New York State
Clean Heat Program
2023 Annual Report

Jointly Filed By:

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Consolidated Edison Company of New York, Inc.
Niagara Mohawk Power Corporation d/b/a National Grid
New York State Electric & Gas Corporation
New York State Energy Research and Development Authority
Orange and Rockland Utilities, Inc.
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Executive Summary

In 2023, the NYS Clean Heat Program supported, via incentives, the installation of a total of 17,494 heat pump projects. More than 65% of these projects were whole home/full load space heating projects. Approximately 69% of the 2023 Clean Heat projects were air source heat pump ("ASHP") space heating technologies in residential (1-4 family) buildings and 5% were ground source heat pump ("GSHP") technologies in residential buildings. In addition, the Long Island Power Authority ("LIPA") supported 9,868 heat pumps in 2023, for a total of 27,362 heat pump projects installed in 2023 across New York State.

In 2023, the NYS Clean Heat Program spent over $202 million and achieved over 1,307,000 MMBtu of energy savings. Clean Heat delivered 194% of targeted savings at 233% of the targeted budget for 2023 authorized in the 2020 New Efficiency New York ("NE:NY") Order.[1] Actual 2023 savings achievement and spend includes budget transfers from electric portfolios and Continuity Funding Mechanisms for certain utilities,[2] which were not included in the 2020 NE:NY Order and were authorized in subsequent orders.

Since the NYS Clean Heat Program launch on April 1, 2020, cumulative program spend has totaled over $816 million and the Program has achieved over 4,527,000 MMBtu of savings as of December 31, 2023.[3] As of the end of 2023, the Program has achieved over 240% of the 4-year (2020-2023) NE:NY MMBtu savings target and spent 315% of the combined 4-year incentive program budget. The actual spend and savings figures include the additional budget transfers and Continuity Funding Mechanisms authorized to fund Clean Heat. Details on individual Utility performance can be found in Section 3 of this report.

Con Edison relaunched its Clean Heat Program on January 17, 2023. On May 9, 2022, after reaching its cumulative 2020-2025 program targets, Con Edison paused accepting ASHP heat pump incentive applications. On August 11, 2022, the New York Public Service Commission ("Commission") authorized a Continuity Funding Mechanism with expenditures not to exceed $10 million per month to allow the Company to begin accepting new Clean Heat Program applications. Section 3.2 contains more information about the Con Edison program and achievement.

Recruitment efforts in 2023 continued to grow the pool of ASHP and GSHP contractors. As of the end of 2023, there were 1,120 contractors enrolled, up from 980 at the end of 2022 and 750 at the end of 2021. Recruitment activities continue with the goal of continuously increasing the pool of ASHP and GSHP contractors. Contractor network growth is complemented by efforts to educate and support Participating Contractors to provide quality installations.

Over 1,100 individuals across the heat pump supply chain were trained, advancing the goal of growing a quality-oriented skilled labor force. NYSERDA's Market development efforts included $33 million in

[1] Case 18-M-0084, In the Matter of a Comprehensive Energy Efficiency Initiative ("NE:NY Proceeding"), Order Authorizing Utility Energy Efficiency and Building Electrification Portfolios Through 2025 (issued January 16, 2020) ("2020 NE:NY Order")

[2] See sections 3.1, 3.2, and 3.5 for further detail.

[3] The prior heat pump achievement in Q1 2020 – as acquired by NYSERDA – was incorporated into the respective NY Electric Utilities' individual 2020 budgets and targets, pursuant to the 2020 NE:NY Order.

spending across various initiatives. A summary is provided in Section 2, with specific program details provided in Section 4.

Key Program Accomplishments and Planned Areas of Improvement

The Joint Efficiency Providers[4] engaged in many activities throughout 2023 in their efforts to develop, support, and improve the NYS Clean Heat Program. The key accomplishments, which fall into three categories – Program Administration, Process Enhancements, and Heat Pump Incentives, are summarized below.

Program Administration

- Maintained and improved key communications including updates to the NYS Clean Heat Program Manuals[5], Implementation Plan[6], Program Website[7], and Working Group Series for Participating Contractors and Industry Partners ("PC&IP")
- Updated and enhanced the *Statewide Clean Heat Program Custom Calculator* to help contractors determine project savings and incentives
- Published a *Category 6 – Domestic Hot Water* Custom Incentive Calculator
- Published a *Heat Recovery Chiller/Heat Pump Chiller* Custom Incentive Calculator
- Published resources including the Design Temperature Lookup Tool and Guidance for Acceptable Load Calculations

Process Enhancements

- Made QA/QC process enhancements including revising ASHP and GSHP checklists in coordination with stakeholders, revising the decommissioning checklist, and promoting 48 Clean Heat contractors to Full Status
- Enhanced application process cycle times through increased program staffing, improved communication with participants, and increased training opportunities for industry partners
- Maintained low frequency of application errors and expedient resolution time

Heat Pump Incentives

[4] The Joint Efficiency Providers are defined as the New York State Energy Research and Development Authority ("NYSERDA") and the NY Electric Utilities. The NY Electric Utilities are defined as Central Hudson Gas & Electric Corporation ("Central Hudson"); Consolidated Edison Company of New York, Inc. ("Con Edison"); Niagara Mohawk Power Corporation d/b/a National Grid ("National Grid"); New York State Electric & Gas Corporation ("NYSEG"); Orange and Rockland Utilities, Inc. ("Orange & Rockland"); and Rochester Gas and Electric Corporation ("RG&E") (collectively, "NY Electric Utilities")."

[5] NE:NY Proceeding, NYS Clean Heat: Statewide Heat Pump Program Manual ("Program Manual"), (initially filed on March 16, 2020 and most recently refiled March 1, 2024); NYS Clean Heat Con Edison Heat Pump Program Manual, (initially filed on January 12, 2023 and most recently refiled March 1, 2024) (together, "Program Manuals").

[6] NE:NY Proceeding, Implementation Plan. The Joint Efficiency Providers' work in coordinating development of the NYS Clean Heat Program began in 2019, following the issuance of the Commission's NE:NY Order - NE:NY Proceeding, Order Authorizing Accelerated Energy Efficiency Targets (issued December 13, 2018) ("2018 NE:NY Order").

[7] https://cleanheat.ny.gov/

- All utilities expanded Heat Pump Water Heater ("HPWH") incentive offers, including launch or growth of existing midstream programs and launch of instant discounts with certain big box retailers, both in brick-and-mortars stores and at their online commerce sites
- Central Hudson, National Grid, NYSEG RG&E, and Orange & Rockland removed incentives for partial load heating
- Supported the addition of an Air-to-Water Heat Pump ("AWHP") measure to the NY Technical Resource Manual ("TRM") published in July 2023. After the measure was added to the TRM, the Clean Heat Joint Management Committee ("JMC") initiated a workstream to add AWHP to the program, including engagement with industry partners and stakeholders.
- Added heat pump dedicated outside air systems, heat recovery chillers and heat pump chillers to lists of eligible technologies for custom incentives
- Con Edison:
    - Created dedicated categories for full load ASHP projects with decommissioning for the multifamily and small-and-medium business sectors
    - Created a custom partial-load space heating category
    - Adjusted the structure of residential rates away from capacity of heat pumps to a set $/home or $/apartment rate
    - Introduced contractor allocations in the residential sector to manage program budget
    - Introduced dedicated incentive rates for customers located within Disadvantaged Communities ("DAC")

Planned Areas of Improvement in 2024

The Joint Efficiency Providers are committed to improving the program, particularly in response to feedback from participants. Planned areas of improvement in 2024 include:

- Provide additional efforts to help Participating Contractors grow their heat pump businesses and increase participation in the program with trainings and marketing materials (as detailed in section 2.2)
- Implement new measures and improvements/clarifications to existing measures

The Joint Efficiency Providers will also continue to collaborate with stakeholders to evaluate potential changes such as incentive categories or levels and the addition of new eligible technologies in both Residential and non-residential applications.

Section 2 details the key activities completed in 2023 and planned areas of improvement for 2024.

2024 Lookahead

In 2024, the Joint Efficiency Providers look forward to supporting New York State's electrification goals through Clean Heat achievement. The Joint Efficiency Providers will work with the New York Department of Public Service and other stakeholders on the evolution of the Clean Heat Program as dictated by any Commission Orders as part of the New Efficiency: New York Interim Review.

1. Introduction

Pursuant to the January 16, 2020 *Order Authorizing Utility Energy Efficiency and Building Electrification Portfolios through 2025* ("2020 NE:NY Order"),[8] the New York State Energy Research and Development Authority ("NYSERDA") and the NY Electric Utilities[9] (collectively, "Joint Efficiency Providers") hereby file this New York State Clean Heat Statewide Heat Pump Program ("NYS Clean Heat Program" or "Program") Annual Report for 2023 ("Annual Report").

The NYS Clean Heat Program, which launched on April 1, 2020, provides customers, contractors, and other heat pump solution providers with a consistent experience and business environment throughout New York State. The NYS Clean Heat Program supports a consistent statewide heat pump program designed to achieve the State's ambitious heat pump goals and build the market infrastructure for a low-carbon future.

The NYS Clean Heat Program includes initiatives to advance the adoption of efficient electric heat pump systems for space and water heating applications throughout New York State. The NY Electric Utilities provide incentives to support customer adoption of eligible heat pump technologies, including cold climate air source heat pump ("ccASHP") systems, AWHP systems, GSHP systems, variable refrigerant flow ("VRF") systems, larger scale heat pump systems in commercial and multifamily buildings, and HPWHs, as well as their promotion and pricing by contractors and other heat pump solution providers. The Implementation Plan and the two Program Manuals provide detail about the Program, including incentive structures and levels, eligible technologies, program rules and processes, and information for participating contractors.[10] The Program is implemented in coordination with a portfolio of NYSERDA-led market development initiatives, which aim to build market capacity to deliver building electrification solutions. The market development efforts, which are described in Appendix 1 of the Implementation Plan, include support for training and qualification of contractors, processes to assure quality installations, marketing and education initiatives to help customers understand and select among options and to operate systems optimally, and research and demonstration initiatives.

