



## NEEP's 2019 Air Source Heat Pump & Smart Controls Initiative Overview

*Accelerating market adoption of high-efficiency residential and commercial air source heat pumps, smart controls and services with thermal efficiency improvements that provide deep energy savings and carbon reduction while enabling real-time load management to support efficient, reliable grid operation.*

### About NEEP

Northeast Energy Efficiency Partnerships is a nonpartisan, nonprofit organization that brings together the many players in the energy field – government agencies, the utility industry, advocates, researchers, communities, and others – to work together to accelerate regional scale adoption of high efficiency, low carbon home and building energy solutions. To achieve this, NEEP engages and empowers influential stakeholders, advances regional market transformation strategies, provides independent research, analysis, and technical expertise, and advances knowledge and best practices for selected high-impact opportunities.

### Overview

NEEP's Air Source Heat Pump (ASHP) and Smart Controls regional initiative weaves together and implements our regional market transformation strategies to accelerate market adoption of ASHPs and Smart Controls.<sup>1</sup> The initiative addresses the urgent need to reduce the carbon footprint of homes and buildings in the Northeast region while serving as flexible grid assets as described in NEEP's [2017 Regional Strategic Electrification Assessment](#) and [Action Plan](#). Essential to meet state and local climate stabilization goals by 2030 and 2050, NEEP's market transformation initiative builds on and scales-up the momentum of technology innovation supported by individual state, ratepayer-funded and local energy efficiency, demand response, and carbon reduction policies and programs.

**Cold Climate Air Source Heat Pumps** (ccASHPs) and **Variable Refrigerant Flow** (VRF) systems offer Northeast households and businesses a super-efficient clean energy solution to dramatically reduce the use of less efficient, carbon-intensive space heating systems while also offering efficient air conditioning. **Smart Controls** bridge ASHP systems with other heating systems to maximize efficiency and occupant comfort while also enabling real-time demand response in thermally-efficient homes to support efficient, reliable grid operation.

The ASHP and Smart Controls initiative is poised for growth and expansion in 2019 as participation in our ccASHP product lists and

### NEEP's Long-Term Market Transformation Goals

#### By the year 2030:

1. 40% market penetration of high performance ASHPs in the Northeast
2. 50% of Northeast homes are "energy smart" (i.e., have at least two "energy smart" systems - HVAC, water heating, plug loads)
3. The majority of consumers that adopt high performance ASHPs include thermal efficiency improvements

<sup>1</sup> See NEEP's ccASHP Market Transformation Strategies at: [https://neep.org/sites/default/files/NEEP\\_ASHP\\_2016MTStrategy\\_Report\\_FINAL.pdf](https://neep.org/sites/default/files/NEEP_ASHP_2016MTStrategy_Report_FINAL.pdf),



resources grows across the Northeast U.S. and Canada with increased interest from other regions. In addition, our 2019 initiative includes a broader scope of technologies (e.g., VRF), exploration of high performance ASHP product specifications for additional climate zones, best practice consumer guidance to select ccASHP products, expanded tracking of in-field ccASHP cost and performance, and increased outreach and education to support broad and consistent use of NEEP’s best practice ccASHP guidance for consumers and installers. We will undertake this expansion in consultation with our state, industry, federal, and non-profit project participants to maximize value while maintaining a high level of integrity in our products and services.

## Contents

2019 Initiative Outcomes .....	3
NEEP’s 2019 Cold-Climate ASHP Services.....	3
ASHP and Smart Controls Outreach and Education .....	5
NEEP’s ASHP and Smart Controls Stakeholder Engagement.....	5
2019 ASHP and Smart Controls Initiative Subscription Services and Benefits .....	7
Appendix A: NEEP 2019 Products and Services.....	8
Appendix B: 2019 ASHP Product Listing Fees.....	9
Appendix C: 2019 ASHP and Smart Controls Initiative Subscription Fees.....	10
Appendix D: 2019 ASHP Workshop Sponsorship Fees .....	11
Appendix E: Example Manufacturer Initiative Costs .....	11



## 2019 Initiative Outcomes

Working towards our long-term market transformation goals, NEEP's 2019 activities will focus on supporting the following outcomes:

1. Program and/or policies referencing NEEP's ccASHP specification increases from seven to 10 states and provinces in the Northeast U.S. and Canada.
2. NEEP's regional market transformation strategies and resources for ASHPs are referenced or used in at least five new jurisdictions.
3. At least five Northeast states and 75 percent of manufacturers with products listed on NEEP's 2019 ccASHP list reference or use NEEP's best practice 2018 ccASHP installer guidance and/or 2019 consumer guidance to select ccASHP systems.

