

NYSERDA LOW- TO MODERATE-INCOME MARKET CHARACTERIZATION REPORT

Executive Summary

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ACRONYMS

ACS	American Community Survey
AHS	American Housing Survey
AMI	Area Median Income
BLS	Bureau of Labor Statistics
CPS	Current Population Survey
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

EXECUTIVE SUMMARY

The Clean Energy Fund Implementation Plan developed by the New York State Energy Research and Development Authority (NYSERDA) proposes to "implement a comprehensive, three-pronged strategy for improving energy affordability and access to clean energy solutions for low- and moderate- income (LMI) communities, customers, and building owners."¹ The strategy includes "traditional incentive and special offer programs," "market development interventions," and "coordination with other state agencies." To successfully implement that strategy, NYSEDA needs in-depth information on the LMI households and housing units that can be served through those initiatives. The study addresses NYSEDA's information needs by developing detailed statistics on the LMI Market, documenting which households and housing units have been served by the existing energy assistance and energy efficiency programs, and identifying other state and local programs that might be leveraged to extend the reach and comprehensiveness energy efficiency initiatives.

Study Procedures and Work Products

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 NYSEDA and New York State Homes and Community Renewal (NYSHCR); and, published statistics from federal, state, and local government agencies.

The outputs from the study include a number of different work products that are designed to furnish NYSEDA, other NYS agencies, the regulated utilities, and the public with the type and level of information that each organization and individual needs to participate in the LMI Market programs and initiatives. The work products include:

- Summary Report – This summary report furnishes an overview of the study findings and recommendations.
- Special Topic Reports – Detailed reports that examine important issues more in-depth for organizations and individuals that are focused on those topics.
- NYSEDA LMI Database – An interactive database that allows users to develop customized tabulations of the American Community Survey (ACS) data to meet their individual information needs.

¹ Clean Energy Fund (CEF) Implementation Plan, Chapter 15, page 2.

- Methodology Reports – Detailed descriptions of the secondary data sources that were used to develop statistics, including documentation of analysis procedures.

In addition to those resources, the LMI Study Team furnished NYSERDA with information on how to update the NYSERDA LMI Database as new data are published by the Census Bureau and furnished NYSERDA with data extracts from the other survey data files so that NYSERDA can conduct supplemental research if needed.

Low- to Moderate-Income Demographic Characteristics

NYSERDA defines low-income households as those that are income-eligible for the NYS HEAP (Heating Energy Assistance Program); households with incomes at or below 60 percent of state median income (SMI). NYSERDA defines moderate-income households as those with incomes above the HEAP threshold, but less than 80 percent of the greater of state median income and area median income for the household's geographic area. Moderate-income households are not eligible for HEAP, but are often income-eligible for housing programs.

Figure 1 shows that 3,511,156 households (48%) are classified as low- to moderate-income according to NYSERDA's definition. Of that total, two-thirds are classified as low-income and one-third are classified as moderate-income.

