

ENERGY AFFORDABILITY STUDY POPULATION CHARACTERIZATION REPORT

Summary Report

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ACRONYMS

ACS	American Community Survey
AHS	American Housing Survey
AMI	Area Median Income
BLS	Bureau of Labor Statistics
CPS	Current Population Survey
DC	District of Columbia
DOEE	Department of Energy & Environment
FDIC	Federal Deposit Insurance Corporation
FPL	Federal Poverty Level
GWUL	Greater Washington Urban League
HHSPG	U.S. Department of Health and Human Service Poverty Guidelines
HUD	U.S. Department of Housing and Urban Development
LIHEAP	Low-income Home Energy Assistance Program
LMI	Low- and Moderate- Income
OPC	Office of the People's Counsel
PUMA	Public Use Microdata Area
PUMS	Public Use Microdata Sample
RAD	Residential Assistance Discount
RES	Residential Essential Service
SMI	State Median Income
SNAP	Supplemental Nutrition Assistance Program
WAFF	Washington Area Fuel Fund
WAP	Weatherization Assistance Program
WGL	Washington Gas Light Company

EXECUTIVE SUMMARY

The Office of the People's Counsel (OPC) is an independent agency of the District of Columbia (DC) government. By law, it is the advocate for consumers of natural gas, electric, and telephone services in the District.¹ The OPC is concerned that households across all income levels in DC struggle with energy affordability issues. The OPC is committed to fulfilling its mandate to ensure that DC residents have access to high quality utility services that are safe, reliable, universally affordable, and environmentally sustainable, and therefore seeks solutions that enable equitable access to energy.² The purpose of the Energy Affordability Study is to inform and advise the OPC on matters affecting energy affordability, particularly for DC's low- to moderate-income (LMI) households. The purpose of this Population Characterization Report is to furnish detailed information about the income, demographics, energy burden, and shelter burden faced by DC's LMI households to assist the OPC consider policies and programs to increase energy affordability.

Study Procedures and Work Products

The study used three different types of information to characterize the LMI population and the programs that serve them: public use data sets from surveys conducted by the U.S. Bureau of the Census; the LIHEAP program database furnished by the Department of Energy & Environment (DOEE); and, published statistics from federal, state, and local government agencies.

The outputs from the study include a number of different work products that are designed to furnish OPC, the regulated utilities, and the public with the information that is needed to understand the affordability issues faced by LMI households. The work products include:

- Population Characterization Report – Furnishes comprehensive information on the LMI population in the District of Columbia.
- Special Topic Reports – Explore special topics in more depth for parties who want to examine important subpopulations.
- Methodology Reports – Contain detailed descriptions of the data sources that were used to develop statistics, including documentation of analysis procedures.

This Population Characterization Report is one of three reports included in the Energy Affordability Study. The other reports furnish indicators of energy affordability for program

¹ This text was copied directly from the Office of People's Counsel website on 9-23-2019.

² This is text from the Request for Proposal #OPCI-RFP-2019-4 issued by the OPC on January 10, 2019.

participants and examples from other jurisdictions on energy assistance programs offered to low- and moderate-income households.

Low- to Moderate-Income Household Income and Poverty Status

For purposes of this study, low-income households are defined as those that are income-eligible for the LIHEAP (i.e., households with incomes at or below 60 percent of state median income (SMI)). Moderate-income households are defined as those with incomes above the LIHEAP income threshold, but less than 80 percent of area median income. Moderate-income households are not income-eligible for LIHEAP but are eligible to participate in some of the other energy affordability initiatives in the District.

Figure 1 shows that 113,744 DC households (41%) are classified as low- to moderate-income according to this definition. Of that total, 72 percent are classified as low-income and 28 percent are classified as moderate-income.

Figure 1 – DC Low- to Moderate-Income Households

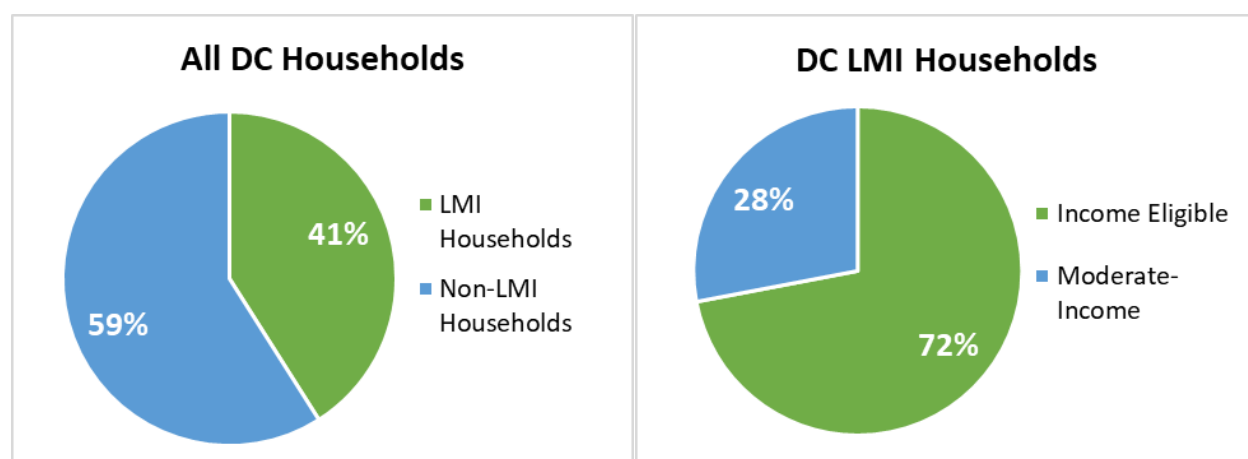
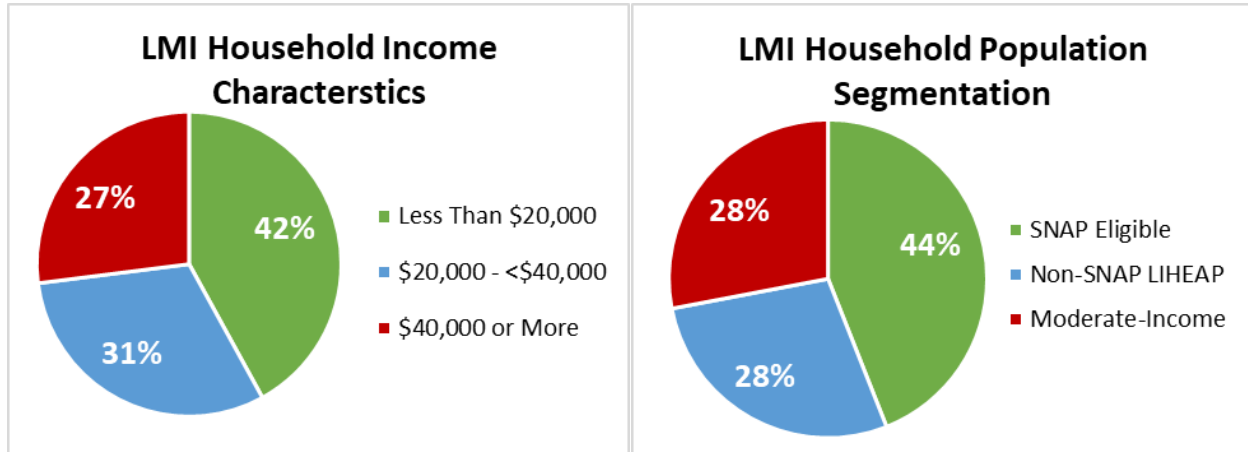


Figure 2 shows the income characteristics of LMI households. The first pie chart shows that about 40 percent of LMI households have income of less than \$20,000 while about one-fourth have income over \$40,000. The second pie chart shows another way of categorizing LMI households. It segments the population into SNAP-Eligible, non-SNAP LIHEAP Eligible, and moderate-income. “SNAP-Eligible” households have income at or below 130 percent of the HHS Poverty Guideline and are income-eligible for the SNAP program (i.e., Food Stamps) as well as for other public assistance programs. “Non-SNAP LIHEAP Eligible” households have income above 130 percent of the Poverty Guideline but are still income-eligible for LIHEAP energy assistance. Many of these households have income that is above the eligibility threshold for public assistance programs other than LIHEAP. The statistics show that 44 percent of LMI households are categorized as SNAP-Eligible, 28 percent are categorized as non-SNAP LIHEAP Eligible, and 28 percent are

categorized as moderate-income. While all LMI households face energy and housing affordability issues, those issues are usually more critical for the SNAP-Eligible households.

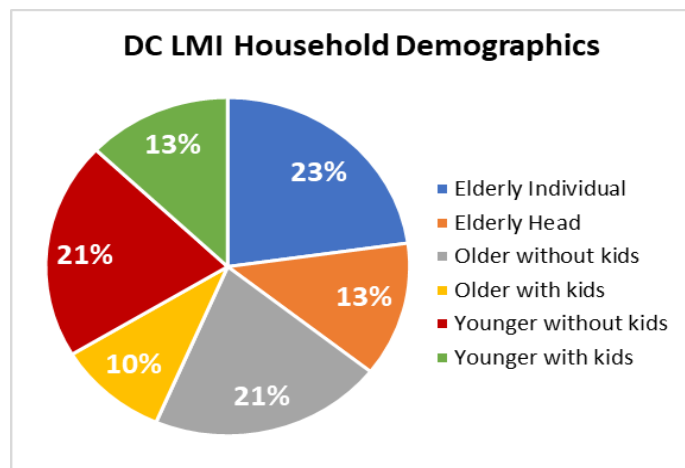
Figure 2 – DC Low- to Moderate-Income Household Income



Low- to Moderate-Income Household Demographics

It is challenging to consider the demographic factors that are relevant to understanding a household's status with respect to engagement with energy assistance and energy efficiency initiatives. Since the need for energy assistance and the ability to engage in energy efficiency initiatives is affected by household age and household composition, we developed a composite household type variable that combines those variables. Figure 3 shows that elderly households (60 or older) represent about 36 percent of the LMI population, but that about two-thirds of those households have a single individual, while the other one-third have two or more persons. One-third of LMI households have a head who is younger than 40 and one-fourth have children.

Figure 3 – DC Low- to Moderate-Income Household Type



Low- to Moderate-Income Housing Characteristics

Two housing unit characteristics are particularly important in the context of energy affordability. The first is whether the LMI household is an owner or a renter of their home since that affects the way in which that household can participate in energy efficiency programs and initiatives that can contribute to improvements in energy affordability. The second is the type of housing unit occupied by the LMI household since a resident of a single-family home can have much more control over energy bills than can a household that lives in a multifamily building.

Figure 4 shows that ownership status varies by income; only 13 percent of SNAP-Eligible households are owners while about one-third of moderate-income households own their homes. About three-fourths of all LMI households are renters; any energy efficiency programs targeted to help increase affordability for LMI households will need to take that into account.

Figure 4 – DC LMI Ownership Status by Program Eligibility Group

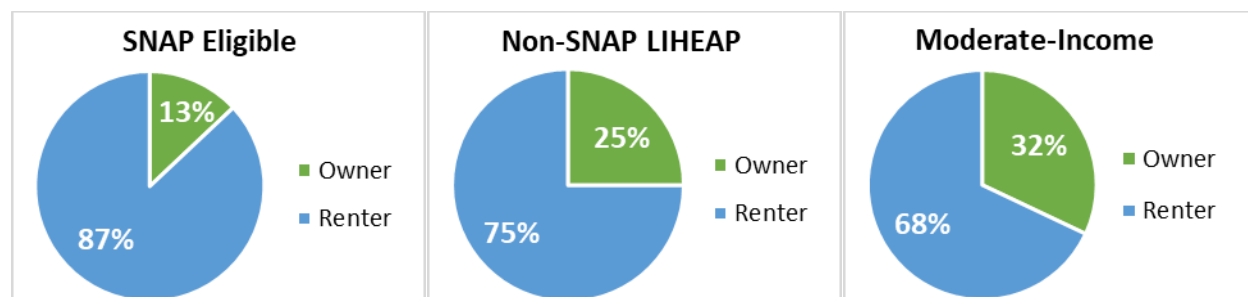
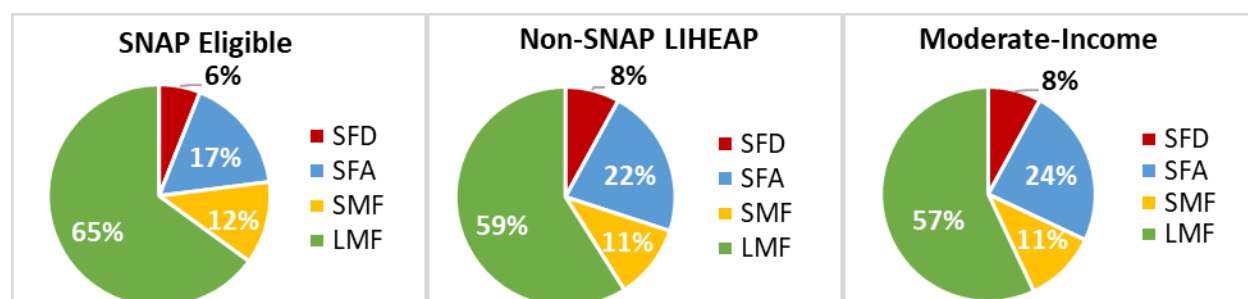


Figure 5 shows that building type also varies by income; over three-fourths of SNAP-Eligible households live in multifamily buildings (LMF + SMF) compared to a 68 percent of moderate-income households. Very few DC households live in single-family detached homes.

Figure 5 – DC LMI Housing Unit Type by Program Eligibility Group³

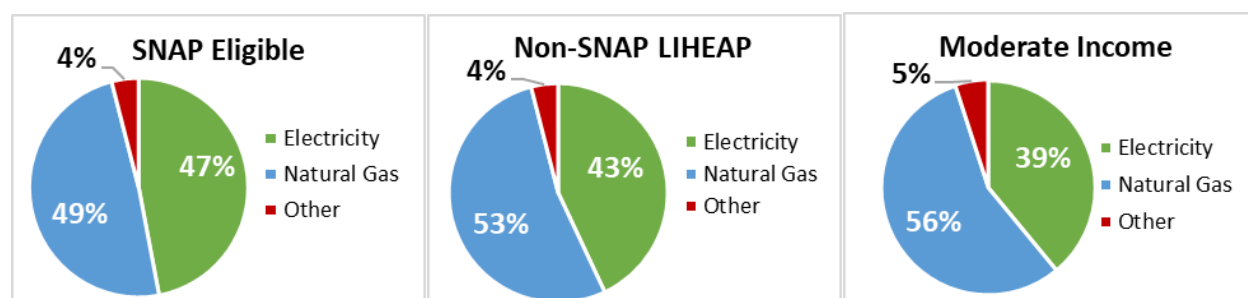


³ SFD = Single Family Detached, SFA = Single Family Attached, SMF = Small Multifamily (2-4 units), LMF = Large Multifamily (5+).

Energy Usage and Payment Patterns

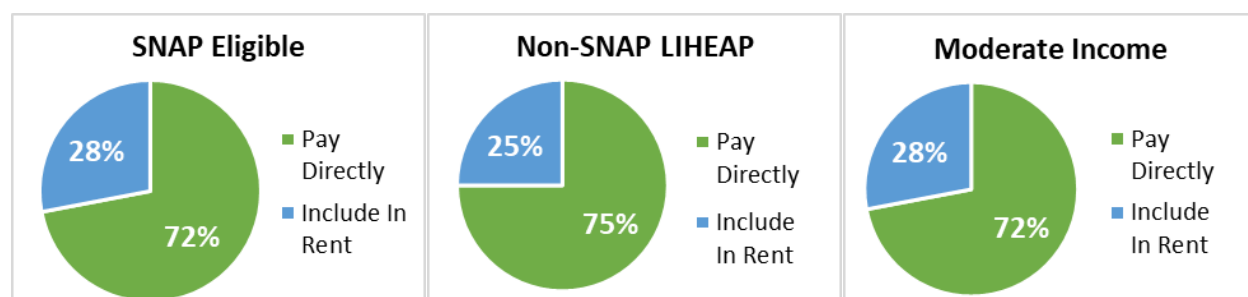
The District of Columbia is unique in that almost all households use either electricity or natural gas for their main heating fuel. In other jurisdictions, many households use delivered fuels such as fuel oil, propane, or wood. Figure 6 shows that SNAP-Eligible households are almost evenly split between electric main heat and natural gas main heat, while moderate income households have a higher incidence of natural gas main heat.

