Q2 Day 1 - Product Coordinating Committee

June 24, 2024

12:30 -4:00 p.m.

Hybrid Meeting: Online and at NEEA – Columbia Conference Room

Meeting Attendees

In Person:

Tyler Boehringer (Emerald PUD), Josh Mitchell (Chelan PUD), Rich Arneson (Tacoma Power), Jonathon Belmont (Bonneville Power Administration), Christian Douglas (Northwest Power & Conservation Council), and Shatoya Parker (Bonneville Power Administration)

By Phone/Webinar:

Debra Bristow (Bonneville Power Administration), Trevor Frick (Clark PUD), Carolyn Beebe (Snohomish PUD,) Haley Puntney (Inland Power and Light), Dave Murphy (Bonneville Power Administration), Lars Henrikson (Seattle City Light), Lis Saunders (Tacoma Power), Thad Roth (Energy Trust of Oregon), Andrew Shepard (Energy Trust of Oregon), Michele Drake (Avista), Leona Haley (Avista), Jesse Durst (Puget Sound Energy), Nathan Kelly (Bonneville Power Administration), Todd Greenwell (Idaho Power)

NEEA Staff:

In Person: Anouksha Gardner, Alexa Hujik, Jack Davidson, Stephanie Quinn, Christopher Dymond

Online: Suzi Asmus, Alisyn Maggiora, Meghan Bean, Gloriana York, Aaron Ingle

Resources

- Agenda Packet: Northwest Energy Efficiency Alliance (NEEA) | Q2 2024 PCC Agenda…
- Slide Deck: Q2 PCC Meeting Slides - Day 1
- Recording: Day 1 Q2 2024 PCC Recording

Welcome, Introductions, and Housekeeping

1. Agenda Overview
2. Introduction and Icebreaker – What was your favorite thing to play with on the playground?

Regional Priority Topic Day 1 – Advanced Heat Pumps

Coordination on planned or ongoing field studies/pilot studies/data collection

Desired Outcome: Committee members are aware of residential heat pump research and pilot studies conducted by utilities in the region.

- **Chelan, Josh Mitchell - Heat Pump Update – Presentation: Current State of HP Affairs**
  - Chelan has large rebates of $3,500/$4,000 (depends on variable speed or not)
  - Josh Mitchell presented research data Chelan collected to determine value of heat pumps to Chelan County.

        - Utility uses: Utility Cost Test (UCT), forward price curve, savings time of day and season, predict capacity values within their control, and compare to carbon premium they receive when selling power on the market
    - Reviewed about 104 installs and looked at aKW/mo against outdoor temps
        - example of peak winter load that was 200aMW average winter day
        - Savings - Half had good results and half not
        - No clear correlation between equipment, installer, or thermostat and the savings outcomes
            - Lack of savings due primarily behavior and use of emergency heat
            - Still seeing savings overall, especially in the summer
    - Brought results to contractors to show them impacts and communicate importance of proper installation – already seeing positive impacts/results from sharing with contractors
    - Josh has started calling homeowners and asking survey questions.

- **Avista, Leona Haley - Hybrid and Cold Climate Heat Pump Pilot Program**

o Pilot focused on Spokane County, where there is high penetration of natural gas

o Customers wanting to move to electricity. Customers calling them to ask for recommendations and this was a driver for starting their study with 12 homes with Hybrid HP and Cold-Climate HP.

o Objectives: Looking at customer satisfaction (comfort, bill savings, etc.) but also performance (efficiency, GHG impacts), Trade Ally (needs, best practices), Weatherization (impacts to performance and behavior)

- 12 homes: 6 Hybrid HPs, 6 Cold Climate HPs. 3 each of sufficient insulation and poor insulation
- Participation requirements – Spokane County in WA, smart meter, single family, owner occupied, and existing HVAC of natural gas furnace with central AC.
- 2-year pilot term.

o Project Status:

- Partners selected (Holliday Heating, DNV)
- Recruitment almost complete (Bidgely) – Looked for homes with AC degradation
- Installation Plan (to complete prior to 2024 heating season). (just ready to start installs now)

o Daikin equipment

- Install includes meter to measure power, temp, humidity, air-flow, pressure
- Whole-home metering of 5-min electric (AMI) and hourly gas (AMI)

o Reviewed Customer participation steps: (includes allowing weatherization and monitoring equipment)

o Reviewed Marketing materials

o Will complete 1–year report, and then 2-year report.

