

Meeting Notes

Q4 2023 Products Coordinating Committee

Wednesday, Nov 15 and 16, 2023

Day 1 – Topics: Role of VFD's and Smart Pumps and Multifamily Water Heating

Day 2 – 2024 PCC Annual Planning Session



Attendees:

Haley Puntney (Inland Power)

William Dixon (Puget Sound Energy)

John Davey (Puget Sound Energy)

Lars Henrikson (Seattle City Light)

ShaToya Parker – NEW (BPA)

Dave Murphy (Bonneville Power Administration)

Mindi Shodeen (Idaho Power)

Josh Mithell (Chelan County PUD)

Carolyn Beebe (Snohomish County PUD)

Jay Olson (Pacific Power)

Michael Gump (Avista)

Todd Greenwell (Idaho Power)

Whitney Jurenic (NorthWestern Energy)

Lis Saunders (Tacoma Power)

Natasha Houldson (Tacoma Power)

Trevor Frick (Clark PUD)

Thad Roth (Energy Trust of Oregon)

Shelly Carlton (Energy Trust of Oregon)

Shawn Fredrickson (Guest)

Jim Loewen (SCL Guest)

Elliott Zimmermann (SCL Guest)

Alan Fraser (EWEB)

NEEA Staff: Alisyn Maggiora, Anouksha Gardner, Jack Davidson, Stephanie Quinn, Nick Michel, Warren Fish, Tamara Anderson, Anne Brink, Kristen Aramthanapon, Neil Grigsby, Timothy Runyan, Geoff Wickes, Britt Cutsforth Dawkins, Kaelin Oppedal

Resources

- **Agenda packet on NEEA.org:** <https://neea.org/committee-documents/q4-2023-pcc-agenda-packet>
- **Slide Deck on NEEA.org:** <https://neea.org/committee-documents/q4-2023-pcc-meeting-slides>
- **Day 1 Meeting Recording, Part 1 :** <https://vimeo.com/885311477>
- **Day 1 Meeting Recording, Part 2 :** <https://vimeo.com/891542011>
- **Day 2 Meeting Recording :** <https://vimeo.com/891546239>
- **2024 PCC Agenda Session on Mural:**
<https://app.mural.co/t/neea1515/m/neea1515/1695920611887/3bc661065cd0cafc5f6278b6bd3b4d7bdf464fc8?sender=uc31e19154c0fd32db0c98248>

Welcome, Agenda, and Packet Review

If you have questions please contact Alisyn Maggiora (amaggiora@neea.org)

Agenda Items in Packet Pg 5 to 7, Slides 1-4

Acknowledgement of Dr. Tina Jayaweera, NWPCC

Introductions & Regional Roundtable

Nick Michel (NEEA) : MT manager, been at NEEA less than a year.

Jack Davidson (NEEA) : Program Coordinator, supporting HPWH.

Anouksha Gardner (NEEA) : Stakeholder Relations Manager

ShaToya Parker (BPA; newest member of Residential Team)

Todd Greenwell (Idaho Power): Managing residential programs.

John Davey (PSE): Downstream program manager.

Will Dixon (Single Family Consumer team at PSE):

- Fallen short on gas and electric savings by about 10-15%
- Launched DR programs. Resi behavioral, Resi automated, and Resi Opt-Out.
 - o Adding water heat, EV's and batteries in 2024
- Other Programs:
 - o Moving HPWH to downstream from mid
 - o Shifting gas (res storage) from downstream to mid
 - o EV chargers to downstream
 - o Marketplace is getting a new overhaul (May)
- Ended home energy pilot. Not much savings but interesting
- Continued rebates on hybrid heating. Increasing rebate on weatherizing
- Biannual update for CEIP

Jay Olson (PAC):

- They are rolling out a HPWH online platform for their WA customers. Intent is to have easy ability for customers to have access and resources. Comes with fixed fee from trade allies. That is launching this week. Starting in WallaWalla area with a \$500 rebate and will rollover into the Yakima area. Reason: Is there an uptake happening, if they can streamline the process and easy approach than customers finding contractors do upgrades. This approach is being looked at like a pilot.
 - o Might extend to new products
- Home Energy Savings and Wattsmart programs are reviewing proposals for next biennium round of [program implementation.

