Matter 16-01007

Report on Alternative Approaches to Providing Low and Moderate Income (LMI) Clean Energy Services

Clean Energy Advisory Council (CEAC)
LMI Clean Energy Initiatives Working Group
February 3, 2017

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Executive Summary

The Low and Moderate Income (LMI) Clean Energy Initiatives Working Group was tasked with investigating and evaluating alternatives to the current delivery of rate payer-funded clean energy services to LMI customers to improve value for the customers served, as well as for the rate-payer funded being invested. Over the course of the evaluation, the Working Group assessed the current approaches for delivering clean energy services including bill reduction, energy efficiency, and renewable energy; identified approaches deployed in other jurisdictions; outlined best practice approaches for delivering LMI clean energy services; and made recommendations for improving the delivery of services to LMI customers. The Working Group's findings are presented in this report, which is intended to inform the LMI Chapter of NYSERDA's Investment Plan and Utilities' future Energy Efficiency Transition Implementation Plans (ETIP) and Budgets and Metrics (BAM) filings, as well as other clean energy activities.

The LMI market segment in New York State is broad and diverse, 3.5 million households have an annual income at or below 80 percent of the Area Median Income (AMI) and 2.3 million of these households have annual incomes at or below 60% of the State Median Income (SMI). LMI customers often face barriers accessing clean energy solutions including access to capital, competing interests, lack of information, building structural issues, and split incentives. Affordable housing owners also face similar barriers with regard to making clean energy improvements in the buildings that they own. As a result of their lower incomes and barriers to clean energy solutions, many of these households spend a disproportionate share of their income to meet their energy needs.

The provision of clean energy services to LMI customers has been a priority for the Public Service Commission (Commission) dating back to the deregulation of the electric industry in 1996. The Commission acknowledged that it was necessary to ensure that certain public policy objectives that may not be met by competitive markets would be addressed, energy affordability for low-income customers was among these policy objectives. Initiatives to improve energy affordability and provide access to clean energy solutions have been part of rate-payer funded energy portfolios administered by the New York State Energy Research and Development Authority (NYSERDA) and the utilities since then. Currently, LMI clean energy initiatives are funded at over $300 million a year, resulting in clean energy services for approximately 16,000 households, nearly 200 affordable multifamily buildings and bill payment assistance to 1.65 million households on an annual basis.

The Working Group finds that additional steps are necessary to improve the overall delivery of services to LMI customers to drive energy affordability and access to clean energy solutions. Accounting for the size of the LMI market segment and the resources available to serve LMI customers, it is clear that resources are not sufficient to exponentially increase the number of customers receiving service on an annual basis. Given the breadth and complexity of the LMI market segment, a singular approach to improving the delivery of services is not sufficient.

The Working Group recommends that NYSERDA and the utilities take a holistic approach to improving the delivery of clean energy services that coordinates and leverages all available resources including, ubt

not limited to ratepayer-funded initiatives. This report outlines 43 recommendations from the Working Group to NYSERDA, the utilities, and the PSC to improve the delivery of clean energy services to LMI customers. The recommendations fall within the following categories:

- Energy Literacy, Awareness, and Program Application Process
- Program Design
- Health and Safety
- Finance and Access to Capital
- Access to DER and Utility Ownership
- Integration of Energy Efficiency and Renewable Technologies
- Access to Energy Consumption Data
- Community Choice Aggregation
- Consistency in Income Eligibility Classification
- Coordination with Other State Agencies

Detailed recommendations are presented in Section 7, and are summarized in Table 10. Given the diversity of interests among Working Group members, consensus among the members was not possible on every issue discussed in this Report. The Working Group's recommendations in this Report do not necessarily represent the position(s) of any individual member, and should not be attributed to individual members in this or other proceedings, irrespective of whether the member presented Comments or Dissenting Opinions in Section 8 herein.

1. Introduction

In a January 21, 2016 Order,[1] the New York State Public Service Commission (PSC or Commission) established a 10-year, $5 billion Clean Energy Fund (CEF) to accelerate the growth of New York's clean energy economy, address climate change, strengthen resiliency despite extreme weather, and lower energy bills. The CEF is a critical component of Reforming the Energy Vision (REV), New York's comprehensive plan to reform the State's power industry, and is designed to support the Clean Energy Standard, a goal to meet 50 percent of the State's electricity needs with renewable resources by 2030.

The Commission also directed major electric and gas utilities to develop new energy efficiency programs on both a regional and statewide basis. To complement further programs supported by the CEF, the Commission directed each investor-owned utility to seek improvement of their own energy efficiency programs to better engage customers and to meet the overall goals of the Clean Energy Standard and the State Energy Plan. Energy efficiency programs offered by major utilities are intended to achieve greater market-wide efficiency savings, target specific needs in the State, and depend less on direct ratepayer support.

In the CEF Framework Order, the Commission established a Clean Energy Advisory Council (CEAC), co-chaired by Department of Public Service Staff (Staff) and NYSERDA. The Commission stated that the Council's "primary objective is to support innovation and collaboration for an effective transition from current program offerings to post-2015 clean energy activities and on-going delivery thereafter."[2] The Commission required that the CEAC address specific issues and provide the Commission with recommendations and reports regarding the appointed issues. The Commission also indicated that the CEAC is intended to inform NYSERDA's CEF Investment Plans and the utilities' Energy Efficiency Transition Implementation Plans (ETIP) and Budget and Metric (BAM) Plan filings.

The Commission directed the CEAC to develop a structure that recognizes the need for NYSERDA interaction with utilities in addition to allowing for meaningful involvement from a broad array of stakeholders, allowing for the geographic considerations of the State. The Charter developed by the CEAC establishes the structure of a Steering Committee and six Working Groups to address specific areas of focus. The CEAC relies upon the Working Groups to conduct necessary research and analysis and to prepare reports regarding their findings and recommendations. Working Groups were established for Clean Energy Implementation & Coordination; Energy Efficiency Procurement & Markets; Metrics, Tracking & Performance Assessment; REV Energy Efficiency Best Practices; Voluntary Investment & Other Market Development; and Low & Moderate Income Clean Energy Initiatives (LMI Working Group).

[1] New York State Public Service Commission. Order Authorizing the Clean Energy Fund Framework (Case 14-M-0094). Issued January 21, 2016. <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={B23BE6D8-412E-4C82-BC58-9888D496D216}>

[2] Ibid, p. 53.

1.1 LMI Working Group Scope and Work Plan

The stated purpose of the LMI Working Group is "to actively evaluate alternative approaches for the delivery of services to LMI customers that can improve value, for the customers served as well as for the rate-payer funding invested."[3] Fulfilling this purpose requires investigating and evaluating alternatives to current LMI service delivery in order to improve customer value. Specific related tasks include an assessment of the strengths and weaknesses of current approaches to LMI service delivery; identification and documentation of alternative approaches deployed in other jurisdictions, including the strengths and weaknesses of each; and a summary of findings regarding opportunities for improved service delivery, including the potential for coordinating delivery of energy efficiency and renewable generation to the LMI population. In addition, the required LMI Working Group report must outline well-defined best practice approaches and specific transitional considerations. Finally, the LMI Working Group should determine whether it has fulfilled its purpose upon the completion of the initial objectives and provide a recommendation regarding the necessity for continuation of LMI Working Group activities. The LMI Working Group Scope can be found in Appendix A.

The Work Plan details activities required to complete the work assigned by the CEAC Steering Committee in accordance with the schedule established in the Working Group Scope. The Work Plan provides due dates for reports and updates to CEAC Steering Committee, a schedule with milestones for producing this report and for recommendations regarding continuation of Working Group activities.

During the October 20, 2016 CEAC Steering Committee Meeting, the Working Group recommended and the Steering Committee concurred with extensions to the draft report submission date and filing date of the LMI Working Group's Final Report.

1.2 LMI Working Group Composition and Membership

The CEAC Charter provides that Working Groups be limited to 20 members, except where the level of stakeholder interest necessitates additional members. Each Working Group is required to select a Chair or Co-chairs and a Designee to the Steering Committee, which must be a representative from a stakeholder group. Working Groups are responsible for the development of findings and recommendations that may be used to inform future decisions by the Commission, NYSERDA's Clean Energy Fund Investment Plans, the utilities' future ETIP and BAM Plan filings, and other clean energy activities. Each Working Group created and posted rosters, scoping documents and work plans to the Document and Matter Management (DMM) system, and also provides written and oral status updates to the Steering Committee. Working Groups must submit their findings and recommendations in separate reports, which must reflect the full range of Working Group participant viewpoints.

Prior to the Charter being established, PSC Chair Audrey Zibelman received a letter on April 27, 2016, from representatives of the Energy Democracy Alliance (a collaboration of community-based organization and grassroots groups) and other interested parties. The letter expressed concerns that

[3] Clean Energy Advisory Council Low & Moderate Income Clean Energy Initiatives Working Group Scope. November 1, 2016. <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={8E4956E3-7D2F-41C8-81B0-DBA7D65D9301}>

the CEAC "appears heavily weighted in favor of utilities and entities with resources who can pay staff to participate in the CEAC working groups and Steering Committee."[4] The authors state that they are "particularly focused on how these programs can reach and benefit low and moderate income people, people of color, small businesses, and other groups that face barriers."[5] The letter concludes by expressing the hope that "CEAC will be an authentic space in which stakeholders representing consumer and community experience can participate on equal ground with business interests."[6]

In a reply letter dated June 3, 2016, CEAC Steering Committee Staff Co-Chair Colleen Gerwitz expressed confidence "that the CEAC and Working Group structure will both represent and accommodate a variety of stakeholder viewpoints and expertise. The interest that we have received regarding Working Group participation along with the Steering Committee Designee assignments from each Working Group will satisfy the need for diverse participation at all levels of the CEAC."[7]

As finally constituted, the LMI Working Group consists of representatives of 28 organizations including utilities, environmental groups, energy efficiency contractors, solar providers, government agencies, and community-based organizations, including several members of the Energy Democracy Alliance. The LMI Working Group membership roster is included in the Working Group Scope (Appendix A).

1.3 LMI Working Group Process and Schedule

The LMI Working Group held its initial meeting on June 7, 2016, where it elected Co-chairs, primary and alternate Steering Committee Designees, and a Secretary. The LMI Working Group has met on a bi-weekly basis since then. The meetings were held at NYSERDA's Albany offices, with both webinar and teleconference access for those not able to attend in person. The LMI Working Group meeting schedule is included in Appendix B.

To promote efficiency, the LMI Working Group formed four subgroups, each focused on a specific area, providing representatives of organizations with particular areas of interest or expertise an opportunity to concentrate their activities. The four subgroups are: single-family housing sector, multi-family housing sector, renewables, and community-based approaches/customer acquisition. These subgroups met on a biweekly, or in some cases weekly, basis by teleconference.

In addition, the LMI Working Group established an online SharePoint site used to store and exchange documents. The site includes folders for resource documents, meeting minutes, a subfolder for each subgroup, the LMI Working Group's Work Scope and Work Plan, reports to the Steering Committee, and a compendium of recommendations.

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[4] Energy Democracy Alliance. Concerns and Recommendations Regarding the Clean Energy Advisory Council (Case 14-M-0094). Issued April 27, 2016, p. 1. <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={2B54213E-552C-45CC-AD5B-100A2B783143}>

[5] Ibid, p. 1.

[6] Ibid, p. 4.

[7] New York State Department of Public Service. Response to EDA CEAC Letter (Case 14-M-0094). Issued June 3, 2016, p. 1. <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7b77829282-35A3-4A54-9699-A6CEA010D97E%7d>

1.4 Stakeholder Input

Given the importance of capturing the input of the full range of stakeholders, including low-income consumers, the Working Group conducted focus groups with low-income consumers and issued a survey to individuals belonging to a number of organizations that address low-income customer needs. Stakeholders provided their perspectives on accessing or working with current energy programs, while low-income consumers provided their perspectives on energy issues including affordability, awareness, and program participation.

1.4.1 Focus Groups

The LMI Working Group conducted two focus groups[8] with low-income customers with the objective of obtaining insights to inform the development of the Working Group recommendations. The focus groups were held in varied regions of the state to capture the breadth of customer experience across utility territories. The focus groups yielded interactive discussion about customer experiences and concerns with energy awareness, energy affordability and participation in clean energy or bill payment assistance programs. Seventeen low-income customers participated in the focus groups, and for those that provided demographic information, half of the participants were home owners; sixty-five percent lived in multi-unit buildings; and seventy-five percent of participants had annual incomes below $20,000. Findings from the focus groups includes:

- most low-income consumers place the highest value on the services that result in the lowest energy costs for the home, indicating that they did not have a preference for energy efficiency or renewable energy services;
- most consumers are interested in more information on energy and how to reduce energy costs online, over the phone, or in the home;
- many consumers identified the need to prioritize the paying for other necessities, such as rent or medicine, over their energy bills;
- rigid income eligibility requirements present a challenge for households that make just over the income threshold;
- many consumers took actions to reduce energy consumption in the home, including turning off appliances and shutting off lights when not in use, hanging laundry instead of using a clothes dryer;
- understanding utility bills was a challenge for many of the consumers;
- consumers identified challenges accessing information on available programs from their utility, and poor communications from service providers about what measures are eligible;
- many consumers identified the importance of having a trusted source of information on energy programs and opportunities to reduce energy costs, such as a neighbor or community-based organization;

[8] The focus groups were held in Buffalo on November 3, 2016, and in Binghamton on November 16, 2016.

- consumers that participated in the EmPower NY program, identified the program as effective in reducing their energy consumption;

Summary information on the focus groups, including the discussion guide and participant demographic summary are included in Appendices C through E.

1.4.2 Service Provider Survey

The survey was distributed to 60 organizations, including Environmental Justice (EJ), weatherization subgrantees,[9] community action agencies, and other community-based organizations that provide service to low-income customers. Service providers were asked to identify the programs that they have experience with and provide input on which programs have been most useful in delivering benefits to LMI customers, to highlight clean energy services that are not currently available, and to identify models for successful engagement of the LMI community. 15 service providers responded to the survey, providing the following insights:

- outreach and education is important to ensure that customers understand available programs, and can make informed decisions on which clean energy upgrades to invest in;
- available programs need to do a better job of coordinating and integrating energy efficiency and renewables to maximize affordability;
- income eligibility thresholds can be too restrictive,
- to reduce energy bills, an emphasis should be on increasing access to clean energy services rather than relying on bill assistance;
- more utility-non-profit partnerships are necessary to drive affordability in LMI communities;
- community-based organizations can play an effective role as messengers by building a good reputation and trust in the community;
- respondents identified various programs including EmPower NY, the Weatherization Assistance Program (WAP), the ConEd Multifamily Energy Efficiency Program, and the National Grid Residential Efficiency programs as being helpful in addressing energy affordability for low-income consumers or providing incentives to offset the cost of clean energy upgrades.

The survey questions can be found in Appendix F.

2. LMI Landscape in New York State

New York's low- to moderate-income (LMI) market segment is broad and diverse, with more than 3.5 million households across the State.[10] For ratepayer funded programs[11] in New York, the low-income designation applies to households with annual incomes at or below 60 percent of the state median

[9] Weatherization subgrantees administer the Weatherization Assistance Program (WAP) in each county
[10] American Community Survey 2013-2015
[11] Administered by NYSERDA and the utilities.

income (SMI),[12] while moderate-income households are designated by annual incomes between 60 percent SMI and 80 percent of area median income (AMI) or SMI, whichever is greater.[13] LMI household characteristics vary across the State with respect to housing tenure, housing type and condition, and primary heating fuel used, all of which can contribute to a household's annual energy consumption and costs and influence energy savings opportunities within the home. In addition to LMI households, the LMI market includes building owners and landlords, service providers, and program administrators who are responsible for delivering clean energy solutions to LMI households.

2.1 LMI as a Designation

For the purposes of establishing categorical eligibility and creating consistency in the market, where possible, the income thresholds used to determine eligibility for LMI energy programs administered by NYSERDA and the utilities are aligned with other state and federal energy and housing programs. The low-income designation of 60 percent of SMI is consistent with income eligibility criteria used by the Home Energy Assistance Program (HEAP)[14] and the Weatherization Assistance Program (WAP), which allows for the receipt of HEAP or WAP to serve as a proxy in lieu of income eligibility determinations from NYSERDA and the utility. The moderate-income designation of the greater of 80 percent of SMI or AMI aligns with Housing and Urban Development (HUD) definitions for affordable housing.

While income thresholds used by NYSERDA and the utilities align with those state and federal definitions, differences in terminology used across other state and federal energy, housing, and social service programs create confusion among customers and service providers. Many social service programs, such as Temporary Assistance for Needy Families and Special Supplemental Nutrition Program for Women, Infants, and Children determine eligibility on the basis of federal poverty level. HUD utilizes AMI to set income eligibility and considers moderate-income to be 80% - 120% AMI, low-income to be 80% AMI, and further segments to very low income (50 percent of AMI) and extremely low income (30 percent of AMI).

2.2 The LMI Market Segment

When defined as up to 80% of the greater of SMI or AMI, the LMI market segment accounts for nearly half of the households in New York State. Within the LMI segment, there are approximately 2.3 million low-income households (60 percent SMI) and about 1.2 million moderate-income households (80 percent AMI/SMI, whichever is greater), as outlined in Table 1. Nearly 1 million have an annual income at or below the federal poverty level.[15]

[12] For a household of four, 60% of SMI is approximately $53,076 a year.
[13] For a household of four, 80% of SMI is approximately $70,764 a year.
[14] Federal Low-Income Energy Assistance Program regulations establish the maximum income level allowed at 150 percent of the poverty level, except where 60 percent of SMI is higher. New York State has adopted the higher of 60 percent SMI or 150% FPL as the maximum income level allowed.
[15] In 2016, the federal poverty level designates annual household income for a family of four at $24,300.

Table 1: Distribution of LMI Households by Income Level[16]

Income Level	Number of Households in New York State	% of LMI Households	% of Households in New York State
Poverty Level[17]	999,659	28%	14%
Low-Income[18]	1,358,258	39%	19%
Moderate-Income[19]	1,153,239	33%	16%
Total	3,511,157	100%	48%

When considering the ability for LMI households to afford energy and identifying options for delivering clean energy solutions to such a large portion of the population, it is important to understand the characteristics of the population because variations in income level, housing tenure, and housing type can influence energy costs and the degree to which these households can engage in and undertake clean energy upgrades. For example, given very low household income, households living at or below poverty level face significant barriers to investment in clean energy upgrades.

Further consideration of LMI household distribution by housing type provides insights that can inform the design of clean energy programs to target this large market segment. As indicated in Table 2, there is a near equal distribution of LMI households across single family and multifamily building types.

Table 2: Distribution of LMI Households by Housing Type[20]

Income Level	Single Family Detached	Single Family Attached	Small Multi-Family (2-4)	Moderate Multi-Family (5-50)	Large Multi-Family (50+)	Mobile Homes & Other
Poverty Level	17%	4%	23%	29%	23%	3%
Low-Income	31%	4%	22%	22%	17%	4%
Moderate-Income	37%	5%	20%	19%	15%	3%
Total	29%	5%	22%	23%	18%	3%

As indicated in Table 3, LMI customers tend to live in older buildings. Nearly two thirds of LMI customers live in homes that are more than 50 years old, and a third live in homes built prior to 1940. Older homes have a tendency to be drafty, have outdated and inefficient appliances, and can have significant structural or other deficiencies. A review of the American Housing Survey indicates that low-income households in New York experience higher incidences of structural and other building deficiencies,

[16] United States Census Bureau. "Summary File."*2013 – 2015 American Community Survey*. U.S. Census Bureau's American Community Survey Office, 2016. Web. 29 November 2016 <http://ftp2.census.gov/>.
[17] Represents the number of households at or below the Federal Poverty Level (FPL). These households would be included in the low-income market segment, however they are presented separately for illustrative purposes.
[18] Represents the number of households between FPL and 60% of SMI.
[19] Represents the number of households between 60% SMI and 80% of AMI.
[20] United States Census Bureau/American Fact Finder. *2013 – 2015 American Community Survey*. U.S. Census Bureau's American Community Survey Office, 2016. Web. 29 November 2016 <http://factfinder.census.gov/>.

compared to higher income households.[21] Issues such as electric wiring problems and leaky roofs can be costly to repair and, in most cases, can be a barrier to moving forward with energy efficiency upgrades[22] until the deficiency is addressed. In addition to more frequent equipment breakdowns, these households report higher occurrences of homes being uncomfortably cold for a period of 24 hours or longer.

Table 3: Housing Vintage by Income Level[23]

Income Level	Pre- 1940	1940-1970	1970-2000	2000 +
Poverty Level	37%	35%	22%	7%
Low-Income	34%	37%	23%	6%
Moderate-Income	32%	39%	22%	6%
Total	**34%**	**37%**	**22%**	**6%**

Energy end use profiles can vary significantly between single family home and apartment dwellers. According to the U.S. Energy Information Administration (EIA), apartments in buildings of five or more units consume about half as much energy as single family homes.[24] This is due to the fact that the apartments are typically smaller, can be bordered by other apartments or common areas, and large apartment buildings typically have centralized heating systems. As illustrated in Table 4, the majority of LMI customers rent their homes. Opportunities for making clean energy improvements in rental properties can be compromised by the willingness of a landlord to fund improvements or to otherwise give permission for no-cost energy upgrades. Typically, direct install measures such as replacing inefficient lighting, installing low-flow devices, and the addition of weather stripping can be done without landlord approval. However, intrusive measures such as insulation and air sealing or the replacement of appliances, require either landlord sign off or in some cases warrants landlord cost share. The ability to site solar panels or other forms of renewable energy generation is compromised for those who live in apartments, though the emergence of shared solar will provide apartment dwellers with opportunities to access the benefits of renewable energy.

