FY 2020 residential energy expenditures divided by estimated FY 2020 annual income. Median individual residential burden is computed by computing the median of the individual values. See text in Appendix A for a discussion of energy burden.

ⁱⁱⁱ Households with annual incomes at or below the maximum in Section 2605(b)(2)(B) of the LIHEAP Act, Act, 42 U.S.C. § 8624(b)(2)(B).

^{iv} Includes verified LIHEAP recipient households from the 2015 RECS.

NC = No cases in the 2015 RECS household sample.

W = Withheld due to the small number of sample cases.

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

Low Income Home Energy Data for FY 2020: Appendix A: Home Energy Estimates

Table A-4. Home Heating: Percent of Households Using Major Types of Heating Fuels, by All, Non-Low Income, Low Income, and LIHEAP Beneficiary Households, by Census Region and Main Heating Fuel Type, 2015ⁱ

Census Region	Natural Gas ⁱⁱ	Electricity	Fuel Oil/Kerosene	LPG	Other ⁱⁱⁱ
US - All households	48.8%	34.6%	4.9%	4.2%	3.1%
US - Non-low income households	51.6%	31.6%	4.8%	4.6%	3.4%
US - Low income households ^{iv}	41.8%	42.2%	5.3%	3.3%	2.3%
US - LIHEAP beneficiary households ^v	52.6%	29.2%	9.6%	4.9%	2.7%
Northeast - All households	54.3%	13.3%	22.6%	4.1%	5.6%
Northeast - Non-low income households	53.9%	12.4%	22.4%	4.5%	6.8%
Northeast - Low income households	55.2%	15.4%	23.1%	3.2%	2.9%
Northeast - LIHEAP beneficiary households	52.4%	12.6%*	27.1%	2.3%	5.7%
Midwest - All households	70.9%	20.6%	0.4%	5.8%	2.3%
Midwest - Non-low income households	73.5%	17.3%	0.4%	6.6%	2.2%
Midwest - Low income households	63.0%	30.6%	0.2%	3.4%	2.8%
Midwest - LIHEAP beneficiary households	68.9%	27.0%	0.6%	3.0%	0.6%
South - All households	30.8%	55.9%	1.9%	4.2%	1.9%
South - Non-low income households	32.6%	53.6%	2.0%	4.6%	2.2%
South - Low income households	26.4%	61.5%	1.6%	3.2%	1.4%
South - LIHEAP beneficiary households	36.6%	50.0%	0.0%	9.4%	1.2%
West - All households	52.6%	29.7%	0.5%	2.9%	3.8%
West - Non-low income households	58.0%	25.1%	0.5%	2.6%	4.1%
West - Low income households	38.8%	41.7%	0.5%	3.6%	3.0%
West - LIHEAP beneficiary households	43.8%	42.3%	0.0%	8.4%	2.5%

ⁱ Data derived from the 2015 Residential Energy Consumption Survey (RECS), Energy Information Administration, U.S. Department of Energy. Represents main heating fuel used in 2015.

ⁱⁱ The sum of percentages across fuel types may not equal 100% due to rounding and excluding households reporting no main fuel.

ⁱⁱⁱ This category includes households using wood, coal, and other minor fuels as a main heating source. It excludes households reporting no main fuel.

^{iv} Households with income at or below the maximum in Section 2605(b)(2)(B) of the LIHEAP Act, Act, 42 U.S.C. § 8624(b)(2)(B).

^v Includes verified LIHEAP recipient households from the 2015 RECS.

Low Income Home Energy Data for FY 2020: Appendix A: Home Energy Estimates

Table A-5. Home Heating: Average Consumption per Household, by All Fuels and Specified Fuels, by All, Non-Low Income, Low Income, and LIHEAP Beneficiary Households, by Census Region, FY 2020¹

Census Region	All Fuels ² (MMBtus) ³	Natural Gas (MMBtus)	Electricity (MMBtus)	Fuel Oil/Kerosene (MMBtus)	LPG (MMBtus)
US - All households	33.5	48.0	13.5	66.0	44.4
US - Non-low income households	36.5	50.5	14.3	72.6	47.5
US - Low income households ⁴	25.9	40.1	12.1	50.8	33.6
US - LIHEAP beneficiary households ⁵	41.3	56.1	15.9	48.1*	40.0*
Northeast - All households	50.2	55.3	14.4	68.1	51.3
Northeast - Non-low income households	54.4	59.3	16.1	76.3	57.0
Northeast - Low income households	41.0	46.6	11.5	50.5	W
Northeast - LIHEAP beneficiary households	45.1	53.4	11.2*	48.7*	W
Midwest - All households	53.9	65.0	19.9	86.9	55.1
Midwest - Non-low income households	58.1	67.8	22.3	W	56.9
Midwest - Low income households	41.0	54.8	15.7	W	44.5*
Midwest - LIHEAP beneficiary households	57.3	72.8	20.5	W	W
South - All households	20.4	35.7	12.0	52.6	37.1
South - Non-low income households	22.1	37.7	12.6	53.9*	38.8
South - Low income households	16.5	29.9	10.9	W	31.5*
South - LIHEAP beneficiary households	22.7	36.1	13.3	NC	29.7*
West - All households	21.9	31.2	13.5	57.8	32.5
West - Non-low income households	24.1	33.2	13.8	W	35.0
West - Low income households	16.1	23.3	13.2	W	W
West - LIHEAP beneficiary households	26.5	30.6*	19.6*	NC	W

¹ Developed from the 2015 Residential Energy Consumption Survey (RECS), Energy Information Administration, U.S. Department of Energy, and adjusted for FY 2020 for heating degree days.

² Weighted average of natural gas, electricity, fuel oil, 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 at or below the maximum in Section 2605(b)(2)(B) of the LIHEAP Act, Act, 42 U.S.C. § 8624(b)(2)(B).