Figure 1 - NYS Low- to Moderate-Income Households

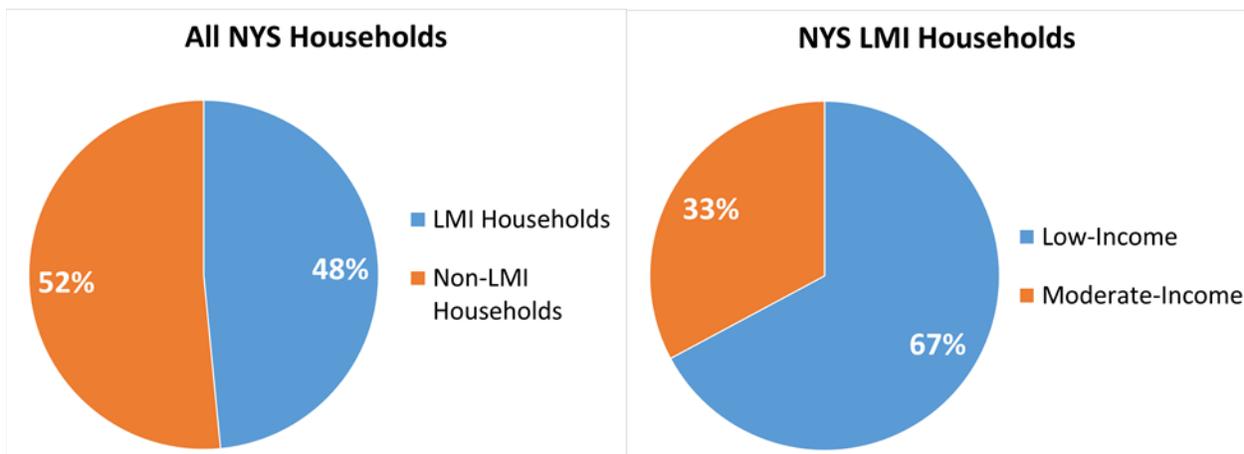
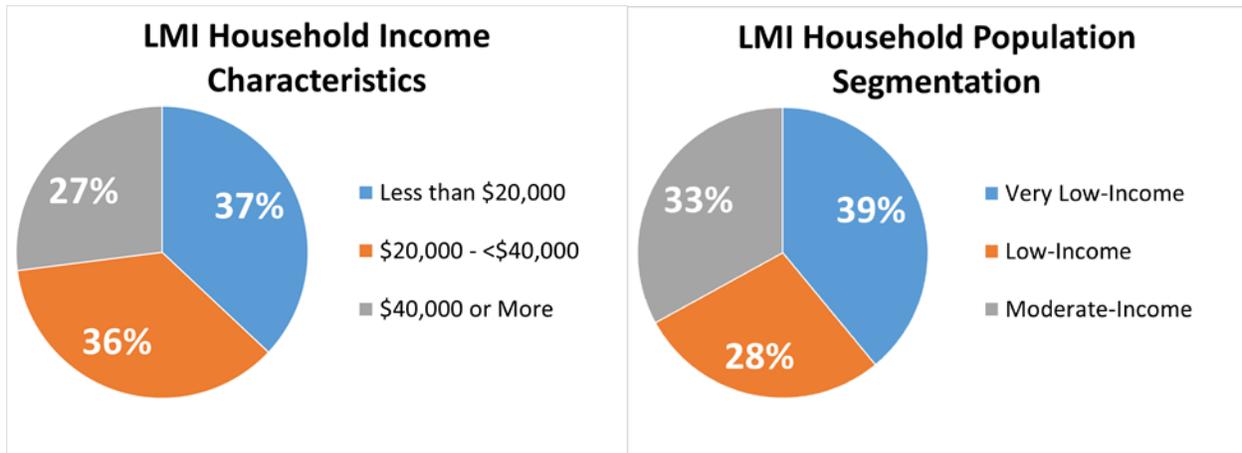


Figure 2 shows the income characteristics of LMI households. The first pie chart shows that over one-third of LMI households have income of less than \$20,000 while 27 percent have income over \$40,000. The second pie chart shows another way of categorizing LMI households. It segments the population into very low-income, low-income, and moderate-income. Very low-income households have income at or below 130 percent of the HHS Poverty Guideline and are income-eligible for the SNAP program (i.e., Food Stamps) as well as for other public assistance programs. Low-income households have income above 130 percent of the HHS Poverty Guideline

