

Regional Clean Energy Hubs Market Evaluation and Baseline Customer Survey: Appendices

Final

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APPENDIX A: Extended Methodology

Table A-1 summarizes the primary data collection activities conducted during the study to inform the market evaluation and baseline setting. The sections that follow provide additional detail on each activity.

Table A- 1. Primary Data Collection Activity Summary

ACTIVITY	TARGET GROUP	POPULATION SIZE	SAMPLE SIZE	EXPECTED SAMPLING PRECISION/ CONFIDENCE	STRATA
Interviews	RCEH Hub Leadership	12 Hubs (15 Hub Leaders)	12 interviews (19 interviewees)	Hubs census	NA
Virtual Focus Groups	Subcontractors	~50 organizations	3 Focus Groups of 6-9 participants each	Thematic saturation	NA
Virtual Focus Groups	Consumers in DACs	~7,000,000 individuals	8 Focus Groups of 6-9 participants each (48 - 72 total)	Thematic saturation	Rural/urban/ suburban strata (designations defined by Data Axle)
Online survey	Consumers in DACs	~7,000,000 individuals	280	90/10	Rural/urban/ suburban strata (designations defined by Data Axle)

A.1 Extended Hub Leadership Interview Methodology

For the Hub Leader interviews, IEC interviewed a census of the Hub Leader teams, to ensure all 12 Hubs were represented (i.e., a 100 percent response rate) (**Table A-2**). The Hub Leadership Interviews were conducted between June and July 2023. Hub Leadership interviews were designed to establish context for understanding Hub progress at the time of evaluation. The 12 interviews, one with each of the 12 Hubs, included 19 participants total. This report analyzed Hub interviews and reported findings at the Hub level, as teams interviewing represent the same Hub and were always in agreement. Topics included Hub partners involved in RCEH work, the energy advisor hiring process, observed barriers to consumer uptake of clean energy services, and plans for future community campaigns. At the time of interview, Hubs had primarily been working with their subcontractor organizations and had not yet engaged their community partners, so the planned stakeholder focus groups became subcontractor focus groups.

Table A- 2. Hubs and their prime contractor organizations

HUB REGION	PRIME CONTRACTOR ORGANIZATION	NO. INTERVIEW EES	CEEP ORG?	NOTES
Capital Region	Affordable Housing Partnership (AHP)	1	Yes	AHP participated in CEEP.
Central NY	Central NY Regional Planning & Development Board	4	No	Working closely with AGREE and Greater Syracuse Works. Did not participate in CEEP.
Finger Lakes	Climate Solutions Accelerator of the Genesee-Finger Lakes Region	1	No	Did not participate in CEEP.
Long Island	Cornell Cooperative Extension Nassau County	2	Yes - peripherally	Long Island residents do not pay into the system benefits charge that funds the agency's programs. United Way of Long Island was a CEEP contractor and now contracts with CCE Nassau County as a part of the larger Long Island Hub.
Mid-Hudson	Cornell Cooperative Extension Dutchess County	2	Yes	CCE Dutchess County participated in CEEP.
Mohawk Valley	Cornell Cooperative Extension Oneida County	1	No	Did not participate in CEEP.
NYC - Bronx/ Brooklyn	Association for Energy Affordability (AEA)	2	Yes - peripherally	The Center for NYC Neighborhoods (CNYCN) was a CEEP contractor and now contracts with AEA as a part of the larger Bronx/Brooklyn Hub.
NYC - Manhattan	WE ACT for Environmental Justice	1	No	Did not participate in CEEP.
NYC - Richmond/ Queens	Neighborhood Housing Services of Queens	1	No	Did not participate in CEEP. IEc interviewed Kinetic Communities Consulting (KC3), a subcontractor that is handling the administration for the prime contractor of the Richmond/Queens Hub, Neighborhood Housing Services of Queens.
North Country	Adirondack North Country Association	1	Yes - peripherally	ANCA was involved peripherally with CEEP as a subcontractor.
Southern Tier	Cornell Cooperative Extension Tompkins County	1	Yes	CCE Tompkins County participated in CEEP.
Western NY	People United for Sustainable Housing (PUSH) Green Buffalo	2	Yes	PUSH Green Buffalo was a CEEP contractor. They have been involved with NYSERDA programs since the launch of Green Jobs Green NY.

IEc also used the interviews with Hub leaders to collect the names of three to five stakeholder/partner organizations for each Hub as part of developing the subcontractor focus group sample (snowball sampling).

A.2 Extended Subcontractor Focus Group Methodology

The IEc Team conducted a series of focus groups with a range of subcontractors working with Hubs in August 2023. The participant candidates for the stakeholder/partner focus groups were initially drawn from the NYSERDA Hub Membership List and was supplemented using a

snowball sampling method from the interviews with Hub Leadership teams as described above. Subcontractors typically have a long-standing partnership with the prime contractor of their RCEH, and Hubs divide work among contractors based on existing expertise and programs (e.g., organizations with experience in workforce development will lead that portion of the initiative). NYC Manhattan was the only Hub for which IEC was not able to recruit subcontractor focus group participants, though all five contacts were invited (**Table A-3**).

Table A- 3. Subcontractor Focus Group Participation

HUB REGION	SUBCONTRACTORS IDENTIFIED	SUBCONTRACTORS INVITED	SUBCONTRACTORS ATTENDED	PARTICIPATION RATE
Capital Region	4	4	3	75%
Central NY	1	1	1	100%
Genesee/ Finger Lakes	5	2	2	100%
Long Island	5	4	2	50%
Mid-Hudson	3	3	3	100%
Mohawk Valley	3	3	3	100%
NYC Bronx/ Brooklyn	2	2	1	50%
NYC Manhattan	5	5	0	0%
NYC Richmond/ Queens	6	6	5	83%
North Country	2	2	2	100%
Southern Tier	2	2	2	100%
Western NY	6	2	2	100%
TOTAL	44	36	29	81%

Note: Number of invitations sent depended on when IEC received confirmation or correction on candidate participant lists from Hub Leadership teams.

The IEC Team conducted three subcontractor/stakeholder focus groups with approximately ten participants each. Participants work for organizations that subcontract with the Hub Leadership Teams’ organizations. Overall, the IEC Team achieved 100% participation with attendees in all three subcontractor focus groups and the participants stated that they enjoyed the discussion and would participate in a similar format again if asked.

Virtual focus groups with stakeholders generated feedback on the Hubs’ planned activities and early engagement and outreach, as well as the RCEH program design. The virtual stakeholder focus groups were designed to confirm or rebut information for the same five main evaluation questions as the Hub Leadership interviews as a point of data validation (triangulation).

A.3 Extended DAC Consumer Survey Methodology

The DAC population in New York State is approximately 7,000,000 known residents. In order to reach a wide representation of DAC residents, NYSERDA purchased contact information from Data Axle¹ for a randomly selected sample of DAC residents. DAC designation is based on a series of criteria developed by the NYSERDA Climate Justice Working Group; at the time of sampling the DAC definition was not yet finalized so the sample was based on the DAC interim criteria as defined by New York State. NYSERDA randomly drew a sample of 50,000 DAC contacts (i.e., including hard to reach, underserved rural communities and areas with high levels of poverty and limited access to resources) and provided these contacts to IEC for sample formulation.^{2,3,4}

IEC developed a randomized but balanced contact sample draw with equal numbers of contacts dwelling in urban, suburban, and rural areas, using Data Axle demographic information. The DAC consumer survey was administered in waves between November 2023 and April 2024, and participants were compensated for completing the survey (\$10). The population segmentation strata for the survey were urban/rural/suburban, using Data Axle designation data. With a total sample of 9,945 contacts, the goal was 280 responses. This was identified as sufficient to achieve a 90% confidence/10% precision (90/10) target threshold across each of three strata, plus additional variation for analysis across single and multifamily consumer types (Table A-4).

Table A- 4. DAC consumer survey response rate by stratum

STRATUM	SURVEY CONTACTS	RESPONSES	RESPONSE RATE	CONFIDENCE/PRECISION
Rural	2,676	80	3.0%	80/20
Urban	3,377	55	1.6%	90/10
Suburban	3,492	81	2.3%	90/10
Not identified*	0	9	N/A	N/A
Total	9,495	225		90/10

*Respondents listed as "not identified" were individuals, likely family members, who responded on behalf of or instead of the original contact, for whom IEC did not have Data Axle data. These individuals received compensation for the survey, and the responses were included in the analysis.

A total of 36 percent of respondents were categorized as dwelling in urban areas, 36 percent in suburban areas, and 24 percent were in rural areas. Four percent were unable to be mapped back

¹ Data Axle is a company that compiles publicly available contact, demographic, housing, and consumer purchase pattern data for purchase for marketing and survey-based research. Data Axle acquired recognized brands Infogroup and InfoUSA and continues to grow their consumer data coverage through targeted acquisitions.

² NYS Climate Action Working Group. 2023. Disadvantaged Communities Criteria. Accessed online April 2023: <https://climate.ny.gov/resources/disadvantaged-communities-criteria/>

³ The NYS Climate Action Working Group definition for DACs is based on a set of criteria, including employment; income level; home ownership/rental status; particulate matter exposure; asthma rate; proximity to highways, industrial land use, landfills, remediation sites, and/or wastewater discharge; and more.

⁴ The 50,000 DAC residents represent a true random sample draw with no attention to regional distribution.

to the Data Axle dataset and were therefore categorized as “not identified.” The overall survey response meets the 90/10 sampling target. While the IEc team used a range of techniques for recruitment (including different email formats, framing, and subject lines, as well as a mailed invitation to participate), the rural response did not meet the 90/10 threshold, despite multiple outreach attempts across a total rural sample of 5,343 contacts.

The consumer web survey was designed to be accessible for a general audience and was programmed to be navigable by either PC/laptop or phone. Survey respondents most frequently accessed the survey via phone. Additionally, the survey administrator (RMS) translated and programmed a Spanish language survey option to make the survey accessible to a multilingual audience (17% of the contacts in the sample were identified as Spanish-speaking in the Data Axle demographics data). Despite this option, zero respondents used the Spanish-translated survey.