[21] Summarized from Rochester and New York City data in United State Census Bureau. *American Housing Survey for the United States: 2013,* U.S. Government Printing Office, Washington, DC.

[22] For example, electrical problems and leaky roofs can be a barrier to improvements such as air sealing, insulation, and upgrading inefficient appliances.

[23] United States Census Bureau. "Summary File."*2013 – 2015 American Community Survey*. U.S. Census Bureau's American Community Survey Office, 2016. Web. 29 November 2016 <http://ftp2.census.gov/>.

[24] "Apartments in Buildings with 5 or More Units Use Less Energy than Other Home Types." U.S. Energy Information Administration, June 18, 2013. Web. 18 December 2016 <http://www.eia.gov/todayinenergy/detail.php?id=11731>

Table 4: Distribution of LMI Households by Housing Tenure[25]

Income Level	% Own	% Rent
Poverty Level	20%	80%
Low-Income	38%	62%
Moderate-Income	50%	50%
Total	**37%**	**63%**

As indicated in Table 4, home ownership in the LMI segment increases with income level. Moderate-income customers are generally more likely than low-income households to own their homes and may have a greater capacity to take on clean energy improvements through participation in programs subsidize the cost of upgrades, or by undertaking do-it-yourself activities to improve the energy performance of the building.

The way in which customers use energy, along with the fuels consumed, are also critical factors for energy affordability and identifying potential clean energy solutions. Table 5, provides detail on the average residential energy consumption by primary end use for households in New York.

Table 5: Residential Energy Consumption[26]

End Use	Portion of Overall Household Energy Consumed
Space Heating	56%
Appliances, electronics, and lighting[27]	26%
Water heating	17%
Cooling	1%
Total	**100%**

Home heating is the most energy-intensive activity in the residential sector, accounting for over half of total annual energy consumption. As highlighted in Table 6, more than half of the LMI market segment heats with natural gas, and about 27 percent of LMI homes heat with a deliverable fuel.

[25] United States Census Bureau/American Fact Finder. *2013 – 2015 American Community Survey*. U.S. Census Bureau's American Community Survey Office, 2016. Web. 29 November 2016 <http://factfinder.census.gov/>.
[26] United States Energy Information Administration/2009 Residential Energy Consumption Survey. *Household Energy Use in New York*. United States Department of Energy, 2009. <https://www.eia.gov/consumption/residential/reports/2009/state_briefs/pdf/NY.pdf>
[27] Also worth noting is the growth in the adoption of consumer electronics among households of all incomes, and the associated increase in electric consumption, which affects all residents regardless of housing configuration.

Table 6: Distribution of LMI Households by Primary Heating Fuel[28]

Income Level	% Natural Gas	% Oil or Propane	% Electricity	% Other	% None
Poverty Level	55%	26%	15%	3%	2%
Low-Income	57%	27%	12%	3%	1%
Moderate- Income	57%	29%	10%	3%	1%
Total	**56%**	**27%**	**12%**	**3%**	**1%**

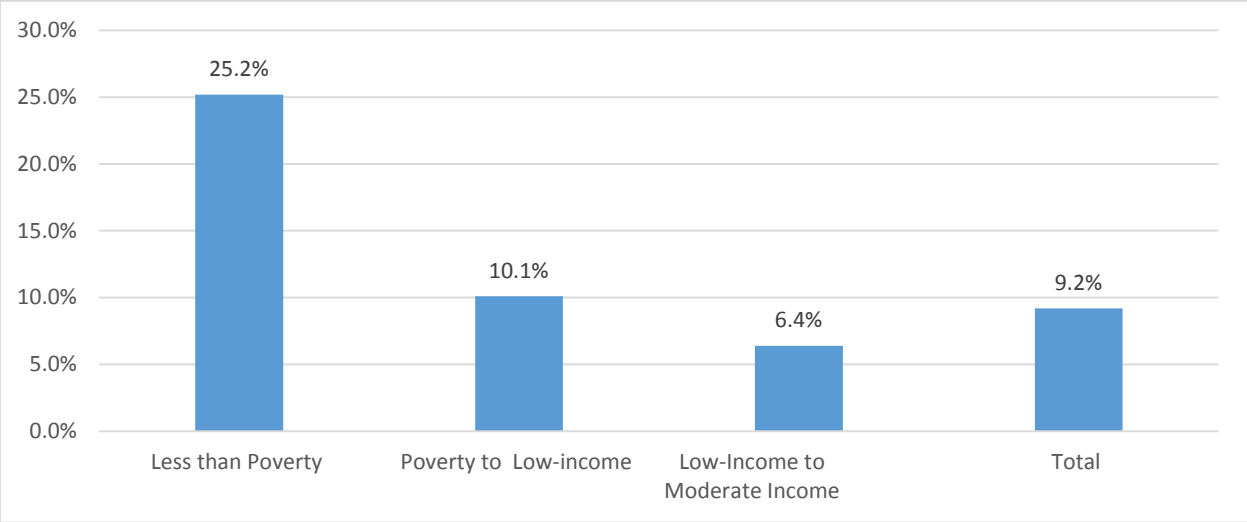
Current commodity prices for natural gas and electricity are relatively low and stable. Conversely, prices for deliverable fuels such as oil or propane are typically higher than natural gas and can be volatile, making it difficult for a household on a limited budget to afford. For households with high energy costs associated with home heating, improvements to the building shell[29] and the efficiency of the heating system are an important consideration. Oil to natural gas conversions also can deliver affordability benefits to households that heat with deliverable fuels.

2.3 Energy Affordability

LMI households pay a disproportionate share of their incomes on energy needs, relative to higher income households. The energy burden, or the percentage of annual household income spent on energy, can approach 25 percent for LMI households, compared to less than five percent for households with higher incomes. As outlined in Figure 1, further segmentation reveals that energy affordability can vary greatly among LMI households. Many of these households face difficult tradeoffs between paying their energy bills and paying for housing, food, or medical needs.[30] For low-income households that have heat included in the rent, high energy costs can result in increased operating and maintenance costs for building owners, who pass the cost along to the tenants. This dynamic can result in unaffordable housing and create housing insecurity for lower-income households.

[28] United States Census Bureau/American Fact Finder. *2013 – 2015 American Community Survey*. U.S. Census Bureau's American Community Survey Office, 2016. Web. 29 November 2016 <http://factfinder.census.gov/>.
[29] Such as reducing thermal loss through insulating the attic and walls, and air sealing.
[30] National Energy Assistance Directors' Association. *2009 National Energy Assistance Survey, Final Report*. Distributed April 2010. <http://neada.org/wp-content/uploads/2013/03/neada_2009_survey_report_4_16_10.pdf>

Figure 1: Mean Energy Burden by Income Level[31]



Indicators such as the level of utility arrears and the number of utility disconnects highlight the difficulty that customers have paying for their energy needs. As of October 31, 2016, there were 1,012,956 residential customers who were more than 60 days in arrears, carrying approximately $711 million owed to utilities; and 256,096 residential customers statewide had utility service disconnected for non-payment during the preceding 12 months. As can be seen from the high numbers of arrearages and shut offs, energy affordability remains a significant challenge in New York State.

2.4 Service Providers

The LMI market segment is served by a wide range of service providers, including utilities, government agencies, affordable housing owners and managers, community-based organizations, contractors and installers, and program administrators, all of whom could assist in delivering clean energy solutions to the LMI population. These organizations often serve as important and trusted information sources for LMI customers. Increasing energy affordability and access to clean energy solutions requires not only direct engagement with the LMI households but also working through these intermediaries. The primary LMI market actors are summarized in Table 6.

[31] American Community Survey 2013-2013. The data presented only reflects households that pay for their energy bills directly.

Table 7: Summary of LMI Market Segment Participants

Actor	Description	Role
Human service providers	Local Departments of Social Services, Office for the Aging	Serve as the point of intake for low-income households when they apply for assistance programs.
Community-based organizations	NYSERDA GJGNY CBO, faith-based organizations, NYS Community Action Agencies, Weatherization subgrantees	Provide services such as energy education, identification of programs and resources for LMI residents, project development and implementation, and assistance with application processes.
Contractors, vendors, and installers	Weatherization subgrantees and home performance contractors; multifamily partners; architect and engineering (A&E) firms; solar installers	A network of more than 300 firms and non-profits that deliver clean energy solutions to LMI households through existing clean energy programs.
Affordable housing owners and managers	Own and manage multifamily affordable housing	Provide affordable housing for income-eligible residents. For many owners and managers, clean energy upgrades help manage building operational costs.
Program administrators	NYSERDA, utilities, NYS Homes and Community Renewal, Office of Temporary and Disability Assistance, and others.	Responsible for administering ratepayer and taxpayer-funded clean energy programs.

2.5 Multifamily Affordable Housing

Multifamily affordable housing in New York State presents significant opportunities for energy savings, improving the viability of the housing stock and the quality of life for tenants; however the various ownership and metering configurations can impact the level of benefit to LMI households. In direct metered buildings, where tenants are responsible for paying their energy bills, in-unit energy efficiency improvements such as appliance and lighting upgrades, can result in direct financial benefit to the LMI tenant. In master-metered buildings, the financial benefit of energy efficiency improvements result in reduced operational costs for the building owners, this benefit is typically passed on to the LMI tenant in the form of increased comfort and safety, improved viability of the housing stock, and the stabilization of rents as a product of reduced operating and maintenance costs for the building owners. In cooperative or condominium configurations, the LMI tenants have an ownership stake in the building, and benefit directly from improvements to the building (central systems and shell improvements), as well as in-unit upgrades.

In addition, when regulated affordable buildings undergo capital refinancing, the benefits of clean energy improvements can be included in the underwriting criteria, thus improving the financing terms for the building owner. The building owner therefore can make additional capital improvements to the building, which can further improve the viability of the housing stock and the quality of life for tenants.

2.6 Access to Clean Energy Solutions

While energy efficiency and renewable energy upgrades can decrease energy consumption and energy bills, most LMI customers and affordable building owners face obstacles that prevent them from undertaking energy efficiency improvements or investing in renewable energy solutions. Direct consumer input and secondary research indicate that the LMI market segment faces significant barriers to the adoption of clean energy solutions. Barriers for consumers and building owners include financial barriers, competing interests and priorities, lack of information on available programs, building structural issues, and split incentives.

In addition, systemic challenges present barriers to achieving scale and maximizing the impact of energy programs. Policy and program barriers include limited budgets, the high cost of delivering programs, the fragmented administration of LMI-oriented energy programs, and challenges in identifying LMI customers.

2.6.1 Barriers for LMI Consumers and Affordable Building Owners

Access to capital. By definition, LMI consumers have lower incomes and many have difficulty paying their energy bills, making it less likely that they can budget for clean energy improvements on their own. LMI consumers can also face difficulty in accessing affordable financing options. Debt-to-income and FICO score requirements associated with typical consumer lending can often leave LMI customers effectively without access to credit. Affordable building owners also often operate on tight budgets, and may be unable or unwilling to take on additional debt to make clean energy upgrades. In addition, many LMI customers do not have sufficient tax liability to benefit from tax credits for the installation of clean energy measures.

Competing interests. Due to their limited budgets, LMI consumers often face tradeoffs between paying for necessities such as mortgage or rent, utilities, childcare, transportation, food, and medicine; which are prioritized over investments in clean energy improvements. This sentiment was echoed by many focus group participants. Similarly, the lean budgets of affordable building owners often preclude them from budgeting additional expenditures for clean energy improvements, when other capital improvements are needed.

Lack of information. Many LMI consumers and building owners are not aware of the benefits and cost savings of clean energy improvements; are unaware of the available programs to offset the costs of such improvements; and/or lack confidence that the upgrades will result in the projected savings.

Building structural issues. As noted above, most LMI residents live in older housing and can experience a higher prevalence of structural and electrical deficiencies. Many key energy efficiency measures, such

as insulation, depend on the integrity of the roof or walls ensure that the measure is effective. Rooftop solar PV system installation requires that the roof is structurally sound and that the electric service is in good repair. When structural issues are present, clean energy upgrades must be deferred until the deficiencies are corrected. To compound this issue, there are limited sources of assistance available to LMI households to address these deficiencies. While current LMI programs such as EmPower NY can address health and safety issues such as improper venting of combustion appliances, addressing knob and tube wiring, gas leaks, and the installation of smoke and carbon monoxide detectors, the budget available does not allow for major health and safety mitigation or structural repairs to the home.[32]

Split incentive. In rental buildings, in cases where renters are individually metered and pay the energy bill, owners typically do not have an incentive to invest in clean energy upgrades, and renters do not have the ability to make investments to improve the energy efficiency of a property that they don't own. In master-metered buildings, owners may have a motive to invest in clean energy upgrades, however if the benefits of such investment are not passed on to tenants, such investments do not impact affordability. In addition, tenants in master metered buildings are not directly responsible for paying the energy bill and may not have a financial incentive to moderate their energy consumption.

2.6.2 Systemic Barriers

Limited budgets. As noted above, nearly half of the households in the State qualify as low or moderate-income. In addition, LMI clean energy programs require high subsidization. For example, the EmPower NY program, open to utility customers up to 60% of SMI, provides no-cost energy efficiency services, and averages about $4,000 per project. The Assisted Home Performance with ENERGY STAR program, open to utility customers up to 80% of SMI/AMI, provides a 50% subsidy on the cost of the entire energy efficiency workscope. It would be difficult to scale-up clean energy programs to serve all eligible households at these expenditure levels.

Fragmented program administration. LMI clean energy and bill payment assistance programs are delivered by multiple program administrators, including the utilities, NYSERDA, HCR, and OTDA. While recently, progress has been made to coordinate and align certain programs,[33] multiple program processes and rules can create confusion for both service providers and customers.

Identifying LMI customers. Low-income energy programs generally use receipt of HEAP to establish categorical eligibility for low-income energy services.[34] In the case of the utility bill payment discount programs and EmPower NY, utilities have the ability to identify their direct HEAP recipients and automatically enroll them into the utility bill payment assistance program, as well as referring the customer for energy efficiency services through EmPower. The utilities have a difficult time identifying

[32] Under EEPS, NYSERDA allocated approximately 4% of the EmPower NY program budget to address health and safety issues. The level of health and safety expenditure is expected to be similar under the CEF.
[33] NYSERDA and HCR have made progress in aligning EmPower and WAP, including the development of a joint application that is used by Weatherization Subgrantees.
[34] Utility payment assistance, EmPower NY, WAP.

low-income customers; however, if the customer does not receive a utility HEAP benefit. Similarly, identification of moderate income customers is difficult, unless the customer directly applies for a given program and provides documentation of income eligibility.

3. Energy Policy and Regulatory Landscape

3.1 Background

3.1.1 Deregulation and the Systems Benefit Charge

In 1996, as the State deregulated the electric industry to introduce competition with the goal of lowering costs for ratepayers, the PSC acknowledged the need to ensure that certain public policy objectives that may not be met by competitive markets would be addressed. Energy affordability for low-income customers was among these policy objectives.[35] The System Benefits Charge (SBC) was established to fund these objectives through a surcharge on electric bills. NYSERDA was named as the independent administrator of SBC funds, and eventually became the default provider of low-income energy efficiency services, due to the administrative and operational efficiencies associated with a statewide program.[36] Initially, the SBC funded a series of low-income energy efficiency programs, which were based on the success of the Utility Low-Income Energy Efficiency Program (ULIEEP).[37] The Low-Income Direct Installation Program, the Assisted Multifamily Program, and the Weatherization Initiative where administered from 1999 through 2005 and served as the precursors to the current portfolio of LMI energy efficiency programs. The SBC also included energy awareness, education, and leveraging programs targeted at low-income customers. [38] The SBC portfolio was renewed several times through 2016.

3.1.2 Energy Efficiency Portfolio Standard

On June 23, 2008, the PSC established the Energy Efficiency Portfolio Standard (EEPS) proceeding as a statewide initiative to develop and encourage adoption of cost-effective energy efficiency, in order to reduce energy consumption and greenhouse gas emissions and in support of the State's energy and

[35] Opinion and Order Regarding Competitive Opportunities for Electric Service (Case 94-E-0952). Issued May 20, 1996. <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7B076F3B08-917D-47FE-83C0-8B2B32822A67%7D>

[36] Case 94-E-0952, Order Establishing Conditions for The Continuation and Transfer of Low-Income Programs and Establishing System Benefits Charge Funding (Case 94-E-0952). (issued May 30, 2003). <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7B3AB4D394-F72C-417B-86CF-533E62E02893%7D>

[37] In July of 1992, through Case 89-M-124, the PSC ordered New York utilities to establish three year pilot programs to provide energy efficiency services to low-income customers.

[38] See Appendix H for detail on the low-income SBC energy efficiency programs.

environmental goals.[39] Under EEPS, the Commission directed the utilities and NYSERDA to submit proposals for energy efficiency programs.[40]

In 2010, the Commission reaffirmed its preference for a statewide approach for low-income energy efficiency programs, in order to maintain consistency in offerings and capture administrative efficiencies,[41] and NYSERDA was continued as the default provider of low-income energy efficiency services.[42] The EEPS portfolio included the following low- and moderate-income energy efficiency programs: EmPower NY, Assisted Home Performance with ENERGY STAR, the Assisted Multifamily Performance Program, and ENERGY STAR Certified Homes Program. The annual budget for the low- and moderate-income programs was over $60 million.

Throughout SBC and EEPS, the Commission acknowledged the important role that the utilities play in referring candidates for low-income energy efficiency services. In 2010, the Commission provided an incentive to utilities for the referral of low-income customers. For customers referred to EmPower NY, utilities were able to claim 15 percent of the energy saved from measures installed toward the utility's EEPS energy savings goals.[43] In 2012, this incentive was expanded to include 7.5 percent of the energy savings from low-income customers referred from other entities within the utility's service territory.[44]

[39] At the time, the State's goals included reducing New York residents' electricity usage by 15 percent of forecast levels by 2015.

[40] While not part of the EEPS proceeding, the Keyspan/National Grid Low-Income Gas Efficiency Pilot program was developed and implemented by Keyspan in conjunction with WAP subgrantees, in September of 2007. The pilot was established as a result of the Keyspan and National Grid merger and was funded at $3.3 million for one year to serve as an interim gas efficiency program to service low-income, small home (1-4 units) & multifamily (5+ units) firm gas rate paying customers in Keyspan's service territory in NY City (KEDNY) and Long Island (KEDLI). In total, the $3.3 million contract called for provision of program eligible gas efficiency services to 1,360 housing units to achieve over 400,000 therms saved. In the summer of 2008, the PSC approved the full implementation of the Interim program by National Grid. As a result, 2008, the program was extended through December 2009 and the overall program budget and production goals were quadrupled to $13.2 million to serve a total of 5,264 units of low-income housing to achieve over 1 million therms saved.

[41]New York State Public Service Commission. Order Approving Certain Commercial and Industrial; Residential; and Low-Income Residential Customer Energy Efficiency Programs with Modifications (Case 07-M-0548). Issued January 4, 2010. <http://documents.dps.ny.gov/public/Common/ ViewDoc.aspx?DocRefId=%7B4B290246-94FD-451F-B352-1C9C6CCC110B%7D>

[42] While NYSERDA was the default provider for low-income energy efficiency programs, low-income customers were able to participate in the utility rebate programs.

[43] Ibid.

[44] New York State Public Service Commission. Order Modifying Budgets and Targets for Energy Efficiency Portfolio Standard Programs and Providing Funding for Combined Heat and Power and Work Force Development Initiatives (Case 07-M-0548). Issued December 17, 2012. < http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7B15F1F208-370F-4AF5-A110-2062012A1F4F%7D>

3.1.3 NY-Sun

The NY-Sun initiative, administered by NYSERDA, was launched in 2014 and represents New York State's approach to creating a self-sustaining solar photovoltaic (PV) market. With support from NY-Sun, solar power systems in New York State have grown 750 percent increase – from a little over 78 megawatts in 2012 to 669 megawatts currently throughout the state. The market is expected to add 3,000 megawatts of solar capacity to the State's electricity generation mix by 2023. While deployment of solar PV can provide significant grid benefits for all consumers, as previously discussed, many LMI customers cannot directly access the benefits of solar PV due to barriers to adoption.

