

2015 NORTHEAST/MID-ATLANTIC AIR-SOURCE HEAT PUMP WORKSHOP

FACILITATED BY DAVE LIS Director of Market Strategies NORTHEAST ENERGY EFFICIENCY PARTNERSHIPS TUESDAY OCTOBER 6, 2015

THANK YOU PLANNING COMMITTE

Richard Faesy	Energy Futures Group		
Michael Psihoules	Fujitsu		
Peter McPhee, Meg Howard	Massachusetts CEC		
Rick Nortz, Matt Sooy	Mitsubishi Electric		
Lori Borowiak	NYSERDA		
Robb Aldrich	Steven Winter Associates		

....."LESSONS LEARNED"

PURPOSE OF TODAY'S WORKSHOP

- Bring together a collection of Air-Source Heat Pumps (ASHP) industry experts to encourage a productive dialogue
- Expose key lessons-learned related to the installation, maintenance and performance of ASHPs from a variety of regional market actors.
- Strengthen regional coordination to accelerate market adoption of ASHPs
- Provide direction to NEEP's regional ASHP activities going forward

About NEEP

Mission

Accelerate energy efficiency as an essential part of demand-side solutions that enable a sustainable regional energy system

Approach

Overcome barriers and transform markets via

Collaboration, Education and Enterprise

Vision

Region embraces **next generation energy efficiency** as a core strategy to meet energy needs in a carbon-constrained world

One of six regional energy efficiency organizations (REEOs) funded by the US Department of Energy (US DOE) to link regions to US DOE guidance, products and programs







SPACE HEATING WITH ASHPs

• Space Heating dominates residential energy consumption (site) in the Northeast





NEEP'S PERSPECTIVE



• Expanded use of this technology in the region could be a potential pathway to multiple outcomes:











2+ YEARS OF REGIONAL ENGAGEMENT



June 2013- Attend DOE Expert meeting (Hadley, MA)

Fall 2013- Convene Leadership Adv. Committee

December 2013- Publish Market Strategies Report

2014- Working group and sub-committees

June 2014- ASHP Workshop (Newport, RI)

January 2015- Publish ccASHP Specification

2015- Working group and sub-committees

October 2015- Workshop (Woburn, MA)

Northeast/Mid-Atlantic ASHP Market Strategies Report





www.neep.org/efficient-products/emergingtechnologies/Air-Source-Heat-Pumps/index

RECOMMENDED MARKET STRATEGIES



- 1. Develop more accurate tools to predict energy and cost savings associated with ASHP installations, through collection of real world performance data
- 2. Develop standardized Metrics for Cold Climate ASHP Performance
- 3. Increase Consumer Awareness and Education
- 4. Expand HVAC Contractor Awareness and Education
- 5. Improve Integration of ASHPs with Other Heating Systems
- 6. Provide ASHPs at Affordable Costs to Consumers
- 7. Characterize policy implications of large scale deployment of ASHPs





- Name
- Organization

WORKSHOP AGENDA



9:30 am	Welcome and Introduction
9:45 am	Session 1- Lessons Learned from ASHP Installations and O&M Experiences
10:45 am	AM Break
11:00 am	Session 2- Lessons Learned from In-Field Performance Research
11:45 am	Session 3- Lessons Learned from ASHP Program Administration
12:30 pm	Lunch
1:30 pm	Session 4- Is it Appropriate for Electric Efficiency Programs to Promote Cold Climate ASHPs?
2:15 pm	PM Break
2:30 pm	Session 5- Is the Cold Climate ASHP Specification and Effective Tool?
3:15 pm	Wrap up & Next Steps

Session #1- Lessons Learned from ASHP Installations and O&M

- Bruce Harley, CLEAResult
- Marc Rosenbaum, South Mountain Builders





AM BREAK





Session #2- Lessons Learned from In-Field Performance Research

- Bruce Ledgerwood, ABCD
- Robb Aldrich, Steven Winters Associates



Session 3- Lessons Learned from ASHP Program Administration



 Peter McPhee, Massachusetts Clean Energy Center



Session 4- Is it Appropriate for Electric EE Programs to Promote Cold Climate ASHPs?



- Peter Klint, Eversource
- Jamie Howland, Acadia Center



Session 5- Is the Cold Climate ASH Specification an Effective Tool?