Total survey bounce-backs were minimal, but despite contacting 9,945 consumers, the online survey had only a 2% response rate (**Table A-5**). Survey respondents represented all 10 New York State economic development regions (**Table A-5**). Though the survey sample design sought geographic representation across all 10 economic development regions, the evaluation team did not set targets or quotas for this stratification (i.e., IEc did not seek specific number of respondents for each region, or to achieve a 90/10 threshold in survey response). Respondent distribution across each economic development region is described here for illustrative purposes only.

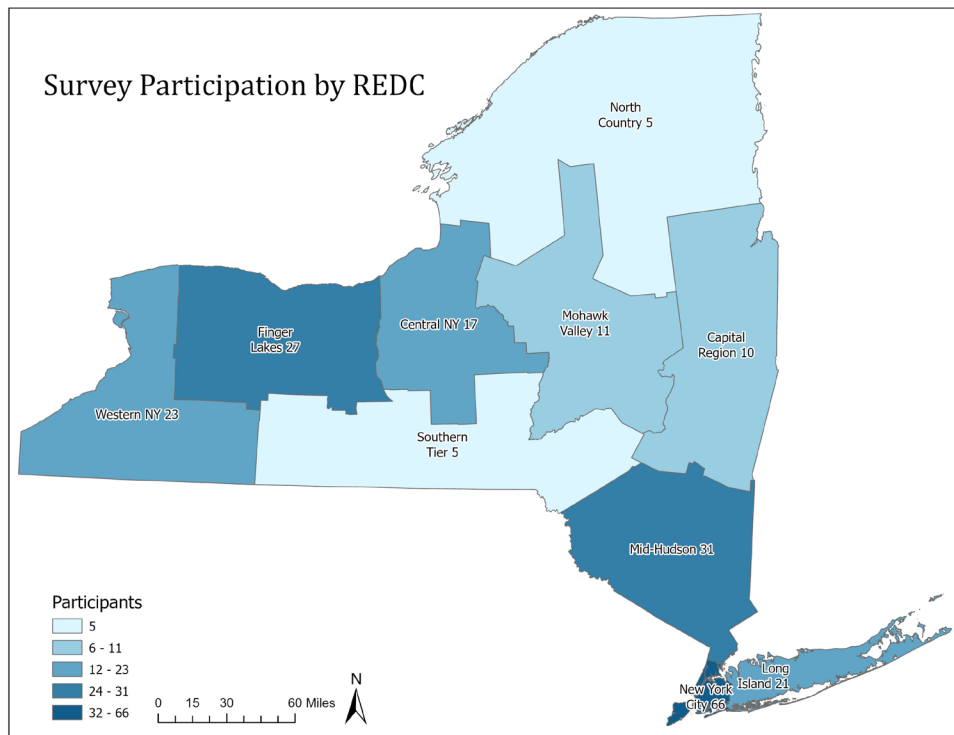
Table A- 5. Respondent distribution by economic development region

REDC	ALL CONTACTED	ALL COMPLETES BY REDC	ALL BOUNCE-BACKS	TOTAL RESPONSE
Capital Region	477	10	2	2%
Western NY	870	23	7	3%
New York City	2,968	66	7	2%
Southern Tier	310	5	4	2%
Central NY	636	17	1	3%
North Country	161	5	2	3%
Mohawk Valley	281	11	1	4%
Finger Lakes	1,099	27	6	2%
Long Island	1,178	21	3	2%
Mid-Hudson	1,965	31	4	2%
Not identified*	-	9	-	
Total	9,945	225	37	2%

*Respondents listed as "not identified" were individuals, likely family members, who responded on behalf of or instead of the original contact, for whom IEC did not have Data Axle data. These individuals received compensation for the survey, and the responses were included in the analysis.

The survey also asked respondents whether they were interested in participating in a focus group conversation on a similar topic for an additional incentive (\$100), which drove focus group recruitment and was supplemented by additional outreach to the full contact list from Data Axle.

Figure A- 1. Consumer survey distribution (N=225)



Note: There were nine (9) survey participants for whom IEC did not have location data.

A.4 Extended DAC Focus Group Methodology

RMS moderated a series of five DAC consumer virtual focus groups between December 2023 and April 2024. The intention for the DAC consumer focus groups was to provide contextual depth to the baseline characterization of consumer awareness provided by the DAC consumer survey. Consumer focus group questions focused on community-level energy concerns, personal energy concerns, awareness of energy efficiency and renewable energy generation and storage, and awareness of or past experiences with home energy assessments. Focus group respondents were compensated for their participation (\$100).

RMS used the phone contacts and email addresses from the Data Axle sample, as well as an interest form in the last page of the web survey instrument, to recruit participants for the focus groups. The interest form was the most successful approach to recruitment.

While the sampling design included eight focus groups for DAC consumers, the IEc Team determined that thematic saturation was reached after five focus groups (i.e., no new topics were raised by focus group respondents that were not previously mentioned in other focus group discussions). IEc halted recruitment after reaching the point of thematic saturation, as this was the sampling threshold for consumer focus groups. In this case, the sampling design of eight focus groups was not needed to achieve the sampling threshold required for analysis.

While Southern Tier and Mohawk Valley regions were not represented in the DAC consumer focus group discussions (**Table A-6, Figure A-2**), the focus group strata (i.e., rural, urban, suburban) were evenly represented (**Table A-7**). DAC consumer survey respondents represented all 10 economic development regions.

Table A- 6. Focus group recruitment and response rate by REDC

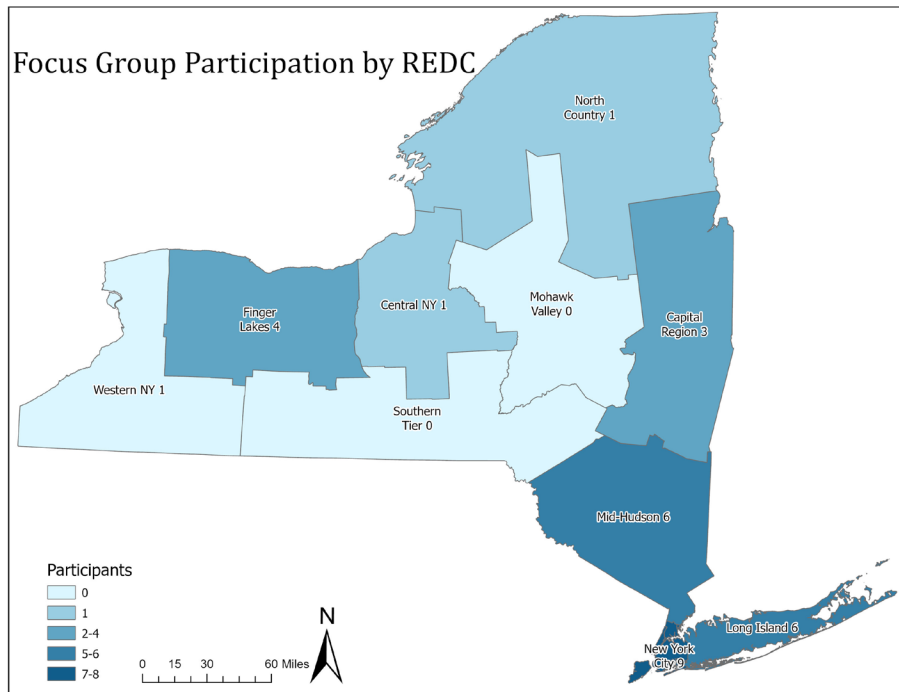
REDC	CONTACTS IDENTIFIED	CONTACTS INVITED	CONTACTS ATTENDED	% RESPONSE
Capital Region	463	168	3	1.8%
Central NY	617	271	1	0.4%
Finger Lakes	1,063	477	4	0.8%
Long Island	1,141	458	6	1.3%
Mid-Hudson	1,869	813	6	0.7%
Mohawk Valley	266	109	0	0.0%
New York City	2,842	1,140	9	0.8%
North Country	152	51	1	2.0%
Southern Tier	294	78	0	0.0%
Western NY	838	362	1	0.3%
TOTAL	9,545	3,927	31	0.8%

Table A- 7. DAC consumer focus group participation rate across rural, urban, and suburban strata

STRATUM	CONTACTS INVITED	CONTACTS ATTENDED	% RESPONSE
Rural	1,356	7	0.5%
Urban	1,376	10	0.7%
Suburban	1,354	11	0.8%
Not identified*	0	3	
TOTAL	4,086	31	0.8%

*Respondents listed as "not identified" were individuals, likely family members, who responded on behalf of or instead of the original contact, for whom IEC did not have Data Axle data. These individuals received compensation for the survey, and the responses were included in the analysis.

Figure A- 2. Consumer virtual focus group participant distribution (N=31)



APPENDIX B: Extended Secondary Data Review Methodology

IEc first received program data from NYSERDA in April 2023. The initial Hub Opportunities Data and Engagement Report Data files that IEC reviewed had numerous inconsistencies and large data gaps. In May 2023, IEC submitted a memorandum to NYSERDA describing recommendations for improved Salesforce recordkeeping to limit possible data losses. Hub Leaders were asked to review and consider updating past data entries, and these changes were to be implemented going forward under the guidance of a finalized Salesforce User Guide.^{5, 6} Inconsistent data entry practices across individuals, organizations, or regions in the initial Hub Opportunities Dataset reflected user shortcuts or notations used for convenience were to be addressed.⁷

IEc received updated Hub Opportunities and Monthly Hub Engagement Report data from NYSERDA in August 2023. IEC also reviewed U.S. Energy Employment Report and data from 2021 and 2022. **Table B-1** lists each of the datasets and documents data losses from cleaning, shared with NYSERDA in August 2023. The sections below follow the format of the table and characterize each dataset and its anomalies when compared to the NYSERDA-reported data. Detailed data cleaning information is described further below.

Table B- 1. RCEH Program Data Inventory

FILE NAME	RECORDS (INITIAL)	RECORDS (CLEANED)	NOTES
RCEH Opportunities Data	1,072	1,042	Number of final records excludes opportunities for which there was no individual or business name information included anywhere in the record.
Monthly Hub Reports	3,005	3,005	Number of records in the final file is consistent with the initial file because no exclusions were made.
List of Project Partners	145	169	IEc added newer subcontractor contacts identified by Hub Leadership teams in advance of the subcontractor focus groups.
USEER Data	NA	63	Published annually – limited file to New York jobs.

