

Co-promotion of Weatherization and High Performance HVAC in Programs Best Practice Guide



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About NEEP

NEEP was founded in 1996 as a non-profit whose mission is to serve the Northeast and Mid-Atlantic to accelerate regional collaboration to promote advanced energy efficiency and related solutions in homes, buildings, industry, and communities. Our vision is that the region's homes, buildings, and communities are transformed into efficient, affordable, resilient places to live, work, and play.

Disclaimer: NEEP verified the data used for this brief to the best of our ability. This paper reflects the opinions and judgments of the NEEP staff and does not necessarily reflect those of NEEP Board members, NEEP Sponsors, or project participants and funders.

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Summary of Key Findings and Recommendations

When implemented and managed properly, co-promotion of weatherization (building envelope improvements) and high performance HVAC equipment is an effective strategy to achieve significant energy- and utility-cost savings in homes across the region. While these two home upgrade measures, high performance HVAC replacement and weatherization, offer significant opportunities to reduce energy use and utility costs for homeowners and improve the resiliency of homes, there are a number of barriers that prevent consumers from making these improvements.

Residential high performance HVAC and weatherization programs in the region have existed for years to help address the barriers to adoption, including building awareness, reducing upfront costs, building a market of qualified contractors, etc. These programs have commonly been offered by ratepayer funded energy-efficiency programs and other more local programs. These programs help improve energy affordability for all customers.

Energy-efficiency incentive programs have historically targeted these two opportunities, high performance HVAC and weatherization, separately. Even within the same program, HVAC replacements and weatherization are often designed and operated independently of each other.

An increasing number of programs have begun to cross- or co-promote the measures in a more integrated way, with the aim of increasing uptake of both by leveraging initial interest in one of the two. Programs are now co-promoting the two measures through program requirements, financial incentives, education, and information exchange. Some programs view the inclusion of weatherization with high efficiency heat pump (HP) as a consumer protection strategy to maximize utility cost savings.

This guide was developed to serve two purposes: first, to describe how programs in the region are currently co-promoting high performance HVAC equipment, with a focus on high performance air-source heat pumps (ASHP), along with weatherization, and second, to present program best practices for how to design and implement programs that maximize the adoption of both solutions via co-promotion. ASHPs are the focus HVAC solution due to their cost savings for home owners, and current program focus across the region.

Current state of programs implementing heat pump/weatherization co-promotion

Our research found three basic models of heat pump and weatherization co-promotion in the Northeast:

- 1) Those requiring implementation of both measures
- 2) Those that offer a bonus for doing both
- 3) Programs that share information with each other's customers

Seven of 13 states in the Northeast/Mid-Atlantic region are offering some model of a heat pump/ weatherization co-promotion. The most common model being implemented is the bonus model, with seven programs offering this model.

Successes and Challenges Associated with Co-promotion Models

This report assesses the successes and challenges of each co-promotion program model.

In the case of the "both measures required" model, successes included the ability to achieve maximum impact for each project and to allow for installation of cheaper, smaller, and simpler heat pump systems. For the bonus model, successes included the creation of "heat pump ready" homes and an increase in heat pump customers weatherizing.

Programs requiring both measures faced the challenge of increased program requirements, increased cost of participation, and difficulty in managing across different trades. Challenges associated with the bonus model included not fully realizing the cost and energy savings opportunity of participating homes, customers facing compressed timelines to install both measures, and the increased complexity of heat pump sizing if it is not done before weatherization.

Recommended Best Practices for Program Co-promotion

This guide provides a series of best practices that are currently being implemented by programs in the region and beyond. It also includes a few emerging practices identified as possible solutions to the challenges of existing programs. The emerging practices were identified during discussions with programs on how they could overcome common challenges. These best practices should be considered by existing program administrators when possible and be used to shape developing programs. These best practices are aimed at boosting program participation, enhancing program outcomes, and increasing customer satisfaction:

- Select and Implement Co-promotion Program Models
 - Focus on program goals and co-promote as feasible
 - Employ best practices related to program models requiring both measures
 - Employ best practices relevant to program model offering bonuses for both measures
 - Employ best practices related to information sharing program model
 - Utilize comprehensive home energy assessments
 - Avoid penalizing weatherization
 - Link weatherization to heat pump programs to ensure energy affordability for all American households

• Drive Program Participation

- Simplify program participation
- Designate a single point of contact
- Offer guidance and resources for financing or payment assistance

• Deliver Customer Outreach and Education

- Conduct customer outreach
- Educate homeowners
- Engage Contractors
 - Connect weatherization and heat pump installers
 - Promote common messaging for participating contractors
 - Provide contractor training
- Support Use of Effective Tools

NEEP and other actors in the region stand ready to assist programs, administrators, and other key actors to implement programs and strategies and facilitate partnerships for advancing high performance HVAC equipment and weatherization in the Northeast region.

Introduction

In the Northeast, space heating represents the largest energy use in a typical home. Heating equipment and the thermal performance of the building envelope are two primary determinants of space heating energy use. High performance HVAC, combined with an efficient building envelope result in significant utility cost savings for homeowners, reduces household energy use while improving non-energy benefits like occupant comfort and safety. The process of improving a home's envelope, and reducing heating and cooling loads, through insulation, air sealing, and other methods is commonly referred to as weatherization ("Wx").

While these two home upgrade measures, high performance HVAC replacement and weatherization, offer a significant opportunity to reduce energy costs and use, there are a number of barriers that prevent consumers from making these improvements to their homes.

Residential high performance HVAC and weatherization programs in the region have existed for years to help address the barriers to adoption, including building awareness, reducing upfront costs, building a market of qualified contractors, etc. These programs have commonly been offered by ratepayer funded energy-efficiency programs and other more local programs. These programs help improve energy affordability for all customers

Energy-efficiency incentive programs have historically targeted the two opportunities, high performance HVAC and weatherization, separately. Even within the same program, HVAC replacements and weatherization have often been designed independently of each other—addressing HVAC replacements at points of failure, or substantial degradation, or adding weatherization improvements often with no more than a safety assessment of the HVAC equipment. ASHPs are the focus of this resource due to their cost savings for home owners, and current program focus across the region.

An increasing number of programs have begun to cross- or co-promote the two measures in a more integrated way to increase the adoption of both by leveraging initial interest in one of the two. Programs are now copromoting the two measures through program requirements, financial incentives, education, and information exchange. Beyond the benefits of increased adoption, some programs, particularly those being offered to income eligible customers, are seeing the inclusion of weatherization with high performance heat pump (HP) installation as a consumer protection strategy to maximize energy cost savings.

As programs refine their efforts, the overarching goal is that both comprehensive weatherization upgrades and heat pump installation occur expeditiously across the Northeast and beyond, leading to significant increases in energy savings and reductions in utility costs and energy use for homeowners.

