

December 18, 2024



CT Residential Topics

PROUD SPONSORS OF



Agenda

Weatherization and Heat Pump Data Reports

Attic and Knee wall Access

Pre-qualification for Attic and Wall

HES and HES-IE Discussion

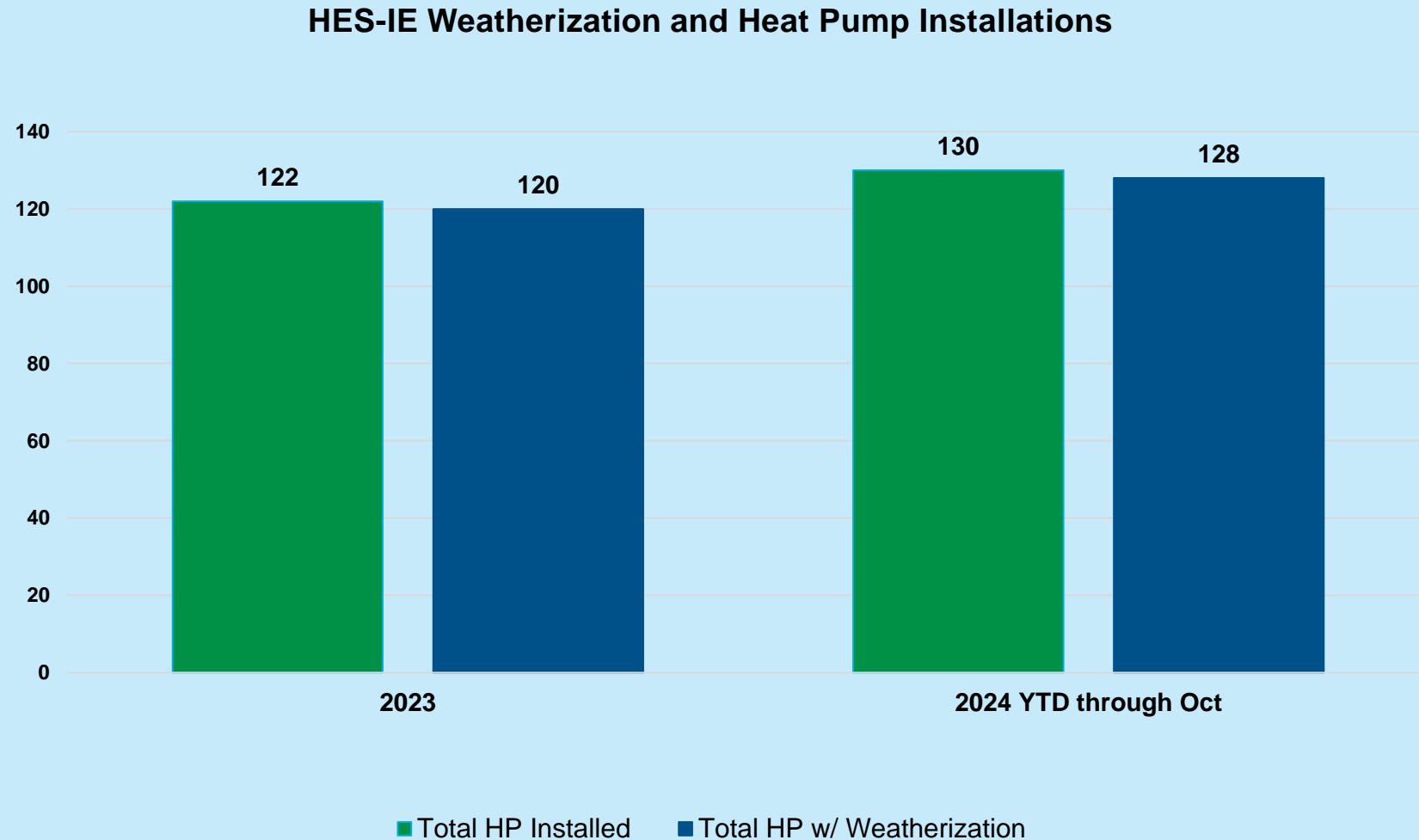
**Contractor Recommendations, HES and HES-IE
QA/QC, and Communication Protocols**