Figure 6 – DC LMI Main Heating Fuel by Program Eligibility Group



The District of Columbia also is unique in that a significant share of households have their heat and/or electricity included in their rent. In other jurisdictions, almost all households pay directly for their energy, even when they rent. However, Figure 7 shows that more than one-fourth of all income groups have their natural gas heat included in the rent.

Figure 7 – DC LMI Natural Gas Payment Status by Program Eligibility Group

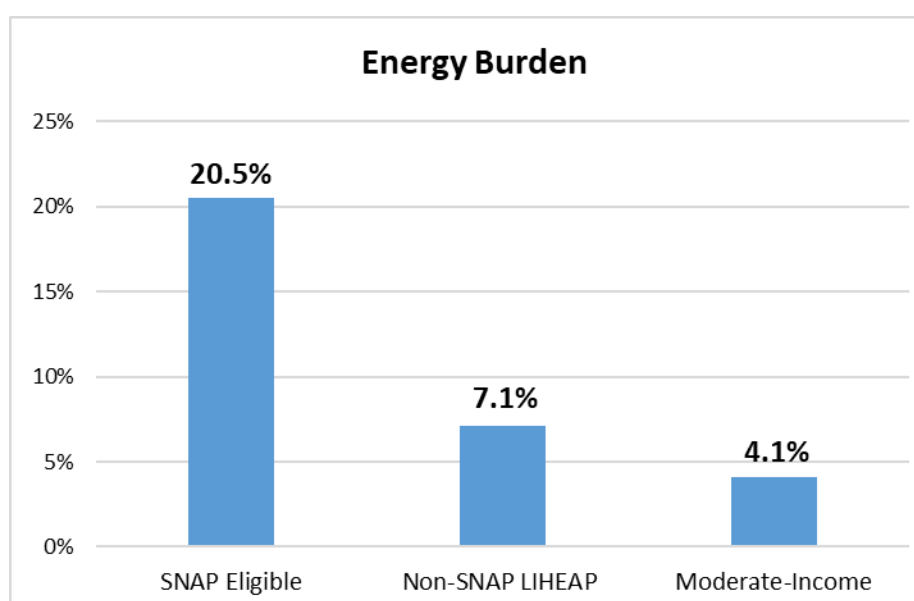


In one respect, the DC energy usage patterns simplify policy development; since almost all LMI households use regulated energy sources, it is possible to address LMI energy affordability through regulatory initiatives. However, since energy bills for over one-fourth of households are embedded in their rental payments, it is more difficult to determine whether energy bills are affordable for those households.

Energy Burden Explanatory Factors

Policy analysts have suggested that households with an energy bill that is more than 6% of income have an “unaffordable” energy burden and that those with an energy bill that is more than 10% of income have a “severe” energy burden. Figure 8 shows that average energy burden for DC’s SNAP-Eligible households is 20.5 percent, for non-SNAP LIHEAP households it is 7.1 percent, and for moderate-income households it is 4.1 percent. the average SNAP-Eligible household has a severe energy burden, the average non-SNAP LIHEAP household has an unaffordable energy burden, and the average moderate-income household has an affordable energy burden.

Figure 8 – LMI Energy Burden by Program Eligibility Group



Detailed analysis of LMI energy burdens demonstrate that the following groups have the highest energy burdens:

- **Demographic Group** – Elderly individuals living alone have the highest energy burdens because they have the lowest average income.
- **Housing Unit Type** – Households in single-family homes have the highest energy burdens; while they have the highest average income, they also have the highest energy bills.
- **Main Heating Fuel** – Households that use natural gas as their main source of heat have higher energy burdens than those that use electricity as their main source of heat.

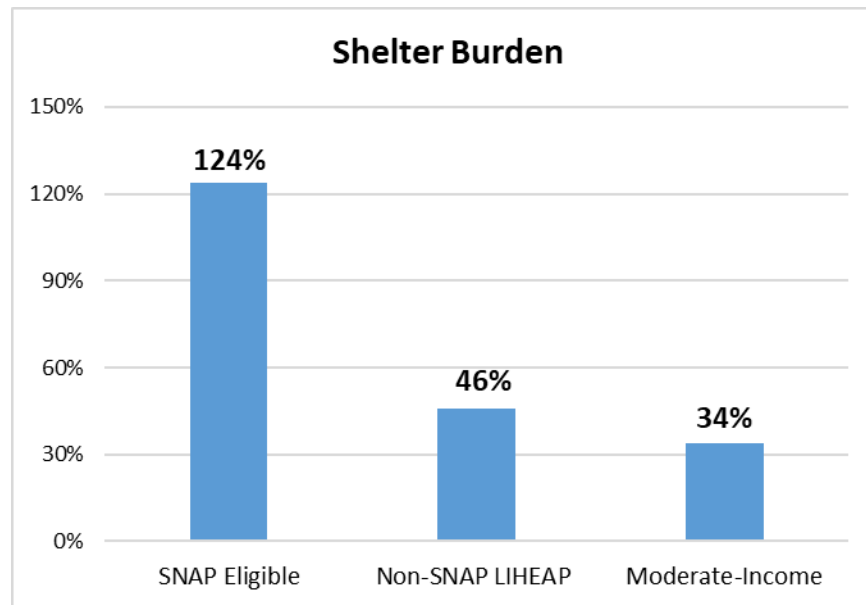
The differences are important in that they help to show that while the most important problem with respect to energy affordability is low-income—SNAP-Eligible households have the highest

energy burdens—there are other factors that also are important determinants of energy affordability.

Shelter Burden Explanatory Factors

Shelter burden is a statistic used by analysts at the Department of Housing and Urban Development (HUD) to understand the extent to which households have affordable housing. Housing experts generally consider that households with shelter costs of more than 30% of income have an “unaffordable” shelter burden and that those with shelter costs that are more than 50% of income have a “severe” shelter burden. Figure 9 shows that average shelter burden for DC’s SNAP-Eligible households is 124 percent; they are paying more in shelter costs than they receive in income. Shelter burden is 46 percent for non-SNAP LIHEAP households and 34 percent for moderate-income households. The average SNAP-Eligible household has a severe shelter burden, while the average non-SNAP LIHEAP household and the average moderate-income household has an unaffordable shelter burden.

Figure 9 – LMI Shelter Burden by Program Eligibility Group



Detailed analysis of LMI energy burdens finds the following with respect to shelter burden explanatory factors.

- **Demographic Group** – Young households without children have the highest average shelter burden. Elderly couples have the lowest average shelter burdens.
- **Housing Unit Type** – Average shelter burdens are similar across all household types. Households in single-family homes have higher shelter costs, but also higher income.

- Heat in Rent – Households that have all of their energy bills included in the rent have slightly lower average shelter burden than those who pay their energy bills directly.

In some jurisdictions, some households with high energy burdens have affordable shelter burdens and may be able to pay high energy bills. However, these statistics show that all groups of DC households have “unaffordable” shelter burdens. As such, anything that can be done to make energy bills more affordable is likely to have an impact on overall shelter burden issues.

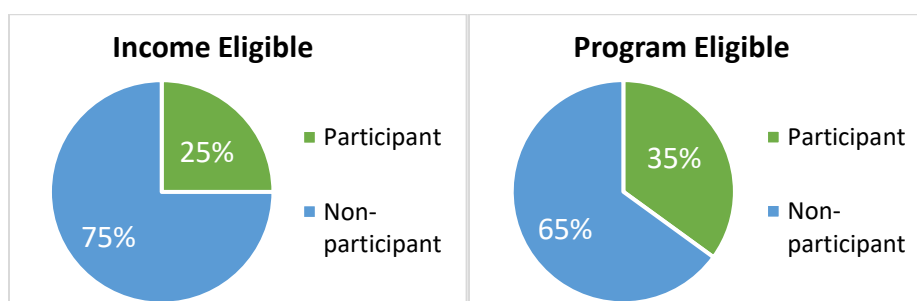
Energy Assistance Program Participation

LMI households in the District of Columbia are served by an array of programs that help to make energy more affordable, including:

- LIHEAP and Ratepayer Discount Programs – Low-income households (i.e., households with income at or below 60% of SMI) are eligible for LIHEAP and utility rate discount programs from PEPCO and WGL if they pay a utility bill directly to their energy supplier.
- Fuel Fund Programs – LMI households are eligible to participate in the Washington Area Fuel Fund (WAFF) and the Greater Washington Urban League Fuel Fund.
- Solar for All – LMI households are eligible to receive benefits under the Solar for All program that has the goal of serving 100,000 LMI households by 2032.
- Housing Choice Voucher Program – Households who receive HCVP benefits and pay an energy bill directly to their supplier receive a utility allowance from the DC Housing Office.

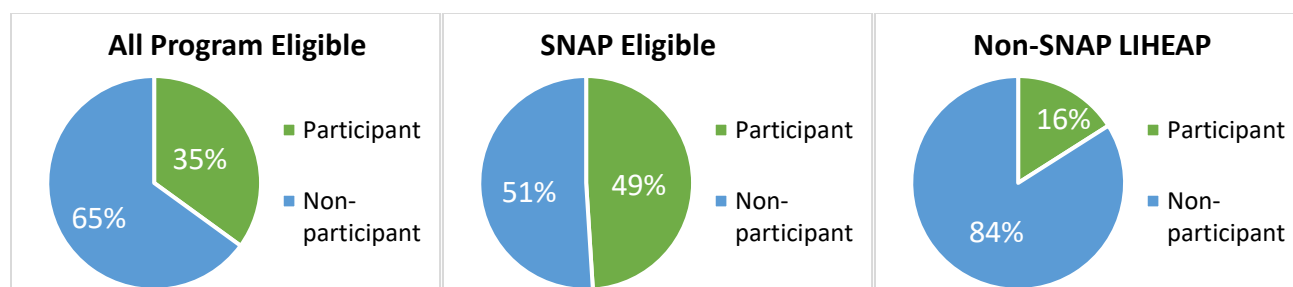
The project team was able to obtain detailed information related to the LIHEAP and Ratepayer Discount Program. Figure 10 shows the program participation rate for all income-eligible households, as well as for households that pay an electric bill or a natural gas bill. About 25 percent of low-income households receive a LIHEAP benefit. However, the program is only available to households who pay an electric or natural gas bill directly to their energy provider. About 35 percent of low-income households who pay an energy bill receive benefits.

Figure 10 – LIHEAP Program Participation Rates for Income Eligible and Program Eligible



The most significant determinant of program participation is income. Figure 11 shows that the overall participation rate is 35 percent of program-eligible households, 49 percent of SNAP Eligible households participate, while only 16 percent of Non-SNAP LIHEAP households participate.

Figure 11 – LIHEAP Program Participation Rates by Program Eligibility Group



Summary of Findings and Recommendations

The OPC is concerned that households across all income levels in DC struggle with energy affordability issues. The data presented in this report document that LMI households, in particular, have both energy affordability and housing affordability issues. However, the data also show that there are important differences in both affordability and program participation among different LMI population subgroups. These differences should be considered as the OPC considers policies and programs to increase energy affordability.

Important findings from the study include:

- **Distribution of Income** – Within the LMI population, the study defined three different groups of households that have very different financial capacity. SNAP-Eligible households have average income of \$10,267 per year. Non-SNAP LIHEAP households have average income of \$31,208 per year. Moderate-Income households have average income of \$47,375.
- **Vulnerability** – Across all LMI population groups there are certain households that are likely to be more vulnerable than the average household. One-fourth of LMI households consist of a single elderly individual. One-third of LMI households have a disabled individual in the home. About ten percent of LMI households have a young child in the home. These households are particularly vulnerable to underutilization of energy and any disruption due to nonpayment of bills.
- **Housing** – The District of Columbia is unique in the share of LMI households who are renters and who live in multifamily buildings. In most jurisdictions, about one-half of LMI households own single-family homes. In DC, about 75 percent of all LMI households are

renters and, among the SNAP-Eligible households, 87 percent are renters. Renters, particularly those in multifamily buildings, have a limited ability to control their energy usage, particularly for heating and cooling.

- **Energy Usage** – The District of Columbia also is unique in that almost all households use either electricity or natural gas to heat their homes and in that there is only one utility of each type that delivers services. To some extent that reduces the complexity of program development.
- **Energy Burden** – SNAP-Eligible households have an average energy burden of over 20 percent of income. That exceeds both the “affordable” energy burden target and the “severe” energy burden target. Non-SNAP LIHEAP households have an average energy burden that exceeds the “affordable” target but not the “severe” target, while moderate-income households have an average energy burden that is considered to be “affordable.”
- **Shelter Burden** – SNAP Eligible households have an average shelter burden that exceeds 100 percent of income. Non-SNAP LIHEAP households have average shelter burdens that exceed the “affordable” target but not the “severe” target. Moderate-income households have average shelter burdens close to the “affordable” burden target.
- **Energy Assistance Programs** – DC has four different energy assistance programs that each deliver substantial benefits to a large number of LMI households. The LIHEAP and UDP programs have a coordinated delivery procedure and target low-income households, while the SFA and HCVP programs are available to all LMI households.

In some ways, the LMI population in DC is similar to those in other jurisdictions, particularly in terms of the financial capacity of the lowest income households, as well as the average energy burden and shelter burden. In other ways, DC LMI households are quite different from the populations in other jurisdictions, particularly in terms of housing type, owner/renter status, and energy sources used. In addition, only a few other jurisdictions have a program like SFA and it is not clear than any of them target such a large share of LMI households.

The most important recommendation regarding the energy assistance programs for the District of Columbia is that there needs to be more information sharing among the programs available to LMI households and better specifications for setting program goals and performance indicators. Some examples include:

- **Affordability Targets** – What are appropriate targets for energy burden and shelter burden for LMI households? Are there any situations in which a household can afford to pay more than the target? Are there any situations in which a household cannot even afford to pay the targeted amount?

- **Special Population Groups** – Are there vulnerable populations that should be prioritized by the energy assistance programs? What procedures are needed to reach each of these population groups? How can the programs track their performance in reaching these groups?
- **Other Program Barriers** – Are there other barriers to program participation that need to be addressed? Do some households face challenges in completing program applications and need assistance in obtaining the required documentation? Is language an issue for some households?
- **Energy Bills in Rent** – A substantial number of LMI households have their energy bills included in their rent payments. Are some of those households facing shelter affordability issues because they are not able to receive energy assistance for that part of their rent that goes for payment of utilities?

The District of Columbia has a comprehensive set of energy assistance programs that serve a large number of LMI households and that will serve even more households in the future through SFA. However, there currently is no mechanism that allows policymakers to assess whether those funds are being used to the greatest effect.

This Population Characterization Report, when combined with the other parts of the Affordability Study, is designed to help to set benchmark values for the performance of the programs with respect to the needs of LMI households. However, to measure progress toward longer term goals, policymakers will need to develop consensus on a set of performance indicators and invest in information sharing and analysis procedures that will furnish ongoing information on performance over time.

1.0 INTRODUCTION

The Office of the People's Counsel (OPC) is an independent agency of the District of Columbia (DC) government. By law, it is the advocate for consumers of natural gas, electric, and telephone services in the District. District of Columbia law designates the Office as a party to all utility-related proceedings before the Public Service Commission. The Office also represents the interests of District ratepayers before federal regulatory agencies.⁴

The OPC is concerned that households across all income levels in DC struggle with energy affordability issues. The OPC is committed to fulfilling its mandate to ensure that DC residents have access to high quality utility services that are safe, reliable, universally affordable, and environmentally sustainable, and therefore seeks solutions that enable equitable access to energy.⁵ The purpose of the Energy Affordability Study is to inform and advise the OPC on matters affecting energy affordability, particularly for DC's low- to moderate-income (LMI) households.

The Energy Affordability Study consists of four complementary research tasks.

- Population Characterization Report – This report furnishes detailed information about income, demographics, energy burden, and shelter burden for DC's LMI households.
- Program Participant Report – The participant report examines how successful existing low-income programs are in making energy affordable for low-income households.
- Program Nonparticipant Report – The nonparticipant report examines energy affordability issues for households who are eligible for but not participating in energy assistance programs, as well as for households who are not eligible for those programs.
- Lessons from State Energy Assistance Programs – The report reviews energy assistance programs in other states to identify alternative approaches for the OPC to consider.

Together these reports will help the OPC to develop a better understanding of energy affordability for LMI households and to consider ways to better fulfill their mandate.

1.1 Analytic Framework

The first objective of this report is to utilize statistics to characterize LMI households, including:

- Income – Shows the distribution of income and poverty levels for LMI households and how that relates to eligibility for LMI programs.

⁴ This text was copied directly from the Office of People's Counsel website on 9-23-2019.

⁵ This is text from the Request for Proposal #OPCI-RFP-2019-4 issued by the OPC on January 10, 2019.