- **Emerald PUD, Tyler Boehringer - Measure Cost Effectiveness Calculator**
    - BPA Slice customer and historically fill gaps with emphasis on EE.
    - Very focused on residential savings and in particular on HVAC savings
    - Recent power prices have motivated them to focus more closely on savings

o Look at BPA measures and compare savings numbers to EPUD system peaks with savings shapes to determine where to focus their incentives.

- Which measures are more valuable?
- Which save when they need it?
- How much should they pay for priority measures?

o Lighthouse Energy developed a user-friend tool

- EPUD can plug in measure data
- Compares savings shape to system load shape with avoided costs

- results show maximum incentives

o Useful tool for EPUD to understand capacity value in additional to energy savings

o Questions: So the primary driver is marginal costs above slice and block?

A: Anything above slice and block EPUD is on the market for. Recent price increases motivated them to shave peaks.

- **Energy Trust, Andrew Shepard - Heat Pump Research**
  - Andrew reviewed Energy Trust 2024 active rebates and incentives for ResHVAC
    - Including "extended capacity" rebate
    - Really mostly focused on heat pumps for manufactured homes.
  - Not seeing the savings that they would like to see in the market.
  - Research focused on getting at realizing savings in heat pump measures:
    - Recruiting nor pilot for Honeywell T-9 T-stat – finding end of this year
    - Dual fuel heat pump pilot for homes with gas furnaces – findings next year
    - Duct treatment/duct sealing research
      - Energy Trust hiring vetted contractors to do the work
      - Studying if they can get the savings through their control of the install environment
    - Looking to do future work with micro-HPs for multi-family.
    - Looking to do future work on "Low Load" or "Mild Climate" heat pumps
      - Currently reviewing installed to-date to determine how many can be designated "mild climate"
    - Starting to look at "Mixed delivery" heat pumps (combination of ducted and ductless) and trying to figure out how to handle them
    - Research for installment improvements
      - Pre-bid customer experience
      - Post-install commissioning or retro-commissioning (go back to previously- incented systems?)
      - Installation specifications, HSPF and other aspects of HPs
      - Question was asked how they stay unbiased with varying qualified contractors. It is not fully defined how they will proceed on how to manage that.

- **Puget Sound Energy, Jesse Durst (on behalf of Will Dixon) - Heat Pump Research**
  - (No Slides. Also presented at EFx24. So you can see their presentation video.)
  - Exploring **hybrid heat pumps** since 2022, primarily to address residential CO22 emission and managing peak loads for heating electrification.
    - Preliminary 2022 research: found modest gas use difference between fully gas and hybrid models. Real benefit was for peak load.
    - Pilot: June 2023 launched rebates that were targeted about 300,000 dual fuel customers to convert from gas to hybrid heat pump
      - Offered $1700 (can also upgrade existing gas furnace)
      - Requirements around sizing and lock out temps
      - 100 projects completed
      - Avg cost of $17,000 (unclear if these included ductwork, new furnaces, panel upgrades, etc.)
      - had 13 different contractors and 8 manufacturers
      - End-use monitoring by DNV with data loggers
        - found difference in performance with clearly defined lockouts vs some that had disabled lockout or deep nighttime setbacks
    - Currently in evaluation. Have some anecdotal results coming in on control strategies

        - Takeaways so far include control strategy vs customer comfort; require education to help contractors and customer understand the value.
        - Prelim was approximately 50%-60% decrease in gas usage, but equal increase in electricity.
        - Nothing specific to share yet but see significant peak load mitigation over 100% electric alternatives.
    - Question about the requirements of the different kinds of HP: Not confident but maybe - 7.5 HSPF2 and had sizing requirements and the balance point requirement sizing was 30-degree balance point and lockout temperature is 35 degrees.
    - Question about goal with this effort: Goals include reduce gas usage from the perspective of emissions reduction; but also conflicts with some of the other benefits, like reducing peak. Might be better to use gas to meet morning peak.

- **Tacoma Power, Rich Arneson - Heat Pump Research**
    - (Also presented at EfX24. Can see video.)
    - Upcoming research focused on behaviors: customer interaction and comfort needs
    - What is causing system load spikes (7-10am)? & What are barriers and opportunities for future interventions? (Costumer behavior-related)
        - Found 11,000 HPs in service territory
        - Launch online survey this fall, mid-winter site visits, results early summer next year.
    - Analyzed 2900 customers, showed data reflecting the high, medium, and low spikes
        - Identified potential for ~1MW coincident peak demand reduction for every 1,000 HPs
    - Shared slide showing data to be gathered by Survey, Onsite, and loggers.
    - Share timeline.