Appendix

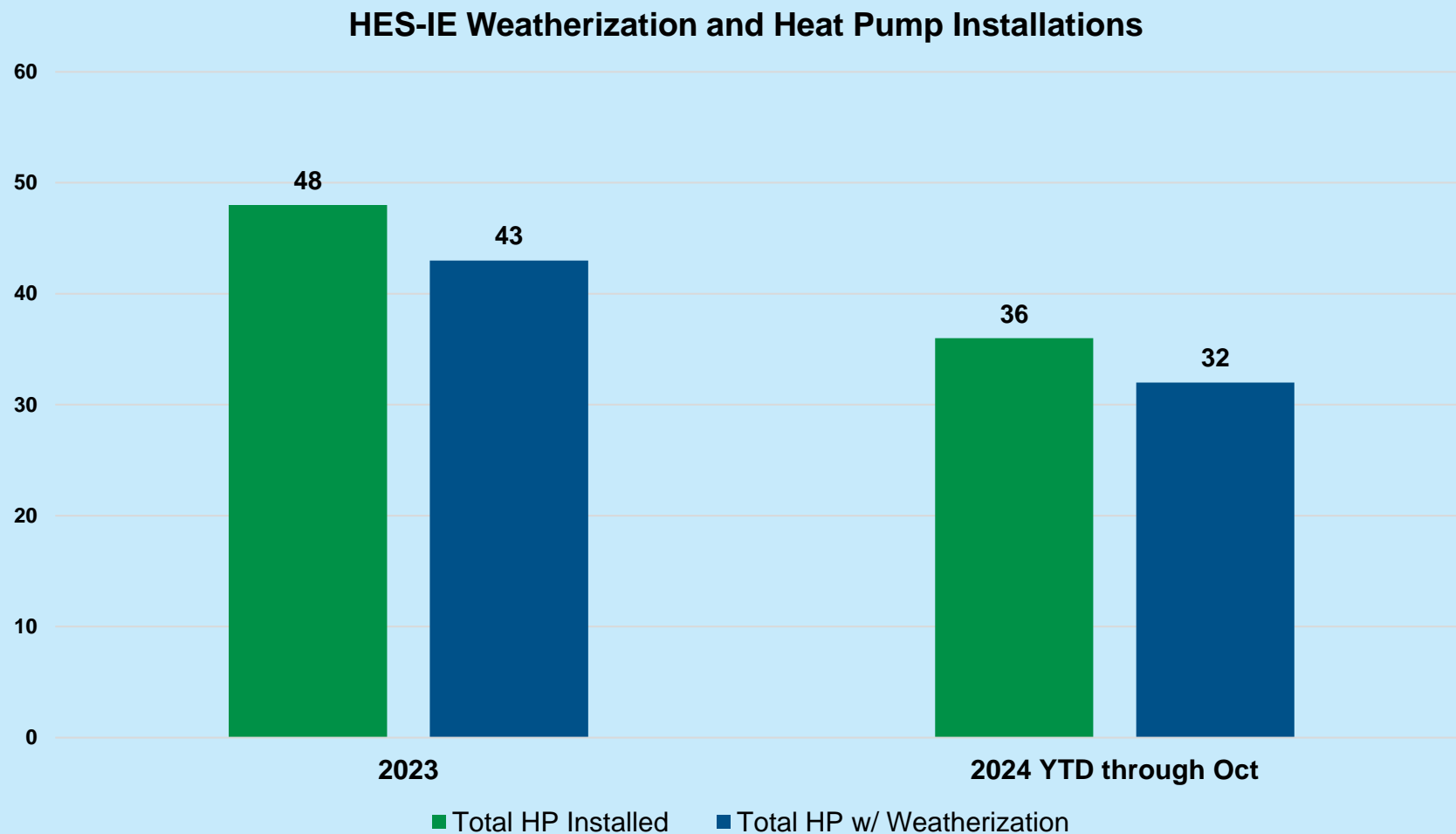


Weatherization and Heat Pump Data Reports

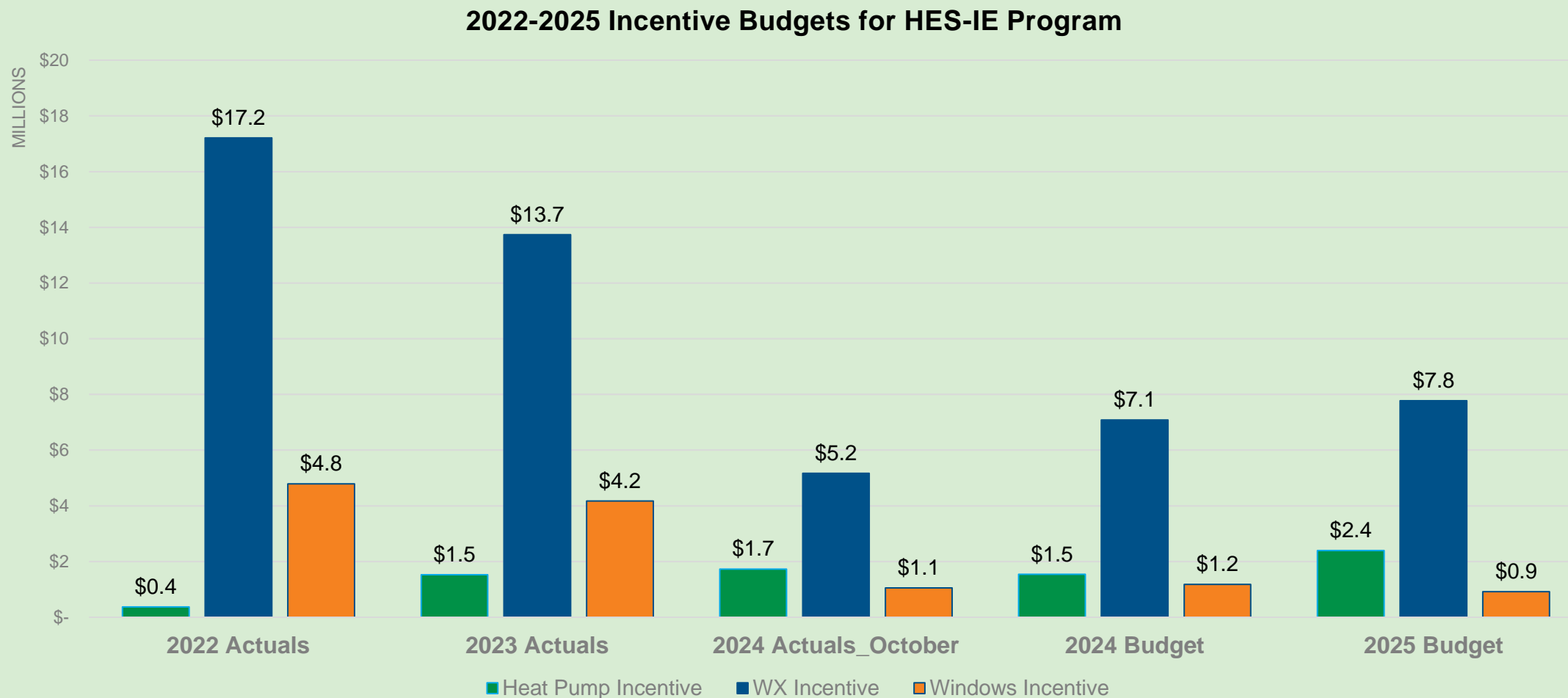
Eversource: In 2023 and 2024, 98% of HES-IE SF homes received both weatherization and heat pumps



UI: In 2023 and 2024, 89% of HES-IE SF homes received both weatherization and heat pumps

