



High Performance Air Source Heat Pumps

Smart, Efficient Low Carbon Building Energy Solutions

MISSION

Accelerating market adoption of high-efficiency residential and commercial air source heat pumps, smart controls and services that provide deep energy savings and carbon reduction.

NEEP's Air Source Heat Pump (ASHP) regional initiative weaves together and implements [our regional market transformation strategies](#) to accelerate market adoption of ASHPs, VRF and smart controls. 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.

LONG-TERM MARKET TRANSFORMATION GOALS

By 2025:

- 10 percent of Northeast homes use high performance ASHPs for heating and 33 percent of installed roof top units are advanced or VRF systems.

By 2030:

- 40 percent of Northeast homes use high performance ASHPs for heating.

Regional Trends and Leaders:

- Space and water heating decarbonization is an emerging priority for most Northeast States. Several, MA, RI, NY, ME and CT, have strategies to drive adoption of "clean" or "renewable" heating and cooling technologies.
- ASHP Adoption is quickly increasing in New York and New England. Sales have increased from ~ 50,000 units in 2013 to approximately 75,000 in 2016; a 50% percent increase in just three years.
- NEEP's [Cold-Climate ASHP Product List](#) has grown to include over 5,000 products from over 60 different brands. Programs across the region, and beyond, utilize the list as part of their incentive programs.

NEEP's 2020 Project Outcomes:

1. Twenty percent increase in the adoption of program-rebated ASHP and VRF systems across the Northeast.
2. NEEP's ccASHP product list is used by five new programs joining fifteen others using the list in 2019.
3. NEEP's consumer and installer guides are used or referenced by six programs in the region.
4. ASHP Initiative participants report significant progress in implementing the 2016 ASHP Market Transformation Strategy.

Stakeholder Engagement: NEEP will engage a diverse group of stakeholders - industry, efficiency programs, state and local government, national labs, U.S. DOE, and advocates - to develop and advance long-term regional market transformation strategies to speed the market introduction and adoption of ccASHPs and smart controls.

- ASHP Working Group
- VRF Working Group*
- Sub-Committees*
 - ccASHP Specification
 - Installer Best Practices
 - Program Implementation Best Practices
 - Industry Advisory Committee
 - **New!** ASHP/VRF Refrigerants Advisory Committee*
- Annual in-person ASHP/VRF Workshop
- Two topical webinars
- Invited presentations and Briefings for initiative participants

ASHP Initiative Subscription

NEEP's Air Source Heat Pump (ASHP) initiative is made possible through the engagement and support of key actors across the ASHP market. Current participants include regional, national, and Canadian interests spanning government, manufacturers, distributors and installers, service providers, program designers, national labs and research institutes, consultants, consumers, advocates, and other interested stakeholders.

NEEP invites interested stakeholders to join the Initiative through an annual subscription program for 2020. For more information about benefits and costs visit [NEEP's website](#).

Tracking and Analysis: NEEP will continue to expand its collaboration with U.S. DOE, national labs, REEOs, and others to track, assess, and provide initiative members reported ccASHP performance data and associated analyses. NEEP will also track and contribute to projects that drive the development of home heating system controls that integrate ccASHPs with other building heating systems.

- ASHP market tracking analyses in quarterly working group reports, including innovation tracking
- Online repository of ASHP, VRF, and smart controls reports/analysis/resources
- Participation on core team conducting an Integrated Controls Demonstration project in New York, including managing technical advisory committee

Tools and Guidelines: NEEP introduced in 2019, a new format and user interface for the ccASHP Product List including user-friendly technical information. NEEP will continue to develop market and program facing tools to support the broad use of ccASHPs.

- Maintain/update NEEP's ccASHP Specifications and Product List
- **New!** Lead process to explore needs and opportunities associated with a ccVRF Specification and Product List
- **Update!** ASHP Sizing/selection and installation guides
- **New!** VRF case studies

Research and Reports: NEEP will assess regional progress and update its current market transformation strategies for ASHP, to complement the recent 2019 VRF Market Transformation report.

- **New!** Progress Report: ASHP Market Transformation Strategy Implementation and Results
- **New!** White Paper: The Future of HVAC Refrigerant Policies and Programs
- **New!** DRAFT Program Guidance: Best practices for ASHP Whole House Applications

National/Regional Collaboration: NEEP will track, contribute to, and help disseminate relevant research, policies, programs and initiatives, and will attend related conferences and events regionally and nationally to build market momentum to overcome identified market, technology, and policy barriers to ASHP and VRF market adoption.

- Collaborate with other regional organizations advancing water and space heating decarbonization (i.e. Regional Energy Efficiency Organizations, Natural Resources Canada, Building Performance Association, California stakeholders, advocacy organizations, etc.)
- Monitor, communicate, present, and coordinate with national and regional organizations advancing high performance ASHPs and VRF

Additional Activities Pending More Funding:

- Research & Analysis: VRF in- field performance study (Proposal under consideration by U.S DOE)
- Strategy Development: Regional clean heating and cooling workforce development strategy
- Best Practice Guidelines: Development of a new cold climate air-to-water ASHP specification and category within the existing ccASHP Product List

Project Staff



Dave Lis



Giselle Procaccianti



Derek Koundakjian