

# **NYSERDA LOW- TO MODERATE-INCOME MARKET CHARACTERIZATION REPORT**

## **Main Summary Report**

Prepared For:

**New York State Energy Research and Development Authority (NYSERDA)**  
Albany, NY

Judeen Byrne  
NYSERDA Project Manager

Prepared By:

**APPRISE Incorporated**  
32 Nassau Street, Suite 200  
Princeton, NJ 08542  
P (609) 252-8008

David Carroll, Project Manager

## NOTICE

This report was prepared by APPRISE Incorporated in the course of performing work contracted for and sponsored by the New York State Energy Research and Development Authority (hereafter "NYSERDA"). The opinions expressed in this report do not necessarily reflect those of NYSERDA or the State of New York, and reference to any specific product, service, process, or method does not constitute an implied or expressed recommendation or endorsement of it. Further, NYSERDA, the State of New York, and the contractor make no warranties or representations, expressed or implied, as to the fitness for particular purpose or merchantability of any product, apparatus, or service, or the usefulness, completeness, or accuracy of any processes, methods, or other information contained, described, disclosed, or referred to in this report. NYSERDA, the State of New York, and the contractor make no representation that the use of any product, apparatus, process, method, or other information will not infringe privately owned rights and will assume no liability for any loss, injury, or damage resulting from, or occurring in connection with, the use of information contained, described, disclosed, or referred to in this report.

NYSERDA makes every effort to provide accurate information about copyright owners and related matters in the reports we publish. Contractors are responsible for determining and satisfying copyright or other use restrictions regarding the content of reports that they write, in compliance with NYSERDA's policies and federal law. If you are the copyright owner and believe a NYSERDA report has not properly attributed your work to you or has used it without permission, please email [print@nyserda.ny.gov](mailto:print@nyserda.ny.gov).

**TABLE OF CONTENTS**

Acronyms .....i

1.0 Introduction ..... 1

    1.1 Methodology ..... 1

    1.2 NYSERDA LMI Special Topic Reports ..... 2

    1.3 NYSERDA LMI Market Database ..... 3

    1.4 Report Organization ..... 4

2.0 LMI Demographic Characteristics ..... 5

    2.1 Methodology ..... 5

    2.2 Low- and Moderate-Income Households ..... 5

    2.3 LMI Household Demographics ..... 8

    2.4 Key Findings on Household Demographics ..... 9

3.0 LMI Housing Characteristics ..... 11

    3.1 Methodology ..... 11

    3.2 Housing Unit Type ..... 11

    3.3 Owner/Renter Status ..... 13

    3.4 LMI Housing Market Segments ..... 14

    3.5 Key Findings on Housing Unit Characteristics ..... 16

4.0 LMI Annual Energy Usage Patterns ..... 17

    4.1 Methodology ..... 17

    4.2 LMI Energy Characteristics ..... 17

    4.3 LMI Heating Fuel Annual Energy Usage ..... 19

    4.4 LMI Electric Usage ..... 21

    4.5 Key Findings on LMI Annual Energy Usage ..... 22

5.0 Financial Capacity of LMI Households ..... 23

    5.1 Methodology ..... 23

    5.2 LMI Annual Energy Burden ..... 24

    5.3 LMI Annual Shelter Burden ..... 27

    5.4 Other LMI Financial Capacity Statistics ..... 29

    5.5 Key Findings on LMI Household Financial Capacity ..... 32

6.0 Low- to Moderate-Income Market Segments ..... 34

    6.1 Proposed Segmentation Strategy ..... 34

    6.2 Detailed Information on LMI Market Segments ..... 35

    6.3 Key Findings on LMI Market Segmentation ..... 37

7.0 Programs Serving Low- to Moderate-Income Households ..... 39

    7.1 Methodology ..... 39

    7.2 Energy Assistance Programs ..... 40

    7.3 Energy Efficiency Programs ..... 41

    7.4 Housing Programs ..... 45

    7.5 Key Findings on Programs Serving the LMI Market ..... 48

8.0 Findings and Recommendations ..... 50  
 8.1 Findings ..... 50  
 8.2 Recommendations ..... 51

**Tables**

Table 2.1 - New York State Households by Income Group..... 6  
 Table 2.2 - LMI Households by Income Level..... 7  
 Table 2.3 - LMI Households by Poverty Group ..... 7  
 Table 2.4 - LMI Households by LMI Income Group..... 8  
 Table 2.5 - LMI Households by LMI Income Group and Household Type ..... 8  
 Table 2.6 - LMI Households by LMI Income Group and Race/Ethnicity ..... 9  
 Table 2.7 - LMI Households by LMI Income Group and Linguistic Isolation ..... 9  
 Table 3.1 - Percent of Households by Housing Unit Type and Income Group ..... 12  
 Table 3.2 - Percent of LMI Households by Housing Unit Type and LMI Income Group ..... 12  
 Table 3.3 - Percent of LMI Households by NYS Economic Development Region and Housing Unit Type..... 12  
 Table 3.4 - Percent of Households by Ownership Status and Income Group..... 13  
 Table 3.5 - Percent of LMI Households by Ownership Status and LMI Income Group ..... 13  
 Table 3.6 - Percent of LMI Households by NYS Economic Develop Region and Ownership Status .... 14  
 Table 3.7 - Share of LMI HHs by Housing Unit Type, Ownership Status, and LMI Income Group ..... 15  
 Table 3.8 - Number LMI HHs by Housing Unit Type, Ownership Status, and LMI Income Group..... 15  
 Table 3.9 - Percent of LMI HHs by Housing Unit Type, Ownership Status, and LMI Income Group... 15  
 Table 4.1 - Percent of Households by Main Heating Fuel and Income Group..... 18  
 Table 4.2 - Percent of Households by Main Cooling Equipment and Income Group ..... 18  
 Table 4.3 - Average Housing Unit Square Footage by Housing Unit Type and Income Group..... 18  
 Table 4.4 - Statistics Related to Electric Usage by Income Group ..... 19  
 Table 4.5 - Average Annual Heating Fuel Usage (Thousand Btu, MBtu) by Housing Unit Type and Income Group for Households that Heat with Natural Gas, Fuel Oil/Kerosene, or Propane..... 19  
 Table 4.6 - Distribution of Annual Heating Fuel Usage by Income Group for Households in Single Family Homes that Heat with Natural Gas, Fuel Oil/Kerosene, or Propane (Percent)..... 20  
 Table 4.7 - Distribution of Annual Heating Fuel Usage by Income Group for Households in Single Family Homes that Heat with Natural Gas, Fuel Oil/Kerosene, or Propane (Number)..... 20  
 Table 4.8 - Average Annual Electric Usage in kWh by Housing Unit Type and Income Group for Households that Heat with Natural Gas, Fuel Oil/Kerosene, or Propane..... 21  
 Table 4.9 - Distribution of Annual Electric Usage in kWh by Income Group for Households in Single Family Homes that Heat with Natural Gas, Fuel Oil/Kerosene, or Propane (Percent)..... 21  
 Table 4.10 - Distribution of Annual Electric Usage in kWh by Income Group for Households in Single Family Homes that Heat with Natural Gas, Fuel Oil/Kerosene, or Propane (Number)..... 22  
 Table 5.1 – Energy Burden for New York State Households by Income Group..... 25  
 Table 5.2 - Energy Burden Distribution for New York State Households by Income Group (2009) ..... 25  
 Table 5.3 - Energy Burden for Gas Main Heat LMI Households by Usage Group (2009) ..... 26  
 Table 5.4 - Energy Burden for LMI Households by Main Heating Fuel..... 26

Table 5.5 - Energy Burden for LMI Households by Housing Unit Type ..... 27

Table 5.6 - Average Shelter Burden for New York State Households by Income Group ..... 27

Table 5.7 - Shelter Burden Distribution for New York State Households by Income Group..... 28

Table 5.8 - Average Shelter Burden for LMI Households by Household Type ..... 28

Table 5.9 - Shelter Burden by NYS Economic Development Region..... 29

Table 5.10 - Banking Status for New York State Households by Income Group ..... 30

Table 5.11 - Home Equity Statistics for Mid-Atlantic Census Division (NY, NJ, PA) Households by Income Group ..... 30

Table 5.12 - Home Equity Statistics for Mid-Atlantic Census Division (NY, NJ, PA) for LMI Households by Household Type ..... 31

Table 5.13 - Home Equity for LMI Households by Geographic Region ..... 31

Table 6.1 - LMI Market Segments by Owner Status, Income Group, and Housing Unit Type..... 35

Table 6.2 - Recommended Low- to Moderate-Income Market Segments..... 36

Table 7.1 - HEAP Participation Rates for Low-Income Households by LMI Income Group ..... 40

Table 7.2 - WAP Service Rates for Low-Income by Housing Unit Type ..... 42

Table 7.3 - EmPower Service Rates for Low-Income by Housing Unit Type ..... 42

Table 7.4 - Assisted Home Performance Service Rates for Moderate-Income by Housing Unit Type .. 43

Table 7.5 - MPP Service Rates for Moderate-Income by Housing Unit Type ..... 44

Table 7.6 - LMI Market Segments by Owner Status, Income Group, and Housing Unit Type Compared to Energy Efficiency Program Service Levels..... 45

Table 7.7a - Buffalo Metropolitan Area Rental Housing Program Participation by Income Group / Single Family and Small Multifamily Homes ..... 46

Table 7.7b - Rochester Metropolitan Area Rental Housing Program Participation by Income Group / Single Family and Small Multifamily Homes ..... 47

Table 7.7c - New York City Metropolitan Area Rental Housing Program Participation by Income Group / Single Family and Small Multifamily Homes ..... 47

Table 7.8 - 2016 HUD Program Funding for Selected Communities ..... 48

## ACRONYMS

ACS	American Community Survey
AHS	American Housing Survey
AMI	Area Median Income
BLS	Bureau of Labor Statistics
CPS	Current Population Survey
EIA	United States Energy Information Administration
FDIC	Federal Deposit Insurance Corporation
FPL	Federal Poverty Level
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
MBtu	Thousand British Thermal Units
MMBtu	Million British Thermal Units
MPP	Multifamily Performance Program
NYS HCR	New York State Homes and Community Renewal
NYSERDA	New York State Energy Research and Development Authority
OTDA	New York State Office of Temporary and Disability Assistance
PUMA	Public Use Microdata Area
PUMS	Public Use Microdata Sample
REAP	Residential Energy Affordability Partnership Program
RECS	Residential Energy Consumption Survey
REV	Reforming the Energy Vision
SMI	State Median Income
SNAP	Supplemental Nutrition Assistance Program
WAP	Weatherization Assistance Program

## 1.0 INTRODUCTION

The Clean Energy Fund Implementation Plan developed by NYSERDA proposes to "implement a comprehensive, three-pronged strategy for improving energy affordability and access to clean energy solutions for LMI communities, customers, and building owners."<sup>1</sup> The strategy includes "traditional incentive and special offer programs," "market development interventions," and "coordination with other state agencies." To successfully implement that strategy, NYSERDA needs in-depth information on the low- to moderate-income (LMI) households and housing units that are to be served through those initiatives, as well as comprehensive information on how the LMI market is already served by other state and local programs.

The purpose of the NYSERDA Low- to Moderate-Income Market Characterization Study is to develop detailed information on LMI households and housing units to support NYSERDA's design and implementation of a comprehensive LMI market strategy. The first goal of the study is to identify and analyze secondary data sources that contain information on LMI demographics, housing characteristics, energy usage and expenditures, and financial capacity to assess the size, geographic distribution, and energy saving potential associated with the LMI Market. The second goal of the study is to develop an inventory of the LMI housing units served over the past ten years to assess what needs have been met and what needs remain, and to develop an understanding of how other state and local agencies are engaged with the LMI population and can potentially partner with NYSERDA in serving the LMI Market. The overarching goal of the study is to develop an information infrastructure that NYSERDA, other state agencies, the utilities, other interested parties, and the public can use to understand the LMI market and identify ways to engage with that market.

### 1.1 Methodology

The study used three different types of information to characterize the LMI market and the programs that serve them: public use data sets from surveys conducted by the U.S. Bureau of the Census and other Federal Statistical Agencies; program databases furnished by NYSERDA and NYSHCR; 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)
- Residential Energy Consumption Survey (RECS)
- Current Population Survey (CPS)

---

<sup>1</sup> Clean Energy Fund (CEF) order Chapter 15, page 2.

- American Housing Survey (AHS)

The LMI Study Team used these data sets to develop customized tabulations for the LMI population; those tabulations are not available from published data sources.

The LMI Study Team analyzed program databases from NYSERDA and New York State Homes and Community Renewal (NYSHCR). The NYSERDA program databases included EmPower, Multifamily Performance Program (MPP), and Assisted Home Performance. The NYSHCR database was for the Weatherization Assistance Program (WAP). The EmPower program database was directly compared to the WAP database to assess the level of coordination between the two programs.

The LMI Study Team also reviewed published statistics from the U.S. Department of Housing and Urban Development (HUD), state-level statistics for the Low Income Home Energy Assistance Program (LIHEAP) and WAP programs, and information from other state agencies that serve LMI households. These data furnished information on the amount of funding available, the number of households and housing units served, and some characteristics for those households and housing units.

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

### ***1.2 NYSERDA LMI Special Topic Reports***

The LMI Market 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 Summary Report is to develop a comprehensive picture of this market, and thereby help to ensure that all parts of the market are addressed by the REV initiatives.

However, organizations and individuals working in this market sector need detailed information on the specific issues, households, and housing units that they are working to address. To meet those needs, the LMI Study Team developed a series of in-depth Special Topic Reports that examine special topics of interest. Each Special Topic Report documents how the topic is relevant to the REV initiative, furnishes detailed information, and make recommendations with respect to LMI Market policies and programs.