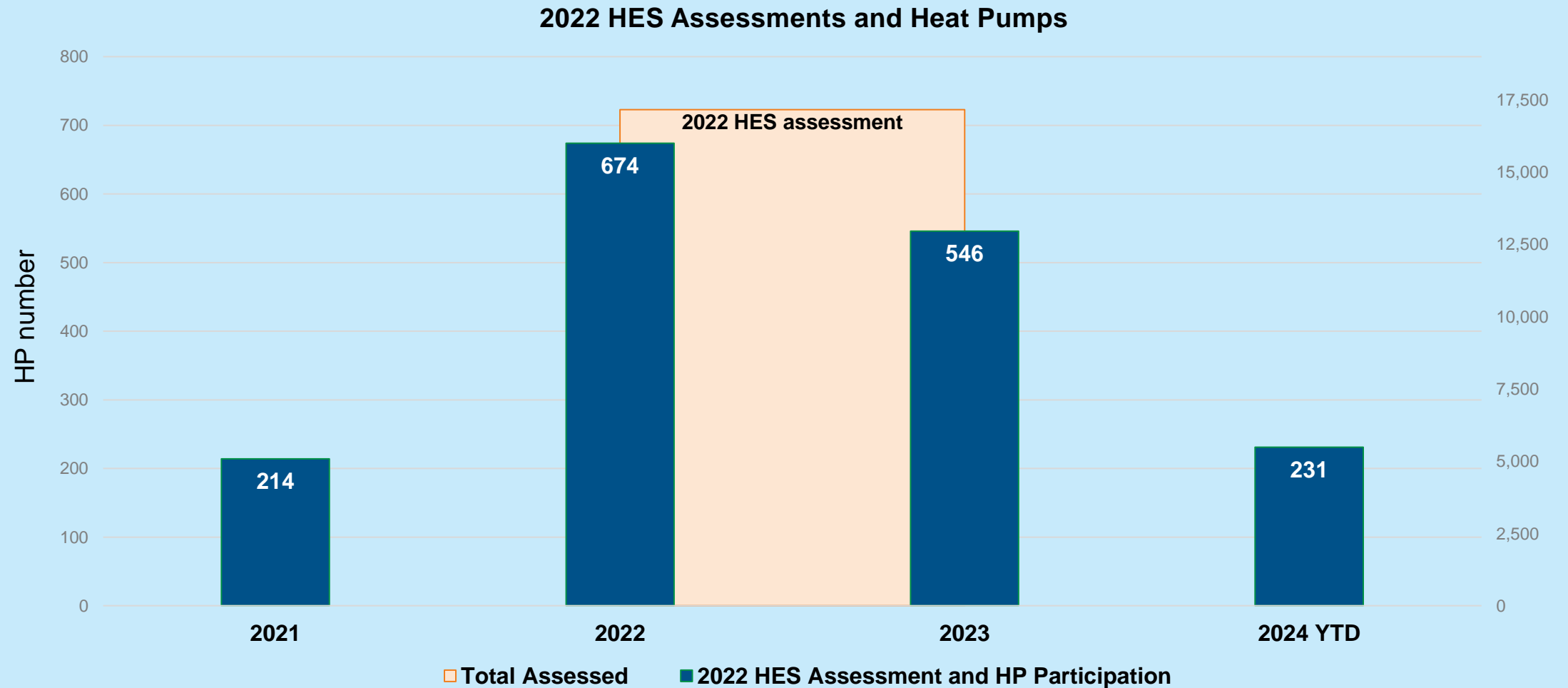


Eversource: For HES-IE Elec & Gas, the highest incentive budget/actuals was for (1) air sealing/insulation, duct sealing, (2) windows, and (3) heat pumps*

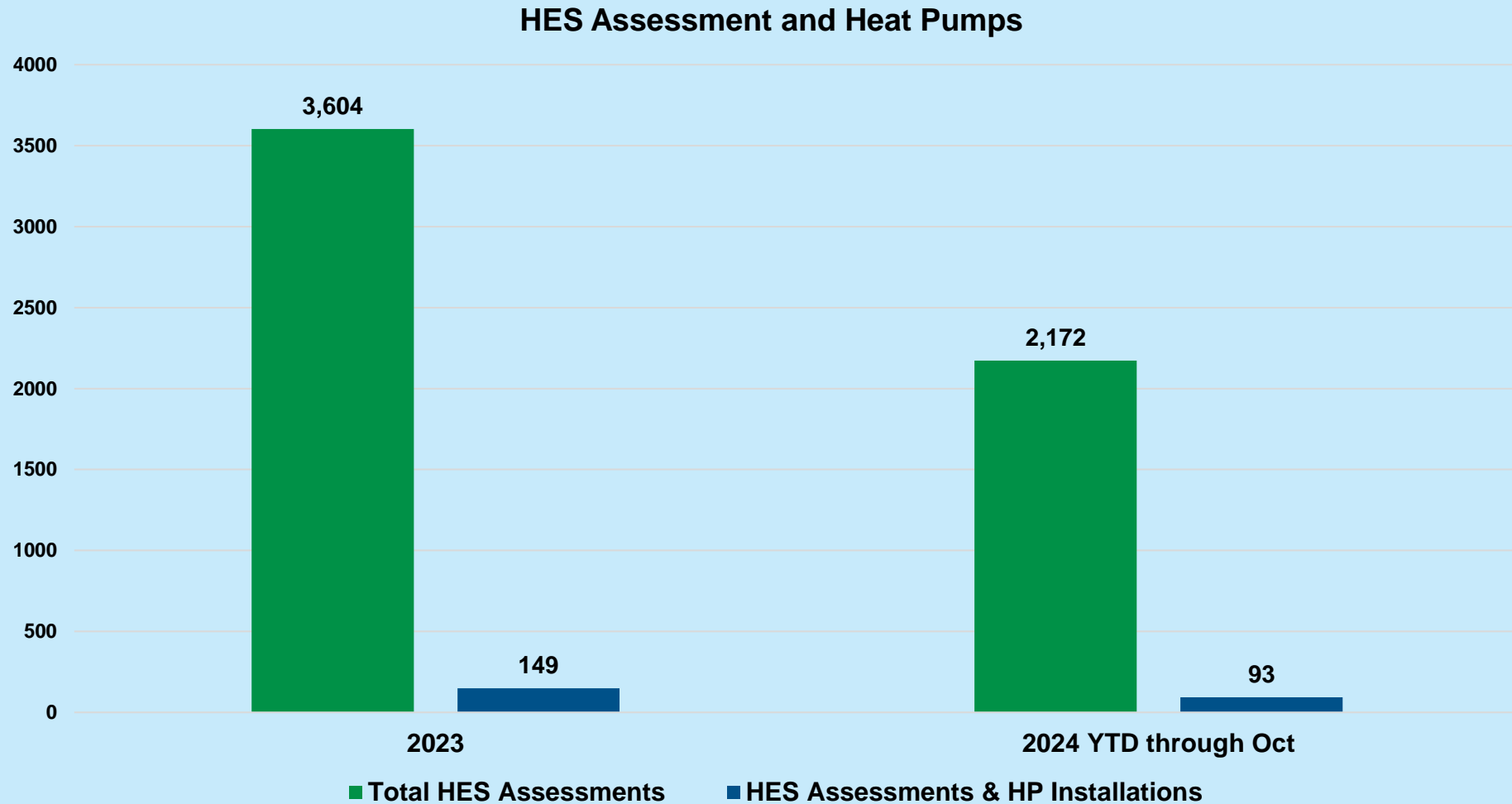


*Windows had second highest incentive budget for 2022-2023 actuals.