Carolyn Beebe (SnoPUD):

- New software system for all energy service systems. They aren't making changes to programs while that new system goes up. – Likely another 6mo before ready.

- Assistant General Manager, customer and energy services; Pam Bailey is retiring. New person will be hired soon. Will be difficult to replace!

Lars Hendrikson (Seattle City Light):

- Efficient laundry rebates, HP's and HPWH still going.
- Smart Thermostats; line voltage incentives happening
- Looking forward to doing a fixed price install for HPWH for 2024
- For 2024, a Whole Home program aligned with IRA funding. Looking for what tools they can supply so customers can use it for Home Energy Assessments
- Has invited colleagues for Pumps and Motors (Jim Lewen and Elliot Zimmerman)

Josh Mithell (Chelan PUD):

- Thoughts about shoring up their HPWH program for 2024 – kicking around ideas with contractors.
 - o Requiring size limitation for backup heating coils
 - o Paying for equipment as part of rebate and doing a 1-year follow-up (w/ related incentive)
- Getting ready to kick off their no-cost, low income weatherization and appliance project. Working with making sure ppl have access to IRA funding first, then stacking Chelan.
- They are ready to announce that someone will be hired on their commercial open slot

Anne Brink (NEEA):

- Two new staff members on the RPP team; Steve Seminario and Wendy Preiser.
- Had a multi-product agreement signed for standards proposal for several categories:
 - o ASAP and, NEEA negotiated a proposal with DOE on cloth washers, etc (xxxxx)
 - 2027-2030 depending on the products.
 - Looking at it as a win.
 - DOE will look at that before potential change takes place in Administration.
 - o Had new test procedures in Television in September.
 - Several manufacturers signed onto agreement.
 - New TV's are being tested.
 - Coming through slower than anticipated but watching that.
 - Will be doing other things around TV in 2024 to support Estar TV's

Tamara Anderson (NEEA):

- Talking about Efficient Fans and High-Performance Windows. Last day with E-Fans here at PCC
- Fans Activity report.
 - o Tuesday Dec 5th in Seattle
 - o Wednesday Dec 6th in Portland.

- Shout out to utilities who volunteered for Twin City Fans Training. SnoPUD and Tacoma Power attending the Seattle Training. Clark PUD and Energy Trust of Oregon attending the Portland training.
- Windows: Conducting volume builder pilot project.
 - Working with builders to encourage them to try out triple pane windows and debunk some myths.
 - Project was Confederated tribes of Grand Ronde.
 - Two videos and case studies currently on BetterBuilt NW

Stephanie Quinn (NEEA): Manager of Program Management filling in for HPWH.

- DOE Federal standard, comment period closed end of September. We anticipate that DOE will issue a final vote in May 2024. Update of the water heating performance standard issued by DOE. They have published a notice of proposed rule-making. It would increase performance standards for all water heaters. Essentially requires a performance level that only a heat pump water heater can do. There are some other things that can be carved out. **Proposed rulemaking details can be answered by Emily Rosenbloom and Geoff Wickes at NEEA.** When the final rule is out, it will only go into effect in 2029 or after. NEEA is still going to be in the market and look at what needs to be done before anything changes.
 - Britt: NEEA involvement was with a large group of diverse stakeholders. DOE estimates standards will result in approximately 27 quadrillion BTUs of full fuel cycle energy savings over 30 years. Expected to be one of the greatest savings achieved by any DOE standard in history.
 - Jack: DOE on NOPR: <https://www.energy.gov/articles/doe-proposes-new-energy-efficiency-standards-water-heaters-save-americans-more-11-billion>
- In the process of onboarding 2 implementation teams to expand training (program + marketing)
- Filming two installs this week to add to training materials - basement scenario and closet space.
- Final update; EMPER #7 is complete. Working on getting it posted, but can update CC
 - Key takeaways: no significant movement in attitude amongst installers, those using trainings from HWS feel more confident in tech.
 - More to come on that - particularly how those findings will be incorporated into program activities.

Warren Fish (NEEA):

- Pumps and Circulators: Hydraulic Institute has been working to refine EStar label for pumps.
- MFRs announcing product launches to help push efficiency.
- Chance to share out with EStar and their team of allied technical assist. contractors on Case studies is what we are focused on, smart pumps.
- Kristen Aramthanapon, is new member focused on XMP
- Beginning stages of first MPER underway
- Q3 results: good sales activity on smart pumps, reliability seminar, several webinars and trainings.