⁵ Includes verified LIHEAP recipient households from the 2015 RECS.

NC = No cases in the 2015 RECS household sample.

W = Withheld due to the small number of sample cases.

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

Low Income Home Energy Data for FY 2020: Appendix A: Home Energy Estimates

Table A-6a. Home Heating: Average Annual Expenditures by Amount and Mean Group Burden, by All, Non-Low Income, Low Income, and LIHEAP Beneficiary Households, by Census Region and Main Heating Fuel Type, FY 2020

Census Region	All Fuels ⁱ	All Fuels ⁱⁱ	Natural Gas Heat	Natural Gas Heat	Electric Heat	Electric Heat	Fuel Oil/Kero Heat	Fuel Oil/Kero Heat	LPG Heat	LPG Heat
US - All households	\$537	0.5%	\$555	0.6%	\$457	0.5%	\$1,276	1.3%	\$902	0.9%
US - Non-low income households	\$571	0.5%	\$582	0.5%	\$483	0.4%	\$1,410	1.1%	\$953	0.8%
US - Low income households ⁱⁱⁱ	\$450	2.1%	\$473	2.2%	\$409	1.9%	\$970	4.5%	\$729	3.4%
US - LIHEAP beneficiary households ^{iv}	\$634	3.4%	\$628	3.4%	\$552	3.0%	\$896*	4.9%*	\$920*	5.0%*
Northeast - All households	\$832	0.8%	\$701	0.6%	\$635	0.6%	\$1,313	1.2%	\$1,269	1.2%
Northeast - Non-low income households	\$908	0.6%	\$749	0.5%	\$703	0.5%	\$1,485	1.0%	\$1,445	1.0%
Northeast - Low income households	\$664	2.7%	\$598	2.5%	\$513	2.1%	\$943	3.9%	W	W
Northeast - LIHEAP beneficiary households	\$698	3.4%	\$653	3.2%	\$470*	2.3%*	\$906*	4.4%*	W	W
Midwest - All households	\$661	0.7%	\$656	0.7%	\$640	0.7%	\$1,572	1.7%	\$936	1.0%
Midwest - Non-low income households	\$698	0.6%	\$682	0.6%	\$708	0.6%	W	W	\$959	0.8%
Midwest - Low income households	\$546	2.5%	\$564	2.6%	\$522	2.4%	W	W	\$800*	3.7%*
Midwest - LIHEAP beneficiary households	\$737	4.3%	\$740	4.3%	\$750	4.4%	W	W	W	W
South - All households	\$429	0.5%	\$462	0.5%	\$412	0.5%	\$1,061	1.2%	\$769	0.8%
South - Non-low income households	\$451	0.4%	\$485	0.4%	\$431	0.4%	\$1,057*	0.9%*	\$780	0.7%
South - Low income households	\$377	2.0%	\$394	2.1%	\$374	2.0%	W	W	\$731*	3.8%*
South - LIHEAP beneficiary households	\$474	3.1%	\$472	3.1%	\$458	3.0%	NC	NC	\$766*	5.1%*
West - All households	\$359	0.3%	\$391	0.4%	\$409	0.4%	\$1,054	1.0%	\$740	0.7%
West - Non-low income households	\$378	0.3%	\$420	0.3%	\$419	0.3%	W	W	\$777	0.6%
West - Low income households	\$308	1.4%	\$281	1.2%	\$393	1.7%	W	W	W	W
West - LIHEAP beneficiary households	\$494	2.5%	\$329*	1.6%*	\$529*	2.6%*	NC	NC	W	W

ⁱ Expenditures shown in this table are derived from the 2015 Residential Energy Consumption Survey (RECS), Energy Information Administration, U.S. Department of Energy. The 2015 RECS data have been adjusted for heating degree days and fuel price estimates for FY 2020. Expenditures represent the costs for fuel oil, and LPG delivered, and billed costs for natural gas and electricity used. RECS expenditure data are not collected for other fuels.

ⁱⁱ Represents the percent of household income used for home heating energy expenditures. National and regional mean incomes are calculated from the 2020 CPS ASEC, which reports income for calendar year 2019. Mean group home heating 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.

ⁱⁱⁱ Households with annual incomes at or below the maximum in Section 2605(b)(2)(B) of the LIHEAP Act, Act, 42 U.S.C. § 8624(b)(2)(B).

^{iv} Includes verified LIHEAP recipient households from the 2015 RECS.

NC = No cases in the 2015 RECS household sample.

W = Withheld due to the small number of sample cases.

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

Low Income Home Energy Data for FY 2020: Appendix A: Home Energy Estimates

Table A-6b. Home Heating: Average Annual Expenditures by Amount and Mean Individual Burden, by All, Non-Low Income, Low Income, and LIHEAP Beneficiary Households, by Census Region and Main Heating Fuel Type, FY 2020