2. NYS Clean Heat – Statewide Heat Pump Incentive Program

This 2023 Annual Report describes the milestones, activities, results, and findings for 2023 and planned areas of improvement for the NYS Clean Heat Program for 2024. Table 1 shows 2023 program achievement as compared to the budgets and targets from the 2020 NE:NY Order.[11] Table 2 shows cumulative achievement for the Program since it began in 2020. Actual savings achievement and spend

[8] NE:NY Proceeding, 2020 NE:NY Order, p. 93.

[9] Central Hudson Gas & Electric Corporation ("Central Hudson"); Consolidated Edison Company of New York, Inc. ("Con Edison"); Niagara Mohawk Power Corporation d/b/a National Grid ("National Grid"); New York State Electric & Gas Corporation ("NYSEG"); Orange and Rockland Utilities, Inc. ("Orange & Rockland"); and Rochester Gas and Electric Corporation ("RG&E") (collectively, "NY Electric Utilities")."

[10] Both the Implementation Plan and Program Manual are revisited, as necessary and with prior notice, on a separate schedule from this Annual Report.

[11] NE:NY Proceeding, 2020 NE:NY Order, Appendix C; NE:NY Proceeding, Implementation Plan, p. 4-5. Similar tables are shown for each utility in Section 4.

in both Tables 1 and 2 include budget transfers from electric portfolios and Continuity Funding Mechanisms for certain utilities which were not included in the 2020 NE:NY Order and were authorized in subsequent orders. Table 3 shows the number of heat pump projects that were installed and provided incentives in 2023 by program category.

Statewide Program Performance

Table 1. NYS Clean Heat Statewide Program Spend and Achievement 2023

Category	Spend ($)	Savings (MMBtu)*
2023 Actual	$202,315,523	1,307,011
2023 NE:NY Budget/Target	$86,770,261	672,346
Difference Between 2023 Actual and NE:NY Budget/Target	$115,545,262	634,665

Table 2. NYS Clean Heat Statewide Program Cumulative Spend and Achievement versus 2020 NE:NY Order [12]

Category	Spend ($)	Savings (MMBtu)*
2020-2023 Spend/Achievement[13]	$816,070,788	4,527,967
2020 NENY Order 2020-2023 Budget/Target	$258,676,928	1,883,322
Realized Through 2023 to 2020-2023 NE:NY Order Budget/Target	315%	240%
NE:NY 2020-2025 Budget/Target	$454,318,222	3,566,590
Realized Through 2023 to 2020-2025 NE:NY Budget/Target	180%	127%

** Equivalent Annual MMBtu, net of all energy savings and associated usage*

[12] The prior heat pump achievement in Q1 2020 – as acquired by NYSERDA – was incorporated into the respective NY Electric Utilities' individual 2020 budgets and targets, pursuant to the 2020 NE:NY Order.

[13] This also includes transfers from electric portfolios and Continuity Funding Mechanisms. For more detail, please see Section 3.1 for Central Hudson, 3.2 for Con Edison and 3.5 for RG&E.

Table 3. Projects Installed and Provided Incentives in 2023 by Electric Utility and Category

Category	Description	Central Hudson	Con Edison	National Grid	NYSEG	RG&E	ORU	Total by Category
1	*ccASHP: Partial Load Heating*	309	34	659	541	117	24	1,684
2	*ccASHP: Full Load Heating*	715	266	1,191	1,335	214	79	3,800
2a	*w/ Integrated Controls*	11	87	40	32	16	37	223
2b	*w/ Decommissioning*	796	4,497	360	490	118	169	6,430
2c	ASHP MF Full Load Heating with Decommissioning	-	44	-	-	-	-	44
2d	ASHP SMB Full Load Heating with Decommissioning	-	29	-	-	-	-	29
3	*GSHP: Full Load Heating*	101	198	250	241	75	26	891
4	*Custom Space Heating Applications*	11	145	27	28	4	3	218
4a	*Heat Pump + Envelope*	-	21	1	-	-	-	22
5	*HPWH (up to 120 gal)*	633	297	1,641	665	643	58	3,937
6	*Custom Hot Water Heating Applications*	-	32	1	-	-	-	33
7	*GSHP Desuperheater*	12	3	48	67	27	4	161
8	*Dedicated DHW WWHP*	5	-	-	12	3	1	21
9[14]	*Simultaneous Install of Space & Water Heating*	173	74	6	219	72	26	570
10	*Custom Partial Load Space Heating*	-	1	-	-	-	-	1
Total Project Count[15]		2,593	5,654	4,218	3,411	1,217	401	17,494

[14] Category 9: *Simultaneous Install of Space & Water Heating* is indicative of a bonus incentive and is not included in Total Project Count.

[15] Total Project Count is the total number of customer heat pump projects installed and provided incentives in 2023. A single parcel (i.e., or customer) may have multiple projects. *See,* NE:NY Proceeding, NYS Clean Heat: Program Manuals *Glossary of Terms* for definition of Clean Heat Project. For instance, a customer may have a Category 2 space heating and a Category 5 water heating installation. Total project counts may also deviate from those reported in annual utility scorecard filings.

Table 4. Cumulative Projects Installed and Provided Incentives, Program To-Date 2020-2023 by Electric Utility and Category

Category	Description	Central Hudson	Con Edison	National Grid	NYSEG	RG&E	ORU	Total by Category
1	*ccASHP: Partial Load Heating*	1,459	5,025	1,581	1,403	386	74	9,928
2	*ccASHP: Full Load Heating*	4,668	9,894	2,978	3,828	625	532	22,525
2a	*w/ Integrated Controls*	12	2,300	40	32	16	76	2,476
2b	*w/ Decommissioning*	1,177	10,574	377	565	125	233	13,051
2c	*ASHP MF Full Load Heating with Decommissioning*	-	44	-	-	-	-	44
2d	*ASHP SMB Full Load Heating with Decommissioning*	-	29	-	-	-	-	29
3	*GSHP: Full Load Heating*	313	381	747	670	233	63	2,407
4	*Custom Space Heating Applications*	27	323	51	53	12	10	476
4a	*Heat Pump + Envelope*	-	26	3	-	-	-	29
5	*HPWH (up to 120 gal)*	2,128	785	2,420	1,512	1,029	121	7,995
6	*Custom Hot Water Heating Applications*	-	39	1	-	-	-	40
7	*GSHP Desuperheater*	65	107	187	216	78	29	682
8	*Dedicated DHW WWHP*	14	3	5	43	11	1	77
9	*Simultaneous Install of Space & Water Heating*	501	303	39	556	169	49	1,617
10	*Custom Partial Load Space Heating Applications*	-	1	-	-	-	-	1
Total Project Count[16]		9,863	29,531	8,390	8,322	2,515	1,139	59,760

Each NY Electric Utility's individual performance is presented in more detail under its respective "Utility-Specific Progress" section.

[16] Total Project Count is the total number of customer heat pump projects installed and provided incentives in 2023. A single parcel (i.e., or customer) may have multiple projects. *See,* NE:NY Proceeding, NYS Clean Heat: Program Manuals *Glossary of Terms* for definition of Clean Heat Project. Cumulative totals from 2020 do not include projects that were funded under the prior NYSERDA program.

2.1 Summary of NYS Clean Heat Program in 2023

2.1.1. Program Administration Activities

The Joint Efficiency Providers conduct a range of program administration activities and implement continuous improvement practices to make implementation more efficient, make rules and communication clearer, and to respond to participant feedback and market developments.

These activities are ongoing and will continue going forward, with modifications to reflect programmatic needs or changing market conditions. Key activities include:

- **Maintain and improve key communications, including:**
  - Updates to the Program Manuals filed in March 2023 (Version 9) and September 2023 (Version 10).[17] The Joint Efficiency Providers anticipate the same cadence of updates in 2024.
  - Introduction of the Con Edison Program Manual on January 17, 2023, updated to V2 in March 2023 and V3 in September 2023.
  - Updates to the NYS Clean Heat Implementation Plan (September 2023).
  - Development and support of the NYS Clean Heat webpage.[18]
  - Continuation of the Working Group Series for Participating Contractors and Industry Partners. In 2023, meetings were held in January, March, June, September, and December with an average of 95 attendees per session.
- **Grow and support the Clean Heat Contractor Network**
  - The program processed enrollment applications and provided orientation to new contractors increasing participation from 980 to 1,120.
  - 48 registered statewide Clean Heat contractors achieved Full status in 2023.
  - The JMC conducted 30 School of Clean Heat training webinars with 294 attendees and numerous one-on-one trainings with individual contractors. Recordings were posted for on demand access and received 254 views.
  - The Joint Efficiency Providers posted recorded trainings focused on various topics, which can be viewed anytime at https://www.gotostage.com/channel/605e6790b2d043e5b2d270c27c6b517d for Con Edison and https://www.gotostage.com/channel/ac7f5f9bccc643a5a3a6c0841311f18e for the rest of the state.
- **Drive high quality installations**
  - On March 1, 2023, the Clean Heat JMC instituted a requirement for all current and new ASHP Participating Contractors to complete a heat pump sizing and design training. Nearly all contractors have completed this requirement.