## NEEP's 2019 Cold-Climate ASHP Services

**Publicly Accessible High Performance ccASHP Product List:** Since our January 2015 launch of the ccASHP product specification and product list, NEEP has improved performance metrics for ccASHPs to serve the needs of consumers and installers who live and work in cold climates, and facilitated consistency in technical requirements for ccASHP in efficiency programs across the Northeast U.S. and Canada. Efficiency programs in the Northeast continue to shift their requirements to align with NEEP's specification, and there is growing interest from other regions.

**Updated Product Specification and New Product List Application Fee:** To stay current with product development and innovation, on January 1, 2019, NEEP will publish an updated ccASHP product list based on ccASHP specification V3.0<sup>2</sup>. Beginning in April, we will launch a new web-based product list format. NEEP's updated, public ccASHP product list will offer a new format and user interface that eases ccASHP product list review and comparison along with user-friendly technical information. The enhanced database will support the growth in ASHP products as well as expanded list use by programs in the U.S. and Canada. In 2019, we will begin charging annual manufacturer product listing fees for products to be listed on this multifunctional ccASHP product list beginning April 1. *See Appendix B for NEEP's ccASHP listing fees.*

**New ASHP List Expansion:** Informed by initiative subscribers and relevant developments (e.g., CSA's new ASHP performance testing protocol), NEEP will explore opportunities to develop high performance product specifications and lists for additional climate zones and types of ASHP systems including VRF, air-to-water ASHPs, integrated control systems, and others.

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<sup>2</sup> Access more information on our website at: <https://neep.org/initiatives/high-efficiency-products/emerging-technologies/ashp/cold-climate-air-source-heat-pump>. Most V2.0 listed products meet the updated V3.0 specification and will automatically be carried over.



**New VRF Market Transformation Strategies Report:** The 2019 ASHP initiative includes developing for Variable Refrigerant Flow (VRF) technologies a regional roadmap of market transformation strategies designed to accelerate VRF adoption in the region. Building on NEEP’s 2018 VRF market research, in 2019, we will engage a diverse cross section of market actors to develop a regional roadmap to overcome identified technology and market barriers.

**ccASHP Product Performance and Market Tracking:** Field data is necessary to successfully integrate ccASHPs into existing heating systems, to set consumer expectations, and to inform product development, installation and service best practices as well as program cost-effectiveness analysis and evaluation. NEEP will continue and expand its collaboration with U.S. DOE, national labs and others to track, assess and provide initiative subscribers reported and observed ccASHP performance data and associated analyses.

**ccASHP System Installation and Consumer Education Best Practices:** In 2017, NEEP, with U.S. DOE funding, developed a ccASHP Installation Best Practices<sup>3</sup> guide and video to build market capacities to properly select and install ccASHPs. In 2019 NEEP will develop a consumer buying guide to educate consumers on ccASHP options and considerations in purchasing an ASHP. NEEP will engage initiative subscribers to inform guidance development as well as to assist broad distribution, use and referencing of these best practice materials through programs, industry installer training, and consumer outreach and education.

**New Smart Controls for ccASHP System Integration:** A new generation of home heating system controls are needed to manage the interaction of ccASHPs (particularly ductless systems) with other building heating systems (e.g., furnaces and boilers) to optimize efficient energy use while keeping occupants comfortable and responding to electric grid needs. In 2019, NEEP will track and contribute to projects (e.g., in Massachusetts, New York and national labs) to drive the development of such integrated controls, and test their performance. We will facilitate learning exchange among these efforts and share relevant developments with initiative subscribers to inform program efforts that encourage market introduction, adoption and use of integrated controls for multiple heating systems.

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<sup>3</sup> See NEEP’s *Guide to Sizing & Selecting ASHPs in Cold Climates* and *Guide to Installing ASHPs in Cold Climates* at <https://neep.org/initiatives/high-efficiency-products/air-source-heat-pumps/air-source-heat-pump-installer-resources>



## ASHP and Smart Controls Outreach and Education

To support efforts to accelerate the market introduction and adoption of high performance ASHPs and Smart Controls, NEEP will provide topical public webinars, participate in and present at relevant state, regional, and national conferences, publish topical blogs and papers, and use social media channels to reach target audiences including policy makers, state officials and agency staff, regulators, efficiency program administrators, community leaders, and consumer and environmental advocates.

NEEP also tracks and contributes to relevant research, policies, programs and initiatives, and attends related conferences and events regionally and nationally to build market momentum to overcome identified market, technology and policy barriers. This sometime includes providing invited comments to state policy and program proceedings. We also serve as a technical advisor to initiative participants.