Recent shifts are now offering new market opportunities:

1. Heat pump improvements:

HVAC replacements have typically been "like-for-like," albeit with more efficient versions when feasible.. With the emergence of high performance heat pumps as an option for HVAC replacement, homeowners can choose new, highly efficient, proven equipment, which, in many instances, lowers total energy costs. These improved heat pump options include the establishment of cold climate heat pump standards,



numerous available models that meet that standard, and extensive installation and user experience showing that heat pumps are a viable HVAC option throughout the Northeast and Mid-Atlantic region.

2. Building energy benefits of both envelope measures and high performance heat pumps:

Appropriate heat pump installations paired with practical envelope improvements set a house and its residents up for the best practical performance outcome. Heat pumps work most effectively and efficiently for buildings whose thermal needs are more stable rather than those that drastically and quickly change. Weatherized buildings slow the need for cooling or heating and retain thermal energy, allowing heat pumps to perform most efficiently as they respond to smaller, more precise thermal needs. These efficiencies are carried through during particularly cold or hot weather. Conversely, heat pumps installed in homes with poor envelopes can result in comfort issues, lower energy efficiency, faster equipment degradation, and humidity control issues. If the house is weatherized after heat pumps are installed, the previously installed heat pump equipment may be oversized, resulting in similar problems.

Combining weatherization and installation of high performance HVAC equipment yields the best result in terms of residents' comfort, thermal stability, and reduced energy consumption, improving public perception and driving the installation of high performance HVAC equipment. These benefits can also increase the availability of heat pumps as they reduce the total cost of upgrades by allowing for smaller heat pump systems with simplified distribution needs and leading to lower total energy bills.

3. Available funding:

Funding to support building improvements has been increasing across the region, from ratepayer funding, new federal funding, and other funding sources. For example, New York and Rhode Island have introduced programs incorporating the new Home Energy Rebates (HER) programs from IRA federal funding, and other states will follow suit with their own plans. These programs boost efforts for more comprehensive whole home treatment, particularly with lower-income residents. The landscape for funding opportunities is changing and growing.

There is recognition that these types of home upgrades can stress residents' and owners' finances, so addressing cost-effectiveness barriers is important to driving envelope improvements and heat pump acceptance in all markets.

Some regional programs recognize the important interrelationships and benefits of both improvements happening at the same (or similar time) for a home and have sought to leverage the customer's interest in one measure to encourage upgrading the other.

Objective and Scope

This guide was developed for two purposes: first, to describe how programs in the region are currently copromoting high performance HVAC equipment along with weatherization, and second, to present program best practices for how to design and implement programs that maximize the adoption of both solutions via copromotion.

The guide focuses on *single-family and small multifamily homes* (one to four units) for both market rate and income eligible customers. This guide also focuses on high performance *air-to-air heat pumps* as there is widespread interest in growing acceptance of the technology via programs. Air-to-water or ground-source space heating heat pump systems are not in scope due to their small market share at this time¹.

Research Methods and Approach

To ensure the research was relevant and robust, NEEP assembled an Advisory Committee composed of subject matter experts (SMEs), including program implementers, manufacturers, utility representatives, and industry stakeholders. The Advisory Committee guided the project by validating its direction, providing critical input, and reviewing findings and materials. The research team reviewed program websites and documents, case studies, program evaluations, and annual reports, and collected feedback from NEEP Advisory Committee members. The research team held 15 interviews with a variety of regional program stakeholders. Interview discussions and attributions were kept anonymous to encourage open conversation. Interviewee organization categories are noted in *Table 1.*

Table 1: Stakeholder Interviewee Organizations

Interviewee Organization Type	# Interviewed
Contractor installing Wx, HP, or both	4
Regional Community-Based Organizations	4
Utility Representatives or Implementers	4
Energy Efficiency Advocacy Orgs	3

¹ Air-to-water and ground-source options both have case-by-case merit, and several programs offer related incentives, particularly for ground-source systems.

Current State of Program Co-promotion in the Northeast

Current Program Activity

This section presents a current snapshot of how programs are co-promoting high performance heat pumps and weatherization. While stand-alone weatherization and heat pump programs are ubiquitous in the region, we present examples of programs that are co-promoting these measures in some fashion. The research examined existing program models to explore their design and effectiveness, identify current barriers and practices, and assess program success. To compile regional incentive program offerings, we reviewed consumer-facing website resources available as of the end of September 2024.

We classify co-promotion programs into three categories, each involving varying levels of heat pump and weatherization integration. We then examine some successes and challenges associated with each approach.

Table 2 defines three prevalent program models that take different approaches to co-promotion.

Table 2. Co-promotion	program	models.
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Program model	Explanation
Both measures required	 Program that requires co-installation of weatherization upgrades and heat pumps to qualify for incentives Includes programs that require homes to have sufficient weatherization or heat pumps installed as a prerequisite to be eligible for program incentives
Bonus incentives	 Program that provides bonus incentive for one measure based on adoption of the other measure This can be structured in either direction; weatherization leading to heat pump bonus incentives or heat pump adoption leading to weatherization bonus incentives. Offers a bonus incentive to weatherization or heat pump participants who install the other measure within an allotted time before or after the first Although these program models are mostly similar, there are a few important differences.
Information sharing	 Program that only provides information and encouragement to install heat pumps/complete weatherization in conjunction with the other measure No extra incentive provided to install the corresponding measure Information often linked through program websites-

Table 3 provides a snapshot of programs in the Northeast and Mid-Atlantic that are delivering some form of copromotion between heat pumps and weatherization.

Table 3.	Regional	ratenaver	funded	incentive	programs.	by co-	promotion	model.
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State	Program Administrator	Program Co-promotion Model	Heat Pump Requirement/ Bonus Incentive	Weatherization (Wx) Requirement/Bonus Incentive
СТ	Energize CT	Bonus (HP bonus)	\$500 HP bonus incentive	Customer installs insulation
DE	Energize Delaware	Bonus (HP bonus)	\$300 HP bonus incentive	Customer installs air sealing
MA	Mass Save	Both measures required	Up to \$10,000/whole house HP project (LMI – \$16k)	Home must have sufficient Wx
NH	NH Saves (NHEC)	Bonus (HP bonus)	\$250/ton HP bonus incentive	Applicant completes (or has previously completed) Wx
NY	NYSERDA- EmPower+	Information sharing	Heat pumps one of several measures offered under single program (total incentive pool capped based on income; contractors help determine mix of improvements)	Wx one of several measures offered under single (total incentive pool capped based on income; contractors help determine mix of improvements)
	NYSERDA – Comfort Home	Bonus (HP bonus)	HP bonus incentive (available if done within 24 months of completing Wx)	Customer makes Wx upgrades ("load reduction package")
	PSEG-LI	Bonus (Wx bonus)	Customer installs HP	Window rebates available
PA	PPL; PECO; First Energy	Bonus (HP bonus)	\$350 HP bonus incentive	Customer installs insulation and air sealing
	PPL; PECO; First Energy	Bonus (Wx bonus)	Customer installs HP	\$250-\$350 Wx bonus incentive
RI	RI Office of Energy Resources – Clean Heat RI	Both measures required	Covers 100% of HP cost (for LMI)	Home must have sufficient Wx

Seven of 13 states in the Northeast/Mid-Atlantic region are offering some model of a heat pump/weatherization co-promotion. There are seven instances of the bonus model being implemented.