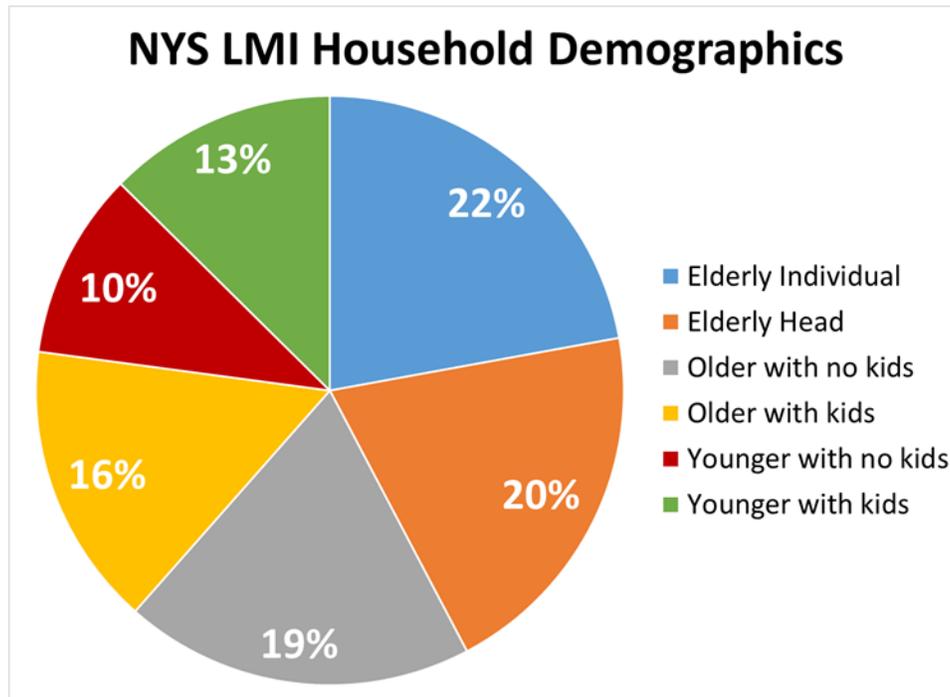
but are still income-eligible for LIHEAP energy assistance, but are not eligible for many other public assistance programs. The statistics show that 39 percent of LMI households are very low-income, 28 percent are low-income, and 33 percent are moderate-income. While all LMI households face energy and housing affordability issues, those issues are usually more critical for the very low-income households.

Figure 2 - NYS Low- to Moderate-Income Household Income Statistics



It is challenging to consider all of the demographic factors that are relevant to understanding a household's status with respect to engagement with energy assistance and energy efficiency initiatives. Since the need for energy assistance and the ability to engage in energy efficiency initiatives is affected by household age and household composition, the LMI Study Team developed a composite household type variable that effectively combines those variables. For example, Figure 3 shows that elderly households (60 or older) represent about 42 percent of the LMI population, but that about one-half of those households are individuals, while the other one-half have two or more persons. Only about one-fourth of LMI households have a head who is younger than 40.

Figure 3 - NYS Low- to Moderate-Income Household Type



LMI households also are racially and ethnically diverse; 43 percent are White non-Hispanic, 20 percent are Black non-Hispanic, and 26 percent are Hispanic. About 15 percent of LMI households are linguistically isolated; there is no person in the household who is 16 years or older and reports that they speak English "well" or "very well."

Low- to Moderate-Income Housing Characteristics

Two housing unit characteristics are particularly important in the context of this study. The first is whether the LMI household is an owner or a renter of their home since that affects the way in which that household can participate in energy efficiency programs and initiatives. The second is the type of housing unit occupied by the LMI household; for example, weatherization measures for large multifamily buildings are quite different from those for single family homes.

Figure 4 shows that ownership status varies by income; less than one-fourth of very low-income households are owners while one-half of moderate-income households are owners. While the majority of LMI households are renters, it is clear that LMI energy efficiency programs and initiatives will need to work with both renters and homeowners.