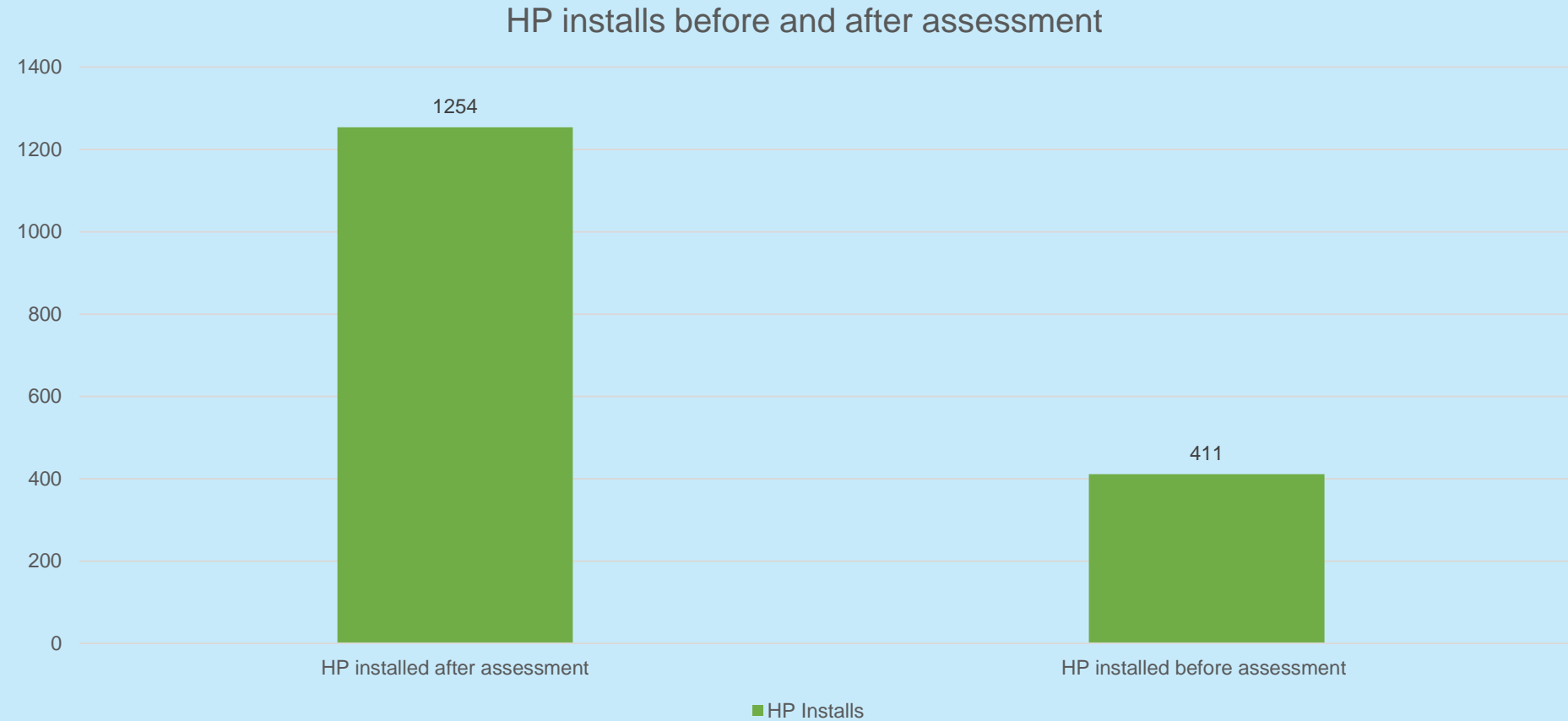
Eversource: Approximately 9% of HES home assessments resulted in heat pump installation



UI: Approximately 4% of HES home assessments resulted in heat pump installation

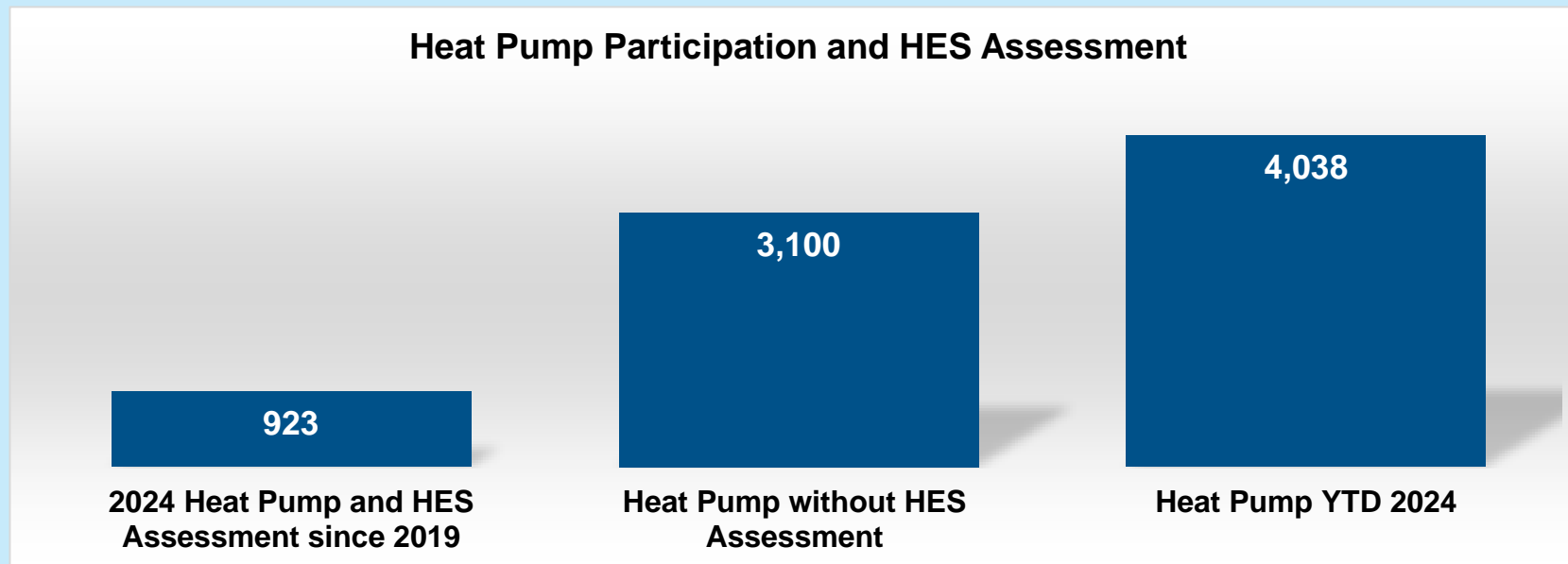


Eversource: 2022 HES Assessment and HP installation



Eversource: Of Heat Pumps installed in 2024, 23% of homes had HES assessments (since 2019)

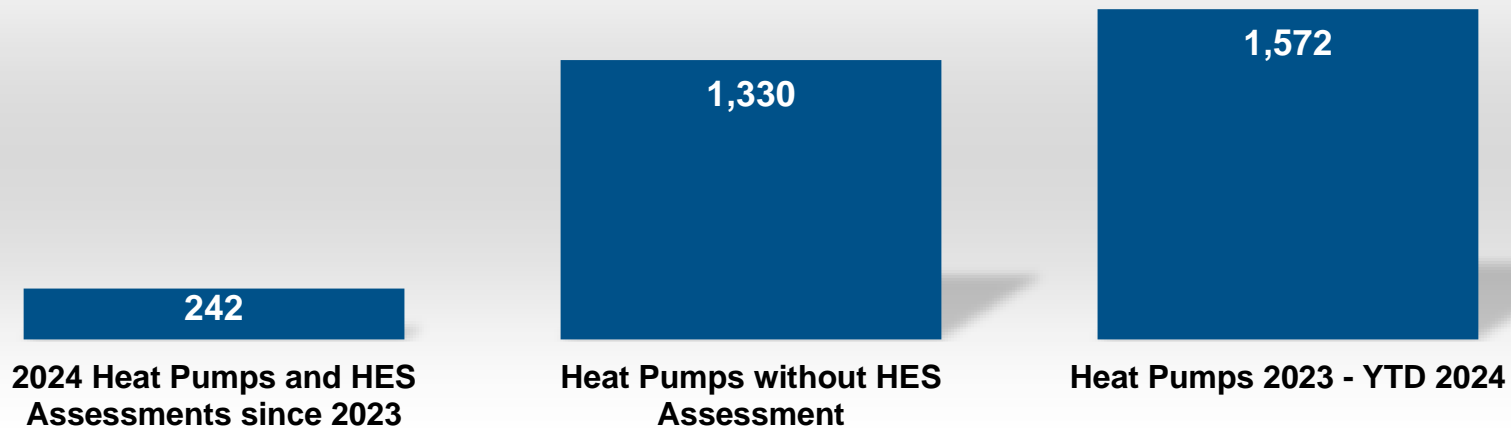
Heat Pumps Installed Sept YTD 2024	2024 Heat Pumps and HES Assessments since 2019	% of Heat Pumps that had HES Assessments since 2019	# of Heat Pumps that did not have HES Assessments	% of Heat Pumps that did not have HES Assessments since 2019
4,038	923	$923/4,023 = 23\%$	3,115	$3,115/4,038 = 77\%$