To explore solutions to address barriers to solar PV adoption by LMI customers, NYSERDA created a working group, comprised of solar installers, utilities, consumer advocacy groups, and DPS staff, in 2014. The working group discussed financing options, increased outreach and education, and community-based investment models as opportunities for increasing access to solar PV for LMI customers. The Commission further supported these efforts by authorizing up to $13 million in NY-Sun funds to be used to support increased participation by LMI customers in solar PV.[45]

3.2 Recent Developments

3.2.1 New York State Energy Plan

The 2015 NYS Energy Plan (Energy Plan) presents a comprehensive path for coordinating the State's energy policies and initiatives to achieve a 40 percent reduction in greenhouse gas emissions, 50 percent of electricity generation from renewable energy sources, and a 23 percent decrease in energy consumption from buildings, by 2030. In presenting the challenges and opportunities that the State must address to achieve these aggressive energy and environmental goals, the Energy Plan emphasizes the importance of energy affordability and providing solutions for addressing the barriers to adopting clean energy solutions for LMI communities. In addition, the Energy Plan highlights the important co-benefits of clean energy in LMI communities, such as positive health impacts, job creation, and sustainable development.[46]

3.2.2 Reforming The Energy Vision

In Governor Cuomo's Reforming the Energy Vision (REV) proceeding, the Commission articulated a new approach to regulation of energy markets, and new business models that create opportunities for customers and other third parties to be active participants, utilizing distributed energy resources (DER)

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[45] New York State Public Service Commission. Order Authorizing Funding and Implementation of the Solar Photovoltaic MW Block Programs (Case 03-E-0188). Issued April 24, 2014. <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7bEDB54E42-13EA-4817-8F5C-8E3165D78919>

[46] New York State Energy Planning Board. *The Energy to Lead: 2015 New York State Energy Plan*. <https://energyplan.ny.gov/-/media/nysenergyplan/2015-state-energy-plan.pdf> The planned 40 percent reduction in greenhouse gas emissions is relative to 1990 levels. The planned 23 percent decrease in energy consumption from buildings is relative to 2012 levels.

as an integral tool. The Commission's policy to maintain universal, affordable service is a critical driver of the REV initiative.[47]

The REV initiative facilitates opportunities to invest in clean energy and the means to reduce energy costs -- the best solution for all customers, including LMI customers. Greater access to clean energy solutions for LMI customers will empower those for whom these savings may have the greatest value, as well as allowing these customers more choice in how they manage and consume energy. It is also the best way to narrow the affordability gap that needs to be filled with direct financial assistance for customers with low incomes.

In the REV Framework Order,[48] the PSC concluded that ready access to information regarding customer energy usage is vital to the success of DER markets, and directed the utilities to consider near-term measures to enhance access to customer data. During the Distribution System Implementation Planning (DSIP) process that followed, the utilities took stock of customer data accessibility in their service territories, sought stakeholders' perspectives on data issues, and outlined plans for streamlining and standardizing the provision of customer data. This effort culminated in a joint utility proposal for a common path forward on data access, filed with the PSC on November 1, 2016 as part of the Supplemental DSIP.[49] Among other things, the utilities that intend to deploy automated metering infrastructure (AMI) committed to the following steps:

- Implement a nationwide standard for customer-driven data sharing called Green Button Connect My Data (or a comparable specification);
- Develop a new electronic data interchange (EDI) transaction to provide ESCOs with interval data at the end of the billing cycle;
- Provide bill-quality basic energy usage data in intervals between five minutes and one hour, available on a 24-hour lag; and
- Provide a uniform level of aggregated data including information on kW and/or ICAP, customer counts, and kWh data that is aggregated by zip code and/or tax district, and segmented by rate class.

Additionally, the PSC's REV Track Two Order[50] directed the utilities and NYSERDA to work together to continue developing NYSERDA's statewide Utility Energy Registry (UER), which houses aggregated

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[47] Case 14-M-0101, Reforming the Energy Vision, Order Adopting Regulatory Policy Framework and Implementation Plan (issued February 26, 2015).

[48] New York State Public Service Commission. Order Adopting Regulatory Policy Framework and Implementation Plan (Case 14-M-0101). Issued February 16, 2016, <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={0B599D87-445B-4197-9815-24C27623A6A0}>

[49] Joint Utility DSIP, http://documents.dps.ny.gov/public/MatterManagement/MatterFilingItem.aspx?FilingSeq=170233&MatterSeq=51282.

[50] New York State Public Service Commission. Order Adopting a Ratemaking and Utility Revenue Model Policy Framework (Case 14-M-0101). Issued May 19, 2016.

customer usage data provided by the utilities. NYSERDA has convened a UER working group that will develop potential solutions around reporting standardization, customer privacy, the mode of UER implementation, and cost of implementation.

3.2.2.1 Clean Energy Fund

In a January 21, 2016 Order, the Commission established a 10-year, $5 billion Clean Energy Fund (CEF) to accelerate the growth of New York's clean energy economy, address climate change, strengthen resiliency despite extreme weather, and lower energy bills.[51] The CEF is designed to meet four primary objectives: (1) greenhouse gas emission reductions; (2) affordability, as measured by reductions in customer energy bills; (3) statewide penetration and scale of energy efficiency and clean energy generation; and (4) growth in the State's clean energy economy. The CEF is administered by NYSERDA and is intended to build on the progress already made to date in developing a robust clean energy sector through innovative projects and private-public partnerships and mobilizing private-sector capital. The fund will operate four major portfolios:

- Market Development ($2.7 billion): NYSERDA will undertake a variety of activities to attract and leverage third-party capital, stimulate consumer demand for clean energy alternatives, and help build clean energy supply chains to meet that demand. At least $234.5 million must be invested in initiatives that benefit low- to moderate-income customers during the first three years of the fund.
- NY-Sun ($961 million): CEF finalizes funding for NY-Sun and confirms a long-term commitment to the solar electric market and industry in New York State.
- NY Green Bank ($782 million): CEF completes the capitalization of the NY Green Bank, increasing the NY Green Bank's total investment to $1 billion.
- Innovation and Research ($717 million): CEF will fund research and technology development that drives clean-tech business growth and job creation while providing more energy choices for customers.

In approving the CEF, the Commission emphasized that the delivery of services to low-income customers will remain a priority and required NYSERDA to invest a minimum of $234.5 million in LMI clean energy programs over the first three years of the CEF. In addition, the Commission directed NYSERDA and the utilities to actively evaluate the delivery of services to low-income customers in order to develop alternative approaches that can improve consumer value.[52]

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http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={D6EC8F0B-6141-4A82-A857-B79CF0A71BF0}.

[51] New York State Public Service Commission. Order Authorizing the Clean Energy Fund Framework (Case 14-M 0094). Issued January 21, 2016. <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={B23BE6D8-412E-4C82-BC58-9888D496D216}>

[52] Ibid, p. 28.

In February 2016, NYSERDA filed the Resource Acquisition Transition Chapter,[53] which includes $162 million in investments in LMI clean energy programs. In August 2016, NYSERDA filed the LMI Chapter of the CEF,[54] which includes an overview of NYSERDA's strategy for providing clean energy services to LMI households under the CEF. It also includes a summary of funding allocations for the first three years of the CEF, along with investment plans for four LMI-oriented initiatives.[55] The LMI Chapter will be updated, as new CEF investments in LMI initiatives are made.

3.2.2.2 Affordability Proceeding

In January 2015, the Commission opened a proceeding to examine the low income programs offered by the major electric and gas utilities in New York State.[56] The primary purposes of the proceeding were to standardize utility low income programs to reflect best practices where appropriate, streamline the regulatory process, and ensure consistency with the Commission's statutory and policy objectives.

On May 20, 2016, the Public Service Commission issued an order in this proceeding adopting a universal Energy Affordability Policy, which seeks to limit energy costs for LMI New York households to no more than 6 percent of household income.[57] A brief summary of the order follows:

- As an initial step to reaching all eligible households, the Commission directed that utilities open their low income discount programs to all households that currently receive HEAP, regardless of fuel or benefit type.
- A default process of setting benefit levels was established which varies levels of discounts based on need; however, utilities were allowed some flexibility in designing rate discounts. Con Edison and National Grid-NY were specifically allowed to pursue alternative approaches.
- A funding limit was established such that the total budget for each utility may not exceed 2% of total electric or gas revenues for sales to end-use customers.
- Statewide, the enhanced low income discount program will serve approximately 1.65 million customers, at a cost of approximately $248 million, an increase of approximately 87% to existing programs.

In concert with the Commission's adoption of the Energy Affordability Policy, the Governor also directed the formation of a Task Force, to develop new strategies so that all of the state's low income households have greater access to clean energy and are better served by the state's energy efficiency and assistance programs. The Task Force has been meeting regularly in the latter half of 2016, and has made itself available as a resource to the CEAC LMI Working Group.

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[53] NYSERDA. CEF Resource Acquisition Transition Chapter. February 22, 2016. < https://www.nyserda.ny.gov/-/media/Files/About/Clean-Energy-Fund/CEF-Resource-Acquisition-Transition-Chapter.pdf >

[54] NYSERDA. CEF Low-to Moderate Income Chapter. August 18, 2016. < https://www.nyserda.ny.gov/-/media/Files/About/Clean-Energy-Fund/CEF-Low-to-Moderate-Income.pdf>

[55] Retrofit NY, REVitalize, the Low-Income Forum on Energy, and the Healthy Homes Initiative.

[56] Case 14-M-0565, Utility Low Income Programs, Order Instituting Proceeding (issued January 9, 2015) (Instituting Order).

[57] Ibid.

3.2.2.3 Retail Access

There are currently about 200 energy service companies (ESCOs) eligible to provide electricity and natural gas in New York State. It is estimated that there are about 173,000 low-income ESCO residential electric customers and about 108,000 low-income ESCO residential gas customers. Staff recently compiled data that indicates that for the 30 months ended June 30, 2016, New York State low-income customers who chose to take service from an ESCO paid almost $96 million more than residential customers that elected to take commodity supply from their utility for the same period.

Based on these findings, the Commission issued an Order on December 16, 2016 prohibiting ESCOs from selling electricity and natural gas to low-income customers in New York.[58] The ban is effective 60 days after the Order was issued. In its Order, the Commission determined that a prohibition on ESCO service to low-income customers is necessary to protect those customers who receive a subsidy on their energy bill, and to protect taxpayers and ratepayers who fund the programs that provide those subsidies. The Commission provided a limited window to individual ESCOs that may be willing and able to provide guaranteed savings to these consumers. For those ESCOs who are capable of doing so, the Commission is allowing them to seek a waiver.

3.2.2.4 Community Distributed Generation

A July 2015 Order established a two-phase process for the Community Distributed Generation (DG) Program. In Phase 1 (October 19, 2015 – April 30, 2016), priority was given to projects that included at least 20 percent low-income participants.[59] Staff also initiated a collaborative to develop means for encouraging low income customer participation and to address obstacles to such participation in Community DG during Phase Two. In Phase 2 (began May 1, 2016), the entire state was open to CDG projects.[60] While initial steps in developing community solar projects began (resulting in many such projects entering utility interconnection queues), actual progress has been slow; no projects entered service during Phase 1 and only a few have entered service in 2016.

In the Order, the Commission directed Department of Public Service Staff (Staff) to initiate a collaborative process involving NYSERDA, low-income community organizers, utilities and other interested stakeholders to identify the main barriers to participation for low-income customers in Community DG and exploring possible solutions. The Collaborative established five working groups — Financing, Energy Usage Data, CDG Customer (Subscriber), Incentives, and Oversight — to examine key barriers to low-income customer participation and develop solutions. A report on the Collaborative' s

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[58] Case 12-M-0476, Order Adopting a Prohibition on Service to Low-Income Customers by Energy Service Companies. (Issued December 16, 2016).
<http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={1803241A-06B8-4B4C-96CA-F6B7C1D64A16} >

[59] Case 15-E-0082, Community Net Metering, Order Establishing a Community Distributed Generation Program and Making Other Findings (issued July 17, 2015).

[60] Visit www.lowincomesolar.org/models/community-solar-new-york/ for further details.

work was presented to the Commission in August 2016[61], which noted that no consensus on best approaches was achieved and the DPS Staff will develop a whitepaper examining utility ownership of LMI CDG, which will be forthcoming.

Con Edison recently filed a petition for approval to install solar panels on some of its buildings, and to share the benefits with a group of it low income customers.[62] That petition remains pending before the Commission.

3.2.2.4.1 Value of DER

In December 2015, the Commission instituted a proceeding[63] seeking input on the development of an alternative method of valuing distributed energy resources (DER), particularly solar systems that receive compensation under net metering. This proceeding is still underway. After a year-long collaboration with environmental advocates, utilities, solar and DER providers, and consumer advocates, Staff recently issued for comment a set of initial steps of an ongoing process that will lead to an new methodology for an increasingly granular pricing. In the transition phase, existing rooftop solar systems would continue to receive compensation under current contracts for up to 20 years of operation.

3.2.2.5 Community Choice Aggregation (CCA)

The Commission initiated consideration of CCA as part of both the REV initiative and its continued review and revision of retail energy markets. The goals of both REV and retail energy market reform include, among other things, increasing the ability of consumers to manage their energy usage and bills, facilitating wider deployment of clean energy, and increasing the benefits of retail competition for residential and small non-residential customers.[64] A Community Choice Aggregation (CCA) program creates these benefits for participating communities.

Under CCA, municipalities are able to form associations to purchase power for residents and small businesses in a single neighborhood or an entire community. When a municipality creates a CCA, every resident is a member of the power purchase association, unless they opt-out. The plan must comply with public comment requirements. Utilities are required to share certain and applicable customer data with a CCA, but that data does not include phone numbers or whether the customer is LMI.

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[61] New York State Public Service Commission. Collaborative Report Regarding Protections for Low-Income Customers of Energy Services Companies (Case 12-M-0476). <http://www3.dps.ny.gov/W/PSCWeb.nsf/All/8A75B07F45E1672485257EDD00602D7C?OpenDocument>

[62] [cite]

[63] New York State Public Service Commission. In the Matter of the Value Distributed Energy Resources, Notice Soliciting Comments and Proposals on an Interim Successor to Net Energy Metering and of a Preliminary Conference (Case 15-E-0751). Issued December 23, 2015. < http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={72C65039-EC54-497A-8D4A-FD0636512C10}>

[64] Case 14-M-0101, Reforming the Energy Vision, Order Instituting Proceeding (issued April 25, 2014); Case 12-M-0476 et al., Residential and Small Non-Residential Retail Energy Markets, Order Instituting Proceeding and Seeking Comments Regarding the Operation of the Retail Energy Markets in New York State (issued October 19, 2012).

3.2.2.6 REV Demos

Demonstration projects are a transition step in implementing REV policy changes, and are intended to inform decisions with respect to developing distributed system platform functionalities, measuring customer response to programs and prices associated with REV markets, and determining the most effective implementation of DER. These projects are also a means of presenting REV to customers and gauging their receptiveness to REV technologies, products, and services. Data collected from these projects will help inform regulatory changes, rate designs, and the most effective means to integrate DER on a larger scale.

A total of 11 projects are being actively implemented, including several that focus on community and LMI customer engagement. National Grid's "Fruit Belt" REV Demo seeks to install up to 100 residential rooftop solar systems within the Buffalo "Fruit Belt" neighborhood to provide 150 LMI customers with monthly net-metering credits.[65] National Grid also plans to partner with the Town of Clifton Park and clean energy providers to offer programs and pricing signals designed to manage usage and reduce peak demand and energy bills. NYSEG's Community Energy Coordination Project aims to aggregate local demand for clean energy technologies, organize a bulk purchase from third-party providers on behalf of customers, and target outreach to areas where DER provides the greatest system benefits.

4. LMI Clean Energy Initiatives in New York State

Across New York State, more than $700 million in public funds are spent on delivering clean energy and bill payment assistance initiatives that support the LMI market segment, each year. These initiatives include both ratepayer-funded programs administered by NYSERDA and the utilities and federally-funded programs such as the Home Energy Assistance Program (HEAP) and the Weatherization Assistance Program (WAP).[66] Combined, these programs provide clean energy services to approximately 16,000 households, nearly 200 affordable multifamily buildings and bill payment assistance to 1.65 million households on an annual basis. Ratepayer-funded initiatives represent over $300 million in spending annually, with $248 million being directed at bill payment assistance through the utilities, nearly $50 million going towards no-cost energy efficiency improvements for low-income households, $18 million for affordable multifamily initiatives, $7 million for affordable new construction, and $4 million for renewable energy.

Beyond incentives for clean energy projects, there are several other initiatives that help facilitate LMI clean energy projects and contribute to the reduction of energy burden of LMI customers. Outreach and education help consumers make more informed energy decisions and can help them learn about available programs; by working through community based organizations and addressing community-

[65] National Grid is also partnering with NYSERDA to integrate energy efficiency improvements for the homes that either host PV or receive the net metering bill credit.

[66] The focus of this report is on the ratepayer-funded programs, however HEAP and WAP are included to provide a more comprehensive picture of LMI energy initiatives within New York State.

level energy needs, programs can address access and energy burden issues; and low-interest financing options can help to overcome capital constraints for some LMI customers and building owners.

Table 8: Summary of Low-Moderate Income Energy Programs in NYS

Program	Income Threshold	Service Provided	Target Audience	Program Administrator	Annual Funding Level[67]
Utility Low-Income Program	60% SMI	Bill payment assistance	Utility customers that pay directly for their energy	Utilities	$248 million[68]
EmPower NY	60% SMI	Energy Efficiency	Homeowners and renters	NYSERDA	$30 million
National Fuel Gas LIURP	60% SMI	Energy Efficiency	Homeowners and renters	NYSERDA	$6 million
National Grid/KEDLI Low Income Program	60% SMI	Energy Efficiency	Homeowners and renters	National Grid	$1.9 million
Residential Energy Affordability Partnership (REAP) Program	60% SMI	Energy Efficiency	Homeowners and renters	PSEG	$3.7 million
Assisted Home Performance with ENERGY STAR	greater of 80% AMI or SMI,	Energy Efficiency	Home owners (1-4 family)	NYSERDA	$8 million
Multifamily Performance Program (LI)	80% AMI	Energy Efficiency	Affordable MF building owners and property managers	NYSERDA	$11 million
ConEd Multifamily Energy Efficiency Program	80% AMI	Energy Efficiency	Affordable MF building owners and property managers in ConEd service territory	Con Ed	$4 million[69]
RetrofitNY	80% AMI	Building Performance	Affordable MF building owners; A&E and construction firms; and manufacturers	NYSERDA	$3 million
Central Hudson Community	All	Energy Efficiency	Low-income and HTR customers located in CH territory	Central Hudson	$13,000

[67] Annual funding levels are based on estimated 2016 program budgets.

[68] The utility low-income program funding level is based on that established in the New York State Public Service Commission's Proceeding on Motion of the Commission to Examine Programs to Address Energy Affordability for Low Income Utility Customers (Order 14-M-0565). Issued January 9, 2015. < http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={B9477FFE-87E4-427F-937A-12E490920EEB}>

[69] Based on an estimate of 20% of program activity being directed at affordable buildings.

LED Lighting Progam					
NYSERDA New Construction	80% AMI	Building Performance	Affordable housing builders and developers	NYSERDA	$7 million
Affordable Solar (Rooftop PV)	80% AMI	Renewable Generation	Homeowners	NYSERDA	$2.3 million[70]
Affordable Solar Pre-Development	80% AMI	Renewable Generation	Developers	NYSERDA	$1.2 million[71]
Weatherization Assistance Program	60% SMI	Energy Efficiency	Homeowners and renters	NYS HCR	$60 million
Home Energy Assistance Program	60% SMI	Bill payment assistance	Low-income consumers that pay for their heating needs	NYS OTDA	$330 million

4.1 Energy Efficiency Initiatives

4.1.1 EmPower New York

The EmPower NY program provides no-cost energy efficiency services to households at or below 60 percent of the State Median Income. The program is administered by NYSERDA, is funded through the Clean Energy Fund, and is delivered by a network of more than 200 energy efficiency and weatherization contractors across the State. Improvements provided at no-cost include insulation, air sealing, health and safety measures, efficient lighting replacement, and replacement of inefficient appliances. Each home receives a comprehensive energy audit and in-home energy education to inform customers on options for saving energy within their home. The program closely coordinates with the Weatherization Assistance Program (WAP) in the delivery of energy efficiency services.

Homeowners and renters are eligible, however rental properties require landlord cost share and approval to install intrusive measures such as air sealing or insulation. Customers are primarily enrolled through utility referral, however there are paths for customers to apply or be referred from other entities such as CBOs and contractors. The average project costs approximately $4,000,[72] including both whole-house efficiency upgrades and projects that include electric reduction services only. The higher costs for this type of program, relative to rebate programs, limits the number of customers that can be served each year. Since 2004, the program has served more than 125,000 units, saving customers an average of $400 a year, including comprehensive and electric reduction projects. EmPower is currently funded at nearly $30 million a year, and is projected to serve 8,750 households

[70] The funding level of $7 million for the Affordable Solar (Rooftop PV) initiative is for the duration of the initiative. To present an estimated annual budget, the total budget was prorated over three years, however the funds may be spent before the three year period.
[71] The funding level of $3.6 million for the Affordable Solar Pre-Development initiative is for the duration of the initiative. To present an estimated annual budget, the total budget was prorated over three years, however the funds may be spent before the end of the three year period.
[72] Inclusive of incentives and implementation costs.

annually.[73] Feedback from consumers in the focus groups indicate that EmPower has been successful in lowering their energy costs.