The Special Topic Reports are:

- NYSERDA LMI Market Characterization Database - Furnishes information how to use the NYSERDA database to develop custom LMI Market tabulations.



- Income Status for LMI Households - Documents how low-income status is defined and identifies the important income groups within the LMI population.
- Energy Burden for LMI Households - Furnishes statistics on energy burden and the potential for addressing burden through assistance programs and efficiency initiatives.
- Financial Capacity of LMI Households - Documents the financial capacity of LMI households and assesses the ability of LMI households to invest in energy efficiency.
- LMI Market Segmentation - Presents a market segmentation strategy and furnishes detailed profiles for important market segments.

This series of reports furnishes participants in the REV initiative ready access to specialized information that will be needed as they engage in the LMI Market.

### ***1.3 NYSERDA LMI Market Database***

One important goal is to make the data from this study accessible to NYSERDA, its partners, and the public. The LMI Study Team met this goal by developing a database that allows users to develop custom statistics from the American Community Survey (ACS) for the LMI market. In addition, the LMI Study Team developed procedures that allow NYSERDA to update the database as new ACS data are made available to the public annually by the Census Bureau.

This Summary Report furnishes the statistics that the LMI Study Team and NYSERDA identified as being most important for understanding the LMI market. Additional details on the population were developed by the LMI Study Team and are published in the LMI Study Special Topic Report format. However, the New York State LMI market is multidimensional; the different organizations and individuals involved in the REV initiative each are working with very different market segments.

The NYSERDA LMI Database meets the needs of these users by allowing them to develop customized statistics for the specific population, housing type, and geography of interest. The database is accessible on the NYSERDA website and allows the user to select a specific segment of the market using a menu-driven interface. In addition to being able to display and print the specified statistics, the Database allows the user to download information that they need for further processing.

### ***1.4 Report Organization***

This report consists of eight sections, including:

- Introduction
- LMI Demographic Characteristics
- LMI Housing Characteristics
- LMI Energy Usage Patterns
- Financial Capacity of LMI Households
- Low- to Moderate-Income Market Segments
- Programs Serving Low- to Moderate-Income Households
- Findings and Recommendations

The report sections furnish summary statistics for the LMI market. Additional detail is available in the Special Topic Reports.

## 2.0 LMI DEMOGRAPHIC CHARACTERISTICS

The Low- to Moderate-Income chapter of the NYSERDA Clean Energy Fund Implementation Plan defines low-income households as those with incomes at or below 60% of the State Median Income (SMI) and defines moderate-income households as those with incomes above 60% of SMI but at or below the greater of 80% of State Median Income (SMI) and 80% of Area Median Income (AMI). This section of the report shows the share of NYS households that are included in the LMI market and furnishes summary information on LMI household demographics. More detailed information is available from the NYSERDA LMI Market Database.

### 2.1 Methodology

This analysis makes use of the American Community Survey (ACS) public use data files for 2013, 2014, and 2015. 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 data files can be used to develop customized statistics that are not published by the Census Bureau. The Census Bureau recommends using three years of data for development of sub-state statistics.

The LMI Study Team compared the income reported by each ACS respondent to the poverty guidelines published by the U.S. Department of Health and Human Services (HHS) to compute the poverty level for each household. The LMI Study Team compared reported income to the state median income (SMI) estimates from HHS to compute the household's percent of SMI status. The LMI Study Team compared reported income to the area median income estimates (AMI) published by NYSHCR to compute the household's percent of AMI status.

### 2.2 Low- and Moderate-Income Households

This study furnishes information on all LMI households living in housing units in New York.<sup>2</sup> This includes households residing in tribal areas within New York.<sup>3</sup> 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 distinct groups. Table 2.1 shows the number and percent of households that fall into each income group: low-income households, moderate-income households, and non-LMI households. There are about 7.25 million households in New York; 2.36

---

<sup>2</sup> For this analysis, households residing in Census' defined group quarters facilities were excluded. Group quarters include college or worker's dormitories, residential treatment centers, correctional facilities, and facilities for people experiencing homelessness or requiring medical care. Group quarters does not include general public or low-income housing.

<sup>3</sup> Overall, New York has approximately 6,500 households residing on 11 tribal areas. Households from these areas can be interviewed for the ACS and the estimates presented in this report include LMI households from all tribal and non-tribal areas in New York.

million (33%) are categorized as low-income and 1.15 million (16%) are categorized as moderate-income. As defined by NYSERDA, the LMI market has 3.51 million households, about 48.5 percent of all households.

**Table 2.1 - New York State Households by Income Group**

Household Group	Number of Households	Percent of Households	Average Income
<b>Low-Income Households</b>	2,357,917	32%	\$19,768
<b>Moderate-Income Households</b>	1,153,239	16%	\$47,348
<b>Non-LMI Households</b>	3,733,988	52%	\$143,349
<b>All Households</b>	7,245,144	100%	\$87,849

Source: ACS (2013-2015) / Percent of households may not sum to 100% due to rounding.

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 income of \$15,000 would have less financial capacity than a household with income of \$25,000.
- Poverty Level - At the same time, a one-person household that has income of \$15,000 may be more able to meet basic needs than would a four-person household with income of \$25,000. For that reason, HHS defines the household poverty level using both income and household size. In 2017, a one-person household with income of \$15,000 is estimated to have income that is 124% of the HHS Poverty Guideline; a four-person household with income of \$25,000 is estimated to have an income that is 102% of the HHS Poverty Guideline.
- LMI Income Group - For purposes of this study, the LMI Study Team also used assistance program eligibility criteria to define three distinct LMI Income Groups: Very Low-Income, Low-Income, and Moderate-Income..
  - Very Low-Income - Households with income at or below 130% of the HHS Poverty Guideline who are eligible for certain public assistance programs like SNAP.
  - Low Income - Households with income greater than 130% of the HHS Poverty Guideline but at or below 60% of SMI. These households are eligible for LIHEAP, but not for SNAP.
  - Moderate-Income - Households with incomes above 60% of SMI and below 80% of SMI or AMI. These households are not eligible for SNAP or for LIHEAP, but are eligible for certain 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 annual income less than \$10,000 (16% of LMI households) as well as households with annual income of \$50,000 or more (14% of LMI households). The median income for LMI households is \$22,938 and the average income for LMI households is \$28,827.

**Table 2.2 - LMI Households by Income Level**

Annual Income	Number of Households	Percent of Households	Average Income
<b>Less than \$10,000</b>	568,478	16%	\$5,109
<b>\$10,000 - &lt;\$20,000</b>	733,626	21%	\$14,812
<b>\$20,000 - &lt;\$30,000</b>	663,904	19%	\$24,700
<b>\$30,000 - &lt;\$40,000</b>	604,051	17%	\$34,505
<b>\$40,000 - &lt;\$50,000</b>	443,727	13%	\$44,320
<b>\$50,000 or More</b>	497,370	14%	\$61,397
<b>All LMI Households</b>	3,511,156	100%	\$28,827

Source: ACS (2013-2015) / Percent of households may not sum to 100% due to rounding.

Table 2.3 shows the number and percent of LMI households by poverty group. All of the households with income below 200% of the HHS Poverty Guideline are eligible to participate in WAP; about 2.2 million (62% of LMI households).

**Table 2.3 - LMI Households by Poverty Group<sup>4</sup>**

Poverty Group	Number of Households	Percent of Households	Average Income
<b>Less than 100%</b>	999,660	28%	\$9,757
<b>100% - &lt;150%</b>	628,198	18%	\$22,457
<b>150% - &lt;200%</b>	566,022	16%	\$31,403
<b>200% or More</b>	1,317,276	38%	\$45,229
<b>All LMI Households</b>	3,511,156	100%	\$28,827

Source: ACS (2013-2015) / Percent of households may not sum to 100% due to rounding.

Table 2.4 shows the number and percent of LMI households by LMI Income Group. Households that are very low-income make up about 39 percent of the LMI population. Many of those households are eligible for other types of public assistance as well. The low-income households represent about 28 percent of the LMI population. As is highlighted in later sections of this report, those households sometimes have the financial capacity to make investments in their homes.

<sup>4</sup> The Poverty Group is based on the HHS Poverty Guideline. For more detailed, see the LMI Study Special Topic Report on Income Status for LMI Households.

**Table 2.4 - LMI Households by LMI Income Group**

LMI Income Group	Number of Households	Percent of Households	Average Income
<b>Very Low-Income Households</b>	1,388,051	39%	\$12,801
<b>Low-Income Households</b>	969,865	28%	\$29,739
<b>Moderate-Income Households</b>	1,153,239	33%	\$47,348
<b>All LMI Households</b>	3,511,156	100%	\$28,827

Source: ACS (2013-2015)

### 2.3 LMI Household Demographics

This study focuses on household demographics that are likely to affect the household's participation in different types of energy efficiency initiatives. This demographic analysis includes tables on household type, race and ethnicity, and language spoken at home.

Table 2.5 shows the distribution of households by type for each LMI Income Group. This household type variable shows households by age and the presence of children. Those factors are likely to affect the households' willingness to participate in energy efficiency programs or to consider making investments in the energy efficiency of their homes. They also are likely to affect the type of program outreach or marketing message that might be most effective, and the type of financial instruments that might be attractive to those households. In the moderate-income group, close to one-half of the households (46%) are elderly couples or older households without children in the homes. In comparison, 41 percent of the very low-income households are elderly individuals or younger households with children.

**Table 2.5 - LMI Households by LMI Income Group and Household Type**

Household Type	LMI Study Group		
	Very Low-Income	Low-Income	Moderate-Income
<b>Elderly Couple</b>	14%	22%	25%
<b>Elderly Individual</b>	24%	25%	18%
<b>Older without Children (40-59)</b>	19%	17%	21%
<b>Older with Children (40-59)</b>	17%	16%	14%
<b>Younger without Children (&lt;40)</b>	10%	9%	13%
<b>Younger with Children (&lt;40)</b>	17%	12%	8%
<b>All LMI Households</b>	100%	100%	100%

Source: ACS (2013-2015) / Totals may not sum to 100% due to rounding.

Table 2.6 shows the distribution of households by race and ethnicity for each LMI Income Group. White non-Hispanic households represent about one-half of LMI households, with a lower

percentage in the SNAP eligible group and a higher percentage in the non-SNAP LIHEAP and moderate-income groups. Blacks and Hispanic households each also represent a significant share of LMI households.

**Table 2.6 - LMI Households by LMI Income Group and Race/Ethnicity**

Race and Ethnicity	LMI Income Group		
	Very Low-Income	Low-Income	Moderate-Income
<b>White Non-Hispanic</b>	43%	56%	59%
<b>Black Non-Hispanic</b>	20%	16%	16%
<b>Hispanic</b>	26%	19%	17%
<b>Asian</b>	8%	6%	6%
<b>Other</b>	2%	2%	2%
<b>All LMI Households</b>	100%	100%	100%

Source: ACS (2013-2015) / Totals may not sum to 100% due to rounding.

Table 2.7 shows the distribution of households by linguistic isolation for each LMI Income Group. The term "linguistic isolation" means that there is no member of the household 16 years or older who reports that they speak English "well" or "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. In the lowest income group, about one in five households are linguistically isolated, while for moderate-income households, less than one in ten households are linguistically isolated.

**Table 2.7 - LMI Households by LMI Income Group and Linguistic Isolation**

Race and Ethnicity	LMI Income Group		
	Very Low-Income	Low-Income	Moderate-Income
<b>Not Linguistically Isolated</b>	81%	88%	92%
<b>Linguistic Isolation - Hispanic</b>	10%	6%	4%
<b>Linguistic Isolation - Non-Hispanic</b>	9%	6%	4%
<b>All LMI Households</b>	100%	100%	100%

Source: ACS (2013-2015) / Totals may not sum to 100% due to rounding.

**2.4 Key Findings on Household Demographics**

The LMI population represents about one-half of all households in New York State. These households have a broad range of income, including many different types of households, and are

diverse in terms of race and ethnicity. A small, but significant part of the population are linguistically isolated.

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 \$22,938. That "average" household is likely to face significant challenges in terms of energy affordability. But, those households can and do make decisions about how to make ends meet and can be active partners in program initiatives.
- Distribution of Income - Over one-third of LMI households have annual income below \$20,000. Those households are likely to face serious energy affordability problems. But more than one in four LMI households have income of \$40,000 or more, and may have the capacity to make investments in the energy efficiency of their homes.

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 about 40 percent of the LMI Market. However, single elderly individuals represent the largest group of very low-income households (24%) while elderly couples represent the largest share of moderate-income households (25%).
- Linguistic Isolation - The lowest income households have the highest rate of linguistic isolation; 20 percent of households would face challenges in reading program materials that are in English.

These statistics show the importance of understanding the demographic segments within the LMI market. Organizations and individuals should consider these demographic segments when they design programs or initiatives, and when they conduct outreach or marketing to the LMI population.



### 3.0 LMI HOUSING CHARACTERISTICS

The Clean Energy Fund Implementation Plan developed by NYSERDA proposes to "implement a comprehensive, three-pronged strategy for improving energy affordability and access to clean energy solutions for LMI communities, customers, and building owners." The strategy includes "traditional incentive and special offer programs," "market development interventions," and "coordination with other state agencies." In implementing that strategy, it is important for NYSERDA to understand the size of the LMI Market with respect to different housing characteristics. Programs and initiatives that are effective for owners of single family homes will be quite different from those for large multifamily rental housing. The purpose of this section of the report is to furnish those population estimates.