UI: Of Heat Pumps installed in 2024, 15% of homes had HES assessments (since 2023)

Heat Pumps Installed Sept YTD 2024	2024 Heat Pumps and HES Assessments since 2023	% of Heat Pumps that had HES Assessments since 2023	# of Heat Pumps that did not have HES Assessments	% of Heat Pumps that did not have HES Assessments since 2023
1,572	242	$242/1,572 = 15\%$	1,330	$1,330/1,572 = 85\%$

Heat Pump Participation and HES Assessments



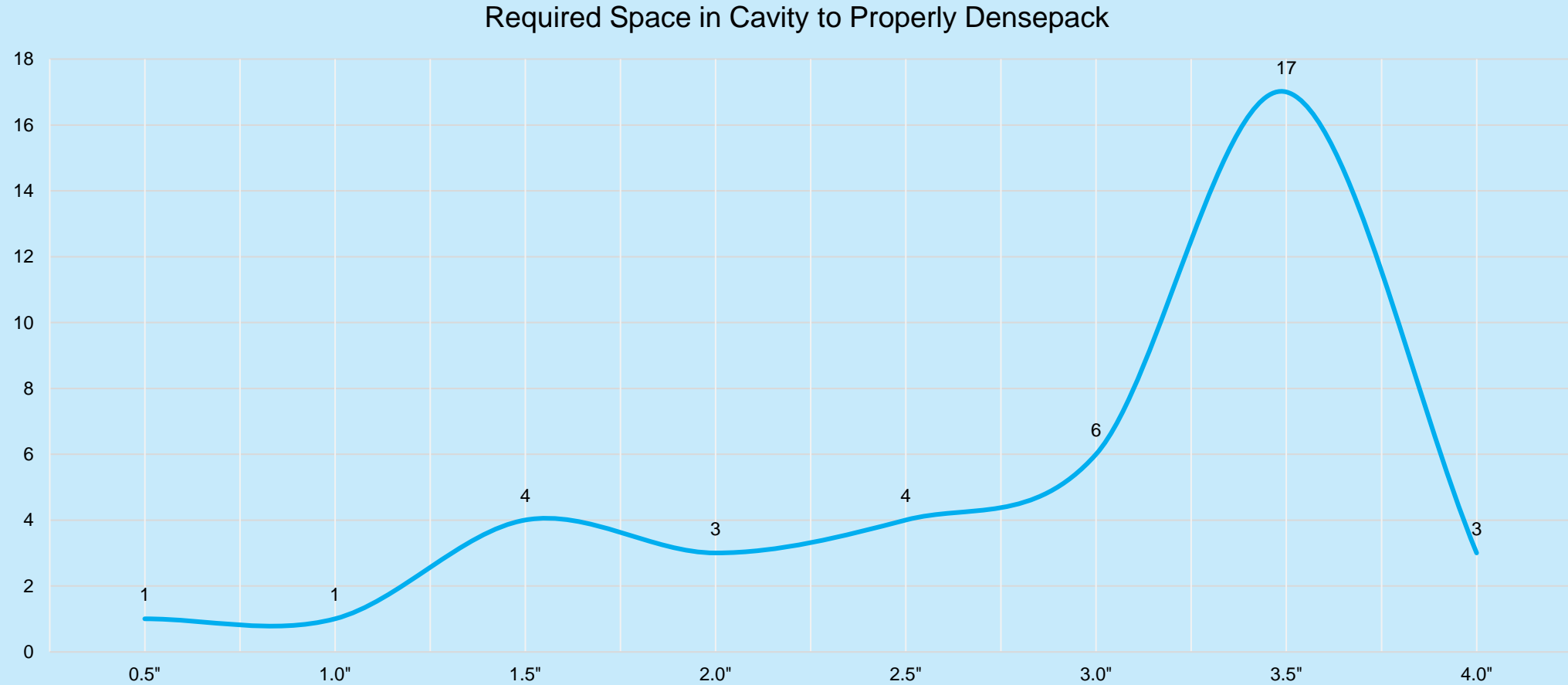
2023 Heat Pump Weatherization bonus

Heat Pumps	Eversource	UI
Heat pumps (no midstream heat pumps)	4,943	1,065
Heat pumps received Wx bonus	264	24
% of heat pumps received Wx bonus	5%	2%

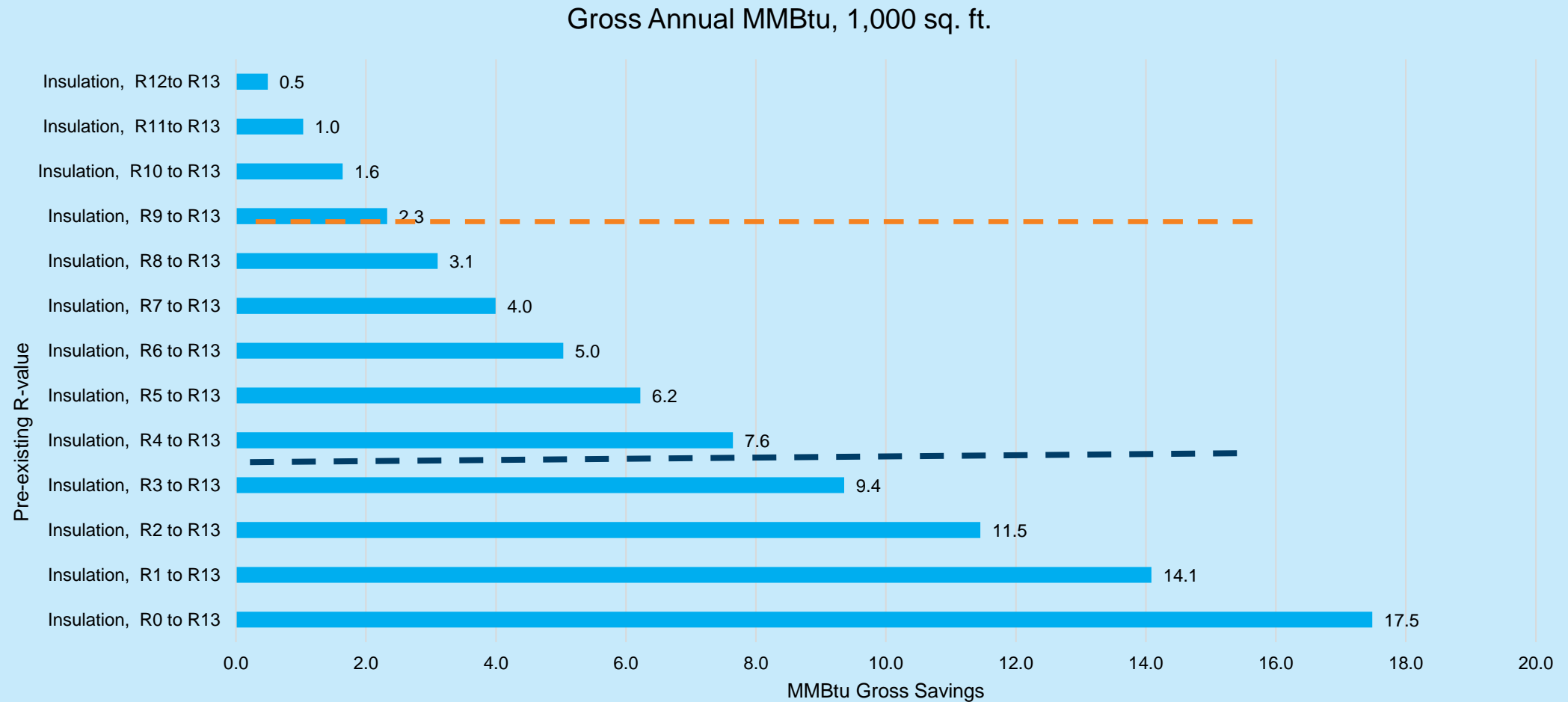
Current prequalification criteria for walls