To support public participation in the ASHP and Smart Controls initiative and use of our resources to advance common market transformation goals, we invite NEEP ASHP initiative subscribers and non-subscribers to sponsor NEEP's **Annual Renewable Heating and Cooling Workshop** to be held spring/summer 2019. *See Appendix D for details.*

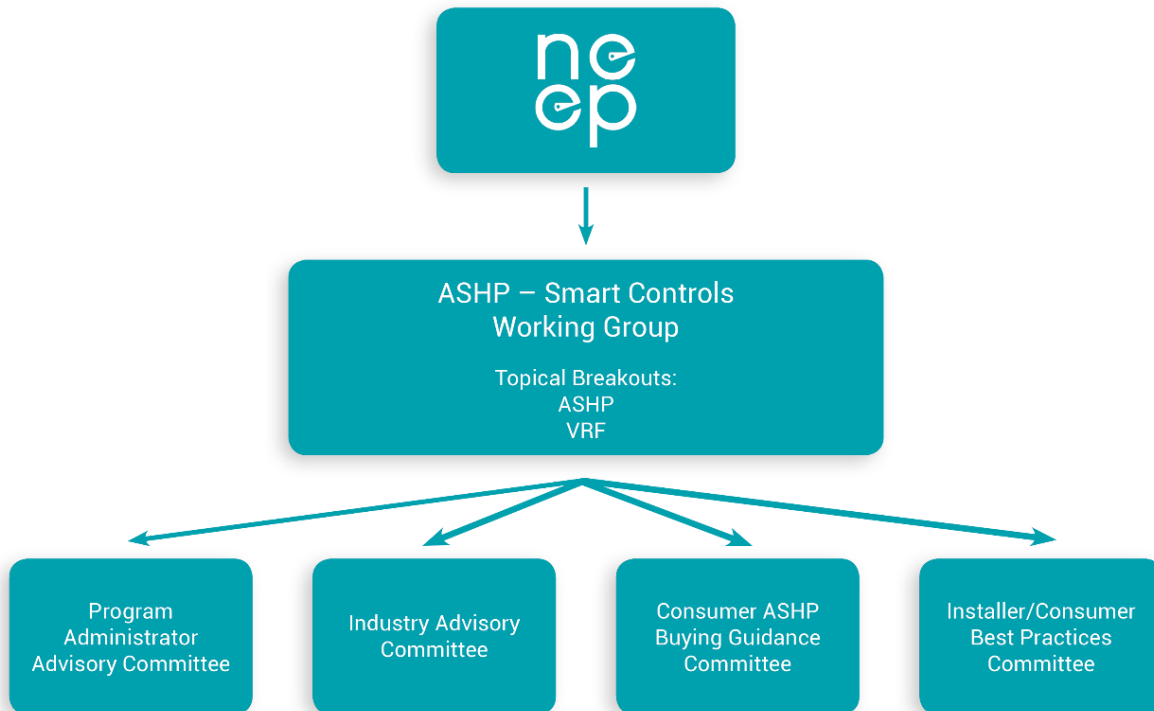
## NEEP's ASHP and Smart Controls Stakeholder Engagement

Collaboration and learning exchange among leaders working to advance high performance ASHP and Smart Controls is a key strategy to achieve long-term market transformation and building decarbonization goals. Our collaboration includes NEEP's initiative working groups and topical sub-committees. These complement NEEP's public-facing webinars and our annual Renewable Heating and Cooling Workshop.

- ◆ Our **working groups** convene subscribers to inform and implement our regional market transformation strategies, develop valuable connections to advance program and business goals, facilitate learning exchange, support product, market and program tracking, and keep abreast of relevant policy, program, technology and market developments.
- ◆ Our **topical sub-committees** engage subscribers to dive deeply into technical, market and program needs, issues and solutions relevant to specific stakeholder perspectives to advance ASHP and Smart Controls.



To better serve over 200 unique participants and prepare for further growth, in 2019 our collaborative structure will integrate efforts to advance the market introduction and adoption of high performance heat pumps and Smart Controls through the following structure:





## 2019 ASHP and Smart Controls Initiative Subscription Services and Benefits

NEEP's Air Source Heat Pump and Smart Controls Initiative participants include regional, national, and Canadian interest spanning federal, state and local government, equipment manufacturers, distributors and installers, utilities and energy service providers, efficiency and clean energy program designers, managers and evaluators, national labs, research institutes and consultants, consumers, low income and environmental advocates, and other interested stakeholders.

To support NEEP's initiative services, beginning April 1, 2019, NEEP will require ASHP and Smart Controls Initiative participants to become initiative subscribers.