Figure 4 - NYS LMI Ownership Status by Income Group

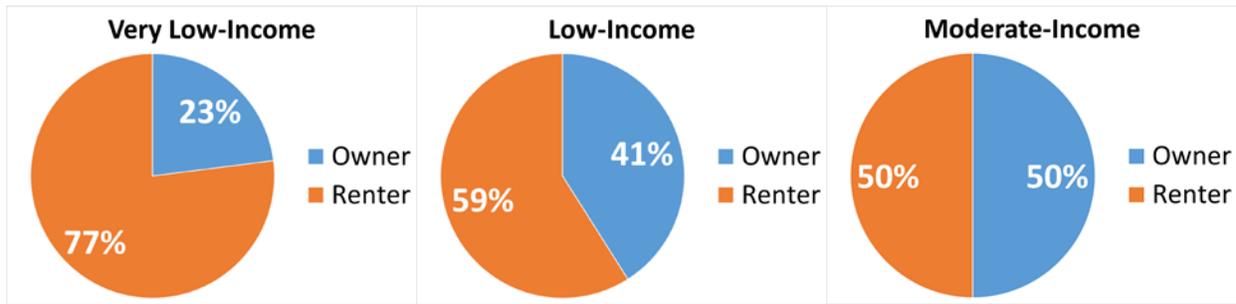
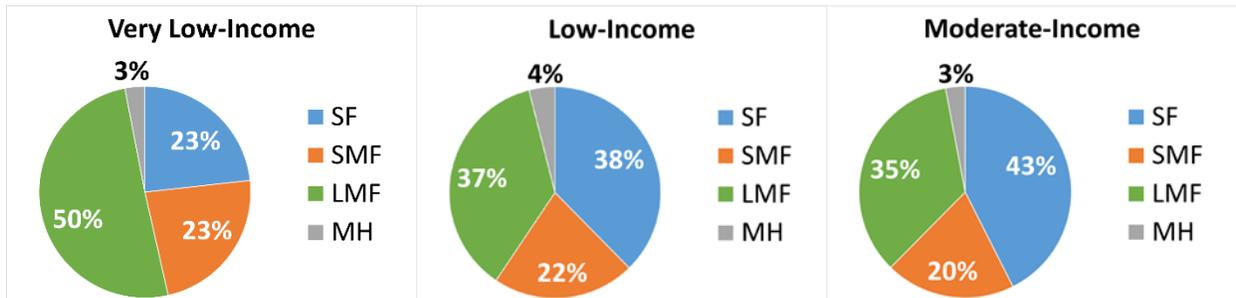


Figure 5 shows that building type also varies by income; less than one-fourth of very low-income households live in single family homes, while about 40 percent of low-income and moderate-income households live in that housing unit type.

Figure 5 - NYS LMI Housing Unit Type by Income Group²



The study found that the existing set of energy efficiency programs have the potential to serve both owners and renters in all housing unit types. However, some market segments are being better served than others.

Low- to Moderate-Income Energy Savings Potential

Policymakers may be concerned that there is less energy saving potential in the LMI Market; if LMI households use less energy than non-LMI households, there could be lower savings per dollar invested in these homes. However, this study finds that the savings for housing units in the LMI Market segment are equivalent to those for higher-income households.

The energy savings potential from weatherization and energy efficiency for LMI households is likely to be higher than for non-LMI households. The Residential Energy Consumption Survey (RECS) data show that the LMI single family homes are about 20 percent smaller than non-LMI single family homes, but use the same amount of natural gas (99.0 MBtu for LMI compared to 100.1 MBtu for non-LMI). Weatherization program evaluations have shown that housing units

² SF = Single Family, SMF = Small Multifamily (2-4 units), LMF = Large Multifamily (5+), MH = Mobile Home

that use 125 MBtu or more of natural gas, fuel oil, or propane have the highest energy savings potential. The RECS data show that there are over 400,000 NYS LMI households that reside in single family or small multifamily homes and use 125 MBtu or more of those fuels.