States	Existing Walls Prequalification
CT	Insulation R4 or less existing in the walls allows for dense packing to manufacturer's specifications
MA	The auditor will determine if more insulation is needed, if it is practical to install insulation, and include it on the work proposal for review and approval prior to the installation. The installer will determine how to add insulation to the wall cavity to meet the material installation standards. Wall insulation is installed infrequently when any insulation already exists.
NY	If pre-existing fiberglass wall insulation is found, participating contractor must consult with program implementation staff. Additional insulation may only be installed with prior approval. When insulating walls, if pre-existing wall insulation is present, the crew must accurately document, with notes and pictures as needed, the location of added wall insulation

For prequalification wall insulation, a CTIIN survey found that 33 out of 39 vendors surveyed need at least 2" of space to dense pack insulation



Lower pre-existing R-value results in greater MMBtu savings for wall insulation



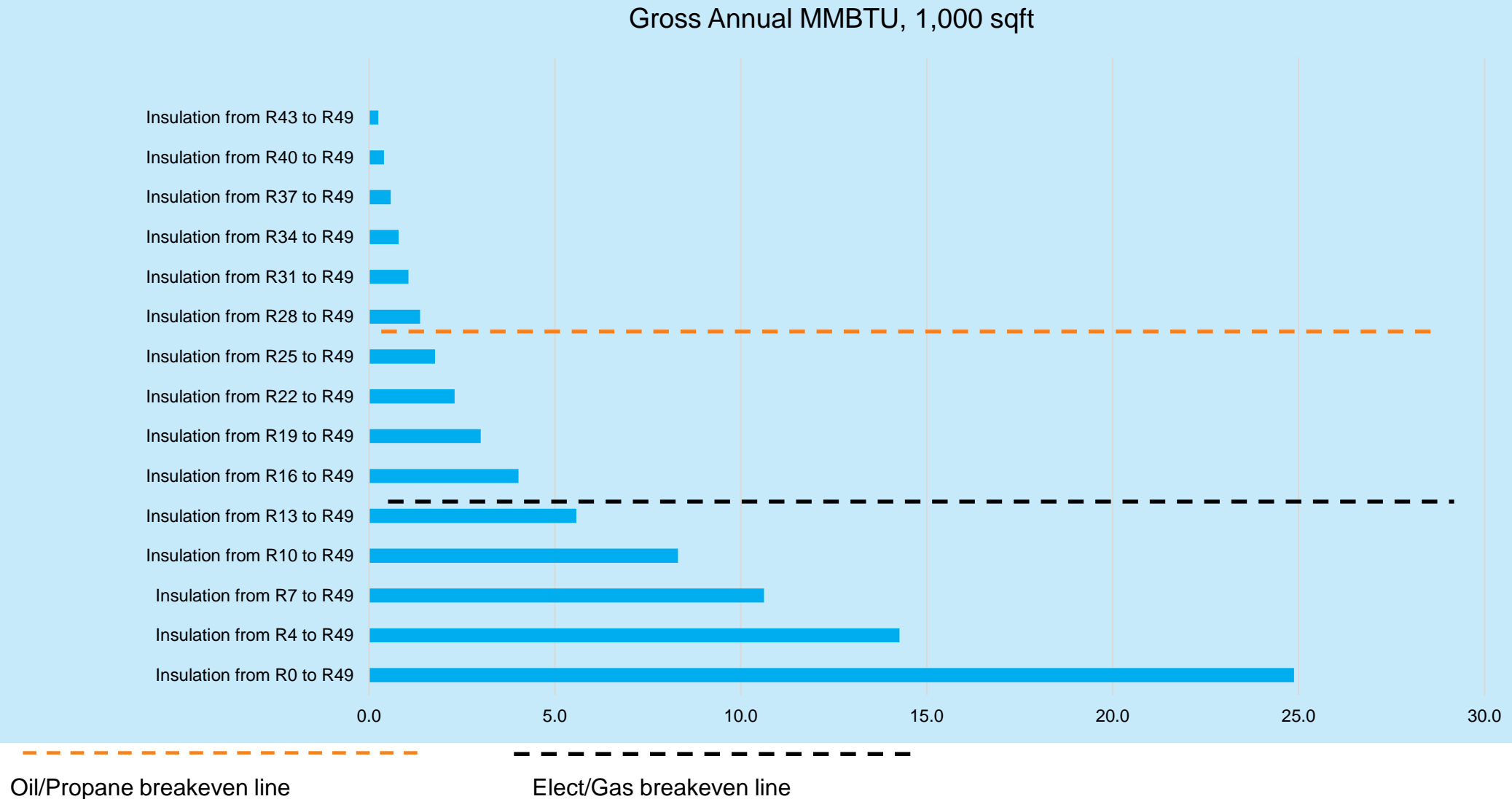
Oil/Propane breakeven line

Elect/Gas breakeven line

Current prequalification criteria for attic

States	Existing Attic Prequalification
CT	Insulation R19 or less
MA	Any existing insulation less than recommended value
NY	No minimum requirement

Attic savings with different pre-existing R-value

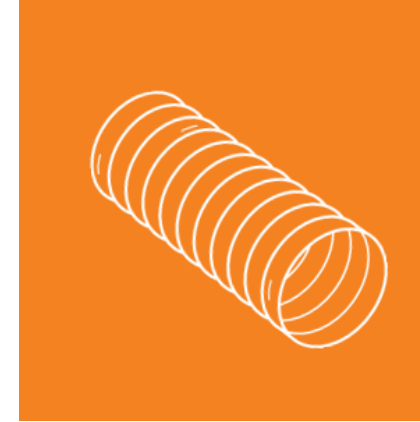


Attic and Kneewall Access – Draft Recommendation

Homes that have inaccessible kneewalls and/or attics and no other barriers to running a blower door test