Successes and Challenges for Select Program Models

Each of these program models presents specific successes and challenges in encouraging the installation of both weatherization upgrades and heat pumps. These findings are based primarily on discussion with existing program implementers, weatherization and heat pump contractors, and SMEs.

"Both measures required" model

As defined in Table 2 and for this guide, a "both measures required" program mandates the co-installation of weatherization upgrades and heat pumps to qualify for incentives. Such a program aims to have the greatest impact on the homes that participate. A "both measures required" program can result in greater barriers to

participation, less program reach, and fewer participants for the allotted resources as it only allows homes that are installing both weatherization and heat pumps to participate. This structure is valuable if the program intends to have the greatest impact on the energy use and comfort of a smaller target population, as each participating residence is optimized in terms of energy efficiency, HVAC system size, comfort, and operating costs. Some examples of "both measures required" programs include the whole home heat pump program offered by Mass Save² and the Income Eligible ASHP program offered by Clean Heat Rhode Island.³

Successes of "both measures required" model

Highly effective in participating homes

"Both measures required" programs are highly effective in reducing energy usage in the participating homes, as they ensure comprehensive upgrades by mandating both measures. By requiring that weatherization measures, such as improved insulation and air sealing, be completed prior to or alongside heat pump installations, these programs address both the building envelope and the heating and cooling systems. This dual focus reduces energy consumption more substantially than single-measure approaches, improves overall comfort, and reduces utility bills. This comprehensive strategy results in a higher overall impact on a project-by-project basis, making this type of program a powerful tool for achieving significant energy savings and enhanced homeowner satisfaction in the participating homes.

Can allow for cheaper, smaller, and simpler heat pump systems

By requiring that weatherization improvements be made and a heat pump installed, a program ensures that homes are well-insulated and air-sealed, reducing the home's heating and cooling loads and allowing for a smaller capacity heat pump system, reduced energy consumption, and a simplified distribution system. The "both measures required" approach enhances the overall efficiency of the home, making the greatest impact to meet an energy efficiency program's goals. It can make more economic sense for the homeowner as they may benefit from both immediate cost savings due to heat pump sizing and long-term reductions in energy consumption.

Appeals to homeowners looking to add value

In addition to financial benefits realized by homeowners, a "both measures required" program can give a participating homeowner a perceived benefit by reframing these improvements into something akin to a comprehensive home remodel or retrofit rather than a series of isolated cost-saving measures. This comprehensive strategy can appeal to homeowners who are looking to make substantial long-term investments in their property. The program offers a thorough upgrade that can improve comfort, energy savings, and property value. By presenting energy performance as part of a broader home upgrade, a "both measures required" program can resonate with homeowners seeking to invest in and substantially improve their homes and can increase customer satisfaction of homeowners in this category.

² Air Source Heat Pumps | Residential | Mass Save

³ Income Eligible Program- Clean Heat Rhode Island (cleanheatri.com)

Challenges of "both measures required" model

Disjunction of funding and regulations

In some regions, weatherization measures are funded and regulated by different entities than high efficiency HVAC measures. For example, NYS Clean Heat incentives and regulatory drivers are focused on the deployment of air source heat pumps without a direct focus on reducing energy consumption. Combining weatherization and heat pump measures in a "both measures required" program can involve complexities in weaving program funding together and carefully compartmentalizing savings claims to ensure funding is properly distributed by multiple sources.

Increased program requirements

A "both measures required" program structure introduces higher barriers to entry than programs that only focus on one measure. The complexity of navigating a program that requires both can be a significant deterrent to homeowners and contractors. The program requirements can be particularly problematic for a homeowner who needs to replace an existing heating or cooling system that is at the end of its life. Emergency replacement situations can be urgent, especially in the Northeast, where the failure of a heating system during cold weather can be dangerous or life-threatening.

Increased cost of participation

Another significant challenge of a "both measures required" program is the higher upfront project cost associated with installing both measures. This higher upfront cost can be a significant barrier, particularly for those with limited financial resources, who will be less likely to participate in the program. Financial impact is usually the most important factor when a homeowner considers an upgrade. While the long-term savings on energy bills may justify the investment, the immediate financial burden can deter homeowners from engaging in the program, reducing its overall effectiveness and reach.

Management and coordination of trades

The complexity of managing a "both measures required" program can reduce interest from both installers and homeowners. Coordinating the installation of weatherization measures alongside heat pumps involves navigating a multifaceted process that can be cumbersome and confusing for homeowners. For installers, this complexity means managing multiple aspects of a project or working around another installer's schedule, which can strain resources and lead to increased administrative work. Installer interest may also wane based on the smaller pool of potential customers who meet these increased requirements. Homeowners may find the process overwhelming as they coordinate both upgrades, each with its own set of requirements, timelines, and construction impacts or inconveniences. This added complexity can lead to decreased enthusiasm and participation from both installers and homeowners, potentially slowing the adoption of energy-efficient technologies and reducing the program's overall effectiveness.



Bonus model (heat pump bonus)

A weatherization program with a heat pump bonus offers a bonus incentive to participants who install heat pumps within an allotted time after weatherization. The main purpose of the program is to increase weatherization in the target homes so that the housing stock has reduced heating and cooling loads when itcomes time for their next HVAC upgrade, presumably a heat pump. The heat pump bonus incentive encourages participating homeowners to install heat pumps in their recently (or imminently) weatherized homes. An example of this program structure is NYSERDA's Comfort Home program, which offers a bonus for heat pumps installed within two years of weatherization upgrades.⁴ These programs historically have low participation rates for bonus incentives. To help encourage co-promotion, programs should actively encourage heat pump installations pursuant to the best practices set forth in this guide.

Successes of bonus model (heat pump bonus)

Focused installation of weatherization upgrades

Homeowners who pursue weatherization under this model receive financial incentives for doing so, with additional incentives for heat pump installations at the same time or shortly thereafter. This structure can effectively prevent the loss of sales for weatherization upgrades that may arise due to cost or participation constraints of requiring co-installation. The primary benefit of this approach is that it weatherizes housing stock on a widespread basis and prepares it for immediate or future heat pump installations. This structure promotes weatherization and encourages heat pump installation without excluding homeowners who are unable to install heat pumps immediately.