- **BPA, Nathan Kelly – High-Performing High-Capacity Heat Pumps**
    - Presented at EFX24. Find video.
    - Looked for equipment that could:
        - perform extremely well when it's very cold out and as well as when it has mild low load conditions. (ability to turn down and very good low speed COP)
        - Minimize both summer and winter peak (minimize or eliminate resistance heat)
    - 58 sites with utility and tribal partners;
        - equipment and logging equipment installed
        - Each site we did total House audit with an audit meta data.
        - both ducted and ductless multi zone systems
        - retrofit and existing installs
    - Findings are preliminary:
        - Presented chart with HEMS and HPHC kWh/sq. ft. vs. HDD
        - Showed 5-8am demand chart depicting impact of setbacks
        - “box specs” (HSPF) don’t provide
    - Collecting one more heating season of data analyzing next year
    - HPHC can deliver the heating with little to no electric resistance heat at the balance point.
    - Chart showing the team effort put into the efforts put toward the opportunity that HPs can provide to savings.
    - Future Research
        - Multifamily heat pumps (PTHP with no outdoor unit and cold climate HPs)
        - Multifamily and single-family new construction, low income and Habitat for Humanity chapters
        - HP sizing using historical load data

- **NEEA, Christopher Dymond, APH Product Manager**
    - "Low load efficient" or "part load efficiency" = minimum capacity COP at 47 degrees ≥ 4.5
        - Equipment cost research shows nothing drives cost to meet spec
        - Completed research to-date
            - Modeling and analysis
            - Test procedure development and influence
            - OEM interview and virtual teardown (24 systems)
        - Future research:
            - Physical Teardown for cost
            - Analyzing field data (BPA HPHCHP, Rating Representativeness)
    - Cold climate window heat pumps
        - Working with BPA and others welcome to join
        - Mini Split HPs are designed to hang in a window and be DIY that can be installed in 15 minutes.
        - EPA interim test procedure, develop tax credits, field testing
    - Rating Representativeness Study of Load-Based Test Procedure
        - Charlie Stephens started initially (Currently published as SPE:07)
        - Testing a heat pump under its own native controls under a load that behaves like a house as opposed to the current test procedure where your heat pump into the test chamber, you lock it, speed, you lock the temperatures, and you get a static reading.
        - Six HPs were tested, and results show load-based testing is statistically more representative of current M1 (static) test procedure
        - M1 often overpredicts the performance of the units in both heating and cooling.
        - In conclusion
            - heating and cooling there is a total error is 43% for cooling and 64% overestimation of performance by the current test than what you see in the field
            - There is a distinct difference between the two test procedures, especially for ductless.
            - Is it worth the extra effort? Unclear, but NEEA is working with AHRI to change the M1 test procedure to verify if a system is variable speed or single speed.

10 MIN BREAK

Regional Round Table

Committee members and NEEA program staff share program and organization updates, highlight areas of possible interest and coordination with others.

Desired Outcome: All are updated on each other's activities and better understand what's happening across the region.

Tacoma Power - Lis Saunders

- Continued DHP maintenance project. Going back to customers that got DHP Grants from the last 10 years and offering them a cleaning and repairs or replacement unit (if needed). We have had 55 projects so far with great success, only needing to replace 5 units.
- Brittany Broyles was selected as a new Manager of Customer Energy Solutions.

- Partnered with City of Tacoma for grant funding from Department of Commerce on HEAR funds. The city is fully focused on decarbonization and replacing gas heat (space or water) with electric. We have heard from Pierce County that they would like to leverage our platform and work with customers outside of the city.
- Partnership with PSE to try and replicate our income qualified rental program with PSE paying for replacement of gas heating with electric. We would then follow up with electric weatherization projects as needed.
- Nothing new with the RES program.
- Q from Christopher Dymond at NEEA – What were the conditions of the DHP's that were cleaned and the ones that were replaced?
    - Feedback from Lis' team: Here's some info from Mark about the condition of the DHPs: vast majority have never been serviced. Filters mostly cleaned by homeowners. One indoor filter and the outdoor unit has never been cleaned (very bad) but the DHP is amazingly still functioning. DHPs that have been replaced are mostly second tier equipment (not Daikin and Mitsubishi).

Snohomish PUD – Carolyn Beebe

- No changes to regular programs.
- Receiving state money through the **HEAR Program*** and are working on details. The current idea is a two phased approach where we are planning on replacing washer, dryers, and possibly stoves (in owner occupied homes only) in the first phase and second phase would be installing HPWH. We are not using this opportunity for fuel switching, so it's strictly electric to electric appliances.
    - ***HEAR Funding - Home Electrification and Appliance Rebate Program***
- Q from Josh Mitchell – You said just homeowners in phase one?
    - For the induction stoves only. Washers and dryers will be for apartments/tenant occupied homes as well. We were concerned with apartments that not every tenant would have the correct cookware for them. We are also looking to help update the cookware.