Note: NA = not applicable

⁵ Developed by NYSERDA Program Staff.

⁶ Careful and consistent data management practices support evaluators in more accurately characterizing the progress toward consumer outreach and engagement during the RCEH Initiative. If the data are of high quality, IEC can minimize or eliminate data losses from necessary cleaning steps and comprehensively report on the outreach and engagement activities and outputs at each Hub, the program will benefit from a more robust evaluation.

⁷ Note that inconsistencies will most likely persist over time to an extent, even after a Salesforce User Guide is distributed. Inconsistent data result in data losses in the cleaning stage (i.e., IEC cannot link individuals to programs and credit the number of applications to the reporting Hub if the information is not provided in the Opportunities data).

B.1 Hub Opportunities Data

The raw NYSERDA RCEH Opportunities data include a total of 1,072 entries from September 1, 2022, to July 31, 2023. The Hub Opportunities Data observations represent individuals that have been engaged with the initiative in some way, from requesting additional information about specific opportunities to submitting an application and completing a project. Hub Opportunities data provide insights into NYSERDA and non-NYSERDA program use, level of participation from individuals and businesses, and some indication of the rate of application success.⁸

Data anomalies and losses: The raw data received include limitations such as inconsistent notation styles within the same column (e.g., John Smith, John Smith – Individual), blank rows for NYSERDA or non-NYSERDA programs (even for opportunity entries not listed as “nurturing”), and in some cases, records are not clearly linked with individuals or businesses, so IEc made determinations using a decision rule approach. Specific data issues are summarized below, along with the corresponding cleaning decisions from IEc (**Table B-2**).

⁸ Importantly, Hub Leadership teams have indicated that the Hub Opportunities dataset cannot be used as a direct measure of application success rate, because the status updates may not always be timely or complete, given the high burden of Salesforce reporting (per IEc interview conversations with Hub Leaders).

Table B- 2. Data Issues and Cleaning Steps: Opportunities

OLD COLUMN NAME	NEW COLUMN NAME	DATA ISSUE DESCRIPTION	RISK TO ANALYSIS	CLEANING DECISION
Opportunity Name	No change	Inconsistent syntax/naming	Loss of observations	Updated Opportunity name with any information from the Account Name if the opportunity name was not sufficiently descriptive. Removed any observations with no detail in Opportunity Name or Account Name (not possible to link to an individual or business). Where program names were listed in this column, backfilled in NYSERDA Program or Non-NYSERDA Program.
Account Name: Account Name	Account Name	Inconsistent naming	Loss of observations	Updated any blank account names with information from Opportunity Name (where possible) and removed true unknowns/duplicates.
[None: new column]	Full Name	Missing entries	Loss of observations	Added. IEC combined any individual/entity name information from Opportunity Name and Account Name variables to back-fill the “full name” column.
Created By: Account Name	Hub Organization	There were 20 accounts listed initially, but only 12 Hub Regions	N/A	Left as-is. Hub Organizations entering test records may not have any opportunities associated with them in the cleaned dataset but are included in IEC’s analysis tables for completeness. The unit of analysis is the Hub.
NYSERDA Program	No change	Missing entries	Incorrect attribution or lack of attribution	Using a complete set of program names, back-filled NYSERDA programs where they are otherwise indicated in the Opportunity Name or Account Name. Revised program names for consistency (e.g., updated all EmPower New York, EmPower+ variations (e.g., low income), and Assisted Home Performance with ENERGY STAR® to EmPower+).
Non-NYSERDA Program	No change	Missing entries	Incorrect attribution or lack of attribution	Using a complete set of known non-NYSERDA program names, back-filled programs where they are otherwise indicated in the Opportunity Name or Account Name.
Customer Type	No change	Missing entries	Lack of attribution	Customer type information was left blank for 92 opportunities. Additionally, IEC does not have differentiating information on residential vs. market rate.
Close Date	No change	Close date is not reliable, per conversations from NYSERDA program staff.	Incorrect attribution or lack of attribution	Renamed as “Anticipated Close Date” and will exclude from further analysis.

Note: This table is not representative of the complete list of data columns – only the columns where IEC noted data issues and/or made changes.

IEC made efforts to keep data and update blank entries with “unknown” “not indicated” or some equivalent wherever possible. Data losses are strictly tied to missing information for actual known entities associated with an opportunity. Anomaly distribution and subsequent data cleaning decisions are described in further detail below:

- **Full Name:** Individual/entity name information was missing for 27 Opportunities, 16 of which belonged to Southern Tier RCEH.⁹ With no individual or entity to link to the opportunity, the data for these records cannot be validated. IEC removed these opportunities from the dataset altogether. This is the only variable where missing information resulted in data losses during cleaning.
- **Business or Individual:** IEC determined this field based on customer type information and any indication in the Opportunity Name or Account Name that suggested a business. If no customer type was indicated, and the name listed under Opportunity Name or Account Name appeared to be a person (not a business), IEC categorized the record as “individual.” However, if a business name was listed under Opportunity Name or Account Name, IEC categorized this record as “business.”
- **Customer Type:** This column includes options such as “residential,” “market-rate,” “contractor/installer,” “Multifamily,” “not-for-profit,” “partner,” and “small commercial.” Information was missing for 92 opportunities, but IEC determined that the other data available were determined insufficient to use a decision rule to back-fill this type of information. Business or individual indicator information was used where customer type information is unavailable.
- **Program Name:** Information was missing for a total of 152 Opportunities: 45 of them are from North County RCEH, 27 from Southern Tier, 23 from Finger Lakes, 21 from Mid-Hudson, 16 from Mohawk Valley, 8 from the Capital Region, and 7 from Central NY. Additionally, there is a range of unclear, vague, or incorrect program names listed in the RCEH Opportunities dataset, including solar programs (e.g., community solar, affordable solar, residential solar expansion, subscription solar, and on-site solar) and the Rural Energy for America Program, denoted as “REA” or “REAP.”

An issue with the RCEH Opportunities dataset is that there is currently no “DAC” indicator for the customer – without such an indicator, IEC was limited in the ability to link customers living in DACs with NYSERDA programs. This limited IEC’s analysis of the indicator for “programs most used by DAC customers” in the baseline. NYSERDA RCEH program staff will reach out to EmPower+ program to isolate a count of customers applying to EmPower+ through RCEH to

⁹ Noted here for tracking purposes because NYSERDA program staff may wish to follow up about recordkeeping/data entry for quality assurance.

include in the next phase of the evaluation. **The final NYSERDA RCEH Opportunities dataset included 1,042 entries from September 1, 2022 to March 31, 2023.**

B.2 Hub Engagement Reports Data

NYSERDA Hub Reports data included 3,005 entries from ~September 2022 to ~July 2023. The Hub Engagement Report Data are intended to inform the characterization of the overall level of activity in each Hub beyond adding individual opportunities to the NYSERDA program pipeline. The Hub Engagement Report Data inform overall effort to date, given that Hubs started outreach under the RCEH program in late 2023 (i.e., many Hubs had an official “launch” in Summer/Fall 2023). At the time of interviews, Hub Leadership teams were still conducting early contract management, marketing, and partnership activities, such as hiring and training new onboards (including Energy Advisors and subcontractor organizations), developing new logos and materials for promoting clean energy programs under RCEH, and planning future events with their subcontractor organizations.

Data anomalies and losses: The Hub Engagement Reports data have fewer data consistency challenges but those that exist are similar to those identified in the RCEH Opportunities data, including, but not limited to, widespread use of different notation styles in the same column both between different users and different regional Hubs. **Table B-3** indicates cleaning decisions to standardize the data for improved analysis.

Table B- 3. Data Issues and Cleaning Steps: Hub Reports

VARIABLE NAME	DATA ISSUE DESCRIPTION	RISK TO ANALYSIS	CLEANING DECISION
Engagement Name	Numbering and descriptions appear to differ significantly across regions	Inconsistent indication of task completion across regions	Simplified into a standard “description” column for easier analysis.
SOW Task	Blank for 1,640 engagements, inconsistent SOW Task numbering (e.g., Task 1.0 is linked to more categories than “Contract Management”)	Lack of attribution	Created a new TaskNumber column to standardize where inconsistencies appear. No deletions.
Record Type Name	Unclear definitions for each category (e.g., too many “meetings” and regular contracting management items are listed as “accomplishments” for several Hubs)	Incorrect attribution	Corrected based on “engagement name” in a new column, focusing on records with no description in the “accomplishment” description

Unlike the RCEH Opportunities dataset, which has a limited number of variables for analysis, the Hub Engagement Reports dataset has sufficient detail in one or more additional variables to support IEC in validating that the activity is appropriately characterized (e.g., “Partnerships” activities all have a partner organization listed). Additionally, the detail provided in other

variables is sufficient to back-fill critical information such as Engagement Name and Record Type. For this reason, IEC determined to keep *all* activities in the dataset (zero deletions during cleaning). Specific issues are documented below:

- **Engagement Name:** This variable has varying levels of detail and task numbering information. IEC created a new column called “EngagementDescription” to strip out the descriptive information from the Engagement Name column. Where detail is insufficient to determine the type of record, other variables such as Accomplishments, Partner Organization Name, and Feedback/Recommendations/Audience were used to back-fill description information. Task numbering is assigned to the new “TaskNumber” column described below.
- **SOW Task:** This variable was blank for 1,907 records. IEC updated this column directly to document “not indicated” in the original dataset, and created a new column “TaskNumber” to back-fill task numbering where possible given engagement name information and other variables (if possible).
- **Record Type Name:** Count of “accomplishments” was too high in the raw dataset—overgenerous assignment of “accomplishment” label to regular activities. For example, the description of engagements and accomplishments for many records indicates that the accomplishment record would be better categorized as “project coordination.” IEC created a new column “StandardRecordType” to correct for this issue.

The final Hub Engagement Reports data include 3,005 entries from September 1, 2022 to March 31, 2023.