- Demographics – Examines LMI household composition, the presence of vulnerable individuals, and other demographic factors that affect the needs of households.
- Housing Characteristics – Documents LMI housing unit types, owner/renter status, and other housing factors that affect the needs of households.

The second objective of this report is to examine how LMI households use energy and what burden that places on household budgets, including:

- Energy Use Patterns – Shows the types of energy used and the way in which LMI households pay for energy.
- Energy Burden – For those LMI households that pay directly for their energy, examines the average energy burden and how that varies by population segment.
- Shelter Burden – For all LMI households, provides information on shelter burdens and how those relate to energy affordability.

The third objective of this report is to identify which types of households are participating in LMI energy assistance and energy efficiency programs, as well as what other opportunities are available for addressing LMI energy affordability.

- Low-Income Program Participation – Furnishes estimates of the rate at which low-income households are served by energy assistance and energy efficiency programs.
- Moderate-Income Program Participation – Examines the ways in which moderate-income households have participated in energy programs that increase affordability.

This report furnishes information on the characteristics of LMI households, how energy affordability varies within the LMI population, and the extent to which existing energy assistance and energy efficiency programs are serving those households.

1.2 Methodology

The study uses three different types of information to characterize the LMI population and the programs that serve them: public use data sets from surveys conducted by the U.S. Bureau of the Census; program databases furnished by the DC Department of Energy & Environment (DOEE), and published program statistics from federal and state agencies.

The public use data sets used in this study include the following:

- American Community Survey (ACS)

- Current Population Survey (CPS)
- American Housing Survey (AHS).

These data sets were used to develop customized tabulations for DC's LMI population.

The program database used in this study was supplied by the District of Columbia Department of Energy & Environment (DOEE). The DOEE program database includes households who applied for the Low-income Home Energy Assistance Program (LIHEAP), the electric rate discount program, and the natural gas rate discount program. The DOEE program database furnishes detailed information on the income, demographics, housing unit characteristics, and program benefits for applicant households.

The analysis also included a review of published statistics from the U.S. Department of Housing and Urban Development (HUD) related to subsidized housing, from the U.S. Department of Health and Human services related to the LIHEAP program, and from the U.S. Department of Energy related to the WAP program. In addition, we reviewed information from the DC fuel funds, the DC Sustainable Energy Utility (DC SEU), and the DC Solar for All program regarding the number of LMI households served by their programs. These data provided information on the amount of funding available and the number of households and housing units served.

We used this comprehensive set of information to characterize the LMI population, estimate the share of the market that has been served by the existing programs, and identify potential linkages with other public assistance and affordable housing programs.

1.3 Report Organization

This report consists of nine sections, including:

- Introduction
- Income and Poverty
- Demographic Characteristics
- Housing Characteristics
- Energy Usage and Payment Patterns
- Energy Burden Factor Analysis
- Shelter Burden Factor Analysis
- Energy Assistance Program Participation
- Findings and Recommendations.

This report is intended to furnish baseline information about household needs and program participation from which the OPC can consider the need for changes in the way that programs serve LMI households.

1.4 Special Topic Reports

The LMI Population consists of many different types of households and housing units, each of which has different needs for energy assistance, different capacities for engaging in energy efficiency initiatives, and different types of energy efficiency opportunities. The purpose of this Report is to develop a comprehensive picture of the LMI population and thereby give the OPC the broadest set of information about energy affordability for this population.

However, as they consider certain policy initiatives, the OPC will need more detail with which to consider options and alternatives. To meet those needs we developed a series of in-depth Special Topic Reports that examine special topics of interest. Each Special Topic Report documents the specific policy issue relevant to OPC initiatives.

The Special Topic Reports are:

- Income Status for LMI Households – Documents how low- to moderate income status is defined and identifies the important income groups within the LMI population.
- Energy Burden for LMI Households – Offers detailed statistics on energy burden and the potential for addressing burden through energy assistance and energy efficiency programs.
- Financial Capacity of LMI Households – Documents the financial capacity of LMI households and assesses the need for energy assistance, as well as the potential for LMI households to invest in energy efficiency.

This series of reports furnishes the OPC and other stakeholders specialized information to help consider affordability solutions for different segments of the LMI population.

2.0 INCOME AND POVERTY

DOEE defines low-income as those households with incomes at or below 60% of the State Median Income (SMI) and moderate-income as those with incomes above 60% of SMI but at or below 80% of Area Median Income (AMI). This section shows the share of District of Columbia households in the LMI market and the distribution of income and poverty for LMI households.

2.1 Methodology

This analysis makes use of the American Community Survey (ACS) five-year public use data files for 2013 to 2017. The ACS is conducted annually by the U.S. Bureau of the Census; it collects data on individuals, households, and housing units, including information on income, program participation, and housing costs. The ACS PUMS data files can be used to develop customized statistics not published by the Census Bureau.

The project team compared the income reported by each ACS respondent to poverty guidelines published by the U.S. Department of Health and Human Services (HHS) to compute the poverty level for each household. The team compared reported income to the State Median Income (SMI) estimates from HHS to compute the household's percent of SMI status. The team compared reported income to the Area Median Income estimates (AMI) published by the U.S. Department of Housing and Urban Development to compute the household's percent of AMI.

2.2 Low- and Moderate-Income Households

This study presents information on LMI households in the District of Columbia. Since low-income households have access to some programs that are not available to moderate-income households, it is important to have statistics for each of those groups. Table 2.1 shows the number and percent of households that fall into each income group: low-income, moderate-income, and non-LMI. There are 277,985 households in DC; 82,290 (30%) are categorized as low-income and 31,454 (11%) are categorized as moderate-income. As defined by DOEE, the LMI market has 113,744 households, about 41 percent of all households.

Table 2.1 – District of Columbia Households by Income Group

Income Group	Number of Households	Percent of Households	Average Income
Low-Income Households	82,290	30%	\$18,477
Moderate-Income Households	31,454	11%	\$47,375
Non-LMI Households	164,241	59%	\$178,515
All Households	277,985	100%	\$116,301

Source: ACS (2013-2017) / All Households

2.3 Characterizing Income and Poverty Level

This study uses three different types of income information to characterize LMI households: annual income, poverty level, and program eligibility.

- **Annual Income** – Reported annual income furnishes the most direct information on a household’s financial capacity. It is easy to see that a household with an income of \$15,000 would have less financial capacity than a household with an income of \$25,000.
- **Poverty Level** – At the same time, a one-person household that has an income of \$15,000 may be better able to meet basic needs than would a four-person household with an income of \$25,000. For that reason, HHS defines household poverty level using both income and household size.
- **Program Eligibility** – For purposes of this study, the project team defined a third income group—program eligibility group—to provide information about the public assistance resources that might be available to a household.
 - SNAP-Eligible households have incomes at or below 130% of the poverty guideline and usually are income-eligible for certain public assistance programs like the Supplemental Nutrition Assistance Program (SNAP).
 - Non-SNAP LIHEAP households have incomes greater than 130% of poverty but at or below 60% of SMI and are LIHEAP-Eligible but usually are not eligible for SNAP.
 - Moderate-Income households (i.e., LMI households with incomes above 60% of SMI and below 80% of the AMI) are not eligible for SNAP or LIHEAP but are eligible for certain energy efficiency programs and housing programs.

Table 2.2 shows the number and percent of LMI households by income level. It is important to understand that the LMI market includes households with an annual income less than \$10,000 (23% of LMI households) as well as households with an annual income of \$50,000 or more (13% of LMI households). The median income for LMI households is \$24,702 and the average income for LMI households is \$26,468.

Table 2.2 – LMI Households by Income Level

Annual Income	Number of Households	Percent of Households	Average Income
Less than \$10,000	26,636	23%	\$4,464
\$10,000 - <\$20,000	22,016	19%	\$14,548
\$20,000 - <\$30,000	18,866	17%	\$24,986
\$30,000 - <\$40,000	15,858	14%	\$34,584
\$40,000 - <\$50,000	15,902	14%	\$44,637
\$50,000 or More	14,466	13%	\$58,190
All LMI Households	113,744	100%	\$26,468

Source: ACS (2013-2017) / All LMI Households

Table 2.3 shows the number and percent of LMI households by poverty group. About 60 percent of households are below 200% of poverty while about 40 percent have income above that level.

Table 2.3-- LMI Households by Poverty Group

Poverty Group	Number of Households	Percent of Households	Average Income
At or Below 100% HHSPG	38,641	34%	\$7,517
101% - <=150% HHSPG	16,818	15%	\$21,342
151% - <=200% HHSPG	14,318	13%	\$31,181
More than 200% HHSPG	43,967	39%	\$43,549
All LMI Households	113,744	100%	\$26,468

Source: ACS (2013-2017) / All LMI Households

Table 2.4 shows the number and percent of LMI households by program eligibility group. Households that are SNAP-Eligible are about 44 percent of the LMI population. Many of those households are eligible for other types of public assistance as well. The non-SNAP LIHEAP Eligible households represent about 28 percent of the LMI population.

Table 2.4 – LMI Households by Program Eligibility Group

Program Eligibility Group	Number of Households	Percent of Households	Average Income
SNAP Eligible	50,027	44%	\$10,267
Non-SNAP LIHEAP	32,263	28%	\$31,208
Moderate Income	31,454	28%	\$47,375
All LMI Households	113,744	100%	\$26,468

Source: ACS (2013-2017) / All LMI Households

2.4 Sources of Income

To understand the longer-term financial capacity of households, it is important to understand the different sources of income that they receive. Tables 2.5 and 2.6 detail the types of income, including employment income (wages or self-employment), retirement income (Social Security or pension benefits), assistance income (public assistance or Supplemental Security Income), and other income.

- **Income Group** – Table 2.5 shows that more than one-half of LMI households have employment income of some type and about one-third receive retirement income. Only about 14 percent receive public assistance income. Most non-LMI households have employment income and about one in five have retirement income.
- **Program Eligibility Group** – Table 2.6 shows that the share of households with employment income increases as income increases. About one-third of SNAP-Eligible households report having employment income compared to almost three-fourths of moderate-income households. About one in four SNAP-Eligible households have assistance income compared to three percent of moderate-income households. About one-third of LMI households of all types report having retirement income.

The sources of income for DC LMI households can be important in thinking about their energy assistance needs. About one-third of households are relying on retirement income that tends to be fixed. Any changes in energy bills are likely to present a challenge for those households. More than one-half of LMI households are employed. Those households are likely to need to apply for energy assistance during non-work hours. A relatively small share of LMI households receive public assistance income. SNAP-Eligible households are the most likely to participate in those programs.

Table 2.5 – Percent of Households with each Source of Income by Income Group

Sources of Income	Income Group		
	LMI Households	Non-LMI Households	All Households
Employment Income	53%	88%	74%
Retirement Income	31%	17%	23%
Assistance Income	14%	1%	6%
Other Income	7%	4%	5%

Source: ACS (2013-2017) / All Households

Table 2.6 – Percent of LMI Households with each Source of Income by Program Eligibility Group

Source of Income	Program Eligibility Group			
	SNAP Eligible	Non-SNAP LIHEAP	Moderate Income	All LMI Households
Wages / Self-Employment	34%	62%	74%	53%
Social Security / Retirement	31%	35%	29%	31%
Public Assistance / SSI	24%	8%	3%	7%
Other	8%	8%	7%	7%

Source: ACS (2013-2017) / All LMI Households

2.5 Geographic Analysis

LMI households represent about 40 percent of the population while about 60 percent of households have income above that level. Table 2.7 shows that each part of the District has some LMI households but that certain areas have a higher percentage. About 70 percent of East Region households are LMI compared to 21 percent in the West Region.

Table 2.7 – Percent of LMI Households by District of Columbia Regions and Income Group

District of Columbia Regions	Income Group		
	LMI Households	Non-LMI Households	All Households
West Region (Ward 3)	21%	79%	100%
North Region (Ward 4)	45%	55%	100%
Northeast Region (Wards 5/6)	37%	63%	100%
East Region (Wards 7/8)	70%	30%	100%
Central Region (Wards 1/2)	31%	69%	100%
All LMI Households	41%	59%	100%

Source: ACS (2013-2017) / All LMI Households

Table 2.8 shows that each part of the District has LMI households of all types. However, the West Region has the highest share of moderate-income households while the East Region has the highest share of SNAP-Eligible households.

Table 2.8 – Percent of LMI Households by District of Columbia Regions and Program Eligibility Group

DC Regions	Program Eligibility Group			
	SNAP Eligible	Non-SNAP LIHEAP	Moderate Income	All Households
West Region (Ward 3)	34%	27%	39%	100%
North Region (Ward 4)	39%	29%	32%	100%
Northeast Region (Wards 5/6)	43%	29%	29%	100%
East Region (Wards 7/8)	49%	29%	22%	100%
Central Region (Wards 1/2)	45%	26%	28%	100%
All LMI Households	44%	28%	28%	100%

Source: ACS (2013-2017) / All LMI Households

2.6 Key Findings on Household Income and Poverty

The LMI population represents about 40 percent of all households in DC. The analysis shows that the different income groups have different levels of financial capacity. Findings include:

- **Median Income** – The median income for LMI households is \$24,702. That "average" household is likely to face significant challenges in terms of energy affordability but also is likely to have choices with respect to how it spends that income.
- **Distribution of Income** – With the LMI population, there are subgroups with very different levels of financial capacity.
 - Almost one-fourth of LMI households have annual income at or below \$10,000. Those households are likely to face affordability issues for all household needs.
 - About one-fourth of LMI households have annual income greater than \$40,000. The financial status for these households is likely to be quite different from those with income at or below \$10,000 per year.
- **Geographic Analysis of Income** – The East Region stands out as having the highest incidence of LMI household and the West Region stands out having the lowest.

These statistics show the importance of understanding the range of financial resources within the LMI population.

3.0 DEMOGRAPHIC CHARACTERISTICS

In considering different energy affordability policy options, it is important for the People's Counsel to understand the different types of households in the LMI population. Along with income, those characteristics can have a significant impact on the needs of a household.

3.1 Methodology

This analysis makes use of the American Community Survey (ACS) five-year public use data files for 2013 to 2017. The ACS is described in Section 2.1 above. This section of the report focuses on household demographics that are likely to affect energy affordability for the household and the household's ability to participate in energy assistance programs. This analysis includes tables on household type, race and ethnicity, language spoken at home, and the presence of vulnerable individuals.

3.2 Household Type

There are a number of factors that can be used to characterize households, including the age of the head of household, the number of individuals in the home, and the presence of children. For purposes of this study, we make use of a household characterization procedure that combines a number of those factors.

- Age – The analysis segments households into those where the household head is 60 or older, those where the head is 40 to 59, and those where the head is less than 40.
- Presence of Children – For the younger groups of households (40 to 59 and less than 40), the analysis segments by the presence of children in the home.
- Elderly Individuals – For the older group, the analysis segments the population into elderly couples and elderly individuals.

Table 3.1 shows the number and percentage of LMI households in terms of these population groups. Almost one-fourth of LMI households have an elderly individual living alone. A little over ten percent of households are younger individuals with children. And, less than one-fourth of LMI households have children in the home. Each age group—60 or older, 40 to 59, and less than 40—represents about one-third of the LMI population.

Table 3.1 – LMI Households by Household Type

Household Type	Number of Households	Percent of Household
Elderly Couple (60+)	14,333	13%
Elderly Individual (60+)	26,222	23%

Household Type	Number of Households	Percent of Household
Older without Children (40-59)	23,699	21%
Older with Children (40-59)	11,017	10%
Younger without Children (<40)	23,802	21%
Younger with Children (<40)	14,671	13%
All LMI Households	113,744	100%

Source: ACS (2013-2017)

Table 3.2 shows the distribution of household type for each of the program eligibility groups. For SNAP-Eligible and non-SNAP LIHEAP Eligible households, elderly individuals represent the largest share of households. Elderly couples stand out as being less likely to be SNAP-Eligible and being more likely to be moderate-income. Households with children, on the other hand, are more likely to be SNAP-Eligible. However, each program eligibility group includes a substantial number of households of each type.

Table 3.2 – LMI Households by Program Eligibility Group and Household Type

Household Type	Program Eligibility Group		
	SNAP Eligible	Non-SNAP LIHEAP	Moderate Income
Elderly Couple (60+)	9%	16%	15%
Elderly Individual (60+)	25%	23%	21%
Older without Children (40-59)	21%	20%	21%
Older with Children (40-59)	11%	11%	6%
Younger without Children (<40)	17%	17%	31%
Younger with Children (<40)	17%	13%	6%
All LMI Households	100%	100%	100%

Source: ACS (2013-2017) / All LMI Households

Table 3.3 shows the distribution of household type for each of the District of Columbia regions. Elderly couples are found in the greatest numbers in the North and Northeast Regions. The West Region and the Northeast Region have the highest shares of elderly individual LMI households. The East Region has the highest share of older households (40-59) both with children and without children. Younger households with children have their highest incidence in the East Region. It is clear that there is a considerable amount of demographic variability by geographic area within DC.