- Perform **pressurized** blower door test, with customer advisement and approval
- Limits risk of any unknown contaminants being pulled through the home

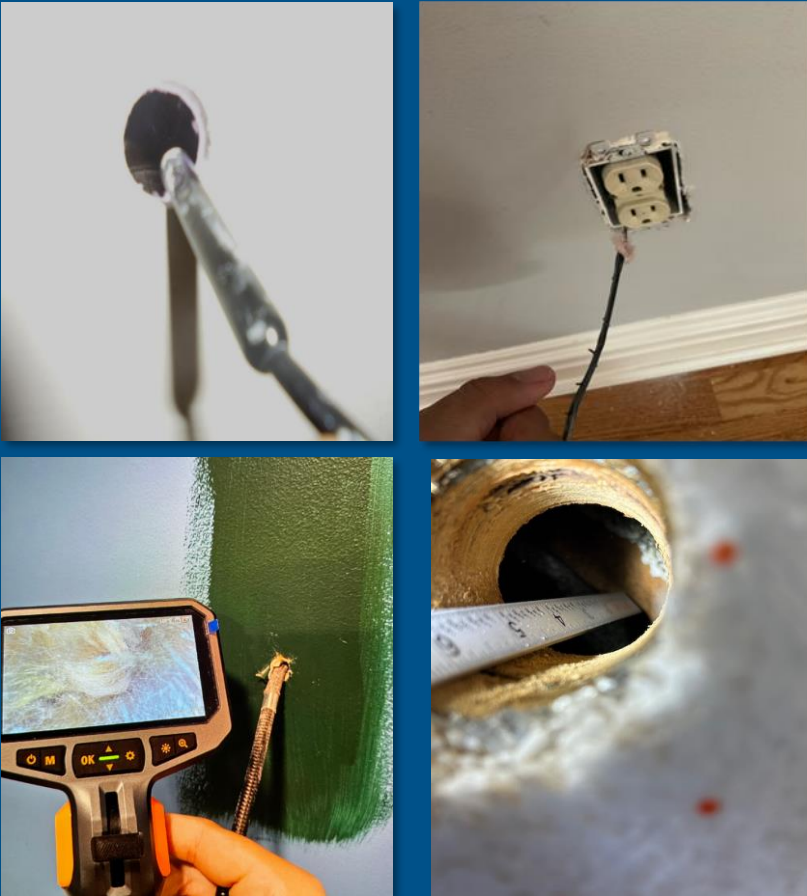


- Conduct only **pressurized** duct leakage to the outside testing

HES and HES-IE Discussion

- Three-hole drilling
- No blower door test when no access to attic and knee wall
- Exterior wall R-value
- 2-4 unit building participation
- Quality assurance/quality control (QA/QC) photo requirements

Three-hole Drilling



Exterior wall photo documentation options

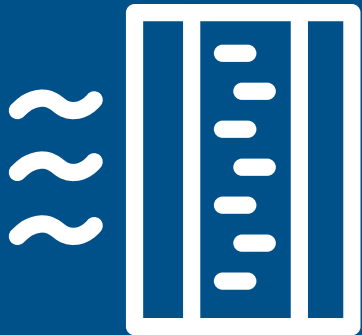
- Borescope
- Obtain a sample
- First (original) layer of attic Insulation, if applicable
- Exterior wall cavity photo
- Infrared Scan
- Balloon frame accessibility

Blower Door Testing



- Must be able to confirm the absence of any health and safety barriers (asbestos, vermiculite, mold)
- BPI protocol of *Do No Harm to the Building and Its Occupants*
- Potential risk does not outweigh the reward → prescriptive path option

Exterior Wall R-Value



- On June 10, 2024, Companies issued memo regarding exterior wall R-value assessment after learning some contractors were using the DOE Home Energy Score Assessor Calculator default values
- Alignment ensures contractors follow Program Savings Document (PSD) requirements for incentive qualification to ensure cost effectiveness of the measure
- Enclosed cavities require ~3 inches of available cavity space to properly dense pack

2-4 Unit Buildings



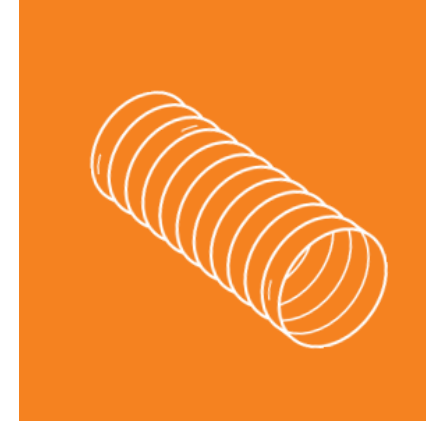
- Home energy assessment requires access to attics, basements, exterior walls, and mechanicals
- Recommendation that all units participate during the initial assessment, landlords may complete authorization form for one or more units
- Individual unit owners may participate individually; though full building assessment recommended
- A full building assessment is allowed even if a unit has participated within last 6 years. However, duplicative services cannot be provided

2 – 4 Unit Buildings – Draft Recommendation

Multi-unit buildings that have inaccessible units and no other barriers to running a blower door test



- Perform **prescriptive air sealing** for any applicable attic, basement, and in-unit envelope opportunities



- Conduct only **pressurized** duct leakage to the outside testing

QA/QC Photo Requirements

- In July 2024, Companies issued photo documentation guidelines in a timeline format
- Guidelines provided a listing of photos needed to support work completed or recommendations








Subject: **Consolidated Photo Documentation Guidance**

Sent to all HES & HES-IE Vendors via Bcc Email

Hello HES and HES-IE Vendors,

This is a follow-up email to feedback received during the June 20, 2024 CTAC meeting regarding photo documentation requirements for the HES & HES-IE programs.

The following timeline and associated communications are provided below to help combine these procedures in one memo.

11/2/2022	12/15/2023	1/18/2024	2/1/2024	3/1/2024	6/11/2024
Q4 Principals Meeting Slide	2023 End-of-Year Updates Memo	Photo Count Guide & Examples	Q1 Principals Meeting Slides	Change Order Process	Exterior Wall Guidance
		 	 Slides 13-26		

The Companies have been asked to put together a checklist summarizing these photo expectations to document existing conditions, work completed, and recommendations. The following checklists document minimum expectations.

Photo Type	Quantity	Photo Type	Quantity
<input type="checkbox"/> Pre CFM 50	1	<input type="checkbox"/> Mechanicals	Min 2
<input type="checkbox"/> Airtight	Min 3	<input type="checkbox"/> Heating Systems	1-2
Common Areas	1-5	<input type="checkbox"/> Water Heater	1-2
Attic Access	1-2	<input type="checkbox"/> Windows	Min 2
Unique Finds	1-2	Primary Type	1-2
Chimney	1-2	Secondary Type	1-2
Whole House Fan	1-2	<input type="checkbox"/> Dust Sealing	Min 1
Exterior Wall Area	1-4	Front Door (1-100 CFM/hr)	1
<input type="checkbox"/> Basement	Min 2	Pre CFM 25	1
Rim Joint	1-3	Air Handler	1-2
Unique Finds	1-2	Supply/Return Trunk	1-2
<input type="checkbox"/> Garage/Living Space	No Min.	Duct Boots/Takeoffs	1-2
Common Areas	1-2	Post CFM 25	1
Unique Finds	1-2	<input type="checkbox"/> Advanced Dust Sealing	Min 1
<input type="checkbox"/> Post CFM 50	1	Equipment Setup	1-2

If you have any questions or are in need of additional guidance, please do not hesitate to reach out.