Inland Power and Light – Hailey Puntney

- Most rebate programs are still doing well with heat pumps being the largest uptake residentially.
- Launched a new On-Bill finance program. We received $30M at 0% interest from RUS – Rural Utility Services (USDA Funding), and we are lending it to our members in the form of a tariff at a 5% interest rate. It's a tariff not a loan, so it follows the property not the person. If they go delinquent the tariff allows us to turn off their power but not put a lean out on their home. We are using this to upgrade heat pumps, installation, windows, solar power with or without battery backup, HPWH, anything considered a Weatherization Upgrade and will hard launch July 1st. Right now, land and homeowners are the only individuals eligible; and 15 people are currently signed up to participate in the pilot program. Target for this program is middle class. We do soft credit checks so there isn't any personal information that we gain.
- Low-income weatherization program – BPA released a dollar-for-dollar repair costs for necessary repairs to make the measure successful. We are doing HVAC, Air and Duct Sealing, Windows, and primarily targeting mostly mobile homes and mobile home parks. Done 10 homes so far since Memorial Day and they have all done very well so far.
- Josh at Chelan – Something we have run into working with mobile home parks in Wenatchee, WA is landowners not allowing heat pumps in the parks? It's a noise/volume issue so they do allow for Variable Speed Systems.
    - We haven't run into that yet at all and hopefully we don't. A lot of our parks have gone corporate, so we have been getting permission from the landlords and then each individual participating as well. Most of the "landowners" haven't given us any pushback.
    - Josh – Okay, it's been an issue with the noise. So, they will allow for VSP, which is huge.

Avista – Michele Drake

- Launching a multifamily direct install that is very targeted with an energy management component.
- Joined in on BOC (Building Operator Certification) offering discounts for customers training. A few people have taken us up on it, but the commitment to the class seems to be a hurdle.
- Just underwent our first evaluation on our midstream program and had some pretty surprising realization rate challenges*. If anyone has had experience with midstream evaluation and would be willing to chat about it offline, please reach out.*
- Launched a cohort of clean buildings participants and working through that process.
- Just had a low-income client who is struggling to find a heat pump that fits the net zero requirements with the space constraints in Manufactured and Mobile Homes. The air handlers wouldn't accommodate to our required HSPF level because of the size requirements, so we are looking for different options. Has anyone else encountered this or run into a specific product that works for this issue?
    - Christopher Dymond, NEEA - A lot of the manufactured homes have a 19 or 21 in wide air handler and the standard is 24 in. So there is a limited form factor.

Clark PUD - Trevor Frick

- Just wrapped up all 2023 data requests.
- Working with grant funds from Washington Department of Commerce through the Climate Commitment Act in residential sector – looking to launch a program focused around Central, Ductless, and Heat Pump Water Heaters in the form of larger instant rebates for the customers. We're matching the BPA low-income payments as much as possible. Increased somewhat on HPWH because we want customers to hopefully get a free one in the end; but they will still likely have some out-of-pocket costs with ductless and central heat pumps. Quick turnaround on this project since WDC wants all the funds spent by end of June next year and Clark wants to exhaust the funds before the federally funded IRA programs are launched to avoid confusion. Only focusing on electrically heated customers, nothing to do with decarbonization since our general council didn't want to change our messaging since we have remained neutral on their heating sources.
- City of Vancouver did get funding through the HEAR program, so we will send customers their way that are looking to fuel switch and get a little collaboration. This will allow us to experiment in new programs.
- Working with 4 non-profits on low-income work. One big one is Vancouver Housing Authority – over the next couple of years we are hoping to install 3-400 ductless heat pumps and 1-2000 window and sliding glass door units in low- and moderate-income households. Gives us room to grow in those sectors.
- Residential programs going well overall but there has been a sharp downturn in heat pump installations. We noticed in the first 6 months of 2022 we paid rebates on around 250 installations, in 2023 it dropped down to 125 and this year we are on track for just under 100 in the first 6 months. Assuming its cost increases and higher interest rates, etc.
    - Christopher Dymond – You might want to join the RETAC conversation happening later this week on Thursday with NEEA on room heat pumps in support of your 4 non-profits that are doing the DHP and window heat pump work. (Like the inverter window unit.)

Seattle City Light - Lars Henrickson

- Our HEAR Funding is being used to augment our incentives for HPWH and heat pumps for small business. Adding incentives through our midstream program for that part of the population.
- City of Seattle got funding for fuel switching, so a lot of the customers will be low income so they will be eligible for our weatherization project.
- Working with PSE on their fuel switching pilot in unincorporated King County in low-income homes.