Encourages heat pump installation in weatherized homes

The program design encourages homeowners who are already invested in improving their home's energy performance to adopt heat pump technology. Having an additional incentive for homeowners to take the next step can increase the likelihood that these customers will opt for a heat pump installation. At a minimum, this structure, when properly presented to the homeowner, requires the homeowner to consider installing heat pumps and offers education on why this is helpful. This type of program fosters a more comprehensive approach to energy efficiency, driving greater consumer acceptance of heat pump systems among those who have already committed to weatherizing their homes.

Creates "heat pump ready" homes

This type of program is effective at lowering the heating and cooling loads of the home. This prepares the home for a smaller heat pump system with a simplified distribution system, which can result in lower equipment and installation costs along with lower heating and cooling bills. This type of program, with fewer barriers to entry, can reach a larger number of homes than a "both measures required" program, preparing a region for future energy-efficiency goals.

⁴ Comfort Home Program- NYSERDA



Challenges of bonus model (heat pump bonus)

Does not realize full energy savings opportunity of participating homes

Weatherization-focused programs with bonus incentives encourage heat pumps, but do not guarantee that participants will fully transition to highly efficient heating and cooling at the time of participation or soon thereafter. Weatherizing a home may present the best time to encourage homeowners to pursue new, highly efficient HVAC equipment options. Losing this opportunity could limit the overall impact on reducing pollution and advancing state or utility energy goals.

High cost to install both measures

Weatherization and heat pumps are expenses that an average homeowner must save for. Immediately following weatherization upgrades, a homeowner may not be financially capable of paying for heat pump installation. The homeowner will likely need time to save between upgrades rather than installing both measures simultaneously.

Short timeline to install both measures

The time needed for a homeowner to save funds for heat pumps after weatherizing can result in a lengthy period before homeowners are ready to proceed. This period is typically more than a year as homeowners recoup savings and may choose to spend extra funds elsewhere instead. A homeowner's timeline to install both measures is typically longer than the time allotted by a program to claim the bonus incentive. This can result in a lost opportunity to convert to high performance heat pumps. Longer allowances to earn the heat pump bonus incentive could improve overall conversion rates but may be a challenge for program budget performance periods.

Loss of connection or interest

A homeowner may lose connection with or interest in the program while they are saving for a heat pump upgrade. They might forget about the opportunity to claim the bonus incentive and/or decide to install an HVAC system outside of the program, which could include a less efficient, like-for-like replacement of their previous system. As the homeowner experiences increased comfort resulting from weatherizing, they might opt to delay upgrading their HVAC system. Program implementers should remain in frequent touch and advertise the benefits associated with the bonus incentive to maintain participant interest and encourage engagement. Without effective continued engagement, potential beneficiaries may lose connection with or interest in the program, leading to reduced program impact.

Bonus model (weatherization bonus)

A heat pump program with a weatherization bonus offers a bonus incentive to participants if they install weatherization upgrades within an allotted time before or after their heat pump installation. The main intent of this program type is to encourage heat pump installation in participating homes. The secondary effect is that weatherization upgrades can increase comfort, lower utility bills, and decrease the electrified homes' load on the grid. Best practices should be followed to increase the percentage of homes that are weatherized alongside installing heat pumps.

Successes of bonus model (weatherization bonus)

Focused installation of heat pumps

A heat pump program with a weatherization bonus co-promotes weatherization and heat pumps while focusing on installing more efficient HVAC into participating homes. All homes participating in the program are upgrading their HVAC systems. Those that apply for and receive the bonus incentive are lowering their loads, energy usage, and demand on the grid. The flexibility of this program structure allows for broader reach and prevents the exclusion of interested heat pump customers who might be unwilling or unable to install weatherization measures.

Encourages heat pump customers to weatherize

A heat pump program with a weatherization bonus incentive encourages participants to install weatherization measures. Although weatherization should ideally be completed prior to heat pump installation, heat pumps are often installed without plans to weatherize or with plans to weatherize in the future. This is commonly the case when the heat pump conversion is triggered by the old system failing or nearing failure. Encouraging the homeowner to consider weatherization when installing a heat pump can reduce heating and cooling loads such that the contractor can appropriately size the heat pump system at the time of installation. Providing a bonus incentive for weatherization upgrades as part of the program encourages homeowners to at least consider the weatherization improvements. This approach can increase the overall impact the program has on the participating homes.

Challenges of bonus model (weatherization bonus)

Increased complexity of heat pump sizing

Most contractors need additional training to size heat pumps for planned load reductions. When the heating and cooling loads of a home are expected to change, the contractor must ensure that the home will remain comfortable both pre- and post-weatherization. If planning for a substantial future heating load reduction, the heat pumps should be sized to the expected future load, and the house should retain its existing heating system, or some intentional supplemental heating option, to cover winter peaks until the weatherization program is complete. If the heat pump is sized to the current load before weatherization, it may be substantially oversized for the future load and could operate inefficiently in the shoulder seasons and struggle to provide appropriate dehumidification in the summer. Installing an oversized system also eliminates the benefit of lower operational (and installation costs) typically found with smaller systems.

Heat pumps installed in a home with a poor envelope may underperform

Heat pumps installed in homes with envelope issues that are left unresolved may face poor performance and comfort issues. Without adequate weatherization, homes can experience significant heat loss or gain resulting in discomfort and forcing the heat pump to provide more heating and cooling than a properly weatherized home. A customer may have a negative first experience with a heat pump installed to meet a future load—including experiencing higher energy bills, the need to maintain a secondary heating system, and uneven heating in certain areas of the home.

Loss of connection or interest

A homeowner may lose connection with or interest in the program while saving for weatherization. They may forget about the opportunity to claim the bonus incentive and never resolve their envelope issues. If the homeowner benefits from increased comfort resulting from a heat pump installation, they may decide to postpone weatherization upgrades. Programs should remain in close touch with homeowners and advertise the benefits associated with the bonus incentive to maintain interest and encourage engagement.

Recommended Best Practices for Program Co-promotion

The following section lists best practices that are currently being implemented by programs in the region and beyond. It also includes a few untested practices identified as possible solutions to the challenges of existing programs. The untested best practices were identified during discussions with programs on how they could overcome common challenges. These practices should be added to existing programs when possible and be used to shape developing programs. All of these best practices are aimed at boosting program participation, enhancing program outcomes, and increasing customer satisfaction.