Thank you,
You Eversource and Avangrid Energy Efficiency Team

- Q4 2022: Insulation Change Orders
- Q4 2023: Air Sealing Photo Requirements
- Q1 2024: Air Sealing Photo Guide & Presentation at Q1 Principals Meeting
- Q2 2024: Exterior Wall Photo Guidance

HES and HES- IE QA/QC

- Standards and protocols
- Common errors include missed air sealing/insulation opportunity and missing documentation
- Recommendation Action Plans

QA/QC Standards and Protocols

- Field Implementation Manual, Appendix A: QA for Inspection Purposes
- Contractual
 - HES Statement of Work
 - HES-IE Statement of Work
- QA/QC inspection contractors
 - In-process inspections
 - Pre-inspections
 - Post-inspections
- Data quality reviews
 - Tracking system validation
 - Desk reviews by contractors and Companies
- Contractor QA plans
 - Field/QA Supervisor
 - Project reviews
 - Inspections

Contractor Recommendations

- Update project proposals and comprehensive benefits (Customer Report)
- Encourage weatherization prior to heat pump installations

Customer Report

Project Proposals and Comprehensive Benefits

- Companies agree Customer Reports need improvement, intend to include updates as part of program redesign effort and will gather stakeholder input
- Current program realization rates negatively impacting savings shown on Customer Reports for air sealing and insulation
- Need to investigate and integrate initiatives regarding federal funding and/or other federal program alignment (IRA, EPA Home Upgrade, DOE Home Energy Score report, Home Performance with ENERGY STAR (DOE))
- Allow recommendations for home performance upgrades regardless of CT incentive offerings

Customer Report

Future Enhancements

- Companies are working with an external firm to facilitate a customer report redesign.
- The process will include engagement of all stakeholders.
- This effort will also include an assessment of the DOE Home Energy Score collection in the Hancock MINT mobile tool.
- Currently customers receive an Energize CT and Home Energy Score report separately. The goal with this effort is for the reports to be combined.
- Home Energy Scores will also be added to the US Green Building Registry.

Communications Protocol

Order of Escalation:	Avangrid	Eversource
Program Manager Energy Efficiency Consultant (EEC) Senior EEC	rvalente@uinet.com	spencer.hauer@eversource.com
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Manager	amclean@uinet.com	diane.delrosso@eversource.com
Senior Manager	marissa.westbrook@uinet.com	
Director	erik.robie@uinet.com	stephen.bruno@eversource.com
DEEP CTAC Meeting - Item added to agenda for review		

Appendix

Eversource: HES assessments with heat pump participation

	2021	2022	2023	YTD 2024 (Sep)	Total HP Participation
2022 HES assessment (17,169)	214	674	546	231	1,512 (8.8% of 2022 HES assessment had HP installed)
2023 HES assessment (17,774)	194	261	515	359	1,249 (7.0% of 2023 HES assessment had HP installed)

UI: HES assessments with heat pump participation

	2023	YTD 2024 (Sep)
HES Assessments	3604	2172
Heat Pump Installations	149	93
Total HP Participation	4%	4%

Eversource: HES-IE assessments with heat pump participation

	A – Total # of HPs installed	B - # of HPs received weatherization	C - # of HPs did not receive weatherization	% of HPs and weatherization (B/AA)
2023	122	120	2	120/122 = 98%
2024 YTD (through Oct)	130	128	2	130/128 = 98%
Total	252	248	4	248/252 = 98%

Number of Heat Pumps	Reason for not receiving Wx
2	No Insulation recommended
1	Unvented gas appliance
1	Fossil fuel system with high carbon monoxide

UI: HES-IE assessments with heat pump participation

	A – Total # of HPs installed	B - # of HPs received weatherization	C - # of HPs did not receive weatherization	% of HPs and weatherization (B/AA)
2023	48	43	5	43/48 = 90%
2024 YTD (through Oct)	36	32	4	32/36 = 89%
Total	84	75	9	75/84 = 89%

Number of Heat Pumps	Reason for not receiving Wx
9	No Insulation recommended, home already insulated

Eversource: HES-IE incentives break down 2022-2025

HES-IE (electric and gas combined)						
SF	<u>Heat Pump Incentives</u>	<u>A/O - HVAC Incentives</u>	<u>Weatherization Incentives</u>	<u>Window Incentives</u>	<u>All Other Incentives</u>	<u>Total Incentive</u>
2025 Budget	\$ 2,398,448.00	\$ 1,298,603.00	\$ 7,773,322.00	\$ 917,530.00	\$ 1,028,752.81	\$ 13,416,655.81
2024 Budget	\$ 1,543,627.00	\$ 1,180,956.51	\$ 7,085,739.07	\$ 1,180,956.51	\$ 818,286.02	\$ 11,809,565.12
2024 Actuals - up until October	\$ 1,731,037.73	\$ 1,036,092.44	\$ 5,171,568.51	\$ 1,052,635.09	\$ 879,930.22	\$ 9,871,263.99
2023 Actuals	\$ 1,530,757.05	\$ 1,593,297.67	\$ 13,737,286.70	\$ 4,174,539.09	\$ 1,652,289.58	\$ 22,688,170.09
2022 Actuals	\$ 368,883.98	\$ 2,609,925.12	\$ 17,208,985.95	\$ 4,787,699.05	\$ 1,921,999.35	\$ 26,897,493.45
MF						
2025 Budget	\$ 1,080,560.00	\$ 223,152.00	\$ 2,165,832.00	\$ 295,648.00	\$ 992,931.36	\$ 4,758,123.36
2024 Budget	\$ 678,426	\$ 442,932.20	\$ 2,657,593.20	\$ 354,345.76	\$ 296,024.84	\$ 4,429,322.00
2024 Actuals - up until October	\$ 230,750.00	\$ 51,881.62	\$ 410,799.49	\$ 106,527.84	\$ 368,051.21	\$ 1,168,010.16
2023 Actuals	\$ 244,161.81	\$ 391,104.62	\$ 900,343.89	\$ 367,534.78	\$ 576,786.90	\$ 2,479,932.00
2022 Actuals	\$ 204,834.49	\$ 481,888.72	\$ 938,362.85	\$ 713,390.05	\$ 1,053,554.02	\$ 3,392,030.13

R1983 results June 2023

Figure 4: Evaluated Savings Over Time by State – Average Air Sealing & Insulation Savings (CCF/Year) for Market Rate Natural Gas-Heated Customers¹¹