B.3 Hub List of Project Partners

The raw Hub List of Project Partners included a total 12 prime contractor and 38 subcontractor organizations (for a total of 50 unique organizations). The Hub List of Project Partners is intended to inform the documentation of local organizations partnering with Hubs, including both subcontractors and unpaid local organization partners. IEC received the Hub List of Project Partners in April 2023, and noted some duplicate contacts in the “all member list,” before removing them. IEC also reached out to the Hub Leadership Teams with a request to identify subcontractors for IEC to contact as a part of the subcontractor/stakeholder virtual focus group

outreach. IEC appended the original raw Hub List of Project Partners to include these new subcontractors and other project partners identified in the baselining effort.¹⁰

At the time of the virtual focus groups, Prime Contractor organizations were still writing up subcontracts for Hub organizations and identifying their external (non-subcontractor) community partner organizations.^{11,12} Additionally, many Hubs were still hiring their teams of Energy Advisors, onboarding subcontractor partners (including training regarding clean energy services and technical language) and rebranding their Hub prior to or during the early days of the Hub launch. Though IEC will use the updated Hub List of Project Partners to inform the baseline (summarized in **Table B-3**), this is one area that is likely still actively evolving at the time of writing this report. However, IEC is only reporting the final list of contacts received prior to August 1, 2023. **The final Hub List of Project Partners includes a total 169 contacts from 69 unique organizations, including (but not limited to) the 12 prime contractors and 55 subcontractor organizations.**¹³

B.4 U.S. Energy and Employment Jobs Report (USEER)

The USEER dataset is external to NYSERDA, published by the U.S. Department of Energy (USDOE). IEC reviewed 2021 USEER data (published in 2022) for the baseline. The original data file contained 1,393 records (for the whole U.S.). The records include county-level employment summary data (counts) for different types of energy-related jobs across the U.S. (e.g., electric power generation; transmission, distribution, and storage; fuel production or extraction; energy efficiency-related jobs, and motor vehicle-related jobs). Filtering out non-New York State county-level records, **the final USEER data file contains a total of 62 NYS county-level records and one additional record that includes employment summary data for jobs that were not linked with a specific county but are still linked with NYS.**

¹⁰ Despite IEC's request for contact information from subcontractors, some Hubs sent contact information for unpaid partners as well.

¹¹ Multiple Hub Leadership Teams indicated to IEC in interviews that they were waiting on the RABA process to finish identifying locally based community organizations that they would invite to their Hub teams, but the total count of 69 unique organizations did also include some community based organizations and state agencies funded through sources other than NYSERDA.

¹² IEC also requested the original proposal information from each Hub to understand more clearly the extent to which some Hubs have had to pivot or otherwise shift away from their initial strategy and list of partners. However, this information was not shared due to concerns about confidentiality.

¹³ This list also includes some non-subcontractor partners, who were invited to participate in the subcontractor focus groups due to the contact list confirmation process with Hub Leadership Teams.

B.5 Implications of Secondary Data Limitations

As described above, the biggest issue with the secondary datasets is inconsistency. Data entry varies substantially from Hub to Hub. Ultimately, the greatest implication of inconsistent data records is underrepresenting or underreporting the progress to date achieved by each Hub. Known data issues and their implications are summarized in **Table B-4**.

Table B- 4. Research questions, indicators, data sources, known issues, and data implications

RESEARCH QUESTIONS	INDICATORS	DATA SOURCE	KNOWN DATA ISSUE	IMPLICATION
What local organizations are Hubs working with in partnership?	Number of local organizations partnering with Hubs	Hub List of Project Partners	Data gap: local organization subcontractors	No local organization partners represented at the baseline (unless projected)
Did partnerships with local organizations lead to increased NYSERDA project implementation?	Number of NYSERDA projects facilitated by Hubs with partner organizations	<ul style="list-style-type: none"> Hub Engagement Reports Data RCEH Opportunities Data 	Data gaps: missing connection between partner organizations and NYSERDA projects	<ul style="list-style-type: none"> Unclear or insufficient representation of projects Underrepresented Hub partnerships
What services/programs were the most used among DAC participants?	Clean energy programs most used by members of DACs	RCEH Opportunities Data	Data gaps, inconsistencies leading to losses	<ul style="list-style-type: none"> Data losses Underreporting about services that benefit DAC participants

For specific research questions, the threat to the analysis is an inaccurate representation of key indicators in the baseline. If the information included in the dataset is affected by data losses or inconsistent recordkeeping, the total number of participants recorded for each program type may underrepresent actual use.

APPENDIX C: Evaluation Question Crosswalk

Table C-1 below summarizes the evaluation strategy by highlighting the data sources used to address the research questions and program indicators. Check marks (✓) denote data used, while asterisks (*) denote data planned (ultimately not collected in this phase of the study).

Table C- 1. Evaluation Question Crosswalk

RESEARCH QUESTIONS	INDICATORS	RCEH OPPORTUNITIES DATA	HUB REPORTS DATA	HUB LEADERSHIP INTERVIEWS	HUB SUBCONTRACTOR FOCUS GROUPS	DAC CONSUMER FOCUS GROUPS	DAC CONSUMER SURVEY
What are the key barriers to clean energy adoption in DACs?	Major barriers to clean energy adoption			✓	✓	✓	✓
What local organizations are Hubs working with in partnership?	Number of local organizations partnering with Hubs		✓	✓	✓		
Did partnerships with local organizations lead to increased NYSERDA project implementation?	Number of NYSERDA projects facilitated by Hubs with partner organizations	✓	✓				
What services/programs were the most used among DAC participants?	Clean energy programs most used by members of DACs	✓		✓		✓	✓
Are consumers aware of clean energy opportunities (specifically in DACs)?	Consumer awareness of clean energy opportunities on a Likert scale					✓	✓
What MWBEs and SDVOBs are participating in the clean energy sector?	Number of MWBEs participating in the clean energy sector			*	*		
What MWBEs and SDVOBs are participating in the clean energy sector?	Number of SDVOBs participating in the clean energy sector			*	*		
Were recommendations made and community needs, barriers, or opportunities identified	Number of community needs, barriers, or opportunities identified in public stakeholder forums			*			

RESEARCH QUESTIONS	INDICATORS	RCEH OPPORTUNITIES DATA	HUB REPORTS DATA	HUB LEADERSHIP INTERVIEWS	HUB SUBCONTRACTOR FOCUS GROUPS	DAC CONSUMER FOCUS GROUPS	DAC CONSUMER SURVEY
by communities brought to policymakers?	which were elevated to policymakers						
Were recommendations made and community needs, barriers, or opportunities identified by communities brought to policymakers?	Number of participants in sponsored public stakeholder forums			*			
Output	Number of existing community campaigns supported and new community campaigns		✓	✓	✓		
Output	Number of workshops and outreach efforts (in-person and virtual)		✓	✓			
Output	Number of NYSERDA projects coordinated with wrap-around services/resources	✓	✓	✓	✓		
Outcome	Number of partnerships/subcontractor relationships established		✓	✓	✓		
Outcome	Number of NYSERDA program participants from DACs		✓	✓		✓	✓
Outcome	Number of stakeholders/organizations promoting clean energy technologies and opportunities ^a				✓		

Note: ^a Also used USEER data; check marks (✓) denote data used, while asterisks (*) denote data planned (ultimately not collected in this phase of the study).

APPENDIX D: Extended Results

This section expands on the condensed results from the primary data collection activities that are provided in the main report. The following sections provide extended discussion of the results from Hub Leadership interviews, subcontractor focus groups, DAC consumer survey, and DAC consumer focus groups. The results provided here include areas not prioritized in the report (e.g., ancillary to the narrative, not directly relating to indicators, or relating to more cross-cutting themes), and do not include responses from all questions asked during data collection.

D.1 Extended Hub Interview Results

For the primary data collection effort, IEC spoke with each of the Hub Leadership teams (N=12). The references coded are summarized in **Table D-1**.¹⁴ The table summarizes the number of *interviews* qualitatively coded to a range of topics (i.e., not the total number of mentions for each topic). The subtopics summarized below show Hub Leadership response to the key topics discussed (for example strategies for outreach and engagement with different customer sectors) and is representative of the topics discussed in greater detail in the main report. The report and extended discussion below describe additional response detail, as well as patterns and nuances.

Table D- 1. Hub interview topics

TOPIC	DESCRIPTION	REFERENCES CODED	SUBTOPICS
Progress to date	Indication of Hub progress made to date, or explanation of things that they are focusing on instead of making progress with outreach/engagement (e.g., hiring, training, getting partner contracts in place).	n=12	<ul style="list-style-type: none"> • Hiring/onboarding energy advisors • Onboarding subcontractors • Training staff • Conducting customer outreach events and workshops
Challenges/barriers to clean energy	Challenges/barriers discussed to residents and communities adopting clean energy.	n=12	<ul style="list-style-type: none"> • Insufficient funds to help high-need customers (cusp of qualifying or requiring critical repairs) • Cost of electricity/concerns about affordability • Financing restrictions • Negative perceptions of clean energy (misinformation or conflicting narratives about the reliability of electricity service) • Insufficient options for non-residential customers • High administrative burden (multiple applications for multiple programs) • Split or misaligned incentives for multifamily building owners (larger projects require cost share and tenant cannot do much without landlord approval)

¹⁴ “References coded” refers to the number of participant responses that were coded for a particular item, rather than “code frequency” data, which refers to the number of times a code is applied (and can be skewed by participants who repeatedly use a certain term or mention a particular topic area).