Recommended best practices for all programs are divided into five sections:

- Select and implement co-promotion program models
- Drive program participation
- Deliver customer outreach and education
- Engage contractors
- Support use of effective tools

Select and Implement Co-promotion Program Model

Focus on program goal and co-promote as feasible

It is crucial for incentive programs to be designed to embody the goals of the program sponsor while also addressing the known challenges of the market. A program implementer should assess their key priorities when deciding what structure to select. A program designed to help address broad building stock for a focused population should require both weatherization and heat pump installation, allocating more resources to each home they interact with. A program focused on maximizing its reach and increasing the uptake of heat pumps *or* weatherization should focus on program simplification and remove as many barriers to adoption as possible. Regardless, programs focusing on either weatherization or heat pumps should provide education on how a homeowner can further improve their home comfort by adding the other corresponding upgrade. A program structure that focuses principally on *either* a heat pump *or* weatherization measures while offering an optional bonus for installing the *other* measure can effectively address some challenges and barriers of co-promotion while also achieving the program sponsor's primary goals. The implementer of such a program should follow up with participants and provide an elongated timeline to allow for maximum participation in the other measure.

Best practices related to "both measures required" model

Allow homes with existing sufficient weatherization or heat pumps to participate in the corresponding measure To encourage adoption, the "both measures required" model should allow homes that are already sufficiently weatherized or have adequate existing heat pump systems to participate and receive incentives to install the corresponding measure. Programs should establish waivers based on the year of build or last renovation, the amount of required additional weatherization, tightness of the envelope, or age and performance of the heat pump system. Eligibility can be determined using the building code for the year the home was built, having installers submit pre-installation photos, performing audits, or requiring blower door tests. This approach ensures that homeowners who have already invested heavily in weatherization can still benefit from the program. It also prevents potential frustration among homeowners who may feel penalized for their prior investments. Implementing this best practice can enhance overall program reach by meeting homeowners where they are and encouraging the participation of homeowners who have already invested in their homes.

Increase participant guidance

One of the biggest challenges to a "both measures required" model is its relative complexity. The average homeowner does not have time to navigate difficult programs. Enhancing participant guidance and coaching can ease participation and increase the likelihood that a homeowner will participate. Initial guidance can include an overview of what to expect during the process, help for homeowners to determine if they meet prerequisites, a schedule, and assistance with the application. During the project, guidance should connect homeowners with installers and address questions and issues throughout the process. By ensuring clear communication and facilitating smooth interaction among all parties, the program can enhance the homeowner's experience and contribute to project success.

Programs should also offer detailed training and resources for installers. Training should cover the technical aspects of integrating weatherization measures with heat pump installations, including how to optimize both systems for maximum efficiency and performance. Providing installers with clear guidelines on how to collaborate effectively with other trades and how to manage the logistical aspects of combined installations can reduce confusion and errors. Clear communication channels between installers and program coordinators can help address and smooth issues promptly. Implementing tools or platforms that facilitate real-time updates and collaboration can further enhance the integration process.

By increasing guidance and coaching for both homeowners and installers, programs can improve the overall effectiveness of combined projects, leading to higher participant satisfaction, reduced project delays, and better outcomes in terms of energy savings and comfort.

Extend the timeline allowed for installation of both weatherization and heat pumps

An extended timeline for homeowners who may not have the financial means to complete weatherization upgrades and heat pump installations simultaneously can allow for increased participation and installation of both weatherization and heat pumps. Recognizing that the combined cost of both upgrades can be substantial, this approach allows homeowners to manage their budgets more effectively while still participating in the

program. The program still reaches its desired outcome of weatherized homes with highly efficient heat pumps but allots homeowners sufficient time to save funds and manage the installation of both measures.

With a flexible timeline, homeowners can complete the upgrades in phases. This flexibility is particularly important for those who need to spread out their financial commitment over time due to budget constraints or who have limited capacity for disruption. Addressing weatherization first produces the best outcomes and

allows the heat pump(s) to be sized to meet the building's final heating and cooling loads. But it is possible to do heat pumps first, sizing them for the eventual planned load, with sufficient backup heating left in place or otherwise supplied until the weatherization is complete.

To support this practice, the program should clearly outline the extended timeline options and guide how to plan and budget for the phased approach. Offering resources such as financial planning tools or budget counseling can help homeowners manage their expenses and make informed decisions about their upgrades.

Flexible timelines can enhance program participation and satisfaction by allowing homeowners to undertake comprehensive energy improvements without feeling rushed or financially overwhelmed, ultimately leading to more successful and effective implementation of both measures.

Provide or require unbiased energy audits

An unbiased energy audit conducted by a third-party or program energy auditor can identify the measures with the greatest impact on the home's energy usage and comfort. The energy audit should be completed by someone without financial interest in the upgrades. This approach ensures that the recommended weatherization and heat pump upgrades are tailored to the specific needs of the home, maximizing both energy savings and participant satisfaction. The auditor can offer homeowners a clear and accurate understanding of their home's current energy profile, including areas where improvements are most needed, while providing program implementers a thorough understanding of the home's baseline condition.

The assessment process should involve a comprehensive evaluation of the home's insulation, air sealing, envelope materials, heating and cooling systems, and overall energy usage. A thorough analysis helps identify which weatherization measures will have the greatest impact on reducing energy consumption and which heat pump solutions will be most effective. The resulting recommendations should be based on the data and best practices, ensuring the best mix of benefits.

Incorporating energy audits into the program can aid homeowners in the decision-making process. With clear, evidence-based recommendations, homeowners can make informed choices about which improvements to prioritize and how to proceed with their upgrades. This approach not only enhances the effectiveness of the program but also builds trust with participants by demonstrating a commitment to transparency and personalized care for the homeowner.

Some programs allow the participating contractor to perform audits for their own projects. This can lead to improved outcomes, as the contractor is fully familiar with all aspects of the building and the improvement recommendations are unlikely to get lost in translation between an auditor and a different installer. However,

this model relies on participating contractors who can be trusted not to promote unsubstantiated measures or measures with a high-profit margin that are not aligned with the interests of the homeowner or the program.

Allow alternate pathways to participation

To prevent the total loss of sales and encourage broader participation, a program implementer could offer a tiered incentive system where customers who do not opt for co-installation can receive smaller incentives. A hybrid model allows flexibility, ensuring that homeowners who are hesitant or unable to commit to both measures can still benefit from the program. Consequently, it helps retain interest and participation in the program while promoting the intended upgrades over time, thereby striking a balance between incentivizing comprehensive improvements and accommodating varying homeowner needs.

Best practices relevant to bonus model

Encourage contractors to use bonus incentives as a sales tactic

Both weatherization and heat pump contractors can benefit from the bonus incentive when selling their services to the homeowner. Approaching the home as a system and providing the homeowner with information on additional benefits associated with co-installation can result in increased homeowner trust. Weatherization and heat pump installers should leverage program participants as "warm leads" to sell a weatherization upgrade or heat pump. Promoting the combined benefits of both measures can help the program convert heat pump customers into weatherization customers and vice versa.