[17] *See,* NE:NY Proceeding, NYS Clean Heat: Program Manual
[18] https://cleanheat.ny.gov/

- In the March 2023 PC&IP call, the JMC shared information on common nonconformances and best practices for snow protection and refrigerant line protection.
- The JMC published supporting resources to the Clean Heat webpage including: Guidance for Acceptable Load Calculations and a Design Temperature Lookup Tool

2.1.2. Process Enhancements

As part of the effort in developing, initiating, and implementing the NYS Clean Heat Program, the Joint Efficiency Providers achieved the following key process improvements in 2023:

2.1.2.1. Key Accomplishments in 2023

- **QA/QC Process Enhancements**
  - Updates to both ASHP and GSHP Checklists to support more decommissioning approaches to offer flexibility to contractors and customer.
- **Updates to the Decommissioning Checklists**
  - Clarified best practices and highlight all required measures for each decommissioning scenario.
- **Enhancements to the Custom Savings and Incentive Calculators**
  - Updated the *Statewide Clean Heat Program Custom Calculator* tool to reflect the latest programmatic updates in the Program Manuals and changes made to improve usability.
  - Published a *Category 6 – Domestic Hot Water Custom Calculator* and a *Heat Recovery Chiller/Heat Pump Chiller Custom Calculator*
- **Efforts to Maintain Application Process Cycle Times**
  - Continuous refinement of processing times through training to increase efficiency and efforts to foster communications with applicants.
  - For all utilities, the time to process and pay applications which did not require contractors' attention and correction fell from 86 days in 2022 to 36 days in 2023.
- **Efforts to Reduce the Frequency of Application Errors and the Duration of Time to Resolve Errors**
  - To reduce application errors and reduce processing timelines, School of Clean Heat training sessions concentrated on going over common sources of application errors and providing tips on how to avoid them. The rate of applications with flaws for all utilities improved from an error rate of 43% in Q1 to an error rate of 30% in Q4. The overall average improved from 42% in 2022 to 32% in 2023.

2.1.2.2. Planned Areas of Enhancement

- **Increase Support Offered to Program Contractors**
  - To foster more frequent engagement with contractors and to help drive quality installations, non-Con Edison utilities will increase minimum participation levels from one project submission every 24 months to one project submission every 6 months. The Program will engage with contractors before moving to Inactive status and contractors will have the opportunity to reapply to the Program as applicable.

- The program will provide group and contractor training on specific non-conformance items.
- The program, in conjunction with its Implementation Contractors, will partner with software manufacturers to offer hands-on Manual J training.
- The NYS Clean Heat primary website will be reorganized and streamlined to enhance navigation and make important resources for contractors more easily available.
- Section 4 of the Program Manual, "Participating in the Program," will be streamlined to more clearly lay out steps and documents needed to apply as a Participating Contractor and to submit prescriptive and custom applications.

- **Maintain Application Process Cycle Time**
  - The Utilities will continue to sustain an efficient application process cycle time for prescriptive applications. In 2023, the utilities maintained an efficient standard achieved first in 2022 of processing and paying applications without an error in, on average, under four weeks. The utilities are committed to continuing that success and improving on that timeline where possible.
- **Maintain High Standard of Application Quality and Timeliness in Resolving Errors**
  - A certain percentage of applications to the Clean Heat Program include some level of error that requires correction from contractors. The Program will continue to expand contractor training in 2024 and provide one-on-one process assistance and retraining to resolve and drive down error rates. In addition, the Utilities will enforce the deadline for contractors to submit missing and/or corrected information that was introduced in 2022, in order to find more timely resolutions.[19]
  - As part of the expanded training for contractors, the Program will add to the School of Clean Heat library a series of short on-demand videos focused on specific error types to teach Participating Contractors how best to avoid these errors.

2.1.3. Heat Pump Incentives

2.1.3.1. Key Accomplishments in 2023

Updates and changes to incentive offerings included:

- **Added Heat Pump Water Heater Midstream Incentives**
  - Beginning in 2023, the JMC either launched or grew distributor and retailer midstream channels for HPWH rebates. These midstream channels offer easier access to incentives, with the goal to drive greater overall participation and more customers accessing the benefits of heat pump water heaters. Distributor midstream heat pump water heater incentives became available in all service territories by February 6, 2023. The Joint Efficiency Providers also expanded an instant discount for heat pump water heaters at

[19] The electric utility will notify the Participating Contractor if an application contains missing or inaccurate information. Beginning March 1, 2022, Participating Contractors will be given 45 days from the date that the electric utility contacts the Participating Contractor with a missing information request to complete their application. See NYS Clean Heat: Statewide Program Manual, Version 6, March 1, 2022, p.71.

Lowe's and Home Depot stores. This channel was expanded to the service territories of Con Edison, National Grid, NYSEG, Orange & Rockland and RG&E on April 26, 2023.

- **Incentive Updates at Central Hudson, National Grid, NYSEG and RG&E, and Orange & Rockland**
  - These utilities announced broad incentive level adjustments to facilitate allotted savings targets increasing relative to budgets over time and transition from aggressive adoption to a sustainable ongoing structure.
  - Incentive updates made to meet the need for program efficiency included:
    - Effective Sept 1, 2023, Central Hudson, NYSEG and RG&E, and Orange & Rockland removed Category 1 incentives to focus on systems that fully displace fossil heating and provide customers with greatest efficiency.
    - Custom incentive levels and rebate caps were adjusted to provide substantial offerings while maintaining cost-efficiency.
- **Incentive Updates at Con Edison**
  - Con Edison introduced a substantially revised set of prescriptive incentives on Relaunch that offer incentives denominated in dwelling units for residential and multifamily projects or square footage for small commercial projects. Con Edison also introduced targeted rates for disadvantaged communities. For more detail, please see section 3.2.
- **Facilitated the Addition of AWHP measure to the NY TRM**
  - The JMC supported efforts to add AWHP to the TRM version 11 record of revision filed in July 2023. After the measure was added to the TRM, the JMC initiated a workstream to add AWHP to the program, including engagement with industry partners and stakeholders.
- **Added New Technologies for the Custom Incentive category**
  - The Joint Efficiency Providers added Heat Recovery Chillers, Heat Pump Chillers, and Dedicated Outdoor Air Systems for Custom incentives.
- **Updates to TRM by the TRM Management Committee, including:**
  - Supported addition of AWHP technology to the TRM in July of 2023.

2.1.3.2. Planned Areas of Enhancement

- **Add Air-to-Water Heat Pump (AWHP) technology incentives**
  - The JMC will launch incentives for air-to-water heat pumps for residential space conditioning effective March 2024. Incentives will be offered on a $/ savings basis for Central Hudson, National Grid, NYSEG RG&E, and Orange & Rockland. Con Edison will offer incentives on a $/ dwelling unit basis. To ensure successful implementation of AWHP projects, the program will work from a qualified list of AWHP products informed by industry standards that allows manufacturers to request participation, pending JMC review. Projects will be subject to technology-specific quality assurance checks and participating contractor requirements that consider the health and safety needs for AWHP systems and installers. The JMC will coordinate marketing and outreach efforts with NYSERDA to promote this newly adopted technology.

- Additionally, the Joint Efficiency Providers will continue to analyze program data and collaborate with technical experts, manufacturers, and other industry partners to explore and expand the range of technologies eligible for Clean Heat incentives as well as to evaluate any potential changes to incentives.

2.1.4. Market Development

2.1.4.1. Key Accomplishments in 2023

- **Market Development**

NYSERDA Market Development activities were funded through the Clean Energy Fund ("CEF")

- Additional details on the achievements below are included in Section 5:
  - In 2023, the NYS Clean Heat marketing campaign experienced a nearly 50% increase in customer engagement over 2022.
  - NYSERDA updated its interactive web version of the Heat Pump Planner for consumers, and added an interactive heat pump water heater page.
  - NYSERDA expanded the Clean Heat Connect[20] Network by seven members--which now includes 8 HVAC manufacturers and 14 distributors and covers a majority of the New York State market--who promote adoption of educational and technical tools and resources through their contractor networks.
  - Through Clean Heat Connect Network, NYSERDA released 9 new contractor support resources for installing air source heat pumps and provided promotion of and assistance with accessing NYSERDA contractor programs such as On-the-Job Training programs, Coop Advertising and Training funding, and Green Jobs-Green New York Financing.
    NYSERDA launched the Experience Clean Heat ("ECH") Initiative, which reinforces the benefits of heat pumps through social media and an augmented reality tool.
  - NYSERDA's Technical Assistance programs received 350 study applications in 2023 that focused on electrification or had an electrification component. Most of these studies are for multifamily facilities, commercial real estate, and PreK-12 schools. The studies completed in 2023 identified and evaluated 543 electrification measures: 251 ccASHP, 117 VRF measures, 145 domestic hot water electrification, and 30 GSHP measures.
  - The Community Heat Pump Systems Solicitation, Program Opportunity Notice ("PON") 4614, for the development of clean thermal energy networks was closed in 2023 after completing 10 funding rounds supporting over 50 project sites.
  - NYSERDA's NextGen HVAC Innovation Challenges (renamed the NextGen Building Innovation Challenge), PON 3519, completed Round 7 in 2023. This PON continues to issue targeted and specific challenges to address New York State's unique heating and cooling requirements.

[20] https://cleanheatconnect.ny.gov/

- The Empire Building Challenge announced the results of its second funding round: the six newly awarded real estate partners collectively own more than 108 million square feet of real estate and 18,000 residential units throughout New York State, including 1,500 affordable housing units. These awards also unlock an anticipated $57 million in private investment from these program participants.
- In 2023, NYSERDA awarded funding toward 3 retrofit and 16 new construction projects in NYS Homes and Community Renewal's ("HCR") multifamily portfolio through the Clean Energy Initiative. NYSERDA also partnered with NYC Housing Preservation and Development ("HPD") to award funding toward 11 retrofit projects, under the Retrofit Electrification Pilot, and 8 new construction projects, through the newly-launched Future Housing Initiative (FHI). Additionally, the first 72 packaged window heat pumps were installed in NYCHA housing under the Clean Heat for All Challenge.
- In 2023, Comfort Home expanded its geographic reach and as a result enrolled 9 new participating contractors for a total of 81 contractors. Comfort Home nearly doubled its prior-year production, completing 1,998 load reduction projects in 2023 for a total of 3,445 homes improved since Pilot inception.

