

# Meeting Notes

## Q2 2023 Natural Gas Advisory Committee

### Thursday, April 20, 2023

### Webinar Only



#### Attendees:

Corey Corbett – Puget Sound Energy  
Monica Cowlshaw – Cascade Natural Gas  
Kevin Duell – NW Natural  
Carlos Limon – Avista  
Jackie Goss – Energy Trust of Oregon  
Whitney Jurenic – NorthWestern Energy  
Danie Williams – NorthWestern Energy

Michelle Wildie – Puget Sound Energy  
Laney Ralph – NW Natural  
Holly Braun – NW Natural  
Dan Kirschner – Northwest Gas Association  
Sari Hoffman-Dachelet - MNCEE  
Peter Kernan – Oregon Public Utility Commission  
Carl Nelson - MNCEE

**NEEA Staff:** Alisyn Maggiora, Peter Christeleit, Brandon Lindquist, Noe Contreras, Ryan Brown, Aaron Winer, Becky Walker, Tamara Anderson, Kevin Rose, Jason Jones, Jeff Harris

#### Resources

- **Agenda packet on NEEA.org:** <https://neea.org/committee-documents/q2-2023-ngac-agenda-packet>
- **Master slide deck on NEEA.org:** <https://neea.org/committee-documents/q2-ngac-meeting-slides>
- **Meeting Recordings:** Part 1 <https://attendee.gotowebinar.com/recording/4207199211042907907>  
Part 2 <https://attendee.gotowebinar.com/recording/4416769425831682816>

#### Welcome and Introductions

*If you have questions regarding general content in this meeting, please contact Alisyn Maggiora. ([amaggiora@neea.org](mailto:amaggiora@neea.org)).*

A. Welcome and Introductions

#### Round Robin

Utility members and NEEA program staff shared updates since the last quarterly meeting.

A. **Monica Cowlshaw (Cascade)**

- Evaluation, measurement, and verification on commercial industrial program underway. Annual conservation potential assessment happening, as well. Doing annual reporting. Had a conservation advisory group meeting recently to go through current processes. Codes will be impactful on our programs. Biannual conservation planning is starting up. Looking at opportunities in the new biennium.

B. **Corey Corbett (PSE)**

- Working on standard biannual activities. Gas savings forecast has increased, but still a little bit below 100 percent for the biennium, looking at ways to hit 100 percent. Looking at IRP CPA cycle for next biennium. Likely will increase targets for next biennium 25 percent to 30 percent. RFP for new and existing programs will be released in early May. Working on development of several new measures, including an aroeseal duct sealing measure for residential, commercial weatherization. Working with Elaine Miller and Rick Dunn form NEEA on commercial secondary window attachments. PSE is a finalist for an Edison award for Clean Buildings Accelerator program. This teaches customers how to comply with the law, how to do benchmarking, etc.

C. **Michelle Wildie (PSE)**

- Just finished demand response winter season. Evaluating the results and seeing how they line up with what was expected with vendor. Our electrification pilots are underway. Our hybrid heating pilot with the gas furnace backup for a heat pump that's underway. But the biggest focus I think most people

would see is our Seattle City Light Joint program where we're going to work with their space and water heat programs along with our targeted electrification program, which is mandated by our settlement agreement. And we're in the midst of the RFP right now. Hopefully going to select a vendor very soon. Still working on the estimation of our energy efficiency and demand response, potential savings for specific pocketed areas to offset infrastructure savings.

**D. Jackie Goss (ETO)**

- Developing measures for next year. Annual report just came out this week. Looking at activity that is happening nationally as well as at the state-level and trying to see what is possible. It's a lot of effort to parse what is real and what is not. There are a lot of retirements in management coming up, a knowledge transfer is currently underway. Hybrid HVAC pilot is kicking off, have some meetings coming up with each of the funding utilities early next month to settle on goals, expectations, and learning objectives.

**E. Laney Ralph (NWN)**

- In the middle of a conservation potential assessment for Washington and getting annual report filing ready for June. There will be a lot of recommendations that come out of that that will impact efficiency programs. Beginning to look more at transport loads.