TOPIC	DESCRIPTION	REFERENCES CODED	SUBTOPICS
Past NYSERDA experience	Indicator of whether the Hub was involved with CEEP (even peripherally), Clean Energy Communities, or other program prior to the RCEH initiative.	n=11	<ul style="list-style-type: none"> • CEEP • Heat Smart • Clean Heating and Cooling Campaign • Clean Energy Communities
DAC barriers	Mention of challenges/barriers to clean energy adoption, specific to DACs.	n=10, n=2 were waiting on RABA	<ul style="list-style-type: none"> • Extensive critical repairs needed or weatherization (complicates/adds a step and requires careful coordination) • Financing restrictions where individuals do not own the land on which the property is located (renting, mobile homes, Tribal reservation lands) • Split or misaligned incentives for multifamily building owners (larger projects require cost share and tenant cannot do much without landlord approval) • Programs are not accessible to individuals who speak languages other than English and Spanish
Planned Outreach/engagement	General plans for outreach and engagement.	n=10	<ul style="list-style-type: none"> • Preparing for a "hard launch" of the Hub • Organizing community campaigns to focus on specific clean energy and energy efficiency opportunities/issues • Sharing information with their subcontractors or partner organizations and agencies (e.g., the library system or public service information hotlines) • Radio spots or social media campaigns to build awareness about clean energy opportunities (including workforce training opportunities)
Residential outreach/engagement	Mention of residential outreach strategies, specifically.	n=10	<ul style="list-style-type: none"> • Frequenting food pantries or food distribution centers • Connecting residents with wraparound services to support clean energy and energy efficiency activities • Tabling at community events
Small Business outreach/engagement	Mention of small business outreach strategies, specifically.	n=10	<ul style="list-style-type: none"> • GJGNY energy audit pipeline referrals • Peer-to-peer outreach, such as engaging small building commercial owners who have already participated in incentive programs • Mailing lists/listserv updates for farming communities (or other special interest groups) • Passive education strategies, as with a resource repository for creative solutions depending on the institution type
NYSERDA logistical challenges	Hubs indicated logistical challenges that they are experiencing with NYSERDA preventing their Hub activities, partner onboarding, or planning from going smoothly.	n=10	<ul style="list-style-type: none"> • Branding of Hubs • Agency is constraining Hubs' ability to build trust • Delayed and opaque requirements from NYSERDA (lack of effective communication) • Need for procurement guidance • Need for more technical program information
Types of NYSERDA programs	NYSERDA programs for which the Hub has provided referrals.	n=9	<ul style="list-style-type: none"> • EmPower • Assisted Home Performance with ENERGY STAR®
Types of non-NYSERDA programs	Non-NYSERDA programs for which the Hub has provided referrals.	n=8	<ul style="list-style-type: none"> • HEAP • Other utility assistance programs

TOPIC	DESCRIPTION	REFERENCES CODED	SUBTOPICS
Feedback on Contractor Performance and Availability	Indications from Hubs about contractor performance and availability (e.g., small pool of contractors).	n=8	<ul style="list-style-type: none"> Limited NYSERDA contractors in the pool for rural areas Lack of incentives for contractors to tackle the administrative load for working with programs like EmPower+ (a low-income assistance program) when they can earn more with less administrative work on a market-rate job Contractors often have a profit-driven business framework rather than a community/values-oriented one, so they may be prone to cutting corners
Workforce development outreach/engagement	Mention of workforce development activities, specifically.	n=7, n=5 have other partners working on this	<ul style="list-style-type: none"> Tabling events to connect interested people to workforce services or education programs. Setting up a contractor job board. Facilitating a training course for clean energy sector jobs targeted to people with justice-related barriers to employment (e.g., felonies and misdemeanors). Connecting high-school aged workers and shift workers to pre-apprenticeship programs relevant to the regional energy job landscape.
Salesforce challenges	Challenges experienced in setting up/training staff/entering data into Salesforce volunteered by participants (no question about Salesforce).	n=7	<ul style="list-style-type: none"> Training staff Duplicate entry with the org's data portal Lack of timely guidance
Wraparound Services	Tradeoffs in wraparound services provision and challenges associated with braiding funding.	n=7	<ul style="list-style-type: none"> Securing services for people on the cusp of qualifying for assistance programs Coordinating weatherization and energy projects to maximize energy savings Finding creative funding solutions for households that need home health and safety issues addressed, or critical home repairs Wraparound services coordination is time-consuming and may reduce Hub throughput Additional support from NYSERDA to help explain benefits could help Hubs
Planned Campaigns	Brainstorm ideas for planned community campaigns.	n=7	<ul style="list-style-type: none"> Outreach to landlords Build a network of contractors Targeting rural residents Targeting small businesses Program to engage mobile home residents Targeting issues like home health and safety needs/critical repairs (referrals to other programs)
Other types of outreach	Outreach that may reach a broad customer base, or cuts across multiple sectors.	n=6, n=2 have other partners working on this	<ul style="list-style-type: none"> Streamlining the website intake forms for customers Optimizing searches for their Hub and sponsored programs (i.e., if someone Google searches the "affordable energy" the Hub will come up) Creating a tool to help estimate energy and cost savings with solar panel installation in homes
Multifamily building owners outreach/engagement	Mention of multifamily building owner outreach strategies, specifically.	n=5, n=1 has another partner working on this	<ul style="list-style-type: none"> Eviction moratoriums challenging outreach Hubs focus on the residents (tenants) of multifamily buildings, as building owners are not always interested in the cost share component of many energy-saving programs Where Hubs have partners with affordable housing organizations, they are able to do more multifamily building owner outreach Joining and interacting with Facebook groups for landlords was another engagement strategy

TOPIC	DESCRIPTION	REFERENCES CODED	SUBTOPICS
Collaboration is positive	Hubs volunteered positive feedback on the RCEH design and collaboration opportunities.	n=5	<ul style="list-style-type: none"> • Collaboration has been much better than with CEEP • Hubs should share information to leverage knowledge for problem-solving • Hubs want improved functionality in Salesforce to better support customers and partners

Wraparound services were the topic of extensive and varied discussion among Hub Leadership Interviewees. This section of the Appendix describes the range of responses received relevant to that topic that, while not the most frequently mentioned, provides additional context for understanding the challenges and opportunities for Hubs trying to work with high-need customers.

Wraparound Services: A key challenge that emerged through the interviews was the workload implications of providing wraparound services to high-need customers while simultaneously engaging with a higher volume of customers. During the Hub leadership interviews, identifying and organizing energy and non-energy wraparound services (braiding services) was discussed as challenge for the Hubs due to the time-intensity of the activity. Hub teams discussed strategies to meet the needs of the different types of customers that need support. Customer non-energy needs identified by Hubs include:

- Family health and home safety.
- Nutritional needs.
- General public health.

Hub Leader interviewees discussed how they hoped to mitigate the challenges surrounding the provision of wraparound services. Ideas discussed by the interviewees include:

- Developing strategies that address intake (i.e. streamlining the website contact forms for customers).
- Develop website intake resources to help potential customers determine whether they can find what they need without further assistance, or whether they need to engage further with direct support from an Energy Advisor.
- Optimizing searches for the Hubs and sponsored programs (i.e., if someone Google searches “affordable energy” the Hub website will come up).
- Creating a tool to help estimate energy and cost savings with solar panel installation in homes.

Hub Leader interviewees said they hope that implementation of these and other ideas will help reduce the time needed for these engagements so that Hub staff can focus on meeting the needs of high-need customers. However, Hub Leaders did note that they still anticipate many customers will require additional support with filling out an application, finding an assistance program to help with

weatherization, lead or mold remediation, or with managing critical home repairs prior to receiving clean energy services. Hub Leaders indicated that addressing this challenge was particularly critical, as working with partners to identify and deliver wraparound services for households affects the Hubs’ ability to serve high volumes of high-need applicants.

D.2 Extended Hub Subcontractor Focus Group Results

RMS moderated three virtual Hub subcontractor focus groups with 9 to 10 participants each (N=29). As with Hub Leadership interview findings, the subcontractor focus group frequency data summarized in **Table D-2**. The table summarizes the number of *subcontractor participants* mentioning a particular topic (i.e., not the total number of mentions). The subtopics noted below align with the key topics discussed in detail in the main report, and include workforce development activities in DACs, and a range of activities promoting clean energy technologies and opportunities (among other topics). The report and extended discussion below describes the additional range of responses, as well as patterns and nuances.

Table D- 2. Hub subcontractor focus group references coded by topic

TOPIC	DESCRIPTION	REFERENCES CODED	SUBTOPICS
Activities promoting clean energy technologies and opportunities	Activities the organization has been conducting to promote clean energy technologies and opportunities.	n=18	<ul style="list-style-type: none"> • Assigning energy “targets” for neighborhoods • Provide solar assessment • Connect customers with wraparound services • Educate school children about clean energy • Attend block parties, county fair, movie nights and community events with information and signup sheet • Launch one-stop-shop website to provide customer intake • Promoting community solar adoption and building electrification • Connect people with free workforce development trainings
DAC Outreach	Disadvantaged community resident-specific outreach strategies (if any) used by subcontractor organizations.	n=17	<ul style="list-style-type: none"> • Communicating about supplemental programs and the benefit to reducing energy costs • Holding free events and classes • Working with specific neighborhood outreach programs or finding early adopters to help spread information and build trust organically • Meeting with pastors and other faith-based community members so they can serve as ambassadors in their communities • Working with other neighborhood social service programs
Challenges/barriers to clean energy	Challenges that prevent or cause issues for consumer uptake of clean energy technologies and energy efficiency improvements or participation in the clean energy workforce.	n=17	<ul style="list-style-type: none"> • Not having a GED may limit individuals’ ability to qualify for jobs in the clean energy sector • Having a prior justice issue may limit individuals’ ability to qualify for jobs in the clean energy sector • People think they need a graduate degree to apply to jobs in the clean energy industry (not always true) • Lack of awareness about clean energy benefits (savings, indoor air quality) • Negative perceptions of clean energy • Lack of trust in the program that it has the consumer’s best interest in mind • Politicized clean energy • Split or misaligned incentives for landlords