Table 3.3 – LMI Households by District of Columbia Region and Household Type

Household Type	Geographic Region				
	West (Ward 3)	North (Ward 4)	Northeast (Wards 5/6)	East (Wards 7/8)	Central (Wards 1/2)
Elderly Couple (60+)	7%	17%	17%	13%	8%
Elderly Individual (60+)	30%	23%	29%	18%	25%
Older without Children (40-59)	12%	20%	22%	24%	19%
Older with Children (40-59)	6%	11%	7%	13%	5%
Younger without Children (<40)	43%	17%	16%	10%	37%
Younger with Children (<40)	3%	12%	9%	21%	6%
All LMI Households	100%	100%	100%	100%	100%

Source: ACS (2013-2017) / All LMI Households

3.3 Race and Ethnicity

Table 3.4 shows the distribution of households by race and ethnicity. Black households represent about two-thirds of the LMI population. There also are a significant number of white households (17%) and Hispanic households (10%) in the LMI population. Very few of the LMI households in DC are Asian or other races.

Table 3.4 – LMI Households by Race/Ethnicity

Race and Ethnicity	Number of Households	Percent of Household
White Non-Hispanic	19,752	17%
Black Non-Hispanic	76,713	67%
Hispanic	11,135	10%
Asian Non- Hispanic	3,587	3%
Other Non-Hispanic	2,557	2%
All LMI Households	113,744	100%

Source: ACS (2013-2017) / All LMI Households

Table 3.5 shows the distribution of households by race and ethnicity for each of the program eligibility groups. Black non-Hispanic households represent a higher share of the SNAP-Eligible group and a lower share of the moderate-income households. In contrast, white households represent a larger share of the moderate-income group and a lower share of the SNAP-Eligible group. Hispanic households are close to 10 percent of each income group.

Table 3.5 – LMI Households by Program Eligibility Group and Race/Ethnicity

Race and Ethnicity	Program Eligibility Group			
	SNAP Eligible	Non-SNAP LIHEAP	Moderate Income	All LMI Households
White Non-Hispanic	12%	15%	28%	17%
Black Non-Hispanic	73%	68%	58%	67%
Hispanic	9%	12%	8%	10%
Asian Non-Hispanic	3%	2%	4%	3%
Other Non-Hispanic	2%	3%	2%	2%
All LMI Households	100%	100%	100%	100%

Source: ACS (2013-2017) / All LMI Households

Table 3.6 shows the distribution of race and ethnicity for each of the District of Columbia Regions. White non-Hispanic households have the highest incidence in the West Region. Black non-Hispanic households represent the majority of households in the North, Northeast, and East Regions and are a plurality in the Central Region. Hispanic households have their highest incidence in the North Region. Asian LMI households have their highest incidence in the West Region.

Table 3.6 – LMI Households by District of Columbia Region and Race/Ethnicity

Race and Ethnicity	Geographic Region				
	West (Ward 3)	North (Ward 4)	Northeast (Wards 5/6)	East (Wards 7/8)	Central (Wards 1/2)
White Non-Hispanic	67%	9%	13%	1%	35%
Black Non-Hispanic	11%	61%	79%	95%	41%
Hispanic	9%	26%	5%	3%	12%
Asian Non-Hispanic	10%	2%	2%	<1%	8%
Other Non-Hispanic	4%	3%	2%	1%	4%
All LMI Households	100%	100%	100%	100%	100%

Source: ACS (2013-2017) / All LMI Households

Table 3.7 shows the distribution of households by linguistic isolation. The term “linguistic isolation” means that there is no member of the household 14 years or older who reports that they speak English only or speak English “very well.” This is relevant because it means that program outreach or marketing materials that are not available in the household’s language will not be accessible to the household. About seven percent of LMI households are linguistically isolated. Most of those households speak Spanish as their primary language.

Table 3.7 – LMI Households by Linguistic Isolation

Linguistic Isolation	Number of Households	Percent of Household
Not Linguistically Isolated	106,127	93%
Linguistic Isolation - Hispanic	4,977	4%
Linguistic Isolation - Non-Hispanic	2,640	2%
All LMI Households	113,744	100%

Source: ACS (2013-2017) / All LMI Households

Table 3.8 shows the distribution of households by linguistic isolation for each of the program eligibility groups. Households who are SNAP-Eligible or Non-SNAP LIHEAP Eligible are more likely to be linguistically isolated than are moderate-income households.

Table 3.8 – LMI Households by Program Eligibility Group and Linguistic Isolation

Linguistic Isolation	Program Eligibility Group			
	SNAP Eligible	Non-SNAP LIHEAP	Moderate Income	All LMI Households
Not Linguistically Isolated	93%	93%	94%	93%
Linguistic Isolation - Hispanic	5%	5%	3%	4%
Linguistic Isolation - Non-Hispanic	2%	2%	3%	2%
All LMI Households	100%	100%	100%	100%

Source: ACS (2013-2017) / All LMI Households

Table 3.9 shows the distribution of linguistic isolation for each of the District of Columbia Regions. Hispanic linguistic isolation occurs at the greatest rate in the North Region, while non-Hispanic linguistic isolation occurs at the greatest rate in the West Region where the incidence of Asian households is highest.

Table 3.9 – LMI Households by District of Columbia Region and Linguistic Isolation

Linguistic Isolation	Geographic Region				
	West (Ward 3)	North (Ward 4)	Northeast (Wards 5/6)	East (Wards 7/8)	Central (Wards 1/2)
Not Linguistically Isolated	93%	80%	96%	99%	94%
Linguistic Isolation - Hispanic	2%	15%	2%	1%	3%
Linguistic Isolation - Non-Hispanic	6%	4%	2%	1%	3%
All LMI Households	100%	100%	100%	100%	100%

Source: ACS (2013-2017) / All LMI Households

3.4 Households with Vulnerable Individuals

Table 3.10 shows the distribution of households by the presence of vulnerable individuals. [Note: The LIHEAP statute instructs grantees to target benefits to households with elderly or disabled individuals, or those with young children.] The table shows that a large share of LMI households have an elderly or a disabled person in the home. However, only 12 percent of LMI households have a young child.

Table 3.10 – LMI Households by Vulnerability Status

Vulnerability Status	Number of Households	Percent of Household
Elderly (60+)	40,555	36%
Disabled	39,142	34%
Young Child (5 or Less)	13,187	12%
All LMI Households	113,744	100%

Source: ACS (2013-2017) / All LMI Households

Table 3.11 shows the distribution of households with vulnerable individuals by program eligibility group. More than two-thirds of SNAP-Eligible households are categorized as vulnerable, while only about one-half of moderate-income households have vulnerable individuals in the home. Among SNAP-Eligible households, 34 percent are elderly, and 44 percent are disabled, while among moderate-income households, 35 percent are elderly, and only 19 percent are disabled.

Table 3.11 – LMI Households by Program Eligibility Group and Vulnerability Status

Vulnerability Status	Program Eligibility Group			
	SNAP Eligible	Non-SNAP LIHEAP	Moderate Income	All LMI Households
Elderly (60+)	34%	39%	35%	36%
Disabled	44%	34%	19%	34%
Young Child (5 or Less)	14%	12%	7%	12%
Any Vulnerable	68%	61%	48%	60%

Source: ACS (2013-2017) / All LMI Households

Table 3.12 shows the distribution of households with vulnerable individuals for each of the District of Columbia Regions. The Northeast Region has the highest incidence of households with vulnerable individuals, 70 percent, compared to only 43 percent for the West Region.

Table 3.12 – LMI Households by District of Columbia Region and Vulnerability Status

Vulnerability Status	Geographic Region				
	West (Ward 3)	North (Ward 4)	Northeast (Wards 5/6)	East (Wards 7/8)	Central (Wards 1/2)
Elderly (60+)	37%	39%	45%	31%	33%
Disabled	16%	32%	43%	41%	27%
Young Child (5 or Less)	3%	14%	10%	18%	4%
Any Vulnerable	43%	62%	70%	67%	48%

Source: ACS (2013-2017) / All LMI Households

3.5 Key Findings on Household Demographics

The analysis shows that the different program eligibility income groups are somewhat different in their demographic profile. Key findings include:

- **Elderly Households** – Elderly households are a little more than one-third of the LMI population. However, single elderly individuals represent the largest group of SNAP income-eligible households (25%) while elderly couples are only nine percent of that group.
- **Households with Children** – Almost 30 percent of SNAP-Eligible households have children, while only 12 percent of moderate-income households have children. About one-third of the households in the East Region have children, while they have a considerably lower incidence in the other areas.
- **Linguistic Isolation** – SNAP-Eligible and Non-SNAP LIHEAP households have a linguistic isolation rate of 7 percent each; cumulatively, 5,760 households (5% of all LMI households) would face challenges in reading program materials that are in English. The highest rate of Hispanic linguistic isolation is in the North Region and the highest rate of non-Hispanic linguistic isolation is in the West Region.
- **Vulnerable Individuals** – About 60 percent of LMI households have a vulnerable individual in the home and more than two-thirds of SNAP-Eligible households have vulnerable individuals.

These statistics show the importance of understanding the demographic segments within the LMI market. The OPC should consider these demographic segments when they consider alternative programs or policies to increase energy affordability.

4.0 HOUSING CHARACTERISTICS

In considering different energy affordability policy options, it is important for the People’s Counsel to understand the different types of housing occupied by LMI households. Programs and initiatives that are effective for owners of single-family homes will be quite different from those for large multifamily rental housing, both in terms of energy bills and bill payment responsibilities. This section of the report furnishes statistics on LMI housing.

4.1 Methodology

This analysis makes use of the American Community Survey (ACS) five-year public use data files for 2013 to 2017. The ACS is described in Section 2.1 above. For this section of the report, the project team used survey responses on the type of housing unit and owner/renter status. In addition, this section of the report shows how characteristics vary by program eligibility group and geography.

4.2 Housing Unit Type

Table 4.1 shows the share of LMI households that live in each type of housing unit compared to the non-LMI households. LMI households are much more likely to live in multifamily buildings than are non-LMI households; almost three-fourths (73%) of District LMI households live in small multifamily or large multifamily buildings. About one-fourth of LMI households live in single-family homes, with most of those in attached single-family homes (i.e., row houses).

Table 4.1 – Percent of Households by Housing Unit Type and Income Group

Housing Unit Type	LMI Households	Non-LMI Households	All Households
Single Family – Detached	7%	16%	12%
Single Family – Attached	20%	29%	26%
Small Multifamily (2-4)	12%	8%	10%
Large Multifamily (5+)	61%	46%	52%
All Households	100%	100%	100%

Source: ACS (2013-2017)

Table 4.2 shows that more than three-fourths (77%) of the lowest-income group live in multifamily housing. However, even for moderate-income households, more than two-thirds (68%) live in multifamily homes. The main finding from Table 4.2 is that, as income increases there is a small reduction in the share of households living in large multifamily buildings and a small increase in the share living in row houses (i.e., single-family attached).

Table 4.2 – Percent of LMI Households by Housing Unit Type and Program Eligibility Group

Housing Unit Type	SNAP Eligible	Non-SNAP LIHEAP	Moderate Income
Single Family – Detached	6%	8%	8%
Single Family – Attached	17%	22%	24%
Small Multifamily (2-4)	12%	11%	11%
Large Multifamily (5+)	65%	59%	57%
All LMI Households	100%	100%	100%

Source: ACS (2013-2017) /All LMI Households

Table 4.3 shows how the housing types for LMI households vary across the five DC regions. The Central Region has most LMI households (87%) living in multifamily buildings, while in the Northeast Region only 63 percent of households live in multifamily buildings and a significant share of those live in small multifamily buildings.

Table 4.3 – Percent of LMI Households by Housing Unit Type District of Columbia Regions

Housing Unit Type	Geographic Region				
	West (Ward 3)	North (Ward 4)	Northeast (Wards 5/6)	East (Wards 7/8)	Central (Wards 1/2)
Single Family – Detached	11%	7%	10%	8%	1%
Single Family – Attached	12%	23%	27%	23%	12%
Small Multifamily (2-4)	4%	9%	21%	14%	6%
Large Multifamily (5+)	73%	62%	42%	55%	81%
All LMI Households	100%	100%	100%	100%	100%

Source: ACS (2013-2017) /All LMI Households

Housing unit type is one important factor in understanding the energy affordability for LMI households. LMI households living in a single-family home—particularly homeowners—have somewhat more control over their energy usage than do households who live in a row house or a multifamily building. A single-family homeowner receives the full benefit from any energy conservation actions (e.g., lowering their thermostat) and from any energy efficiency measure (e.g., replacing an inefficient furnace). They have more opportunity to impact their energy affordability. In contrast, a household who lives in a row house often is affected by actions taken by households in adjoining units and can have their energy bills significantly increased if the adjoining unit is vacant. Households who live in multifamily buildings usually have even less control; they can have their energy bills affected by units on each side of them and by the units above and below. Moreover, many LMI households who live in row houses and multifamily buildings are rentals and do not have the ability to make investments in energy efficiency.

measures. As the OPC works on issues related to energy affordability and considers what actions are the responsibility of the LMI household, it is important to consider how much control LMI households can have on their own energy usage.

4.3 Owner/Renter Status

Ownership status is an important issue for LMI energy affordability. A homeowner can apply to participate in the low- or moderate-income energy efficiency programs managed by DOEE or DCSEU. Making rental housing more energy efficient is somewhat more challenging because of the need to align the interests of the building owner and the tenants.

Table 4.4 shows what share of LMI households are owners compared to the non-LMI households. Only 22 percent of LMI households are owners compared to 54 percent of non-LMI households. And, Table 4.5 shows that 32 percent of moderate-income households are owners compared to 13 percent of SNAP income-eligible households.

Table 4.4 – Percent of Households by Ownership Status and Income Group

Ownership Status	LMI Households	Non-LMI Households	All Households
Owner	22%	54%	41%
Renter	78%	46%	59%
All Households	100%	100%	100%

Source: ACS (2013-2017) / All Households

Table 4.5 – Percent of LMI Households by Ownership Status and Program Eligibility Group

Ownership Status	SNAP Eligible	Non-SNAP LIHEAP	Moderate Income
Owner	13%	25%	32%
Renter	87%	75%	68%
All LMI Households	100%	100%	100%

Source: ACS (2013-2017) / All LMI Households

Table 4.6 shows how ownership status for LMI households varies by geography. In the West and the Northeast Regions, about one-third of LMI households are owners, compared to only 15 percent of LMI households in the Central Region. About 22 percent of LMI households are homeowners.

Table 4.6 – Percent of LMI Households by Ownership Status and District of Columbia Regions

Ownership Status	Geographic Region				
	West (Ward 3)	North (Ward 4)	Northeast (Wards 5/6)	East (Wards 7/8)	Central (Wards 1/2)
Owner	31%	27%	29%	18%	15%
Renter	69%	73%	71%	82%	85%
All LMI Households	100%	100%	100%	100%	100%

Source: ACS (2013-2017) /All LMI Households

4.4 Housing Market Segments

The combination of housing unit type, ownership status, and income offers an important way to segment the LMI Housing Market. Table 4.7 shows the percent of LMI households that are owners and renters for each program eligibility group within building unit type. The table shows that, for all income levels, most LMI households who live in single-family homes are owners, while most LMI households who live in multifamily buildings are renters. The table also shows that, for all housing unit types, the share of LMI households who are owners increases as income increases.

Table 4.7 – Share of LMI HHs by Housing Unit Type, Ownership Status, and Program Eligibility Group

Housing Unit Type	SNAP Eligible		Non-SNAP LIHEAP		Moderate Income	
	Owner	Renter	Owner	Renter	Owner	Renter
Single Family – Detached	62%	38%	70%	30%	84%	16%
Single Family – Attached	40%	60%	62%	38%	75%	25%
Small Multifamily	2%	98%	10%	90%	8%	92%
Large Multifamily	4%	96%	8%	92%	12%	88%
All LMI Households	13%	87%	25%	75%	32%	68%

Source: ACS (2013-2017) /All LMI Households

Table 4.8 shows the number of LMI households that fall into each of the listed market segments and Table 4.9 shows the percent of LMI households that are in each segment. These tables help to identify some of the most important segments of the LMI market. For example, 31,402 SNAP income-eligible renters live in large multifamily buildings, 28 percent of the total LMI population. In another example, 5,655 moderate-income households are owners of single-family detached homes, 5 percent of the LMI population. Overall, large multifamily renters are 57 percent of all LMI households, while single family owners are 18 percent of the LMI households.