**F. Holly Braun (NW Natural)**

- In Oregon there is the CBP and we are currently attempting to figure out the model and the structure that makes it more clear what other activities you should do. Special focus on ground source heat pumps and industrial decarbonization.

**G. Carlos Limon (Avista)**

- Working on typical biannual activities such as conservation reports. Just submitted natural gas IRP. In exploratory phase for hybrid dual fuel heat pump pilot.

**H. Whitney Jurenic (Northwestern)**

- Want to hear about the dual fuel conversation happening today.

## **Minnesota Center for Energy & Environment ([slides 7-17](#))**

*Carl Nelson, Senior Director of Market Transformation, presented on MNCEEE's Market Transformation efforts that NEEA has been involved in.*

### **Presentation Highlights**

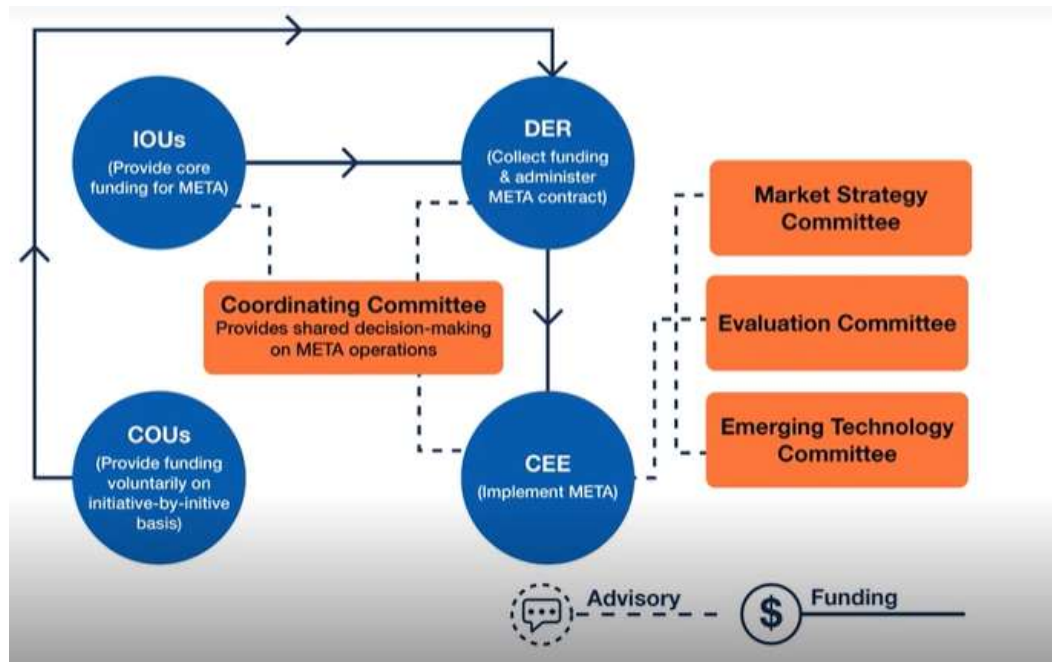
**A. CEE Background**

- a. Originally began as the energy office for the city of Minneapolis and began as an independent non-profit in the 1980s.
- b. Run programs primarily in Minnesota for Minnesota utilities, but also other states in the Midwest. Involved with a lot of stakeholders working on policy, allowing for a number of 2021 Minnesota state legislature wins, including the Energy Conservation and Optimization Act, the Natural Gas Innovation Act, and the Minnesota Efficient Technology Accelerator. The ETA creates a market transformation framework in Minnesota.

**B. NEEA and MNCEE**

- a. NEEA's success informed MNCEEE's approach to market transformation. NEEA help was crucial in giving stakeholders confidence that this approach could be done in Minnesota, as the similarities between the Northwest and Minnesota are greater than other areas of market transformation activity in energy efficiency.