• Dave Lis, NEEP



On behalf of energy efficiency stakeholders across the Northeast and Mid-Atlantic, Northeast Energy Efficiency Partnerships (NEEP) is pleased to be housing the new Cold Climate Air-Source Heat Pump (ccASHP) Specification and a list of those products that meet the specification's requirements. Those requirements include both specific performance levels as well as a series of reporting requirements.

Energy efficiency Stakeholders from the Northeast lack confidence that the existing heating performance metric (HSPF) for air-source heat pumps provides the necessary information to adequately characterize heating performance at low temperatures. In addition, the supplemental information that is provided by manufacturers to demonstrate cold temperature performance is not standardized or consistent. The current performance

AIR-SOURCE HEAT PUMPS Cold Climate Air-Source Heat Pump Specification

PROJECT STAFF





• Current uses



ccASHP Spec genesis



- Existing heating performance metric (HSPF) for ASHPs does NOT adequately characterize heating performance at low temperatures.
 - Does not include low temperature testing points below 17°F
 - Makes assumptions about use of electric resistance back up
 - Tests in steady-state operation (as opposed to allowing modulation).

ccASHP Spec Scope



- Air-to-air, split system heat pumps
- Ducted and ductless systems
- Both single-zone and multi-zone ductless systems
- <65k Btu/hour at 47 °F (dry bulb)
- Does NOT include ground-source or air-to-water heat pump systems





ccASHP Spec Requirements

- Indoor and outdoor units must be part of an AHRI matched system
- ENERGY STAR Certified
- COP @5° F>1.75 (at maximum capacity operation)
- HSPF>10 for Ducted systems
- HSPF>10 for Single-zone ductless systems or HSPF>9 for Multi-zone ductless systems
- Engineering data for each system must be reported through the "Cold Climate Air-Source Heat Pump Performance Information Tables".



Manufacturer	
Brand (if applicable)	
AHRI Certificate No.	
Outdoor Unit Model:	
Indoor Unit Model(s)[1]:	
Variable-Capacity (Yes/No)	
HSPF (Region IV):	>10/9
SEER	
EER (@ 95°F)	
ENERGY STAR Certified (Yes/No)	
Ductless or Ducted	
If Ductless, "Multizone or Singlezone"	
	Manufacturer Brand (if applicable) AHRI Certificate No. Outdoor Unit Model: Indoor Unit Model(s)[1]: Variable-Capacity (Yes/No) HSPF (Region IV): SEER EER (@ 95°F) ENERGY STAR Certified (Yes/No) Ductless or Ducted If Ductless, "Multizone or Singlezone"



					Cap	pacity Lev	vel
SECTION TWO	Outdoor	Indoor			Minimum	Patad	Maximum
	Dry Bulb (°F)	Dry Bulb (°F)			winnin	Rateu	Waximum
	47°F	70°F	Btu/h				
			kW				
				СОР			
	17°F 7		70°F	Btu/h			
		70		kW			
				СОР			
	5°F*			Btu/h			
		70°F	kW				
				СОР			>1.75

ON	Outdoor Dry	Indoor Dry Rulh (°C)		Capacity Level			
	ECTI	Bulb (°F)*			Minimum	Rated	Maximum
	al: SE OUF		70°F	Btu/h			
	iona			kW			
Opt		СОР					



			Pan Heater
SECTION THREE	Integrated or Accessory (provide model #)	Input Power (W)	What determines when heater operates? (Limit 300 characters)



Heat pump test procedure activity

DOE ASRAC
Working Group



 CSA Group's Non Consensus
Standard
Development





WORKSHOP DAY 1 WRAP-UP



NEXT STEPS

- Circulate Slides/Workshop Notes
- Convene ccASHP Spec committee to discuss potential updates to Spec
- Q4 Working Group Meeting
- Contact NEEP if you'd like to join Regional ASHP Working group





WORKSHOP DAY 2- NETWORKING BONANZA

- 8:00am- Breakfast
- Just before 9:00am- Welcome Back
- 9:00-10:45am- Manufacturer "Round Robin"
- 11:00am-12:30pm- Networking opportunities (planned and informal)





QUESTIONS/COMMENTS???





PLEASE COMPLETE WORKSHOP EVALUATION









THANK YOU!

David Lis djlis@neep.org

October 6, 2015

91 Hartwell Avenue Lexington, MA 02421 P: 781.860.9177 www.neep.org