2.2 2024 Lookahead

The Joint Efficiency Providers of the NYS Clean Heat program continue to monitor and participate in policy developments that may inform or influence the program.

- The Climate Action Council released its final Scoping Plan in December 2022; as the recommendations begin to manifest in executive orders and legislative action, NYSERDA and its utility partners will ensure that actionable proposals in this plan are incorporated into the NYS Clean Heat program where applicable.
- As mandated in the 2020 NE:NY Order,[21] the Commission initiated an Interim Review process in 2022, and, in July 2023, the Commission released its *Order Directing Energy Efficiency and Building Electrification Proposals* ("EE/BE Order").[22] Pursuant to the EE/ BE Order, on November 1, 2023, each of the Joint Efficiency Providers submitted proposals which, among other things, provided proposed Clean Heat budgets for and targets for 2026-2030 and addressed other topics related to the Clean Heat Program.[23] The Joint Efficiency Providers will continue to actively participate in and support the process related to the Interim Review and EE/BE Order in 2024.

[21] NE:NY Proceeding, 2020 NE:NY Order, p. 59-60.
[22] NE:NY Proceeding, Order Directing Energy Efficiency and Building Electrification Proposals ("EE/ BE Order") (Issued July 20, 2023).
[23] Pursuant to letter request from DPS Staff, each of the Joint Efficiency Providers provided supplemental information on their proposal on January 12, 2024. See, NENY Proceeding, EE-BE Proposal Supplemental Information Request, New York Department of Public Service (December 14, 2023).

- The statewide heat pump technical study conducted by Department of Public Service ("DPS") Staff started in Q3 2021 with results anticipated in 2024. The Joint Efficiency Providers will incorporate insights from the study and make programmatic adjustments as applicable.

3 Utility-Specific Progress

3.1. Central Hudson

Table 5. 2023 Clean Heat Program Spend and Achievement

Category	Spend ($)	Savings (MMBtu)
2023 Actual	$10,594,034	146,847
2023 NE:NY Budget/Target	$8,265,836	48,190
Difference Between 2023 Actual and NE:NY Budget/Target	$2,328,198	98,657

Table 6. Clean Heat Program Spend and Achievement 2020-2023

Category	Spend ($)	Savings (MMBtu)
Cumulative 2020-2023 Spend/Achievement	$54,433,121	594,599
Cumulative NE:NY 2020-2025 Budget/Target	$43,221,312	255,292
Share of NE:NY Budget/Target Realized Through 2023	126%	233%

3.1.1. 2023 Program Performance

In 2023, Central Hudson saw continued growth in the program and exceeded its annual savings target, and surpassed more than 200% of its cumulative program savings goal. Central Hudson tripled its 2023 annual savings target while expending 128% of its initial annual budget. This continued cost-effective activity spearheaded the effort for additional funding for the remainder of the Clean Heat program.

After introducing the Category 2B decommissioning measure in spring of 2022, high levels of activity continued as training and education in the marketplace took place. In 2023, Central Hudson saw full load decommissioning projects counts exceed all other program measures in 2023. In addition to high growth in project volume, prescriptive full load decommissioning projects accounted for over 40% of overall program savings in 2023. Moving forward, decommissioning projects remain a focus for Central Hudson with continued workforce development centered on proper displacement of legacy fossil-fuel systems.

Order Approving Additional Funding for Central Hudson's Clean Heat Program

As a result of high savings attainment and cost-effectiveness, Central Hudson petitioned for additional funding in early 2023. On June 22, 2023, the Commission authorized additional funding for the program

via previously authorized and unspent funds, reallocated future energy efficiency funds, and finally a continuity funding mechanism after previous authorized funding sources are exhausted[24].

Central Hudson received approval for the use of $3.97 million of previously collected, unspent funds, along with the transfer of $13.5 million of future non-LMI Energy Efficiency funds, $1.7 million of accrued interest from the Company's Clean Energy Fund, and $6 million in continuity funding, not to exceed $1 million per month. The Company's Clean Energy Fund interest and continuity funding mechanisms have been assigned a cost per unit target of $93.03 MMBtu. Additionally, any unspent monthly continuity funds will carry over to future months for use. In total, the Order approved the use of just over $25 million in additional funds to support continued Clean Heat activity in Central Hudson territory.

[24] NE:NY Proceeding, Order Approving Funding for Clean Heat Program (issued June 22, 2023) ("Central Hudson Clean Heat Order")

3.2. Con Edison

3.2.1. Con Edison 2023 Program Performance

Table 7. Con Edison 2023 Clean Heat Program Spend and Achievement

	Spend ($)	Savings (MMBtu)
Pre-Continuity Funding Mechanism (including Transfers)	$109,530,278	383,626
Continuity Funding Mechanism	$38,151,026	289,095
Total	$147,681,304	672,721

Table 8: Con Edison Clean Heat Program Spend and Achievement 2020-2023 with authorized funding transfers

	Spend ($)	Savings (MMBtu)
Cumulative Pre-Continuity Funding Mechanism (including Transfers) 2020-2023 Spend/Achievement	$620,121,253	2,536,887
2023 Continuity Funding Mechanism Spend/Achievement	$38,151,026	289,095
Total	$658,272,279	2,825,982
Cumulative Authorized budget including transfers and Continuity Funding Mechanism 2020-2023	$865,599,511	-
Share of authorized budget through 2023 utilized	76%	-

Con Edison relaunched its Clean Heat Program on January 17, 2023. Con Edison achieved its cumulative 2020-2025 program targets under the originally authorized NENY funding in Q1 2022 and then paused accepting new ASHP applications in May 2022. On August 11, 2022, the Public Service Commission allowed the transfer of $518 million in funding from the Energy Efficiency portfolio to support project applications that were submitted prior to the Program pause.[25] The Commission also authorized a Continuity Funding Mechanism with expenditures not to exceed $10 million per month with unused funds carried over to be used in subsequent months, to allow the Company to begin accepting new Clean Heat Program applications.

[25] NE:NY Proceeding, Order Approving Funding for Clean Heat Program (issued August 11, 2022) ("Con Edison Clean Heat Order")

In January 2023, as part of the relaunch, Con Edison began accepting new applications for projects installed within the approved budgets set forth under the Continuity Funding Mechanism. In 2023 under the Continuity Funding Mechanism, Con Edison achieved annual energy savings of 289,095MMBtu at a spend of $38,151,026. Together with its initial authorizations, the Company achieved 672,721MMBtu of annual energy savings at a spend of $147,681,304.

Con Edison also helped catalyze a shift toward residential customers decommissioning their fossil fueled systems. In 2023, ASHP installations with decommissioning of existing fossil fuel heating systems accounted for approximately 92% of all residential ASHP projects acquired.

Incentive Changes

On program relaunch, Con Edison made incentive adjustments across all offerings to manage its Clean Heat program budget consistent with the Con Edison Clean Heat Order.

In the Residential sector, Con Edison made the following changes:

- Removed Category 1: Partial Load ccASHP and Category 2: Full load ccASHP from the program
- Modified the incentive rate structure from a capacity-based incentive to a $/home, $/apartment, and $/building flat rate structure
- Later in 2023, introduced a higher dedicated incentive rate for customers located within Disadvantaged Communities

In the non-residential sectors, Con Edison made the following changes:

- Created dedicated categories for full load ASHP projects with decommissioning for the multifamily and small-and-medium business sectors
- Created a custom partial-load space heating category

Con Edison modified Program incentive limitations, including a cap on incentives of 50% and 70% of project costs for residential projects located outside of and within Disadvantaged Communities respectively. Con Edison also maintains a project cost cap of $1 million or 50% of project costs for Multifamily and Commercial and Industrial customers.

3.3. Orange & Rockland

3.3.1. 2023 Program Performance

Table 9. Orange & Rockland 2023 Clean Heat Program Spend and Achievement

Category	Spend ($)	Savings (MMBtu)
2023 Actual	$4,065,289	33,693
2023 NE:NY Budget/Target	$2,828,131	16,109
Difference Between 2023 Actual and NE:NY Budget/Target	$1,237,158	17,584

Table 10. Orange & Rockland Clean Heat Program Spend and Achievement 2020-2023

Category	Spend ($)	Savings (MMBtu)
Cumulative 2020-2023 Spend/Achievement	$11,288,507	84,842
Cumulative NE:NY 2020-2025 Budget/Target	$15,003,888	86,657
Share of NE:NY Budget/Target Realized Through 2023	75%	98%

Orange & Rockland's program participation remained consistent in 2023 with a total of 367 completed projects. This resulted in exceeding savings and expenditures in both 2023 and cumulatively since program inception. ASHP installations were completed in over 95% of all 2023 projects while GSHP installations accounted for 5% of projects. Full load and integrated controls projects accounted for 59% of projects. Full load with fossil fuel displacement accounted for 28%. Partial load accounted for 7% of projects. Heat pump water heaters accounted for the remaining 6% of projects. Residential projects accounted for 90% of all projects.

Incentive Level Changes

On September 1, 2023, Orange & Rockland made incentive level adjustments for residential (1-4) family air source heat pump projects (Categories 1, 2, 2a and 2b), and custom space and hot water heating applications (Categories 4, 4a and 6) to manage its remaining authorized Clean Heat program budget. In addition to those adjustments, Orange & Rockland also discontinued partial load heating for air source heat pump projects (Category 1) as well as an additional bonus for simultaneous installations of space heating and domestic water heating (Category 9).