#### 3.1 Methodology

This analysis makes use of the American Community Survey (ACS) public use data files for 2013, 2014, and 2015. The ACS is described in Section 2.1 above. For this section of the report, the LMI Study Team used ACS survey responses on the type of housing unit and the households' owner/renter status.

In addition, this section of the report shows how characteristics vary by LMI Income Group and geography. One limitation of the data is that it does not give good information on the configuration of large multifamily buildings. Energy efficiency opportunities for a 20-story high rise apartment building are different from those for garden apartments or for a four-story walk-up. The ACS survey responses are not useful in documenting those differences.

#### 3.2 Housing Unit Type

Housing unit type is one important factor in designing and implementing energy efficiency programs and initiatives. For single family homes, air sealing and insulation are usually the most cost-effective major energy efficiency measures. However, for many large multifamily buildings, upgrades to the space heating and/or water heating systems can be more cost-effective. In working to assess the energy efficiency potential of the LMI Market, statistics on housing unit type will be valuable.

Table 3.1 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. However, one-third of LMI households live in single family homes.

**Table 3.1 - Percent of Households by Housing Unit Type and Income Group**

Housing Unit Type	LMI Households	Non-LMI Households	All Households
Single Family	34%	59%	47%
Small Multifamily	22%	14%	18%
Large Multifamily	41%	26%	34%
Mobile Home	3%	1%	2%
All Households	100%	100%	100%

Source: ACS (2013-2015) / Totals may not sum to 100% due to rounding.

Table 3.2 shows that almost three-fourths of the lowest-income group live in multifamily housing. While the majority of moderate-income households also live in multifamily housing, 43 percent live in a single family home.

**Table 3.2 - Percent of LMI Households by Housing Unit Type and LMI Income Group**

Housing Unit Type	Very Low-Income	Low-Income	Moderate-Income
Single Family Home	23%	38%	43%
Small Multifamily Home	23%	22%	20%
Large Multifamily Home	50%	37%	35%
Mobile Homes	3%	4%	3%
All Households	100%	100%	100%

Source: ACS (2013-2015) / Totals may not sum to 100% due to rounding.

Table 3.3 shows how the housing types for LMI households vary by geography. In most Upstate New York regions (i.e. all regions except New York City and Long Island), about one-half of LMI households live in single family homes, while in New York City, 88 percent of LMI households live in multifamily buildings. In Long Island, 71 percent of LMI households live in a single family home.

**Table 3.3 - Percent of LMI Households by NYS Economic Development Region and Housing Unit Type**

NYS Economic Development Region	Single Family	Small Multifamily	Large Multifamily	Mobile Home	All Housing Units
Western New York	52%	27%	16%	5%	100%
Finger Lakes	56%	17%	21%	6%	100%
Central New York	52%	19%	22%	7%	100%
Southern Tier	52%	18%	17%	13%	100%
North Country	55%	16%	13%	15%	100%
Mohawk Valley	52%	24%	13%	12%	100%
Capital District	46%	27%	21%	6%	100%

NYS Economic Development Region	Single Family	Small Multifamily	Large Multifamily	Mobile Home	All Housing Units
Mid-Hudson	42%	22%	33%	3%	100%
New York City	12%	24%	64%	<1%	100%
Long Island	71%	12%	16%	1%	100%
All LMI Households	34%	22%	41%	3%	100%

Source: ACS (2013-2015) / Totals may not sum to 100% due to rounding.

### 3.3 Owner/Renter Status

Ownership status is one of the most important issues for making LMI housing more energy efficient. An LMI household who is a homeowner and income-eligible can apply to participate in the low-income energy efficiency programs managed by NYSERDA or NYSHCR, or can choose to make investments with the support of the Assisted Home Performance Program. 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. If the building owner pays for energy services, the tenant may not have an incentive to furnish income verification documentation needed for the building to qualify for program incentives. If the tenants pay for the cost of energy services, the building owner may not have an incentive to make the owner co-payments that often are required by energy efficiency programs.

Table 3.4 shows what share of LMI households are owners compared to the non-LMI households. Only 37 percent of LMI households are owners compared to 69 percent of non-LMI households. However, Table 3.5 shows that 50 percent of moderate-income households are owners compared to 23 percent of SNAP income-eligible households.

**Table 3.4 - Percent of Households by Ownership Status and Income Group**

Ownership Status	LMI Households	Non-LMI Households	All Households
Owner	37%	69%	53%
Renter	63%	31%	47%
All Households	100%	100%	100%

Source: ACS (2013-2015) / Totals may not sum to 100% due to rounding.

**Table 3.5 - Percent of LMI Households by Ownership Status and LMI Income Group**

Ownership Status	Very Low-Income	Low-Income	Moderate-Income
Owner	23%	41%	50%
Renter	77%	59%	50%
All Households	100%	100%	100%

Source: ACS (2013-2015) / Totals may not sum to 100% due to rounding.

Table 3.6 shows how ownership status for LMI households vary by geography. In most Upstate New York regions (i.e. all regions except New York City and Long Island), about one-half of LMI households are owners, compared to only 20 percent of LMI households in New York City. In Long Island, 65 percent of LMI households are homeowners.

**Table 3.6 - Percent of LMI Households by NYS Economic Develop Region and Ownership Status**

NYS Economic Development Region	Owners	Renters	All Housing Units
Western New York	49%	51%	100%
Finger Lakes	49%	51%	100%
Central New York	48%	52%	100%
Southern Tier	52%	48%	100%
North Country	54%	46%	100%
Mohawk Valley	54%	46%	100%
Capital District	46%	54%	100%
Mid-Hudson	44%	56%	100%
New York City	20%	80%	100%
Long Island	65%	35%	100%
All LMI Households	37%	63%	100%

Source: ACS (2013-2015) / Totals may not sum to 100% due to rounding.

### 3.4 LMI Housing Market Segments

The combination of housing unit type, ownership status, and income furnishes an important way to segment the LMI Housing Market. Table 3.7 shows the percent of LMI households that are owners and renters for each LMI Income Group within building unit type. The table shows that, for all income levels, more than 50 percent of LMI households who live in single family homes or mobile 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 percent of LMI households who own their homes increases with income.

**Table 3.7 - Share of LMI HHs by Housing Unit Type, Ownership Status, and LMI Income Group**

Housing Unit Type	Very Low-Inomce		Low-Income		Moderate-Income	
	Owner	Renter	Owner	Renter	Owner	Renter
<b>Single Family Home</b>	64%	36%	80%	20%	86%	14%
<b>Small Multifamily Home</b>	13%	87%	22%	78%	30%	70%
<b>Large Multifamily Home</b>	5%	95%	10%	90%	15%	85%
<b>Mobile Homes</b>	61%	39%	73%	27%	75%	25%
<b>All Households</b>	23%	77%	41%	59%	50%	50%

Source: ACS (2013-2015)

Table 3.8 shows the number of LMI households that fall into each of the listed market segments and Table 3.9 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, 660,800 very low-income renters live in large multifamily buildings, 19 percent of the total LMI Market. In another example, 424,526 moderate-income households are single family owners, 12 percent of the LMI Market. Overall, large multifamily renters are 38 percent of all LMI households, while single family owners are 26 percent of the LMI Market.

**Table 3.8 - Number LMI HHs by Housing Unit Type, Ownership Status, and LMI Income Group**

Housing Unit Type	Very Low-Income		Low-Income		Moderate-Income	
	Owner	Renter	Owner	Renter	Owner	Renter
<b>Single Family Home</b>	209,713	116,158	292,939	72,380	424,526	71,854
<b>Small Multifamily Home</b>	42,428	280,641	46,309	164,974	67,992	160,273
<b>Large Multifamily Home</b>	34,377	660,880	34,894	323,815	60,607	338,226
<b>Mobile Homes</b>	26,803	17,051	25,180	9,374	22,298	7,463
<b>All Households</b>	313,321	1,074,730	399,323	570,542	575,424	577,816

Source: ACS (2013-2015)

**Table 3.9 - Percent of LMI HHs by Housing Unit Type, Ownership Status, and LMI Income Group**

Housing Unit Type	Very Low-Income		Low-Income		Moderate-Income	
	Owner	Renter	Owner	Renter	Owner	Renter
<b>Single Family Home</b>	6%	3%	8%	2%	12%	2%
<b>Small Multifamily Home</b>	1%	8%	1%	5%	2%	5%
<b>Large Multifamily Home</b>	1%	19%	1%	9%	2%	10%
<b>Mobile Homes</b>	1%	<1%	1%	<1%	1%	<1%
<b>All Households</b>	9%	31%	11%	16%	16%	16%

Source: ACS (2013-2015)

### ***3.5 Key Findings on Housing Unit Characteristics***

The statistics in this section of the report show that housing unit characteristics are different for LMI and non-LMI households. As such, there should be a different emphasis on the types of programs and initiatives developed for those two markets. However, the statistics also showed that housing unit characteristics vary by geographic region and by the income sub-groups within the LMI Market. For that reason, the programs and initiatives in Upstate New York and on Long Island are likely to be different from those in the New York City area. And, the kinds of program offerings for the lowest income households should be different from those targeting Moderate-Income Households.

The statistics that demonstrate these differences include:

- **LMI/Non-LMI Differences** - Over 60 percent of LMI households are renters and about 42 percent live in large multifamily buildings (5+ units). By comparison, only 31 percent of non-LMI households are renters and only 26 percent live in large multifamily buildings.
- **Income Group Differences** - Over three-fourths of very low-income LMI households are renters and about one-half live in large multifamily buildings (5+ units). By comparison, only one-half of moderate-income LMI households are renters and only 35 percent live in large multifamily buildings.
- **Geographic Differences** - In the Upstate New York regions (i.e., all regions except New York City and Long Island), the share of households in single family homes ranges from about 42 percent to 56 percent. However, for Long Island LMI households, 71 percent live in single family homes. By comparison, only 12 percent of New York City LMI households live in single family homes and 64 percent live in large multifamily buildings.

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.

## 4.0 LMI ANNUAL ENERGY USAGE PATTERNS

One consistent finding from energy research is that LMI households use heating in about the same way and in about the same amount as do non-LMI households. LMI households have smaller housing units, however, those housing units are not as energy efficient as the non-LMI housing units. This suggests that the LMI market has significant heating energy savings potential.

It is more difficult to assess the electric energy savings potential for LMI households. Non-LMI households have significantly higher electric usage than do LMI households, but they also have larger portfolios of appliances and electronics. An additional consideration with respect to electric usage, the 2009 RECS is quite out-of-date in terms of being able to furnish useful information about energy efficiency lighting and Energy Star appliances.

### 4.1 Methodology

This analysis makes use of the 2009 Residential Energy Consumption Survey (RECS). The RECS collects household and housing unit characteristics data through an in-person survey, and then collects energy consumption and expenditure data from the survey respondents' energy suppliers (i.e., electric and gas utilities, and delivered fuel vendors). The 2009 RECS had 839 survey respondents who reside in New York. The LMI Study Team extracted those case records from the RECS public use data file. [Note: The 2015 RECS is not yet available for analysis. It is estimated that the complete data will be published in 2018.]

### 4.2 LMI Energy Characteristics

The RECS data are best used to identify space heating and space cooling energy savings potential. They furnish good-quality data on fuels and equipment used, as well as housing unit characteristics including square footage. These data can be used to compare LMI and non-LMI housing units.

Table 4.1 shows the share of LMI households that use main heating fuel compared to the non-LMI households. The distributions are similar; LMI households are a little more likely to use fuel oil, kerosene, or electric as their main heating fuel than are non-LMI households.

**Table 4.1 - Percent of Households by Main Heating Fuel and Income Group**

Main Heating Fuel	LMI Households	Non-LMI Households	All Households
Natural Gas	54%	59%	57%
Fuel Oi/Kerosene	32%	30%	31%
Electric	8%	6%	7%
Propane	2%	1%	1%
Other	4%	4%	4%
All Households	100%	100%	100%

Source: 2009 RECS/ Totals may not sum to 100% due to rounding.

Table 4.2 shows the share of LMI households that use each type of cooling equipment compared to the non-LMI households. LMI households are less likely to have central air conditioning, and 28 percent have no air conditioning at all.

**Table 4.2 - Percent of Households by Main Cooling Equipment and Income Group**

Cooling Equipment	LMI Households	Non-LMI Households	All Households
Central Air Conditioning	14%	30%	22%
Window/Wall Air Conditioning	58%	60%	59%
No Air Conditioning	28%	11%	19%
All Households	100%	100%	100%

Source: 2009 RECS/ Totals may not sum to 100% due to rounding.

Table 4.3 shows the average housing unit square footage for LMI households compared to the non-LMI households, for all housing unit types and each type of housing unit. Non-LMI single family homes are about 25 percent larger than those of LMI households and non-LMI multifamily homes are about 10 percent larger.

**Table 4.3 - Average Housing Unit Square Footage by Housing Unit Type and Income Group**

Housing Unit Type	LMI Households	Non-LMI Households	All Households
Single Family Homes (1-4)	2,056	2,611	2,369
Multifamily Home (5+)	793	878	824
All Housing Unit Types	1,512	2,184	1,844

Source: 2009 RECS / Small Multifamily included with Single Family / Mobile Homes Excluded

Table 4.4 furnishes some indicators for households' lighting, appliances, and electronics. In general, LMI households would be expected to have lower electric usage than non-LMI households since they have fewer refrigerators, fewer televisions, and fewer lights on for more



than 1 hour per day. LMI households are slightly more likely to have a primary refrigerator that is 10 or more years old and is likely to be less efficient.