TOPIC	DESCRIPTION	REFERENCES CODED	SUBTOPICS
			<ul style="list-style-type: none"> • Tenant worry about being labeled as “problem tenants” if they seek energy savings or upgrades • Program materials need to be available in languages other than English and Spanish • Childcare is not available for workforce programs, which limits parents and guardians of young children from participating • Some individuals in NYS still do not have access to high speed internet.
Clean energy project applications facilitated	Discussion of work or delays in facilitating clean energy project applications.	n=14	<ul style="list-style-type: none"> • Solar programs, heat pump programs were mentioned frequently by focus group participants • HEAP is a “most common” program referral • EmPower+ is another “most common” program referral • Clean energy project application support is not the role of all subcontractors • Some subcontractors provide referrals only, others focus squarely on workforce development
NYSERDA-related barriers	Challenges that organizations face in working with NYSERDA (question was framed in terms of barriers preventing partnerships from working as well as they could be).	n=13	<ul style="list-style-type: none"> • NYSERDA has a reputation among some contractors as being a slow payer, and the NYSERDA approval process requires additional paperwork. • NYSERDA needs to provide clear guidance on what expenses qualify for funding awarded in the Hub contracts. • More technical information to help get up to speed about new energy technologies (e.g., heat pumps) • Marketing shortcomings – existing materials do not reflect the communities that they are intended to serve. Materials need to be geared to a 6th grade reading level, be multilingual, and show pictures of real DAC communities and households
Workforce development activities in DACs	Workforce development activities targeting potential jobseekers in disadvantaged communities.	n=11	<ul style="list-style-type: none"> • Presenting at local secondary schools and trade/vocational schools • Planning to work with summer youth employment programs and bringing in clean energy workers to speak with students and share opportunities • Hiring bilingual staff to better communicate with non-English speakers about possible workforce opportunities Identifying “trusted messengers” or community leaders who can serve as ambassadors for workforce training programs and promote trust in workforce outreach efforts • Coupling workforce development outreach with educating people about services and agencies that focus on social programs like affordable housing and using supplemental food assistance to meet family nutritional needs • Raising awareness among young people and/or immigrant communities
Past Experience with NYSERDA Energy Programs	Indication of subcontractor past experience with NYSERDA energy programs.	n=9	<ul style="list-style-type: none"> • Heat Smart • Green Jobs Green New York (GJGNY) • Solar campaigns • EmPower
Importance of Collaboration	Participant perceptions of the importance of collaboration. While there was general agreement among participants that collaboration was important (this was asked explicitly), n=8	n=8	<ul style="list-style-type: none"> • Subcontractors would like to be consulted on NYSERDA program changes, or receive support to help explain transition to customers to help prevent loss of credibility • Identified as critical to the RCEH initiative, and includes both collaboration between Hubs and within Hubs • Want to “see what NYSERDA sees” in Salesforce and have access to track customer journey after the application submission

TOPIC	DESCRIPTION	REFERENCES CODED	SUBTOPICS
	participants volunteered further explanation about their perceptions about importance of collaboration.		
Small Business Outreach	Small Businesses-specific outreach strategies used by subcontractor organizations.	n=7	<ul style="list-style-type: none"> • Visiting Chambers of Commerce • Meeting with small business advisory groups or organizations like Rotary Clubs • Planning for and conducting an “Energy Summit” (a conference for energy issues in the small business community). • Promoting WFD activities in Small Business Development Centers.
Planned Activities/Campaigns	Planned activities/campaigns forecasted for Hubs (e.g., community campaigns once funding is available).	n=6	<ul style="list-style-type: none"> • Sustainability week • Clean energy conferences • Career fairs • Reaching out to local politicians
Multifamily Building Owner Outreach	Multifamily building owner-specific outreach strategies used by subcontractor organizations.	n=4	<ul style="list-style-type: none"> • Looking for and participating with landlord groups on social media • Speaking with real estate developers • Looking at city documents to identify multi-family structures for more canvas-style outreach • COVID-era eviction moratorium presents a challenge for building owners to qualify for NYSERDA programs if they have tenants in arrears.

Though focus group discussion themes are described in the main report, this section of the Appendix provides additional detail to a few topic areas. The topical nuances were not directly related to the indicators and research questions in the report but are documented here to showcase the range of responses in subcontractor focus groups and maintain the information as a part of the broader narrative around outreach and engagement, as well as barriers to clean energy adoption in New York State.

Outreach and Engagement Strategies: Hub subcontractors identified future residential outreach plans including representing the Hub at community events such as festivals, farmers’ markets, working with specific neighborhood outreach programs or finding other “high profile” early adopters of clean energy services/technology to help build trust and spread information organically, by word of mouth. Hub subcontractors spoke about using a “trusted messenger” organization to support planned community outreach efforts in DACs – they described the Regional Analysis and Barriers Assessment (RABA) as critical to this residential engagement task.

Finally, Hub teams were taking steps to keep themselves educated on best practices for community engagement. One subcontractor focus group participant recommended that their team had benefitted from the “Bridges out of Poverty” program education about language and framing changes for working with vulnerable populations that can improve outreach efforts, and recommended that others seek similar guidance as they work toward fulfilling their RABA responsibilities.

Tools to Address Barriers to Clean Energy Adoption: In this early stage of the RCEH Initiative, several subcontractors expressed that they did not have enough NYSERDA tools to have an informed conversation about clean energy with DAC residents. Additionally, subcontractors explained that they felt challenged in describing the benefits and value proposition of clean energy services and assistance programs beyond those that offer clean energy upgrades that have long payback period (too long, in many cases, to entice DAC consumers who are looking for immediate energy bill relief), but could provide other improvements like improved air quality or comfort (as with HVAC or an induction stovetop). The focus group participants explained that they were interested in having more basic informational materials to support DAC residents in better understanding the different program offerings, such as basic program descriptions with comparative infographic.

D.3 Extended DAC Consumer Survey Results

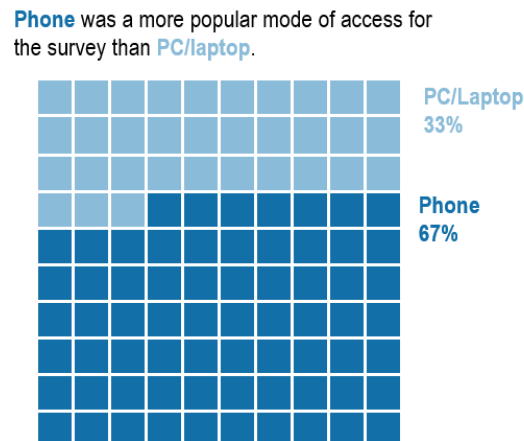
The survey was administered from November 2023 to April 2024 to a total sample of 9,495 individual contacts. The initial sample was 4,693 contacts,¹⁵ and the initial response was less than 1 percent (low even for a general population survey), so the IEc Team worked with NYSERDA to reformat the email and ensure consistency with NYSERDA branding for improved validity.¹⁶ This appeared to have a positive effect on response rates. The IEc Team primarily contacted individuals over email, but also mailed invitations to participate to a subsample of 400 individuals to test the effect on response rate, but the mail survey invitation garnered only 11 responses (a 3% response rate). Ultimately, IEc and NYSERDA determined that another sample purchase was merited, and the survey was sent to another 4,852 individual contacts in early April 2024.

The median survey response time was eight minutes, with a minimum of three minutes and a maximum of 55 minutes. Approximately 67% of respondents chose to take the survey on their phone (33% took the survey using a PC), indicating that survey programming tailored to mobile devices is essential (**Figure D-1**). Of the 225 respondents, only one elected to take the survey in Spanish (less than 1%).

¹⁵ The sample was later expanded to improve response rates and achieve the goals for strata segmentation.

¹⁶ The invitation letter was not originally branded with NYSERDA header and HTML formatting, a decision informed by discussions with community-based organizations and their partners during the CEEP evaluation in 2021 and reinforced by early interviews with RCEH Hub Leaders, suggesting that there are many individuals in New York State who have a deep distrust of government.

Figure D- 1. DAC consumer survey respondents used their phone or PC/laptop (N=225)



Survey Demographics: IEc used consumer demographic information from provider Data Axle to characterize the demographics of the DAC consumer survey participants. A general population survey typically has lower response rates than a survey where the contacts are familiar with the entity conducting the survey,¹⁷ and demographic information is a known survey drop-off point for individuals who prefer to remain anonymous. For this reason, IEc did not include demographic questions in the consumer survey and instead defaulted to the demographic information linked with individual contacts in the Data Axle dataset. Importantly, this means that some individuals' demographic information is incorrectly characterized, as individuals occasionally respond on behalf of a spouse, parent, roommate, sibling, or significant other (a pattern that the IEc Team observed in several instances during the DAC consumer focus group recruitment effort).

Over half of survey respondents own their home (56%), while the other 44% rent their home (**Figure D-2**). A total of 47% of respondents were single, 26% were married, and 27% had an unknown marital status in the Data Axle database. Respondents were 44% female, 39% male, and 17% unidentified (Data Axle categories). The survey received responses from all age groups (**Table D-3**). Many respondents had attended at least 2 years of college (58%, **Table D-4**). Categories for education in Data Axle do not align well with U.S. Census information, so the difference between the education level of DAC consumer survey respondents and the New York statewide average was not possible to discern.¹⁸

¹⁷ General population surveys are “cold contact” or contact without prior familiarity.

¹⁸ For example, U.S. Census data for New York State indicates that a majority of New Yorkers have a high school degree (87%), but the related Data Axle education categories include: “Attended/graduated high school,” “Attended at least two years of college,” and “Attended 2 or more years of college/graduated college.”

Figure D- 2. DAC consumer survey respondent home ownership status (N=225)

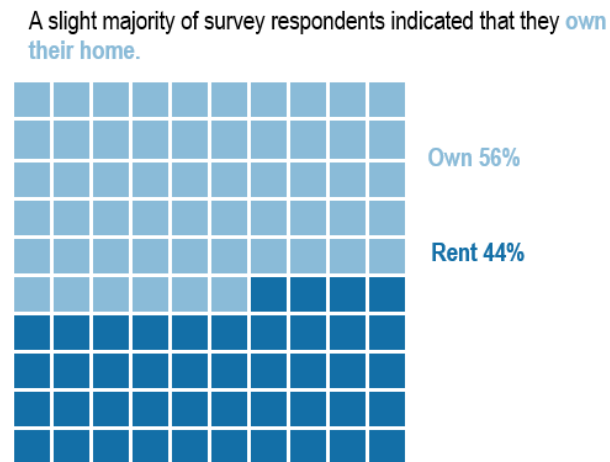


Table D- 3. DAC Consumer survey respondents' age distribution (N=225)

AGE	COUNT	%
18-29	34	15%
30-39	46	20%
40-49	35	16%
50- 59	34	15%
60-69	34	15%
70+	26	12%
Not identified	16	7%

Table D- 4. DAC consumer survey respondent's highest level of education achieved (N=225)

LEVEL OF EDUCATION	RESPONDENTS	%
8th to 9th Grade Completed	5	2%
Attended/Graduated High School	52	23%
Some College (up to 2 yrs.)	130	58%
More Than 2 Yrs. College/College Grad.	27	12%
Post-Graduate College (up to 2 yrs.)	4	2%
Not identified	7	3%

Consumer survey respondents typically had a household income under \$30,000 per year (38%, **Table D- 5**); however, the survey received responses from participants with a range of household incomes (all the way to \$200,000 - \$249,000). However, matching income information with contacts who respond to the survey allow researchers to avoid asking survey respondents to disclose their household income, a sensitive topic that often results in survey drop-off.