Census Region	All Fuels ⁱ	All Fuels ⁱⁱ	Natural Gas Heat	Natural Gas Heat	Electric Heat	Electric Heat	Fuel Oil/Kero Heat	Fuel Oil/Kero Heat	LPG Heat	LPG Heat
US - All households	\$537	1.5%	\$555	1.4%	\$457	1.5%	\$1,276	3.5%	\$902	2.2%
US - Non-low income households	\$571	0.8%	\$582	0.8%	\$483	0.8%	\$1,410	2.0%	\$953	1.3%
US - Low income households ⁱⁱⁱ	\$450	3.1%	\$473	3.1%	\$409	3.0%	\$970	6.9%	\$729	5.2%
US - LIHEAP beneficiary households ^{iv}	\$634	4.2%	\$628	4.0%	\$552	4.2%	\$896*	5.9%*	\$920*	5.5%*
Northeast - All households	\$832	2.2%	\$701	1.9%	\$635	1.7%	\$1,313	3.6%	\$1,269	2.3%
Northeast - Non-low income households	\$908	1.2%	\$749	1.0%	\$703	1.0%	\$1,485	2.1%	\$1,445	1.9%
Northeast - Low income households	\$664	4.4%	\$598	3.8%	\$513	3.1%	\$943	6.8%	W	W
Northeast - LIHEAP beneficiary households	\$698	4.4%	\$653	4.1%	\$470*	3.0%*	\$906*	6.0%*	W	W
Midwest - All households	\$661	1.8%	\$656	1.7%	\$640	2.3%	\$1,572	2.6%	\$936	2.0%
Midwest - Non-low income households	\$698	1.1%	\$682	1.1%	\$708	1.2%	W	W	\$959	1.4%*
Midwest - Low income households	\$546	3.9%	\$564	3.8%	\$522	4.2%	W	W	\$800*	5.3%*
Midwest - LIHEAP beneficiary households	\$737	5.1%	\$740	4.7%	\$750	6.4%	W	W	W	W
South - All households	\$429	1.2%	\$462	1.1%	\$412	1.3%	\$1,061	3.1%	\$769	2.0%
South - Non-low income households	\$451	0.7%	\$485	0.7%	\$431	0.7%	\$1,057*	1.4%*	\$780	1.0%
South - Low income households	\$377	2.6%	\$394	2.5%	\$374	2.7%	W	W	\$731*	5.3%*
South - LIHEAP beneficiary households	\$474	2.9%	\$472	2.7%	\$458	3.0%	NC	NC	\$766*	4.7%*
West - All households	\$359	1.0%	\$391	0.8%	\$409	1.6%	\$1,054	2.5%	\$740	2.7%
West - Non-low income households	\$378	0.5%	\$420	0.5%	\$419	0.7%	W	W	\$777	0.9%
West - Low income households	\$308	2.2%	\$281	1.8%	\$393	3.0%	W	W	W	W
West - LIHEAP beneficiary households	\$494	4.1%	\$329*	2.4%*	\$529*	4.4%*	NC	NC	W	W

ⁱ Expenditures shown in this table are derived from the 2015 Residential Energy Consumption Survey (RECS), Energy Information Administration, U.S. Department of Energy. The 2015 RECS data have been adjusted for heating degree days and fuel price estimates for FY 2020. Expenditures represent the costs for fuel oil, and LPG delivered, and billed costs for natural gas and electricity used. RECS expenditure data are not collected for other fuels.

ⁱⁱ Represents the percent of household income used for home heating energy expenditures. For individual households, FY 2020 income is estimated by inflating income reported in the 2015 RECS by the consumer price index (CPI) and FY 2020 energy expenditures are estimated by adjusting energy expenditures reported in the 2015 RECS for changes in weather and energy prices. FY 2020 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.

ⁱⁱⁱ Households with annual incomes at or below the maximum in Section 2605(b)(2)(B) of the LIHEAP Act, Act, 42 U.S.C. § 8624(b)(2)(B).

^{iv} Includes verified LIHEAP recipient households from the 2015 RECS.

NC = No cases in the 2015 RECS household sample.

W = Withheld due to the small number of sample cases.

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

Low Income Home Energy Data for FY 2020: Appendix A: Home Energy Estimates

Table A-6c. Home Heating: Average Annual Expenditures by Amount and Median Individual Burden, by All, Non-Low Income, Low Income, and LIHEAP Beneficiary Households, by Census Region and Main Heating Fuel Type, FY 2020

Census Region	All Fuels ⁱ	All Fuels ⁱⁱ	Natural Gas Heat	Natural Gas Heat	Electric Heat	Electric Heat	Fuel Oil/Kero Heat	Fuel Oil/Kero Heat	LPG Heat	LPG Heat
US - All households	\$537	0.8%	\$555	0.8%	\$457	0.7%	\$1,276	1.9%	\$902	1.3%
US - Non-low income households	\$571	0.6%	\$582	0.6%	\$483	0.5%	\$1,410	1.5%	\$953	1.0%
US - Low income households ⁱⁱⁱ	\$450	2.0%	\$473	2.1%	\$409	1.9%	\$970	4.7%	\$729	3.5%
US - LIHEAP beneficiary households ^{iv}	\$634	3.1%	\$628	2.8%	\$552	3.3%	\$896*	4.1%*	\$920*	3.5%*
Northeast - All households	\$832	1.3%	\$701	1.0%	\$635	1.2%	\$1,313	1.9%	\$1,269	1.7%
Northeast - Non-low income households	\$908	0.9%	\$749	0.7%	\$703	0.7%	\$1,485	1.5%	\$1,445	1.5%
Northeast - Low income households	\$664	3.1%	\$598	2.5%	\$513	2.9%	\$943	4.6%	W	W
Northeast - LIHEAP beneficiary households	\$698	3.1%	\$653	2.7%	\$470*	2.9%*	\$906*	4.1%*	W	W
Midwest - All households	\$661	1.0%	\$656	1.0%	\$640	1.1%	\$1,572	2.5%	\$936	1.2%
Midwest - Non-low income households	\$698	0.8%	\$682	0.8%	\$708	0.8%	W	W	\$959	1.1%
Midwest - Low income households	\$546	2.7%	\$564	2.8%	\$522	2.9%	W	W	\$800*	3.3%*
Midwest - LIHEAP beneficiary households	\$737	3.9%	\$740	3.9%	\$750	6.3%	W	W	W	W
South - All households	\$429	0.6%	\$462	0.7%	\$412	0.7%	\$1,061	1.2%	\$769	1.2%
South - Non-low income households	\$451	0.5%	\$485	0.5%	\$431	0.5%	\$1,057*	1.0%*	\$780	0.8%
South - Low income households	\$377	1.7%	\$394	2.0%	\$374	1.8%	W	W	\$731*	4.5%*
South - LIHEAP beneficiary households	\$474	1.7%	\$472	1.8%	\$458	1.6%	NC	NC	\$766*	3.5%*
West - All households	\$359	0.4%	\$391	0.5%	\$409	0.6%	\$1,054	1.4%	\$740	1.3%
West - Non-low income households	\$378	0.3%	\$420	0.4%	\$419	0.3%	W	W	\$777	0.5%
West - Low income households	\$308	1.2%	\$281	1.2%	\$393	1.7%	W	W	W	W
West - LIHEAP beneficiary households	\$494	2.1%	\$329*	1.6%*	\$529*	3.2%*	NC	NC	W	W