4.1.2 National Fuel Low-Income Usage Reduction Program

The Low-Income Usage Reduction Program (LIURP) was initiated in September 2007 by National Fuel Gas (NFG) to provide weatherization and energy efficiency services to their low-income customers. NFG has partnered with NYSERDA to deliver the LIURP through the EmPower NY program to leverage the program infrastructure that already existed. Participants receive an energy audit and in-home education and may also receive air sealing, insulation, heating system tune up, and other thermal reduction measures. Because the program is administered with EmPower NY, NYSERDA can bring electric reduction resources to LIURP participants, providing opportunities for comprehensive energy efficiency improvements. To date, over 7,600 NFG customers have received services under LIURP, and the initiative is currently funded at approximately $6 million a year.

4.1.3 KEDLI Low-Income Energy Efficiency Program

Low-income customers in the KEDLI service territory had been provided energy efficiency services through the EmPower NY program under EEPS. With the transition to the CEF, the Commission ordered that NYSERDA continue to serve low-income KEDLI customers through EmPower through 2016, and for NYSERDA and KEDLI to pursue alternatives to providing low-income energy services in 2017 and beyond.[74] In late 2016, KEDLI issued a solicitation to procure a vendor to deliver services. The company expects that the energy efficiency program will include a four tier approach: customer outreach, marketing and education will occur in Tier I. Tier II will include a Home Energy Assessment, a Health and Safety Test and the direct installation of several energy efficiency measures such as faucet aerators, low-flow shower heads, thermostats, pipe wrap, etc. Tier III will include energy efficiency measures recommended in the Home Energy Assessment and Health and Safety Check such as weatherization measures, heating and hot water system repairs and replacements. Tier IV will allow for health and safety and resiliency work that may prevent a customer from receiving energy efficiency services. This will be a collaborative effort with local human service agencies, the electric utility and local contractors to provide customers with comprehensive coordinated services. The company expects to serve approximately 2,000 customers a year, with an annual budget of $1.9 million.

4.1.4 Residential Energy Affordability Partnership (REAP) Program

The REAP program is a direct install program offered at no charge to PSEG Long Island customers with an annual income at or below 60% SMI. Services include an energy audit, the replacement of inefficient lighting, low-flow devices, and pipe insulation. Starting in 2017, the customers will also be eligible for

[73] More than 15,000 households were served in 2015, and NYSERDA is projecting over 13,000 households will be served in 2016. At the end of 2014 and in 2015, EmPower received infusions of uncommitted EEPS funds and were in the middle of a planned ramp up in production, as such annual budgets for these years were significantly higher than they were in previous years. The budget under the CEF, approximately $30 million a year, will be similar to the program budgets in 2012 and 2013.

[74] New York State Public Service Commission. Order Authorizing the Clean Energy Fund Framework (Case 14-M 0094). Issued January 21, 2016

shell measures to reduce thermal load, attic and wall insulation. In addition, participants are guided to other non-PSEG Long Island services that can help them with special needs. 60,324 households have been served to date. PSEG estimates that approximately 2,000 households will be served in 2017, with a budget of $3.7 million.

4.1.5 Assisted Home Performance with ENERGY STAR

The Assisted Home Performance with ENERGY STAR (AHPwES) program is a whole-house energy efficiency program, administered by NYSERDA and funded through the CEF. The program provides incentives for energy efficiency upgrades for households that have an annual income up to 80% of AMI or SMI, whichever is higher, that also pay into the CEF. Eligible customers receive a discount covering 50 percent of the cost of eligible energy efficiency improvements[75] up to $4,000 per project for single-family homes. Two- to four-unit residential homes with income-eligible residents may qualify for a discount of up to $8,000. In addition, customers are eligible for a no-cost energy audit and can access low-interest financing options through Green Jobs- Green New York (GJGNY).

This program serves an important service, as it address the need for financial support for customers that are over the income eligibility threshold for no-cost energy efficiency services that are available through EmPower NY. Nearly 28,000 homes have received energy efficiency services through AHPwES, since the program inception, with an average annual bill savings of nearly $500. For the time period 2016 through 2018, the program is funded at $8 million a year and is projected to serve approximately 1,600 homes on an annual basis. While low-interest financing is available to fund the balance of the project that is not subsidized, financing requirements such as FICO and debt-to-income ratio can present barriers to financing for some customers.

4.1.6 Multifamily Performance Program

NYSERDA's LMI component of the Multifamily Performance Program (MPP) addresses cost barriers experienced by owners LMI properties when implementing clean energy upgrades. The program also increases the awareness of and access to energy efficient solutions for LMI properties by supporting a network of firms that promote the program and clean energy opportunities in affordable multifamily buildings. The program was launched in 2005,[76] based on the Assisted Multifamily Program, and is currently funded through the CEF. MPP has undergone several program design modifications since inception, and in 2015, applications for new projects were temporarily suspended as a result of high demand for incentives. A redesigned MPP was relaunched in April 2016, offering two options for buildings to improve their energy performance: a targeted option that provides incentives for single measure installations with no minimum energy reduction target, and a comprehensive option that provides incentives for work scopes designed to achieve at least 25 percent whole-building source

[75] Eligible measures for the AHPwES program can be found here: http://www.energyfinancesolutions.com/sites/energyfinancesolutions.com/files/pdfs/hpwes-eligible-measures-and-accessories.pdf

[76] In 2005, MPP started by incentivizing affordable new construction and began offering incentives for existing buildings in 2007.

energy savings. In addition, a high performance offering that provides incentives for deep energy retrofit projects will be made available through a competitive solicitation, to be released in 2017.

To date, the MPP has facilitated energy efficiency upgrades to over 780 affordable multifamily buildings, touching over 120,000 dwelling units. In addition, the program has contributed to the high performance new construction of 400 affordable multifamily buildings, encompassing over 30,000 units. This initiative allocates a total of $34 million for the period of 2016 through 2018 across the three options. Under the CEF, NYSERDA has a goal to touch approximately 70,000 affordable units through MPP, however since the program re-launch uptake has been slow. NYSERDA is currently examining opportunities for making program modifications to increase uptake of the program.

4.1.7 Con Edison Multifamily Energy Efficiency Program

Through the Multifamily Energy Efficiency Program, Con Edison provides in unit and common area direct install measures at no cost for both market rate and affordable multifamily buildings. Affordable buildings are eligible for in-unit direct install measures including LED lighting, low-flow devices, and thermostatic radiator valves. Other no-cost measures include air sealing and boiler clean and tunes. Building surveys and custom assessments are also provided at no cost to the building owner. Additional electric and gas measures are eligible for incentives.[77]

Affordable housing customers must show proof of subsidy or rent roll and can receive higher incentives. The program has been in operation since 2010, with total electric and gas budgets both the affordable and market rate components equaling $21 million a year. The Program has served 6,000 buildings with 94,000 MWh and 975,000 Dth in savings since inception. For calendar year 2016, 1,200 buildings received services with savings estimates of 30,000 MWh and 150,000 Dth. ConEd estimates that 20% of program activity is attributable to affordable multifamily buildings.

4.1.8 NYSERDA New Construction

NYSERDA's new construction program promotes high performance for affordable low-rise and high-rise multifamily new construction projects. Support includes financial incentives to overcome the incremental cost of building to a higher performance threshold, such as passive house or net zero energy standards; providing technical assistance, tools and resources to builders, developers, architects, and engineers on high performance new construction techniques, with an emphasis on integrated design solutions and pre-development cost reductions; and strengthening the capacity of clean energy partners in the building design, construction, and performance verification. This initiative allocates a total of $21 million for the period of 2016 through 2018.

4.1.9 RetrofitNY

Through RetrofitNY, NYSERDA seeks to develop a sustainable market for deep energy retrofits in multifamily buildings that are scalable and financeable. Starting with the affordable housing sector, NYSERDA will work with A&E firms, manufacturers, and construction entities to develop scalable

[77] Visit www.coned.com/energyefficiency/residential_multifamily.asp for details.

technical solutions to enable the deep retrofit of occupied multifamily buildings to approach net-zero levels of energy performance. Substantially reducing the energy consumed by multifamily buildings will result in operational cost reductions for building owners, which will help preserve affordability for tenants. In addition, deep retrofits will deliver positive impacts on resiliency, tenant comfort and health.

To facilitate the development and adoption of the technical solutions, NYSERDA will organize design and build competitions and will test the best solutions through pilot activities, where design solutions will be refined. To enable large scale implementation of successful designs, NYSERDA will identify and address regulatory issues, facilitate the development of new private sector financing products, and work to develop the New York supply chain for high-efficiency building components.

RetrofitNY is funded through the CEF, with a budget of $30 million over 10 years. The investment plan[78] for the initiative was approved by DPS Staff in August 2016 and NYSERDA expects activities to launch in 2017.

4.1.10 Central Hudson Gas & Electric Community Lighting Program

Through the Community LED Lighting Program, Central Hudson provides LED lightbulbs at no cost to low-income eligible customers. Central Hudson partners with The United Way agencies to determine income eligibility and distribute a maximum of 8 Philips LED lightbulbs to qualified customers. Recipients must provide verification of service address located in Central Hudson territory. The program has been in operation since September 2016. The Program will provide 20,000 LED's to over 3,000 households saving recipients 521 MWh.

4.1.11 Utility Rebates

In addition to the ratepayer-funded programs directed towards the LMI segment, LMI customers are also eligible to participate in utility rebate programs. Each utility offers rebates on energy efficient appliances and services. While utilities do not track the level of LMI participation in rebate programs, anecdotal evidence suggests that participation is low, primarily due to the fact that rebates require a cash contribution. In other cases, renters may not have the ability to participate in the utility rebate programs because appliances are provided by the landlord.

4.2 Renewable Energy Initiatives

4.2.1 Affordable Solar Incentives

Affordable Solar, administered by NYSERDA, is part of NY-Sun and provides incentives to help lower the cost of installing rooftop solar for LMI customers. For homeowners[79] with total household income less than the higher of 80% of AMI or SMI, the program doubles the current NY Sun incentive for solar electric system installations. Homeowners may also access Green Jobs, Green New York low-interest

[78] NYSERDA. *Low-to Moderate Income Chapter*. August 18, 2016. < https://www.nyserda.ny.gov/-/media/Files/About/Clean-Energy-Fund/CEF-Low-to-Moderate-Income.pdf>

[79] Customers must own and occupy a 1-4 family home to be eligible for incentives through Affordable Solar.

financing to finance the balance of the project. Affordable Solar has a total budget of approximately $7 million and is funded out of the $13 million of NY Sun funds that were approved by the Commission to be used to support increased participation by LMI customers in solar PV. Since the launch of the initiative in October 2015, 130 installations have been completed or approved, and an additional 30 projects have submitted an application.

4.2.2 Affordable Solar Predevelopment and Technical Assistance

In December 2016, NYSERDA announced the availability of predevelopment funding to address resource gaps and market barriers that prevent the development of solar installations serving LMI households through the Affordable Solar Predevelopment and Technical Assistance solicitation. To help expand access to the benefits of solar to LMI households, funding will be awarded through an open solicitation to support the projects that lead to the implementation and operation of solar installations for multifamily affordable housing and shared solar installations that provide access to LMI households. The predevelopment and technical assistance is funded through the $13 million of NY Sun funds that were approved by the Commission to be used to support increased participation by LMI customers in solar PV. This initiative has a total budget of $3.6 million.

4.2.3 Additional Incentives through NYSERDA and Utility Programs

NYSERDA programs such as Home Performance with ENERGY STAR and NY-Sun, and utility rebate programs offer incentives or access to low-interest financing to install renewable technologies such as geothermal heat pumps, air source heat pumps, and solar thermal water heating. While not specifically targeted at LMI households, LMI customers are eligible to participate. Program administrators do not track participation by income level, as such it is difficult to estimate the level of LMI participation, but similar to the utility energy efficiency rebates, it is believed that there is not much LMI uptake as a result of the cost share requirements and the fact that renters are not likely to invest in clean energy upgrades that involve the installation of equipment or appliances.

4.3 Financing

4.3.1 Green Jobs - Green New York/On-Bill Recovery

Customers can finance energy efficiency, PV, and solar thermal installations through the Green Jobs - Green New York (GJGNY) revolving loan fund. The GJGNY financing program includes two low-interest loan products that are subsidized for LMI customers: a Smart Energy Loan, an unsecured loan that is repaid in installments to NYSERDA's loan servicer; and an On-bill Recovery (OBR) Loan,[80] repaid through an installment charge on the customer's utility bill.[81] OBR loans have strict cost-effectiveness requirements associated with them, meaning that on average, the annual cost of the energy

[80] The Power NY Act of 2011 established the on-bill recovery financing mechanism and increased maximum loan limits for residential loans to $13,000, if the simple payback is less than 15 years, the maximum value of the loan can be $25,000.

[81] Specific detail on the loan products can be found online at: http://www.energyfinancesolutions.com/sites/energyfinancesolutions.com/files/pdfs/residential-loan-information-sfr-hp-prodinfo-fs-1-v3.pdf

improvements are no more than the projected bill savings to achieve a "bill neutral" approach to financing. Both loan options offer expanded credit qualification criteria, a Tier 2 option, for applicants that do not qualify for a loan based on more traditional criteria to qualify for GJGNY loans.

The New York State 2015-2016 budget bill required NYSERDA to take steps to encourage and increase participation of and issuance of loans to LMI households under GJGNY and to establish a working group (GJGNY LMI Working Group) to provide recommendations on options for increasing participation of LMI households in GJGNY. [82] The GJGNY LMI Working Group identified a number of barriers to accessing the GJGNY financing options by LMI customers[83] and also addressed the sustainability of the loan fund.

Among the factors that limit the effectiveness of the GJGNY financing option, cost effectiveness requirements and underwriting criteria can limit the eligibility of some customers. Low electric and gas rates; necessary health, safety, and structural improvements that do not deliver energy savings, and reducing program incentives (NY Sun) can extend the payback period on loans and impact the ability of the project to meet the cost-effectiveness requirements. Underwriting criteria such as FICO requirements and debt-to-income ratio also limit the number of customers that would be eligible for the financing.

While subsidized interest rates and alternate qualification criteria help address the gap for financing for LMI households, there are concerns about the sustainability of the loan fund. The combination of the low interest rates, long loan terms, and an increasing rate of demand for loans for higher income borrowers has an impact on the ability of the loan fund to continue to lend at low-interest rates. The interest rate is not adequate to cover the full cost of providing the loans and the rate of replenishment of the loan capital is not adequate to keep up with demand for new loans. To address the sustainability of the loan fund, NYSERDA implemented modifications to the interest rates for GJGNY finance products in September 2016, increasing the interest rates for higher income households.

Through October 2016, NYSERDA reports that 17,690 residential GJGNY Loans have closed, 12,373 have been for residential energy efficiency projects.[84] 32 percent of the energy efficiency loans have gone to Assisted HPwES customers, representing 23.9 percent of the total loaned funds. Of the loans closed for Assisted HPwES customers, 28.7 percent met Tier 2 qualification standards. Since the launch of OBR, 25.6 percent of the Assisted HPwES customers who access financing use OBR Loans.

[82] Green Jobs- Green New York Low to Moderate Income (LMI) Working Group Recommendations. September 2015. <https://www.nyserda.ny.gov/-/media/Files/EDPPP/GJGNY/Advisory-Council-Updates/GJGNY-LMI-Working-Group-Recommendations.pdf>

[83] Ibid.

[84] Comprising of 12,373 Home Performance with Energy Star® (HPwES) loans, 5,298 Photovoltaic (PV) loans, 10 Solar Thermal (ST) loans and 9 Renewable Heat NY (RHNY) loans. Of the 17,690 total loans closed, 15.6 percent are Tier 2 customers, representing 15.2 percent of the total funds, while 84.4 percent are Tier 1 customers representing 84.8 percent of the funds.

4.3.2 New York Green Bank

Administered by NYSERDA, NY Green Bank is a state-sponsored investment fund dedicated to overcoming current obstacles in clean energy financing markets and increasing overall capital availability through various forms of financial support. NY Green Bank collaborates with private-sector clients to address and alleviate specific gaps and barriers in current clean energy capital markets through a variety of approaches and transaction structures. NY Green Bank is market responsive in the solutions it provides, although there are several "product types" frequently requested from NY Green Bank to address gaps and barriers in clean energy financing markets, including: credit enhancements to mitigate perceived financial risks; warehousing/aggregation of smaller projects on a short-term basis in order to build larger portfolios which are more attractive to many private sector capital providers; asset loans and investments to support long-term financial products; and, composite products to combine various financial products in one transaction. Additional information on these products can be found on NY Green Bank's website.

With regard to support for LMI initiatives, NY Green Bank has engaged several counterparties to explore opportunities to facilitate clean energy projects that benefit LMI consumers. One area that has been explored by the NYGB entails working with local lenders, Community Development Financial Institutions (CDFIs) and regional banks to extend credit to a project sponsored for low-income households for the purpose of subscribing to a Community DG project. NY Green Bank could perform a "warehousing" function in advance of the potential development of a secondary loan market for Community DG equity share purchasing loans to LMI consumers. Another option -- one that has been suggested to NY Green Bank by a number of counterparties – is to provide credit enhancement for LMI customers as one part of a broader portfolio of end users being built out by a sponsor or project developer.

4.3.3 Property Assessed Clean Energy (PACE)

Property Assessed Clean Energy (PACE) is a financing mechanism that enables low-cost, long-term funding for energy efficiency and renewable energy projects that is repaid through an assessment on the property's tax bill. PACE financing has been available for commercial properties in New York,[85] but residential PACE has not been an option until recently. Due to concerns of mortgage lenders including Freddie Mac and the Federal Housing Finance Agency, that the PACE assessment would subordinate the mortgage, PACE was not an option for homeowners. However, in July 2016, the HUD issued guidance that enabled residential PACE financing and outlining how properties with PACE assessments can be purchased or refinanced with Federal Housing Administration (FHA) insurance. The HUD guidance allowed the PACE assessment to become subordinated to mortgages, and stay with the property. While residential PACE has not yet been adopted in New York State, it may provide another option to address finance barriers for all homeowners, including LMI.

[85] Multifamily projects could be considered for commercial PACE.

4.4 Community Approaches

4.4.1 Green Jobs, Green New York

The GJGNY Program delivers services in targeted communities with the support of Constituency-Based Organizations (CBOs). NYSERDA currently has contracted with 12 constituency-based organizations to help homeowners, renters, small businesses, not-for-profit organizations, and multifamily building owners through the process of improving energy efficiency of their home or building. CBOs typically assist homeowners in the application process for programs and financing, and help to identify additional resources that may be necessary for the home to undergo energy efficiency improvements.

4.4.2 REVitalize

Through REVitalize, NYSERDA will provide technical assistance to community-based organizations representing low-income or environmental justice (EJ) communities for the implementation of a community-scale clean energy project. Through this initiative, NYSERDA expects to develop replicable models for ownership and finance of these projects. REVitalize was approved by DPS in August 2016, NYSERDA anticipates a launch of early 2017.

4.4.3 Solarize

Solarize campaigns are locally organized community outreach efforts aimed at getting a group of homes and businesses in one area to go solar. When groups of neighbors learn about solar and the installation together, they can often get better pricing and share the tasks. Group members can contribute their strengths and learn new skills. NYSERDA provides technical assistance, marketing materials, and other support for these efforts. Solarize is part of the NY-Sun Incentive Program. While solarize campaigns are not necessarily targeted at LMI communities, LMI customers can take advantage of the initiative to receive lower-cost solar installations. To date, NYSERDA has one round of Solarize campaigns complete, resulting in over 1,000 solar PV installations through 54 Solarize campaigns across the State. So far, two Solarize projects have qualified for the Affordable Solar incentive, however NYSERDA anticipates increased LMI participation in the second round of Solarize campaigns.

4.5 Energy Education and Literacy

4.5.1 Consumer Education Program for Residential Energy Efficiency

NYSERDA established an energy literacy and awareness campaign "Consumer Education Program for Residential Energy Efficiency (CEPREE)" in 2002. CEPREE is designed to raise awareness, educate the general public, with an emphasis on the low-income population, and increase the adoption of energy efficiency behaviors and practices at home, at work and within communities. CEPREE is implemented through a series of no-cost workshops that are open to the public, and targeted at LMI customers. From October 2002 through February 2016 there were 7,275 workshops across the State, with 82,404 attendees.[86] In the consumer focus groups conducted by the LMI Working Group, many consumers mentioned the value provided by these workshops.

[86] 68% of workshop attendees self-reported that their annual income was at or below $30,000.

4.5.2 Low-Income Forum on Energy

The Low-Income Forum on Energy (LIFE) initiative was established by the PSC in 1998, as New York prepared to move to a more competitive retail electric market. The PSC recognized the importance of identifying, discussing, and addressing issues of particular concern for low-income consumers given the changing energy marketplace. To that end, the PSC established LIFE to provide a forum for public dialogue on these issues and to assess the intended and unintended consequences of energy policy decisions on the low-income population. The initiative is administered by NYSERDA in partnership with the NYS DPS, and is guided by a Steering Committee comprised of 22 organizations that represent program administrators, community-based organizations, utilities, and advocates. The initiative provides a venue for information exchange and collaboration by hosting meetings and conferences, webinars, and distribution of an electronic newsletter.

4.5.3 Consumer Education and Outreach through Utility Companies

Utilities have implemented outreach and education programs for decades. These programs provide customers with information on their rights and responsibilities, ways to reduce energy usage, and availability of budget billing, deferred payment arrangements and other options available to help customers manage their utility bills. Clean energy technologies are driving a shift to a more consumer-centric business model; however, residential customers still struggle to understand or become motivated to participate in clean energy programs. Consumer education consequently must be a higher priority for utilities today than it has been in the past.