3.4. National Grid

Table 11. National Grid (Niagara Mohawk) Clean Heat Program Spending and Achievement 2023

Category	Spend ($)	Savings (MMBtu)
2023 Actual	$19,342,757	217,862
2023 NE:NY Budget/Target	$ 16,424,789	210,694
Difference Between 2023 Actual and NE:NY Budget/Target	$ 2,917,968	7,168

Table 12. National Grid (Niagara Mohawk) Clean Heat Program Spending and Achievement 2020-2023

Category	Spend ($)	Savings (MMBtu)
Cumulative 2020-2023 Spend/Achievement	$ 42,294,629	452,013
Cumulative NE:NY 2020-2025 Budget/Target	$84,398,834	1,112,681
Share of NE:NY Budget/Target Realized Through 2023	50%	41%

3.4.1. 2023 Program Performance

For the 2023 program year, National Grid achieved its annual NE:NY savings target and overspent its 2023 annual NE:NY budget. Savings in 2023 were 60% higher than 2022, with the program achieving 103% of its 2023 annual savings target.

National Grid saw an increase in application volume in 2023. National Grid and its program implementation vendor continued to invest in onboarding and training new and existing contractors, expanding the network of industry partners in the service territory from 456 at the start of 2023 to 520 by the end of the year.

Another success of the National Grid program was continued growth in Commercial and Industrial projects with a 65% increase in savings from 2022.

National Grid also grew its heat pump water heater distribution midstream offering from 18 units in 2022 to 751 units in 2023. 19 distributors were enrolled, and 93 contractors installed units through the program.

Incentive Level Changes

On September 1, 2023, National Grid made incentive level adjustments for prescriptive air source heat pump projects (Categories 1, 2, 2a, and 2b) and custom space and hot water heating applications

(Categories 4, 4a, and 6). National Grid also discontinued the bonus for simultaneous installations of space heating. Incentives for partial load heating for prescriptive heat pump projects (Category 1) were ceased on 12/31/23.

3.5. NYSEG and RG&E

Table 13. NYSEG Clean Heat Program Spend and Achievement 2023

Category	Spend ($)	Savings (MMBtu)
2023 Actual	$17,069,798	193,276
2023 NE:NY Budget/Target	$14,628,326	187,944
Difference Between 2023 Actual and NE:NY Budget/Target	$2,441,472	5,332

Table 14. NYSEG Clean Heat Program Spend and Achievement 2020-2022

Category	Spend ($)	Savings (MMBtu)
Cumulative 2020-2023 Spend/Achievement	$40,479,615	460,897
Cumulative NE:NY 2020-2025 Budget/Target	$75,130,577	992,737
Share of NE:NY Budget/Target Realized Through 2023	54%	46%

Table 15. RG&E Clean Heat Program Spend and Achievement 2023

Category	Spend ($)	Savings (MMBtu)
2023 Actual	$3,562,341	42,612
2023 NE:NY Budget/Target	$1,799,548	22,468
Difference Between 2023 Actual and NE:NY Budget/Target	$1,762,793	20,144

Table 16. RG&E Clean Heat RG&E Program Spend and Achievement 2020-2022

Category	Spend ($)	Savings (MMBtu)
Cumulative 2020-2023 Spend/Achievement	$9,302,637	109,634
Cumulative NE:NY 2020-2025 Budget/Target	$9,247,776	119,223
Share of NE:NY Budget/Target Realized Through 2023	101%	92%

Table 17. RG&E Clean Heat Program Spend and Achievement 2020-2023 with NENY flexibility funding transfer

Category	Spend ($)	Savings (MMBtu)
Cumulative 2020-2023 Spend/Achievement	$9,302,637	109,634
Cumulative NE:NY 2020-2025 Budget/Target w NENY flexibility transfer	$11,681,678	146,755
Share of adjusted NE:NY Budget/Target Realized Through 2023	80%	75%

3.5.1. 2023 Program Performance

RG&E Clean Heat program achieved twice its 2023 annual MMBtu savings goal. This resulted in greater spend, while maintaining the originally budgeted cost of savings. NYSEG Clean Heat program surpassed goal in 2023 for annual MMBtu while maintaining budget spend. The programs focused on the continued development of the participating contractor and implementation partner network. The Companies' participating contractor network continued to see growth in 2023. Both NYSEG and RG&E saw substantial growth in ASHP installations, which constituted 80% of total savings for the year. Overall, in 2023 the Companies saw an increase in heat pump adoption, resulting in a 25% increase in MMBtu savings from 2022.

Also, the Companies launched their heat pump water heater distribution midstream offering bolstering the adoption of heat pump water heaters by double.

NENY flexibility Funding for RG&E Clean Heat Program

In 2022 and 2023, RG&E experienced significant growth in the program and exceeded the annual savings targets and budgets.

Due to accelerated program achievement, RG&E filed a revision to the June 2023 SEEP plan allowing for the transfer of funds from electric non-LMI unspent funds to RG&E Clean Heat. Since, RG&E was able to meet their electric NE:NY goals, unspent funds could be transferred to the RG&E Clean Heat program allowing it to operate seamlessly without the need for a pause or shut down.

Incentive Level Changes

On September 1, 2023, NYSEG and RG&E made incentive level adjustments for prescriptive air source heat pump projects (Categories 1, 2, 2a and 2b) and custom projects (Category 4, 4a) to manage its remaining authorized Clean Heat program budget.

4 Market Development Plan

4.1. Overview

Starting in Q2 2020, the NY Electric Utilities launched the NYS Clean Heat Statewide Heat Pump incentive program. To achieve the statewide heat pump goals and build the market infrastructure for a low-carbon future, the incentive program has been paired with a portfolio of market development initiatives implemented by NYSERDA.

NYSERDA is investing more than $277 million in market-enabling initiatives funded through CEF to support the NYS Clean Heat Market Development Plan, which aims to build market capacity to deliver building electrification solutions.

The NYS Clean Heat Market Development Plan is designed to address critical barriers and market needs through the initiatives listed in the table below. These initiatives have been approved through various NYSERDA CEF Investment Plans.

While NYSERDA does report benefits such as energy savings and leveraged funding from various investments outlined in the following table in routine CEF reporting (from investment plans[26] unrelated to utility investments), NYSERDA's NYS Clean Heat performance is quantitatively assessed in the following manner:

1. Funding commitments made in comparison to the Implementation Plan; and
2. Progress against near-term output metrics and longer-term outcome metrics which are summarized in Appendix A of this report.

[26] https://www.nyserda.ny.gov/About/Funding/Clean-Energy-Fund

4.2. NY Clean Heat Market Development Plan Funding Commitments

The table below summarizes NYSERDA's progress in 2023 in funding commitments per each Critical Market Need, as identified in the Market Development Plan. These metrics are also documented in quarterly/annual CEF reporting related to each NYSERDA investment plan supporting the Market Development Plan. Plans here reflect NYSERDA's 8/1/23 Compiled Investment Plan filing.

Table 17. NYSERDA 2023 Progress per Critical Market Need

Critical Market Need	Initiative	Expended Through 2022	Expended in 2023	Planned 2023 Expenditures	Difference Actual v Projected 2023	NYSCH Goal (all years)	Total Expended as % of NYSCH Goal
Train and develop the needed clean heating and building electrification workforce	Workforce Development	$5.9M	$5.3M	$2.8M	$2.4M	$38.2M	29%
Build consumer demand and market confidence and reduce customer acquisition costs	Marketing	$14.3M	$4.9M	$9.3M	-$4.3M	$26.1M	74%
	Community Campaigns	$1.3M	$0.6M	$2.0M	-$1.4M	$10.0M	19%
	Critical Tools	$0.7M	$0.4M	$0.5M	-$0.1M	$4.5M	25%
	Technical Assistance	$7.3M	$2.9M	$2.2M	$0.7M	$28.8M	35%
Drive performance improvements, reduce cost, and deliver new economic solutions through technology innovation and demonstrations	Thermal Energy Networks	$3.3M	$4.3M	$2.3M	$2.0M	$30.7M	25%
	HVAC Technology Challenges	$8.5M	$2.6M	$2.9M	-$0.3M	$40.3M	28%
	Empire Building Challenge	$1.9M	$1.3M	$1.0M	$0.3M	$15.0M	22%
	Multifamily Building Demos	$0.4M	$0.7M	$1.4M	-$0.7M	$18.3M	6%
Make electrification solutions available for LMI consumers	LMI	$6.1M	$1.8M	$2.3M	-$0.5M	$30.0M	26%
Make products available when and where consumers need them by building the clean heat supply chain	Clean Heat Supply Chain	$1.7M	$1.7M	$0.7M	$0.9M	$12.2M	28%
Minimize winter electrical peak by investing in demand reducing "heat-pump ready" solutions	Comfort Home	$5.2M	$6.3M	$3.2M	$3.2M	$22.7M	51%
Develop a long-term building electrification roadmap to guide the transformation of how New Yorkers heat and cool their buildings	Building Electrification Roadmap	$0.9M	$0.1M	$0.2M	-$0.1M	$1.0M	99%
Totals		**$57.4M**	**$33.0M**	**$30.8M**	**$2.1M**	**$277.7M**	**33%**

4.3 2022 Updates: Critical Market Needs and Market Development Initiatives

1. TRAIN AND DEVELOP THE NEEDED CLEAN HEATING AND BUILDING ELECTRIFICATION WORKFORCE

2023 Performance

During 2023, 1,107 individuals were trained (8,196 cumulative to date). Approximately 64% of those trained to date are associated with HVAC or building electrification occupations in the areas of sales, installation, and design.

2024 Lookahead

Plans for 2024 include: continued offerings and promotion of programs that build capacity for heat pump training to meet growing demand and address market gaps. This includes supporting union apprenticeship and pre-apprenticeships to expand clean energy training related to building electrification and heat pumps; career pathways training for new heat pump workers; and hiring support programs for the heat pump industry such as on-the-job-training, internships and fellowships; and partnerships with the Clean Energy Hubs to increase reach of workforce development programs. NYSERDA is also looking to offer additional introduction to heat pump webinars or other trainings to targeted audiences and is supporting the development of short duration installation best practices training videos.

