

Advanced Heat Pump Coalition

All Members Webinar, September 24th, 2024

TOPIC: AHPC Workgroup Updates

Agenda

General Information

10 minutes

- Advanced HP Coalition Intro
- Highlights

Workgroup Updates

60 Minutes

- WG#1 Test Procedure and Data
- WG#2 Roadmap and OEM Engagement
- WG#4 Heat Pump Only Homes
- WG#5 Connected Commissioning
- WG#8 Dual Fuel
- WG#10 Program Managers

Webinar Objective: Increase collaboration and awareness of energy efficient heat pump market development, technologies, industry, and standards

A “Coalition of the Willing”

Goal

To increase research collaboration among energy efficiency organizations that are working to accelerate market adoption of advanced heat pumps

Membership

- ACTIVE = Participate in workgroups, guide and fund collaborative activities
- PASSIVE = attend webinars, help socialize what we learn

General Info

- Steering committee guides collaboration (NEEA, NEEP, MEEA, CEC, NRCAN, EPA, NYSERDA)
- NEEA and EPA co-fund admin support
- MEEA maintains website with past docs and PPTs
[The Advanced Heat Pump Coalition](#)

Brightest heat pump minds from organizations such as these:



Workgroups

#	Title	Status	Co-Leads	Frequency	Goal or Topics
SC	Steering Committee	Active	Christopher Dymond David Lis	Quarterly	Provides guidance on workgroups and collaboration and set topics for semi-annual webinars
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5	Connected Commissioning	Active	Christopher Dymond Christian Valoria	Bi-monthly	CCX report definition, certification criteria, energy savings, value prop, who maintains the QPL
6	Load Flexibility	Pending	To be determined.	To be determined.	Load shifting, HVAC command stack, (OpenADR, EcoPort), limit to 100A load
7	Refrigerants	DOE already has working groups to address this	To be determined.	To be determined.	Next transition to ultra-low GWP, limiting leakage, policy and code impacts
8	Dual Fuel HP	Active	Abigail Daken Ben Schoenbauer	Monthly - 2nd Wednesday 2PM	Existing furnaces with HP coil? What is the best HP for dual fuel? What are the controls and design recommendations?
9	Multi-Head Systems	Pending	Bruce Manclark or ??	To be determined.	
10	Program Managers	Active	Suzi Asmus Joe Riccihiuto	To be determined.	Share information about program approaches and best practices, find areas of collaboration

Workgroup #1

Ratings and Test Procedure

Co-Leads of Workgroup

David Lis, NEEP

Mvuala Suami, NRCAN

WG#1 – Test Procedure and Performance Data

Purpose

- Improve heat pump performance ratings so that the ASHP marketplace (Efficiency Programs, manufacturers, contractors, consumers) can identify products that will deliver actual efficiency/performance

Objectives

- Scope/Conduct research to inform improvements to ASHP test procedures and performance data
- Socialize research findings to influence standards/specification setting bodies such as DOE, AHRI, ACCA, EPA, NRCAN, CEE, NEEP for test procedure/performance metrics improvements.

WG#1 – Description

2024 Activity

- HP Rating Representativeness Project- Completed, Report Publication in October
- AHRI performance data discussions/NEEP ASHP Performance Data Memo

2025 Actions and Deliverables

- Scoping follow on research to rating representativeness project
- Communicating results of project
- WG#1 meeting tomorrow to discuss/clarify

2025 Timeline and Schedule

- WG#1 meeting tomorrow to discuss/clarify

Workgroup #2

Roadmap and Manufacturer Engagement

Co-Leads of Workgroup

Christopher Dymond, NEEA
Lauren Morlino, Evergreen

WG#2 – Description

Objective and Purpose

- Product Roadmap and OEM Engagement
- Helping industry realize market success and value of features utilities need

Timeline & Schedule

- Continuous refinement of energy efficiency needs
- Annual engagement with manufacturers during AHR Expo
- Bi-Monthly Meetings – 2nd Tuesday