Provide participants with recommended schedules and expected costs

Providing homeowners with clear timelines and schedules can set expectations for when work should be completed and allow a homeowner to budget to install a heat pump after weatherizing. A transparent schedule can help keep a homeowner engaged and manage financial expectations to ensure that homeowners are prepared for upcoming expenses.

Allow an elongated timeline to claim the bonus incentive

The time needed for an average homeowner to recoup funds to spend on a heat pump installation or weatherization project is often more than a year. Allowing an elongated timeline can alleviate financial pressure and improve the adoption rate in participating homes. Extending the period in which both upgrades can be completed allows homeowners flexibility to manage their budgets more effectively, making it easier for them to commit to the full scope of the program and install heat pumps in their weatherized home.

Repeated follow up with weatherization participants

Periodic follow-ups with participants are essential to keep them engaged and planning for a heat pump installation. These follow-ups serve to remind homeowners about the bonus incentive and upcoming expenses and encourage them to complete their installation within the allotted time. Regular communication helps keep the incentive top of mind and ensures that participants are motivated to take full advantage of the benefits offered. Follow-ups should include program reminders, the expected timeline of installation, and the benefits of installing heat pumps in their weatherized home.



Educate contractors on how to size heat pumps in homes with planned weatherization

Sizing a heat pump system to the anticipated future reduced heating and cooling loads is difficult. Programs should provide clear instructions to contractors on how to do this, considering upgrades to be completed, timeline, current heating loads, and expected future loads. The program should provide guidelines on supplemental heating, including managing controls properly to give the heat pump primacy, to meet the current load throughout the winter.

Best practices related to information sharing model

Provide supplemental education on other measures

Homeowners participating in weatherization or heat pump programs are investing in their home's comfort and energy affordability. The best opportunity to educate them on other methods of improving their home's comfort and energy performance is while they are engaged in this process. Programs should provide educational resources to participants about other available incentives, programs, and the benefits of a whole home approach.

Educational materials should highlight how weatherization and heat pumps can cooperatively enhance overall home performance and energy savings. Program administrators should be knowledgeable about other technologies and able to connect participants to other, complementary programs. In the absence of a formal structure, raising awareness of the broader benefits and available resources can motivate participants to explore additional upgrades that align with their long-term energy goals. NYSERDA does this well through their Clean Heat Connect program that provides educational resources focused on high performance heat pumps and weatherization.

Communicate between programs operating in the same region

Separate programs that operate in the same region with the same customer base should frequently share information about program changes, successes, best practices, and identified trends. Sharing information can increase a program's ability to recruit participants and maximize the program's effect within its allotted resources. Program contacts should be able to educate participants on other programs they may be eligible for or at least point them in the right direction. Separate programs serving the same population should foster symbiotic relationships and work together to use their resources most effectively. Programs can work alongside each other at promotional events or create a degree of similarity in their online branding and navigation to create a sense of familiarity and ease with users. Aligning internal data fields can better enable sharing of data and allow more efficient incentive processing between programs, such as performance metrics, data format, or pictures.

Utilize comprehensive home energy assessments

An ideal program would allow each home to be assessed individually to determine the most effective strategy for energy savings and comfort improvement and then implement thoughtful combinations of weatherization and high performance HVAC. This process begins with conducting unbiased high-quality energy assessments to

identify tailored measures for each participant. Having energy assessments conducted by impartial entities such as third-party auditors or program energy advisors can avoid conflicts of interest and prevent customers from being directed toward the services of the auditor conducting the assessment.

There is a wide range of what may be called an "assessment"—from a phone conversation or virtual audit with limited capacity to offer definitive recommendations to an in-person comprehensive diagnostic assessment with a prioritized list of recommendations. The relative value of any assessment is difficult to quantify, though a homeowner typically receives more exact information from a "gold standard" inspection that includes appropriate diagnostics than from a virtual audit or phone conversation. Any assessment should tailor data to identify clear opportunities and bases for heat pump and weatherization upgrades.

If a simple initial assessment provides evidence of effective and straightforward measures to install, a more thorough building assessment might also be conducted *just before* or *as* work starts. The benefit of this approach is that installations can happen more readily—especially for contractors who either install both measures or who work closely with other contractors on co-installation. The challenge of this approach is that major adjustments to a work scope may be costly in terms of money, time, and expectations. Some contractors propose this model as a potential option for energy savings, though with careful consideration of what happens with problematic findings on-site.

While a quality in-person full home assessment is ideal and should be encouraged where practical for understanding the building as a system and the home's potential improvements, the need to rapidly ramp up assessments to drive volume may dictate that we streamline the process. (See discussion in Improvement Selection Tools as well.) This streamlining may take the shape of quick assessments of homes without a robust initial review. If so, some form of double-checking will be important to make sure the home is being considered appropriately, with attention to outlying conditions.

Avoid penalizing weatherization

Larger capacity (size) heat pumps typically cost more, and installing more heat pumps in a house will cost more. Heat pump programs with incentives that increase along with the system capacity (e.g., NYS Clean Heat rebates) may have the adverse impact of dissuading load-reduction measures and encouraging heat pump oversizing, since a larger heat pump installation project will receive more incentive money. An alternative model would be to increase incentives based on the *total impact* of load reduction *and* energy efficiency. As an example, a house receives attic insulation and air sealing to drop the heat load by 25 percent. Incentives would be calculated from the pre-weatherization baseline load rather than only on the smaller capacity heat pumps that are now installed (a 2-ton unit is installed rather than a 2.5-ton unit since the house load is now reduced). A fuel-switching bonus (e.g., oil to heat pumps) may also be augmented by load reduction efforts to similarly drive weatherization measures.

Such a program would face challenges in implementation but could lead to an improved combined impact. It would require establishing a baseline energy use estimate through a combination of energy modeling, historic

fuel usage, and/or vintage assignment, and then confirming that both the weatherization improvements and the installed heat pump combined to reduce the baseline load. This program concept would help ensure that buildings are evaluated based on their actual performance improvements, fostering a more holistic strategy for reducing energy consumption.

Drive Program Participation

Simplify program participation

Simplifying the program participation process is essential for reducing the burden of participation on both installers and homeowners. Most interviewees expressed the benefits of a simpler system and the deterrent of a complex system. The interviewees' experience proved that a simplified program can result in increased participant satisfaction and increased participation. Strategies to simplify programs include:

- Refrain from frequent changes in program offerings, requirements, or incentive amounts. Frequent changes discourage contractor participation by increasing administrative requirements. Changing incentive amounts can make contractors skeptical of program stability, thereby discouraging participation. For example, the New York State Clean Heat program and Clean Heat RI program both experienced mid-year program disruptions due to spending program budget before expected, which may have led to a lack of trust by both contractors and consumers. If changes are necessary, program administrators should announce them to participants in a clear manner with substantial lead-time before the change and be transparent with causes.
- **Minimize participation requirements** to focus on the key goals of the program. Refrain from adding excessive paperwork, ancillary data collection, or communication that adds managerial time without additional benefit to the program or participant.
- Streamline application and approval procedures, facilitating quicker project initiation and completion for both heat pump and weatherization projects. This efficiency benefits all parties by reducing delays and administrative hurdles. Contractors often mention that it can be a huge burden to carry too many costs while waiting for reimbursements.
- **Provide clear, well-documented guidelines and processes** that help participants understand the requirements and procedures. This reduces confusion and ensures that participants are aware of what is expected at each stage.