ⁱ Expenditures shown in this table are derived from the 2015 Residential Energy Consumption Survey (RECS), Energy Information Administration, U.S. Department of Energy. The 2015 RECS data have been adjusted for heating degree days and fuel price estimates for FY 2020. Expenditures represent the costs for fuel oil, and LPG delivered, and billed costs for natural gas and electricity used. RECS expenditure data are not collected for other fuels.

ⁱⁱ Represents the percent of household income used for home heating energy expenditures. For individual households, FY 2020 income is estimated by inflating income reported in the 2015 RECS by the consumer price index (CPI) and FY 2020 energy expenditures are estimated by adjusting energy expenditures reported in the 2015 RECS for changes in weather and energy prices. FY 2020 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.

ⁱⁱⁱ Households with annual incomes at or below the maximum in Section 2605(b)(2)(B) of the LIHEAP Act, Act, 42 U.S.C. § 8624(b)(2)(B).

^{iv} Includes verified LIHEAP recipient households from the 2015 RECS.

NC = No cases in the 2015 RECS household sample.

W = Withheld due to the small number of sample cases.

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

Low Income Home Energy Data for FY 2020: Appendix A: Home Energy Estimates

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 Beneficiary Households, by Census Region, FY 2020

Census Region	Percent that Cool ⁱ	Consumption ⁱⁱ (in		Mean Group Burden ^{iv}	Mean Individual Burden ^v	Median Individual Burden ^{vi}
		MMBtus)	Expenditures ⁱⁱⁱ			
US - All households	94.1%	7.7	\$300	0.3%	0.8%	0.4%
US - Non-low income households	95.6%	8.3	\$325	0.3%	0.4%	0.3%
US - Low income households ^{vii}	90.4%	6.0	\$232	1.1%	1.6%	0.9%
US - LIHEAP beneficiary households ^{viii}	92.9%	3.9	\$159	0.9%	1.0%	0.6%
Northeast - All households	90.5%	4.0	\$207	0.2%	0.5%	0.2%
Northeast - Non-low income households	93.3%	4.4	\$226	0.2%	0.3%	0.2%
Northeast - Low income households	84.4%	3.0	\$160	0.7%	1.0%	0.6%
Northeast - LIHEAP beneficiary households	89.5%	2.5	\$126	0.6%	0.8%	0.5%
Midwest - All households	96.2%	5.0	\$195	0.2%	0.4%	0.3%
Midwest - Non-low income households	97.9%	5.6	\$216	0.2%	0.3%	0.2%
Midwest - Low income households	91.1%	3.4	\$128	0.6%	0.8%	0.6%
Midwest - LIHEAP beneficiary households	92.6%	3.4	\$127	0.7%	0.7%	0.5%
South - All households	98.7%	12.1	\$432	0.5%	1.2%	0.7%
South - Non-low income households	99.5%	13.2	\$471	0.4%	0.7%	0.5%
South - Low income households	99.8%	9.3	\$338	1.8%	2.3%	1.6%
South - LIHEAP beneficiary households	98.3%	6.6	\$246	1.6%	1.6%	0.9%
West - All households	87.2%	5.4	\$239	0.2%	0.6%	0.2%
West - Non-low income households	88.6%	5.8	\$261	0.2%	0.3%	0.2%
West - Low income households	83.6%	4.4	\$177	0.8%	1.2%	0.6%
West - LIHEAP beneficiary households	92.4%	3.4	\$137	0.7%	0.8%	0.4%

ⁱ 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 2015 RECS (e.g., table and window fans.).

ⁱⁱ Consumption and expenditures are derived from the 2015 Residential Energy Consumption Survey (RECS), Energy Information Administration, U.S. Department of Energy. The 2015 RECS data have been adjusted for cooling degree days and electricity price estimates for FY 2020. Expenditures represent billed costs for electricity used for home cooling.

ⁱⁱⁱ Represents the percent of household income used for home cooling energy expenditures.

^{iv} Mean group energy burden has been calculated by (1) calculating average residential energy expenditures from the 2015 RECS for each group of households; (2) adjusting those figures for FY 2020; and (3) dividing the adjusted figures by the average income for each group of households from the 2020 CPS ASEC.

^v Mean individual burden is calculated by taking the mean, or average, of individual cooling energy burdens, as calculated from FY 2020 adjusted RECS data. See Appendix A for information on energy burden calculation.

^{vi} Median individual burden is calculated by taking the median of individual energy burdens, as calculated from FY 2020 adjusted RECS data.

^{vii} Households with annual incomes at or below the maximum in Section 2605(b)(2)(B) of the LIHEAP Act, Act, 42 U.S.C. § 8624(b)(2)(B).

^{viii} Includes verified LIHEAP recipient households from the 2015 RECS.