The RECS data show that the electric energy savings potential for LMI households may be lower than for non-LMI households because LMI households in single family homes use about 15 percent less electricity than non-LMI households and are less likely to have central air conditioning, as well as have fewer refrigerators, electronics, and lights. However, the RECS data also show that there are a large number of LMI households who have significant energy savings potential; there are about 350,000 LMI households who live in single family homes that are heated with a fossil fuel (i.e., natural gas, fuel oil, or propane) that use over 10,000 kWh of electricity per year.

These data show that with appropriate targeting, LMI energy efficiency programs can play an important role in both increasing energy affordability for LMI households and in meeting the overarching energy usage reduction goals associated with the Reforming the Energy Vision (REV) initiative.

Financial Capacity of Low- to Moderate-Income Households

As part of the REV initiative New York State established an Energy Affordability Policy that set the goal of limiting energy costs for low-income utility customers to an average of no more than 6 percent of income. This study developed information on energy burden for LMI households; those statistics are useful for understanding how energy efficiency programs can contribute to meeting that energy affordability objective. However, the study went beyond that to look at other measures of financial capacity, including shelter burden (i.e., the share of household income used to pay for all housing costs), banking status (i.e., whether the household is without a bank account or uses nontraditional lending sources), and home equity for those LMI households who are homeowners.

Figure 6 shows that average energy burden for very low-income households is 19.4 percent, more than three times the energy affordability target of 6 percent. While participation in energy efficiency programs should help make energy more affordable for these households, most will still require energy assistance. In comparison, the average energy burden for moderate-income households is 6.4 percent. About one-half of moderate-income households already have energy burden less than 6 percent, and for many of the others, participation in energy efficiency programs could help them to reduce their energy usage to an affordable level.

Figure 6 - NYS LMI Energy Burden by Income Group

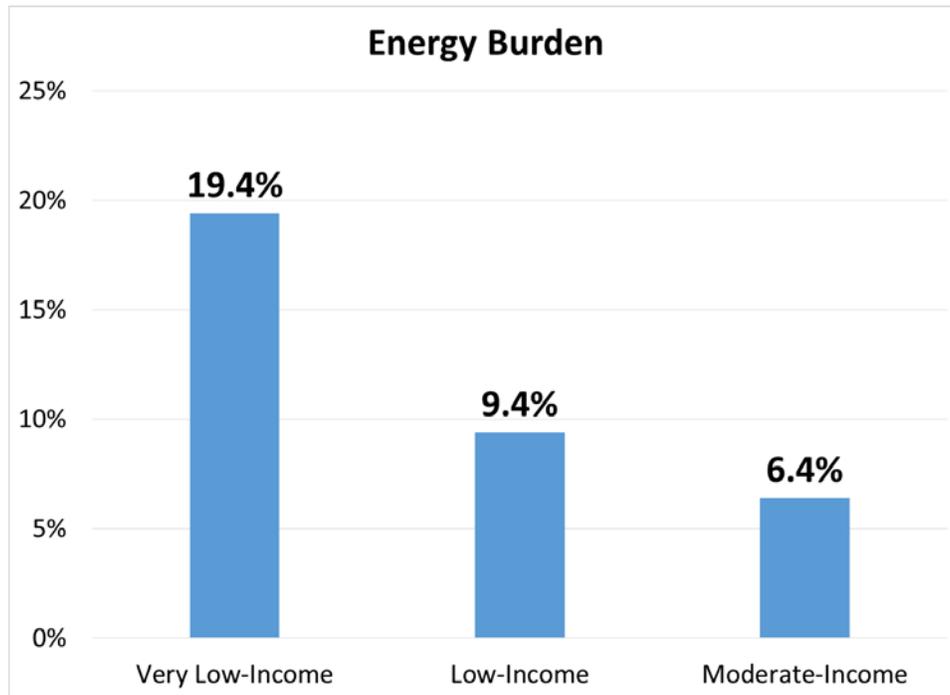
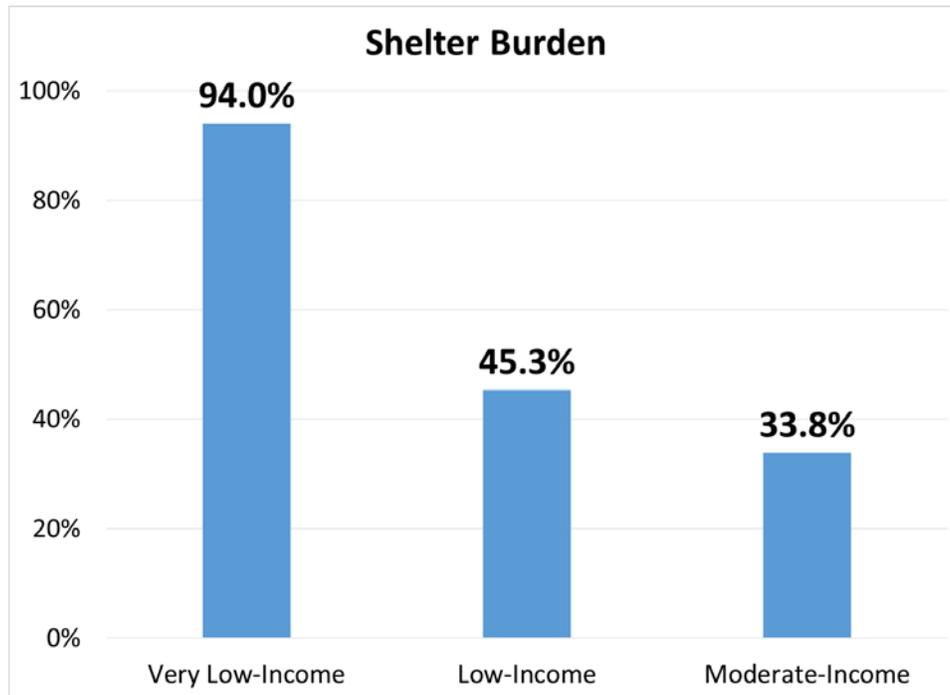