Designate a single point of contact

A program should provide a dedicated single point of contact for each participant, offering general guidance through each step of the process. This role involves personalized coaching to assist a participant in navigating the program's requirements and understanding eligibility criteria, financing, and payment assistance options. Contractors repeatedly mention this as an extremely helpful component for multi-measure programs.

A program contact may provide even more intensive support, serving as a project manager for the applicant, assisting with scheduling and coordination to ensure timely progress for installations, and minimizing delays or

disruptions. A program contact that assists with project management responsibilities can simplify the process for the applicant and ensure greater realized energy and cost savings by coordinating trades and assisting in selecting the upgrades with the highest impact.

Educational outreach is an additional aspect of this role. The contact can provide education resources, inform customers of webinars, and update them on technology and program changes. The program contact should direct applicants to available tools and resources endorsed by the program to help participants make informed decisions.

The program contact should have a deep understanding of the participation process and program requirements. They should receive training and reference documents from SMEs to anticipate and answer difficult but expected questions from the applicant. The program contact should be supported by SMEs for both frequently asked questions and for technical questions outside the scope of their expertise.

Offer guidance and resources for financing or payment assistance

The capital investment for weatherization or heat pump installation is substantial. Doing both at once or concurrently exacerbates this. An effective incentive program should offer comprehensive guidance and resources for financing and payment assistance. The program does not need to offer its own financing; rather, it can refer applicants to available external financing sources. Offering a robust set of resources to participants is valuable to both installers and customers. This resource library should provide guidance on loan terms, eligibility criteria, the benefits of different financial products, and details on various financing options.

Deliver Customer Outreach and Education

Conduct customer outreach

Program implementers and participating contractors should connect with the target population via a range of communication media or through community-based organizations (CBOs) to learn the specific needs of the customer base and tailor programs to these needs. While feedback from trade allies and installers is valuableand should be collected and acted on, speaking directly to customers is the best way to meet their needs and address concerns. CBOs can provide valuable insight and connection with the communities the program is attempting to serve. Identifying the needs and goals of the target population will help programs be more effective in their efforts to encourage customer engagement and will make a greater impact on the needs of the communities the program is intending to serve.

Educate homeowners

An effective program must educate homeowners about the process, technologies, and benefits of home upgrades. Education should emphasize the benefits of combining weatherization upgrades with heat pump installations and communicate that the simultaneous (or proximate) installation of both can significantly reduce operating costs through load reduction, and enhance user comfort. This information should be seamlessly

integrated into the program's marketing efforts to reach potential participants early on, and then be reinforced during later stages, such as when customers inquire about specific measures. Providing this detailed and timely education helps participants make informed decisions, encourages the adoption of complementary upgrades, and ultimately maximizes the program's impact on cost and energy savings and environmental sustainability.

ENERGY STAR is planning national articles on heat pump and envelope benefits in 2025. The content is intended to support utility promotional efforts as well as ENERGY STAR Home Upgrade promotional efforts. National programs such as ENERGY STAR or Electrify Now offer compelling general information that can be used as launching points for discussions.

Engage Contractors

Connect weatherization and heat pump installers

A collaborative model should provide higher adoption rates of both weatherization and heat pumps, leading to greater overall energy savings and a more significant impact on utility energy savings goals.

Weatherization and heat pump installers typically specialize in their trade and rarely interact with one another. The process of installing both measures can be streamlined when weatherization contractors and heat pump installers are in tight communication. As an example, a weatherization installer who recognizes that a home would benefit from a heat pump can refer the customer to a trusted installer, ensuring proper coordination with any weatherization work and limiting the administrative burden on the homeowner. Similarly, heat pump installers can recommend weatherization services to clients who would benefit from such improvements to maximize the efficiency of their new system. Some contractors who provide mostly HVAC or weatherization services develop symbiotic relationships and provide referrals to other contractors they know and trust when they see clear opportunities for improvement, but it is not common. Some companies provide both services, or there are two very closely associated companies that can provide both (e.g., same owner). In those cases, cross- promotion and coordination typically works well.

Promote common messaging for participating contractors

Participating contractors play a pivotal role in the promotion of heat pump systems, as homeowners often turn to them for recommendations. Contractor-provided information and opinions carry significant weight and can sway the decision of a homeowner to or from the technology a program is looking to promote. To ensure participating contractors are effectively communicating the benefits of both heat pumps and weatherization upgrades, program administrators should provide them with *talking points and messaging*. This messaging should include energy-efficiency technologies, cost savings, and environmental benefits. Equipping participating contractors are consistent in messaging and ability to address common concerns can ensure that all participating contractors are consistent in messaging and are able to advocate confidently for both energyefficient measures. Well-prepared messaging can enhance installation rates and overcome potential biases or misinformation.

Provide contractor training

Programs should have well-trained participating weatherization and heat pump contractors with a comprehensive understanding of building science and the advantages of combining both measures. By fostering a deeper knowledge of building science for contractors, these programs can help ensure that the building is considered a system and that recommendations are for the most effective improvements.

Training should include installation skills and offer certification opportunities, such as those given by the Building Performance Institute (BPI). If a contractor is interested in adding weatherization or heat pumps to their business, they should be encouraged to do so and provided with the necessary training or directed to an entity that can provide the training. An installer that is trained in providing both services can enhance their business opportunities and contribute to more holistic and effective solutions for homeowners, ultimately supporting the wider adoption of both measures. BPI recently launched a Total Building Performance certificate course that offers a broad range of retrofit solutions.⁵

Support the Use of Effective Tools

To aid participants and increase the effectiveness of both installed measures, programs should provide tools and resources for participants. This section offers tools and best practices to support programs in better co-promotion of weatherization and heat pumps.

Program guide

A program guide should offer clear and concise instructions for both homeowners and installers, ensuring a smooth and straightforward experience from start to finish. The guide should provide detailed and easyto- follow steps to participate in the program and guidance on how to complete each step. The guide should include information on how to estimate potential incentives and collect incentives. The guide should define each step in simple, actionable tasks and avoid industry-specific jargon (without definition) to make it accessible to those less familiar with the program. The program guide should facilitate a hassle-free process, enabling participants to efficiently navigate the program and maximize their benefits with minimal confusion. If helpful, separate guides may be created for homeowners and contractors to ease comprehension.