Appendix B: Income Eligible Household Estimates

ACF encourages LIHEAP grant recipients to use performance measurement systems to manage LIHEAP. ACF has developed targeting performance indicators to support measurement of LIHEAP targeting at the grant recipient level. For several years, ACF has furnished state grant recipients 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 grant recipients can use these estimates with their own data on LIHEAP beneficiary characteristics to compute reciprocity targeting performance statistics.

State-level estimates of the number of income eligible households for FY 2020 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.¹ ACF also uses the estimates from the ACS and household beneficiary data from the states' *LIHEAP Household Report* to develop state-level targeting indexes.

The 2015-2019 five-year ACS Public Use Microdata Sample (PUMS) data file is used to develop more precise estimates of the number of income eligible households than those that would have been obtained using the 2019 single-year ACS PUMS data.²

The federal maximum LIHEAP income standard is the greater of 60 percent of the 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,³ derived from the 2015-2019 five-year ACS, using the federal maximum income standard and the FY 2020 state income standards, respectively. The state income standards are the income levels that the states set to define LIHEAP income eligibility. These state income 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 2015-2019 five-year ACS, using the using the federal maximum income standard and the FY 2020 state income standards, respectively.

¹ For an explanation, and to better understand the differences between the ACS and CPS ASEC, please visit the Census Bureau's Guidance for Data Users website regarding "[Which Data Source to Use for Poverty](#)".

² The Census Bureau recommends multi-year data estimates from the ACS instead of estimates from the one-year ACS when the precision of the estimates is of primary importance. (See the Census Bureau's Guidance for Data Users website regarding "[When to Use 1-year or 5-year Estimates](#)" for estimates from the ACS.) In prior *Notebooks*, state-level estimates of the income-eligible population were derived from the Census Bureau's 3-year ACS PUMS product. However, in 2015, the Census Bureau discontinued publication of its 3-year ACS PUMS. For the *FY 2015 Notebook* and the *FY 2016 Notebook*, the methodology chosen to develop state-level estimates of the income-eligible population was the three-year average of 1-year ACS PUMS files, which produced comparable estimates to the discontinued 3-year ACS PUMS. To maintain consistency with the Census Bureau's published ACS PUMS data, beginning with the *FY 2017 Notebook*, the methodology chosen to develop state-level estimates of the income-eligible population was the 5-year ACS PUMS data published by the Census Bureau. The *FY 2020 Notebook* uses the most recent 5-year (2015-2019) ACS PUMS file to develop state-level estimates of the income-eligible population.

³ 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 members with a disability with those in previous *Notebooks*.

LIHEAP Home Energy Notebook for FY 2020: Appendix B: Income Eligible Household Estimates

Table B-1. State-level Estimates of the Number of LIHEAP Income Eligible Households Using the Federal Maximum LIHEAP Income Standard by Vulnerability Category:^{i ii iii}
(2015-2019 ACS)

State	Total Number of LIHEAP Eligible Households ^{iv}	LIHEAP Eligible Households with at Least One Member 60+ Years	LIHEAP Eligible Households with at Least One Child Less than 6 Yrs. Old	LIHEAP Eligible Households with at Least One Member with a Disability ^v	LIHEAP Eligible Households with no Vulnerable Members
Alabama	570,979	233,197	90,747	259,032	150,691
Alaska	68,028	23,033	16,575	25,204	20,111
Arizona	636,864	261,768	122,197	229,291	183,488
Arkansas	326,084	129,326	60,380	156,665	76,786
California	3,439,939	1,412,414	652,776	1,181,282	1,068,550
Colorado	542,892	212,458	88,449	182,220	180,373
Connecticut	421,067	188,020	56,031	151,285	126,940
Delaware	99,056	42,191	15,032	33,477	30,171
District of Columbia	76,602	29,419	9,571	32,156	25,084
Florida	1,936,639	928,710	288,739	700,033	531,951
Georgia	1,009,036	386,227	193,322	378,505	301,081
Hawaii	110,644	53,600	19,583	40,036	29,123
Idaho	144,297	53,994	26,983	56,991	41,197
Illinois	1,420,838	599,430	231,845	497,805	438,947
Indiana	681,919	266,683	119,339	278,442	192,997
Iowa	340,331	143,129	52,380	123,663	101,135
Kansas	301,606	116,701	55,243	119,508	86,028
Kentucky	530,097	214,729	89,644	270,083	117,103
Louisiana	593,640	241,757	97,342	254,878	163,307
Maine	158,381	78,019	17,261	77,615	32,154
Maryland	614,032	270,226	104,456	219,498	176,887
Massachusetts	813,161	388,042	101,916	333,067	212,725
Michigan	1,137,840	466,778	181,265	482,641	304,385
Minnesota	607,152	265,893	98,926	218,592	172,221
Mississippi	336,967	133,455	57,882	154,981	87,376
Missouri	678,460	279,458	111,535	294,417	177,034
Montana	117,245	51,142	16,725	44,990	34,193
Nebraska	196,818	77,517	36,258	70,224	59,998
Nevada	260,174	100,003	45,491	92,833	83,532
New Hampshire	143,609	70,088	16,799	58,911	36,211
New Jersey	992,140	461,955	153,296	337,741	287,361
New Mexico	216,920	88,232	38,469	91,640	57,992
New York	2,251,793	1,026,195	342,510	858,876	620,132
North Carolina	1,082,654	444,239	183,410	431,420	305,990
North Dakota	89,160	35,117	13,928	30,153	30,725
Ohio	1,363,726	563,074	225,728	582,623	353,114
Oklahoma	397,901	152,640	74,482	175,118	106,634
Oregon	405,487	172,307	61,801	169,825	111,722
Pennsylvania	1,501,739	710,994	212,035	659,707	356,731
Rhode Island	130,193	60,199	17,177	57,411	31,750
South Carolina	521,371	219,204	85,893	212,804	144,686
South Dakota	90,273	38,545	15,676	33,357	25,786
Tennessee	696,509	280,836	119,827	312,156	181,334
Texas	2,582,998	919,271	565,943	895,202	824,089
Utah	205,202	65,050	52,584	65,257	64,237
Vermont	73,149	36,018	8,329	32,035	17,685
Virginia	864,649	366,660	143,619	321,659	251,993
Washington	719,777	293,600	131,478	279,987	198,122
West Virginia	231,860	101,415	32,469	121,274	50,214
Wisconsin	649,672	279,955	97,187	241,797	182,328
Wyoming	59,681	24,841	9,217	21,626	18,112
All States	33,441,251	14,057,754	5,659,750	12,949,993	9,462,516

ⁱ State estimates are subject to sampling error and may not sum to United States total due to rounding.