Actions and Deliverables

- Share technology research (what are we working on)
- Build utility program support for the features utilities need

WG#2 – Update

Technologies of Interest

- TriMode Heat pumps
- Room and through the wall solutions
- Defrost improvement
- Limiting electric resistance heat use
- Integrated Control of DHPs with other heat sources
- Load Flex / Demand Response
- Other

Engagement Strategy

- Approach
 - Members regular engage Manufacturers
 - Top 3-4 priorities Alignment – once/yr
 - Provide feedback to the group
- Venues
 - AHR Expo February
 - ACEEE Hot Air Forum March
 - CEE Industry Partner September
 - ENERGY STAR Partners October?

Who wants to join WG#2?

Join if :

- You want to engage manufacturers
- Willing to share the challenges you face, and research you are doing
- Contribute resources (time and \$\$)
- Develop collaborative project(s)

Workgroup #4

Heat Pump Only Homes

Co-Leads of Workgroup

Matt Christie, TRC

~~Nathan Kelly, Bonneville Power Administration~~

Your name here - Seeking volunteers!

WG#4 – Description

Objective and Purpose

- Accelerate acceptance of, and adoption of, whole-home HVAC system design where heat pumps serve the entirety of the annual heating and cooling loads, meeting needs at design conditions without backup, auxiliary, or supplemental sources.

Timeline & Schedule

- Meeting monthly – 3rd Mondays of each month 11:00am – 12:00 pm EPT

Actions and Deliverables

- Identify the market's needs to move more towards “heat pump only homes”
- Curate or create mechanisms/resources to fulfill those needs
- Encourage/support research and market understanding by AHPC members and industry partners
- Explore and advance ways to get accurate information to the market – e.g. programs, conferences, papers, AHPC collaboration
- Track trends and data, then report out

WG#4 - Update

Market Need Identification:

- **Confidence and competence in load-sizing**
 - Manual J
 - Manual S
 - Informal/alternate approaches
- **Provide success stories***
 - Especially in the face of below-design temp heating, or in particularly cold climates
- **Expand on the need/definition for "good-enough" envelope**
- **Improve on understanding of distribution needs**
 - Low-capacity heads
 - Improved duct-design, and duct-repurpose evaluation
 - Multi-compressor and multi-modal distribution
- **Circulate the "what if I lose power" reality better**
 - Also the resiliency-value of multiple-compressor design for compressor failure

WG#4 - Update

Providing Success Stories:

- **BPA research initiative “High Performance, High Capacity Heat Pump”**
 - Measuring if heat pumps can handle the cold without ER backup
 - Ongoing, with BPA presenting some initial data through various presentations (EFX)
- **NYSERDA Case Studies (Clean Heat Connect)**
 - Customer-experience based exposés on heat-pump-only homes in upstate NY
 - Light-touch data collection (temperatures)
 - Initiating in fall of 2024
- **Who’s Afraid of a Polar Vortex research**
 - Conceptual; an expansion on the NYSERDA case-studies concept with more robust data
 - Includes the potential to “force” a simulated sub-design temperature test period
 - Potentially managed by NEEP, if a “go” will be seeking co-funders/collaborators

Workgroup #5

Connected Commissioning

Co-Leads of Workgroup

Christopher Dymond, NEEA cdymond@neea.org
Christian Valoria, PNNL christian.valoria@pnnl.gov

WG#5 – Description

Objective and Purpose

- To support development of a Connected Commissioning (CCX) Specification
- To gather input from energy efficiency programs and generate interest in using CCX and smart tools that support quality installation programs
- To provide a forum for EE and industry to share perspectives