2. BUILD CONSUMER DEMAND AND MARKET CONFIDENCE AND REDUCE CUSTOMER ACQUISITION COSTS

2023 Performance

Marketing

In 2023, the NYS Clean Heat marketing campaign recorded significant year-over-year increases in actions taken by visitors to the cleanheat.ny.gov website. The homepage generated over 167,00 actions (or clicks to additional content on the site); this is a 47% growth over 2022. Additionally the "Find a Contractor" path saw a 103% (doubling) increase in engagement, and the "Find a Rebate" path tracked a 24% increase year-over-year. In addition to the increase in website utilization, the annual NYS Clean Heat marketing survey also recorded significant gains in consumer perceptions and awareness of heat pumps, an essential starting point to drive broader market transformation in the efficient electrification space:

- Awareness: A 9% increase in unaided[27] awareness of heat pumps since 2022
- Benefits: The majority of survey respondents (89%) were aware of and believe at least five of the twelve benefits that were listed in the survey as associated with heat pumps. This year, a 19% increase in the association of increased comfort with heat pumps was recorded, relative to 2022, which reflects a key message highlighted in this year's campaign messaging.

[27] Unaided refers to people who were asked to name a type of home heating and cooling equipment, and they mentioned at least one type of heat pump technology.

- Barriers: Installation cost and finding a reputable contractor continue to be some of the top concerns/barriers and have grown this year over last. One perceived barrier that did decrease year over year is the ability of a heat pump to heat a home all winter/cool all summer.

Community Campaigns

The Clean Heating and Cooling Community Campaigns have successfully increased awareness, built demand, and boosted market confidence in energy efficiency and heat pump technologies, including ccASHPs, GSHPs, and HPWHs. Community Campaigns engaged a variety of partner networks to promote key messaging in single-family and multifamily residential, commercial, and other markets in a variety of income brackets, including LMI residents. Through 2023, approximately 1,000 people have participated in clean heating and cooling campaigns and installed approximately 2,800 energy efficiency and heat pump installations.

Critical Tools

NYSERDA, through its Clean Heat Connect Network of air source heat pump manufacturers and distributors, launched a variety of new contractor-oriented tools and resources in 2023 including:

- A set of refrigerant line flare fitting educational resources to prevent common failures at flared connections: how-to sheet, flare fitting torque setting stickers, how-to video and discount vouchers for torque wrenches and flare tools;
- “Air Source Heat Pump Snow Deflectors” products reference sheet;
- “IRA 25 C Tax Credit Guide;”
- “Air Source Heat Pump Project Pricing Checklist;”
- Drip marketing campaign content for HVAC distributors; “Air Source Heat Pump: Efficiency Ratings Explained – DOE Appendix M1;”
- “Do You Have Enough Juice” guide for electric service upgrades for heat pump installations, maintained updated information sheets for NYS Clean Heat air source and ground source heat pump incentives.

The Network also provided significant promotion and support for NYSERDA contractor programs including On-the-Job Training funding, Coop Advertising and Training funding, and Green Jobs-Green New York Financing.

Technical Assistance

The Technical Assistance programs received 350 study applications in 2023 that focused on electrification or had an electrification component. Most of these studies are from multifamily facilities, commercial real estate, and PreK-12 schools. The studies completed in 2023 identified and evaluated 543 electrification measures: 251 ccASHP measures, 117 VRF measures, 145 Domestic Hot Water electrification, and 30 GSHP measures.

2024 Lookahead

Marketing

In 2024, the marketing campaign will continue to focus on increasing familiarity and interest across key audiences. Campaign messages are expanding to include additional information about the incentives, Inflation Reduction Act (IRA) tax credits, and NYSERDA's Green Jobs – Green New York (GJGNY) low-interest financing that is available to reduce the costs associated with heat pumps. Comfort, health, and safety will continue to be key messages as they continually drive high engagements of consumers to the website. Additionally, to test custom regional messages and their potential impact on driving interest, the marketing campaign will pilot co-branded (NYS Clean Heat brand with individual utility brands) social media posts featuring custom utility territory rebate amounts as well as peer-to-peer utility customer testimonials on the CleanHeat.ny.gov website and across marketing channels.

Community Campaigns

Clean Heating and Cooling Community Campaigns will continue across the state in select locations until 2025, supporting the evolution of community campaigns within the Regional Clean Energy Hubs Program. Campaigns under the Regional Clean Energy Hubs will be technology agnostic, focusing on connecting DACs with clean energy solutions and technologies, including energy efficiency, clean heating and cooling, solar photovoltaic ("PV"), electric vehicles, and demand response, and will serve all residential and most commercial markets.

Phase 2 Clean Heating and Cooling campaigns will be executed by the Clean Energy Hubs and funding moved to the LMI Joint Implementation Plan.

Critical Tools

Additions and improvements will be made to the Heat Pump Planner based on current usage and feedback, with a specific effort to better integrate an "envelope first" message (e.g., pursuing thermal efficiency should be a step done prior to or in conjunction with a heat pump retrofit to maximize comfort and reduce prospective upfront and operating costs associated with a heat pump).

NYSERDA will continue to work with our industry partners, in particular our contractor networks, Residential Market Advisory Group, and our Clean Heat Connect upstream partners network, to identify and develop new tools and resources as needs arise. An online course for non-HVAC residential contractors to add air source heat pump installation services is planned for release through the Clean Heat Connect Network.

In support of the Custom Measure 6, Heat Pump Plus Weatherization Retrofit Standard Simulation for Measure Packages (HP+Retrofit) in the NY TRM, NYSERDA is validating the approach with in-field measurement to document the correlation between modeled and measured energy savings, contributing factors, and risks. NYSERDA is also examining how the method can be expanded to include additional building types (e.g., row houses, manufactured homes) and additional types of equipment (e.g., ground source heat pumps) to support beneficial electrification efforts. NYSERDA will review these analyses with DPS and the JMC to determine potential updates to the NY TRM documentation of the

method. Lastly, NYSERDA is preparing for IRA Home Efficiency Rebate design and implementation by incorporating the HP+Retrofit measure approach as the method for modeled energy savings.

Technical Assistance

NYSERDA is engaging in sector specific-electrification-centric efforts, such as the promotion of a healthcare protocol playbook and higher education playbook to create sector-specific roadmaps for decarbonization and resiliency.

NYSERDA is also targeting approximately 100 new, completed Flex Tech studies in 2024 that include a recommended electrification measure or electrification component.

3. DRIVE PERFORMANCE IMPROVEMENTS, COST REDUCTIONS, AND DELIVER NEW ECONOMIC SOLUTIONS THROUGH TECHNOLOGY INNOVATION AND DEMONSTRATIONS

2023 Performance

Clean Thermal District Systems

The Community Heat Pump Systems Solicitation, PON 4614, for the development of clean thermal energy networks was released in early 2021. The program closed in Q4 2023 after completing 10 funding rounds to perform feasibility studies, detailed design, and support construction of thermal energy networks across 51 diverse project sites, covering nearly 100 million square feet of conditioned space throughout the State, with over 40% located in DACs and/or serving LMI customers. PON 4614 was a pilot program to assess potential site-specific opportunities for thermal energy networks and demonstrated a strong interest for thermal energy networks to decarbonize building heating and cooling on campuses and in communities. The program helped develop a pipeline of projects, some of which are advancing to design and construction or are being considered for implementation by the utilities.

Cost Reduction Strategies

NYSERDA completed two research efforts to understand the supply chain and ecosystem that supports both envelope and ground source heat pump industries. Through this work NYSERDA will continue to assess and make efforts to address key market barriers to accelerate implementation of envelope improvements and subsequent ground source heat pump adoption.

Early efforts of Clean Heat Connect, Experience Clean Heat, and other Supply Chain activities are designed to support growth in contractor/installer capacity to deploy heat pumps and drive market development in New York State, including increasing the number of businesses supported by Clean Heat serving the heat pump and weatherization market.

HVAC Technology Challenges

NYSERDA's NextGen HVAC Innovation Challenge (renamed to NextGen Building Innovation Challenge), PON 3519, completed Round 7 in 2023. This PON continues to issue targeted and specific challenges to address barriers and market gaps specific to New York State's unique heating and cooling needs. Efforts

under the challenge have resulted in five innovative commercialized products that are seeing utilization and increasing adoption in the State.

In 2023, 17 projects were awarded $18M in funding to accelerate the development and commercialization of innovative products and solutions to enable broader adoption of heat pumps, building envelope retrofits, thermal storage, and advanced controls and strategies for energy management. Projects from Round 7 focus on:

- Building Envelope Systems and Components – solutions for single-family and multifamily buildings that substantially reduce heating and cooling costs, increase comfort, and modernize façades by introducing new materials and construction techniques.
- Ground Source Heat Pump Cost Compression – solutions for residential and commercial buildings that reduce the system installation cost by 20% or greater through new heat pump equipment, ground loop technologies, and hybrid systems.
- Intelligent Buildings – solutions for residential and commercial buildings that enable electrification without electric service upgrades, connect legacy and siloed energy systems, and maintain residents' desired comfort while minimizing the building's peak electricity demand, emissions, and impact on the grid.
- Thermal Storage – solutions for residential and commercial buildings that integrate thermal storage with HVAC equipment to provide space conditioning as a single functional system and reduce overall heating peak loads.

Empire Building Challenge

The Empire Building Challenge is a $50 million initiative to form public-private partnerships with leading real estate portfolio owners, engineers, and technology providers to demonstrate commercially viable low carbon retrofit approaches that can decarbonize New York's existing stock of high-rise buildings.

There is significant interest from the real estate industry in clean heat technology innovations and demonstration projects. In 2023, NYSERDA began revamping and expanding the Empire Building Playbook, which includes the results and processes from deep technical analysis and strategic capital planning conducted by program partners. This Playbook– which is being rebranded as the "Retrofit Playbook for Large Buildings"– illustrates pathways for significant energy and carbon reduction in existing buildings at commercially acceptable returns. The revamped Playbook, which will include new multifamily case studies, will launch on Earth Day 2024.