Lis Saunders (Tacoma Power):

- Planning for 2024-25 is big. Putting final touches on conservation plan 56 Megawatt hrs. Similar to last biennium, so not a lot of changes to what they are doing.
- Looking at their res portfolio. Changes may happen to tools that the programs use (ex. conservation loan fund - ensuring middle to lower-income folks are taking advantage). Income qualified customers are so important to us - looking at how to offer more grants to owner-occupied income qualified folks.
 - o 1 Year of Income qualified rental program: landlords get a grant spread over five years is a year on their belt. No rent increases over 6% over 5 years for low-income ppl and they get the grant. They may be able to up that for 7 years.
 - o City council and public utility board is interested on that program.
- On track to exceed 2022 and 2023 target
- They have avoided Business Occupation tax in WA on BPA EEI Money- used to help income qualified customers if it's not part of their programs- working with CAP agency to buy fridges for their low-income rentals. Maybe 50 fridges!!

Whitney Jurenic (NWE):

- Very busy and understaffed. Whitney is the only DSM Engineer at the moment, so survival mode
- Preliminary data coming in on end-use load data. As it finalizes it will be interesting to share out at PCC
- Programs are running smoothly. DSM-5 months in. USB programs- busy securing funding for new contracts
 - o Three pilots: all up and running. Word is out, getting participation. LLLC, Cold Climate Ductless heat pump and HPWH. All have different requirements. Some customer focused, some installer focused.
- Ear to ground on anything they can add value to: what's the best value/service for their customers.
- Winter is coming! Everyone is weatherizing and looking at their heating systems; so it's a big deal in Montana.
- HPWH (and all HP's) continue to be a big focus for NWE. Installer adoption is just not happening. Had a couple of events and hopes to say that some of their folks are more turned off. Tech seems intimidating, which means a lot of work to do. Cost is very scary and it's not the cheapest fuel type. Concerns with that and rural and low-income market.

Mindi Shodeen (Idaho Power):

- Things running as per usual.
- Todd, had some updates:
 - o Battling constant changes, cost effectiveness
 - o DHP Incentives went from 750 to 500 (UCT cost test)
 - o Multifamily (MF) launched as a new program with lots of measures.
 - Space heating incentives included, not sure about HPWH.
 - State has been under massive expansion and MF is exploding. Hard to keep up.

- Building Permits have dropped this year watching interest rate hikes. 14% down but still higher than traditionally were.
- Currently waiting for home efficiency rebate program and home appliance efficiency rebate program.
- Organizational updates: Senior EE Manager; Theresa Drake is retiring. Position is open to three program leaders in the department.

Hayley Puntney (Inland Power):

- Been busy and big year
- Organizationally: New energy services and power supply manager hired in August.
- Launched Low income bill assistance program (driven by CETA) and an Income-based insulation program.
- Working on Rural Utility Services (USDA program) tariff (loan) program. Coming up with member process and billing and documentation, etc.
 - Hoping for soft launch early next year.
 - \$30 mil received to give out to members.
- Partnering with ESG to do a duct-ceiling contractor and reach low income members
- Putting themselves out for low income members
- Excited to get into the next BPA rate period

Dave Murphy (BPA): Grateful for Shatoya Parker joining their team. A BPA veteran who transferred from another group. She will be attending PCC in the future.

- Inspired by Haley and what they are working on. Ideas on Equity that they can discuss.
- End of rate period. New Implementation Plan.
- Beginning the Rate Case
- Eliminated most payments for Consumer Products, no longer C/E; keeping washers and dryers (now includes low-income measures) and TSP valves
- New greener water heater getting installer payment gets people over the hump. Making installers get comfortable and paid for their time.
 - Heard from single distributor so far, even though there's a rebate. They are limiting how much the labor pay will be. Ppl with faulty unit are facing higher costs. Heard from a single distributor.
 - Hot water solutions team topic to discuss and brainstorm. **(Steph Q and Emily R)**