**Subscriber Benefits:** Initiative subscribers receive the following benefits:

- 1. Enhanced Access to ccASHP Product List:** NEEP's ccASHP Product list, available for view on NEEP's website, includes products documented and evaluated to meet our technical requirements. With the launch of our new ASHP product database with increased functionality, subscribers will have access to unlimited downloads of the ASHP list along with reported product performance information. Non-subscription access will be limited.
- 2. Participation in NEEP's ASHP and Smart Controls Working Groups, Advisory and Sub-Committees:** Subscribers and invited guests will be invited to participate in NEEP's quarterly webinar meetings and in NEEP's topical sub-committees to contribute to the development of NEEP resources/tools.
- 3. Initiative Updates and Reports:** Subscribers will receive topical updates and have early access to NEEP reports prior to full publishing.
- 4. NEEP Events:** Subscribers will receive early information about NEEP's Renewable Heating and Cooling workshop and 2019 NEEP Summit, and opportunities to participate. In 2019 NEEP will also offer several topical ASHP and Smart Controls public webinars. Subscribers will be able to attend these webinars at no cost.
- 5. Technical Expertise:** NEEP will prioritize our team's response to subscribers regarding questions about ASHP or Smart Control technologies, technical requirements, and other issues related to initiative activities.
- 6. Subscriber Visibility:** Subscribers' logos and links will appear on the NEEP website. This makes it clear to ASHP, VRF, Smart Controls manufacturers, suppliers and specifiers that initiative subscribers are part of a larger effort to assure quality and energy efficiency for their customers and constituents.
- 7. Discount for NEEP Allies Program:** Initiative subscribers will be offered a 25% discount on the NEEP Allies Program

***See Appendix C for 2019 ASHP and Smart Controls Initiative Subscriber Fees.***



## **Appendix A: NEEP 2019 Products and Services**

### **Stakeholder Engagement, Outreach and Education**

1. ASHP Working Group and Sub-Committees
  - Program Administrator Advisory Committee
  - **New** Industry Advisory Committee
  - **New** Consumer Buying Guidance Best Practices Committee
  - **New** Installer/Consumer Best Practices Committee
2. VRF Working Group
3. Renewable Heating and Cooling Workshop
4. Topical Webinars (three – topics to be selected to meet subscriber needs)
5. Presentations and Briefings

### **Tracking and Analysis**

6. Quarterly ASHP Market Tracking Analysis reports

### **Tools and Guidelines**

7. NEEP's Cold-Climate ASHP Specification and Product List
8. **New** Cold-Climate VRF Specification and Product List: Opportunity Assessment
9. **New** ASHP Consumer Buying Guidance Resource
10. Dissemination of NEEP's ASHP Installer Guides/Video, and ccASHP Consumer Operations and Maintenance Guide
11. **New** Case studies of most common ASHP installs
12. Online repository of ASHP, VRF and Smart Controls Reports/Analysis/Resources

### **Research and Reports**

13. **New** Northeast VRF Market Transformation Strategies Report

### **National/Regional Collaboration**

14. Monitor, communicate, present and coordinate with national and regional organizations (i.e. Regional Energy Efficiency Organizations, U.S. DOE, Natural Resources Canada, Home Performance Coalition, ACEEE, Efficiency Canada, advocacy organizations, etc.)
15. Disseminate U.S. DOE best practice and link states to federal programs and resources





## Appendix B: 2019 ASHP Product Listing Fees

NEEP’s ccASHP Product list is referenced and used by leading ccASHP programs in the U.S. and Canada (including NYSERDA, Massachusetts Clean Energy Center, Ontario’s Save on Energy, etc.). To serve an expanding number of programs and manufacturers using this list, in April 2019 NEEP will introduce a new enhanced database that eases list review and comparisons supported by technical information. To support this, beginning April 1, NEEP will require manufacturers listing products on NEEP’s public-facing ccASHP product list to pay a listing fee as follows. See NEEP’s [website](#) for more details regarding the timeline relating to the product listing fee program. NEEP will provide detailed information about the product listing application process in the first quarter of 2019.