Table D- 5. DAC consumer survey respondent household income (N=225)

HOUSEHOLD INCOME	COUNT	%
UNDER \$20,000	59	26%
\$20,000 - \$29,999	26	12%
\$30,000 - \$39,999	21	9%
\$40,000 - \$49,999	14	6%
\$50,000 - \$59,999	11	5%
\$60,000 - \$69,999	18	8%
\$70,000 - \$79,999	9	4%
\$80,000 - \$89,999	14	6%
\$90,000 - \$99,999	8	4%
\$100,000 - \$124,999	11	5%
\$125,000 - \$149,999	9	4%
\$150,000 - \$174,999	7	3%
\$175,000 - \$199,999	3	1%
\$200,000 - \$249,999	8	4%
Not identified	7	3%

Consumer Awareness of Clean Energy Opportunities: The main report describes survey respondent awareness of energy efficiency and renewable energy generation and storage. **Figures D-4 and D-5** illustrate customer agreement responses to topics like creating new jobs or reducing electricity bills.

Figure D- 3. Customer survey respondent agreement with phrases regarding energy efficiency

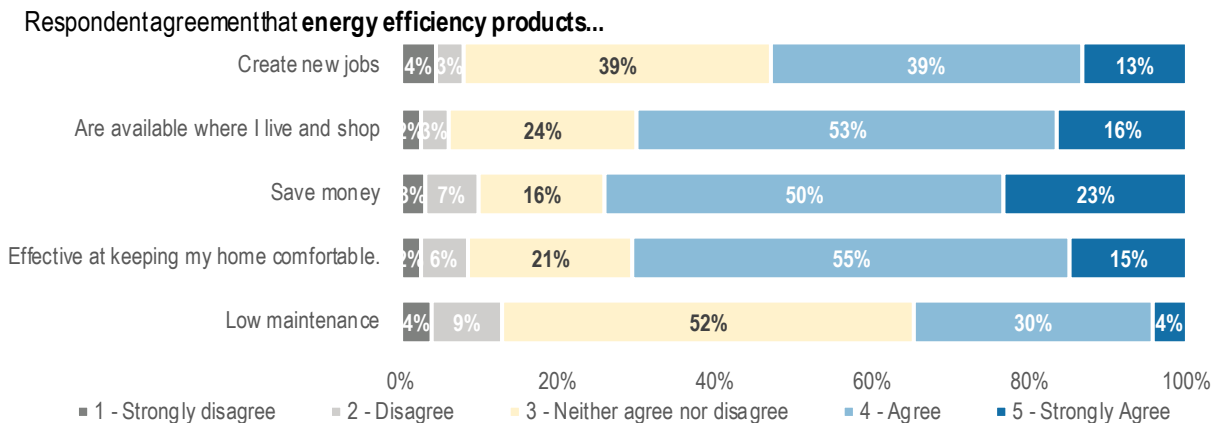
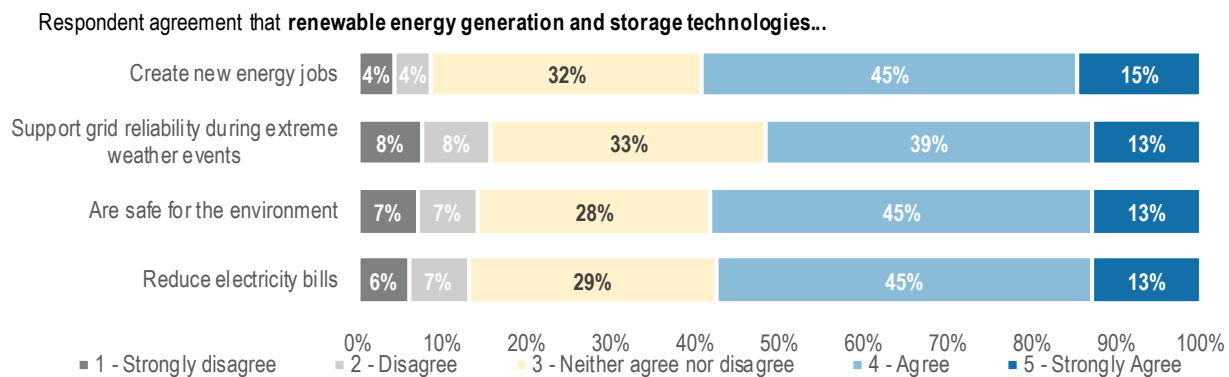


Figure D- 4. Customer survey respondent agreement with phrases regarding renewable energy



The main report details consumer survey responses regarding a series of energy audit questions. These questions are summarized in **Table D-6** below for completeness.

Table D- 6. Customer survey responses to energy audit questions

QUESTION	RESPONSE	PERCENTAGE	N
Have you ever had an energy audit conducted in your home?	Yes	20%	225
	No	69%	
	I don't remember	11%	
Was the energy audit through a NYSERDA program?	Yes	45%	44
	No	11%	
	I don't remember	43%	
Did you end up addressing any of the action items identified by the energy audit?	Yes	57%	44
	No	32%	
	I don't remember	11%	
Have you ever installed clean energy or energy efficiency measures in your home?	Yes	44%	225
	No	48%	
	I don't remember	8%	
Have you observed any energy savings in your heating/cooling energy bills?	Yes	43%	225
	No	23%	
	I don't remember	34%	

The consumer survey created an opportunity to ask about customer awareness of NYSERDA and other NYS programs. For the most part, most consumers had never heard of any of the programs (**Table D-7**). The exception to this general rule was the Home Energy Assistance Program (HEAP), where a total of 56% of respondents had heard of or participated in the program themselves. A total of 74% of respondents indicated that they had not tried to participate in a NYSERDA program before (**Figure D-6**). Over half of survey respondents found accessing the NYSERDA program somewhat easy (40%) or very easy (16%, N=58) (**Figure D-7**).

Table D- 7. DAC consumer survey respondent awareness of relevant NYSERDA programs (N=225)

RESPONSE	NEVER HEARD OF PROGRAM	HEARD OF PROGRAM, HAVE NOT PARTICIPATED	PARTICIPATED IN PROGRAM
Home Energy Assistance Program (HEAP)	44%	33%	23%
Utility Bill Assistance	65%	28%	6%
Weatherization Assistance Program	79%	16%	4%
Assisted Home Performance with ENERGY STAR®/ now part of EmPower+)	81%	17%	3%
Workforce Development	82%	16%	2%
NYS Clean Heat	91%	8%	1%
Air Source Heat Pump Program	92%	7%	1%
NY-Sun Commercial/Industrial Incentives	94%	5%	1%
EmPower+	92%	7%	1%
EmPower New York (now part of EmPower+)	91%	8%	1%
Solarize	83%	16%	1%
FlexTech	96%	4%	0%
NYS HOME Program	89%	10%	0%
NY-Sun Financial Incentives	95%	5%	0%
Clean Heating & Cooling Communities	91%	8%	0%
Green Jobs Green New York Financing	91%	8%	0%
Drive Clean	89%	10%	0%
Truck Voucher Program	97%	3%	0%
Comfort Homes	96%	4%	0%
Multifamily Performance Program	96%	4%	0%
On-Bill Recovery Loan	96%	4%	0%
Agricultural Energy Audit Program	96%	4%	0%
Charge Ready NY	96%	4%	0%
Heat Smart	93%	7%	0%
Green Jobs Green New York Energy Study	89%	11%	0%

Figure D- 5. DAC consumer survey respondent participation in NYSEERDA clean energy programs (N=225)

Most respondents (74%) had not tried to participate in any of the NYSEERDA clean energy programs.

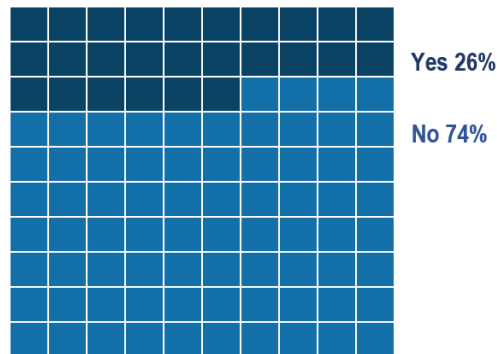
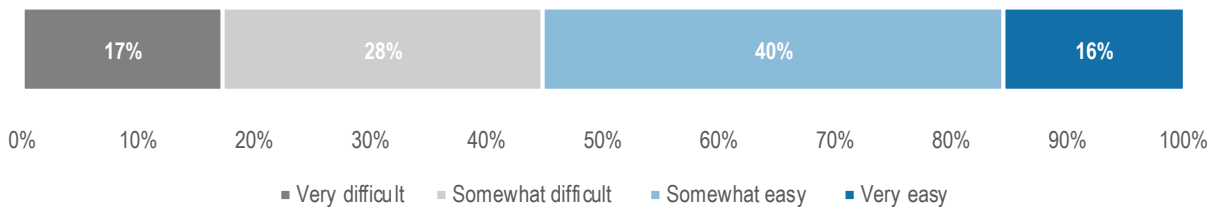


Figure D- 6. Consumer survey respondent assessment of accessibility in accessing NYSEERDA clean energy programs (N=58)

Over half of survey respondents found accessing the program somewhat easy or very easy (56% total).