In addition, for LMI households, increasing energy literacy can be a key to maintaining utility service. Low income energy education, including counseling in household budgeting and financial management, energy savings actions, and information on how to participate in clean energy projects, helps engage and involve the customer in the process, and can have a lasting impact on affordability.

5. LMI Clean Energy Initiatives in Other Jurisdictions

In addition to assessing the current approaches for delivering LMI clean energy services in New York State, the LMI Working Group also reviewed several initiatives being implemented in other jurisdictions. While not exhaustive, the following provides an overview on how other states and utilities are delivering clean energy services to LMI customers.

5.1 Mass Saves

Mass Save is an initiative sponsored by the Massachusetts natural gas and electric utilities and energy efficiency service providers. Massachusetts legislation requires investor owned utilities to collect money from customers to provide energy efficiency services with the goal of providing benefits to ratepayers and reducing the need for new power plants. Participating in the Mass Save energy efficiency program is one way to access these energy efficiency funds. The Low-Income Multi-Family (LIMF) program is part of Mass Save and offers energy efficiency improvement or replacement opportunities for residential multi-family facilities with five (5) or more dwelling units.

The LIMF Program is funded and overseen by the Massachusetts Energy Efficiency Program Administrators (PAs) – electric and gas investor-owned utilities, and energy efficiency service providers, including: the Berkshire Gas Company, Cape Light Compact, Columbia Gas of Massachusetts, Eversource, National Grid, Liberty Utilities, and Unitil. The Sponsors of Mass Save work closely with the MA Department of Energy Resources to provide a wide range of services, incentives, trainings, and information promoting energy efficiency that help residents and businesses manage energy use and related costs.

As a low-income energy efficiency program, the LIMF Program is managed and operated collaboratively by the Low-Income Energy Affordability Network (LEAN) and the PAs. This arrangement means that daily operations of the program are handled by LEAN and its member Lead Agencies while program standards, policies, and evaluations are developed jointly by LEAN and the PAs.

5.2 California Multifamily Affordable Solar Housing (MASH) and Multifamily Affordable Solar Housing Roofs (MAHSRP) Programs

In California, the Multifamily Affordable Solar Housing (MASH) Program[87] launched in 2009 along with its sister program, the Single-Family Affordable Solar Homes (SASH) Program.[88] These programs provide up-front incentives for multifamily affordable housing solar installations with a primary purpose of maximizing economic benefits to low-income tenants and maximizing benefit to ratepayers. MASH/SASH were financed using 10 percent of the overall $2.2 billion budget from the ratepayer-funded California Solar Initiative. If low-income customers pay into solar program's incentive pool as ratepayers or taxpayers, low-income incentives should be created in proportion to their contribution to the incentive pool. This approach forms the backbone of SASH and MASH and ensures that all ratepayers who contribute to the solar initiative, including low-income families, also have equitable access to receive the benefits of the program.

The MASH program provides fixed, up-front, capacity-based incentives for qualifying solar energy systems on affordable multifamily dwellings. The amount of the incentive depends on which Track the applicant is eligible for. Requires participants who receive monetary incentives to enroll in the Energy Savings Assistance (ESA) program, if eligible. Provides job training and employment opportunities in the solar energy and energy efficiency sectors of the economy.

Currently MASH is closed to new applications. Recent highlights and milestones of the program include[89]:

- 25.7 MW of solar capacity is now interconnected across 370 projects statewide that serve multifamily affordable housing.
- More than $83 million in incentives have been paid to completed projects; an additional $46 million is reserved for pending projects.

[87] http://www.cpuc.ca.gov/General.aspx?id=3752
[88] http://www.cpuc.ca.gov/General.aspx?id=3043
[89] http://www.cpuc.ca.gov/General.aspx?id=3752

- There are now over 6,880 tenant units participating in Virtual Net Metering thanks to the MASH program.

In 2015, the Multifamily Affordable Housing Solar Roofs Program (MAHSRP)[90] was established to extend low-income multifamily solar options beyond the existing MASH program. Similar to MASH, the MAHSRP uses up-front rebates to reduce the cost of installing solar, but requires that the systems provide direct economic benefits to tenants. It is funded by the California Climate Investments fund (cap-and-trade revenues). The MAHSRP – the largest dollar investment for low-income multifamily solar to date – is being implemented starting in 2016 with California Public Utilities Commission oversight. The program will be up and running no later than June 30, 2017 and will provide incentives up to December 31, 2030 for qualified deed-restricted multifamily properties.[91]

5.3 Colorado- Community Solar Gardens in IOU Territory

As of 2015, there were a total of 20 community based solar projects in Investor Owned Utility (IOU) territories in Colorado, representing 17,686 kW, with 5.03% of that, or 890 kW, dedicated to low-income subscribers. The developers of solar gardens operating in the Colorado IOU territories appear to all take a similar approach, with the developers doing the recruitment for and running of the programs; the utility company providing utility incentives and verifying compliance with the utility commission's solar garden regulations; and a non-profit or housing authority identifying potential low-income subscribers, verifying eligibility of those subscribers, and perhaps helping the developer with outreach and marketing. Because many, if not all, of the potential low-income subscribers would not qualify for or cannot receive financing, the developers end up giving the panels at no cost either directly to the low-income subscriber or to the relevant non-profit or public housing authority, that will then allocate the electricity generation credits to the low-income subscribers.[92]

Although this 5% minimum participation level was successful in Colorado, it functioned as a ceiling to low-income participation. Seeking to further increase the participation of low-income customers, Colorado appears to be moving away from low-income carve out requirements for each community solar project developed and towards low-income targeted programs. For example, a recent settlement in Colorado involving the State's largest investor owned utility, Xcel Energy, allows the utility to meet

[90] https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160AB693

[91] http://www.lowincomesolar.org/models/multi-family-california/

[92] *See* Lotus Engineering and Sustainability LLC, Analysis of the Fulfillment of the Low-Income Carve-Out for Community Solar Subscriber Organizations (Nov. 2015), available at: https://www.colorado.gov/pacific/sites/default/files/atoms/files/Low-Income%20Community%20Solar%20Report-CEO.pdf. To receive renewable energy credit towards its Renewable Portfolio Standard requirement, the IOU must ensure that at least 5% of a new community-based generation project is reserved for qualifying low-income subscribers. *See* Code of Colorado Regulations, Rule 3665(d)(V),

the 5% low-income obligation through ownership of community solar gardens that are 100% dedicated to low-income subscribers.[93]

5.4 Colorado- Low-Income Community Shared Solar Demonstration Project and Xcel Energy Renewable Energy Compliance Plan

In 2015, the Colorado Energy Office (CEO) launched a low-income community shared solar demonstration project[94] designed to demonstrate the viability of community solar models that serve low-income households. The demonstration will include at least 5 projects totaling over 1 megawatt of installed solar capacity to serve at least 300 low-income families. The CEO investment is leveraged with utility investment for each project, at a ratio of two dollars for each dollar of CEO grant funding invested. In-kind contributions may also be included in the leveraged ratio. While the details will vary project by project, each project will result in significant savings to low-income subscribers. The community solar installations will also provide an estimated 2,000 hours of hands-on solar job training to local workers.[95]

On November 9, 2016, the PUC voted to approve a settlement that will make at least 20 MW of low-income rooftop and community solar available in Colorado for 2017-19.[96] The Xcel Energy settlement is comprehensive, offering solar developers access to incentives and creates structures to encourage workforce development and job training.

Additionally, Colorado is first state to integrate rooftop solar into their Low-Income Weatherization Assistance Program (WAP).[97]

5.5 Colorado- Grand Valley Power Zero Down Community Solar Garden Project

Grand Valley Power (GVP), an electric cooperative, serves around 17,000 customers in the rural areas around Grand Junction, Colorado. In 2011, GVP began its Zero Down Solar program. This program utilizes a solar farm that GVP built on GVP property, and that GVP continues to own and maintain. Customers may participate in the solar farm through one of two options: (1) a payment in full option under which the customer makes a one-time payment of $750 to lease the production from a single solar panel for a period of 21 years; or (2) a zero-down option under which the customer pays a $15 per month charge, which is added to their electric utility bill, for a period of five years while receiving the

[93] Proceeding 16AL-0048E, Before the Public Utilities Commission of the State of Colorado, Non-unanimous Comprehensive Settlement Agreement (August 15, 2016) at 69, available at: https://www.dora.state.co.us/pls/efi/EFI.Show_Filing?p_session_id=&p_fil=G_678020.

[94] https://www.colorado.gov/pacific/energyoffice/community-solar

[95] https://www.colorado.gov/pacific/energyoffice/community-solar and http://www.lowincomesolar.org/models/community-solar-colorado/

[96] Docket 16A-0139E Decision No. C16-1075

[97] http://www.renewableenergyworld.com/articles/2016/08/colorado-launches-first-low-income-rooftop-solar-power-project.html

credit from that solar panel for a period of 21 years. Each panel produces approximately $50 per year in credit, or around a 450 kWh per year per panel offset.[98]

5.6 Minnesota- Shiloh Temple Community Solar Garden Project

Cooperative Energy Futures (CEF) is developing its first community solar garden in the heart of a predominantly African American community in North Minneapolis. The solar project is being placed on the roof of the Shiloh Temple International Ministries building and will serve between 40 and 50 households, with members of the congregation and local residents having priority in subscribing. These priority subscribers also have the option of subscribing through a pay-as-you-go option, which involves no upfront cost and will provide an estimated 5% savings in the first year, with the savings expected to increase yearly thereafter.[99]

5.7 California Low-Income Weatherization Program

California has a program[100] that combines the use of Low Income Weatherization Program funds and Cap & Trade greenhouse gas reduction funds to provide efficiency and solar (PV and thermal) to large affordable multifamily buildings. Energy analysis and benchmarking of buildings is provided for free by the program, which serves buildings with 20 or more units (a waiver is possible for buildings with fewer units). The program provides funds to properties that meet affordability requirements of having 2/3 of households at or below 80% Area Median Income and that are located in specific "disadvantaged communities," which have been identified using census tract data. The program provides incentives for efficiency and solar although property owners are expected to contribute capital as well. Efficiency measures must equate to at least a 15% modeled energy savings above existing conditions and can be for common area and/or in-unit upgrades with lower incentives for reducing owner energy bills versus tenant energy bills. The incentives are provided to the property owner after completion of the work.

5.8 California Solar Initiative-Thermal Program Low-Income Program

The California Solar Initiative Thermal Program[101] (thermal program) provides incentives to offset the cost of solar thermal hot water heating that displaces natural gas. A minimum of 10 percent of the total budget is allocated to low-income projects. Single family and multifamily projects are eligible for incentives that cap out at $3,750 for single family, and $500,000 for multifamily installations.
To be eligible, single family households must have previously participated in an energy assistance program and the home must be occupied by the homeowner. Rental properties must meet the

[98] https://www.solarelectricpower.org/media/378380/solarops-case-study-grand-valley-power-low-income-community-solar-program.pdf; http://www.gvp.org/content/renewable-energy; https://www.solarelectricpower.org/media/378380/solarops-case-study-grand-valley-power-low-income-community-solar-program.pdf.
[99] http://www.lowincomesolar.org/models/multi-family-washington-dc/; https://cooperativeenergyfutures.com/communitysolar/shiloh-csg/; https://cooperativeenergyfutures.com/about/; https://cooperativeenergyfutures.com/shiloh-faq/#9.
[100] https://camultifamilyenergyefficiency.org/
[101] http://www.gosolarcalifornia.ca.gov/solarwater/low_income_solar_water.php

definition for low-income property in the Public Utilities Code. For multifamily properties, at least half of the units in the building must have previously received energy assistance and benefits of the solar thermal installation must be passed on to the tenants in the form of lower energy costs.

Since 2010, there have been 671 multifamily installations and 224 single family installations that are low-income, compared to the total 4,059 installations incentivized by the program.

6. Best Practices for Providing Services to LMI Customers

To inform the development of this report, the LMI Working Group conducted a literature review of best practices for delivering clean energy services to LMI customers. There can be many factors that influence the design and delivery of LMI clean energy initiatives including regulatory and policy objectives, demographic and geographic distribution of the LMI population, and energy prices; however, there are general principles for the effective delivery of LMI initiatives that should be considered when examining options for delivering LMI clean energy services. The following best practices have been identified by researchers and other stakeholders to achieve the greatest impact of LMI clean energy initiatives, with respect to reaching the targeted population, engaging affordable building owners and property managers, and making the most of energy and bill savings.

Target high usage program participants.[102] By targeting resources at LMI customers that have the highest energy use, programs can maximize savings and ensure that resources are being directed at customers with high potential for energy savings.

Encourage a whole-building approach, with a wide range of eligible measures.[103] Installing or improving multiple measures in a building can also provide the added value of interactive effects, for instance a project that combines insulation with a high efficiency heating system is likely to realize greater savings than it would if the heating system was installed alone. To achieve this greater level of energy savings and to address all potential opportunities for energy savings, LMI energy programs should offer a wide range of eligible measures. In addition, incentives should be structured to encourage a whole-building approach.

Ensure that major measures are installed where opportunities exist and that missed opportunities are minimized.[104] In a study on solutions for achieving potential savings in whole house weatherization

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[102] "Barriers and Solutions to Achieving Potential Savings in Whole House Low-Income Weatherization Programs." APPRISE. http://www.appriseinc.org/wp-content/uploads/2016/05/IEPEC-Barriers-and-Solutions.pdf

[103] "Building Better Energy Efficiency Programs for Low-Income Households." ACEEE, March 2016. and "Energy Efficiency Programs in Multifamily Affordable Housing" Energy Efficiency for All, May 2015

[104] "Barriers and Solutions to Achieving Potential Savings in Whole House low-Income Weatherization Programs." APPRISE

programs, APPRISE found that household energy savings increased with the number of major measures[105] installed.

Facilitate access to additional resources.[106] To address the homes structural issues and other needs that the customer might have, program administrators should connect customers with other social service programs and organizations.

Include customer energy education strategies.[107] Energy education is important to make customers aware of available programs, to maximize energy and bills savings achieved through energy efficiency programs, and to influence the behavior of the customer.

Support a "one-stop" where customers and building owners can access program services.[108] A "one-stop" shop can simplify program enrollment and participation, increasing the likelihood that clean energy projects are implemented. The "one-stop" shop can facilitate program participation by providing participants with a single point of contact, providing assistance to navigate eligibility and application processes, as well serving as a trusted resource on clean energy opportunities.

Broadly Partner with community based organizations for program design and implementation. Experience in other jurisdictions, as well as in New York State has shown Non Profit and community based organizations bring local knowledge, relationships of trust and low cost service delivery to the table. Such partnerships cold be tied with the one stop concept and recognizable statewide programs across utility service territories. [109]

Coordinate efficiency and bill payment assistance programs.[110] By coordinating bill payment assistance and energy efficiency programs, program administrators can achieve efficiencies in income eligibility qualifications and allow for targeting energy efficiency to the highest energy users by sharing consumption data between the programs. In other cases, the provision of energy efficiency services can lower the need for bill payment assistance.

Develop fuel neutral programs.[111] To successfully address energy affordability issues, it is important to address various end uses and install measures regardless of fuel type.

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[105] Identified by APPRISE as insulation, air sealing, HVAC replacement, duct sealing, refrigerator replacement
[106] Ibid.
[107] Ibid.
[108] Energy Efficiency for All, May 2015, and "Apartment Hunters: Programs Searching for Energy Savings in Multifamily Buildings." ACEEE, December 2013.
[109] Power to the People: Using Community-Based Approaches to Deliver Efficiency and Sustainability to Hard-to-Reach Populations. 2016 ACEEE Summer Study on Energy Efficiency in Buildings. http://aceee.org/files/proceedings/2016/data/papers/11_943.pdf
[110] ACEEE, March 2016
[111] Ibid.

Align with existing efforts to serve low-income households.[112] Coordination with other programs and resources that provide services to LMI households, such as WAP and HEAP, can result in a simplified delivery for the customer. In addition, leveraging ratepayer and federal funds can increase the number of homes receiving weatherization or energy efficiency services.

Improve building owners' access to energy usage information.[113] To help building owners make informed decisions on investing in clean energy upgrades and other operational improvements, it is important for the owners to have information on the energy performance of the building. In addition to energy consumption and cost detail, providing metrics such as energy usage intensity (EUI) can provide insights on the potential savings, when compared to similar buildings.

Deliver measures through innovative channels.[114] In addition to relying on utilities and energy efficiency contractors to engage customers, ACEEE has found that programs can reach a broader range of low-income households when they identify options for engaging households and delivering energy efficiency measures through organizations that the customers are already familiar with, such as foodbanks or other social service networks.

Address health, safety, and building integrity issues.[115] As building integrity, health, and safety can often be barriers to energy efficiency upgrades, ACEEE has identified a number of programs that have incorporated ways to make necessary health, safety, and structural improvements necessary to allow for energy efficiency improvements to take place. Programs fund these improvements anywhere from $500 per home, to up to 50% of the cost of the workscope.

Encourage deeper retrofits by providing escalating incentives.[116] Generally, the cost of an energy efficiency project increases with scope, thus a more extensive upgrade will be more expensive and time consuming. Tying higher incentives to the achievement of higher levels of energy savings will help offset the costs associated with increased workscopes, but may also serve to compensate owners for the perceived risk and uncertainty associated with deep energy retrofits.

Integrate direct install and rebate programs.[117] Offering no-cost direct install measures[118] at the time of an energy assessment can serve as an engagement tool for home and building owners and encourage them to undertake more significant energy improvements.

The current portfolio of clean energy services administered by NYSERDA and the utilities incorporate many of these best practices, as outlined in Table 9. However the degree to which the best practice is

[112] Ibid.
[113] EEFA, May 2015
[114] ACEEE, March 2016
[115] Ibid.
[116] ACEEE, December 2013.
[117] ACEEE, December 2013.
[118] Such as efficient light bulb replacement, low-flow devices, and weatherstripping.

addressed varies by LMI initiative and there remains room for further integrating these concepts into initiatives to realize the intended outcomes. For instance, current programs such as EmPower NY attempt to facilitate access to other resources for the customers receiving services, however this effort is limited by the awareness of the service provider of the additional resources, as well as the availability of the resources. Available funding and regulatory constraints may also limit the ability of an initiative to fully incorporate the concept represented by the best practice.

Table 9: Best Practices Addressed by Current LMI Clean Energy Initiatives

Best Practice	**Currently Addressed**
Target high usage program participants	✓
Encourage a whole-building approach	✓
Ensure major measures are installed	✓
Facilitate access to additional resources	✓
Include customer energy education strategies	✓
Support a "one-stop" shop	
Broadly partner with CBOs	✓
Coordinate efficiency and bill payment assistance	✓
Develop fuel neutral programs	✓
Align with existing efforts to serve low-income households	✓
Improve building owners' access to energy use information	✓
Deliver measures through innovative channels	✓
Address health, safety, and building integrity issues	✓
Encourage deeper retrofits by providing escalating incentives	✓
Integrate direct install and rebate programs	✓

The recommendations presented in section 7 highlight the Working Group's belief that current and future LMI initiatives incorporate these best practices to the extent possible to improve the delivery of clean energy services to LMI customers.

7. Recommendations

New York has a strong foundation of clean energy programs that are targeted to the LMI market; however, based on the size of the market and the scope of the clean energy programs targeted at LMI customers, it is evident that the resources available are not sufficient to provide services to all LMI customers. Achieving impact with respect to number of customers served and the realization of energy cost reductions for New York's LMI population will require a holistic approach that coordinates and leverages all available resources including but not limited to ratepayer-funded programs. As illustrated by the recommendations below, the Working Group believes that there are opportunities to improve the targeting, coordination, and delivery of clean energy services. In addition, modifications to the design and delivery of current programs, the exploration of new initiatives, and improved coordination would increase energy affordability and access to clean energy solutions for the LMI market.

The Working Group submits the following recommendations to address barriers associated with clean energy adoption among LMI consumers, affordable building owners, and affordable property managers. These recommendations are intended to increase the impact of ratepayer funded initiatives, improve energy affordability among LMI consumers, and develop better cohesion with other publically funded LMI clean energy initiatives. In the CEF Order, the Commission states that the delivery of clean energy services to LMI customers is an area that requires NYSERDA and the utilities to actively evaluate to develop alternate approaches. The expectation of the Working Group is that this report will inform the development of LMI clean energy initiatives to be delivered by NYSERDA and the utilities through NYSERDA's LMI Chapter and utility ETIP BAM filings.

Given the breadth and complexity of the LMI market, a singular approach to improving the delivery of services to LMI customers will not suffice. The recommendations reflect a variety of approaches to address energy affordability and access to clean energy, however the timing, available budget, and particular market segment targeted will necessarily influence the approach that taken. While some of the recommendations entail modifications to current initiatives, others outline opportunities for new approaches to deliver clean energy services to LMI customers. In Table 10, below, the Working Group has identified initiatives that are good candidates for pilot activities, which could be developed and piloted in the near term. The recommendations are presented in no particular order. Additional analysis may need to be conducted to fully understand the cost implications of the recommendations.