LIHEAP Home Energy Notebook for FY 2020: Appendix B: Income Eligible Household Estimates

ⁱⁱ The federal maximum LIHEAP income standard is the greater of 60 percent of the state median income estimates or 150 percent of the HHS Poverty Guidelines.

ⁱⁱⁱ A household can be counted under more than one vulnerability category.

^{iv} The 2015-2019 ACS estimate of the total number of all United States households is 120,756,015.

^v 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, 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 Maximum LIHEAP Income Standards by Vulnerability Category^{i ii iii} (2015-2019 ACS)

State	State Income Guideline ⁱ for 4-Member Household as % of HH ⁱ Poverty Guidelines	Total Number of LIHEAP Eligible Households ^{iv}	LIHEAP Eligible Household with at Least One Member 60+ Years	LIHEAP Eligible Households with at Least One Child 1 Less than 6 yrs. Old	LIHEAP Eligible Households with at Least One Member with a Disability ^v	LIHEAP Eligible Households with no Vulnerable Members
Alabama	150%	493,409	195,463	82,556	226,405	128,192
Alaska	150%	49,205	17,128	12,060	19,761	12,889
Arizona	167% ^{vi vii}	636,794	261,760	122,135	229,283	183,488
Arkansas	147% ^{vi viii}	322,270	128,792	58,153	155,255	76,040
California	195% ^{vi viii}	3,437,616	1,411,766	650,824	1,180,316	1,068,379
Colorado	213% ^{vi viii}	542,815	212,449	88,381	182,211	180,373
Connecticut	262% ^{vi viii}	421,067	188,020	56,031	151,285	126,940
Delaware	200%	88,125	36,662	14,075	30,405	26,437
District of Columbia	231% ^{vi viii}	76,602	29,419	9,571	32,156	25,084
Florida	150%	1,653,714	778,419	263,605	605,414	443,981
Georgia	171% ^{vi viii}	1,008,087	385,840	192,513	378,061	301,038
Hawaii	150%	81,192	39,546	15,484	31,108	19,560
Idaho	150%	131,993	47,462	25,954	52,561	37,423
Illinois	150%	916,805	356,824	166,074	339,324	278,148
Indiana	177% ^{vi ix}	681,899	266,683	119,330	278,433	192,986
Iowa	175%	283,161	113,945	46,228	105,649	83,324
Kansas	130%	176,270	61,268	34,411	73,107	50,069
Kentucky	130%	382,603	143,859	69,310	202,243	80,988
Louisiana	175% ^{vi viii}	593,289	241,685	97,098	254,730	163,245
Maine	189% ^{vi x}	158,381	78,019	17,261	77,615	32,154
Maryland	175%	365,133	156,409	66,362	143,819	96,618
Massachusetts	265% ^{vi viii}	813,161	388,042	101,916	333,067	212,725
Michigan	110%	542,727	187,401	98,175	244,660	144,864
Minnesota	194% ^{vi xi}	484,070	213,219	79,694	183,592	130,059
Mississippi	143% ^{vi viii}	327,718	131,108	54,060	151,157	85,095
Missouri	135%	439,783	168,684	77,265	201,196	110,350
Montana	178% ^{vi ix}	117,245	51,142	16,725	44,990	34,193
Nebraska	130%	110,858	40,549	22,445	41,651	32,053
Nevada	150%	217,238	80,460	40,320	78,274	69,020
New Hampshire	246% ^{vi viii}	143,609	70,088	16,799	58,911	36,211
New Jersey	200%	704,502	321,752	116,902	256,274	192,554
New Mexico	150%	214,597	86,753	38,469	90,908	57,281
New York	214% ^{vi xii}	2,251,793	1,026,195	342,510	858,876	620,132
North Carolina	130%	749,034	288,799	138,968	306,747	206,204
North Dakota	215% ^{vi viii}	89,151	35,117	13,919	30,153	30,725
Ohio	175%	1,183,040	465,145	209,160	515,641	303,553
Oklahoma	130%	295,149	103,928	57,886	130,306	80,591
Oregon	183% ^{vi viii}	405,214	172,240	61,607	169,632	111,717
Pennsylvania	150%	960,946	414,160	149,014	446,750	224,695
Rhode Island	226% ^{vi viii}	130,193	60,199	17,177	57,411	31,750
South Carolina	150%	447,749	183,467	78,318	184,845	122,108

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South Dakota	175% ^{xiii}	77,369	31,937	14,768	29,675	21,281
Tennessee	150%	604,980	235,930	110,388	275,876	153,464
Texas	150%	2,092,327	721,741	488,218	738,790	648,506
Utah	150%	153,328	47,039	40,683	49,867	47,263
Vermont	185%	60,931	29,619	7,466	27,799	14,028
Virginia	130%	419,439	166,298	72,135	173,451	115,375
Washington	125%	340,243	124,744	62,991	142,313	93,159
West Virginia	164% ^{vi viii}	231,678	101,387	32,309	121,126	50,192
Wisconsin	205% ^{vi viii}	649,508	279,949	97,052	241,723	182,321
Wyoming	196% ^{vi viii}	59,678	24,841	9,214	21,626	18,112
All States	Not applicable	27,817,688	11,403,351	4,873,969	10,956,428	7,786,937

ⁱ State estimates are subject to sampling error and may not sum to United States total due to rounding.

