Air Source Heat Pumps and Smart Controls

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 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 THIS PROJECT

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. 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 2030:

40%

of Northeast homes use high performance ASHPs for heating.

50%

of Northeast homes are "energy smart" with at least two "energy smart" systems (HVAC, water heating, plug loads)

80%

of Northeast homes with high performance ASHPs are retrofitted to improve thermal efficiency performance.

2019 PROJECT 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

REGIONAL TRENDS & LEADERS

- NEEP's 2017 Regional Strategic Electrification Assessment and Action Plan highlight the urgent need to accelerate market adoption of low carbon heating and cooling solutions, including ASHPs, with thermal efficiency and grid integration to achieve state carbon emission reduction goals while growing jobs and maintaining energy affordability.
- Decarbonization of space and water heating is emerging as a priority for most states in the region. Several states including MA, RI, NY, and CT have strategies to drive adoption of "clean" or "renewable" heating and cooling technologies.
- Adoption of ASHP in the region (NY and New England) is quickly increasing. Sales have increased from approximately 50,000 units in in 2013 to approximately 75,000 in 2016; a 50% percent increase in just three years.

2019 Strategies with Associated Products, Services and Technical Assistance

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*
  - ASHP Sub-Committee (Program Administrator Advisory Committee)
  - ASHP Sub-Committee (Industry Advisory Committee)
  - ASHP Sub-Committee (Consumer Buying Guidance)
  - ASHP Sub-Committee (Installer/Consumer Best Practices)
- VRF Working Group
- Air Source Heat Pump Market Transformation Workshop
- Topical Webinars (three – topics to be selected to meet member needs)
- Presentations and Briefings

TRACKING & ANALYSIS

NEEP will continue to expand its collaboration with U.S. DOE, national labs, 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

TOOLS & GUIDELINES

NEEP will introduce, in mid-2019, a new format and user interface for the ccASHP Product List that will ease product review and comparison including user-friendly technical information. NEEP will also continue to develop consumer based tools to support the broad use of ccASHPs.

- NEEP's Cold-Climate ASHP Specification and Product List (updated 1/1/19)*
- Cold-Climate VRF Specification and Product List: Opportunity Assessment
- ***New*** ASHP Consumer Buying Guidance Resource
- Dissemination of NEEP's ASHP Installer Guides/Video, and ccASHP Consumer Operations and Maintenance Guide
- ***New*** Case studies of most common ASHP installs
- Online repository of ASHP, VRF, and Smart Controls Reports/ Analysis/Resources

** In 2019, there will be product listing fees and membership fees associated with NEEP's Cold-Climate ASHP Specification and Product List and NEEP's Northeast/Mid-Atlantic ASHP/VRF Working Group. For more information on these fees, please visit: https://neep.org/initiatives/high-efficiency-products/emerging-technologies/ashp*

RESEARCH & REPORTS

NEEP will finalize a regional roadmap of market transformation strategies designed to accelerate VRF adoption in the region. The strategy will provide a list of priority actions that the regional VRF Working group will work to implement on an ongoing basis.

- Northeast VRF Market Transformation Strategies Report

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.

- 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, Rocky Mountain Institute, advocacy organizations, etc.)
- Disseminate U.S. DOE best practices and link states to federal programs and resources