Motor Driven Products Regional Priority Topic

Overview: Smart Pumps

Warren Fish of NEEA walked through an overview on Smart Pumps. Smart pumps include not just a pump, but a motor and variable speed drive that are built into the product at the factory. The integrated variable speed controls allow the pump to automatically optimize the required load, and with the pump performance curve programmed into the drive, the need for downstream sensors is eliminated. Smart

pumps have many advantages, such as self-optimization, reduced failure points and installation costs due to fewer parts and pieces, ease of installation and maintenance, adaptive controls, and electric balancing. These pumps have been on the market for several years and manufacturers routinely add more pump types, sizes, and motor types to their lines. Most smart pumps include electrically commutated motors (ECMs), which are the most efficient motors on the market. Opportunities to install smart pumps exist mainly in new construction or major remodel, but existing buildings can also benefit as well from the reduced maintenance, decreased noise, and energy savings that a smart pump can provide. NEEA is looking for opportunities to tell smart pump success stories and encourages utilities and program administrators to bring forward any known projects including smart pumps that may provide a compelling case study that highlights energy savings as well as non-energy benefits.

Discussion:

Thad Roth (Energy Trust of Oregon): Are these smart pumps more expensive than the alternative?

Warren Fish (NEEA): Not necessarily, especially when you compare the all-in installed costs for a field-built system vs. a smart pump.

Overview: Variable Speed Drives

Nick Michel of NEEA introduced Variable Speed Drives (VSDs) as an area of interest for the Motor-Driven Products Group. Variable Speed Drives are electronic (not mechanical or clutch-based adjustable speed) devices that control the flow of power, and can be integrated into another product, or applied separately. NEEA is interested in VSDs because they are a mature technology with great energy savings potential but are lagging in adoption. There are opportunities for VSDs in flexible load management, future proofing, system solutions and reduced labor, and the relatively new Power Index metric (PI) can help us determine and measure efficiency of power drive systems (consisting of a VFD and motor). So far, NEEA has established 2 programs that include VFDs in their definitions (Extended Motor Products and Efficient Fans), reviewed existing research and conducted additional research. We have learned that the industrial sector and new construction markets are more saturated, and that more opportunity for VFDs is in commercial retrofit under 50 HP. Overall, the technology is complex and awareness of the benefits of VFDs are low. A major challenge is that motors and drives exist in separate sales channels and will require a multifaceted approach to increase knowledge and adoption. While no plan is in place to build a program around VFDs at this time, we are still learning with the intention of filling in gaps not covered by existing programs, pursuing a possible future where VFD/motor integration is standard, and continuing to capture knowledge and experiences from relevant market actors.

Discussion:

Alan Fraser (Tacoma Power): You hit it right there when you mentioned the different sales channels. You can have finger pointing between people on what isn't working and that's always been a challenge.

It's certainly more industrial than commercial, like you said.

It also sounds like there is voltage optimization going on with newer drives, so that's kind of exciting.

Jim Loewen (Seattle City Light): SCL has provided incentives for a number of different projects - cooling tower fans, domestic water booster pumps, condenser water pumps/chilled water pumps, fans, etc.

A lot of folks who are upgrading existing buildings will contact us about improving their systems. With the Seattle codes the way they are, and because buildings are gradually converting away from natural gas, boiler systems are kind of disappearing and are being replaced with heat pump systems. Codes in the Seattle area do require drives I think down to 5 HP, which covers a lot of systems over the last 8 years. The opportunity is that heating and cooling systems have previously been designed for maximum output, but seasonally in Seattle we have a lot of shoulder periods where there's no reason for those pumps to run at full speed much more than 10% of the time they're operating, so these kinds of applications are great for drives.

There are also industrial opportunities where customers are upgrading their chiller and heating plants, modifying/consolidating their pumps.

You mentioned that drives are very good at correcting power factor, but another good feature is the soft start, where they're commanded on, and they'll start at 10-15% speed and then are allowed to ramp up to whatever speed they need to operate. If you have an older motor that's being ramped up immediately and fully every time, there is going to be some wear and tear and the customer is going to see a failure at some point. Adding a drive is a good option provided you take care of grounding issues.