Resource library

A resource library can be a valuable source of education on the program and related technologies. The library can provide tailored guidance by developing program-specific resources that help participants understand and maneuver through the process. These resources should be crafted to address the unique needs of the program, offer detailed instructions, and provide critical information that aligns with the program's objectives. The resource library should also include resources on technologies that relate to the program. These resources help

⁵ https://www.bpi.org/certificates/total-building-performance-certificate/



the participant to gain a deeper understanding of the related technologies.

Links to valuable external resources should be included in the library. Potential references include the DOE Savings Hub, ENERGY STAR, CEE, NEEP, state resources, utility sites, and other authoritative energy-efficiency organizations. These connections provide participants with access to reliable and up-to-date information, empowering them to make informed decisions and maximize the benefits of their energy-efficiency efforts. By integrating these valuable external resources, the library not only supports program-specific needs but also enhances participants' overall knowledge and engagement with broader energy-efficiency initiatives.

The library should be segmented into distinct sections to ease navigation, each catering to different user groups. For installers, the library should offer links to technical resources, best practices, and installation guidelines that facilitate their role in the program. This specialized content ensures that installers have easy access to the tools and information necessary for successful implementation. For homeowners, the library should provide straightforward, user-friendly resources designed to support their understanding of the technologies and engagement with the program. Bifurcation of these resources ensures that both installers and homeowners can efficiently find the information most relevant to their needs.

For example, NYSERDA Clean Heat Connect⁶ has an extensive library of educational materials intended for contractors and homeowners to learn about heat pumps. These resources span a variety of topics from assessing residential electrical service to refrigerant regulation changes.

Homeowner educational materials

Educational materials are essential for equipping installers and homeowners with an effective understanding of weatherization techniques and heat pump technologies. These resources delve into how these upgrades can improve home performance, reduce utility costs and boost comfort. Programs should provide homeowners with simple, jargon-free explanations of how weatherization and heat pump systems work, their potential benefits, and ways they can optimize energy use in their homes. Installers should be provided with materials to give to a homeowner at the time of bid or installation that ensure the homeowner is aware of how to operate and maintain their new system. To accommodate different learning styles and points of contact, they should include printed brochures, online resources, and instructional videos, and be designed to be engaging and informative. Using these resources, contractors can increase homeowner knowledge of their systems and enhance their experience.

Improvement selection tools

Homeowners are often challenged by how to select which upgrades make the most impact and fit within their budget. Selection tools (typically web-based) should be designed to simplify the selection process for homeowners interested in both measures. These user-friendly tools should allow a homeowner to input details

⁶ Installer Reference Materials | Resources | Clean Heat Connect- NYS Clean Heat

about their specific issues, goals, and home characteristics and generate upgrade recommendations tailored for their residence. Systematically assessing factors such as insulation levels, window types, and existing heating or cooling systems can allow homeowners to identify the most effective weatherization and heat pump improvements for their situation. A selection tool can also maximize the impact of program funds by referring customers to the measures that result in the greatest energy savings per dollar spent. Often, these online tools can identify initial benefits and potential for future building upgrades, serving as a motivator for the homeowner to pursue additional opportunities.

Selection tool websites can provide a simplified and rapid, although cursory, home assessment. Multiple organizations have websites where a user provides basic inputs and is provided estimated savings and potential rebates available for both heat pumps and weatherization; these tools also connect users to other resources regarding either measure. Two such examples are PNNL's Retrofit Decision Tool⁷ or Rocky Mountain Institute's Green Upgrade Calculator.⁸ Tools such as these could be adjusted to more precisely serve a specific population. NEEP offers a cold climate air source heat pump tool that allows the user to input design loads and select a nearby weather station to analyze how the heat pump systems may perform using historical weather data and manufacturer-supplied capacities and efficiencies.⁹

Other selection tools can be used for building modeling and analysis directly. Interviewees recommended lidarinformed HVAC design and sales software such as Amply, Conduit Tech, or Hover, to streamline and improve the accuracy of building models and energy use. These tools also offer visualizations to help homeowners and contractors understand the "look and feel" of a weatherization or heat pump installation and outline the benefits. NEEP recently published an article on remote assessments that delves further into the topic.¹⁰

Other tools such as data aggregators can use available housing data, statistical analysis, or other data to discover residential opportunities for program involvement.

As mentioned above, an energy assessment can further enhance the accuracy and effectiveness of recommended upgrades. This professional evaluation should provide a comprehensive analysis of the home's energy performance and identify precise opportunities for improvement. Incorporating expert insight into the selection process provides homeowners with reliable and targeted recommendations tailored to their home's specific conditions. A dual approach—using improvement selection tools in conjunction with a third-party assessment—ensures that homeowners make informed decisions, leading to more efficient upgrades and greater overall energy savings.

⁷ <u>https://basc.pnnl.gov/retrofit_decision_tool</u>

⁸ https://greenup.rmi.org/

⁹ ashp.neep.org)

¹⁰ https://neep.org/blog/how-virtual-energy-assessment-tools-can-play-key-role-states-ira-market-transformation

Cost calculators

Cost calculators are an invaluable tool for homeowners considering upgrades as part of an energy-efficiency program. These calculators estimate costs for common upgrades, such as insulation improvements, window replacements, or heat pump installations. The cost calculator should use market rates and typical installation scenarios and should be able to project the potential monthly bill reductions associated with upgrades using data from reputable sources like the DOE Savings Hub.¹¹ Projections of monthly utility bills help homeowners understand the long-term savings potential of upgrades, giving them a clearer picture of the financial benefits.

Mass Save offers a heating comparison calculator for Massachusetts residents to compare the energy consumption and cost of their existing HVAC system to a selection of potential heating systems and provide the calculated carbon emissions savings.¹²

The estimates provided by the cost calculator are for informational purposes only and may not reflect the actual costs incurred. Adding information on what might increase or decrease costs can empower homeowners to educate themselves further on options that optimize customer and utility savings. Homeowners should consider these variables and consult with contractors (or auditors) to obtain estimates and bids tailored to their circumstances. Clear communication of limitations and transparency in the calculations help ensure that homeowners make informed decisions and have realistic expectations based on a comprehensive understanding of potential costs and savings.

Conclusion

This assessment outlines the benefits and challenges associated with different strategies of heat pump and weatherization promotion for single-family households. It provides recommendations for programmatic best practices for cross-promoting and co-promoting heat pumps and weatherization, regardless of the incentive structure decided upon. NEEP and other actors in the region stand ready to assist programs, administrators, and other key actors to implement actions, facilitate partnerships, and implement strategies for advancing the adoption of high performance heat pumps and weatherization in the Northeast region.

¹¹ energy.gov/save

¹² Mass Save | Heating Comparison Calculator