**Table 4.4 - Statistics Related to Electric Usage by Income Group**

Statistic	LMI Households	Non-LMI Households	All Households
<b>Number of Refrigerators</b>	1.09	1.21	1.15
<b>% Primary Refrigerator 10+ Years</b>	34%	29%	32%
<b>Number of Televisions</b>	2.14	2.49	2.31
<b>% with 10+ Lights (&gt;1 hour per day)</b>	3%	7%	5%

Source: 2009 RECS

Most of the energy characteristics presented suggest that one would expect that LMI households would use less energy than non-LMI households. For space heating fuels in particular, LMI homes are smaller and would be expected to use less energy.

### 4.3 LMI Heating Fuel Annual Energy Usage

The RECS data can be used to develop information on energy consumption for all NYS households and for LMI households. These data show the differences in average usage for different types of housing units. They also show the distribution of energy usage within any segment of the LMI market. These types of statistics are important for organizations and individuals to understand the energy savings potential in the LMI market, and to develop strategies for where to target resources to maximize energy savings.

For households that heat with a fossil fuel (i.e., natural gas, fuel oil, kerosene, or propane), Table 4.5 shows the average annual energy usage of the household's main heating fuel for LMI households compared to that for non-LMI households. The statistics show that LMI households use very close to the same amount of heating fuel as do non-LMI households.

**Table 4.5 - Average Annual Heating Fuel Usage (Thousand Btu, MBtu) by Housing Unit Type and Income Group for Households that Heat with Natural Gas, Fuel Oil/Kerosene, or Propane**

Housing Unit Type	LMI Households	Non-LMI Households	All Households
<b>Single Family Homes (1-4)</b>	99,043	100,103	99,643
<b>Multifamily Home (5+)</b>	53,513	53,938	53,664
<b>All Housing Unit Types</b>	80,002	89,346	84,655

Source: 2009 RECS / Small Multifamily included with Single Family / Mobile Homes Excluded

For households that heat with a fossil fuel (i.e., natural gas, fuel oil, kerosene, or propane), Table 4.6 shows the distribution of heating fuel energy usage for LMI households compared to that for

non-LMI households for single family homes. Table 4.7 shows the number of LMI households in each usage group.

**Table 4.6 - Distribution of Annual Heating Fuel Usage by Income Group for Households in Single Family Homes that Heat with Natural Gas, Fuel Oil/Kerosene, or Propane (Percent)**

Thousand Btu (MBtu)	LMI Households	Non-LMI Households	All Households
<b>Less than 75,000</b>	34%	27%	30%
<b>75,000 - &lt;100,000</b>	26%	29%	28%
<b>100,000 - &lt;125,000</b>	17%	22%	20%
<b>125,000 - &lt;150,000</b>	8%	12%	10%
<b>150,000 or More</b>	15%	11%	12%
<b>All Households</b>	100%	100%	100%

Source: 2009 RECS / Small Multifamily included with Single Family / Mobile Homes Excluded/ Totals may not sum to 100% due to rounding.

**Table 4.7 - Distribution of Annual Heating Fuel Usage by Income Group for Households in Single Family Homes that Heat with Natural Gas, Fuel Oil/Kerosene, or Propane (Number)**

Thousand Btu (MBtu)	LMI Households	Non-LMI Households	All Households
<b>Less than 75,000</b>	626,680	652,601	1,279,281
<b>75,000 - &lt;100,000</b>	486,648	692,939	1,179,587
<b>100,000 - &lt;125,000</b>	312,029	524,758	836,787
<b>125,000 - &lt;150,000</b>	144,300	284,495	428,795
<b>150,000 or More</b>	272,742	254,441	527,183
<b>All Households</b>	1,842,398	2,409,234	4,251,633

Source: 2009 RECS / Small Multifamily included with Single Family / Mobile Homes Excluded

WAP evaluations have shown that the best heating fuel energy savings are achieved for higher usage homes. For New York State, the WAP evaluation found that homes with pre-weatherization usage of less than 75,000 MBtu saved only about 1,500 MBtu (2%), those with usage from 75,000 MBtu to 125,000 MBtu saved about 14,000 MBtu (14%), and the highest-usage homes with usage of 125,000 MBtu or more saved about 32,000 MBtu (20%). Table 4.6 shows that there are about 420,000 single family homes (1-4 units) in the LMI Market that demonstrate the potential to save 20 percent of their space heating fuel from the delivery of comprehensive weatherization services.

#### 4.4 LMI Electric Usage

The RECS data also can be used to develop information on electric consumption for all NYS households and for LMI households. To develop the most comparable statistics, the analysis is restricted to housing units that are heated with a fossil fuel (i.e., natural gas, fuel oil, or propane)<sup>5</sup>.

For households that heat with a fossil fuel (i.e., natural gas, fuel oil, kerosene, or propane), Table 4.8 shows the average annual electric energy usage for LMI households compared to that for non-LMI households, for all housing unit types and each type of housing unit. LMI households in single family homes use about 15 percent less electricity than do non-LMI households.

**Table 4.8 - Average Annual Electric Usage in kWh by Housing Unit Type and Income Group for Households that Heat with Natural Gas, Fuel Oil/Kerosene, or Propane<sup>6</sup>**

Housing Unit Type	LMI Households	Non-LMI Households	All Households
Single Family Homes (1-4)	6,903	8,076	7,567
Multifamily Home (5+)	3,969	3,958	3,965
All Housing Unit Types	5,676	7,116	6,393

Source: 2009 RECS / Small Multifamily included with Single Family / Mobile Homes Excluded

For households that heat with a fossil fuel (i.e., natural gas, fuel oil, kerosene, or propane), Table 4.9 shows the distribution of electric usage for LMI households compared to that for non-LMI households for single family homes. Table 4.10 shows the number of LMI households in each usage group.

**Table 4.9 - Distribution of Annual Electric Usage in kWh by Income Group for Households in Single Family Homes that Heat with Natural Gas, Fuel Oil/Kerosene, or Propane (Percent)**

Kilowatthours (kWh)	LMI Households	Non-LMI Households	All Households
Less than 5,000	39%	28%	33%
5,000 - <7,500	26%	23%	24%
7,500 - <10,000	16%	22%	19%
10,000 or More	19%	27%	23%
All Households	100%	100%	100%

Source: 2009 RECS / Small Multifamily included with Single Family / Mobile Homes Excluded/ Totals may not sum to 100% due to rounding.

<sup>5</sup> Since fossil fuels are delivered to the home and then combusted to create heat, they are fundamentally different from electricity that is used in resistance heaters or is used in heat pumps. Comparison of electric with fossil fuels involves more complex calculations than we present here.

<sup>6</sup> Note that the RECS data are out of date with respect to electricity usage because of the significant changes in lighting and appliance efficiency. We present the comparisons here for completeness, but acknowledge that the relative distributions by income group may have changes in the last eight years.

**Table 4.10 - Distribution of Annual Electric Usage in kWh by Income Group for Households in Single Family Homes that Heat with Natural Gas, Fuel Oil/Kerosene, or Propane (Number)**

Kilowatthours (kWh)	LMI Households	Non-LMI Households	All Households
<b>Less than 5,000</b>	721,909	677,996	1,399,905
<b>5,000 - &lt;7,500</b>	470,978	563,197	1,034,175
<b>7,500 - &lt;10,000</b>	300,411	518,375	818,786
<b>10,000 or More</b>	349,100	649,666	998,767
<b>All Households</b>	1,842,398	2,409,234	4,251,633

Source: 2009 RECS / Small Multifamily including with Single Family / Mobile Homes Excluded

Evaluations of electric energy efficiency programs have shown that households with higher usage have more electric efficiency opportunities and therefore achieve higher electric energy savings that are more cost-effective. Table 4.9 shows that there are about 350,000 LMI households in single family homes for which there is significant energy savings potential.

**4.5 Key Findings on LMI Annual Energy Usage**

The RECS furnishes good-quality information on average annual energy usage and the distribution of energy usage for New York State LMI households in single family homes, defined as housing units with 1 to 4 units in the building. The sample size of mobile homes in the RECS for NYS is too small for meaningful analysis. And, since the RECS does not directly measure usage amounts for households with heat included in rent, a large share of the information for multifamily units is not directly measured.

The analysis of heating fuel usage for LMI households in single family homes (1-4 units) shows that they are about 25% smaller than non-LMI homes, but that they use about the same amount of energy. This implies that they are less energy efficient than are non-LMI homes and have significant energy savings potential. There are about 420,000 LMI homes that are using 125,000 MBtu or more per year and could be expected to save about 20 percent of pre-weatherization energy usage from an investment similar to the investment made in homes by the WAP program.

The analysis of annual electric usage for LMI households in single family homes (1-4 units) shows that they use about 15 percent less electric than do non-LMI households. LMI households generally have fewer lights, appliances, and electronics, and are less likely to have central air conditioning. However, the statistics also show that there are about 350,000 LMI households in single family homes that use more than 10,000 kWh per year and would be expected to have significant energy savings potential.

## 5.0 FINANCIAL CAPACITY OF LMI HOUSEHOLDS

As part of the Reforming the Energy Vision (REV) initiative New York State established an Energy Affordability Policy that set the goal of limiting energy costs for low-income utility customers (i.e., households that are HEAP-eligible or with income at or below 200 percent of the HHS Poverty Guideline) to an average of no more than 6 percent of income. That policy includes a commitment to give low-income households greater access to clean energy and to the state's energy efficiency and assistance programs.<sup>7</sup> NYSERDA will spend a minimum of \$234 million over three years on energy efficiency programs for LMI households, including the EmPower and Assisted Home Performance programs, along with other initiatives.

One issue that has been important in the development of the Energy Affordability Policy has been an examination of the energy burden for LMI households. Energy burden statistics presented in this section of the report show that over 80 percent of LMI households have energy burden above the affordability guideline of 6 percent of income. This demonstrates that most low-income households need energy assistance and/or improved energy efficiency to reach the affordability threshold.

However, the REV initiative is looking for new ways to engage all households, including LMI households, in increasing the energy efficiency of the residential market sector. This section of the report looks at the broader financial capacity of LMI households and considers whether they can potentially invest in making energy efficiency upgrades to their homes.

### 5.1 Methodology

This analysis uses data from four surveys conducted by the federal government - the American Community Survey (ACS), the Residential Energy Consumption Survey (RECS), the Current Population Survey (CPS), and the American Housing Survey (AHS).

- The ACS is conducted annually by the U.S. Bureau of the Census. It collects self-reported data on household demographics, housing unit characteristics, housing costs, and energy expenditures. This analysis used the 2013, 2014, and 2015 data files and examined records for households who live in New York State.
- The 2009 Residential Energy Consumption Survey (RECS) was conducted by the U.S. Energy Information Administrative (EIA) and included a household survey on energy end uses and a follow-up energy supplier survey to collect data on energy consumption and

---

<sup>7</sup> See the May 19, 2016, Press Release entitled "Governor Cuomo Announces New Energy Affordability Policy to Deliver Relief to Nearly 2 Million Low-Income New Yorkers": <https://www.governor.ny.gov/news/governor-cuomo-announces-new-energy-affordability-policy-deliver-relief-nearly-2-million-low>

expenditures for the RECS respondents. This analysis used the RECS public use data file and examined records for households who live in New York State.

- The CPS is conducted annually by the U.S. Bureau of the Census. It collects in-depth information on household demographics and income. One of the special survey modules includes information on the household's access to banking resources. This analysis used the special module from June 2015 and examined records for households who are residents of New York State.
- The AHS is conducted once every two years by the U.S. Bureau of the Census. It collects in-depth information on households and the housing units that they occupy, including information on the households' equity in their homes. This analysis used the 2013 survey data file and examined households who live in the Northeast Census Region of the United States since state-level data are not available. The analysis also uses the special metropolitan area files for the New York City metropolitan area (2013), the Buffalo metropolitan area (2011), and the Rochester metropolitan area (2013).

These four data sources furnish information to assess the financial capacity of households as defined for this study.

## ***5.2 LMI Annual Energy Burden***

The ACS furnishes the most up-to-date estimates of household energy burden. Table 5.1 shows the average annual energy bill, the average annual income, and the average annual energy burden for households that pay their energy bill directly to their energy supplier.<sup>8</sup> It shows that the average annual energy burden for LMI households is 9.2 percent, compared to 2.4 percent for non-LMI households. Within the LMI Market, households that are very low-income have an average annual energy burden of 19.4 percent, while moderate-income households have an average annual energy burden that is closer to the affordability target of 6 percent.

---

<sup>8</sup> This table excludes households that have their heating bill and/or electric bill included in their rent since the survey respondent does not know what share of their rent pays for their energy bills.

**Table 5.1 – Energy Burden for New York State Households by Income Group**

Household Group	Average Annual Energy Bill	Average Annual Income	Average Energy Burden
<b>LMI Households</b>	\$2,839	\$30,726	9.2% <sup>9</sup>
<b>Very Low-Income</b>	\$2,616	\$13,488	19.4%
<b>Low-Income</b>	\$2,830	\$30,230	9.4%
<b>Moderate-Income</b>	\$3,064	\$48,048	6.4%
<b>Non-LMI Households</b>	\$3,452	\$142,243	2.4%
<b>All Households</b>	\$3,186	\$93,860	3.4%

Source: ACS (2013-2015) / Households that pay energy bills directly to energy suppliers

Since the Energy Affordability Policy sets a goal of limiting energy burden for all households to no more than 6 percent of income, it is important to have information on the distribution of energy burden, not just average energy burden. The ACS furnishes a good estimate of the average energy burden for groups of households but cannot be used to show the distribution of energy burden for individual households because of the way the survey question is asked for electric and gas expenditures.<sup>10</sup> The RECS collects annual energy expenditure data directly from the energy suppliers for each respondent household and can be used to examine the distribution of energy burden. The data show that 88 percent of low-income households and 51 percent of Moderate-Income Households spend 6 percent or more of their income for energy, while only 7 percent of non-LMI households do. Further, 21 percent of low-income households spend 25 percent or more of their income on energy.