Table 4.8 – Number LMI HHs by Housing Unit Type, Ownership Status, and Program Eligibility Group

Housing Unit Type	SNAP Eligible		Non-SNAP LIHEAP		Moderate Income	
	Owner	Renter	Owner	Renter	Owner	Renter
Single Family – Attached	1,830	1,137	1,782	773	2,007	374
Single Family – Detached	3,406	5,039	4,351	2,650	5,655	1,918
Small Multifamily	147	5,807	365	3,204	288	3,308
Large Multifamily	1,259	31,402	1,595	17,543	2,209	15,695
All LMI Households	6,642	43,385	8,093	24,170	10,159	21,295

Source: ACS (2013-2017) /All LMI Households

Table 4.9 – Percent of LMI HHs by Housing Unit Type, Ownership Status, and Eligibility Group

Housing Unit Type	SNAP Eligible		Non-SNAP LIHEAP		Moderate Income	
	Owner	Renter	Owner	Renter	Owner	Renter
Single Family – Detached	2%	1%	2%	1%	2%	<1%
Single Family – Attached	3%	4%	4%	2%	5%	2%
Small Multifamily	<1%	5%	<1%	3%	<1%	3%
Large Multifamily	1%	28%	1%	15%	2%	14%
All LMI Households	6%	38%	7%	21%	9%	19%

Source: ACS (2013-2017) /All LMI Households

4.5 Key Findings on Housing Unit Characteristics

The key finding from this section of the report is that housing unit characteristics are different for LMI and non-LMI households.

- **Single-Family Owners** – About one-half of non-LMI households are owners of single-family homes (attached and detached), while only about one in five LMI households are owners of those types of homes. One strategy to increase energy affordability is to invest ratepayer funds in energy efficiency programs. However, such programs are more likely to serve non-LMI households than to serve LMI households since it usually is easier to implement residential programs for single-family homeowners.
- **Multifamily Renters** – In contrast, almost 70 percent of LMI households are renters who live in multifamily buildings. Energy efficiency programs that furnish incentives for building owners to invest in energy efficiency should be able to help increase energy affordability for LMI households. However, it will be challenging to identify the correct set of incentives that help to identify income-eligible buildings and encourage the building owner to see the value of participation in the program.

Programs and initiatives for the LMI market will need to have a different emphasis than those for the non-LMI market. And, within the LMI market, the programs and initiatives will need to vary by income group and geographic region to maximize effectiveness.

5.0 ENERGY USAGE AND PAYMENT PATTERNS

The District of Columbia is unique in the types of energy used by households and in the relationship between the household and their energy suppliers. Very few households in the District use delivered fuels (i.e., fuel oil, propane, or wood); most use either electricity alone or electricity and natural gas. In addition, most District households occupy multifamily buildings (See Table 4.1) and some of those households do not pay directly for their energy services. It is important to understand these energy use patterns in developing energy assistance and energy efficiency programs for DC's LMI households.

5.1 Methodology

This analysis makes use of the American Community Survey (ACS) five-year public use data files for 2013 to 2017. The ACS is described in Section 2.1. For this section of the report, the project team used survey responses on the main heating fuel used by the household and the energy bills paid by the household.

5.2 Main Heating Fuel

In most jurisdictions, households use different types of fuels to heat their homes, including electricity, natural gas, fuel oil/kerosene, propane, and wood. However, in DC, almost all households report that they use either electricity or natural gas to heat their homes. Table 5.1 shows the share of LMI households that use each type of main heating fuel compared to the non-LMI households. Natural gas is the most common main heating fuel for DC households (55%). Electricity is also the main heating fuel for a substantial share of households (41%). Only about three percent of households use another type of fuel to heat their homes.

Table 5.1 – Percent of Households by Main Heating Fuel and Income Group

Main Heating Fuel	LMI Households	Non-LMI Households	All Households
Electricity	44%	39%	41%
Natural Gas	52%	57%	55%
Delivered Fuels	3%	4%	3%
No Fuels Used	2%	1%	1%
All Households	100%	100%	100%

Source: ACS (2013-2017) / All Households

Table 5.2 shows how the household's main heating fuel varies by program eligibility group. SNAP-Eligible households have the highest incidence of electric main heat. Moderate-income households have the highest incidence of natural gas main heat. This is consistent with the

housing unit findings (see Table 4.2). SNAP-Eligible households are more likely to live in multifamily buildings which often have electric heat.

Table 5.2 – Percent of LMI Households by Main Heating Fuel and Program Eligibility Group

Main Heating Fuel	SNAP Eligible	Non-SNAP LIHEAP	Moderate Income
Electricity	47%	43%	39%
Natural Gas	49%	53%	56%
Delivered Fuels	2%	2%	4%
No Fuels Used	2%	2%	1%
All LMI Households	100%	100%	100%

Source: ACS (2013-2017) / All LMI Households

Table 5.3 shows how the main heating fuel for LMI households varies across the five DC regions. The Central Region stands out as having 58 percent of households using electric main heat and only 37 percent with natural gas main heat. That is consistent with Table 4.3 that showed that almost 90 percent of LMI households in the Central Region live in multifamily buildings.

Table 5.3 – Percent of LMI Households by Main Heating Fuel and District of Columbia Regions

Main Heating Fuel	Geographic Region				
	West (Ward 3)	North (Ward 4)	Northeast (Wards 5/6)	East (Wards 7/8)	Central (Wards 1/2)
Electricity	38%	35%	39%	43%	58%
Natural Gas	54%	61%	57%	54%	37%
Delivered Fuels	5%	3%	3%	2%	3%
No Fuels Used	3%	2%	1%	1%	2%
All LMI Households	100%	100%	100%	100%	100%

Source: ACS (2013-2017) / All LMI Households

5.3 Direct Payment for Electric Services

There are two factors that affect the share of households in DC that make a direct payment to their energy suppliers. First, about 60 percent of DC households are renters and almost 80 percent of LMI households are renters. It is sometimes true that renters have their heat included in their rent. Second, over 60 percent of DC households live in multifamily buildings and almost three-fourths of LMI households live in multifamily buildings. Households who live in multifamily buildings are more likely to have their heating costs and their electricity included in the rent than are households that live in other types of housing units.

Table 5.4 shows the share of LMI households that pay their electric supplier directly for their electricity usage compared to the share of non-LMI households that do so. Most households (77%) report that they pay directly for their electric bills. The rate is a little lower for LMI households (70%) than for non-LMI households (83%).

Table 5.4 – Percent of Households by Electric Payment Status and Income Group

Electric Payment Status	LMI Households	Non-LMI Households	All Households
Pay Directly	70%	83%	77%
Included In Rent	30%	17%	23%
All Households	100%	100%	100%

Source: ACS (2013-2017) / All LMI Households

Table 5.5 shows what share of households pay their electric supplier directly for their electricity usage by program eligibility group. SNAP-Eligible households have the highest incidence of having their electricity included in their rent (31%).

Table 5.5 – Percent of LMI Households by Electric Payment Status and Program Eligibility Group

Electric Payment Status	SNAP Eligible	Non-SNAP LIHEAP	Moderate Income
Pay Directly	66%	73%	73%
Included In Rent	34%	27%	27%
All LMI Households	100%	100%	100%

Source: ACS (2013-2017) / All LMI Households

Table 5.6 shows how electric payment status for LMI households varies by housing unit type. About 40 percent of households in large multifamily units have their electric costs included in the rent. There is a much lower incidence for other types of housing, but even for single-family attached and small multifamily units, more than 10 percent of households had their electric bill included in the rent.

Table 5.6 – Percent of LMI Households by Electric Payment Status and Housing Unit Type

Electric Payment Status	Household Unit Type			
	Single Family Detached	Single Family Attached	Small Multifamily (2-4 Units)	Large Multifamily (5+ Units)
Pay Directly	96%	86%	84%	59%
Include In Rent	4%	14%	16%	41%
All LMI Households	100%	100%	100%	100%

Source: ACS (2013-2017) / All LMI Households

Table 5.7 shows how electric payment status for LMI households varies by geography. Two DC regions have higher rates of electricity included in rent, the West Region and the Central Region. At least 40 percent of households in those regions have their electric included in their rent while it is closer to 20 percent in the other regions.

Table 5.7 – Percent of LMI Households by Electric Payment Status and District of Columbia Regions

Electric Payment Status	Geographic Region				
	West (Ward 3)	North (Ward 4)	Northeast (Wards 5/6)	East (Wards 7/8)	Central (Wards 1/2)
Pay Directly	47%	73%	77%	80%	55%
Include In Rent	53%	27%	23%	20%	45%
42%	100%	100%	100%	100%	100%

Source: ACS (2013-2017) / All LMI Households

Table 5.8 shows how electric payment status for LMI households varies by main heating fuel. There is very little difference between electric main heat households and natural gas main heat households. In both cases, about 20 percent of households have their electric costs included in their rent.

Table 5.8 – Percent of Households by Electric Payment Status and Main Heating Fuel

Payment Status	Electric Main Heat	Natural Gas Main Heat	All Households
Pay Directly	69%	72%	70%
Included In Rent	31%	28%	30%
All Households	100%	100%	100%

Source: ACS (2013-2017) / All LMI Households

5.4 Direct Payment for Natural Gas Services

Table 5.9 shows what share of natural gas main heat households pay their supplier directly for their natural gas usage compared to the non-LMI households. As with electric payments, LMI households have a higher incidence of natural gas payments in rent than non-LMI households.

Table 5.9 – Percent of Households by Natural Gas Payment Status and Income Group

Natural Gas Payment Status	LMI Households	Non-LMI Households	All Households
Pay Directly	65%	82%	75%
Included In Rent	35%	18%	25%
All Households	100%	100%	100%

Source: ACS (2013-2017) / All Households with Natural Gas Main Heat

Table 5.10 shows that about one-fourth of LMI households in each of the Program Eligibility Groups have their natural gas payment included in their rent.

Table 5.10 – Percent of LMI Households by Natural Gas Payment and Program Eligibility Group

Natural Gas Payment Status	SNAP Eligible	Non-SNAP LIHEAP	Moderate Income
Pay Directly	61%	68%	67%
Include In Rent	39%	32%	33%
All LMI Households	100%	100%	100%

Source: ACS (2013-2017) / LMI Households with Natural Gas Main Heat

Table 5.11 shows how natural gas payment status for LMI households varies by housing unit type. More than one-third of households in large multifamily units that heat with natural gas have their energy costs included in the rent. There is a much lower incidence for other types of housing, but even for single-family attached and small multifamily units, more than 10 percent of households had their natural gas bill included in the rent.

Table 5.11 – Percent of LMI Households by Natural Gas Payment Status and Housing Unit Type

Electric Payment Status	Household Unit Type			
	Single Family Detached	Single Family Attached	Small Multifamily (2-4 Units)	Large Multifamily (5+ Units)
Pay Directly	97%	89%	83%	36%
Include In Rent	3%	11%	17%	64%
All LMI Households	100%	100%	100%	100%

Source: ACS (2013-2017) / All LMI Households with Natural Gas Main Heat

Table 5.12 shows how electric payment status for LMI households varies by geography. The West and Central Regions have the highest incidence of natural gas payments included in rent.

Table 5.12 – Percent of LMI Households by Natural Gas Payment Status and District of Columbia Regions

Natural Gas Payment Status	Geographic Region				
	West (Ward 3)	North (Ward 4)	Northeast (Wards 5/6)	East (Wards 7/8)	Central (Wards 1/2)
Pays Directly	44%	61%	80%	73%	48%
Included In Rent	56%	39%	20%	27%	52%
All LMI Households	100%	100%	100%	100%	100%

Source: ACS (2013-2017) / LMI Households with Natural Gas Main Heat

5.4 Key Findings on Energy Usage and Payment Patterns

The key findings from this section of the report furnish information on main heating fuels, direct payment for electric services, and direct payment for natural gas services.

- **Main Heating Fuel** – The most common main heating fuels in DC are natural gas and electricity. Very few households use delivered fuels.
- **Direct Payment for Electric Services** – Almost one-third of LMI households have their payment for electricity included in their rent. About 40 percent of households in Large Multifamily buildings have their electric included in their rent. The West and Central Regions have the highest incidence of electric included in rent.
- **Direct Payment for Natural Gas Services** - About one-third of LMI households with natural gas main heat have their payment included in their rent. More than two-thirds of households in large multifamily buildings have their natural gas included in their rent. The West and Central Regions have the highest incidence of natural gas included in rent.

These findings suggest that the OPC can measure energy affordability for most DC LMI households by looking at energy burden. However, about one-fourth of DC LMI households have their energy burden included as part of their rent. For that reason, Section 7 of this report examines household shelter burden which includes household energy bills.

6.0 ENERGY BURDEN FACTOR ANALYSIS

One important energy affordability indicator is the household's energy burden, defined as the share of income spent for residential energy. At least two energy affordability "standards" have been documented in the literature.

- **Affordable Energy Burden** – Analysts have identified 6% of income as an "affordable" energy burden based on the following rationale. HUD has defined an "affordable" shelter burden as 30% of income and, since energy bills are on average about 20% of shelter costs, a 6% energy burden would contribute to an "affordable" shelter burden.
- **Severe Energy Burden** – Analysts have identified 10% of income as a "severe" energy burden based on the following rationale. HUD has defined a "severe" shelter burden as 50% of income and, since energy bills are on average about 20% of shelter costs, a 10% energy burden would contribute to a "severe" shelter burden.

This section of the report examines the average energy burden for LMI households and the factors that are associated with the average energy burden.

6.1 Methodology

This analysis makes use of the American Community Survey (ACS) five-year public use data files for 2013 to 2017. The ACS is described in Section 2.1. For this section of the report, the project team used survey responses on the energy bills furnished by households. It is important to note that this section of the report only can furnish information on those households who directly pay for their energy to the energy supplier; it excludes households with their energy bills included in rent.

6.2 Energy Burden Summary Statistics

The ACS provides statistics on household energy burden. Table 6.1 shows the average energy bill, the average income, and the average energy burden for all households that pay their energy bill(s) directly to their energy supplier. It shows that the average energy burden for LMI households is 7.8 percent compared to 1.2 percent for non-LMI households. The average LMI household has an energy burden that exceeds an "affordable" energy burden of 6%, but the average is less than the severe energy burden limit of 10%. The average energy burden for non-LMI households does not exceed either target (affordable or severe energy burden).

Table 6.1 – Energy Burden for District of Columbia Households by Income Group

Income Group	Average Energy Bill	Average Income	Average Energy Burden ⁶
LMI Households	\$2,149	\$27,659	7.8%
Non-LMI Households	\$2,224	\$190,879	1.2%
All Households	\$2,197	\$132,303	1.7%

Source: ACS (2013-2017) / Households that pay energy bills directly to energy suppliers

Table 6.2 shows the average energy bill, the average income, and the average energy burden for LMI households that pay their energy bill directly to their energy supplier by program eligibility group. On average, SNAP-Eligible households have energy burdens that exceed both the affordable and severe energy burden targets of 6% and 10% respectively. Non-SNAP LIHEAP households have an average energy burden that exceeds the affordable energy target but not the severe energy burden target. Moderate-income households have an average energy burden that is considered “affordable” by many analysts.

Table 6.2 – Energy Burden for District of Columbia Households by Program Eligibility Group

Program Eligibility Group	Average Energy Bill	Average Income	Average Energy Burden ⁷
SNAP Eligible	\$2,198	\$10,704	20.5%
Non-SNAP LIHEAP	\$2,266	\$31,745	7.1%
Moderate-Income	\$1,958	\$48,212	4.1%
All LMI Households	\$2,149	\$27,659	7.8%

Source: ACS (2013-2017) / Households that pay energy bills directly to energy suppliers

Four other factors that are related to energy burden for LMI households are household type, housing unit type, main heating fuel, and geography.

- **Demographic Group** – Table 6.3 shows that younger households without children have the lowest average energy burden (5.2%). It appears that they have a low burden because they have relatively low energy bills. Elderly individual households have the highest average energy burden (9.1%) because they have the lowest average income.
- **Housing Unit Type** – Table 6.4 shows that large multifamily housing units have the lowest average energy burden (6.0%) because they have the lowest average energy bills. Single-

⁶ This is the “group mean burden” computed by taking the ratio of the average energy bill divided by the average income. An “individual mean burden” would be higher than the “group mean.”