We've been advertising on our website that we provide incentives for drives and certainly if they're doing a project that has to get a mechanical permit, then they'll be required to also comply with the energy code in those situations. We won't provide a supplemental incentive. They have to install the drive, but if it's existing equipment and they want to add a drive to it, then we certainly support that. We're kind of going through a new marketing approach for outreach and we want to make sure all our customers understand that these incentives are available, and they just need to talk to us before they do the project.

Another application is in some systems out there with the older inlet guide vane type of control, putting in some kind of throttling on the fan system. And if they take out that control and go to a drive, they're going to get a good 10 or 15% improvement, maybe more.

Another application is if the customer is replacing say, a large single motor fan with a fan array going from a single motor maybe to 16 motors, then they could lump several motors onto a single drive and help keep the cost down that way.

In other cases, they might have a critical operation like at the Medical Center where they might put in redundant drives or have them somehow operate in parallel so that they could still maintain the system without losing the operability of the fan.

There are a whole lot of different opportunities that we see coming in, there's still a lot of opportunity. It's a really matter of us communicating with the design consultants and mechanical

contractors. These are all things they can consider with their customers, and they can talk to us about.

Something else to consider is the impact on the customer in terms of cost and how they can get projects implemented. I think us as influencers can really think about each application and what kinds of options there are in each particular circumstance that we can propose to them. Essentially, drives are good. I know there's manufacturers that build dual pump assemblies on chassis that have the drives all connected and they're all ready to go. You just have to plug in place, so to speak. I don't know how well that that concept or that technology is being talked about out in the field.

Whatever the technology is, I think all of these pumping and fan motor technologies and drives are going to be a key part of getting us to where we want to be in the next 10 years.

Water Heating Regional Priority Topic

HEAT PUMP WATER HEATER REGIONAL PRIORITY TOPIC: Multifamily (slides_27-50 | packet p. 6)

If you have questions about this section, contact Emily Rosenbloom), Geoff Wickes (gwickes@neea.org), or Shelly Carlton (Shelly.Carlton@energytrust.org).

Presentation Highlights

- A. Multifamily 101
 - a. Current Building Stock
 - i. Woody Walkups – One to one
 - ii. Mixed Use Buildings – One to Many
 - iii. High Rises – Few to Many
 - b. PNW Building Stock
 - i. Most are low-rise building
 - ii. Residential unitary water heaters represent 79% of the existing water heaters in the PNW
 - iii. Up to half of the commercial & multifamily hot water load potentially could be met with a central HPWH solution
 - c. Advanced Water Heating Specification and QPL
 - i. Moving to 9.0 that will include a robust section on residential, and multifamily specifically
 - ii. Hoping to add industrial heat pumps in the future
- B. NEEA Updates
 - a. Markets
 - b. Savings Potential
 - c. AWHS
 - d. Amazing Shrinking Room

- e. Design Charrette Solutions
 - i. Design Charrette held with 5 architects, 4-5 MEPs, maintenance professionals, a rater, and a facilitator, focusing on new construction woody walkups
 - ii. Maintenance perspective brought to light difficulties of access to units when they are in individual apartments
 - iii. Solutions positioned them near external outlets, hallways, or closets, to avoid disturbing residents
- f. Involvement in Projects
 - i. Tacoma Housing Authority, Meridian Gardens, Bayview Tower, Pepsi Blocks, Market Rate Development, Low Income NE PDX, Low Income Hood River
 - ii. Looking for projects in PGE territory
- g. Major Goals for NEEA
 - i. Looking for new scope and scale opportunities
 - ii. Working with manufacturers
 - iii. Integration of flexible load management
 - iv. All taking place outside of the current HPWH program
- C. Energy Trust Share-Out: Multifamily
 - a. Incentives
 - i. ETO offers a multifamily market solutions product allowing people to bundle things that include HPWH for multifamily for 2019 and 2021 code
 - 1. No one has taken ETO up on the in-unit HPWH package
 - 2. Could be tied to space limitations
 - ii. ETO penetration rate with multifamily is limited as so many are being built so quickly
 - 1. Catching them before they go up is a barrier, as well as educating developers
 - iii. One developer has expressed interest, included on Geoff's list of projects
 - iv. A retrofit opportunity as the units have outdoor closets
 - v. Building Energy Simulation Forum upcoming
 - vi. December 13th – training on Interface Engineering and how to work through the CFD analysis, reviewing barriers, and the projects they have supported
 - b. Customer Reactions
 - i.
- D. Regional Discussion

Will (PSE): Do you find that multifamily houses are being flipped, so there is no interest in operation cost?