**Table 5.2 - Energy Burden Distribution for New York State Households by Income Group (2009)**

Energy Burden	Percent of Low-Income Households	Percent of Moderate-Income Households	Percent of Non-LMI Households
<b>Less than 3%</b>	1%	3%	55%
<b>3% - &lt;6%</b>	11%	47%	38%
<b>6% - &lt;10%</b>	28%	40%	6%
<b>10% - &lt;15%</b>	25%	9%	1%
<b>15% - &lt;25%</b>	14%	2%	0%
<b>25% or More</b>	21%	0%	0%
<b>All Households</b>	100%	100%	100%
<b>Average Burden</b>	11.7%	6.0%	2.8%

Source: 2009 RECS/ Totals may not sum to 100% due to rounding.

<sup>9</sup> 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."

<sup>10</sup> See the Energy Burden Computation section of the LMI Study ACS Methodology Report.

Three other factors that have an impact on energy burden for LMI households are a household's energy usage, their main heating fuel, and the type of housing unit that they occupy. Table 5.3 shows that 11 percent of LMI households use more than 150,000 MBtu of natural gas and have average energy burden of 14.2 percent compared to 9.7 percent for the average LMI household. Table 5.4 shows that LMI households who use fuel oil or propane as their main heating fuel have an average energy burden that is about 50 percent higher than those who heat with natural gas or electricity. Table 5.5 shows that the average energy burden for large multifamily housing units is somewhat lower than for other types of housing units.

**Table 5.3 - Energy Burden for Gas Main Heat LMI Households by Usage Group (2009)**

Natural Gas Usage	Percent of LMI Households	Average Expenditures	Average Energy Burden
<b>Less than 75,000 MBtu</b>	49%	\$1,646	9.3%
<b>75,000 - &lt;100,000 MBtu</b>	22%	\$2,442	9.1%
<b>100,000 - &lt;125,000 MBtu</b>	13%	\$2,874	9.2%
<b>125,000 - &lt;150,000 MBtu</b>	5%	\$3,222	11.3%
<b>150,000 MBtu of More</b>	11%	\$3,503	14.2%
<b>All LMI Households</b>	100%	\$2,261	9.7%

Source: 2009 RECS / Percent of LMI households may not sum to 100% due to rounding.

**Table 5.4 - Energy Burden for LMI Households by Main Heating Fuel**

Main Heating Fuel	Percent of LMI Households	Average Energy Bill	Average Income	Average Energy Burden
<b>Natural Gas</b>	65%	\$2,681	\$31,117	8.6%
<b>Fuel Oil</b>	13%	\$4,477	\$34,892	12.8%
<b>Electricity</b>	15%	\$1,857	\$25,246	7.4%
<b>Propane</b>	4%	\$3,503	\$29,970	11.7%
<b>Other</b>	2%	\$3,288	\$33,633	9.8%
<b>All LMI Households</b>	100%	\$2,839	\$30,726	9.2%

Source: ACS (2013-2015) / Households that pay energy bills directly to energy suppliers / Percent of LMI households may not sum to 100% due to rounding.



**Table 5.5 - Energy Burden for LMI Households by Housing Unit Type**

Housing Unit Type	Percent of LMI Households	Average Energy Bill	Average Income	Average Energy Burden
Single Family	48%	\$3,557	\$34,370	10.4%
Small Multifamily	24%	\$2,644	\$29,227	9.0%
Large Multifamily	24%	\$1,567	\$25,696	6.1%
Mobile Home	4%	\$3,093	\$26,804	11.5%
<b>All LMI Households</b>	100%	\$2,839	\$30,726	9.2%

Source: ACS (2013-2015) / Households that pay energy bills directly to energy suppliers / Percent of LMI households may not sum to 100% due to rounding.

### 5.3 LMI Annual 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. Just as NYS has implemented a policy that defines 6 percent of income as an affordable energy burden, housing experts generally consider that households should spend no more than 30 percent of their income on the cost of housing, including energy costs. In addition, it is common practice in the real estate industry to use the 30 percent of income "rule of thumb" when considering whether a household can afford their rent or mortgage.

Table 5.6 shows average annual shelter costs, average annual income, and average shelter burden for NYS households. It shows that the average shelter burden for LMI households is 47.6 percent, compared to 15.7 percent for non-LMI households. Within the LMI Market, households that are very low-income have an average shelter burden of 94.0 percent, while moderate-income households have an average shelter burden that is closer to the affordability target of 30 percent. 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 5.6 - Average Shelter Burden for New York State Households by Income Group**

Household Group	Average Annual Shelter Expenditures	Average Annual Income	Average Shelter Burden
<b>LMI Households</b>	\$13,769	\$28,923	47.6%
Very Low-Income	\$12,082	\$12,859	94.0%
Low-Income	\$13,482	\$29,762	45.3%
Moderate-Income	\$16,021	\$47,389	33.8%
<b>Non-LMI Households</b>	\$22,605	\$143,671	15.7%
<b>All Households</b>	\$18,355	\$88,472	20.7%

Source: ACS (2013-2015) / All households

Table 5.7 shows the distribution of shelter burden for households by income group. Only 11 percent of households categorized as very low-income have shelter burden that is less than the 30 percent affordability target and 71 percent have shelter burden of 50 percent or more of income. Among the other household groups, 31 percent of low-income households, 50 percent of moderate-income households, and 85 percent of non-LMI households have shelter burden below the 30 percent of income target.

**Table 5.7 - Shelter Burden Distribution for New York State Households by Income Group**

Shelter Burden	Very Low-Income Households	Low-Income Households	Moderate-Income Households	Non-LMI Households
<b>Less than 20%</b>	3%	13%	22%	61%
<b>20% - &lt;30%</b>	8%	18%	28%	24%
<b>30% - &lt;40%</b>	9%	19%	22%	9%
<b>40% - &lt;50%</b>	8%	15%	12%	3%
<b>50% or More</b>	71%	34%	16%	2%
<b>All Households</b>	100%	100%	100%	100%

Source: 2013-2015 ACS / All households / Totals may not sum to 100% due to rounding.

Two other factors that are related to shelter burden for LMI households are household type and geography. Table 5.8 shows that LMI elderly couples have the lowest average shelter burden (40.4%) and that LMI younger households without children have the highest average shelter burden (58.4%). Table 5.9 shows that households living in the western and central portions of NYS have average shelter burdens ranging between about 34 and 39 percent, while households in NYC, Long Island, and the Mid-Hudson regions have average shelter burden just above 50 percent of income.

**Table 5.8 - 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
<b>Elderly Couple</b>	20%	\$14,291	\$35,350	40.4%
<b>Elderly Individual</b>	22%	10,186	19,847	51.3%
<b>40-59 Without Children</b>	19%	13,303	26,166	50.8%
<b>40-59 With Children</b>	16%	17,869	37,764	47.3%
<b>18-39 Without Children</b>	10%	14,469	24,795	58.4%
<b>18-39 With Children</b>	13%	14,262	31,127	45.8%
<b>All LMI Households</b>	100%	13,769	28,923	47.6%

Source: ACS (2013-2015) / All Households / Percent of LMI households may not sum to 100% due to rounding.

**Table 5.9 - Shelter Burden by NYS Economic Development Region**

NYS Economic Development Region	Percent of LMI Households	Average Shelter Expenditures	Average Income	Average Shelter Burden
Western New York	8%	8,692	25,499	34.1%
Finger Lakes	6%	9,963	26,898	37.0%
Central New York	4%	9,351	26,526	35.3%
Southern Tier	4%	9,130	25,816	35.4%
North Country	2%	9,101	26,797	34.0%
Mohawk Valley	3%	8,991	26,565	33.8%
Capital District	5%	10,938	27,909	39.2%
Mid-Hudson	10%	16,740	32,590	51.4%
New York City	48%	14,527	27,691	52.5%
Long Island	10%	20,854	38,765	53.8%
<b>All LMI Households</b>	<b>100%</b>	<b>13,769</b>	<b>28,923</b>	<b>47.6%</b>

Source: ACS (2013-2015) / All Households / Percent of LMI households may not sum to 100% due to rounding.

#### 5.4 Other LMI Financial Capacity Statistics

Two other financial capacity indicators available from public data sources also show significant differences between LMI and non-LMI households, access to banking and home equity.

The banking indicator is categorized in the following way:

- Unbanked - Does not have a bank account.
- Underbanked - Has a bank account but uses nontraditional lending sources (e.g., payday loans, pawn shops).
- Fully Banked - Has a bank account and does not use nontraditional lending sources.

Table 5.10 shows that 15 percent of LMI households are unbanked, while only 1 percent of non-LMI households have that status. The table also shows that about one-half of LMI households are fully banked. Within the LMI Market, 26 percent of very low-income households are unbanked, while less than 10 percent of the other two LMI income groups are unbanked. One additional statistic of importance is that only 3 percent of LMI households that own a home are unbanked, while 69 percent are fully banked. [Note: The ACS data show that 37 percent of NYS LMI households are homeowners.]

**Table 5.10 - Banking Status for New York State Households by Income Group**

Household Group	Unbanked	Underbanked	Fully Banked	Unknown
<b>LMI Households</b>	15%	30%	48%	7%
<b>Very Low-Income</b>	26%	30%	36%	7%
<b>Low-Income</b>	6%	34%	55%	5%
<b>Moderate-Income</b>	9%	24%	59%	8%
<b>Non-LMI Households</b>	1%	18%	73%	8%
<b>All Households</b>	8%	24%	61%	7%
<b>LMI Homeowners</b>	3%	20%	69%	7%

Source: 2015 CPS

Table 5.11 furnishes information on home equity for LMI and non-LMI households for the Mid-Atlantic Census Region (NY, NJ, and PA). The table shows that 48 percent of LMI households in the Mid-Atlantic region are owners and that 45 percent of LMI households are owners who have equity in their homes that averages \$194,800. These statistics are surprising and should be treated with caution since they are based on survey respondent self-reports of the value of their home and the amount of all outstanding liens against the home.

**Table 5.11 - Home Equity Statistics for Mid-Atlantic Census Division (NY, NJ, PA) Households by Income Group**

Household Group	Percent Owners	Percent Owners with Equity	Average Equity
<b>LMI Households</b>	48%	45%	\$194,800
<b>Very Low-Income</b>	37%	36%	\$191,340
<b>Low-Income</b>	54%	52%	\$203,731
<b>Moderate-Income</b>	61%	56%	\$187,045
<b>Non-LMI Households</b>	74%	69%	\$264,530
<b>All Households</b>	62%	58%	\$224,796

Source: 2013 AHS

Table 5.12 shows the home equity for LMI homeowners in the Mid-Atlantic Census Division by household type. It shows that almost three-fourths of elderly couples have equity in their homes that averages \$234,256. Younger households without children have the lowest percent of households with home equity (17%) and younger households with children have the lowest average home equity value (\$119,274).

**Table 5.12 - Home Equity Statistics for Mid-Atlantic Census Division (NY, NJ, PA) for LMI Households by Household Type**

Household Type	Percent Homeowners	Percent with Home Equity	Average Home Equity
<b>60+ Household</b>	76%	74%	\$234,256
<b>60+ Individual</b>	57%	55%	\$196,129
<b>40-59 Without Children</b>	42%	38%	\$164,988
<b>40-59 With Children</b>	51%	47%	\$189,335
<b>18-39 Without Children</b>	18%	17%	\$190,920
<b>18-39 With Children</b>	28%	25%	\$119,274
<b>All LMI Households</b>	48%	45%	\$194,800

Source: 2013 AHS

Table 5.13 shows how home equity varies by geographic region for LMI households. The national AHS survey only furnishes information at the Census Division level; the tables above covered households in the states of New York, New Jersey, and Pennsylvania. However, the AHS also conducts special samples for metropolitan areas, including the New York City metropolitan area (2013), Buffalo (2011), and Rochester (2013). Table 5.13 shows the homeownership and home equity statistics for those metropolitan areas and compares them to the Mid-Atlantic Census Division. The New York City metropolitan area has the lowest rate of homeownership for LMI households - 30% - but has the highest average home equity value - \$410,820. About one-half of LMI households in Buffalo and Rochester are homeowners. But, the average home equity value is around \$100,000 in those metropolitan areas. Although specific results are not available for the remainder of upstate New York outside of the Buffalo and Rochester metropolitan areas, it is expected that the results are similar to those for the broader Mid-Atlantic Census region, shown in the last row of the table, which show average home equity greater than Buffalo and Rochester, but lower than in New York City.

**Table 5.13 - Home Equity for LMI Households by Geographic Region**

Geographic Region	Percent Homeowners	Percent with Home Equity	Average Home Equity
<b>NYC Metro Area</b>	30%	29%	\$410,820
<b>Buffalo Metro Area</b>	47%	46%	\$108,662
<b>Rochester Metro Area</b>	53%	51%	\$93,894
<b>Mid-Atlantic Census Division</b>	48%	45%	\$194,800

Source: 2011, 2013 AHS

These statistics should be used with caution because they are self-reported by survey respondents. However, the statistics on homeownership are consistent those from the ACS. Note

that the AHS reports that 30 percent of LMI households in the New York City metropolitan area are homeowners. The ACS reports that 20 percent of New York City LMI households are homeowners, but the metropolitan area also includes Long Island where 65 percent of LMI households are homeowners and parts of the Mid-Hudson region where 44 percent of LMI households are homeowners.

### ***5.5 Key Findings on LMI Household Financial Capacity***

The statistics presented in this section of the report demonstrate that, on average, LMI households have energy burden and shelter burden that exceed affordability thresholds.