- Heat Pump Water Heater Program – Planning for our instant rebate program for a limited time offer going up to $750 per unit from $500 at both Lowes and Home Depot. We are considering keeping it up there since about 5x as many people participate at the higher rebate level.
- Whole Home Program – looking at efficiency, electrification and solar in a bundle that can all be eligible for the upcoming IRA funding. Looking to launch before end of year.
- Adding ENERGY STAR® dryers to our rebated products list.
- Pilot on demand response for our thermostats. Customers like it okay, but not getting the kind of bang for our buck. We will see moving forward.

BPA – Johnathan Belmont

- Shatoya Parker is now our Program Manager for Weatherization at BPA, taking over for Amy Burke. Low income is still with Amy B, so they will work together on the low income and weatherization programs.
- Continuing to look at a lot of different opportunities to incorporate weatherization and Centralized HPWH as a single offering instead of custom approach like we have now.
- Comfort Ready Homes has new training videos available online.
- Starting to update our "New Opportunities Guides" – Changing to "New User Guides" since most customers use these for new employees when they come on to learn about all the different sectors we have. Hoping to have updated soon.
- A lot of current focus is on heat pumps and seeing what opportunities we have and what we can continue to get out there. Pleased that some folks have been keeping the requirements for their programs like Chelan in terms of looking at installations. We are really interested in seeing the applications for the new technologies. (Like the Room Heat Pump and the potential application for multifamily).
- October 1st, 2025, we will be issuing a new Rate Period IM that will start updating every 3 years instead of 2. We will have more information closer to the date.
    - Updates to the current IM, pretty small changes overall.

NWPC Council – Christian Douglass

- RTF doing a lot with heat pumps. Will be presenting more information on this tomorrow morning with Laura Thomas and David Bopp. They are looking hard and what the new heat pump measure suite might look like.
- Currently the council is planning for the next power plan, specifically the input side and EE supply curves which we will be working on this summer. Also, quite a lot of advisory committee activity – Conservation Resources, Demand Response, Climate and Weather (new committee), etc.

Chelan PUD – Josh Mitchell

- Focus has been on low-income programs. We're finally out in the field and getting a lot of data back to help us better understand the complications of moderate- and low-income households vs. regular installs. Hoping to use the HEAR funding to take on additional costs in Life, Health, and Safety because bids have been coming in very high in low-income spaces.
- New Marketing Strategist position open!
- Fire Season is starting back up in the PNW so we are working with our staff to help let homeowners in high-risk areas that in times of high wind we will be turning the power off. Customers are unhappy but understanding since Chelan is such a high-risk area.
- We are also fire hardening our equipment, but the high winds are very high risk.

NEEA – Christopher Dymond, Sr. Product Manager

- Last Friday was the kickoff to our contract with Cadeo Group and MNCEE advanced heat pump program. We're pursuing features and capabilities in heat pumps, low load efficiency, cold climate, automatic load

flexibility, connected diagnostics, and several other things over the next few years. Seeing if we can find things that differentiate heat pumps and their performance other than HSPF and SEER.

- Currently throughout the nation there are a variety of organizations hosting heat pump symposiums, collaborations and forums between manufacturers, trades and utilities. NEEA is hoping to help sponsor or facilitate one of these collaborations in the NW with Daikin to mirror the ones currently happening in the Midwest, NY and NE where we would bring together these three parties and have a conversation about what they need and how we can help. Since we have energy and peak challenges as well as our duct work being outside of the house, we are in a different position than most of the rest of the country.
- Consortium for Energy Efficiency sets tax credit criteria. As of Jan 2025, there will be a new tax credit criteria which we expect will reflect one national spec. Overall it will be simplified and easier to achieve, and the EPA threshold remains a little easier to meet than that. There is $2k tax credit behind the CEE spec so hopefully your customers can get the federal tax credit AND whatever program you currently have running.