⁷ This is the “group mean burden” computed by taking the ratio of the average energy bill divided by the average income. An “individual mean burden” would be higher than the “group mean.”

family detached housing units have the highest average energy burden (11.0%) because they have the highest energy bills.

- **Main Heating Fuel** – Table 6.5 shows that natural gas main heat households have substantially higher energy burdens than those with electric main heat. Their energy bills are higher, but their average incomes are about the same.
- **Regional Analysis** – Table 6.6 shows that households living in the West, North and Northeast Regions of DC have very similar average energy burden. Households in the East Region have the highest average energy burden of 8.9 percent because they have the lowest average income. Households in the Central Region have the lowest average energy burden of 5.6 percent because they have the lowest average energy bills.

It is important to make sure that these factors are considered when designing energy assistance programs. In setting benefit levels to address energy affordability issues, an energy assistance program needs to consider both income and energy bills.

Table 6.3 – Average Energy Burden for LMI Households by Household Type

Household Type	Percent of LMI Households	Average Annual Energy Expenditures	Average Annual Income	Average Energy Burden
Elderly Couple (60+)	16%	\$2,851	\$36,317	7.9%
Elderly Individual (60+)	21%	\$1,917	\$21,036	9.1%
Older without Children (40-59)	21%	\$1,988	\$25,265	7.9%
Older with Children (40-59)	10%	\$2,936	\$32,850	8.9%
Younger without Children (<40)	18%	\$1,489	\$28,584	5.2%
Younger with Children (<40)	14%	\$2,210	\$26,274	8.4%
All LMI Households	100%	\$2,149	\$27,659	7.8%

Source: ACS (2013-2017) / Households that pay energy bills directly to energy suppliers

Table 6.4 – Average Energy Burden for LMI Households by Housing Unit Type

Housing Unit Type	Percent of LMI Households	Average Energy Expenditures	Average Income	Average Energy Burden
Single Family – Detached	11%	\$3,400	\$31,018	11.0%
Single Family – Attached	27%	\$2,911	\$32,962	8.8%
Small Multifamily	14%	\$2,062	\$25,827	8.0%
Large Multifamily	48%	\$1,471	\$24,481	6.0%
All LMI Households	100%	\$2,149	\$27,659	7.8%

Source: ACS (2013-2017) / Households that pay energy bills directly to energy suppliers

Table 6.5 – Average Energy Burden for LMI Households by Main Heating Fuel

Main Heating Fuel	Percent of LMI Households	Average Energy Expenditures	Average Income	Average Energy Burden
Electric Main Heat	49%	\$1,597	\$25,839	6.2%
Natural Gas Main Heat	49%	\$2,685	\$29,469	9.1%
All LMI Households	100%	\$2,149	\$27,659	7.8%

Source: ACS (2013-2017) / Households that pay energy bills directly to energy suppliers with Electric or Gas Main Heat

Table 6.6 – Average Energy Burden for LMI Households by District of Columbia Region

Geographic Region	Percent of LMI Households	Average Energy Expenditures	Average Income	Average Energy Burden
West Region (Ward 3)	6%	\$2,309	\$30,410	7.6%
North Region (Ward 4)	18%	\$2,316	\$30,842	7.5%
Northeast Region (Wards 5/6)	18%	\$2,164	\$28,767	7.5%
East Region (Wards 7/8)	42%	\$2,317	\$25,990	8.9%
Central Region (Wards 1/2)	17%	\$1,481	\$26,268	5.6%
All LMI Households	100%	\$2,149	\$27,659	7.8%

Source: ACS (2013-2017) / Households that pay energy bills directly to energy suppliers

6.3 Electricity Burden Summary Statistics

Section 6.2 examined the total energy bill for all LMI households. It also is useful to consider the energy burden associated with non-heating electric bills. Table 6.7 shows the average electricity bill, the average income, and the average energy burden for all households that pay their electric bill directly to their energy supplier but who use natural gas for their main heating fuel. It shows that the average electric energy burden for LMI households is 4.5 percent compared to 0.7 percent for non-LMI households.

Table 6.7 – Electric Energy Burden for District of Columbia Households by Income Group

Income Group	Average Electric Bill	Average Income	Average Electric Burden ⁸
LMI Household	\$1,327	\$29,231	4.5%
Non-LMI Households	\$1,469	\$204,075	0.7%
All Households	\$1,420	\$143,078	1.0%

Source: ACS (2013-2017) / Households with Natural Gas Main Heat that pay electric bills directly to energy suppliers

⁸ This is the “group mean burden” computed by taking the ratio of the average energy bill divided by the average income. An “individual mean burden” would be higher than the “group mean.”

Table 6.8 shows the average electric energy bill, the average income, and the average electric burden for LMI households that pay their energy bill directly to their energy supplier by program eligibility group. This table shows that for SNAP-Eligible households, even the non-heating electric bill exceeds the affordable and severe energy burden targets. It is important to note that the average electric bill is about the same for all three income groups.

Table 6.8 – Electric Energy Burden for District of Columbia Households by Program Eligibility Group

Program Eligibility Group	Average Electric Bill	Average Income	Average Electric Burden ⁹
SNAP Eligible Households	\$1,355	\$10,975	12.4%
Non-SNAP LIHEAP Households	\$1,403	\$32,292	4.3%
Moderate-Income Households	\$1,221	\$48,727	2.5%
All LMI Households	\$1,327	\$29,231	4.5%

Source: ACS (2013-2017) / Households with Natural Gas Main heat that pay energy bills directly to energy suppliers

Three other factors that are related to energy burden for LMI households are household type, housing unit type, and geography.

- **Demographic Group** – Table 6.9 shows that younger households without children have the lowest average electric burden (3.7%) because they have the lowest non-heating electric bills. It shows that younger households with children have the highest average electric burden (5.0%) because they have relatively high electric bills and relatively low income.
- **Housing Unit Type** – Table 6.10 shows that large multifamily housing units have the lowest average electric burden (4.0%) because they have the lowest average non-heating electric bill. Single-family-detached housing units have the highest average electric burden (5.4%) because they have the highest non-heating electric bills.
- **Geographic Region** – Table 6.11 shows that households living in the East Region have average electric burden (5.5%) because they have the highest non-heating electric bills and the lowest average income.

As with the total energy burden, these tables show that average electric burden varies by both income and non-heating electric bills. Some households have high energy burdens because they have relatively low income, while other households have high energy burdens because they have relatively high non-heating electric bills.

⁹ This is the “group mean burden” computed by taking the ratio of the average energy bill divided by the average income. An “individual mean burden” would be higher than the “group mean.”

Table 6.9 – Average Electric Energy Burden for LMI Households by Household Type

Household Type	Percent of LMI Households	Average Annual Electric Expenditures	Average Annual Income	Average Electric Burden
Elderly Couple (60+)	19%	\$1,584	\$37,357	4.2%
Elderly Individual (60+)	23%	\$1,083	\$22,621	4.8%
Older without Children (40-59)	21%	\$1,260	\$26,346	4.8%
Older with Children (40-59)	11%	\$1,744	\$34,933	5.0%
Younger without Children (<40)	14%	\$1,111	\$30,052	3.7%
Younger with Children (<40)	12%	\$1,395	\$28,186	5.0%
All LMI Households	100%	\$1,327	\$29,231	4.5%

Source: ACS (2013-2017) / LMI Households with Natural Gas Main Heat that pay energy bills directly to energy suppliers

Table 6.10 – Average Electric Energy Burden by Housing Unit Type

Housing Unit Type	Percent of LMI Households	Average Annual Electric Expenditures	Average Income	Average Electric Burden
Single Family – Detached	14%	\$1,655	\$30,396	5.4%
Single Family – Attached	36%	\$1,557	\$33,023	4.7%
Small Multifamily	15%	\$1,123	\$25,542	4.4%
Large Multifamily	35%	\$1,047	\$26,463	4.0%
All LMI Households	100%	\$1,327	\$29,231	4.5%

Source: ACS (2013-2017) / LMI Households with Natural Gas Main Heat that pay energy bills directly to energy suppliers

Table 6.11 – Average Electric Energy Burden by District of Columbia Region

Geographic Region	Percent of LMI Households	Average Annual Electric Expenditures	Average Income	Average Electric Burden
West Region (Ward 3)	6%	1,305	32,458	4.0%
North Region (Ward 4)	22%	1,274	31,817	4.0%
Northeast Region (Wards 5/6)	19%	1,226	29,066	4.2%
East Region (Wards 7/8)	42%	1,461	27,648	5.3%
Central Region (Wards 1/2)	11%	1,122	28,628	3.9%
All LMI Households	100%	1,327	29,231	4.5%

Source: ACS (2013-2017) / LMI Households with Natural Gas Main Heat that pay energy bills directly to energy suppliers

6.4 Key Findings on Energy Burden

The key findings from this section of the report are the groups of households that have unaffordable energy burdens and the factors that are associated with higher and lower burdens.

- **Average Energy Burden** – LMI households have an average energy burden of 7.8 percent of income. That exceeds the “affordable” energy burden target of 6 percent but does not exceed the “severe” energy burden target of 10 percent of income.
- **Program Eligibility Group** – SNAP-Eligible households have an average energy burden of over 20 percent of income. That exceeds both the “affordable” energy burden target and the “severe” energy burden target. Non-SNAP LIHEAP households have an average energy burden that exceeds the “affordable” target but not the “severe” target, while moderate-income households have an average energy burden that is considered to be “affordable.”
- **Demographic Group** – Elderly individuals have the highest average energy burden because they have the lowest average income. Households with children also have high average energy burdens because they have relatively high energy bills.
- **Housing Unit Type** – Households in single-family homes have the highest energy burdens because their energy bills are about 50 percent higher than the LMI household average.
- **Main Heating Fuel** – Households with natural gas main heat have substantially higher energy bills and energy burden than those with electric main heat.
- **Geographic Region** – Households in the East Region have the highest energy burden because they have the lowest average income, while households in the Central Region have the lowest energy burden because they have the lowest average energy bills.

Many LMI households face substantial energy burdens that are considered by many analysts to be “unaffordable.” There are important factors correlated with household income and energy bills that are determinants of unaffordable energy burdens.

7.0 SHELTER BURDEN FACTOR ANALYSIS

The OPC is concerned that households across all income levels in DC struggle with energy affordability issues. In Section 6 of the report, we examined the dimensions of energy affordability and identified the types of households and housing units that have “unaffordable” energy burdens. However, Section 5 of the report demonstrated that many DC LMI households do not directly pay for their energy use, rather they have their heating fuel and/or electricity included in their rent payments. This section of the report looks at household shelter burden and compares shelter burdens for households who pay their energy bills directly to their fuel suppliers to shelter burdens for households whose energy bills are included in rent.

7.1 Methodology

This analysis makes use of the American Community Survey (ACS) five-year public use data files for 2013 to 2017. The ACS is described in Section 2.1. For this section of the report, the project team used survey responses on a series of questions that can be used to calculate shelter burden for households. For renters, those variables include rent and energy bills. For owners, those variables include mortgage payments, property taxes, insurance payments, other fees, and energy bills.

7.2 Shelter Burden

Shelter burden is a statistic that is used by analysts at the Department of Housing and Urban Development (HUD) to understand the extent to which households have affordable housing. Housing experts generally consider that households should spend no more than 30 percent of their income on the cost of housing, including energy costs. They also consider households that spend 50 percent of income on shelter costs to have a “severe” shelter burden.

Table 7.1 shows average annual shelter costs, average annual income, and average shelter burden for DC households. It shows that the average shelter burden for LMI households is 53 percent, compared to 15 percent for non-LMI households. [Note: It is important to note that shelter burden compares annual income to annual shelter expenditures; income does not include non-cash assistance benefits, assistance from others, or withdrawals from assets.]

Table 7.1 – Average Shelter Burden for Households by Income Group

Income Group	Average Annual Shelter Expenditures	Average Annual Income	Average Shelter Burden
LMI Households	\$14,215	\$26,689	53%
Non-LMI Households	\$27,400	\$178,713	15%
All Households	\$22,087	\$117,456	19%

Source: ACS (2013-2017) / All households

Table 7.2 shows average annual shelter costs, average annual income, and average shelter burden for DC households by program eligibility group. It shows that the average shelter burden for SNAP-Eligible households is 124 percent, compared to 34 percent for moderate-income households. While the SNAP-Eligible households have the highest energy burden, all three groups have an average shelter burden that is considered to be “unaffordable.” [Note: Many SNAP-Eligible households receive other kinds of benefits that are not counted as income, including SNAP benefits and housing subsidy benefits. In addition, elderly households may be covering their housing expenses from their savings. That is why they can have shelter burdens that exceed 100% of income.]

Table 7.2 – Average Shelter Burden for LMI Households by Program Eligibility Group

Program Eligibility Group	Average Annual Shelter Expenditures	Average Annual Income	Average Shelter Burden
SNAP Eligible	\$12,844	\$10,335	124%
Non-SNAP LIHEAP	\$14,394	\$31,128	46%
Moderate-Income	\$16,143	\$47,357	34%
All LMI Households	\$14,215	\$26,689	53%

Source: ACS (2013-2017) / All LMI Households

Table 7.3 shows the distribution of shelter burden for households by program eligibility group. Only 15 percent of SNAP-Eligible households have a shelter burden that is less than the 30 percent affordability target, whereas 73 percent of SNAP-Eligible households have a severe shelter burden of 50 percent or more of income. Among the other household groups, 28 percent of non-SNAP LIHEAP low-income households and 46 percent of moderate-income households have a shelter burden that is less than the 30 percent affordability target. Among non-LMI households, 83 percent have a shelter burden of less than the 30 percent affordability target.

Table 7.3 – Shelter Burden Distribution for Households by Program Eligibility Group

Shelter Burden	SNAP Eligible	Non-SNAP LIHEAP	Moderate-Income Households	Non-LMI Households
Less than 20%	6%	13%	19%	58%
20% - <30%	9%	15%	27%	28%
30% - <40%	7%	18%	25%	10%
40% - <50%	5%	15%	12%	3%
50% or More	73%	39%	17%	2%
All Households	100%	100%	100%	100%

Source: ACS (2013-2017) / All Households

Four other factors that are related to shelter burden for LMI households are household type, housing unit type, main heating fuel, and geography.

- **Demographics** – Table 7.4 shows that elderly couples have the lowest average shelter burden (37%) and that younger households without children have the highest average shelter burden (67%).
- **Housing Unit Type** – Table 7.5 shows that there is not much variation in shelter burden by housing unit type. Households in single-family homes have higher average shelter costs than those in multifamily buildings, but they also have higher average income.
- **Main Heating Fuel** – Table 7.6 shows that the electric main heat households have a higher average shelter burden than do natural gas main heat households. They have lower shelter costs, but they also have lower average incomes.
- **Geography** – Table 7.7 shows that households in the West Region and the Central Region have the highest shelter burdens. On average, their burdens exceed the severe shelter burden standard.

Since about one-fourth of DC LMI households have their energy costs included in their rent, it is important to consider factors related to shelter burden when considering how to design energy assistance benefit programs.

Table 7.4 — Average Shelter Burden for LMI Households by Household Type

Household Type	Percent of LMI Households	Average Annual Shelter Expenditures	Average Annual Income	Average Shelter Burden
Elderly Couple	13%	\$13,277	\$35,807	37%
Elderly Individual	23%	\$10,834	\$20,500	53%
40-59 Without Children	21%	\$13,553	\$23,866	57%
40-59 With Children	10%	\$15,839	\$33,163	48%
18-39 Without Children	21%	\$18,683	\$27,710	67%
18-39 With Children	13%	\$13,802	\$26,980	51%
All LMI Households	100%	\$14,215	\$26,689	53%

Source: ACS (2013-2017) / All LMI Households

Table 7.5 – Average Shelter Burden for LMI Households by Housing Unit Type

Housing Unit Type	Percent of LMI Households	Average Shelter Expenditures	Average Income	Average Shelter Burden
Single Family – Detached	7%	\$17,457	\$30,761	57%
Single Family – Attached	20%	\$15,721	\$32,070	49%
Small Multifamily	12%	\$13,001	\$25,469	51%
Large Multifamily	61%	\$13,596	\$24,717	55%
All LMI Households	100%	\$14,215	\$26,689	53%

Source: ACS (2013-2017) / All LMI Households

Table 7.6 – Average Shelter Burden for LMI Households by Main Heating Fuel

Main Heating Fuel	Percent of LMI Households	Average Shelter Expenditures	Average Income	Average Shelter Burden
Electric Main Heat	44%	\$14,177	\$25,060	57%
Natural Gas Main Heat	52%	\$14,357	\$28,025	51%
All LMI Households	100%	\$14,215	\$26,689	53%

Source: ACS (2013-2017) / All LMI Households

Table 7.7 – Shelter Burden for LMI Households by District of Columbia Region

Geographic Region	Percent of LMI Households	Average Shelter Expenditures	Average Income	Average Shelter Burden
West Region (Ward 3)	9%	\$21,769	\$29,150	75%
North Region (Ward 4)	19%	\$13,901	\$30,135	46%
Northeast Region (Wards 5/6)	15%	\$13,078	\$26,773	49%
East Region (Wards 7/8)	36%	\$11,841	\$25,765	46%
Central Region (Wards 1/2)	21%	\$16,175	\$24,158	67%
All LMI Households	100%	\$14,215	\$26,689	53%

Source: ACS (2013-2017) / All LMI Households

7.3 Shelter Burden by Energy Bill Payment Type

The ACS cannot furnish information on the cost of energy for households when energy bills are included in rent. However, it is possible to compare shelter costs for households by energy bill payment type to get a better understanding of how energy bills are embedded in the cost of rent.