**C. Ongoing collaboration in the ETA is built into the ETA program design. The core funding is provided by investor-owned utilities.**



- a.
- D. Other key attributes to of MNCEE Approach
- a. Statewide program with central administrator
  - b. Five-year funding cycles like NEEA, as opposed to the more traditional three-year cycle typical in Minnesota
  - c. Program will measure and claim savings
  - d. Portfolio approach similar to NEEA, both natural gas and electric savings
- E. Four stages of Individual ETA Initiatives
- a. Concept Development
  - b. Program Development
  - c. Market Development
  - d. Long Term Monitoring and Tracking is the last stage
  - e. Working on five different initiatives that will be part of program
- F. Starter Portfolio Initiatives
- a. Air Source Heat Pumps
    - i. Looking at eliminating air conditioners entirely and replacing with a heat pump
  - b. LLLC
  - c. High-Performance Windows
  - d. High Performance RTUs
    - i. Also looking at heat pump RTUs
  - e. Gas-fired heat pump technologies
  - f. Total long-term savings potential from all five is about a 13% reduction in total state energy use. These technologies were chosen for their high potential impact.
- G. Key Takeaways
- a. Market transformation is key part of strategy
  - b. Collaboration amongst stakeholders is crucial
  - c. Heat pumps, lighting controls and windows have significant savings potential, and will be the initial focus of the program.
  - d. Markets are regional, and cooperations among states will be critical for long-term MT success, such as ASHP Collaborative being partially funded by Pacific Northwest National Lab.

## Discussion

**Jackie (ETO):** How prevalent is central air conditioning in Minnesota?

**Carl (MNCEE):** About 80%, especially in the lower half of the state. Homes with central AC are mostly heating with natural gas. We can also target fuel switching to propane heated homes. Have been involved in promoting cold-climate air source heat pumps, but the economics are challenging.

**Holly (NWN):** Are you finding that there are many signing on for the COUs?

**Carl (MNCEE):** Our focused is statewide so there is a potential for free ridership. However, the initiatives we started out with are interesting and attractive to the electric COUs. Rural areas have a much higher percentage of propane heat and that is a very valuable economic proposition to those rural customers.

**Holly (NWN):** Are you looking at ground source heat pumps?

**Carl (MNCEE):** Our focus has not been on those. They have the ability to cover more of the heating load but the cost is so expensive. Still tracking some of the firms who are trying to deal with that issue. As it stands, though, the economics are not there yet.

Holly: Take a close look at the IRA.

## Annual Savings Review (packet p.3-9 | slides 20-29)

Ryan Brown ([rbrown@neea.org](mailto:rbrown@neea.org)), Manager in Planning and Analysis, gave this year's overview of the portfolio savings.

### Presentation Highlights

- A. NEEA's current gas portfolio is below. The bold programs below in Market Development currently have savings to report.
- B. Regional 2020-2022 Co-Created Savings Estimates
  - a. For 2022, NEEA has reported over 800,000 therms of savings. Will look at Efficient Rooftop Unit data when available in Summer 2022 and we expect to have some savings to report for 2022.



## Regional 2020-2022 Co-Created Savings Estimates (Annual Therms)

Program	2020	2021	2022	Source
<b>Total Savings</b>	<b>158,939</b>	<b>387,536</b>	<b>827,379</b>	
<b>Building Codes</b>		<b>370,839</b>	<b>801,423</b>	
Residential	0	361,362	729,576	2018 WSEC IECC 2018 with Idaho amendments
Commercial	0	9,477	71,847	2018 WSEC-C OR 2021 OEESC
<b>Standards</b>		<b>16,697</b>	<b>25,957</b>	
Commercial	0	16,697	25,957	The Commercial Packaged Boilers standard was published in 2020 and goes into effect in 2023. Washington and Oregon Commercial Cooking equipment standards were published in 2019 and went into effect 2021 and 2022 respectively.
<b>Programs</b>	<b>158,939</b>	<b>0</b>	<b>TBD</b>	
Efficient Rooftop Units	0	0	TBD	NEEA will be able to report savings from non-incented units for 2022 as early as September 2023.
Next Step Homes	158,939	N/A	N/A	NEEA redirected its efforts in 2021 to focus on code development, leveraging the work done through the above-code program.