In September 2023, EBC announced the results of its second funding round: six new demonstration projects to be funded under the program. The program also launched a solicitation to recruit a third cohort of partners, to join the program in 2024.

Multifamily Building Demonstrations

The Low Carbon Pathways program was updated in November 2023 to increase participant eligibility and better align the offered measures, bonuses, and incentive values with market feedback received in the previous year. At the end of 2023, the program has 26 committed projects representing 2,658 dwelling units.

2024 Lookahead

Clean Thermal District Systems

NYSERDA is continuing to support feasibility studies of thermal energy networks through the FlexTech program and will launch a new funding opportunity to help advance replicable projects that demonstrate technical and economic feasibility to the detailed design and engineering phase. Best practices and lessons learned about system design, business models, financing strategies, and workforce development will be used to educate industry stakeholders, including municipal leaders and decision makers, through webinars, charrettes, marketing, and direct outreach.

Cost Reduction Strategies

NYSERDA will continue to work directly with the market and all levels of the heat pump and building shell supply chain to identify creative strategies to address cost reduction. Concepts under discussion include:

- Working with distributors to increase stocking of "off the shelf" ccASHP heat pump solutions
- Working with Manufacturers to extend ccASHP special offers/financing promotional periods and offsetting associated contractor fees

HVAC Technology Challenges

In 2024, the PON will continue to support thermal energy storage and building envelope challenges. It will also support a new focus on Intelligent and Grid Interactive Buildings. Projects will be sought that develop buildings as a viable and reliable grid resource that also enables the participation of building owners and occupants in a transactive energy market. Projects will look to recognize the benefits of occupants' wellbeing in addition to energy efficiency and affordability.

Empire Building Challenge

The third cohort of Empire Building Challenge partners – all of which are multifamily partners -- will be announced in Q2 2024. In Q3 2024, the third funding round will be launched, and successful demonstration projects will be selected by the end of 2024.

NYSERDA will launch the new and improved Playbook with additional case studies, analyses, and best practices from the program partners.

By the end of 2024, several Cohort 1 demonstration projects will be past the 50% construction completion mark, while Cohort 2 projects will be wrapping up their designs and gearing up to begin construction.

EBC case studies and successful approaches to decarbonizing tall buildings in cold climates will be presented at the ASHRAE Tall Building Decarbonization Conference taking place in New York City in October 2024.

Throughout 2024, the EBC program will work to develop a training series, to be delivered in person, and then on-demand, leveraging lessons learned from EBC demonstration projects, to build industry capacity with respect to strategic decarbonization planning and implementation.

Multifamily Building Demonstrations

NYSERDA will publish relevant insights from the Low Carbon Pathways program through case studies and video testimonials from initial project experiences and any learnings from these tenant surveys with the market. Additional opportunities for program updates, such as those informed through "Voice of the Customer" sessions, will be assessed based on market response to the program.

4. MAKE ELECTRIFICATION SOLUTIONS AVAILABLE FOR Low-to-Moderate-Income (LMI) CONSUMERS and Affordable Housing

2023 Performance

The electrification of heating and domestic hot water for LMI households and in affordable housing requires additional considerations for consumer protections related to the potential for energy burden impacts and the shifting of heating costs from landlords to tenants; the upfront cost for installing a heat pump and necessary upgrades[28] to ensure optimal performance; and the development of performance thresholds and other technical supports for affordable housing agencies necessary to advance electrification throughout their portfolios. To inform strategies for increasing adoption of heat pump solutions in the LMI market segment, NYSERDA is undertaking a series of pilots, research and analysis, and collaborations with housing agencies.

Pilots and Demonstrations

In 2023, NYSERDA began its evaluation and market insights work based on projects that participated in the $5 million LMI Heat Pump Demonstration Pilot for 1-4 family homes. The Multifamily version of the Pilot, also funded at $5 million, remains ongoing with several projects in the pipeline. The LMI Heat Pump Demonstration Pilot provided heat pumps and heat pump water heaters as part of comprehensive efficiency upgrades in LMI homes and affordable multifamily buildings, focused on buildings using delivered fuels. Results are expected to be available in 2024.

Research and Analysis

In 2023, NYSERDA continued market research and technical analysis to better understand the institutional barriers associated with electrification in the LMI market segment and identify opportunities for addressing these barriers, as well as to understand the potential impacts that electrification can have on energy bills.

The work included:

[28] Including weatherization, addressing health and safety or structural deficiencies associated with deferred maintenance, and electric panel upgrades.

1. Utility bill modeling to assess the bill affordability impacts of electrification in different building sub-segments based on size, existing heating system type, metering configuration, regulatory/subsidy status, vintage, region, and other variables
2. Complementary qualitative research assessing the electrification readiness of sub-segments based on similar variables
3. Mapping scenarios of potential heating cost shifts between owners and tenants in rental housing, and the range of tenant protections available in subsidized affordable housing.

It is expected that this research can lead to insights that can inform future LMI program design.

In addition, NYSERDA continues to support the DPS and the Energy Affordability Policy working group to conduct a low-income bill analysis, which will include a segmentation of low-income households and associated energy bills by demographic, housing type, and heating fuel. The analysis will also incorporate modeling of the impacts of various clean energy interventions on the energy bills of low-income households. The results of this analysis are expected to inform the structure of the EAP bill discount program to increase the impact of bill discounts for low-income customers, which can serve as one way to mitigate potential energy burden increases associated with heat pump adoption. Findings from this study will be published when available.

Collaboration with Housing Agencies

In 2023, NYSERDA continued its partnerships with affordable housing agencies to advance electrification and bring the benefits of comfort and improved indoor air quality to low- and moderate-income residents. This included the Clean Energy Initiative, a pilot with NYS HCR to integrate technical assistance and funding to support electrification directly into HCR's affordable housing finance applications, beginning with affordable new construction and adaptive reuse projects. In 2023, NYSERDA awarded funding toward 3 retrofit and 16 new construction projects in HCR's multifamily portfolio. NYSERDA also partnered with NYC HPD to award funding toward 11 projects through the Retrofit Electrification Pilot, which incorporated incentives for space heating and cooling and/or domestic hot water electrification for existing multifamily building rehabilitation projects into HPD's preservation programs. NYSERDA also further launched its Future Housing Initiative with HPD in 2023 and awarded funding toward 8 new construction projects. Lastly, 72 packaged window heat pumps were installed in NYCHA housing through the Clean Heat for All Challenge, a heating and cooling industry competition to create a packaged, cold climate heat pump that can be mounted in a window opening and provide comfortable, efficient heating and cooling to residents on a room-by-room basis.

Regional Clean Energy Hubs

Launched in December 2022, the Regional Clean Energy Hubs are playing an instrumental role in positioning disadvantaged communities to benefit from the clean energy transition by acting as a trusted local resource for community members to learn more about the energy-related programs and services available to them, increasing awareness of these programs and services by leveraging the expertise and trust of local organizations, developing outreach and engagement strategies to elevate the needs of communities and residents into program and policy development, and addressing gaps in and advancing diversity of the clean energy workforce by connecting residents and small businesses with educational, training, and program opportunities. In 2023, the Regional Clean Energy Hubs

completed their first program year with a focus on foundational program development, project coordination, and outreach and awareness. During the first four to six months of program initiation, the Hubs executed their subcontractor agreements, hired and trained staff, and developed processes for operationalizing Hub activities. The Hubs have provided 2,477 program and loan application referrals to customers across New York State by working with partner organizations to assist customers with coordinating NYSERDA and non-NYSERDA funded projects, programs, and resources. Hubs have also conducted outreach targeted towards disadvantaged communities by hosting or participating in 1,308 community events (farmers markets, town halls, food pantries etc.) and developing targeted marketing materials relevant to the local communities. Additionally, to strengthen coordination and collaboration among NYSERDA and Non-NYSERDA programs, Hubs were connected to the utilities that are part of the Joint Management Committee (JMC). These meetings consisted of introductions, program overviews, and discussion on best practices for coordination.

2024 Lookahead

Engagement of DACs and LMI households around electrification and other clean energy topics is essential. DAC/LMI stakeholder engagement will help ensure strategies are informed by important policy, regulatory, and financial considerations that need to be addressed to accelerate electrification of the affordable housing sector.

Regional Clean Energy Hub activities planned for 2024 will continue to focus on project coordination and community engagement as well as conducting targeted community campaigns to promote a range of clean energy technologies and solutions, developing innovative outreach pilots that are replicable across the state, hosting energy education workshops, completing Regional Assessment and Barriers Analysis reports, and promoting workforce development opportunities. Expanding the Hub network through partnership with community-based organizations and contractors is an important component to improving program access. The Homes and Community Renewal (HCR) Weatherization Assistance Program (WAP) is an important first step in building decarbonization. Hubs will be connected to the Weatherization subgrantees in an effort to build relationships, streamline application assistance, and encourage subgrantees to become NYSERDA contractors.

See the LMI Statewide Implementation Plan[29] for further details including specific milestones for 2022-2025.

5. MAKE PRODUCTS AVAILABLE WHEN AND WHERE CONSUMERS NEED THEM BY BUILDING THE CLEAN HEAT SUPPLY CHAIN

2023 Performance

NYSERDA expanded the Clean Heat Connect Network by seven members, which now includes 8 HVAC manufacturers and 14 distributors and covers a majority of the New York State market. The Network promotes the adoption of educational and technical tools and resources through their respective

[29] NE:NY Proceeding, Statewide Low- to Moderate Income Portfolio Implementation Plan Version 4: https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={603E8C8B-0000-CE5E-B8C3-BEA76F8ECCAC}

contractor networks. NYSERDA developed and promoted several additional resources, detailed in the Critical Tools section in Item 2 above, that are oriented toward HVAC contractors to support air source heat pump capacity.

Members include the top three heat pump manufacturers, Mitsubishi, Daikin, and Fujitsu, and some of the largest distributors such as ABCO, CE, Ferguson, and Meier Supply.