Figure 7 shows similar statistics for shelter burden. Most housing analysts consider an affordable shelter burden to be 30 percent of income. Very low-income households have shelter burden that far exceeds that affordability standard; they access other resources, including non-cash benefits and support from others, to meet their basic housing requirements. Households that are low-income have an average shelter burden considerably above the 30% affordability target, but it is clear that reductions in energy costs could make contributions to the affordability of both energy and housing for these households.

Figure 7 - NYS LMI Shelter Burden by Income Group



The other financial capacity statistics developed by this study demonstrate that some LMI households have greater financial capacity than might be expected.

- **Banking Status** - About one-half of LMI households are considered to be "fully banked" from their self-reported data; they have a bank account and they do not use nontraditional lending sources. Even for the very low-income households, more than one-third are fully banked.
- **Home Equity** - Almost 30 percent of LMI households in the NYC metropolitan area and close to 50 percent of LMI households in the Buffalo and Rochester metropolitan areas have equity in their homes (equity = home market value - liens). In the NYC area, the self-reported value is about \$400,000 while in the Buffalo and Rochester areas the self-reported value is about \$100,000.

While the study found that some LMI households have financial resources, the study does not recommend a specific way to take advantage of those resources. These households face significant challenges in terms of the affordability of energy and of housing. It is important that their financial resources should not be put at risk as organizations work towards engaging them in energy efficiency programs and initiatives.

LMI Market Segments and Energy Efficiency Program Penetration Rates

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-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 1 shows the recommended segmentation approach and the number of households represented by each segment.