Given the diversity of interests among Working Group members, consensus among the members was not possible on every issue discussed in this Report. The Working Group's recommendations in this Report do not necessarily represent the position(s) of any individual member, and should not be attributed to individual members in this or other proceedings, irrespective of whether the member presented Comments in Section 8 herein.

7.1 Energy Literacy, Awareness, and Program Application Process

In the focus groups and surveys conducted by the Working Group, LMI consumers overwhelmingly identified a lack of awareness and understanding of current programs, and inadequate communications regarding such programs, as a primary barrier to realizing energy savings. The knowledge and information gap has the potential to increase under REV, as new opportunities for procuring and managing energy emerge. LMI customers in particular need to be aware of energy savings opportunities. Likewise, affordable housing owners and managers may be unaware of opportunities for clean energy upgrades that would enhance the energy performance of their buildings. LMI renters should also be equipped to encourage and support their building owners and managers to make clean energy improvements.

Recommendation:

1. **DPS, NYSERDA, and the utilities[119] should develop a coordinated energy literacy campaign to educate and inform LMI customers and affordable housing owners and managers on energy topics including: understanding the costs of energy; strategies for managing tight**

[119] It will be important for the utilities to maintain control over communications with their customers, however the communications would be coordinated with the statewide campaign.

household budgets; energy savings tips; available programs, including opportunities for participation in community or shared-solar projects; and Community Choice Aggregation (CCA), where applicable.[120] All materials developed should be multi-lingual and should be made available through multiple avenues.[121] A statewide campaign could result in cost savings, as well as a standard and consistent message to the LMI market segment. Design and implementation of the campaign should include CBOs, local government, and relevant service providers. The State should also develop a framework to evaluate the effectiveness of the components of the literacy campaign and making modifications to the content and delivery, as necessary.

2. **NYSERDA and the utilities should develop an LMI-specific "one-stop shop" online portal that provides homeowners and multifamily building owners and property managers with information on available incentives. This portal should also include an online application process.[122]**

3. **To avoid confusion about the different clean energy programs and various program administrators, NYSERDA and the utilities should consider coordinating outreach and co-branding to present the various program offerings in a cohesive and easy to understand format across all utility service territories.**

7.2 Program Design

The current portfolio of ratepayer funded clean energy programs has resulted in improvements to energy affordability and has increased access to clean energy solutions for LMI customers; however, including LMI households residing in affordable housing, there are opportunities for further enhancing current programs to increase impact, reach additional LMI customers, and provide greater certainty to the market. Certain segments of the LMI market, such as multifamily affordable housing, require distinct program design considerations to ensure programs achieve the greatest impact. New developments in Community Distributed Generation and CCA introduce the need for new approaches to the structure of incentive programs.

7.2.1 Maximizing the Impact of Ratepayer Funds

Over $300 million in ratepayer funding is invested on an annual basis on programs designed to improve energy affordability and increase access to clean energy options for LMI customers.[123] Despite this significant investment, only a fraction of eligible households receive energy efficiency services and bill payment assistance annually. Due to the limited budgets relative to the size of the market, NYSERDA and the utilities must continue to explore all opportunities to reduce the costs associated with delivering

[120] While CCA decisions will be made at the municipal level, DPS and NYSERDA should work with municipalities to ensure that awareness and education about CCA is done consistently across the State. Education should include how a CCA works, identification of the possible benefits, and consumer rights.
[121] Educational avenues should include online resources, utility bill stuffers, and outreach from community-based organizations.
[122] The MassSave initiative, sponsored by Massachusetts natural gas and electric utilities, provides a replicable model for providing an online portal.
[123] Including renters

LMI programs, to leverage the buying power that is represented by the large annual investment in LMI lean energy services, and to prioritize the provision of fully subsidized energy efficiency services to those homes that consume the most energy, and/or have the highest energy burden. [124]

Recommendations:

4. **The utilities, NYSERDA, and DPS should develop a standard approach for referring and prioritizing high usage/high energy burden low-income utility customers for energy efficiency services through EmPower NY. NYSERDA and the utilities should also develop a standard process for referring LMI customers and affordable buildings for clean energy services through NYSERDA utility energy efficiency programs. In addition, NYSERDA should work to develop an approach to better identify customers that heat with oil or other delivered fuels for the purposes of providing energy efficiency services.[125]**

5. **NYSERDA and the utilities should develop and pilot models that maximize the impact of limited ratepayer funding by exploring opportunities to implement pay for performance approaches that incentivize vendor performance and consumer uptake. Such approaches could potentially apply to traditional incentive programs in the single and multifamily market segments, where incentives would be paid based on the level of energy savings achieved.**

6. **To further maximize the impact of limited ratepayer funding, NYSERDA and the utilities should explore opportunities for demand bidding. For example, the EmPower NY program could aggregate projects and develop a bid approach to procuring energy efficiency services.**

7. **While comprehensive building assessments[126] are essential for understanding the interaction between systems within the building, identifying health and safety issues, and benchmarking the energy consumption of the building, these assessments can be time consuming and costly. Ratepayer funded programs should adopt modified energy audit procedures, based on the project. Specifically, if the home or building owner is interested in a single measure, then a comprehensive audit should not be required.[127]**

7.2.2 Customer Acquisition

Many clean energy programs use receipt of utility bill payment assistance to identify eligible low-income customers for energy efficiency or renewable energy services. This is an administratively efficient

[124] Delivery cost should include adjusting program requirements to lessen the administrative burden placed on vendors and contractors.

[125] To the extent that programming is required of utility billing systems to accomplish this recommendation, cost recovery should be afforded to utilities separate from the budgets dedicated to providing programs and services to the LMI market segment.

[126] Such as the ASHRAE Level 2 or BPI Home Energy Audit Standard

[127] The Commission has approved some utility programs that provide incentives for prescriptive measures. This has allowed some programs to adopt modified audit procedures, such as using a spreadsheet tool that incorporates Tech Manual calculations to determine energy savings.

process; however, this approach excludes many eligible customers, including moderate-income customers, who do not receive utility bill payment assistance or HEAP benefits.

Recommendation:

8. **NYSERDA and the utilities should use additional methods for identifying and acquiring LMI customers beyond participation in utility discount or assistance programs, including outreach through community and faith-based organizations that work with LMI customers.** [128] **This process would also allow for the referral of additional customers into the various clean energy programs administered by the utilities or NYSERDA.**

7.2.3 Market Certainty

If program participation levels suggest that incentive levels are insufficient to incent customers (or conversely, too rich, and threaten to prematurely exhaust the budget), program administrators must be ready and able to make adjustments. At the same time, consistent funding is needed to keep market actors engaged. Ensuring that funding for specific programs does not lapse creates certainty for market participants.

Recommendations:

9. **When incentive levels and associated savings targets are established, the Program Administrators should monitor the level of program activity and be able and willing to make adjustments on a timely basis to maximize program uptake and impact of the ratepayer funds.**

10. **To keep vendors and other market actors engaged in the delivery of programs, NYSERDA and the utilities should make information regarding the expected duration and level of program funding publically available, and commit to widely communicate any proposed changes to the market in advance of such changes.**

7.2.4 Whole Building Approach

Comprehensive energy programs take a whole-building approach rather than focusing on individual units or common areas within a building and promote more-comprehensive retrofits in which multiple measures are installed. Whole-building programs are typically more costly to implement; however, significant additional benefits also can result from these upgrades, including increased comfort, improved indoor air quality, and reduced maintenance.

Recommendation:

11. **NYSERDA and the utilities should encourage a whole building approach for both residential and multifamily buildings whenever possible to realize the greatest energy savings. For multifamily buildings this should include treatment of dwelling units, as well as common areas, to address the split incentive issue (as discussed in Section 2.6.1). While upfront costs may pose a barrier to undertaking larger scopes of work, NYSERDA and the utilities should develop engagement tools and other incentives to encourage**

[128] Including the statewide network of weatherization subgrantees, community action agencies, and GJGNY CBOs.

building owners to plan and implement a comprehensive approach all at once or on a phased basis over time, as discussed below.

7.2.5 Fuel Neutrality

While CEF programs, such as EmPower NY, can be administered on a fuel-neutral basis[129], there have been other ratepayer supported programs, such as the RPS, that would only provide incentives to projects that displace electricity. This resulted in missed opportunities for energy affordability improvements because higher cost fuels such as oil or propane were not eligible.

Recommendation:

12. **Ratepayer funded initiatives should be administered on a fuel-neutral basis, and for affordability purposes, target the displacement of higher-cost fuels. By implementing clean energy projects, including oil to natural gas conversions, that displace the combustion of natural gas, oil, and propane, the initiatives would contribute to the State's GHG reduction goals.**

7.2.6 Direct Install and DIY

Comprehensive (whole building) energy efficiency programs can maximize immediate savings, however financial and logistical barriers can often prevent comprehensive efficiency upgrades from being adopted by home or building owners, and can prevent the scale up of fully-subsidized comprehensive programs, such as EmPower NY. In addition, a Do-It-Yourself (DIY) approach may be appropriate in some instances. Properly designed and managed, such an approach can empower residents by allowing them to have a hand in controlling their energy use, as well as provide hands on experience that could potentially provide a potential entry path for on the job training.

Recommendations:

13. **NYSERDA and the utilities should incorporate a direct install (DI) component to the single and multifamily programs.[130] For single family customers, DI can be done for moderate income customers that may or may not choose to go forward with a comprehensive energy efficiency upgrades, DI can also be employed as a means for triaging low-income projects (an audit + DI gets done, then those home that are the best candidates for air sealing/insulation are identified and referred to EmPower). For multifamily buildings, DI can be a means of engaging building owners and encouraging them to go forward with a more comprehensive building upgrade.**

14. **NYSERDA and the utilities should consider designing a program component to enable building owners and residents to carry out the direct installation of select measures on their own, or a DIY approach.**

[129] To operate on a fuel-neutral basis, CEF programs must demonstrate that the level of GHG savings possible will be greater with a fuel-neutral approach, than an electric only approach.
[130] for Commission-approved prescriptive measures

7.2.7 Phased Improvements

Whole building energy efficiency improvements and integration of renewables with efficiency may be the optimal approach in some instances to maximize the benefits of the interactions between shell work, appliances, and renewable energy generation; however, many home and building owners may not have the ability to finance whole building upgrades at once. NYSERDA and the utilities should acknowledge this and engage home and building owners to foster the achievement of clean energy improvements over time.

Recommendation:

15. **NYSERDA or the utilities should adopt or develop a tool[131] that engages home and building owners and encourages the phasing in of clean energy improvements over a period of time. This can be expanded to the development of a multi-year "Energy Master Plan" approach for affordable multifamily buildings to guide the phasing of measures in a specific building or portfolio of buildings over time. Incentives could be provided to encourage more comprehensive energy improvements, or to complete improvements over a certain period of time.**

7.2.8 Multifamily Programs

As highlighted in Section 2, over 40 percent of New York's LMI population live in buildings with more than 5 units, and nearly 20 percent live in buildings with more than 50 units. To ensure that multifamily affordable housing remains viable and provides stable rents to LMI tenants, discrete strategies are needed to address the barriers faced by owners and property managers of multifamily buildings, including the issue of split incentives.

Recommendations:

16. **NYSERDA and the utilities should incorporate a portfolio approach to clean energy upgrades that would enable owners to have a group of buildings evaluated and treated. Affordable building owners often may wish to refinance several properties within their portfolio as part of comprehensive refinancing project. Carrying out clean energy upgrades throughout a portfolio that is being refinanced can take advantage of this optimal intervention point. Aggregating such a group of buildings may also result in an overall reduction in costs for third parties to deliver their services, and provide building owners an opportunity to prioritize their investments in energy/other capital upgrades.**

17. **Multifamily programs should require that the building's management, supervisory and maintenance staff responsible for operating the building should also have the experience, training and credentials necessary to operate the building, and its energy efficiency upgrades, in a manner that will ensure that the planned energy efficiency goals of the upgrades can be achieved and savings retained.[132] For key building personnel who have**

[131] Similar to the Home Advisor tool, developed by DOE for residential customers.
[132] This may occur as part of an on-site audit or pre-inspection.

not already completed a course in energy efficiency building operations, one should be provided at the time of the retrofit.

18. **Because larger buildings require regular commissioning in order for systems to operate efficiently, affordable multifamily buildings should have an ASHRAE Level 2 audit conducted every 5 years. As the cost for a comprehensive audit may be cost prohibitive for affordable building owners, incentives should be made available to affordable building owners to offset the costs of audits.**

19. **When developing incentive structures, particularly for affordable multifamily buildings, Program Administrators should consider increasing incentives or reducing cost share requirements for buildings that have a larger proportion of low-income residents, or can meet a lower income threshold. This approach would provide additional encouragement for owners of affordable housing to pursue clean energy upgrades.**

20. **Develop a comprehensive program to integrate solar installations into affordable housing for the primary purpose of maximizing economic benefits to low-income tenants through deployment of solar and energy efficiency.[133] The incentive structure should account for other financing that is often leveraged for multifamily solar installations,[134] and be subject to review and adjustment over time to ensure that projects are not over incentivized.[135] Ideally, workforce development also would be an integral component of the program, providing robust and substantive job training opportunities, thereby increasing the program's overall benefits. Program requirements should be designed to provide flexibility and avoid over-burdening participating property owners and contractors.[136]**

7.2.9 Community Distributed Generation (CDG)

CDG holds the potential for providing access to renewable energy solutions to thousands of LMI households that either rent or cannot afford to have on-site renewables installed. The September 2015 GJGNY LMI Working Group report highlights that "NYSERDA anticipates that community net metering can provide significant benefits to LMI households and is one of the better options for increasing LMI participation in the solar electric market." However, additional work is necessary to develop scalable models for finance, ownership, and LMI participation.

The Working Group recommends that all CDG project ownership and finance models should be considered, including utility ownership (utility owns or operates a project that is open to LMI customer

[133] The Multifamily Affordable Solar Housing (MASH) and Multifamily Affordable Solar Housing Roofs (MASHR) Programs in California provide up-front incentives for multifamily affordable housing solar installations.
[134] ITC, LIHTC
[135] The incentive structure should utilize a limiting mechanism on installed megawatts or the incentive amount to ensure that funding remains available over a multiyear timeframe.
[136] The comprehensive program could be best served by having a single, third-party statewide program administrator, such as NYSERDA, with expertise in affordable housing, solar technologies for multi-family dwellings, and job training programs, among other aptitudes. NYSERDA can also coordinate this initiative with other clean energy programs offered across the state, allowing meaningful energy efficiency upgrades to be included in the total project.

participation), special purpose entities (a business enterprise composed of individual investors who join together to develop a CDG project, often with a requirement for a minimum level of LMI customer participation), and non-profit sponsorship (in which donors contribute to a community installation owned by a charitable organization).

New financing models also can make CDG more financially feasible. CDG projects can be structured to monetize financial incentives, and leverage grant and rebate programs to expand LMI opportunities. Tax incentives for solar systems are especially valuable and can drive the design of CDG project structures and financing strategies. For example, the investment tax credit is available to entities other than the host, making the use of third party financing a leading trend in CDG projects.

Recommendations:

21. **To facilitate the development of community solar projects that benefit low-income communities, NYSERDA should develop toolkits on proven financing and ownership models for community solar projects.**

22. **NYSERDA, DPS, and the utilities should continue to explore options to increase LMI customer participation in CDG projects through either regulatory requirements for minimum LMI participation or by providing incentives to projects that include LMI customers.[137] Other measures could include prioritizing projects that contain LMI customers or conducting a separate RFP process for LMI community solar projects.**

23. **NYSERDA should continue seeking ways to use Clean Energy Fund investment to provide upfront incentives for LMI access to CDG as part of a comprehensive program that provides meaningful savings, incorporates energy efficiency and weatherization upgrades and provides workforce development opportunities for LMI participants and developers.[138]**

24. **NYSERDA should seek opportunities to pilot community scale geothermal in affordable housing or low-income neighborhoods.**

7.3 Health and Safety

Health and safety improvements are often a critical co-benefit of energy efficiency improvements; however tight program budgets can leave health and safety work unaddressed. In addition, structural

[137] Such as prioritizing projects that contain LMI customers and provide meaningful savings or conducting a separate RFP process for LMI community-solar projects.

[138] The September 2015 Green Jobs – Green New York Low to Moderate Income (LMI) Working Group Recommendations Final Report stated "NYSERDA anticipates that community net metering can provide significant benefits to LMI households and is one of the better options for increasing LMI participation in the solar electric market. In addition, NYSERDA is currently working to make financing for shared renewable opportunities available to LMI and other households through the proposed Clean Energy Fund and other initiatives." The Department of Public Service convened a CDG Low-Income Collaborative in 2015 and 2016 (which included a number of the same participants as the Clean Energy Advisory Committee LMI Working Group) and established working groups to examine key barriers to low-income customer participation and develop solutions. Specifically, the Incentives Working Group regularly discussed the importance of upfront incentives (rebates, low-interest financing, and grants) to remove the upfront cost barrier for LMI participation in CDG and that upfront incentives for LMI access are most useful if directed to developers.

deficiencies such as a leaky roof, can prevent energy efficiency and renewables work from being conducted because these structural deficiencies are outside of the fundable scope of work for the programs.

Recommendation:

25. **NYSERDA should work to identify alternate sources of funding/financing to address health, safety, and structural issues, while delivering energy savings.**

7.4 Finance and Access to Capital

Access to capital and financing is a primary barrier to clean energy upgrades for both LMI households and building owners, resulting in lost opportunities for achieving energy savings or other home improvements. While subsidized programs can alleviate this barrier for some, these programs are only able to serve a portion of the market due to budget limitations relative to the size of the market. Copay requirements also present barriers to participation where customers do not have the capital to make the upfront copayment. [139]

While low-interest financing is available in New York through Green Jobs- Green New York, qualification criteria[140] can disqualify prospective borrowers and the sole reliance on the subsidized loan fund creates sustainability issues that can impact the ability to preserve lending at such low interest rates. To scale the market for clean energy improvements, new finance models are necessary that can leverage or extend the life of program funds, incorporate third party capital, or can be operated in an inclusive manner, and not disproportionately benefit borrowers or lenders are necessary. For example, clean energy investments can generate significant and steady revenue streams, which could serve as a stable source of underwriting for loans that finance the investments.

Recommendations:

26. **Demonstrate an inclusive finance solution in New York that overcomes the credit barriers faced by lower income and low FICO consumers, integrates 3rd party capital to create a finance model that is more sustainable than the current GJGNY revolving loan fund, and possibly includes a guaranteed cost recovery mechanism.**

27. **While program incentives can help offset the costs of clean energy improvements by LMI customers and affordable building owners, in some cases the incentives are either not sufficient to overcome first cost barriers or they are paid out in milestones. NYSERDA should develop a bridge loan product that will provide the necessary capital to initiate clean energy improvements. Such loans could be structured as a short-term bridge product that could fund a portion of construction or installation, leveraging near term incentives as source of repayment and then rolled into a flexible permanent financing source, such as described in the prior recommendation.**

[139] Such as Assisted Home Performance with ENERGY STAR or the Multifamily Performance Program

[140] Debt-to-income and cost effectiveness criteria (NOTE: SEE/REFERENCE GJGNY LMI WG REPORT-p.21)

28. **To encourage energy efficiency improvements by LMI tenants and to address the split incentive issue, the utilities and/or NYSERDA should develop a program approach that would allow interested tenants to finance high efficiency appliances through 0% interest loans. The financing would need to result in net positive cash flow for the tenant.** [141]

7.5 Access to DER and Utility Ownership

There is currently limited uptake of renewable energy solutions among LMI customers. As noted in Section 3.2.2.4, DPS Staff is developing a whitepaper examining utility ownership of LMI CDG. Utility ownership of DER is appropriate where market solutions have not been identified. Utility ownership of DER, including roof top, community solar, solar thermal, combined heat and power, and geothermal, should be considered in such cases, provided that all of the net metering credits and other energy benefits go directly to LMI customers or affordable multifamily buildings.

In the meantime, various ownership models of DER designed to provide benefits to LMI customers should be further developed and explored.

Recommendation:

29. **NYSERDA should develop a demonstration program to identify and evaluate innovative models for creating access to DER, including rooftop and community solar, combined heat and power, geothermal, and solar thermal for LMI households. An incentive program should be developed to support the successful models.**

30. **Utility-owned CDG projects targeted to serving LMI customers should be required to partner with a nonprofit or public interest entity that has a track record in serving LMI needs, to be designed so as to maximize savings and customer benefit for LMI participants, and to provide job training opportunities.**

7.6 Integration of Energy Efficiency and Renewable Technologies

Both energy efficiency and renewable technologies can help lower energy bills while helping to reach the state's energy goals; however, the market barriers that have slowed adoption of each type of clean energy may be different. Current programs generally do not integrate and offer both energy efficiency and renewable solutions. By working to install energy efficiency measures and distributed renewables at the same time, programs can engage customers in new ways and potentially accelerate access and adoption of these technologies, while lowering energy burdens.