- Average energy burden for LMI households is 9.2 percent of income; 88 percent of LMI households spend more than 6 percent of their income on energy costs.
- Average shelter burden for LMI households is 47.6 percent of income; 70 percent of LMI households spend more than 30 percent of their income housing costs.

These statistics highlight the need for the Energy Affordability Policy and for spending funds to increase the energy efficiency of homes occupied by LMI households.

At the same time, the statistics in this section of the report demonstrate that some LMI households have the financial capacity to make investments in the energy efficiency of their homes. For moderate-income households, the study found:

- Homeowners should have an investment profile that would be attractive to lenders; about one-half spend less than 30 percent of their income on housing costs, almost all currently have access to banking resources, and most have equity in their homes.
- Many moderate-income renters spend less than 30 percent of their income on housing costs. If building owners made investments in energy efficiency upgrades that might increase rents in the short run, many moderate-income renters would still be able to afford their housing.

The statistics also suggest that some low-income owners might be able to make investments in the home improvements needed to make their homes eligible for the WAP and/or EmPower programs. Low-income energy efficiency programs sometimes cannot install certain energy efficiency measures because the home has structural problems (e.g., a leaking roof). The statistics in this section of the report demonstrate that some low-income households would have the financial capacity to take out loans to make the needed improvements; they own their homes and have some equity. However, since most low-income households pay more than 30 percent of their income for shelter costs, they would need significant reductions in energy costs from program participation to be able to cover the monthly cost of the home improvement loan. For

example, a low-income household may include older household members who have some equity in their home and intend to stay in the home. Based on their income, they qualify for low-income weatherization, but their home may have a structural or health and safety problem that must be addressed before receiving any energy measures, and the cost to do this (\$5,000, for example) exceeds the amount the program can spend on incidental repairs or health and safety remediation. Based on their home equity and payment history, the household could potentially obtain a loan to pay for the work needed for weatherization to proceed. A \$5,000 loan at 7 percent interest with a 30-year payback period would represent a monthly payment of approximately \$30, or \$360 a year, a significant amount, but one which could be offset partially or mostly by the energy savings from program treatment. By using a well-designed lending mechanism that includes appropriate consumer protections to avoid financial risk, the financial capacity available for a portion of the LMI population could be leveraged to encourage energy efficiency.

## 6.0 LOW- TO MODERATE-INCOME MARKET SEGMENTS

The Energy Affordability Policy established under the REV includes a commitment to give low-income households greater access to clean energy and to the state's energy efficiency programs. The Clean Energy Fund Order requires NYSERDA to invest \$234.5 million over three years in the Low- to Moderate-Income Market segment. NYSERDA's Clean Energy Fund implementation plan includes plans to invest in standard offer programs and market development initiatives.

The LMI population is made of a number of different segments that each face different types of market barriers with market development initiatives. One purpose of the LMI Market Characterization Study is to develop information on the composition and size of each market segment so that investment strategies can be better aligned with the needs of the LMI market. This section of the report furnishes a recommended market segmentation strategy and furnishes detailed profiles of each market segment.

### 6.1 Proposed Segmentation Strategy

The market segment strategy proposed for this study uses the dimensions of income, ownership status, and housing unit type as the primary segmentation variables. Each market segment is then characterized in terms of their most important demographic and geographic dimensions. The specific dimensions include:

- **Income** - Low-income households are income-eligible for energy efficiency programs that pay for the entire cost of the installation of measures; statistics show that low-income households are different from moderate-income households.
- **Ownership Status** - Working directly with the owner and occupant of the housing unit means that there is one decision-maker for the program or market initiative to engage, thereby changing the program and/or marketing dynamic.
- **Housing Unit Type** - Measure installation priorities are different for each housing unit type; home ownership rates vary by housing unit type; and, project acquisition approaches and costs vary by housing unit type.

Table 6.1 shows the recommended segmentation approach and the number of households represented by each segment.



**Table 6.1 - LMI Market Segments by Owner Status, Income Group, and Housing Unit Type**

Housing Unit Type	Renter		Owner	
	Low-Income	Moderate-Income	Low-Income	Moderate-Income
<b>Large Multifamily (5+ units)</b>	984,695 (28%)	338,226 (10%)	129,878 (4%)	
<b>Small Multifamily (2-4 units)</b>	634,153 (18%)	232,127 (6%)	591,389 (17%)	492,518 (14%)
<b>Single Family</b>				
<b>Mobile Homes</b>	108,169 (3%)			

Source: ACS (2013-2015)

**6.2 Detailed Information on LMI Market Segments**

Table 6.2 describes these market segments, furnishes key statistics for households in the segments, and identifies the existing programs that can serve those market segments.

**Table 6.2 - Recommended Low- to Moderate-Income Market Segments**

Market Segment <sup>11</sup>	NYS and NYSERDA Energy Efficiency Programs	Geography	Demographics	Opportunities	Barriers
<b>Low-Income LMF Renters</b>	WAP / EmPower / MPP	74% NYC	57% older without children / 31% have children	High users easy to identify / Target buildings occupied by HEAP renter participants	Building owner contribution and cooperation of tenants
<b>Moderate-Income LMF Renters</b>	MPP	75% NYC	56% older without children / 22% have children	High users easy to identify / Use affordable housing lists	Building owner engagement
<b>Low-Income SF/SMF Owners</b>	WAP / EmPower / Assisted Home Performance	60% Upstate and 16% Long Island	69% older without children / 28% have children	Owners are participants / Target households from LIHEAP lists	Owners paying for structural problems with homes
<b>Moderate-Income SF/SMF Owners</b>	Assisted Home Performance	52% Upstate and 26% Long Island	70% older without children / 27% have children	Owners are participants / Households have lower shelter burden and home equity	Identifying and marketing to owners
<b>Low-Income SF/SMF Renters</b>	WAP / Empower	53% Upstate and 40% NYC	76% non-elderly / 48% have children	Large market segment representing 18 percent of LMI households	Working with individual building owners for small number of units
<b>Moderate-Income SF/SMF Renters</b>	Assisted Home Performance	45% Upstate and 42% NYC	76% non-elderly / 34% have children	Modest market segment representing 6 percent of LMI households	Identifying income-eligible households and engaging building owners
<b>LMI Mobile Homes</b>	WAP / EmPower / Assisted Home Performance	92% Upstate	63% older without children / 30% have children	Mobile homes are often clustered and most mobile homes are occupied by LMI households	More difficult to get energy savings from installed measures
<b>LMI LMF Owners</b>	MPP	74% NYC	79% older without children / 14% have children	Engaging with low-income owners may help with engagement of non-LMI buildings	Are likely to live in buildings with non-LMI households

Source: ACS (2013-2015) / SF=Single Family / SMF=Small Multifamily (2-4 units) / LMF=Large Multifamily (5+ units)

Some important findings from Table 6.2 related to geographic and demographic dimensions of the markets include:

<sup>11</sup> LMF = Large Multifamily (5+ units), SMF = Small Multifamily (2-4 units), SF = Single Family

- Geographic Dimensions - About three-fourths of large multi-family buildings are in New York City. About three-fourths of single family and small multifamily owners are on Long Island and in Upstate. Over 90 percent of mobile homes are in Upstate.
- Demographics - Most owners are older households (40+) without children. Most renters of single family and small multifamily homes are non-elderly households.
- Income - Low-income households can be identified through LIHEAP program records and utility discount program records. Moderate-income households would be more difficult to distinguish from non-LMI households.

These patterns can help to understand how to market programs and services to different market segments.

### ***6.3 Key Findings on LMI Market Segmentation***

The recommended LMI market segmentation strategy divides the LMI population into eight distinct segments that each need a somewhat different set of program approaches and marketing strategies. Within each segment, the analysis has identified the dominant geographic, demographic, and financial characteristics of the population that need to be understood to effectively engage those market segments.

Four of the market segments represent a large share of the LMI market for which NYSERDA, NYSHCR, and other service providers have made significant market progress.

- Low-Income Large Multifamily Renters - This is the largest single market segment - 28 percent of LMI households. It is already served by the WAP, EmPower, and MPP programs. The main challenge in this market is to engage building owners. Recent research also has discussed the benefits of ensuring that tenants are given an understanding of installed measures and their own opportunities for energy saving.
- Moderate-Income Large Multifamily Renters - This is a significant share of the LMI market - 10 percent of LMI households. Some of these households are served by WAP and EmPower, since buildings served by those programs are allowed to have some households that are not low-income. However, it is not clear what share of these households are currently served by existing programs and this may represent a significant new opportunity.
- Low-Income Owners of Single Family Homes (1-4 units) - This is the third-largest market segment - 17 percent of LMI households. The WAP, EmPower, and utility programs have good models for serving these households.

- Moderate-Income Owners of Single Family Homes (1-4 units) - This is another large market segment - 14 percent of LMI households. The Assisted Home Performance model appears to be an effective way to serve these households.

Together these four market segments cover about 70 percent of the LMI market. There are established programs that cover these markets. However, additional research is likely to uncover ways to reach demographic groups that have not been well-served and identify ways to make effective use of the financial capacity of homeowners in these segments.

The segmentation analysis identified two market segments that are likely to be more challenging to engage in LMI energy efficiency initiatives.

- Low-Income Single Family and Small Multifamily Renters - This is the second largest market segment - 18 percent of LMI households. WAP and EmPower will pay for a large share of upgrades. However, since the owner will need to make some contribution and the renter usually pays the energy bill, it is difficult to engage owners. This is likely to be the largest unmet need in the LMI Market.
- Moderate-Income Single Family and Small Multifamily Renters - This is a smaller market segment - 6 percent of LMI households. Assisted Home Performance pays for one-half of energy investment costs. However, since the owner will need to pay for the cost of upgrades and the renter usually pays the energy bill, it is difficult to engage owners. This is another unmet need in the LMI Market, but it is not as large as the low-income segment.

These two market segments are about one-fourth of the total LMI Market and are likely to be largely unserved by existing programs. Research would be needed to identify successful approaches for engaging this market.

Mobile home households are a relatively small segment of the LMI population, only 3 percent of LMI households. Low-income energy efficiency programs do serve this market. However, research shows that energy savings often are not sufficient to make installation of measures cost-effective. One new strategy that might be successful in this market is to try to reduce acquisition costs and measure installation costs by treating mobile home neighborhoods.

Large multifamily owners (i.e., condominiums and cooperatives) make up only 4 percent of the LMI Market. It is likely that these owners live in buildings with non-LMI households. While outreach to any such households that are LIHEAP recipients is appropriate, it is not clear that there is an effective strategy for reaching these owners.

## 7.0 PROGRAMS SERVING LOW- TO MODERATE-INCOME HOUSEHOLDS

In New York State, there are already a wide range of energy assistance and energy efficiency programs for low- and moderate-income households. Some programs are funded by the federal government while others use ratepayer funds. Many of these programs have been in place for many years. This section of the report furnishes an inventory of those programs and, to the extent possible, develops estimates of the current program penetration rates for energy assistance programs as well as the longer-term totals for energy efficiency programs.

In addition to funding for energy-related programs, there is also significant funding for low- and moderate-income housing programs. These programs contribute to the energy efficiency of LMI housing stock in two ways. First, many of these programs have implemented efficiency requirements related to installation of HVAC equipment, appliances, and construction practices. Second, coordination between these housing programs and the energy efficiency programs at the local level potentially reduces fixed costs for both programs and may be able to reduce WAP and EmPower deferral rates related to housing unit structural problems.

### 7.1 Methodology

The LMI Study Team used a number of different data sources to develop information on the number of households and types of housing units served by energy assistance programs, energy efficiency programs, and other housing programs.

- HEAP - OTDA furnished LIHEAP performance reports for FY 2016 for the study.
- NYSERDA - NYSERDA furnished data files for EmPower, the Assisted Home Performance with ENERGY STAR program, and the Multifamily Performance Program for 2004 through 2016.
- WAP - NYSHCR furnished data files for the WAP program for 2004 through 2016.
- American Housing Survey (AHS) - The LMI Study Team used the AHS data to examine the extent to which different groups of LMI households are making use of different kinds of housing programs.
- Housing Program Funding and Statistics - The LMI Study Team accessed reports from NYSHCR and the U.S. Department of Housing and Urban Development (HUD) that document funding and production for different types of housing programs.

These data furnished information that can be used to develop estimates of the share of the LMI market that this being served each year (HEAP) and that has been served over the last ten years (NYSERDA / NYSHCR / HUD).

## 7.2 Energy Assistance Programs

The Home Energy Assistance Program (HEAP) is available to low-income households. In Federal Fiscal Year 2016 (FFY 2016), it delivered about \$299 million in energy assistance benefits to about 1.3 million low-income households; the program served about 56 percent of all low-income households in New York State.

In FFY 2016, HEAP assisted low-income households with their energy bills through three different program components.

- Heating Assistance - Assisted 1,020,621 households with heating costs.
- Emergency Assistance - Assisted 91,671 households with heating emergencies.
- Nominal Assistance to SNAP Households - Assisted 293,025 SNAP households who have subsidized rent.<sup>12</sup>

Among the heating assistance households, the program offers one type of benefit to households who pay for their heat directly to their energy supplier and a different type of benefit to households with heat in rent. We estimate that about one-half of heating assistance recipients pay for their heat directly to their energy vendor, while the others have heat included in their rent.

It is important to note that HEAP funds are also used to help low-income households in others ways. Funds are used to purchase air conditioning equipment, pay for clean and tune-ups of heating equipment, and repair or replace heating equipment. In addition, HEAP transfers funds to NYSHCR for purposes of delivering WAP program services.