Emerald PUD – Tyler Boehringer

- A slow to begin the year with regards to Energy Savings Targets, but right where we need to be with our CNI Projects which is helping us get to where we need to be.
- Focused on the Oregon Heat Pump Deployment program which is state money through a third-party administrator we work with to bill for ductless heat pumps for low-income customers. At a point now where its first come first serve money pot that we're working out of, so that is where a lot of our focus is going. Currently Emerald is calling people from the LIHEAP list from highest to lowest usage and offering a new heat pump for free.
    - We have done 60 installations of the new heat pumps in qualified homes in the last 4 months.
    - The process is we help them sign up through a short application, call our chosen heat pump contractor who installs it, and the invoice is sent to the third-party administrator for the instant rebate (up to $7k).
    - Doing all installations in a two head system, Mitsubishi Hyper Heat, so cold climate in all 60 houses.
- Question was asked on AMI Data?
    - **Yes, we have all the data you want.**

NEEA - Jack Davidson, Program Coordinator

- Residential HPWH Program highlights:
    - NEEA kicked off and announced our Hot Water Innovation Prize. Launched at ACEEE Hot Water Forum and currently networking with participants who would be developing and designing these products.
    - Publication of the Final Rule to the Consumer Water Heater Standard which will apply to standards for HPWH starting in 2029
    - Focused on the Final Rule transitioning to the market now that it has been announced. To compensate for the changes, NEEA is offering more trainings throughout the four states and in collaboration with local utilities on the ground. So far, we have done 12 HPWH Trainings to over 140 Individual Installers.
    - On pg. 13 of the Activity Report a key benefit outlined includes a fully paid HPWH installation for training purposes, stocking incentives and a call back fund to help. Hoping to address pain points regarding stocking and sourcing of these products.

NEEA – Anne Brink, Program Manager

- EPA – NEEA submitted comments for their Dryer Specifications process and started working with them on the "Most Efficient" category and will start working on "Refrigerators" later this year.

- The DOE has issued Final Rules on new appliance standards (Refrigeration, Washers, Dryers, Miscellaneous Refrigeration Appliances). These have all gone through as of April this year.
- Having conversations with retailers about supporting Energy Star V 9.1 with TV's and what strategies we want to use for both this year and 2025.
- Great success with additional sponsors coming into the national program (Energy Star Retail Partners Platform).
    - Dominion Virginia entered in January, so our coverage of US households went up to 24%.
    - CalMTA joined as a pilot focused on induction cooktops this year as well, which moved our coverage to a little over 30% which is the highest coverage we have had to date with this program.

NEEA – Tamara Anderson, Program Manager for High-Performance Windows

- Working on an ENERGY STAR v7 Influence Study which is on track to be completed by end of Q3 this year.
- Ducker/Market hare study is now live on neea.org which determines: 1.) the number of residential windows sold in the NW from the most recent year of sales data (2022), 2.) the relative share of efficient windows represented in this data, and 3.) the proportion of efficient windows that aligned with prescriptive or energy-equivalent pathways for with the ENERGY STAR v7 specification.
    - LINK: https://neea.org/resources/high-performance-residential-windows-market-share-study
- Working on engaging with both national manufacturers and local suppliers on windows for data acquisition.
- Working with national production builder to finish their project. Currently 72/100 homes completed and on track to finish by end of year. Please see pages 25-28 in the packet have more detail if anyone is interested.

Recap, Next Steps, Adjourn

Please come prepared tomorrow morning with questions for the Regional Priority Topic!

Q2 Day 2 - Product Coordinating Committee

June 25, 2024

9:30 a.m. -12:00 p.m.

Hybrid Meeting: Online and at NEEA – Columbia Conference Room

Meeting Attendees

In Person:

Tyler Boehringer (Emerald PUD), Josh Mitchell (Chelan PUD), Jonathon Belmont (Bonneville Power Administration), Shatoya Parker (Bonneville Power Administration), Christian Douglas (Northwest Power & Conservation Council), Laura Thomas (Northwest Power & Conservation Council)

By Phone/Webinar:

Andrew Shepard (Energy Trust of Oregon), Rich Arneson (Tacoma Power), Carolyn Beebe (Snohomish PUD), David Bopp (Regional Technical Forum), William Dixon (Puget Sound Energy), Haley Puntney (Inland Power and Light), Lars Henrikson (Seattle City Light), Jay Olson (Pacific Power), Mark Percy (Tacoma Power), Lis Saunders (Tacoma Power), Michele Drake (Avista), Thad Roth (Energy Trust of Oregon), Trevor Frick (Clark PUD), Todd Greenwell (Idaho Power)

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Welcome, Introductions, and Housekeeping

1. Agenda Overview
2. Introductions and “What do you drink to wake up in the morning?”

Regional Priority Topic Day 2 – Advanced Heat Pumps

Heat Pump Measure Development Updates by Regional Technical Forum (RTF)

Desired Outcome: Committee Members are updated on RTF measure development activities and capture any action items.

Introduction of Presenters: Suzi Asmus of NEEA introduced David and Laura and noted that RTF is continuing to look at and evolve the measures that pushed back some of the decisions and changes that impact everyone’s programs. She advised that the two will do a share out about programs from a slide deck on updates on the work that they have been doing.