Recommendation:

31. **NYSERDA should develop a demonstration program to identify and evaluate innovative models for integrating renewable energy and energy efficiency in low-income projects. Based on the demonstrations, NYSERDA should develop an incentive program to support the successful models.**

32. **Develop a standard package for retrofitting manufactured housing with renewable technologies such air source heat pump, or solar, and storage, as part of a**

[141] ENERGY STAR or Consortium for Energy Efficiency –Tier 2 or 3 rated

weatherization/EE package that includes insulation and air sealing. Test the package and assess the net benefits (energy and bill savings) of implementing such a package. Explore the potential for customer financing the renewable technologies through the savings associated with the energy efficiency improvements, which could be fully subsidized, if coordinated with an existing no-cost energy efficiency program such as EmPower NY.

7.7 Access to Energy Consumption Data

Access to energy consumption data is essential to estimate the savings of clean energy upgrades, both using historical data and accessing data for heating fuel in addition to electricity. Obtaining prior bill data in order to conduct energy modeling improves the accuracy of estimated savings and reduces the timeline and administrative costs associated with clean energy projects. Estimation of multi-fuel savings further requires access to bill data from both electric and heating fuel providers. The Electronic Data Interchange (EDI) standards recommended by the NY EDI Working Group are a step in the right direction.[142] At this time; however, these standards do not have a firm implementation requirement or timeline.

Recommendation:

33. **DPS, NYSERDA, and the utilities should continue their efforts to continue efforts to streamline the availability of utility energy consumption data, in a standardized format, for the purposes of conducting energy modeling. This should include allowing the customer to provide consent for utilities to share their data with DER providers online. This will improve the accuracy of estimated savings and also reduce the timeline and administrative costs associated with clean energy projects.**

7.8 Workforce Development and Training

The integration of workforce development and training specifications in clean energy program design and delivery can have positive outcomes with respect to the realization of energy impacts resulting from clean energy projects, but can also result in economic development benefits for low-income communities, in addition to the realization of energy impacts.

Recommendations:

34. **All ratepayer funded programs should adopt industry recognized workforce training and certification standards for installers, energy auditors, and quality control inspectors.** [143]

35. **Contractors should be encouraged to hire and train workers from within the communities that they serve. Ratepayer funded programs should provide an incentive to contractors. The incentive could be financial or some other incentive, such as access to workforce training resources.**

[142] Case 98-M-0667.

[143] Including Building Performance Institute (BPI), the Interstate Renewable Energy Council (IREC) and the Association of Energy Engineers (AEE).

36. **Programs should provide a mechanism to support on the job or hands on training for disadvantaged workers within the communities where clean energy projects are being implemented.**[144]

7.9 Community Choice Aggregation (CCA)

Community Choice Aggregation provides the potential for delivering benefits to consumers including price stability for a fixed contract term, the potential for lower prices and more favorable terms, and the ability to design a program that reflects local preferences and needs, including a preference for cleaner power sources. These benefits may also help deliver affordability benefits to LMI households. Specific recommendations for CCA are being discussed within the Voluntary Investment Working Group and will be submitted as part of an overall recommendations report on CCA, however in this report, the LMI Working Group identifies the value that a CCA model can bring for LMI consumers.

Recommendation:

37. **Local governments should maintain control over the CCA program and the CCA revenue stream. The CCA revenue stream and leverage should be used to develop and promote energy efficiency programs, with a focus on providing energy efficiency assistance to low-income households, as well as to meet other community goals and local policy objectives, such as increasing renewable energy supply. To ensure that the needs and concerns of LMI customers are considered and met, outreach to low-income customers through community-based organizations should be integrated into CCA development plans.**

7.10 Consistency in Income Eligibility Classification

LMI customers and affordable building owners often receive or seek services from multiple energy, housing, financing, and other social service programs. While many of these programs have aligned eligibility criteria,[145] there are some differences, as well as variations in terminology that can lead to confusion for the customers and service providers. In order to effectively engage both LMI households and affordable building owners to facilitate/encourage clean energy upgrades and achieve synergies with other publically funded LMI energy, housing, and social service programs it is essential to establish a consistent approach for defining the LMI market segment, as well as establishing categorical eligibility between programs to reduce administrative overhead and application time.

Recommendations:

38. **NYSERDA and DPS should work with other state and federal agencies to align household and building eligibility requirements and standardize terminology across energy, housing, and social service programs to the extent possible.**

[144] In particular, rooftop and community PV provide an excellent opportunity for hands-on training.

[145] DPS and NYSERDA have aligned eligibility for utility bill payment assistance and the EmPower NY program with the federal LIHEAP and WAP eligibility (60% SMI) to establish categorical eligibility for low-income customers. NYSERDA and ConEd have set eligibility for AHPwES, MPP, Affordable Solar, and the ConEd MF program at 80% of AMI to align with the HUD definitions for affordable housing.

39. NYSERDA and the utilities should establish a tiered approach to establishing LMI service eligibility that fosters consistency with other energy, housing and social service programs.

For households: develop a two-tiered approach that would provide different levels of subsidy for clean energy services to both homeowners and renters.

Tier 1- would apply to households up to 60% SMI (HEAP and WAP eligibility);

Tier 2- would apply to households between 60% of SMI and 80% of AMI (or state, whichever is greater), which would be consistent with HUD designation;

For buildings: in a similar manner, develop a consistent approach for establishing three tiers of eligibility for programs based on the percentage of income eligible units and status as regulated affordable housing.[146]

Tier 1- weatherization eligible buildings that meet the federal DOE Weatherization requirement for whole building eligibility, requiring that 66% of all households in the building (or project) meet the DOE household income eligibility requirement (which, in NY, is 60% of State Median Income (SMI);

Tier 2 – government regulated multifamily buildings, with rent level requirements for a specified share of the apartment units in the building or complex of buildings that are specified in some form of contract or regulatory agreement between HUD, NYSHCR, or NYCHPD and the property owner;

Tier 3 – privately owned properties that are not publicly assisted or government regulated through such a contract or agreement but whose rent levels for at least 25% or the apartment units in the building (as confirmed by their rent rolls for the building) meet the HUD definition of affordability, i.e., that the monthly rent for a given size apartment is not more than 30% of the monthly income for households with incomes not greater than 80% of Area Median Income (AMI).

7.11 Coordination with Other State Agencies

While the focus of the Working Group is on the ratepayer-funded LMI portfolio, there are other state agencies that are involved in providing clean energy services to the LMI market segment. With nearly $700 million in ratepayer and federal funds being invested in New York state to provide clean energy services to LMI customers, it is imperative that these activities be coordinated and leveraged to increase the efficacy of these funds.

As previously noted in Section 3.2.2.2, the Governor has directed the formation of a Task Force, to develop new strategies so that all of the state's low income households have greater access to clean energy and are better served by the state's energy efficiency and assistance programs. The Task Force has been meeting regularly in the latter half of 2016, and has made itself available as a resource to the CEAC LMI Working Group.

[146] This status applies to buildings regulated by HUD, NYSHCR, and NYCHPD

Recommendations:

40. **The Task Force should work with utilities to develop a process for automatically referring recipients of various social service program benefits into clean energy programs and to develop a process for targeting clean energy services to eligible consumers having the greatest energy consumption.[147] In all cases, appropriate customer consent must be obtained.**

41. **NYSERDA should work with SONYMA to implement a program to reduce Mortgage Insurance Premiums or establish other standard cost savings for affordable housing properties achieving certain efficiency certifications or where robust energy savings are projected, based on a standard building assessment and work plan.**

42. **NYSERDA should work with NYPA and the utilities to support Public Housing Authorities by creating a pre-development funding source and construction funding to support clean energy improvements.[148]**

43. **NYSERDA, DPS, and the utilities should consider models for successfully leveraging ratepayer with federally funded programs to achieve greater scale and energy affordability impacts associated with the investment of public funds towards clean energy services for the low-income market segment. NYSERDA and the utilities can pilot different coordinated approaches.**

Table 10 provides a summary of the recommendations based on whether they amount to modifications to existing efforts, new approaches, and/or whether they represent potential pilot projects for further development. Table 11 identifies how the recommendations address the barriers to improving energy affordability and the adoption of clean energy solutions.

Table 10: Categorization of Recommendations

Recommendation	Modification to Existing Program	New Approach	Potential Pilot	Integration of EE/RE	Market Segment
1. Coordinated energy literacy campaign	✓				All
2. Online portal		✓	✓		All
3. Coordinated program outreach and co-branding		✓			All
4. Standard approach for referring customers	✓				All
5. Pilot pay for performance approaches			✓		All
6. Explore opportunities for demand bidding			✓		All
7. Modified audit procedures	✓				All
8. Additional methods of acquiring LMI customers	✓	✓			All
9. Timely monitoring and adjustment of program activity by Program Administrators	✓				All

[147] Including HEAP, SNAP, SSI, and other income-eligible benefits.

[148] This could be considered as part of Case 16-M-0395, which is considering NYPA's "opt-in" to electric utility programs.

10. Funding and program changes should be widely communicated to the market	✓				All
11. Encourage a whole building approach	✓				All
12. Fuel neutrality				✓	
13. Incorporate a direct install program component	✓	✓	✓		All
14. DIY component to direct install		✓	✓		All
15. Adopt an engagement tool that supports a phased approach to clean energy upgrades		✓	✓		All
16. Incorporate a portfolio approach		✓			All
17. Multifamily building operations requirements		✓	✓		Multifamily
18. Comprehensive audits for MF buildings every five years		✓			Multifamily
19. Reduce cost share for affordable MF buildings with larger proportion of low-income residents		✓			Multifamily
20. Comprehensive program to integrate PV into affordable MF buildings	✓	✓	✓	✓	Multifamily
21. Develop toolkits on CDG finance and ownership models		✓		✓	Multifamily
22. Explore options to increase LMI participation in CDG		✓			CDG
23. Continue to seek ways to provide upfront incentives for LMI access to CDG		✓	✓	✓	CDG
24. Pilot community-scale geothermal			✓	✓	CDG
25. Identify alternative funding/financing to address health, safety and structural issues		✓			All
26. Inclusive finance solution that overcomes credit barriers		✓		✓	All
27. Develop a bridge loan product		✓	✓		All
28. Zero percent interest finance option for high efficiency appliances for tenants		✓			All
29. Develop demonstration program to identify and evaluate DER for LMI households		✓		✓	All
30. Requirement for CDG projects to partner with nonprofit or public interest entity		✓			All
31. Develop a demonstration program to identify and evaluate innovative renewable and efficiency integration		✓	✓	✓	All
32. Standard package for retrofitting manufactured housing including solar/storage and/or air source heat pump		✓	✓	✓	Single family
33. Streamline availability of energy consumption data		✓			All
34. Adoption of workforce training and certification standards	✓	✓	✓	✓	All
35. Hire and train workers from within communities served	✓	✓			All
36. Support on-the-job or hands-on training for disadvantaged workers	✓	✓			All
37. Control of CCA program and revenue stream by local governments		✓		✓	All
38. Align household and building eligibility requirements with other state and federal agencies		✓			All
39. Tiered approach to LMI service eligibility	✓	✓			All

40. Automatic referral of social service program recipients into clean energy programs	✓	✓			All
41. Reduce Mortgage Insurance Premiums or establish other standard cost savings for affordable housing properties		✓	✓		All
42. Create pre-development funding source and construction funding for clean energy improvements for Public Housing Authorities		✓			All
43. Consider models for leveraging ratepayer with federally funded programs	✓	✓	✓		All

Table 11: Barriers Addressed by Recommendation

Barrier to Clean Energy Adoption	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
Residents																																											
Financial/access to capital							✓					✓	✓	✓	✓					✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓					✓			✓			✓
Competing interests		✓					✓						✓		✓																									✓			
Lack of information	✓	✓	✓					✓	✓	✓			✓	✓	✓									✓							✓		✓				✓	✓	✓	✓			
Building structural issues																									✓																		
Split incentive											✓																	✓															
Building Owners																																											
Financial/access to capital							✓					✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓			✓	✓	✓		✓										✓	✓	✓
Competing interests							✓						✓		✓	✓	✓	✓	✓								✓	✓															
Lack of information	✓	✓	✓					✓	✓	✓			✓	✓	✓	✓	✓							✓							✓		✓					✓	✓				
Building structural issues																									✓																		
Split incentive											✓																	✓															
Systemic																																											
Limited budgets				✓	✓	✓			✓	✓			✓	✓											✓																			✓
Fragmented program delivery	✓	✓	✓																																			✓	✓	✓			✓
Identifying LMI customers	✓	✓		✓				✓																																✓			✓
High cost of delivering programs				✓	✓	✓	✓	✓					✓	✓											✓								✓						✓	✓	✓			✓

8. Working Group Member Comments

Comments from National Fuel Gas Distribution Corporation

National Fuel

January 27, 2017

Hon. Kathleen H. Burgess
Secretary
New York State Public Service Commission
Three Empire State Plaza
Albany, New York 12223-1350

Re: Matter 16-01007 – In the Matter of the Clean Energy Advisory Council's ("CEAC") Low and Moderate Income Clean Energy Initiatives Working Group

Dear Secretary Burgess:

National Fuel Gas Distribution Corporation ("National Fuel" or the "Company") is appreciative of the opportunity to work with other interested parties in the Low and Moderate-Income ("LMI") Clean Energy Initiatives Working Group and wishes to recognize the great effort of the Working Group members to produce and deliver the Recommendations Report. While National Fuel does not represent the interests of other New York utilities, participation by a utility is helpful in order to continuously reinforce the unique challenges faced by such entities and the critical need to ensure that utilities are able to keep rates just and reasonable.

A consensus of the parties to the LMI Working Group was not reached during the development of the Recommendations Report. However, the numerous recommendations for alternate approaches for improving the delivery of services to LMI customers that have been identified should be examined further for potential merit. This comment opportunity is not the place to address seriatim the recommendations of the LMI, though National Fuel reserves all rights to do so at an appropriate time. However, when the recommendations are considered, it bears keeping in mind that that the impact on utilities needs to be constantly in focus, as new requirements and burdens on them will necessarily increase costs on utility ratepayers. National Fuel remains concerned that the adoption of many of the recommendations, as currently drafted, could have the effect of significantly increasing the cost of providing utility service while providing no corresponding benefits to ratepayers.

National Fuel has a long record of providing safe and affordable gas utility service to all customers, especially its low and moderate income customers. The Company has fully cooperated in the CEAC Working Group process and will continue working collaboratively in this regard.

NATIONAL FUEL GAS DISTRIBUTION CORPORATION / 6363 MAIN STREET / WILLIAMSVILLE, NY 14221-5887

Respectfully submitted,

/s/ Kenneth M. Gossel

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Comments from Binghamton Regional Sustainability Coalition

Binghamton Regional Sustainability Coalition submits the following comments on the Working Group Report on Alternative Approaches to Providing LMI Clean Energy Services. Comments have been organized by report section.

Section 3: Energy Policy and Regulatory Landscape

Community Distributed Generation

A significant group within the collaborative, including the Energy Democracy Alliance (EDA), strongly dissented with Staff's view on LI CDG, which is also reflected in the present draft. [149] Detailed programmatic proposals, some of which are being tried in the field in real time, are laid out in the Summary of Working Group Reports. [150]This is further detailed reflected in comments submitted to the case by the CDG [Vote Solar] Stakeholders [151] "The CDG Stakeholders disagree with Staff's characterization of the CDG Low Income Collaborative' s work as lacking workable solutions. In fact, the Collaborative achieved very substantive recommendations after thorough exploration of various issues. The CDG Low Income Collaborative' s recommendations were not adequately conveyed in the Staff's report." These include workable solutions in the areas of finance and business modeling, some of which are being put into practice in the field, to the extent permitted by existing barriers which were also pointed out in the Summary and the Stakeholder comments, as well as in a series of case studies published by the EDA.[152]

Value of DER

Stakeholders led by the EDA have commented that while they agree in principle with moving from net metering to a value of D approach, that the proposal undervalues solar by failing to incorporate social, environmental, health, economic and equity values in the stack, and by making the calculation of valuable variable of the life of projects. Combined with other elements of the proposal, stakeholders argue, the result would be to further retard the development of shared projects giving access to LMI New Yorkers Recommendations include treating current retail value as a price floor rather

[149]Eda Response To The Release Of The Report On Low-Income Participation In Shared Solar. August 16, 2016. http://energydemocracyny.org/eda-response-to-the-release-of-the-report-on-low-income-participation-in-shared-solar

[150] New York State Public Service Commission. CDG Low Income Customer Collaborative - Summary of Working Group Reports (Case 15-E-0082). http://www3.dps.ny.gov/W/PSCWeb.nsf/ca7cd46b41e6d01f0525685800545955/8a75b07f45e1672485257edd00602d7c/$FILE/15-E-0082%20Low%20Income%20Collaborative%20Report%208-15-16.pdf. This summary, though part of the record, appears on a private page on the DPS site and not in the matter master.

[151] New York State Public Service Commission. Comments of the [Vote Solar] CDG Stakeholders. http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={FDD74081-F053-4650-AAC5-21A32A2415BA}

[152] Community Owned Shared Renewables Group of the Energy Democracy Alliance. New York Community Solar Case Studies: Opportunities and Challenges. January 2017. http://energydemocracyny.org/wp-content/uploads/2017/01/CoShare-CSS-case-studies.pdf

than a ceiling, adding in the excluded values to the stack, and locking in a price for the life of each project.[153] The group also supports several recommendations from the Coalition for Community Solar Access and those from SEIA and Vote Solar, including lifting the 2% of revenue cap and extending the project period from 20 to 25 years.[154]

Section 4.2.2: Affordable Solar Predevelopment and Technical Assistance
Development costs not unique to LMI development, such as interconnection, permitting or initial land lease payments are ineligible for these funds, which remains a barrier to developers lacking access to development capital.

Section 4.3.1: Green Jobs - Green New York/On-Bill Recovery
Some GJGNY CBO's and solarize program coordinators have found that the added complexity and cost introduced by these increases have made the loans less attractive to borrowers.

Section 4.5.3: Consumer Education and Outreach through Utility Companies
Results from the focus groups is consistent with findings elsewhere in suggesting that the utilities themselves are not best suited to conduct direct outreach services, particularly for LMI communities. Robust partnerships with trusted local community based organizations qualified to deliver such services could be a very workable solution. [155]

Section 5: LMI Clean Energy Initiatives in Other Jurisdictions
The CalEnviroScreen Environmental Justice Screening Methodology (EJSM) should be added as an initiative in other jurisdictions. CalEnviroScreen was developed by the California EPA to identify disadvantaged communities in California under SB5357 for the purpose of redistributing funds generated from the State's greenhouse gas reduction and permits program (AB32). This was based in part on the Environmental Justice Screening Methodology (EJSM), developed in California by academics at USC, University of California at Berkeley, Occidental College, and UC Berkeley in concert with a wide variety of grassroots environmental justice communities, like the CA Environmental Justice Alliance

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[153] NY Energy Democracy Alliance. Comments on the Staff Report and Recommendations (Case 15-E-0751). December 5, 2016. http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={F0F9AC95-AC87-4CE1-A79F-0A3A956BA4E7}

[154] Coalition for Community Solar Access. (Case 15-E-0751). December 4, 2016. http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={0F17FB58-457A-4968-854E-7950F8127976}, Comments of the Solar Energy Industries Association and Vote Solar. December 4, 2016. http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={9135FB87-282F-422B-815E-17BEFF73A980}

[155] http://www.businesswire.com/news/home/20161207005191/en/Utilities-Post-All-Time-High-Customer-Satisfaction-Lack. http://smartgridcc.org/wp-content/uploads/2016/02/2016-State-of-the-Consumer-Executive-Summary.pdf. https://www.greentechmedia.com/articles/read/consumer-trust-in-utilities-continues-to-nosedive. http://inthesetimes.com/article/18536/central-hudson-gas-electric-organizing-housing-rights. http://www.villagevoice.com/news/con-ed-s-kangaroo-court-how-a-private-company-and-our-public-courts-put-consumers-in-the-hot-seat-8474874. Also see comments at the series of public REV hearings held across New York by the Department of Public Service http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=14-m-0101&submit=Search+by+Case+Number.

(CEJA). In California's model, the EJSM was developed with support from State regulatory agencies - the California Energy Commission, and the California Air Resources Board, which have adopted it as a research tool.

Section 7: Recommendations

7.1 Energy Literacy, Awareness, and Program Application Process

Recommendation 2: The establishment of permanent one-stops in each region of the state with a diversified funding stream, partnerships with utilities, local government agencies and community service providers can be particularly impactful for LMI residents.[156]

7.2.5 Program Design

Add a new recommendation that NYSERDA and the utilities should partner with community based organizations for program design and implementation as widely as possible to take advantage of the local knowledge, relationships of trust and low cost deliver that are among the value propositions of CBOs. Combined with the recommendations in section 7.1 (Energy Literacy, Awareness, and Program Application Process) this recommendation becomes particularly important with the devolution of some program delivery responsibilities to the utilities, where confusion and uneven deliver could otherwise result.

7.2.5 Fuel Neutrality

Recommendation 13: When feasible, renewable generation and energy efficiency measures that replace natural gas should be used in place of conversions to Natural Gas, to contribute to the State's greenhouse gas reduction goals.

7.5 Access to DER and Utility Ownership

Recommendation 31: Because costs of these projects would be rate-based, they should only be considered beyond pilot projects in cases where the market cannot serve, and only once the market is sufficiently mature to make that evaluation.