TABLE A: 2019 ccASHP Annual Product Listing Fee Schedule
<b>\$5,000</b> – For Manufacturers listing 1-10 products on the NEEP List in the calendar year
<b>\$7,500</b> – For Manufacturers listing 11-50 products on the NEEP List in the calendar year
<b>\$10,000</b> – For Manufacturers listing more than 50 products on the NEEP list in the calendar year
<i>*Manufacturers who provide any level of listing fees are provided a \$2,000 credit to use towards any other NEEP fees including Initiative subscription, Allies program, or event sponsorship*</i>



## Appendix C: 2019 ASHP and Smart Controls Initiative Subscription Fees

All ASHP Initiative participants must apply to participate in 2019. Table B provides NEEP’s 2019 subscription fees:

TABLE B: 2019 NEEP ASHP & Smart Controls Annual Subscription Fees (Required by 4/1/2019)			
1. State Partnership Subscription (same as 2019 State Partnership pricing)	Population < 3 million	Population 3-10 Million	Population > 10 million
	<b>\$25,000</b>	<b>\$35,000</b>	<b>\$50,000</b>
2. Utility/Government Program Subscription (i.e., utilities/programs not part of a state partnership)	Program Budget <\$10M	Program Budget \$10M-\$100M	Program Budget >\$100M
	<b>\$5,000</b>	<b>\$10,000</b>	<b>\$20,000</b>
3. Industry Subscription (i.e., manufacturers, service providers, consultants, non-profit organizations, trade associations)	Non-profit, Small Business (<20 employees)	Standard Industry	
	<b>\$2,500</b>	<b>\$5,000</b>	
4. Individual ASHP installer/Municipal Employee/ Community-Based Organization Subscription/Grant Providers <sup>Note 1</sup>	<b>No Cost</b>		

Note 1: Federal agencies or foundations that provide grant support for the Initiative can apply for subscription at no cost.

**Subscription Confirmation Process:** To become a subscriber of NEEP’s ASHP and Smart Controls Initiative for 2019, complete the on-line registration form; <http://bit.ly/ASHPandSmartControls>. A NEEP staff member will follow-up to acknowledge receipt, answer questions, and provide a subscription agreement and invoice. Subscription will begin upon NEEP’s receipt of the completed agreement and subscription fee. Starting April 1, only initiative subscribers will have access to the initiative working group and subcommittees.

**NEEP Allies Program:** We offer ASHP and Smart Controls subscribers a 25% discount to encourage participation in NEEP’s Allies Program. For details see: [see https://neep.org/network/allies](https://neep.org/network/allies)

TABLE C: NEEP Allies Annual Program Pricing* (on a rolling 12 month basis)	Standard Fee	Fee with 25% Discount
<b>Tier I:</b> Non-profit Organizations, Academics, Government, Start-ups and for-profits 1-19 employees	\$2,500	\$1,900
<b>Tier II:</b> For profits 20 - 199 employees	\$4,000	\$3,000
<b>Tier III:</b> For profits 200-999 employees	\$6,000	\$4,500
<b>Tier IV:</b> For profits ≥1000 employees	\$8,000	\$6,000



### Appendix D: 2019 ASHP Workshop Sponsorship Fees

We will hold a two-day Renewable Heating and Cooling Workshop in 2019 with the following workshop sponsorship options (no change in pricing from 2018).

TABLE D: 2019 Renewable Heating & Cooling Workshop Sponsorship Options	Fee	Allies Pricing (20% discount)
Workshop Leading Sponsor	\$3,500	\$2,800
Reception Sponsor	\$2,500	\$2,000
Lunch Sponsor	\$2,500	\$2,000
Breakfast Sponsor	\$2,000	\$1,600
Coffee Break Sponsor	\$1,500	\$1,200

For more information about the sponsorship benefits, please contact NEEP’s Event Manager, Lucie Carriou (LCarriou@neep.org).

### Appendix E: Example Manufacturer Initiative Costs

Table E below illustrates manufacturer costs for selected NEEP ASHP & Smart Controls Initiative and other NEEP services. Specific manufacturer costs will vary based on the combination of services selected.

Table E: Annual Manufacturer ASHP Smart Controls Initiative Cost Estimate						
	Product Listing Fees	Product Listing Fee Credit*	Initiative Subscription Fee	Allies Program with 25% ASHP Subscriber discount	Renewable Heating & Cooling Workshop Sponsorship	Total Cost All Options
“Small”	\$5,000 <i>(1-10 products listed)</i>	-\$2,000	\$5,000	\$3,000	\$1,500 <i>Coffee Break</i>	<b>\$12,500</b>
“Medium”	\$7,500 <i>(11-50 products listed)</i>	-\$2,000	\$5,000	\$4,500	\$2,500 <i>Lunch Sponsor</i>	<b>\$17,500</b>
“Large”	\$10,000 <i>(&gt;50 products listed)</i>	-\$2,000	\$5,000	\$6,000	\$3,500 <i>Lead Sponsor</i>	<b>\$22,500</b>

\* Credit can be used towards subscription, Allies program or Workshop sponsorship