First Presenter: David Bopp, RTF Contract Analysis | **Second Presenter:** Laura Thomas, NWPC Council
Ø Presenters to discuss the where, why, what, and when of RTF and air source Heat Pumps. They will be talking about the two different main residential variations which are ducted heat pumps and ductless heat pumps.

1. Ductless heat pumps will be a smaller section but will be presenting more detail on the ductless heat pumps later this week at their implementer subcommittee meeting.
2. Pivotal time to go through heat pump measures: a) federal test metric that has changed b) new data around heat pumps as to how they're supposed to be rated, c) getting a regional release of data from the Home Energy Monitoring Team Energy monitoring study and from BPA field study, d) federal funding, diminishing opportunities for savings, new challenges from load growth, constraints, extreme weather, etc.
3. Slide acknowledging confusing terminology. Air Source Heat Pumps - Lots of Options. They will talk specifically about Centrally Ducted Heat Pumps (CDHP) or Ductless Heat Pumps (DHP) (single or multi-head).
   - NOT Discussing Commercial, Thermostats, or ground source HPs today

- NOT Mid-stream measures
    - Down-Stream vs. Mid-Stream - Review of downstream versus midstream since we do not have any heat pump measures that are currently designed to be used as a midstream measure. The current RTF heat pump measures are all designed and specified as down-stream measures. The savings are not correct for use in a mid-stream program. Current Measures do not work for mid-stream.
    - Baselines are clear and verifiable for downstream.
- Discussion followed on centrally ducted vs ductless, RTF measures, and higher efficiency units.

4. CHDP Context and the Challenges Facing Grid – Massive forecasted load growth moving to electrification
    a. Massive, forecasted load growth (data centers)
    b. Growing transmission constraints
    c. Fewer dispatchable resources
    d. More intermittent resources
    e. Record peaks from extreme weather events (heat domes, cold snaps)
5. Cost of power – Morning and Afternoon – What value can energy efficiency play provided by overlapping these areas. The most valuable EE will provide energy savings and capacity benefits at high value hours.
6. Centrally Ducted Air Source Heat Pumps
    a. 16% of Northwest homes now have a ducted HP.
    b. In Washington state, the number is almost 20%.
    c. In addition, more than 50% of the region has ducted gas or electric furnaces, which could be converted to ducted HPs (HVAC Program).
7. Load Shape by hourly of existing ducted HPs displaying that HP peak is coincident with hours of higher net loads and energy costs.
8. CDHP Measures – Current Centrally Ducted Heat Pump Measures
    - Currently the RTF measures are solely focused on HSPF (HSPF2).
    - The RTF has included requirements on commissioning, controls, and sizing as part of the measure and as a separate add-on but in the end, this was not found to add to savings when compared to current market installation practices.
    - Claim savings – three options: Conversion, Upgrade, and variable speed.
9. RTF current process for updating conversion measures.
    - Lessons learned for CDHP conversions
      - Savings are going down across the region
      - Control of HP backup heat has not been paid much attention historically
    - RTF will Explore creating measure looking at How to Significantly Reduce Backup Heat Demand what we know:
        a. Sizing heat pump to meet all heating needs at 30°F or below
        b. Ensuring ducts are sufficiently sized and insulated
        c. Ensuring home envelopes are insulated first
        d. Locking out backup heat until it is needed
        e. Selecting a cold-climate heat pump that can provide low temperature capacity and efficiency
        f. Reducing unnecessary backup heat capacity
        g. Smarter setback control logic and system defaults Evaluating the control of heat pump backup heating.
    - July RTF Meeting will change status to “Under Review” and will emphasize savings estimation method needs to be updated.

- Comment about the difficulty caused by the requirement to have electrical permits, which now requires an electrician. If replacing not required.
- Todd Greenwall asked could you remind me back in 2022 when the final PTCS or CCS spec was released in April, did we encourage with respect to the first bullet point, balance points below 30 like we had done traditionally or did we say 30 degrees period, do you recall offhand? David replied – that is probably the last one the BPA issued, not RTF.
- **RTF's "Bookends"** – Laying out options by complexity of implementation and savings potential
    - First: Update the "Business as usual" with few requirements
    - Second: "Maximum savings" with minimum duct and home weatherization requirements; **No resistance backup heat where possible**
    - Third: **Everything in between**
        - RTF needs the most help with everything in between. Input from region in between the areas.
        - Data would be helpful too. Start NOW to survey region, gather data
        - Chrisopher question: Has anyone been running a program to require NO strip heat?
            - Tyler: EPUD is interested in running such a program
    - Questions or Comments Section:
        - Discussion on Lock out or in-between holistic approach.