Table 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
Large Multifamily	984,695 (28%)	338,226 (10%)	129,878 (4%)	
Small Multifamily	634,153 (18%)	232,127 (6%)	591,389 (17%)	492,518 (14%)
Single Family				
Mobile Homes	108,169 (3%)			

Source: ACS (2013-2015)

New York State agencies already have implemented a wide range of energy efficiency programs for low- and moderate-income households. Some programs are funded by the federal government while others use ratepayer funds. Those programs include:

- **NYSHCR Weather Assistance Program (WAP)** - Uses the U.S. Department of Energy (DOE) and LIHEAP funds to deliver weatherization measures to low-income households.
- **NYSERDA EmPower Program** - Uses ratepayer funds to deliver energy efficiency measures to low-income households.

- PSEG-LI REAP³ Program - Uses ratepayer funds to deliver electric energy efficiency measures to low-income households.
- NYSERDA Assisted Home Performance Program (AHP) - Uses ratepayer funds to assist moderate-income owners in making energy efficiency upgrades to their single family and small multifamily homes.
- NYSERDA Multifamily Performance Program (MPP) - Uses ratepayer funds to assist building owners of affordable multifamily buildings (at least 25 percent low- to moderate-income) in making energy efficiency upgrades to multifamily buildings.

Several of these programs have been in place for many years. Table 2 shows how the estimated number of housing units served in each market segment compares to the population in that market segment. The programs have been particularly effective in serving mobile homes, owner-occupied single family units, and large multifamily rental units. The programs do not appear to have been as effective in serving single family rental units and small multifamily rental units for either low or moderate-income households. It is unknown whether the programs are serving owner-occupied units in large multifamily buildings.

Table 2 - 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
Large Multifamily	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	
Single Family and Small Multifamily	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%)
Mobile Homes	108,169 housing units / WAP and EmPower served 27,548 (25%)			
All Housing Unit Types	3,511,156 LMI housing units / WAP, EmPower, AHP, and MPP served 426,489 (12%)			

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

The study found that a significant share of low-income renters in single family and small multifamily homes receive assistance through U.S. Department of Housing and Urban Development (HUD) voucher programs. It might be possible for energy efficiency programs to

³ PSEG-LI is the electric utility serving Long Island. REAP is a program for income-eligible customers designed to help them save energy and lower their electric bills

work collaboratively with those local housing programs to target energy efficiency upgrades to the homes occupied by those households.

Summary of Findings and Recommendations

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.
- **Existing Program Strengths** - The existing set of programs is effective in serving mobile homes and single family home owners, small multi-family owner-occupied homes, and large multifamily rental buildings. Some factors contributing to these successes are: NYS is unique in terms of the share of WAP funds devoted to large multifamily buildings; EmPower and WAP 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; and, 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 this type of rental housing to participate in energy efficiency programs. A comparatively small share of that population has been served by the existing programs.
- **Financial Capacity of Low-Income Owners** - The research showed that, in certain geographic regions, some low-income owners have a 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 if appropriate consumer protections are put in place.
- **Housing Burden of Moderate-Income Owners and Renters** - The research showed that many moderate-income owners and renters have affordable energy burdens and shelter burdens. 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.

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 market segments. There may be some potential for increasing program performance by building on the findings from recent evaluations of low- and moderate-income energy efficiency programs.
- **Address Program Gaps** - NYSERDA and NYSHCR are more effective than most organizations in addressing the needs of renter households. 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.
- **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. Since this study found that, in some parts of the state, some low-income homeowners have access to banking services and have equity in their homes, 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. We recommend that NYSERDA consider working with utility companies or local intake agencies to identify moderate-income renter households who apply for services from low-income energy assistance and energy efficiency programs, but are found to be over income limits.

- Mobile Homes - Evaluations find 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 - NYS Office of Temporary and Disability Assistance (OTDA), NYS Investor-Owned Utilities (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. Identifying income-eligible households and their energy savings potential would be significantly enhanced if those resources were combined in some way and made accessible to program partners. We recommend that NYSERDA and its partners consider approaches to developing these resources.

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 segments of the LMI Market. We believe that NYSHCR and 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.