7.10 Income Eligibility

Add two additional tiers of income thresholds:

Tier 3 – would apply to households between 80% of SMI and 100% of AMI
Tier 4 - would apply to households between 100% of SMI and 120% of AMI
We understand that increased resources would be needed for this expansion. Its our view that this is clearly already the case, given the limited reach of NYS energy programs to date, and that this approach is required if the goal is indeed to reach 50% renewable electricity by 2030 and also reach the State's GHG reduction goals.

[156] The Adirondack North Country Association (ANCA) has piloted a limited version of the one-stop with support from NYSERDA's Cleaner Greener Communities Program. A more comprehensive program focused on sustainability exists in New Jersey <http://www.sustainablejersey.com/>.

Appendix A: LMI Working Group Scope

Low & Moderate Income Clean Energy Initiatives Working Group Scope

Purpose:

The Low & Moderate Income (LMI) Clean Energy Initiatives Working Group will provide the venue for NYSERDA, the Utilities, and other interested stakeholders to actively evaluate alternative approaches for the delivery of services to LMI customers that can improve consumer value, for the customers served as well as for the rate-payer funding invested.

Guiding Principles & Clean Energy Advisory Council (CEAC) Protocols:

Working Group activities in support of feasible and impactful findings are expected to include:

- Conducting and implementing Working Group activities with transparency and openness;
- Planning and implementing a work agenda and schedule of activities in support of the Working Group objectives;
- Compiling research;
- Directing analysis and studies;
- Soliciting expert advice;
- Developing options and proposals for consideration with particular focus and emphasis on implications and benefits to customers;
- Assessing options and proposals against objectives, and arriving at written feasible recommendations that provide the underlying rationale and, as needed, documents dissenting views along with associated rationale;
- Informing the development and implementation of programs among New York's clean energy program administrators;
- Providing regular written updates on the Working Group's activities and progress; and
- Sharing final work products and notable interim work products.

Protocols regarding CEAC Steering Committee and Working Group interactions include:

- Working Group scopes are authorized by the Steering Committee. Working Groups may at any time propose revisions and additions to the Working Group scopes for Steering Committee consideration but the initial objectives and deliverables of each group will focus on Commission assigned activities. The Steering Committee will guide and authorize Working Group scopes that lead to recommendations that help inform the future development of programs.
- Each Working Group will establish its own work plan and schedule and should incorporate opportunities for non-member input and feedback, as appropriate and feasible and shall provide routine updates to the Steering Committee on its progress. The Steering Committee will identify potential overlap and coordination between Working Group activities and will suggest opportunities for integration or sharing resources between and among Working Group activities.
- Working Group reports and other documents will typically be provided to the Steering Committee for review and comment two to three weeks prior to final deliverable due dates. The Steering Committee will review and assess Working Group products against the overall

objectives and purpose of the Clean Energy Advisory Council and Working Groups. The Working Group shall consider Steering Committee comments and shall document whether it has incorporated or rejected each comment with associated rationale in a new section of the report or in an appendix to the report. The Working Group retains ownership of final work products and is under no obligation to revise its recommendations in response to Steering Committee feedback. The Working Group shall work with Staff to ensure all final work products are filed in DMM and posted to the DPS website.

Initial Objectives:

The Low-Moderate Income (LMI) Clean Energy Initiatives Working Group is initially tasked with:

(1) Report on Alternative Approaches to Providing Low-Moderate Income (LMI) Clean Energy Services – Investigate and evaluate alternatives to the current delivery of services to LMI customers that can improve consumer value. These services include, among other things, bill reduction, energy efficiency services and renewable generation. Tasks include an assessment of the strengths and weaknesses of current approaches to delivery of the aforementioned services to LMI customers in New York; identification and documentation of alternative approaches deployed in other jurisdictions including the strengths and weaknesses of each; and a summary of findings regarding opportunities for improved delivery of services, including the potential for coordinating the delivery of energy efficiency and renewable generation to the LMI population. The Working Group will develop a report documenting its findings. The report will outline well-defined good practice approaches and specific transitional considerations. The Working Group's report will inform the LMI Chapter of NYSERDA's Investment Plan and Utilities' future Energy Efficiency Transition Implementation Plans and Budgets and Metrics Filings, as well as other clean energy activities.

(2) Recommendation Regarding Continuation of Working Group Activities - Determination as to whether the Working Group has fulfilled its purpose upon the completion of the initial objectives or recommended additional objectives and tasks for the Working Group to pursue.

Tasks/Deliverables:

Task/Deliverable	Expected Completion Date
Final Low & Moderate Income (LMI) Clean Energy Initiatives Working Scope, including member list and member roles provided to Steering Committee	
• Provide to DPS Staff	6/10/16
• Final Filed in DMM	6/17/16
Initial detailed Low & Moderate Income (LMI) Clean Energy Initiatives Work Plan	
• Draft submitted to CEAC Steering Committee for Comment	7/1/16
• Final filed in DMM	8/1/16
Report on Alternative Approaches to Providing Low & Moderate Income Clean Energy Services, including the components described in the objective above.	
• Outline Submitted to CEAC Steering Committee for Comment	8/10/16
• Draft Submitted to CEAC Steering Committee for Comment	12/2/16
• Final Filed in DMM	1/17/17
Provide a Recommendation to the Steering Committee as to whether the Working Group has completed its purpose and should be folded or provide a revised Working Group Scope with additional objectives, tasks and deliverables.	At any time, but no later than 90 days following the completion of previously assigned deliverables

Members:

Name	Role	Company/Organization	Email
Marty Insogna	Co-Chair	DPS	Martin.Insogna@dps.ny.gov
Chris Coll	Co-Chair	NYSERDA	Christopher.Coll@nyserda.ny.gov
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Shirley Anderson	Member	TRC	sanderson@trcsolutions.com
Gregg Collar	Member	UIU	Gregg.Collar@dos.ny.gov

Appendix B: LMI Working Group Meeting Schedule

In development of this report, the working group met on a bi-weekly basis. All meetings were held via webinar, teleconference, and in-person meetings. The Working Group meeting schedule for the development of this report was as follows:

June 7, 2016
June 22, 2016
July 7, 2016
July 21, 2016
August 3, 2016
August 17, 2016
August 31, 2016
September 14, 2016
September 28, 2016
October 19, 2016
October 26, 2016
November 3, 2016
November 9, 2016
November 23, 2016
December 12, 2016
January 20, 2017

In addition, the Single Family, Multifamily, Renewables, and Community Approaches/Customer Acquisition subgroups met on an as-needed basis.

Appendix C: Focus Group Discussion Questions

CEAC LMI Working Group
Consumer Focus Group Scope
Questions for Discussion

Energy Awareness

1. How often do you review your energy bill? Are the charges on your electric or heating bill clear and understandable?

2. What do you know about the amount of energy consumed by various appliances and equipment in your home?

3. Where do you turn to for information about your energy use? OR Who do you trust as a source of information on your energy use?

Energy Affordability

1. Are you concerned about the amount of electricity, natural gas, or heating fuel that you use?

2. Do you have difficulty paying your electric or heating bills? How often does paying your utility bill pose a problem for you? Every month? Only in winter? Only when other unexpected bills come up? Have you experienced a termination?

3. Have you taken any steps to try to reduce your electric or heating costs?
    a. If so, provide details -- for example, do you cut back on using certain appliances? Have you purchased more efficient appliances?
    b. Are there features of your home or apartment that make it difficult to save energy – for example, poor insulation, drafty windows, other? What would help you reduce your energy use, if cost was not an obstacle?

Program Participation

1. Have you participated in any programs to help you manage your energy costs?
    a. If so, which ones? (e.g.: HEAP, budget billing, WAP, EmPower) How did you hear about the program?
    b. Were you able to get help from these programs? Has it made a difference?
    c. If not, why not? Were there barriers to your participation?

2. If not, are there things about those programs you would like to see changed? What are they? How should they change? What kinds of programs would you like to see offered instead?

3. Is there anything else you would like to say about reducing energy costs before we wind up?

Appendix D: Focus Group Demographic Questionnaire

Energy Affordability Focus Group
Participant Questionnaire

Thank you for taking the time to participate in this energy affordability focus group. Your answers to the following questions will assist us with understanding tonight's conversation.

Our discussion tonight is confidential to this room. There will be no audio or video recordings. A few people in the room may be taking some notes so that we can remember what you said and represent it accurately, but these notes will not contain any identifying information about you.

If you have any questions or concerns about your participation after tonight's discussion, please feel free to contact Mishel Filisha at 518-862-1090 ext.3628.

1. First Name: _____

2. How many people live in your home? _____

3. Does your household contain a member who is under age 6, age 60 or older, or permanently disabled? If so, which?
   - ☐ under age 6
   - ☐ age 60 or older
   - ☐ permanently disabled

4. Do you own or rent your home?
   - ☐ own
   - ☐ rent

5. What type of building do you live in?
   - ☐ single family
   - ☐ 2-4 family home
   - ☐ multifamily building, with greater than 5 units

6. What is your primary source of heating?
   - ☐ electric
   - ☐ natural gas
   - ☐ oil or propane

[Continued on back of page}

7. Please estimate your annual household income:

- ☐ less than $10,000
- ☐ $10,000 - $19,999
- ☐ $20,000 - $29,999
- ☐ $30,000 - $39,999
- ☐ $40,000 - $49,999
- ☐ $50,000 - $59,999
- ☐ $60,000 - $69,999
- ☐ $70,000 - $79,999+

8. Please estimate your monthly energy costs?

- ☐ less than $100
- ☐ $100 - $149
- ☐ $150 - $199
- ☐ $200 - $250
- ☐ greater than $250

9. Please estimate your monthly housing cost (rent or mortgage)?

- ☐ less than $250
- ☐ $250 - $499
- ☐ $500 - $749
- ☐ $750 - $999
- ☐ $1000 - $1249
- ☐ $1250 - $1500
- ☐ greater than $1500

Appendix E: Focus Group Summary

Two focus groups with low-income customers were conducted with the objective of informing the Working Group report and recommendations for improving the delivery of clean energy services. Focus groups were held in Buffalo on November 3, 2016 and in Binghamton on November 16, 2016.

In planning and conducting the focus groups, conventional research standards were adhered to as much as time and resources permitted. The focus groups engaged between eight and 17 customers per group and were facilitated by three Working Group members, with one leading the discussion and two taking notes and stimulating follow-up conversation, as necessary. These roles remained consistent throughout the three focus groups. Participants were recruited in cooperation with Working Group members who liaison with low-income communities directly. A discussion guide was developed approaching topics of energy awareness, energy affordability, and energy program participation. Each topic was broken down into three predetermined questions with related follow-up questions. A demographic survey requesting general information regarding housing stock, home heating source, and related information was distributed to participants prior to the start of discussion. A summary of the demographic survey is provided in the table below. During the focus groups, notes were taken categorically in accordance with the discussion guide, with additional topics annotated when necessary. Focus group participants were provided refreshments and compensated with a $20 local grocery store gift card.

The focus groups yielded much interactive discussion about customer experiences and concerns with energy awareness, energy affordability and energy program participation. Participants shared knowledge by responding to questions directly in addition to motivating tangential discussion and sharing individual stories. Information gathered directly from consumers was used to frame and inform recommendations throughout this report.

Demographic Questionnaire- Summary of Focus Group Participant Responses

Demographic Question	Buffalo n=8	Binghamton N=17, n=12
How many people live in your home		
1	4	2
2		2
3	1	6
4	1	
5		2
6	1	
7		
8		
9		
10	1	
Does your household contain a member who is under age 6, age 60 or older, or permanently disabled? If so, which?		
under age 6	1	3
age 60 or older	3	5
permanently disabled	3	6
Do you own or rent your home?		
own	6	4
rent	2	8
What type of building do you live in?		
single family	3	4
2-4 family home	5	5
multifamily building, with greater than 5 units		3
What is your primary source of heating?*		
electric		5
natural gas	8	6
oil or propane		
Please estimate your annual household income		
less than $10,000	2	5
$10,000 - $19,999	3	5
$20,000 - $29,999	1	1
$30,000 - $39,999	1	1
$40,000 - $49,999		
$50,000 - $59,999	1	
$60,000 - $69,999		
$70,000 - $79,999+		
Please estimate your monthly energy costs		
less than $100	2	4
$100 - $149	3	3
$150 - $199		1
$200 - $250	2	
greater than $250	1	4
Please estimate your monthly housing cost (rent or mortgage)		
less than $250	2	
$250 - $499	3	5
$500 - $749	3	4
$750 - $999		3
$1000 - $1249		
$1250 - $1500		
greater than $1500		

Appendix F: Service Provide Survey

About Your Organization

In order for the CEAC LMI Working Group to gain a better understanding of your organization's role in the clean energy and LMI sector, please provide the following information:

1) Number of employees
2) Number of offices
3) Annual operating budget
4) Focus of organization
5) Additional background information about your organization that might be helpful for the CEAC LMI Working Group:

Part 1

1.) How would you rate: your experiences accessing and using LMI Clean Energy Programs
(Rate-Excellent, Good, Fair, Poor, Very Poor)
   a.) Utility programs
   b.) NYSERDA programs
   c.) Other agency programs

Follow-up question: Please indicate which programs you have experience with. Of those, which ones have you found most/least useful? Any specific reasons?

2.) How would you rate: these programs in helping your communities see the value in clean energy?
(Rate-Excellent, Good, Fair, Poor, Very Poor)
   a.) Utility programs
   b.) NYSERDA programs
   c.) Other agency programs

Follow-up question: Have you seen a shift in energy education and literacy in your community as a result of these programs? Have these programs helped people have an improved understanding of their energy use?

3.) How would you rate: the logistics and time required to access funding opportunities or programs/services for clean energy?
(Rate-Excellent, Good, Fair, Poor, Very Poor)
   a.) Utility programs
   b.) NYSERDA programs
   c.) Other agency programs

Follow-up question: Have these programs been timely with their payments and have they been easy to follow through? If not, what barriers have these logistical and time issues created?

4.) How would you rate: these program's success in accelerating clean energy adoption? (Rate-Excellent, Good, Fair, Poor, Very Poor)

a.)Utility programs?
b.)NYSERDA Programs?
c.)Other agency programs?

Follow-up question: Have these agencies allocated their funding to programs that help LMI households the most? If yes, how so? If not, how would you reallocate them?

5.) How would you rate: these programs effectiveness in reducing energy bills? (Rate-Excellent, Good, Fair, Poor, Very Poor)

a.) Utility programs
b.) NYSERDA programs
c.) Other agency programs

Follow up question: Do these agencies place enough emphasis on energy affordability? If so, which programs have been successful in emphasizing this? If not, how can they be improved?

6.) How would you rate: NYSERDA's or other agencies' outreach methods? (Rate-Excellent, Good, Fair, Poor, Very Poor)

Follow-up question: Which NYSERDA or other state agencies' outreach methods have been most/least successful in engaging your community with clean energy?

7.) How would you rate: utility outreach methods?

Follow-up question: Which utility outreach methods have been most/least successful in engaging your community with clean energy?

PART 2: ORGANIZATION-SPECIFIC QUESTIONS

1.) Which outreach methods has your organization used and found to be most successful in engaging your community with clean energy? Which ones have not worked? Do you use or can you suggest different outreach methods for households in multifamily or rental housing? For promoting community solar?

2.) How do you see your organization as an essential intermediary between state agencies and utilities, and the community? Especially in regard to informing customers about clean energy.

3.) What would you like to see less/more of in terms of programs targeting clean energy/energy efficiency, customer engagement, and community approaches? Where should funding be allocated to have the greatest impact on energy affordability and clean energy adopting in the LMI community?

4.) What alternative methods would you suggest using for clean energy programs and services to target and enroll LMI customers?

5.) Please provide recommendations to NYSERDA and the utilities on how to improve their existing clean energy programs.

6.) Please provide recommendations to NYSERDA and the utilities on clean energy programs or series that are not available, but could help increase energy affordability in your community. Do you have experience with other clean energy programs that are relevant and that NYSERDA and the utilities should consider?

Additional Comments:

Appendix G: Summary of SBC- Funded Low-Income Energy Efficiency Initiatives

In addition to the EmPower New York, Assisted Home Performance with ENERGY STAR, and the Multifamily Performance Program, the following programs were funded under the System Benefits Charge:

Low-Income Direct Installation Program (1999-2002)
Administered by NYSERDA, the Low-Income Direct Installation Program targeted Low-income customers in the Central Hudson Gas and Electric Company (CHG&E), Con Edison, and Orange and Rockland Utilities, Inc. (O&R), utility service areas. This program extended the existing service infrastructure of the federal WAP by offering electric reduction measures, including energy-efficient lighting and appliances for low-income customers. The program achieved an estimated 11.5 million kWh in electricity savings, accounting for over $2.1 million in electricity bill savings for low-income customers. It contributed to the installation of 3,918 energy-efficient refrigerators and 25,463 compact fluorescent bulbs in over 10,000 low-income households spending $9.9 million over three years (1999 - 2002) and saving some 10,000 households an average of 25% on their electric bills.

Low-Income Assisted Multifamily Program (AMP) (2002 - 2007)
The AMP was administered by NYSERDA and targeted multifamily buildings that were publicly-assisted and government regulated. The program used a whole-building approach to improve the energy efficiency publicly assisted housing in New York State, with technical assistance, energy audits, financing services, and the bulk purchase of energy efficiency technologies, emphasizing the "fiscal health" of building renovation and retrofit projects. This program also included a statewide network of Local Case Managers (LCMs) and for a WAP referral and coordination system and strategy to increase collaboration and co-funding of affordable housing projects eligible for both AMP and WAP.

Weatherization Initiative (WNI) (2003 - 2005)
This statewide program extended the concept of the NYSERDA "Direct Install" program to be offered also in the remaining utility service territories whose residents paid into the System Benefits Charge (SBC). Training on program design and implementation was provided to WAP subgrantees throughout the State, except in LIPA's territory on Long Island. This WNI program, and the NIMO program first developed under ULIEEP, provided the basis for the NYSERDA Empower program. Maybe this history should be referenced in some form.

Appendix H: Findings from 2009 NEADA National Energy Assistance Survey

Inability to Pay Energy Bills During Past Year (2009) [157]

	n=1,828 % of Respondents
Skipped paying or paid less than entire home energy bill	50%
Received notice or threat of disconnect or discontinuance of electricity or home heating fuel	36%
Electricity shut off due to nonpayment	9%
Heating system broken and unable to pay for repair or replacement	13%
Unable to use main source of heat because unable to pay for a fuel delivery	11%
Unable to use main source of heat because utility company discontinued gas or electric service due to non-payment	11%
Had to Go Without Showers or Baths Due to Lack of Hot Water	10%
Had to Use Candles or Lanterns Due to Lack of Lights	8%

Housing Problems Due to Energy Bills in the Past Five Years[158]

	n=1,828 % of Respondents
Did not make full rent or mortgage payment	31%
Evicted from home or apartment	5%
Had mortgage foreclosure	4%
Moved in with friends or family	12%
Moved into shelter or was homeless	3%

[157] Table IV-25. National Energy Assistance Directors' Association. 2009 National Energy Assistance Survey, April 2010

[158] Table IV-26A. National Energy Assistance Directors' Association. 2009 National Energy Assistance Survey, April 2010

Medical and Health Problems Due to Energy Bills in the Past Five Years, by Vulnerable Group[159]

	Senior	Disabled	Child Under 18	Non-Vulnerable
n	757	788	770	152
Went without food for at least one day	20%	36%	33%	49%
Went without medical or dental care	29%	41%	45%	72%
Didn't fill prescription or took less than full dose	26%	40%	37%	40%
Unable to pay energy bill due to medical expenses	16%	28%	26%	24%

[159] Table IV-29B. National Energy Assistance Directors' Association. 2009 National Energy Assistance Survey, April 2010

Appendix I: Acronyms and Abbreviations

ACEEE- American Council for an Energy Efficient Economy

ACS- American Community Survey

AHPwES- Assisted Home Performance with ENERGY STAR

AMI- Area Median Income

BAM- Budget and Metric Plan

CBO- Community Based Organization

CCA- Community Choice Aggregation

CDG- Community Distributed Generation

CEAC- Clean Energy Advisory Council

CEF- Clean Energy Fund

DER- Distributed Energy Resource

DOE- United States Department of Energy

DOH- New York State Department of Health

DPS- New York State Department of Public Service

EAM- Earnings Adjustment Mechanism

EEPS- Energy Efficiency Portfolio Standard

EDA- New York State Energy Democracy Alliance

EPA- United States Environmental Protection Agency

EIA- United State Energy Information Administration

ETIP- Energy Efficiency Transition Implementation Plan

FPL- Federal Poverty Level

GHG- Greenhouse Gas

GJGNY- Green Jobs, Green New York

HCR- New York State Homes and Community Renewal

HUD- United States Department of Housing and Urban Development

LIPA- Long Island Power Authority

LMI- Low-to Moderate Income

MPP- Multifamily Performance Program

NEADA- National Energy Assistance Directors' Association

NYGB- New York Green Bank

NYSERDA- New York State Energy Research and Development Authority

NYPA- New York Power Authority

OTDA- New York State Office of Temporary and Disability Assistance

PSC- New York State Public Service Commission

PSEG- Public Service Electric and Gas

REAP- PSEG's Residential Energy Affordability Partnership Program

RECS- United States Department of Energy Residential Energy Consumption Survey

REV- Reforming the Energy Vision

SBC- System Benefits Charge

SMI- State Median Income