11. Centrally Ducted HP Upgrades
    - Data is starting to come in and there are variations. (Variable speed, Cold climate, extended capacity, etc.)
    - Within the next year about savings for this variation.
    - July RTF meeting – Change status to Under Review – Savings need to be updated, Update the costs, as well.
        - Anyone who has cost data, please share with RTF!
    - Q&A:
        - Christopher noted CEE has an Advanced Tier for tax credit we can influence. If we could define something nationally, not just regionally, that would be helpful.
        - Andrew Shepard's question regarding the increased AC use today versus years ago tied to savings erosion
            - AC usage has decremental impact on overall savings. Need to look more closely at data.

12. Potential Controls in Existing CDHPs (Two options for "Everything In Between")
    - Lockouts (ER and HP) - and/or – Setbacks
        - Data presented showing impacts and data supporting these two approaches
    - Retro-commissioning & Setback DR exploration (focus on kW reduction)
    - Q&A
        - Laura said they are looking at longer range opportunities and understanding different opportunities with load shape, setbacks and timelines.
        - Christopher Dymond asked: What do people think about retro commissioning concept?
            - Josh Mitchell: I'm excited about it
        - Discussion about homeowner/customer behavior
        - Discussion about contractor education
        - Discussion about limiting rebates to installer not installing any backup, or limiting it

13. Summary: Regional Lessons Learned

- Savings Easily Erode
- Stakeholder Goal Misalignment (Contract, customer, utility)
- Being Holistic is Hard Yet Important
    - Comprehensive contractor training, certification, QA is difficult
    - PTCS had mixed success in changing contractor behavior but important to savings
    - HPs are not plug and play technology as they interact with home and occupants.

14. Other work in the Region
    - Controls logic, test metrics
    - Improve housing stock to prepare for heat pumps to replace existing heating
    - Prepare to support demand response programs
    - Education of contractors
    - Education of customers and setbacks, reset expectations and behavior needed
15. RTF Path for updates
    - Portfolio Assessment >>Data Analysis >>Measure Foundation>>Expanded Measures>> Develop New Measures >>Commercial Measures

Contact information for Presenters from today's Regional Priority Topic: David Bopp; boppda@gmail.com; Laura Thomas; lthomas@nwcouncil.org

Q3 Topic Check In – Heat Pump Water Heaters

Desired Outcome: Committee members confirm there is enough interest in this topic to hold time on the Q3 agenda and to invite any other relevant topics.

Current Topic for Q3 – Current and planned market activities to increase familiarity as well as targeting additional barriers while inviting people to share out on relevant activities, research and pilots.

- No objections from the committee. Will check back in before Q3 to make sure there are no additional Ad Hoc topics for the upcoming September meeting.

Coordinating Committee Assessment

Alisyn Maggiora to share context, review next steps, and send out poll to committee to vote in meeting.

Hoping to complete assessment via coordinating committee meetings and 1:1 discussion with Anouksha Gardner by August 1st.

Goals are to identify areas for improvement and support transition to Cycle 7 for NEEA (2025-2029). Additionally ensuring regional value delivery and effective resource allocation. Part of a larger effort at NEEA to improve all Advisory and Coordinating committee processes for the future.

PROPOSAL:

- 3 meetings per year instead of 4, at least one in person/hybrid meeting
    - Q1 & Q4: 2 half day meetings (1 hybrid); Q2: half day webinar with program focused breakouts
- Increase Flexibility in Agenda
    - Feb/March – Hybrid; 2 Half Days
    - May/June – Virtual; Half Day – 1 hour allocated to breakout sessions for program specific coordination needs, ad-hoc topics, or regional/utility related topics.
    - Nov/Dec – Virtual; 2 Half Days – Annual Planning on Day 2
- Utility and Sector Alignment –
    - Possible renaming of committees with Sector (Residential and Commercial and Industrial)

Will be taking a more formalized proposal to RPAC in Q3.

In-Meeting Online Poll: 100% of the votes (10 ppl) were for "Incorporate Proposed Improvements"

Housekeeping, Recap, Next Steps, Adjourn

Federal Funding Workgroup Update: OR has submitted, WA has submitted one of two applications, and ID and MT are working on their applications.

HPWH Marketing Campaign Elections: 100% of the RPAC+ Team will be participating in NEEA's upcoming HPWH campaign running from July – October of 2024.

NEEA Manufactured Homes moving to "monitoring" status in Q3.

2022 RBSA (Residential Building Stock Assessment) Data now available on neea.org – neea.org/rbsa

Next PCC Meeting is in Q3 - Thursday, September 12th for a Virtual Meeting.