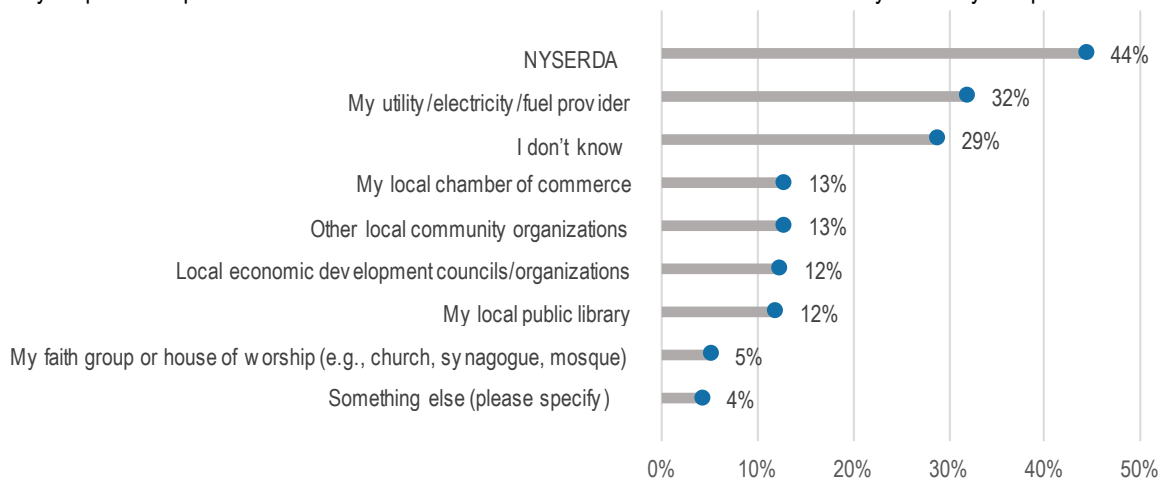


Only 25% of respondents indicated that they have plans to participate in a clean energy or energy assistance program in the future; 54% of participants indicated that they might participate (N=225). The survey also asked whether respondents would like to be contacted by their Regional Clean Energy Hub. While many respondents skipped this question toward the end of the survey, a total of 43% of respondents indicated that they would like to be contacted, while 57% indicated that they would not.

Finally, 44% of survey respondents indicated that they NYSEERDA was a trusted source to give them information about opportunities such as energy efficiency, renewable energy projects, and other clean energy technologies and opportunities, while 32% of survey respondents indicated that their electricity/utility/fuel provider was a trusted source of information (**Figure D-8**).

Figure D- 7. Consumer survey respondents' trusted sources of information

Survey respondent top choices for sources of trusted information include NYSERDA and utility/electricity/fuel providers.



D.4 Extended DAC Consumer Focus Group Results

RMS moderated five consumer virtual focus groups with 5-7 participants each (N=31). Consumer focus group discussion frequency data are summarized in **Table D-8**. The table summarizes the number of *focus group respondents* mentioning each topic (i.e., not the total number of mentions for each topic). The list of subtopics represents the feedback described in detail in the main report. The report and extended discussion below provide an additional range of response, as well as identification of patterns and nuances.

Table D- 8. DAC consumer focus group responses

TOPIC	DESCRIPTION	REFERENCES CODED	SUBTOPICS
Energy Concerns	Energy-related concerns voiced by participants	N=26	<ul style="list-style-type: none"> • Grid infrastructure resiliency to handling intermittent generation • Meeting rising peak demand without fossil fuels • Vulnerability to electricity service disruption in extreme weather • Continued use of fossil fuels and/or development of fossil fuel infrastructure • Global need to curb emissions to mitigate greenhouse gas emissions contributing to climate change • Rising energy bills • Residential rooftop solar is too complicated, and/or door-to-door solar sales are a scam • Poor air quality and/or respiratory health of the population with continued use of fossil fuels • Suspicions about the research behind the push to adopt EVs • Concerns that the EV carbon footprint could get worse due to the lithium batteries • Not having sufficient grid and charging infrastructure to support the transition to personal electric vehicles (EVs) as well as fleets

TOPIC	DESCRIPTION	REFERENCES CODED	SUBTOPICS
			<ul style="list-style-type: none"> • Safety and range of EVs
Word/Idea Association: Renewable Energy Generation and Storage	Ideas or words participants associated with the term Renewable Energy Generation and Storage.	N=26	<ul style="list-style-type: none"> • Solar panels • Wind power • Hydropower • Geothermal • Biogas • Battery backup • New jobs • Intermittent generation • Natural • Clean • Environmentally friendly • Reducing pollution
Ways to Reduce Barriers to Participation	Strategies to reduce barriers - provided by participants.	N=24	<ul style="list-style-type: none"> • Reducing upfront cost through higher incentives • Provide evidence of cost savings through case studies • Customer reviews/feedback • Improve branding, like ENERGY STAR - something recognizable to help people know where to look for savings and efficiency
Word/Idea Association: Energy Efficiency	Ideas or words participants associated with the term Energy Efficiency.	N=22	<ul style="list-style-type: none"> • Cost savings • Energy savings • Thermostat management • ENERGY STAR • Energy efficient appliances • LED lightbulbs
Experience with Purchase/Installation of Equipment	Descriptions of the participants' experience with the purchase or installation of the energy efficiency products for their home(s).	N=19	<ul style="list-style-type: none"> • Saving money with new equipment • Purchased equipment at Home Depot - incentives were less convenient (rebate) and approximately the same as the sale price • DIY weatherization (weatherstripping) • Hard finding time to sign up or schedule energy audit
Barriers to Participation	Barriers preventing individuals from adopting clean energy in their homes.	N=18	<ul style="list-style-type: none"> • Cost for energy purchases • Trust that reduced cost will stay over time • Trust and legitimacy of the organizations and approaches to contacting/engaging with individuals • Participants did not like the door-to-door approach • Need evidence about cost savings

TOPIC	DESCRIPTION	REFERENCES CODED	SUBTOPICS
Trusted Sources	Trusted source/ preferred mode of communication for information about clean energy	N=14	<ul style="list-style-type: none"> • Word of mouth • Google/independent internet research • Case study or data-based evidence • Ratings from private customers • Doctor offices or healthcare providers • Family justice centers • Childcare providers • Department of Social Services • Office of the Aging • Lines for food stamps
Discretionary Income Priority for Clean Energy Programs	Purchase clean energy upgrades or energy efficiency measures with discretionary income	N=13	<ul style="list-style-type: none"> • Energy spending is decidedly not at the top of the list for discretionary spending • Participants seek ways to save on energy spending • Leasing rooftop solar panels • DIY solar panel array with car battery storage • Commitment in leasing panels (some discomfort) • Energy purchases are financially out of reach • Not interested in taking on upgrades/replacements on behalf of their landlord/rental unit • Renters happy to do smaller things like showerheads and lightbulbs (removable)
Benefits from Participation in Clean Energy/Assistance Program	Benefits gained from participating in the clean energy/ assistance program	N=9	<ul style="list-style-type: none"> • HEAP offers streamlined application with other programs • HEAP is lifesaving and for everyone • NYSERDA can provide energy audits • Other NYSERDA programs provide rebates
Addressed Items through Energy Audit	Mention of items addressed through the energy audit.	N=5	<ul style="list-style-type: none"> • Had new appliances installed • New weatherization measures • New insulation • Replaced hot water heater

Though focus group discussion themes are described in the main report, this Appendix describes a few topics in additional detail. The topical nuances were not directly related to the indicators and research questions in the report, but are documented here to maintain them as a part of the broader narrative around clean energy adoption in DACs in New York State. The additional themes include consumer awareness of NYSERDA, energy concerns, awareness of energy audits, and barriers to clean energy adoption.

Consumer Awareness of NYSERDA: Many DAC focus group participants indicated that they had heard of NYSERDA or believed that they had heard of it, but most were not aware of what NYSERDA does, specifically. Some participants knew that NYSERDA is a state agency, while others knew that NYSERDA was associated with energy programs and offerings like residential energy audits.

Energy Concerns: Most participants acknowledged global climate change-related issues, such as increased pollution from fossil fuel emissions, and described renewable energy generation as “clean” and “environmentally friendly,” by contrast. DAC consumer focus group participants expressed concerns with

rising electricity costs, as well as possible risks to grid reliability should New York State transition to a 100% renewable electricity grid mix. A couple of focus group participants were skeptical of a transition to 100% renewable electricity generation, because there is still money to be made from fossil fuel extraction and generation. Other participants perceived that clean energy use is still nascent or emerging, and therefore were hesitant to adopt clean energy technologies in their home because they perceived that the technologies are too “new.” Across all five focus groups, participants expressed that there needs to be more credible information explaining the benefits of clean energy to consumers, including data showing savings over time.

Hesitation to Take Action on Energy Audits: Some participants were not aware of how to sign up for an audit, or had not made time to sign up, but did know that it was an option for them. Some participants who were renters seemed to understand that the free energy audit program was available to them, but also explained that they did not see the purpose in going through the audit. These participants explained that they did not want to invest in updates for a dwelling they did not personally own. In two cases, consumer focus group participants specified that they did not want to benefit their landlord, and instead opted for low-cost and do-it-yourself weatherization updates, like weather stripping around windows and doors to help improve the efficiency of home heating and cooling.

Barriers to Clean Energy Adoption: Cost was the single biggest barrier that DAC consumer focus group participants cited preventing them from pursuing clean energy installations or energy efficiency measures in their homes. Some focus group participants identified that upfront costs are often too high for them to pursue energy upgrades until their currently working equipment fails. Other participants wanted to be very sure that they would have a near-term return on investment before making any purchases or program commitments (e.g., community solar). Focus group participants who were renting their homes at the time of the focus groups explained that their household budgets are tight. Unless they could realize an immediate reduction in their energy bills, participants said that they would not move forward with purchasing clean energy items without an incentive to reduce the total initial cost. While consumer focus group participants acknowledged that saving money is important to them, the knowledge that energy efficiency measures or clean energy installations could save them money over time had not influenced them to adopt such measures, due to the initial investment required. Consumer focus group participants also shared the belief that there is a growing global obligation to move away from fossil fuels; however, the initial cost implications deter adoption.