NYSERDA also launched the Experience Clean Heat (ECH) Initiative to "win the hearts and minds" of consumers who can enjoy personal experiences with heat pumps in common public spaces. The initiative reinforces the benefits of heat pumps and leverages a social media campaign to promote viral sharing of positive heat pump experiences and an augmented reality tool that enables a visitor to see how a heat pump can look in their own home. An expanded ECH Initiative for contractor businesses and technicians will launch in 2024.

2024 Lookahead

Consulting and mentoring initiatives are underway to enable contractors interested in expanding their existing weatherization/heat pump business to retain professional consultants that will assess and make recommendations for business operations improvements and strategies to optimize sales, workforce recruitment and retention, and other key aspects of business expansion and optimization.

6. MINIMIZE WINTER ELECTRICAL PEAK BY INVESTING IN DEMAND-REDUCING "HEAT-PUMP READY" SOLUTIONS – THROUGH THE COMFORT HOME PILOT

2023 Performance

In 2023, Comfort Home expanded its geographic reach and as a result enrolled 9 new participating contractors for a total of 81. Comfort Home nearly doubled its prior-year production, completing 1,998 load reduction projects in 2023 for a total of 3,445 homes improved since pilot inception. Cumulatively, load reduction projects completed through Comfort Home are projected to save 123,284 MMBtu in annual fossil fuel savings and 2,195 MWh in annual electricity savings. Potential grid impacts resulting from the homes improved include an estimated avoided electrification-driven peak demand of up to 2,500 kW in future winter peak demand compared to electric resistance heat typically used as back-up for whole house heat pump installations. These basic measures are projected to reduce future winter peak demand by as much as 2,200 MW via reduced heat pump capacity needs and 4,500 MW in avoided electric resistance back-up heat for the 1-4-unit residential market.

NYSERDA continued its "co-invest, co-save" collaboration with Con Edison in Westchester County, delivering incentives for weatherization improvements by combining Comfort Home with Con Edison's existing weatherization program offering. The joint offering stacks weatherization incentives for the Good, Better, and Best measure packages to expand program reach and project work scope through a "co-invest, co-save" framework.

2024 Lookahead

NYSERDA will continue modeling analysis and launch a field study to further refine the definition of a heat pump ready envelope inclusive of all climate zones in New York State and establish guidance for right-sized supplemental heat where needed.

The program will focus on maintaining a presence in the market for continuity and will evolve to utilize the Comfort Home program infrastructure to support deployment of federal IRA incentives to non-LMI households statewide.

The project goal for 2024, based on available budget, is 3,000 load reduction projects. Additional budget flexibility and/or utility partnerships can support accelerated and increased production levels. 2024 work will include further testing of demand impact calculation methods and quantification of comfort impacts for load reduction measure packages.

NYSERDA will continue to coordinate with National Grid as they plan to expand their residential gas weatherization program to their upstate service territory, seeking alignment with Comfort Home and IRA rebate offers to minimize market confusion and fully leverage all resources available to homeowners in those regions.

7. DEVELOP A LONG-TERM BUILDING ELECTRIFICATION ROADMAP TO GUIDE THE TRANSFORMATION OF HOW NEW YORKERS HEAT AND COOL THEIR BUILDINGS

2023 Performance

As previously reported, analysis conducted in support of a Building Electrification Roadmap was incorporated into the New York State Climate Action Council deliberations, the economy-wide Integration Analysis, and New York's Scoping Plan (December 2022). In light of the publication of the Scoping Plan and New York's Carbon Neutral Buildings Roadmap, as well as ongoing collaboration among NYS agencies, utilities, other states, and stakeholders to develop priority actions to support building electrification, NYSERDA deprioritized release of this specific Roadmap.

2024 Lookahead

Funds allocated under the Market Development Plan have been expended. NYSERDA will assess the need, timing, and funding (as appropriate) for follow-on analysis.

5 Appendix A. NYSERDA Output/Outcome Progress Summary

Several NYSERDA investment plans (initiatives) support the NYS Clean Heat Market Development plan. However, not all initiatives have output/outcome indicators with targets attributed solely to NYS Clean Heat. Indicators shown below are limited to those specifically identifying targets for NYS Clean Heat.

Table 18. NYSERDA Output/Outcome Progress Summary[30]

			Baseline	*Cumulative Progress*	*Cumulative Targets by Year*					
	Initiative	Indicators	Before/Current	2023	2020	2021	2022	2023	2024	2025
Outputs	Heat Pumps Phase 2 (2020)	Number of leads generated for contractors	1	547,755	30,000	140,000	250,000	430,000	680,000	1,000,000
		Customer acquisition costs offset, in dollars	0	$7,802,902	$185,000	$600,000	$1,000,000	$1,600,000	$2,250,000	$3,000,000
		Coop advertising campaign costs offset, in dollars	0	$12,928,561	$600,000	$3,150,000	$5,850,000	$8,250,000	$9,500,000	
		Number of Thermal Energy Network construction projects supported by NYSERDA	0	2				2	4	
		Businesses provided with tools, technical support, and business development assistance	0	800		50	75	125	150	200
		Number of energy-efficient electrified space and water heating technologies installed through NYS Clean Heat	0	58,937	3,900	18,200	32,500	55,900	88,400	130,000
	Multifamily Low-Carbon Pathways	Number of low carbon technology demonstrations in units	0 units	3,773		96	1,141	3,314	6,696	11,274
	Building Operations and Maintenance Partnerships	Increase in number of workers trained (electrification target in parenthesis)	20	5,073 (0)		3,000 (0)	5,000 (100)	6,500 (250)	7,500 (400)	9,600 (1,000)
	Talent Pipeline	Number of students placed in internships by training providers	0	393 (61)		128 (0)	300 (75)	400 (150)	500 (225)	600 (300)
		Number of Interns and Fellows (electrification target in parenthesis)	0	1,244 (107)		1,050 (18)	1,200 (100)	1,350 (200)	1,600 (350)	2,000 (500)
		Number of New Hires (electrification target in parentheses)	0	1,216 (577)		650 (170)	900 (250)	1,100 (350)	1,400 (450)	1,700 (600)
Outcomes	Heat Pumps Phase 2 (2020)	Increase in awareness of CH&C technologies*	TBD	N/A			15%			50%
		Replication of Clean Thermal District System projects beyond NYSERDA supported projects	0	N/A					1	2
		Increase stocking of heat pumps above HARDI 2019 shipments*	0	37%		0%	20%	30%	40%	50%
		Increase penetration of high-performance cold climate heat pumps as a percent of all heat pumps shipped for space conditioning in New York*	61%	N/A		61%	70%	75%	85%	90%

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

* Some investment plans supporting the NYS Clean Heat implementation plan include broader market progress metrics, for example overall heat pump market size and market penetration of cold climate heat pumps. These market progress metrics will be supported collectively by all of NYSERDA's market development activities that extend beyond any singular investment plan. NYSERDA will measure market progress broadly, rather than for each specific investment plan. Progress will be reported

[30] The Cumulative Progress value for "Number of energy-efficient electrified space and water heating technologies installed through NYS Clean Heat" should be 59,653 - not 58,937 - to align with the totals reflected in Table 4 above. This was due to an update to this Annual Report not being reflected in time for the concurrent CIP filing.

6 Appendix B. Long Island Power Authority 2020-2023 Heat Pump Summary

LIPA has adopted a target of approximately 1.15 TBtu of savings through heat pump deployment on Long Island between 2020 and 2025. This equates to a goal of installing 30,000 new residential or commercial heat pumps for space, water, and pool heating in LIPA's service territory. Technologies supported include both full- and partial-load ASHP, heat pump water heaters, heat pump pool heaters, and GSHP. All residential, multifamily, and commercial customers are eligible, with added rebates for income-qualified residential customers who install full-load ccASHP.

As of December 31, 2023, LIPA had achieved 83% of the TBtu goal, having deployed nearly 30,000 heat pumps with the support of PSEG Long Island-administered rebates. In 2020, LIPA customers installed nearly 6,000 heat pumps totaling over 218,000 net MMBtu of energy savings, with over $6.2 million in rebates and incentives provided to support heat pump deployment. In 2021, LIPA customers installed over 6,700 heat pumps totaling 272,000 net MMBtu of energy savings and over $7.6 million of rebates and incentives. In 2022, LIPA customers installed over 7,300 heat pumps totaling 182,000 net MMBtu of energy savings and over $12.3 million in rebates and incentives. In 2023, LIPA customers installed over 9,800 heat pumps totaling nearly 280,000 net MMBtu of energy savings and over $28.3 million in rebates and incentives. Additional Attorney General Funding provided enhanced rebates to LMI heat pump customers for whole home heat pumps. Between 2020 and 2022, there were about 100 participating contractors, whereas in 2023, the number decreased to 55. The participating contractors are enrolled in the Home Comfort program who performed the majority of the space heating work, in addition to other pathways for participation for heat pump water heaters and pool heaters.

Full breakdown of program data is available below:

LIPA	2020	2021	2022	2023	Totals
Heat Pumps Installed [31]	5,973	6,722	7,384	9,868	**29,947**
Total MMBTUs	218,172	272,257	182,297	279,975	**952,701**
Total Rebates & Incentives	$6,210,640	$7,628,514	$12,323,961	$28,399,928	**$54,563,043**
# Participating Contractors	105	100	92	55	**352**
# Partial Air Source Heat Pumps	3,176	3,002	2,417	2,137	**10,732**
# Whole House Air Source Heat Pumps	587	1,088	1,643	4,370	**7,688**
# Geothermal Heat Pumps	293	146	204	152	**795**
# Heat Pump Water Heaters	229	207	349	514	**1,299**
# Heat Pump Pool Heaters	1,635	1,867	1,217	1,393	**6,112**
# Commercial Heat Pumps	53	412	1,554	1,302	**3,321**

[31] Heat pump pool heaters are not eligible under the New York State Clean Heat program.