ⁱⁱ 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 Performance Data Form – Module I (Grantee Survey) and confirmed with other program resources.

ⁱⁱⁱ A household can be counted under more than one vulnerability category.

^{iv} The 2015-2019 ACS estimate of the total number of all United States households is 120,756,015.

^v 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, 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.

^{vi} These states use a percent of state median income as the state income guideline. The figures reported are the conversion to a percent of the HHS Poverty Guidelines for four-member households.

^{vii} The state income guideline is 60 percent of the state median income for households with 1-7 members and 150 percent of HHS Poverty Guidelines for households with 8 or more members.

^{viii} These states use 60 percent of the state median income as the state income guideline for all household sizes.

^{ix} The state income guideline is 60 percent of the state median income for households with 1-8 members and 150 percent of HHS Poverty Guidelines for households with 9 or more members.

^x The state income guideline is the greater of 150 percent of HHS Poverty Guidelines and 60 percent of the state median income, depending on household size.

^{xi} The state income guideline is the greater of 50 percent of the state median income and 110 percent of HHS Poverty Guidelines, depending upon household size.

^{xii} The state income guideline is 60 percent of the state median income for households with 1-10 members and 150 percent of HHS Poverty Guidelines for households with 11 or more members.

^{xiii} The state income guideline is 175 percent of the HHS Poverty Guidelines for households with 1-6 members, 60 percent of the state median income for households with 7 or 8 members, or 150 percent of HHS Poverty Guidelines for households with 9 or more members.

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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^{i ii}

(2015-2019 ACS)

State	Total Number of LIHEAP Eligible Households ⁱⁱⁱ	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	570,979	292,624	104,563	96,222	77,570
Alaska	68,028	29,666	9,704	9,835	18,823
Arizona	636,864	310,030	110,705	114,358	101,771
Arkansas	326,084	178,740	71,563	67,734	8,047
California	3,439,939	1,447,238	518,352	501,240	973,109
Colorado	542,892	185,918	68,930	73,445	214,599
Connecticut	421,067	122,211	42,701	42,010	214,145
Delaware	99,056	37,599	12,355	12,127	36,975
District of Columbia	76,602	37,641	8,265	6,912	23,784
Florida	1,936,639	923,468	363,916	366,330	282,925
Georgia	1,009,036	489,456	176,076	171,501	172,003
Hawaii	110,644	48,256	16,079	16,857	29,452
Idaho	144,297	71,018	29,040	31,935	12,304
Illinois	1,420,838	542,688	184,400	189,717	504,033
Indiana	681,919	292,909	112,861	116,154	159,995
Iowa	340,331	124,666	50,311	52,970	112,384
Kansas	301,606	118,177	47,817	46,876	88,736
Kentucky	530,097	272,136	90,654	88,463	78,844
Louisiana	593,640	302,490	97,401	90,271	103,478
Maine	158,381	59,587	24,612	25,628	48,554
Maryland	614,032	178,864	58,008	62,778	314,382
Massachusetts	813,161	253,394	84,234	82,713	392,820
Michigan	1,137,840	476,963	162,264	168,203	330,410
Minnesota	607,152	176,766	74,617	75,087	280,682
Mississippi	336,967	204,363	68,260	62,591	1,753
Missouri	678,460	282,943	111,033	111,568	172,916
Montana	117,245	49,129	20,430	19,649	28,037
Nebraska	196,818	72,799	30,901	30,346	62,772
Nevada	260,174	123,836	45,834	47,568	42,936
New Hampshire	143,609	34,848	16,449	15,592	76,720
New Jersey	992,140	291,654	102,686	104,196	493,604
New Mexico	216,920	131,415	43,124	40,058	2,323
New York	2,251,793	937,548	286,847	279,172	748,226
North Carolina	1,082,654	505,746	198,446	190,463	187,999
North Dakota	89,160	29,732	11,770	11,346	36,312
Ohio	1,363,726	571,980	197,012	200,497	394,237
Oklahoma	397,901	199,316	78,024	76,477	44,084
Oregon	405,487	168,555	64,494	67,387	105,051
Pennsylvania	1,501,739	555,300	199,878	205,768	540,793
Rhode Island	130,193	48,060	16,161	15,084	50,888
South Carolina	521,371	262,275	93,516	91,958	73,622
South Dakota	90,273	33,883	14,741	14,239	27,410
Tennessee	696,509	349,239	127,331	128,410	91,529
Texas	2,582,998	1,215,780	445,952	430,595	490,671
Utah	205,202	83,591	31,622	38,115	51,874
Vermont	73,149	23,719	11,155	10,622	27,653
Virginia	864,649	290,384	104,361	106,831	363,073
Washington	719,777	249,331	90,912	95,848	283,686

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West Virginia	231,860	116,031	42,131	40,135	33,563
Wisconsin	649,672	216,055	91,049	92,285	250,283
Wyoming	59,681	22,171	8,304	8,885	20,321
All States	33,441,251	14,042,188	5,071,851	5,045,051	9,282,161

ⁱ State estimates are subject to sampling error and may not sum to United States total due to rounding.

ⁱⁱ The federal maximum LIHEAP income standard is the greater of 60 percent of state median income estimates or 150 percent of the HHS Poverty Guidelines.

ⁱⁱⁱ The 2015-2019 ACS estimate of the total number of all United States households is 120,756,015.