Shelly (ETO): This is part of the problem. By the time we find the smaller developments they are already too advanced.

Geoff (NEEA): If you get to them while they're in the concept design phase, they are much more receptive.

Will (PSE): We just had an interesting situation where a property manager had gone into Lowes with a list of tenant phone numbers and was able to game the coupon system, and came away with about 44 HPWH. PSE is still working on figuring out our approach to how to handle this situation. Opens questions of how it impacts distributors or contractors.

Lars (SCL): All of the units were installed in Seattle territory, so it's an open question of how to handle this, or if there is some way to make it where this person wouldn't have to go around the system in the future.

Todd (Idaho): When the expansion of multifamily began in 2014, it was difficult to find these new projects. Had to look for projects with leg work and interviews of those on site. It was necessary work, in order to get this information integrated with decision makers. In Idaho all of the structures were 3 or 4 stories, mostly being built with electric furnaces. How these projects are, you need to be very close to the developers to get them onboard with these ideas.

Jay (Pacific): One thing that was noticed earlier in the program is that many of these developers are not the usual suspects, but smaller and more varied companies. A lot of the work was scouring permit data or attending design meetings. This way information could find its way to the architect, rather than the architect bringing the idea to the customer.

Todd (Idaho): One additional observation is that when the expansion projects started, many of them were following the prior woody walk-ups. The new clients moving to Idaho want something more innovative so projects are taking on additional designs. Units that used to cost \$600 now start at \$1800, so they need to step up their game. Things like HPWH and DHP are becoming more attractive to the customers. HPWHs still remain not as cost-effective given the low draw for some of these units. There are also concerns about the comparative funding from utilities vs IRA funds that everyone is talking about.

Shelly (ETO): Important to remember that part of the utilities role is the early design assistance, as well as the outreach to answer questions and calls, and help direct people to funding sources.

PCC Annual Plan Check In

- **Day 2 Meeting Recording :** <https://vimeo.com/891546239>
- **2024 PCC Agenda Session on Mural:**
<https://app.mural.co/t/nea1515/m/nea1515/1695920611887/3bc661065cd0cafc5f6278b6bd3b4d7bdf464fc8?sender=uc31e19154c0fd32db0c98248>

PCC annual planning process day 2 of PCC, November 16th. Mural used for visual guide and discussion. Focus on topic development based on the topic survey results.

Schedule:

HPWH

RPP/Consumer Products

Advanced Heat Pumps

High-Performance Windows

Coordinating Committee Update

Memo in Packet (Pg-8)

Program Swap: aligned to committee sector

Reassigning Advanced Heat Pumps and High-Performance Windows moving to Products Coordinating Committee

Reassigning XMP Pumps and Circulators and Efficient Fans moving to Integrated Systems Coordinating Committee

2024 Annual Workplan Proposed Structure Changes

Roundtable taking place every quarter. We are proposing Q1 and Q3 to be lighter and focus on one regional topic and have time for Ad-Hoc Topics. Meant to provide flexibility and lighten lift on topic coordination.

Q2 and Q4, longer meetings, still be robust and focus on two regional topics and all the other things we already include.

Questions/Thoughts/Considerations? N/A

Housekeeping

Leadership in Energy Efficiency Awards

- December 4th, in Portland, in person and hybrid happening at Avenue. RSVP by November 17th

Upcoming Meetings

- Nov 30th CEAC
- December 4th & 5th Board Meeting

Stakeholder Engagement Activities

- Stakeholder Satisfaction Survey: Done every 2 to 3 years, tracker on how are we doing, 2 to 3 weeks to respond, encouraging as many individuals from the org to fill out the survey
- In Person Stakeholder Visits: In person stakeholder outreach and engagement visits to cover follow up on the survey. General marketing needs and opportunities for alignment.

2024 Meeting dates

Calendar dates coming your way!

- Q1 March 21
- Q2 June 24 & 25

- Q3 September 12
- Q4 December 3rd and 4th

Efficiency Exchange 2024

- May 2024
- Early bird reg and reg in January

DRAFT