Table 7.8 shows average annual shelter costs, average annual income, and average shelter burden for DC households that rent by their energy bill payment type. This table demonstrates that shelter burdens—on average—are slightly lower for households with energy bills in rent.

Table 7.8 – Average Shelter Burden for Households that Rent by Energy Bill Payment Type

Bill Payment Type	Average Annual Shelter Expenditures	Average Annual Income	Average Shelter Burden
Direct Payment of Bills	\$14,187	\$25,356	56%
Direct Payment of Electricity Only	\$14,186	\$25,508	56%
Energy Bills in Rent	\$12,445	\$23,878	52%
All LMI Households	\$13,658	\$24,908	55%

Source: ACS (2013-2017) / Households that Rent

Table 7.9 shows average annual shelter costs, average annual income, and average shelter burden for SNAP-Eligible households that rent by their energy bill payment type. Households with energy bills in rent have the lowest average shelter burdens.

Table 7.9 – Average Shelter Burden for SNAP Eligible Households that Rent by Energy Bill Payment

Bill Payment Type	Average Annual Shelter Expenditures	Average Annual Income	Average Shelter Burden
Direct Payment of Bills	\$13,065	\$10,430	125%
Direct Payment of Electricity	\$13,046	\$10,485	124%
Energy Bills in Rent	\$10,529	\$10,053	105%
All SNAP Eligible Households	\$12,256	\$10,310	119%

Source: ACS (2013-2017) / Households that Rent

Table 7.10 shows average annual shelter costs, average annual income, and average shelter burden for non-SNAP LIHEAP households that rent by their energy bill payment type. Households with energy bills in rent have the lowest average shelter burdens.

Table 7.10 – Average Shelter Burden for Non-SNAP LIHEAP Households that Rent by Energy Payment

Bill Payment Type	Average Annual Shelter Expenditures	Average Annual Income	Average Shelter Burden
Direct Payment of Bills	\$14,160	\$31,487	45%
Direct Payment of Electricity	\$14,116	\$31,595	45%
Energy Bills in Rent	\$12,795	\$30,062	43%
All Non-SNAP LIHEAP Households	\$13,801	\$31,113	44%

Source: ACS (2013-2017) / Households that Rent

Table 7.11 shows average annual shelter costs, average annual income, and average shelter burden for moderate-income households that rent by their energy bill payment type. All types of households have the same average shelter burdens.

Table 7.11 – Average Shelter Burden for Moderate-Income that Rent by Energy Bill Payment

Bill Payment Type	Average Annual Shelter Expenditures	Average Annual Income	Average Shelter Burden
Direct Payment of Bills	\$16,429	\$47,316	35%
Direct Payment of Electricity	\$16,484	\$47,348	35%
Energy Bills in Rent	\$15,910	\$45,495	35%
All Moderate-Income Households	\$16,264	\$46,737	35%

Source: ACS (2013-2017) / Households that Rent

7.4 Key Findings on Shelter Burden

The key findings from this section of the report furnish information on the households that—on average—have unaffordable shelter burdens and the factors associated with burdens.

- **Average Shelter Burdens** – SNAP Eligible households have an average shelter burden that exceeds 100 percent of income. Non-SNAP LIHEAP households have average shelter burdens that exceed the “affordable” target but not the “severe” target. Moderate-income households have average shelter burdens close to the “affordable” burden target.
- **Distribution of Shelter Burden** – Only 15 percent of SNAP Eligible households have an “affordable” shelter burden, compared to 28 percent of non-SNAP LIHEAP and 46 percent of moderate-income households.
- **Demographic Group** – Young households without children have the highest average shelter burden and elderly couples have the lowest average shelter burden.
- **Main Heating Fuel** – Average shelter burdens are higher for electric main heat households than for natural gas main heat because those households have lower average income.
- **Geographic Region** – The West and Central Regions have the highest shelter burdens.
- **Energy Bills in Rent** – Households that have all of their energy bills included in the rent have the lowest average shelter burdens.

Many LMI households face substantial shelter burdens that are considered by analysts to be “unaffordable.” There are important factors correlated with household income and energy bills that are determinants of unaffordable shelter burdens.

8.0 ENERGY ASSISTANCE PROGRAM PARTICIPATION

LMI households in the District of Columbia have access to several different types of energy assistance programs that are funded in a number of different ways. While most of the programs are limited to low-income households (i.e., households with income at or below 60% of SMI), some of the programs also serve moderate-income households. This section of the report furnishes an inventory of those programs and, to the extent possible, develops estimates of the current program penetration rates.

8.1 Methodology

The study used several data sources to develop information on the number of households and types of housing units served by energy assistance programs.

- **DOEE 2019 Program Database** – The study team used the 2019 DOEE program database to develop statistics for the LIHEAP-funded and DC taxpayer-funded energy assistance programs, as well as the ratepayer-funded electric and natural gas rate discount programs.
- **Fuel Fund Reports** – The study team reviewed reports from the fuel funds and conducted follow-up interviews regarding the number of households served by these programs.
- **Solar for All Program** – The study team used the 2019 report prepared by DOEE to develop information on how LMI households are served by the solar energy projects funded through the Renewable Energy Development Fund.
- **Housing Choice Voucher Program (HCVP)** – The study team used information available on the DC Housing Authority’s website to obtain information on how the program makes energy bills affordable for LMI households that participate in the program.

Each data source furnishes different types of statistics and offers a different level of detail on program participation. The set of information, however, is useful in assessing the number of low-income households that receive some form of assistance with their energy bills as well as the energy assistance resources that also are available to moderate-income households.

8.2 Energy Assistance Program Inventory

The following inventory identifies available energy assistance programs, the funding source(s), and the types of households that are eligible to participate in the program. Those programs include:

- LIHEAP – The federal government furnishes funding to the District of Columbia under the Low-Income Home Energy Assistance Program (LIHEAP) that DC uses to furnish energy assistance. The DC government also allocates taxpayer funds for the program to ensure that the program can operate on a year-round basis. This program is available to households with income at or below 60% of SMI who pay for their electric and/or natural gas service directly to their utility, or for their fuel oil or propane service directly to their delivered fuel vendor.
- Utility Discount Programs (UDP) – The UDP programs consist of the PEPCO Residential Aid Discount (RAD) program and the WGL Residential Essential Service (RES) program. The RAD program offers year-round discounts on electric service and the RES program offers heating season discounts on natural gas service. The program is available to households with income at or below 60% of SMI who pay for their electric and/or natural gas service directly to their utility. [Note: DC Water ratepayers also fund the Customer Assistance Program (CAP) for households with income at or below 60% of SMI who pay DC Water directly for their water and sewer bills.]
- Fuel Fund Programs – Two charitable fuel funds also serve DC households. The Washington Area Fuel Fund (WAFF) assists LMI households who have a disconnection notice and have exhausted all other sources of government assistance. The Greater Washington Urban League Fuel Fund (GWUL) assists households with their PEPCO bills.
- Solar for All Program – The Renewable Portfolio Standard Expansion Amendment Act of 2016 established the Solar for All Program (Solar for All). The long-term goal of the program is to serve 100,000 LMI households with the benefits of Solar for All by 2032.
- Housing Choice Voucher Program – HCVP is funded by the U.S. Department of Housing and Urban Development (HUD) and is administered by the District of Columbia Housing Authority. In addition to rent subsidies, program participants who pay their main heating fuel and/or electric bill are eligible for a utility allowance that helps to make their energy bills more affordable.

This set of programs increases energy affordability for DC LMI households. The primary focus of this report is to identify the number and types of households that participate in these programs. The Program Participant Report examines the impact of these programs on energy affordability.

8.3 LIHEAP and UDP Program Participation Rates

The LIHEAP program and the UDP (RAD and RES) programs are available to households with income at or below 60% of SMI who pay for their energy service directly to their energy supplier. The LIHEAP, RAD, and RES programs have a common application through which eligibility for these programs is determined. Because these programs have a joint application, it is appropriate to examine program participation rates as part of the same analysis.

Table 8.1 shows the LIHEAP/UDP participation rate of LMI households by Program Eligibility Group. It shows that one-third of LMI households in the SNAP Eligible group receive LIHEAP assistance and ratepayer-program assistance, while only about one in ten households in the non-SNAP LIHEAP group receive those benefits. Since the LIHEAP program and the ratepayer discount programs are restricted to households with income at or below 60% of SMI, moderate-income households are not eligible for those energy assistance benefits. Overall, about 72 percent of LMI households are income-eligible for the LIHEAP program and about 18% of LMI households are served by the program.

Table 8.1 – Percent of LMI Households Served by LIHEAP by Program Eligibility Group

Program Eligibility Group	Number of Households	Number of Participants	Income Eligible Participation Rate
SNAP Eligible	50,027	16,335	33%
Non-SNAP LIHEAP	32,263	3,896	12%
Moderate-Income	31,454	0	0%
All Income Eligible Households	113,744	20,231	18%

Source: ACS (2013-2017) / FY 2019 DC Program Files

To participate in the LIHEAP program, a household must pay for their electric, natural gas, or delivered fuel service directly to the energy vendor. As shown in Section 5 of this report, only about 70 percent of LMI households pay the utility or fuel company directly for their energy service. Table 8.2 shows 33,429 SNAP eligible households (67%) pay a utility or fuel bill and are eligible to receive LIHEAP benefits. Similarly, about 23,714 Non-SNAP LIHEAP households (74%) pay a utility or fuel bill and are eligible to receive LIHEAP. Among the “program-eligible” households, about 35 percent participate in the LIHEAP program. The rate for SNAP Eligible households is 49 percent, while the rate for Non-SNAP LIHEAP households is 16 percent.

Table 8.2 – LIHEAP Participation Rates for Program-Eligible Households by Program Eligibility Group

Program Eligibility Group	Number of Households	Households with Utility or Fuel Bills	Number of Participants	Program Eligible Participation Rate
SNAP Eligible	50,027	33,429	16,335	49%
Non-SNAP LIHEAP	32,263	23,174	3,896	16%
TOTAL	82,290	57,143	20,231	35%

Source: ACS (2013-2017) / FY 2019 DC Program Files

There is one other group of households that might not be a primary focus for the DC OPC. The District has a relatively large student population. Many of those students live in nonfamily households (i.e., households without children) and receive substantial support from their families. Prior research has shown that LIHEAP participation rates are low in areas with major colleges and universities. Using the ACS data, it is possible to exclude nonworking, nonfamily, student households from the count of program eligible households. Table 8.3 shows that there are about 55,536 nonstudent households, and that about 36 percent of them are participating in the LIHEAP program. [Note: This analysis is not intended to suggest that student households are not eligible for the LIHEAP program. Rather, since prior research has shown that such households have special circumstances and often do not participate in LIHEAP, the analysis is controlling for that factor in documenting the LIHEAP program participation rates.]

Table 8.3 – LIHEAP Participation Rates for Nonstudent Program-Eligible by Program Eligibility Group

Program Eligibility Group	Number of Households	Households with Utility or Fuel Bills	Nonstudent Households with Bills	Number of Participants	Nonstudent Program Eligible Participation Rate
SNAP Eligible	50,027	33,429	32,087	16,335	51%
Non-SNAP LIHEAP	32,263	23,174	23,449	3,896	17%
TOTAL	82,290	57,143	55,536	20,231	36%

Source: ACS (2013-2017) / FY 2019 DC Program Files

Households that participate in LIHEAP can receive several different kinds of benefits. As part of the LIHEAP program, households who pay their utility company for their main heating fuel can receive a regular LIHEAP heating or cooling assistance grant, as well as a crisis grant. Households that have their heat included in their rent but pay for their electric service can receive a special “heat in rent” assistance payment. Any household that qualifies for the LIHEAP program and pays an electric bill receives PEPCO RAD discounts that reduce the amount of their

bill year-round. Any household that qualifies for LIHEAP and has natural gas main heat receives a WGL RES discount that reduces the amount of their natural gas bill during the heating season.

Tables 8.4a and 8.4b furnish detailed information on households that report that they pay for their electric bill directly to their utility company. Table 8.4a considers all program-eligible households, while Table 8.4b includes only nonstudent households. More than one-third of SNAP Eligible households that pay an electric bill receive LIHEAP and electric ratepayer benefits, while only about one in ten Non-SNAP LIHEAP households receive benefits. Table 8.4b shows that the overall participation rate for nonstudent program-eligible households is slightly higher.

Table 8.4a – Program Eligible Participation Rate for Households Bills

Program Eligibility Group	Households that Pay Electric Bills to Electric Supplier	Households with Electric LIHEAP Regular or Crisis Benefits	Households with Heat in Rent Benefit	Overall Program Participation Rate
SNAP Eligible	33,169	10,122	1,850	36%
Non-SNAP LIHEAP	23,413	2,769	112	12%
TOTAL	56,582	12,891	1,962	26%

Source: ACS (2013-2017) / FY 2019 DC Program Files

Table 8.4b – Program Eligible Participation Rate for Nonstudent Households

Program Eligibility Group	Nonstudent Households that Pay Electric Bills to Electric Supplier	Households with Electric LIHEAP Regular or Crisis Benefits	Households with Heat in Rent Benefit	Program Eligible Participation Rate
SNAP Eligible	31,867	10,122	1,850	38%
Non-SNAP LIHEAP	23,148	2,769	112	12%
TOTAL	58,659	12,891	1,962	27%

Source: ACS (2013-2017) / FY 2019 DC Program Files

Tables 8.5a and 8.5b furnish detailed information on households that report that their main heating fuel is natural gas and that they pay for their natural gas heat directly to their utility company. Table 8.5a considers all program-eligible households, while Table 8.5b includes only nonstudent households. Table 8.5a shows that about 31 percent of SNAP eligible households receive LIHEAP and ratepayer benefits, while only 10 percent of non-SNAP LIHEAP households receive benefits. Table 8.5b shows that the statistics for nonstudent program-eligible

households is almost the same as for all program-eligible households since very few student households pay for their natural gas main heat.

Table 8.5a – Program Eligible Participation Rate for Natural Gas Heat Households

Program Eligibility Group	Households that use Natural Gas for Main Heat	Households that pay for Natural Gas Heat	Households with Natural Gas Regular or Crisis Benefits	Program Eligible Participation Rate
SNAP Eligible	24,373	13,830	4,303	31%
Non-SNAP LIHEAP	16,970	10,695	1,182	11%
TOTAL	41,343	24,525	5,485	22%

Source: ACS (2013-2017) / FY 2019 DC Program Files

Table 8.5b – Program Eligible Participation Rate for Natural Gas Heat Nonstudent Households

Program Eligibility Group	Households that use Natural Gas for Main Heat	Nonstudent Households that pay for Natural Gas Heat	Nonstudent Households with Regular or Crisis LIHEAP Benefits	Nonstudent Program Eligible Participation Rate
SNAP Eligible	24,373	13,588	4,303	32%
Non-SNAP LIHEAP	16,970	10,646	1,182	11%
TOTAL	41,343	24,234	5,485	23%

Source: ACS (2013-2017) / FY 2019 DC Program Files

8.4 LIHEAP and UDP Program Participation Rate Factor Analysis

Table 8.3 shows that the LIHEAP participation rate for nonstudent households that are eligible to receive program benefits is about 36 percent. Table 8.3 also shows that one important factor in terms of program participation is income. The estimated participation rate for SNAP Eligible households is 49 percent, while it is only 16 percent for households that are in the Non-SNAP LIHEAP group. Tables 8.4a-b and 8.5a-b also show that the program participation rates for households with different main heating fuels and payment patterns also are different. The participation rate for nonstudent households who pay an electric bill is 27 percent compared to a participation rate of 22 percent for nonstudent natural gas main heat households.