Timeline & Schedule

- Bi-Monthly calls

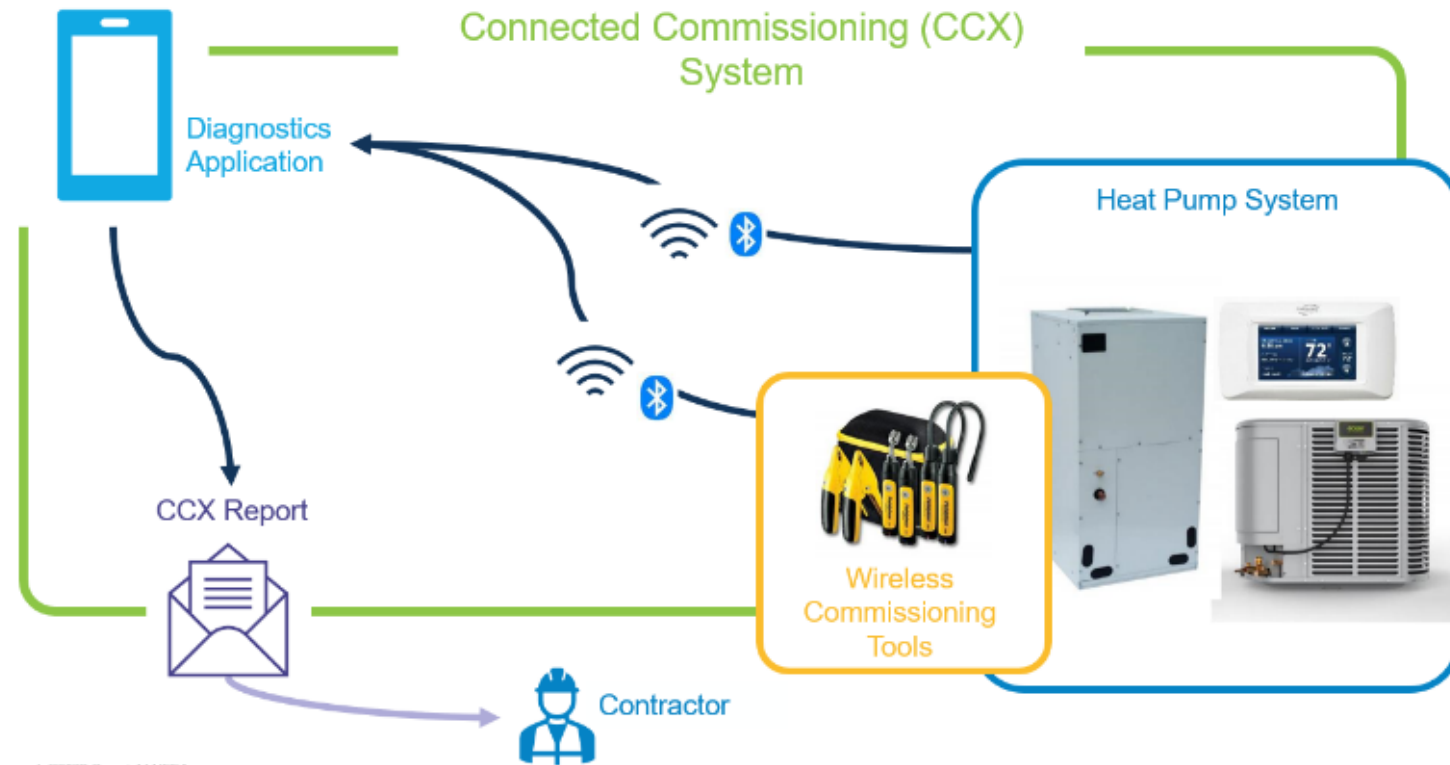
Actions and Deliverables

- Meeting Notes
- Collaborative field validation project – kick the tires!

WG#5 – What is CCX?

OEMs Interested

- Daikin
- Trane
- Lennox
- JCI (Bosch)
- Midea
- LG
- Carrier



Next Steps – Best Guess on Timeline

Technical Working Group

Next 4-5 Months

AHPC WG #5 – CCX

Starts Q4 '24

Certification Test Method Development

2025

Field Validation

2025

Establishing a Qualified Products List

2025

Market/Program Ready

2026

WG#5 - Activities

Review Draft Specification

To provide a forum for EE and industry to share perspectives on HP commissioning challenges and opportunities

- What are the common challenges
- How might CCX be used
- What sort of evidence of benefits, savings is needed

Who wants to join WG#5?