Table 7.1 shows the LIHEAP participation rate by LMI Income Group. The program is estimated to serve over 80 percent of households who are very low-income (i.e., have incomes at or below 130 percent of the HHS Poverty Guideline), while it serves about 20 percent of the low-income households that are low-income. The program does not serve moderate-income households.

**Table 7.1 - HEAP Participation Rates for Low-Income Households by LMI Income Group**

LMI Income Group	Number of Households	Number of HEAP Recipients	Participation Rate
<b>Very Low-Income</b>	1,388,051	1,123,004	81%
<b>Low-Income</b>	969,865	190,642	20%
<b>All Low-Income Households</b>	2,357,916	1,313,646	56%

Source: ACS (2013-2015) / LIHEAP Household Report for FFY 2016

<sup>12</sup> Under federal law, LIHEAP funds can be used to provide a nominal LIHEAP payment that deviates from the state’s regular payment matrix because the households is a recipient of SNAP. Typically, such payments are called “heat or eat” and/or “cool or eat.” In New York, these households received a \$21 benefit.

Electric and gas utilities also offer energy assistance benefits, including bill discount programs.<sup>13</sup> However, because eligibility for those benefits is determined by HEAP participation, the HEAP statistics furnish the most complete estimate of households served with energy assistance benefits.

### **7.3 Energy Efficiency Programs**

There are four ways in which LMI households are targeted by energy efficiency programs in New York State.

- Weatherization Assistance Program (WAP) - WAP weatherization services to low-income households. The program serves all types of housing units and both owner-occupied and rental housing. There is no cost to low-income housing units that are owner-occupied. Building owners of low-income rental housing are expected to make a contribution to the cost of energy efficiency upgrades.
- Ratepayer-Funded Low-Income Programs - The NYSERDA EmPower Program and the LIPA REAP program deliver energy efficiency services to low-income households. EmPower is primarily directed to customers of the state's investor-owned utility companies<sup>14</sup>. REAP is limited to customers of PSEG-LI. The households served must pay for their energy bills directly to the energy supplier.
- Assisted Home Performance with ENERGY STAR Program - The NYSERDA Assisted Home Performance Program serves homeowners with incomes at or below the greater of 80 percent of SMI or AMI. The program pays for 50 percent of the cost of approved energy efficiency upgrades to a maximum of \$4,000 for single family homes and \$8,000 for 2-4 unit buildings. It is also limited to households who are customers of one of the state's investor owned utilities and who pay their bills directly to the energy supplier.
- "Affordable" Multifamily Performance Program - The "Comprehensive Option" is available to multifamily buildings with 4 or more floors and 5 or more units where 25 percent of the units are expected to be occupied by LMI households.

---

<sup>13</sup> In May 2016, the New York State Public Service Commission approved the Energy Affordability Policy, which provides low-income New Yorkers with monthly bill discounts designed to reduce energy burden to no more than six percent of household income. See: <https://www.governor.ny.gov/news/governor-cuomo-announces-new-energy-affordability-policy-deliver-relief-nearly-2-million-low>

<sup>14</sup> NYSERDA funds customers of municipal electric utilities with limited funds made available through the Regional Greenhouse Gas Initiative.

The WAP, EmPower, and REAP programs serve low-income households. The Assisted Home Performance with ENERGY STAR serves LMI households and the Affordable Multifamily Performance Program serves some buildings that have at least some LMI households.

Table 7.2 shows the number of low-income households by housing unit type in the population and the number that have been served by WAP in the last eleven years. WAP served about 17 percent of mobile homes and 14 percent of large multifamily buildings, but only about 4 percent of single family homes. Statistics show that WAP serves only a small number of renter-occupied single family homes.

**Table 7.2 - WAP Service Rates for Low-Income by Housing Unit Type**

Housing Unit Type	Number of Low-Income Housing Units	WAP Units from 2004 to 2016	Percent Served
<b>Single Family Homes (1-4)</b>	1,225,542	46,255	3.8%
<b>Mobile Homes</b>	78,408	13,595	17.3%
<b>Large Multifamily Buildings (5+)</b>	1,053,966	146,036	13.9%
<b>All Low-Income Units</b>	2,357,916	205,886	8.7%

Source: ACS (2013-2015) / Data from NYSHCR for 2004 to 2016

Table 7.3 shows the number of low-income households by housing unit type in the population and the number that have been served by EmPower in the last twelve years. The table shows that EmPower serves mobile homes and single family homes at the highest rate; it served over 10 percent of low-income housing units of those types. The EmPower program served only a small share of the population of multifamily housing units.

**Table 7.3 - EmPower Service Rates for Low-Income by Housing Unit Type**

Housing Unit Type	Number of Low-Income Housing Units	EmPower Units from 2005 to 2016	Percent Served
<b>Single Family Homes</b>	691,190	83,600	12.1%
<b>Small Multifamily Homes</b>	534,352	13,432	2.5%
<b>Mobile Homes</b>	78,408	13,953	17.8%
<b>Large Multifamily Buildings (5+)</b>	1,053,966	16,462	1.6%
<b>All Low-Income Units</b>	2,357,916	127,448	5.4%

Source: ACS (2013-2015) / Data from NYSERDA for EmPower for 2004 to 2016

Tables 7.2 and 7.3 suggest that WAP and EmPower together served about 14 percent of the low-income housing units. In some cases, WAP and EmPower funds are used together. Data analysis of recent WAP and EmPower service delivery found that, in the last two years, about 20 percent of jobs received both WAP and EmPower funding. If we apply an adjustment factor, we find that WAP and EmPower together served about 12 percent of low-income housing units.



The WAP program has been serving low-income households since before 1980 and the EmPower program and its utility predecessors have been serving low-income households since the 1980s. The longer-term penetration rates of these programs are somewhat higher than the numbers presented in these two tables.

The PSEG-LI REAP program served 17,400 low- and moderate-income households on Long Island during program years 2011 through 2017. It is available to homeowners and renters who pay an electric bill, and it serves about 5 percent of LMI households in Long Island with electric energy efficiency services.

Table 7.4 shows the number of moderate-income households by housing unit type in the population and the number that have been served by Assisted Home Performance in the last twelve years. The table shows that Assisted Home Performance serves single family homes at the highest rate; 5.7 percent of moderate-income single family housing units. The Assisted Home Performance served only a small share of the population of small multifamily units. It may have served mobile homes, but there is no information in the database that distinguishes between single family homes and mobile homes. The program did not serve large multifamily housing units.

**Table 7.4 - Assisted Home Performance Service Rates for Moderate-Income by Housing Unit Type**

Housing Unit Type	Number of Moderate-Income Housing Units	Assisted Home Performance Units from 2005 to 2016	Percent Served
Single Family Homes	496,380	26,483	5.7%
Small Multifamily Homes	228,265	2,183	1.0%
Mobile Homes	29,761	DK	DK
Large Multifamily Buildings (5+)	398,833	0	0%
<b>All Moderate-Income Units</b>	<b>1,153,239</b>	<b>28,666</b>	<b>2.4%</b>

Source: ACS (2013-2015) / Data from NYSERDA for Assisted Home Performance for 2004 to 2016

Table 7.5 shows the number of moderate-income households and the number that have been served by Multifamily Performance Program (MPP) in the last ten years. To complete this analysis, the LMI Study Team extracted the MPP projects labeled as "Affordable." Since the "Affordable" projects are expected to have *at least* 25 percent of the units as affordable housing the table first shows the percent of the population served assuming that 25 percent of the units are affordable. Since most of the buildings are likely to have more than the minimum of affordable units, the table also shows the service rates that would be realized if 50 percent of the units in MPP projects were affordable and if 75% of the MPP projects were affordable. The table shows that the likely range of moderate-income multifamily housing units served is between 26,748 and 80,245, coverage from 7 percent to 20 percent of the moderate-income multifamily

renters. However, the share of housing units that are affordable could be greater than 75 percent. It also is likely that some of the units in MPP buildings are low-income rather than moderate-income. These statistics furnish only an approximation of the share of moderate-income multifamily buildings that have been served.

**Table 7.5 - MPP Service Rates for Moderate-Income by Housing Unit Type**

Housing Unit Type	Number of Moderate-Income Housing Units	25% of MPP Units		50% of MPP Units		75% of MPP Units	
		Num.	Percent	Num.	Percent	Num.	Percent
<b>Single Family Homes</b>	496,380	0	0%	0	0%	0	0%
<b>Small Multifamily Homes</b>	228,265	0	0%	0	0%	0	0%
<b>Mobile Homes</b>	29,761	0	0%	0	0%	0	0%
<b>Large Multifamily Buildings (5+)</b>	398,833	26,748	7%	53,497	13%	80,245	20%
<b>All Moderate-Income Units</b>	1,153,239	26,748	2%	53,497	5%	80,245	7%

Source: ACS (2013-2015) / Data from NYSERDA for Multifamily Performance Program for 2006 to 2016

In total, the WAP, EmPower, Assisted Home Performance, and Multifamily Performance Program served about 442,237 housing units in the last twelve years. [Note: This uses the 75 percent estimate for MPP buildings. It does not account for the duplication between EmPower and WAP.] Table 6.1 showed the recommended LMI market segments and the number of housing units in each segment. Table 7.6 replicates Table 6.1 in that it shows the number of housing units in each segment, but it adds the estimated number served by the NYSERDA and NYSHCR LMI energy efficiency programs. Overall, the programs have served about 12 percent of the LMI Market. The programs served about 16 percent of the multifamily (5+) rental market, about 15 percent of the single family and small multifamily owner-occupied market, and about 25 percent of the mobile home market. One major gap appears to be the single family and small multifamily rental market which represents about 25 percent of LMI housing units, but only about 9 percent of housing units served by the NYSHCR and NYSERDA energy efficiency programs.

**Table 7.6 - LMI Market Segments by Owner Status, Income Group, and Housing Unit Type Compared to Energy Efficiency Program Service Levels**

Housing Unit Type	Renter		Owner	
	Low-Income	Moderate-Income	Low-Income	Moderate-Income
<b>Large Multifamily</b>	984,695 housing units / WAP and Empower served 162,498 (17%)	338,226 housing units / MPP served as many as 53,497 (16%)	129,878 housing units / Unknown whether WAP, EmPower, or MPP served any of these buildings	
<b>Single Family and Small Multifamily</b>	634,153 housing units / WAP and EmPower served 35,618 (6%)	232,127 housing units / AHP may have served some units	591,389 housing units / WAP and EmPower served 107,662 (18%)	492,518 housing units / AHP served 28,666 (6%)
<b>Mobile Homes</b>	108,169 housing units / WAP and EmPower served 27,548 (25%)			
<b>All Housing Unit Types</b>	3,511,156 LMI housing units / WAP, EmPower, Assisted Home Performance, and Affordable MPP served 415,489 (12%)			

Source: ACS (2013-2015) / NYSERDA data for EmPower, Assisted Home Performance, and Affordable MPP / NYSHCR data for WAP / The number of units served is for approximately the past twelve years.

The statistics in Table 7.6 do not include LMI housing units served by the REAP program. They also do not include LMI households who received energy efficiency benefits through residential market rate programs operated by the utilities (e.g., heating equipment incentive programs) or multifamily programs implemented by the utilities. However, they furnish a reasonable benchmark for the share of LMI housing units that have been served by targeted energy efficiency programs over the last twelve years.

Another important note is that the ratepayer funds do not serve households that are not customers of the IOUs or customers of those IOUs that did not pay SBC, EEPs, or CEF surcharges. This includes customers of municipal and cooperative utilities, as well as certain types of public housing.<sup>15</sup>

### 7.4 Housing Programs

There are two ways in which housing programs are particularly relevant to the objective of giving LMI households better access to clean energy programs and energy efficiency programs and initiatives.

- Rental Housing Programs - One finding is that the existing energy efficiency programs do not appear to be serving single family and small multifamily rental housing. If housing

<sup>15</sup> While the NYSERDA-administered programs are primarily ratepayer funded, NYSERDA is able to serve customers that do not pay into the SBC, EEPs, or CEF surcharges on a limited basis, with RGGI funds.

programs serve those LMI renter households, there may be an opportunity to increase energy efficiency penetration rates through collaboration with the housing programs.

- **Low-Income and Affordable Housing Construction and Rehabilitation** - A number of different housing programs invest funds in rehabilitating existing LMI housing and constructing new LMI housing. By working collaboratively with those programs at the local level, it is possible that the LMI energy efficiency programs could reduce the costs associated with delivering energy efficiency services to those households.

It is important to identify whether there are existing relationships between these programs and energy efficiency programs at the local level that can be replicated and to explore potential relationships between housing and energy efficiency programs.

*AHS Data on Housing Assistance Programs*

The AHS data furnish information for the three covered metropolitan areas - Buffalo, Rochester, and New York City - with respect to the share of LMI households that participate in different kinds of housing programs. Tables 7.7a to 7.7c show that in all three geographic areas, a significant share of SNAP income-eligible households are receiving housing vouchers that could be used to identify and market low-income efficiency programs in the single family and small multifamily market sector. Housing vouchers are a form of housing assistance where low-income households can find and select their own private housing and a housing subsidy payment is paid directly to the landlord on the household’s behalf. In general, housing vouchers are provided by HUD and administered by local public housing agencies. The share of SNAP income-eligible renter households with vouchers is 26 percent in the Buffalo area, 18 percent in the Rochester area, and 17 percent in the New York City area.

**Table 7.7a - Buffalo Metropolitan Area Rental Housing Program Participation by Income Group / Single Family and Small Multifamily Homes**

Housing Program Participation	SNAP Income-Eligible	LIHEAP non-SNAP	Moderate-Income
<b>Public Housing</b>	5%	5%	0%
<b>Housing Voucher</b>	26%	4%	1%
<b>Private Subsidized Housing</b>	2%	0%	1%
<b>No Assistance</b>	67%	92%	98%
<b>All LMI SF/SMF Renters</b>	100%	100%	100%

Source: AHS (2011) / Totals may not sum to 100% due to rounding / Housing vouchers are a form of housing assistance where low-income households can find and select their own private housing and a housing subsidy payment is paid directly to the landlord on the household’s behalf.