It also is important to consider other factors that affect program participation rates, including main heating fuel and geographic region. Tables 8.6 and 8.7 furnish information on the LIHEAP participation rates for low-income. [Note: We were not able to get information from the DOEE database for household type, race/ethnicity, or housing unit type.]

Table 8.6 shows that about 34 percent of households with electric main heat receive a LIHEAP benefit for either their main heating or cooling, or because they pay an electric bill but have their heat included in the rent. Only about 13 percent of households with natural gas main heat receive a LIHEAP benefit. That is partially because about one-third of those households have their heat included in rent and are not eligible for a natural gas LIHEAP payment. However, if those households pay an electric bill, they do qualify for a heat in rent LIHEAP benefit that is paid to their electric company.

Table 8.6 – LIHEAP Participation Rate for Low-Income Households by Main Heating Fuel

Main Heating Fuel	Share of Income Eligible Households	Number of Income-Eligible Households	Households with Regular or Crisis LIHEAP Benefits	Participation Rate
Electricity Main Heat	46%	37,554	12,705	34%
Natural Gas Main Heat	50%	41,343	5,459	13%
Delivered Fuel Main Heat	2%	1,431	105	7%
Other/No Main Heat	2%	1,962	0	0%
All Low-Income Households	100%	82,290	18,269	22%

Source: ACS (2013-2017) / FY 2019 DC Program Data Files

Table 8.7 shows that LIHEAP and ratepayer program participation varies considerably by region. About one-third of the income-eligible households in the Northeast and East Regions receive benefits, while less than ten percent of income-eligible households in the other regions receive benefits.

Table 8.7 – LIHEAP Participation Rate for Low-Income Households by Region

Geographic Region	Percent of Income-Eligible Households	Number of Income Eligible Households	Households with Regular or Crisis LIHEAP Benefits	Participation Rate
West Region (Ward 3)	7%	5,898	78	1%
North Region (Ward 4)	18%	14,443	1,164	8%
Northeast Region (Wards 5/6)	15%	12,296	4,250	35%
East Region (Wards 7/8)	39%	32,279	10,588	33%
Central Region (Wards 1/2)	21%	17,374	1,523	9%
All Households	100%	82,290	17,603	21%

Source: ACS (2013-2017) / FY 2019 DC Program Data Files. Note: Ward data missing for 666 participants.

The tables presented earlier in this report help to shed some light on those participation rates.

- Table 2.8 shows that only 34 percent of the LMI households in the West Region are SNAP Eligible, while almost one-half of the LMI households in the East Region are SNAP Eligible. The program participation rate is much higher for SNAP Eligible households than for Non-SNAP LIHEAP households.
- Table 3.3 shows that one-third of the LMI households in the East Region have children, while the average for all DC LMI households is only about 10 percent. Households with children might be more likely to apply for energy assistance benefits.
- Table 3.6 shows that the North and Central regions are more racially and ethnically diverse than the Northeast and East Regions. About one-fourth of the households in the North Region are of Hispanic origin and about 20 percent of the households in the Central Region are of Hispanic Origin or Asian. In addition, Table 3.9 shows that almost 20 percent of the households in the North Region are linguistically isolated. The LIHEAP program might need to examine the outreach procedures for those types of households.
- Table 4.3 shows that the over 60 percent of the households in the West, North, and Central Regions live in large multifamily buildings, while closer to one-half of the households in the Northeast and East Regions live in those building types. Table 5.7 shows that more than 40 percent of the households in the West and Central Regions have their heat included in their rent compared to less than 20 percent of the households in the Northeast and East Regions.

These statistics help to identify some possible reasons for nonparticipation by households in some DC Regions. More in-depth information about the program participant population will be available in the new DOEE database and is expected to help furnish direct analysis of program participation decisions.

8.5 Other Energy Assistance Program

The project team was able to develop some information on the funding and program participants for the other types of energy assistance available to LMI households.

- Fuel Fund Programs – The most recent report available from the Washington Area Fuel Fund was for 2016. It showed that the program served 1,289 households and had total funding for benefits of about \$200,000. As noted previously, this program was designed to help households that had exhausted all other program benefits. The project team was not able to obtain funding or participation information from the Greater Washington Urban League.

- **Solar for All** – The most recent report from DOEE indicates that, in 2019, the program served about 8,600 households with average benefits of about \$500 per program participant. That represents about 7.5 percent of the 114,000 LMI households. At this time, there is no information on the extent to which Solar for All program participants overlap with LIHEAP and ratepayer program participants. The DOEE report projects that the Solar for All program will serve an additional 2,750 households in 2020, bringing the total participants to over 11,000 households, or about 10 percent of the LMI population. This compares favorably with the 20,000 households that are served by LIHEAP and the ratepayer discount programs.
- **Housing Choice Voucher Program** – The DC Housing Authority reports that it serves about 10,500 LMI households with the Housing Choice Voucher Program (HCVP). Using the utility allowance calculator available from the Housing Authority, we determined that LMI renters who pay for their energy bills directly to their suppliers can receive an allowance that, on average, should cover most of their electric and/or natural gas bills. At this time, DOEE and the Housing Authority do not have any data-sharing agreements. As such, it is not possible to assess the extent to which households that receive LIHEAP benefits and ratepayer discounts also receive HCVP benefits.

This analysis shows that the other programs available to LMI households serve a large number of LMI households with substantial benefits. However, in order to get a more complete understanding of how widely distributed these benefits are, there needs to be better information sharing among the offices that administer these programs.

8.6 Key Findings on Program Participation Rates

This section of the report furnishes information on the LIHEAP and ratepayer program participation rates as well as information on the other resources that are available to increase energy affordability for DC's LMI households. The key findings include:

- **LIHEAP Program Participation** – About 20,000 LMI households (18%) receive benefits from the LIHEAP and ratepayer discount programs. That is about 25 percent of the income-eligible households and 35 percent of the income-eligible households that pay an energy bill directly to their supplier.
- **Overall LMI Energy Assistance Benefits** – In addition to the LIHEAP and ratepayer discount programs, a substantial number of LMI households receive benefits from the Solar for All program and the Housing Choice Voucher Program. However, it is not currently possible to determine the overlap among all of these programs.

- Participation by Income Level – The most important predictor of program participation is income. About one-third of SNAP-Eligible households receive benefits compared to about one in ten Non-SNAP LIHEAP households that receive benefits. Moderate-income households are not income-eligible to receive benefits from these programs. However, they can receive benefits from the Fuel Fund programs, the Solar for All program, and the HCVP utility allowances.
- Participation Rates by Region – There are large variations in program participation by region. The highest participation rates are found in the Northeast and East Regions. The West Region has the lowest participation rate. Some of the differences appear to relate to the income level of households in those regions. But there do appear to be some outreach issues that might need to be resolved by the program.

Overall, the DC energy assistance programs serve a large number of households with substantial benefits. The most important improvement in the programs would be to develop a better understanding of which households are not participating in the programs and what could be done to make the programs more accessible to them.

9.0 FINDINGS AND RECOMMENDATIONS

The OPC is concerned that households across all income levels in DC struggle with energy affordability issues. The data presented in this report document that LMI households, in particular, have both energy affordability and housing affordability issues. However, the data also show that there are important differences in both affordability and program participation among different LMI population subgroups. These differences should be considered as the OPC considers policies and programs to increase energy affordability.

9.1 Findings and Recommendations – Income

The LMI population represents about 40 percent of all households in District of Columbia. The analysis shows that the different income groups appear to have very different levels of financial capacity. Key findings include:

- Median Income – The median income for LMI households is \$24,702. That “average” household is likely to face significant challenges in terms of energy affordability but is also likely to have choices with respect to how it spends that income.
- Distribution of Income – Within the LMI population there are subgroups with very different levels of financial capacity.
 - SNAP Eligible Households – About 50,027 LMI households (44%) have income that makes them income-eligible for SNAP. The average income for this group is about \$10,267 per year.
 - Non-SNAP LIHEAP Households – About 32,263 LMI households (28%) are income-eligible for LIHEAP but not for SNAP. The average income for this group is about \$31,208 per year.
 - Moderate-Income Households – About 31,454 LMI households (28%) are considered to be moderate-income and are not income-eligible for LIHEAP or UDP programs. The average income for this group is about \$47,375.

These statistics demonstrate the very different levels of need among the LMI population and highlight the importance of targeting energy assistance resources to the households with the lowest income and the highest energy burden.

9.2 Findings and Recommendations – Demographics

The LMI population is demographically diverse. Populations of households that might require special attention from energy assistance programs might include:

- **Elderly Single Person Households** – About one-fourth of the LMI population are single person elderly households. Many of these households are on fixed incomes and might need special assistance in applying for program benefits.
- **Disabled Households** – About one-third of the LMI population are households with a disabled individual. Such households might have special needs for heating or cooling related to the individual's disability.
- **Young Children** – A little more than ten percent of the LMI households have young children. Households with young children may have reduced earning capacity because of the need for childcare. They also need homes that are well-heated and cooled to maintain the health of young children.
- **Linguistic Isolation** – About six percent of LMI households are linguistically isolated, with two-third of those speaking Spanish and one-third speaking other languages.

The LIHEAP program statute instructs grantees to prioritize elderly, disabled, and young child households. In general, it would make sense for all of the DC energy assistance programs to target such households since they are the most vulnerable and do represent a substantial share of the low-income population.

9.3 Findings and Recommendations – Housing

The DC LMI population is unique in terms of the type of housing occupied by LMI households. In most jurisdictions, more than one-half of LMI households are owners of single-family homes. However, in DC, most LMI households are renters who live in multifamily buildings.

- **SNAP Eligible Households** – More than 85 percent of SNAP eligible households are renters and most live in multifamily buildings. It is challenging for such households to control their energy use or to participate in energy efficiency programs that would help to reduce their usage over the long run. SNAP Eligible renters are 38 percent of the LMI population.
- **Other Renters** – Even among Non-SNAP LIHEAP households and Moderate-Income households, most of the households are renters. Together, those households represent about 40 percent of all LMI households.

There are several ways in which the owner/renter status of DC LMI households makes program development more complicated.

- **Account Status** – Because so many LMI households in DC are renters, it is important for energy assistance programs to make sure that procedures are in place to ensure that households who are required to pay an energy bill are able to have the utility bill in their name so that they can qualify for the program and the assistance funds are properly credited to the household's account.
- **Heat in Rent** – Some LMI households have their heat included in the rent. Since that embedded energy cost can be substantial, energy assistance programs should consider whether such households have higher rental cost and whether some assistance is appropriate for those households.
- **Energy Efficiency** – It can be difficult for energy efficiency programs to serve rental units. For multifamily buildings, projects are larger and more complex than serving single-family homes. Even for single-family homes, getting landlord approval can be difficult.

The LMI population in DC is different from the populations in most jurisdictions. As such, it is difficult for energy assistance and energy efficiency program planners to find good examples from other jurisdictions for best practices.

9.4 Findings and Recommendations – Energy Usage and Payment

The DC LMI population is unique in terms of the type of energy usage and payment patterns for LMI households.

- **Main Heating Fuel** – The most common main heating fuels in DC are natural gas and electricity. Very few households use delivered fuels. Moreover, there is only one electric utility and one natural gas utility in DC.
- **Direct Payment for Services** – About one-fourth of LMI households have their payment for electricity included in their rent and about one-third of LMI households with natural gas main heat have their payment included in their rent.

In some respects, the energy usage and payment patterns in DC reduce the complexity for the development of energy assistance programs. Since there is only one electric company and one natural gas company that serve almost all households, each energy assistance initiative can be designed to work directly with those companies. However, the relatively large share of households with heat included in rent places an extra burden on the program office to ensure that those households are treated equitably by the programs.

9.5 Findings and Recommendations – Energy Burden

One important indicator of energy affordability is energy burden; the share of annual income that is spent on home energy bills. Many analysts specify that a burden greater than six percent of income is an “unaffordable” energy burden and that a burden greater than ten percent of income is a “severe” energy burden.

- **Average Energy Burden** – LMI households have an average energy burden of 7.8 percent of income. That exceeds the “affordable” energy burden target of six percent but does not exceed the “severe” energy burden target of ten percent of income.
- **Program Eligibility Group** – SNAP-Eligible households have an average energy burden of over 20 percent of income. That exceeds both the “affordable” energy burden target and the “severe” energy burden target. Non-SNAP LIHEAP households have an average energy burden that exceeds the “affordable” target but not the “severe” target, while moderate-income households have an average energy burden that is considered to be “affordable.”
- **Demographic Group** – Elderly individuals have the highest average energy burden because they have the lowest average income. Households with children also have high average energy burdens because they have relatively high energy bills.

The most effective low-income programs target the households that exceed the energy burden affordability thresholds and consider whether each household has a greater need for energy assistance (e.g., high burden because of low income) or energy efficiency (e.g., high burden because of high usage).

9.6 Findings and Recommendations – Shelter Burden

Since a substantial number of LMI households in DC have their heat included in rent, it also is important to consider shelter burden. Many analysts specify that a shelter burden of more than 30 percent of income is an “unaffordable” shelter burden and that a shelter burden of more than 50 percent of income is a “severe” shelter burden.

- **Average Shelter Burdens** – SNAP Eligible households have an average shelter burden that exceeds 100 percent of income. Non-SNAP LIHEAP households have average shelter burdens that exceed the “affordable” target but not the “severe” target. Moderate-income households have average shelter burdens close to the “affordable” burden target.
- **Distribution of Shelter Burden** – Only 15 percent of SNAP Eligible households have an “affordable” shelter burden, compared to 28 percent of non-SNAP LIHEAP and 46 percent of moderate-income households.

- Energy Bills in Rent – Households that have all of their energy bills included in the rent have the lowest average shelter burdens.

The findings with respect to shelter burden are consistent with the findings related to household income and energy burden. The lowest income households have a “severe” shelter burden and are going to be challenged to make payments on energy bills. The energy assistance programs need to be designed to help address the needs of households that would have difficulty in paying all of their bills, not just their energy bills.

9.7 Findings and Recommendations – Energy Assistance Programs

There are a comprehensive set of energy assistance programs that serve LMI households. They include:

- LIHEAP – The federally and District-funded energy assistance program is available to low-income households (i.e., households with income at or below 60% of SMI) and currently serves about 20,000 low-income households.
- UDP – The Utility Discount programs offer low-income households discounts on their electric and natural gas bills. Since there is one application form for the LIHEAP and UDP programs, the UDP programs also serve about 20,000 low-income households.
- Fuel Funds – Two charitable fuel funds offer benefits to households that have exhausted other sources of assistance. In a recent program year, these programs served over 1,000 households.
- Solar for All – The goal for SFA is to serve 100,000 LMI households by the year 2032. By the end of 2020, about 10,000 LMI households will be receiving SFA benefits.
- Housing Choice Voucher Program – The primary purpose of the HCVP is to furnish rent subsidies to LMI households. However, participating households who pay an energy bill directly to their utility are eligible for a monthly utility subsidy payment. The HCVP currently serves over 10,000 LMI households.

The combined LIHEAP/UDP database furnishes good information about the low-income households that participate in those programs. In addition, DOEE is working to assess the overlap between LIHEAP/UDP and Solar for All to effectively target program benefits. However, all the programs would benefit from more information sharing so that benefits could be more effectively targeted to address energy affordability.

Our analysis also finds that each of the programs could be modified in a way that improves program targeting.

- LIHEAP – The LIHEAP program furnishes higher benefits to lower income households. However, since it does not currently take into consideration the amount of the household's energy bill, it is not as effective at targeting as it could be. [Note: DOEE is examining options for basing the LIHEAP benefit on energy burden rather than on income.]
- UDP Programs – The rate discount program does take into account the size of the household's energy bill; households with a higher energy bill get a larger discount. However, a SNAP Eligible household with income of \$10,000 year gets the same discount as a Non-SNAP LIHEAP household with an income of \$30,000 per year.
- Solar for All – The stated goal for SFA is to reduce LMI household electric bills by an average of 50%. At this time, there do not appear to be any programs that vary the SFA credit by income.
- Housing Choice Voucher Program – The HCVP appears to furnish a rent subsidy that is designed to help the client pay for their electric and main heat fuel bills, and does not make reference to varying the subsidy by income level.

The set of energy assistance programs available to LMI households furnish substantial benefits to the LMI population and make energy more affordable for program participants. However, at this time, with the exception of the LIHEAP/UDP benefits, it is not possible to assess how those benefits are distributed and whether greater equity could be achieved through better benefit targeting.