Join if you want to:

- Voice your opinion
- Provide data or technical support
- Contribute resources (time and \$\$)
- Develop collaborative project(s)

Attend the semi-annual AHPC webinars to stay informed

Workgroup #8

Dual Fuel

Co-Leads of Workgroup

Abigail Daken, EPA

Ben Schoenbauer, Center for Energy and Environment

WG#8 – Description

Objective and Purpose

- The working group includes heat pump systems with any backup fuel except solely electric. We will initially work on knowledge sharing about residential centrally ducted systems, focusing on currently available equipment and actionable topics. Future work may include best practices, guidelines, and/or recommendations around the first phase topic areas, such as ratings and metric, optimization of systems, controls, and field evaluations. We are open to considering beyond residential and beyond forced air in the future.

Timeline & Schedule

- Oct 2024 to June 2025 – Expert lead discussion on actionable dual fuel topics
- Fall 2025 and beyond - best practices, guidelines, and/or recommendation development
- Monthly meetings on the 2nd Wednesday at 2:00 PM ET

Actions and Deliverables

- Summer 2025 – Summary of discussions at AHPC all hands meeting

WG#8 - Update

- **Held two preliminary meetings to decide on scope and action items**
 - Over 60 participants in those meetings, 50+ WG members expected
- **In Scope**
 - Existing residential building retrofit
 - Systems with liquid, gaseous, and solid backup fuels, NOT exclusively electric resistance backup
 - Initial focus will be central forced air systems
 - Encompassing various design goals: decarbonization, minimizing costs, etc.
 - Intend to spend most of our time on actionable items
- **Out of Scope (for now)**
 - Ductless heat pumps, AWHP, MF applications. Though significant group interest in these topics (phase 3?)
 - Also interest in topics covered by other working groups: Integrated controls, programs, load flexibility. Opportunity for collaboration?
 - Additional dual fuel groups may spawn to talk about some of these topics.

Workgroup #10

Program Delivery

Co-Leads of Workgroup

Joe Ricchiuto, MEEA

Suzi Asmus, NEEA

WG#10 – Description

Objective and Purpose:

- **Goal/Purpose:** Share information about residential heat pump program approaches, best practices, pilots, and study results, communicate technical topics from other AHPC workgroups, and find areas of collaboration.
- **Objective:** Identify topics of interest for the group and convene several times a year to address identified topics in the form of discussions, presentations, round-tables or other approach.

Timeline & Schedule:

- Meet quarterly (Starting Q4, 2024)
- Identify near-term topics in September/October

Actions and Deliverables:

- Survey group
- Identify deliverables and next steps

WG#10 - Update

Kick-off meeting held September 11, 2024.

27 total attendees from 18 organizations

General interest was expressed in the formation of the group.

Topics of interest include:

- General peer sharing
- Cold climate HPs
- IRA mobilization – How are programs positioned to maximize IRA funds or momentum?
- Program Pilots
- Tough Market Barriers
- Building More Equity into Program Delivery
- How do we make sense of all the technical innovation in heat pumps and how to integrate innovation into programs
- Installer training
- Incentives and Rebate Structuring
- Data-Driven Program Design
- Demand Response Integration
- Customer education strategies
- What are vendors/contractors doing in each area; what is happening with pricing?
- How to avoid emergency replacements of like-for-like?

Closing Details

For More Information

Membership Information

- Paul Raymer Paul.Raymer@icf.com
- Gloriana York GYork@neea.org

Website

- <https://www.mwalliance.org/advanced-heat-pump-coalition>

Primary Conferences & Events

- ACEEE Hot Air Forum March 4-6 Portland [ACEEE HWF](#)
- AHRExpo February 10-12 Orlando [AHR Expo](#)
- Regional Symposiums & Forums
 - NEEP
 - Efficiency Exchange

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Thank You

Special thanks Midwest Energy Efficiency Alliance for hosting a website