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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^{i ii} (2015-2019 ACS)

State	State Income Guidelines for 4-Member Household as % of HHS Poverty Guidelines	Total Number of LIHEAP Eligible Households ⁱⁱⁱ	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%	493,409	292,624	104,563	96,222	0
Alaska	150%	49,205	29,666	9,704	9,835	0
Arizona	167% ^{iv v}	636,794	310,030	110,705	114,288	101,771
Arkansas	147% ^{iv vi}	322,270	178,740	71,282	64,201	8,047
California	195% ^{iv vi}	3,437,616	1,447,238	518,193	499,076	973,109
Colorado	213% ^{iv vi}	542,815	185,918	68,930	73,368	214,599
Connecticut	262% ^{iv vi}	421,067	122,211	42,701	42,010	214,145
Delaware	200%	88,125	37,599	12,355	12,127	26,044
District of Columbia	231% ^{iv vi}	76,602	37,641	8,265	6,912	23,784
Florida	150%	1,653,714	923,468	363,916	366,330	0
Georgia	171% ^{iv vi}	1,008,087	489,456	175,989	170,639	172,003
Hawaii	150%	81,192	48,256	16,079	16,857	0
Idaho	150%	131,993	71,018	29,040	31,935	0
Illinois	150%	916,805	542,688	184,400	189,717	0
Indiana	177% ^{iv vii}	681,899	292,909	112,861	116,134	159,995
Iowa	175%	283,161	124,666	50,311	52,970	55,214
Kansas	130%	176,270	118,177	47,817	10,276	0
Kentucky	130%	382,603	272,136	90,654	19,813	0
Louisiana	175% ^{iv vi}	593,289	302,490	97,390	89,931	103,478
Maine	189% ^{iv viii}	158,381	59,587	24,612	25,628	48,554
Maryland	175%	365,133	178,864	58,008	62,778	65,483
Massachusetts	265% ^{iv vi}	813,161	253,394	84,234	82,713	392,820
Michigan	110%	542,727	476,963	65,764	0	0
Minnesota	194% ^{iv ix}	484,070	176,766	74,607	74,863	157,834
Mississippi	143% ^{iv vi}	327,718	204,363	67,850	53,752	1,753
Missouri	135%	439,783	282,943	111,033	45,807	0
Montana	178% ^{iv vii}	117,245	49,129	20,430	19,649	28,037
Nebraska	130%	110,858	72,799	30,901	7,158	0
Nevada	150%	217,238	123,836	45,834	47,568	0
New Hampshire	246% ^{iv 6}	143,609	34,848	16,449	15,592	76,720
New Jersey	200%	704,502	291,654	102,686	104,196	205,966
New Mexico	150%	214,597	131,415	43,124	40,058	0
New York	214% ^{iv x}	2,251,793	937,548	286,847	279,172	748,226
North Carolina	130%	749,034	505,746	198,446	44,842	0
North Dakota	215% ^{iv vi}	89,151	29,732	11,770	11,337	36,312
Ohio	175%	1,183,040	571,980	197,012	200,497	213,551
Oklahoma	130%	295,149	199,316	78,024	17,809	0
Oregon	183% ^{iv vi}	4050,214	168,555	64,494	67,114	105,051
Pennsylvania	150%	960,946	555,300	199,878	205,768	0
Rhode Island	226% ^{iv vi}	130,193	48,060	16,161	15,084	50,888
South Carolina	150%	447,749	262,275	93,516	91,958	0
South Dakota	175% ^{xi}	77,369	33,883	14,741	14,239	14,506
Tennessee	150%	604,980	349,239	127,331	128,410	0
Texas	150%	2,092,327	1,215,780	445,952	430,595	0
Utah	150%	153,328	83,591	31,622	38,115	0
Vermont	185%	60,931	23,719	11,155	10,622	15,435
Virginia	130%	419,439	290,384	104,361	24,694	0
Washington	125%	340,243	249,331	90,912	0	0
West Virginia	164% ^{iv vi}	231,678	116,031	42,127	39,957	33,563
Wisconsin	205% ^{iv vi}	649,508	216,055	91,049	92,121	250,283
Wyoming	196% ^{iv vi}	59,678	22,171	8,304	8,882	20,321
All States	Not applicable	27,817,688	14,042,188	4,974,389	4,283,619	4,517,492

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ⁱ State estimates are subject to sampling error and may not sum to United States total due to rounding.

ⁱⁱ 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 Performance Data Form – Module I (Grantee Survey).

ⁱⁱⁱ The 2015-2019 ACS estimate of the total number of all United States households is 120,756,015

^{iv} These states use a percent of state median income as the state income guideline. The figures reported are the conversion to a percent of the HHS Poverty Guidelines for four member households.

^v The state income guideline is 60 percent of the state median income for households with 1-7 members and 150 percent of HHS Poverty Guidelines for households with 8 or more members.

^{vi} These states use 60 percent of the state median income as the state income guideline for all household sizes.

^{vii} The state income guideline is 60 percent of the state median income for households with 1-8 members and 150 percent of HHS Poverty Guidelines for households with 9 or more members.

^{viii} The state income guideline is the greater of 150 percent of HHS Poverty Guidelines and 60 percent of the state median income, depending on household size.

^{ix} The state income guideline is the greater of 50 percent of the state median income and 110 percent of HHS Poverty Guidelines, depending upon household size.

^x The state income guideline is 60 percent of the state median income for households with 1-10 members and 150 percent of HHS Poverty Guidelines for households with 11 or more members.

^{xi} The state income guideline is 175 percent of the HHS Poverty Guidelines for households with 1-6 members, 60 percent of the state median income for households with 7 or 8 members, or 150 percent of HHS Poverty Guidelines for households with 9 or more members.