**Table 7.7b - Rochester Metropolitan Area Rental Housing Program Participation by Income Group / Single Family and Small Multifamily Homes**

Housing Program Participation	SNAP Income-Eligible	LIHEAP non-SNAP	Moderate-Income
<b>Public Housing</b>	2%	0%	0%
<b>Housing Voucher</b>	18%	9%	0%
<b>Subsidized Housing</b>	6%	3%	0%
<b>No Assistance</b>	74%	88%	100%
<b>All LMI SF/SMF Renters</b>	100%	100%	100%

Source: AHS (2011) / Totals may not sum to 100% due to rounding / Housing vouchers are a form of housing assistance where low-income households can find and select their own private housing and a housing subsidy payment is paid directly to the landlord on the household's behalf.

**Table 7.7c - New York City Metropolitan Area Rental Housing Program Participation by Income Group / Single Family and Small Multifamily Homes**

Housing Program Participation	SNAP Income-Eligible	LIHEAP non-SNAP	Moderate-Income
<b>Public Housing</b>	4%	4%	1%
<b>Housing Voucher</b>	17%	5%	3%
<b>Private Subsidized Housing</b>	3%	1%	1%
<b>No Assistance</b>	75%	90%	96%
<b>All LMI SF/SMF Renters</b>	100%	100%	100%

Source: AHS (2011) / Totals may not sum to 100% due to rounding / Housing vouchers are a form of housing assistance where low-income households can find and select their own private housing and a housing subsidy payment is paid directly to the landlord on the household's behalf.

*Information on HUD-Funded Housing Programs*

One challenge for collaboration between statewide energy efficiency programs and local housing programs is that most of the funding from HUD goes directly to local communities. Each community sets its own priority for the funding. Table 7.8 furnishes information on the amount that was allocated in 2016. The total Community Development Block Grant (CDGB) funding for New York was about \$288 million and the total HOME program funding about \$92 million for FFY 2016.

**Table 7.8 - 2016 HUD Program Funding for Selected Communities**

Community	CDBG Funding (in millions)	HOME Program Funding (in millions)
<b>New York City</b>	\$151.5	\$54.2
<b>Buffalo</b>	\$12.5	\$2.5
<b>Rochester</b>	\$7.7	\$1.9
<b>Syracuse</b>	\$4.5	\$1.1
<b>Albany</b>	\$3.0	\$0.6
<b>Yonkers</b>	\$3.4	\$0.9
<b>Other Communities</b>	\$105.4	\$31.7
<b>TOTAL Funding</b>	\$288.0	\$92.9

Source: HUD Program Statistics

Review of Buffalo's 2015 Annual Action Plan furnishes more detail on how one community invests those funds. The plan shows that in 2015, the city had \$18.2 million available from CDBG, HOME, and other funding sources. Of that amount, \$4.4 million was spent on housing, including \$2.0 million of emergency repairs, \$1.2 million for owner-occupied rehabilitation, and \$1.2 million for rental unit rehabilitation. Since community based organizations often receive both housing funds and energy efficiency program funds, it is expected that there already is significant collaboration at the local level. However, there is no systematic information about the level of collaboration and the best practices for using housing program funds and energy efficiency program funds.

### **7.5 Key Findings on Programs Serving the LMI Market**

New York State directly assists households in the LMI Market with energy assistance and energy efficiency programs, including:

- Energy Assistance Programs - The HEAP program and the utility rate discount programs help low-income households to pay their energy bills. The HEAP program services about 80 percent of households that are SNAP income-eligible and about 20 percent of other low-income households. HEAP recipients who are customers of IOUs also are expected to receive ratepayer-funded energy assistance benefits.
- Energy Efficiency Programs - The publicly funded WAP program and ratepayer-funded programs operated by NYSERDA and PSEG-LI have served a large number of households in the LMI Market in the last ten to twelve years.
  - WAP served about 9 percent of low-income housing units, including 14 percent of units in large multifamily buildings and 17 percent of mobile homes.

- The EmPower program served about 5 percent of low-income housing units, including about 12 percent of single family homes and 18 percent of mobile homes.
- The Assisted Home Performance program served about 2.5 percent of moderate-income housing units, including about 6 percent of single family homes.
- The Multifamily Performance Program served approximately 13 percent of moderate-income housing units in large multifamily buildings.

These programs furnish significant benefits to households in the LMI Market and demonstrate progress toward the overall Clean Energy Fund objectives.

The study finds, however, that there are different penetration rates of energy efficiency programs by market sector. For example, the WAP and EmPower programs are estimated to have served 18 percent of the population of low-income single family and small multifamily owner-occupied units and as much as 17 percent of the low-income multifamily homes. However, the programs have served only about 6 percent of low-income single family and small multifamily rental units. Additional work is needed to develop effective procedures for serving certain LMI market segments.

The study also finds that there is potential for effective collaboration between energy efficiency programs and housing programs in two ways.

- Housing Vouchers - It might be possible to serve low-income renters in single family and small multifamily homes by identifying households who have rental vouchers. The American Housing Survey data show that there are over 15,000 households with rental vouchers in the Buffalo metropolitan area, about 7,500 in the Rochester metropolitan areas, and over 45,000 in the New York City metropolitan area who are low-income households that live in single family and small multifamily rental units.
- HUD Programs - Data from HUD show that they deliver about \$381 million in housing funds to New York State and local communities through the CDBG and HOME programs. Review of the CDBG/HOME implementation plan for the City of Buffalo shows that a certain share of those funds are used for housing rehabilitation. It is likely that there are existing models of collaboration at the local level that demonstrate how to use those housing program funds and energy efficiency funds to deliver comprehensive benefits to low- and moderate-income households.

Overall, the study finds that the existing programs have made substantial progress, but that there is still more work to be done to realize all of the energy savings potential in the LMI Market.

## 8.0 FINDINGS AND RECOMMENDATIONS

The purpose of the NYSERDA Low- to Moderate-Income Market Characterization Study is to develop detailed information on LMI households and housing units to support NYSERDA's design and implementation of a comprehensive LMI market strategy. The study used secondary data sources to develop a profile of NYS LMI households, and program databases and reports to estimate the share of the market that has already been served by publicly funded and ratepayer-funded energy efficiency programs. In addition, the study identified other programs that serve LMI households with which NYSERDA and others could collaborate to identify LMI households and coordinate service delivery.

### 8.1 Findings

Following are some of the most important findings from the study in terms of the LMI households and the energy efficiency programs that serve them.

- **LMI Market Diversity** - There is no one housing type, demographic characteristic, or geographic location that "typifies" low- to moderate-income households. To serve this market effectively, energy assistance and energy efficiency programs need to be prepared to engage each market segment on its own terms; they need to be ready to serve the needs of a single elderly individual living alone in an apartment in a small city, a younger family with children renting a duplex in one of NYC's boroughs, and an older couple who are homeowners in a suburban area.
- **Existing Program Strengths** - The existing set of programs is particularly effective in serving large multifamily buildings and single family owner-occupied homes for both low- and moderate-income households. NYS is unique in terms of the share of WAP funds that are devoted to large multifamily buildings; the state's WAP program has been at the forefront of development of effective building treatment procedures. The EmPower and WAP programs have served a relatively large share of the population of single family homes. The Assisted Home Performance program serves moderate-income households who are often overlooked by ratepayer-funded programs. The Multifamily Performance Program has special components that encourage the participation of the owners of affordable housing projects.
- **Current Program Challenges** - About 25 percent of LMI households are renters who live in single family homes and small multifamily buildings (2-4 units). It is very challenging to engage owners of rental housing to participate in energy efficiency programs. A relatively small share of that population has been served by the existing programs.



- **Financial Capacity of Low-Income Owners** - The research showed that low-income owners have a significant amount of home equity and access to banking resources. It might be possible to make use of that financial capacity to allow these households to invest in energy efficiency without putting them at financial risk.
- **Housing Burden of Moderate-Income Owners and Renters** - The research showed that many moderate-income owners and renters have affordable energy and housing (i.e., they have energy burdens less than 6 percent of income and shelter burdens less than 30 percent of income). This means that these households might have the capacity to invest a little more in their housing in the short run to realize the longer-term benefits of greater energy efficiency.

The existing energy assistance and energy efficiency programs are aligned fairly well with the needs of low-income households and the opportunities presented by the LMI market. But, there are some market segments that could be better served and additional capacity for working proactively with LMI households to make cost-effective investments in energy efficiency.

## ***8.2 Recommendations***

The following recommendations were developed with the understanding that NYSERDA's goals include both increasing the effectiveness of existing program models to maximize energy savings and identifying new program models to better serve the entire LMI Market.

- **Build on Existing Strengths** - NYSERDA and NYSHCR have good-quality programs that are effective in serving important LMI markets. However, recent evaluations of low- and moderate-income energy efficiency programs have identified some important ways to improve their effectiveness. Some the more important lessons from these evaluations are that it is important to target high-usage housing units, develop systems for measuring the performance of individual service delivery agencies and contractors, and work with intake agencies to implement housing unit and household screening procedures that reduce the fixed cost of service delivery and increase major measure installation rates. We recommend that the NYSERDA and NYSHCR programs be empowered to invest in those types of activities to continue to enhance program effectiveness.
- **Address Program Gaps** - NYSERDA and NYSHCR are more effective than most organizations in addressing the needs of renter households. NYSHCR devotes a large share of funds to weatherization of large multifamily buildings. EmPower's program database shows that it has served more than 20,000 rental units in single family homes and small multifamily buildings. However, small multifamily rental units, in particular, are underserved relative to the rest of the LMI market. We recommend that NYSERDA and

NYSHCR work to identify ways to better serve that market. One approach would be to conduct research on those rental units that EmPower has been successful in serving to identify how those experiences might be replicated. Another approach might be to work with both OTDA and NYSHCR at the state level and with community-based organizations and utilities in targeted local areas to identify low- to moderate-income renter households in these types housing units and conduct research to learn more about their participation in energy assistance and housing assistance programs, and better assess the potential for engaging their landlords in energy efficiency programs.

- **Low-Income Homeowners** - A growing problem in the delivery low-income energy efficiency program services is that high-usage homes often have structural problems (e.g., a leaking roof, poorly functioning equipment) that must be resolved before the home can receive weatherization services. One finding from the study was that, in some parts of the state, low-income homeowners have access to banking services and have equity in their homes that could potentially be used to secure loans at reasonable interest rates for such structural improvements. However, given the fragile financial circumstances of these households, it would be important to design the loans in a way that protects the homeowner from the risks associated with such investments. We recommend that NYSERDA conduct research with these households to increase NYSERDA's understanding of their ability engage in such financial transactions, and to conduct research with financial professionals and low-income advocates on how to best protect low-income households who make these investments.
- **Moderate-Income Homeowners** - The Assisted Home Performance program appears to be an effective way to serve moderate-income homeowners. NYSERDA should make all program partners aware of strategies they could implement to effectively engage these households. If NYSERDA has not conducted such research, it would be appropriate for NYSERDA to do so since there are about 450,000 households who, according to the ACS statistics, have the capacity to make investments in energy efficiency of their homes.
- **Moderate-Income Renters** - The Assisted Home Performance program does not serve many rental units for moderate-income households. This is a particularly challenging market segment to identify and engage. First, it is hard to identify because moderate-income households are not eligible for HEAP and have relatively low participation rates for rental vouchers. Second, it is hard to engage because many of these households report that they have affordable energy costs (i.e., less than 6 percent of income) and affordable housing costs (i.e., less than 30 percent of income). We expect that some of these housing units would have good energy savings potential. Probably the best way to identify such households would be through utility companies or local intake agencies. Those

organizations are likely to find households that apply for energy assistance or energy efficiency program benefits, but who are over income. If those households could be referred to an Assisted Home Performance program that targets renters, doing so might help to fill that gap in program service delivery.

- **Mobile Homes** - Program statistics suggest that a large share (25 percent) of the mobile home market has been served. And, evaluation statistics show that it is difficult to achieve cost-effective savings for weatherization of mobile homes. However, there are new equipment technologies (e.g., low-temperature heat pumps) that may represent a cost-effective way to serve such households. We recommend that NYSERDA examine some of those technologies and consider additional program elements targeted to this market segment.
- **Information Resources** - The organizations operating energy assistance and energy efficiency programs - OTDA, NYS IOUs, NYSHCR, NYSERDA, and PSEG-LI - each have significant amounts of information on households who are participating in energy assistance programs, and on households and building owners who have participated in energy efficiency programs. The challenges associated with identifying income-eligible households and their energy savings potential would be significantly enhanced if there were a way to put together those information resources and make them accessible to all program operators. The privacy concerns and the technical challenges associated with implementing such a system are significant. But, if individual partners could take incremental steps toward that larger goal, there would be potential for developing a comprehensive resource that would effectively serve all program partners.

The LMI Market as defined by NYSERDA represents almost one-half of all households in New York State. NYSERDA and NYSHCR have designed and implemented programs that serve both low- and moderate-income households in all different segments of the LMI Market. We believe that NYSERDA can improve the performance of existing programs by making incremental changes to program policies and procedures. We recommend that NYSERDA conduct additional research with program participants in certain markets to identify strategies that would be effective to expand coverage of those markets. We recommend that NYSERDA also leverage both state-level and local partnerships to find ways to identify and serve households that are not currently a part of the program landscape.