- b.
- C. Current Business Cycle Plan Estimates
- a. Not expecting to meet the business plan range, primarily due to unforeseen policy drivers that are leading to shifts in new construction fuel choice. Have also had some delays in other programs, but the largest driver is residential code savings playing out differently than was expected in 2018 and 2019.
- D. Expectations for Timing of Savings Reporting

## Expectations for Timing of Savings Reporting

Program	Products	Year Expected for Reporting
Commercial Code	Specific proposals advanced in WA 2018	2021
	Specific proposals advanced in 2021 OEESC	2021
	Working on future code development in ID	TBD
Residential Code	Residential Codes WA 2018	2021
	IECC 2018 with Idaho amendments	2021
	Or. Specialty Code 2023	2024
Efficient Rooftop Units	Efficient Rooftop Units	2022 (Available in Q4)
Standards	Commercial Kitchen Equipment (WA)	2021
	Commercial Kitchen Equipment (OR)	2022
	Commercial Boilers (Federal)	2023
High-Performance Windows	Windows	2023/2024
Efficient Gas Water Heater	Gas Heat Pump Water Heaters	TBD

- a.
- b. As programs advance and data is collected, we will continue to add savings streams. Working on future development for future code development in Idaho.
- c. Expect High-Performance Windows to advance either later this year or early 2024.

### Discussion

**Jackie (ETO):** Residential codes are different than expected, is that primarily Washington?

**Ryan (NEEA):** Yes, largest impacts are Washington code.

### Portfolio Update (packet p.10-20)

Natural Gas Portfolio Manager Peter Christeleit ([pchristeleit@neea.org](mailto:pchristeleit@neea.org)), Director of Codes, Standards, Emerging Technology Mark Rehley ([mrehley@neea.org](mailto:mrehley@neea.org)), Product Manager Noe Contreras ([ncontreras@neea.org](mailto:ncontreras@neea.org)), Program Managers Jason Jones ([jjones@neea.org](mailto:jjones@neea.org)), Aaron Winer ([awiner@neea.org](mailto:awiner@neea.org)), and Tamara Anderson ([tanderson@neea.org](mailto:tanderson@neea.org)) gave an overview of the current state of the Natural Gas Portfolio and a retrospective of 2022.

## Presentation Highlights

- A. As soon as Q1 financials are ready, Peter Christeleit will bundle it and send it out. It looks like we will be underbudget for the first quarter. Some larger program expenses are shifting out to later in the year, this should have us coming in close to the budget at the end of the year. Have made some minor pivots this year as opportunities have been made available.
- B. Scanning
  - a. Combi
    - i. Field testing being done with multifamily homes and single-family homes with an SMTI 80 kBTU gas heat pump.
    - ii. Working with GTI Energy to receive a Vicot v20 gas heat pump for lab testing
    - iii. Finalizing research report outlining HVAC installer and end-user perceptions and feedback
  - b. Dual Fuel Ongoing Work
    - i. Modeling of a dual fuel ASHP and a natural gas furnace
    - ii. Research report outlining installer and end-user perceptions and feedback
    - iii. Report detailing key players and product performance
  - c. Commercial Dryers
    - i. Finalizing cost savings report of modulating dryer technology in the Northwest
    - ii. Continue scoping a liquid desiccant-based heat recovery solution for commercial clothes dryer systems
  - d. Engine Driven Gas Heat Pump
    - i. Scoping opportunity with a Yanmar system for a space heating/cooling application in the Portland, Oregon area
- C. Codes, Standards, and New Construction
  - a. Standards
    - i. In the first quarter of 2023, NEEA staff submitted one comment letter to a request from the Department of Energy on Consumer Furnaces.
  - b. Codes
    - i. Both Washington Residential Code and Washington Commercial Code are expected to go into effect on July 1, 2023.
    - ii. Montana Homes Collaborative group met in Q1 of 2023 and discussed wall assembly, building envelope practices, cold climate foundations, and more. Group will be publishing a document that it has been working on with Montana Roadmap to Home Energy Efficiency and Affordability.
    - iii. Idaho's Building Code Board is preparing to review the energy code in again in 2023. Two board seats have changed. NEEA is helping to convene the Idaho Code Collaborative to encourage an aligned response to board questions.
- D. Highlights from the North American Gas Heat Pump Collaborative
  - a. Lots of discussions with different gas heat pump technology developers and manufacturers.
  - b. One of the work products that should be developed this year are term worksheets for residential gas heat pump combi/furnace systems.
- E. Efficient Rooftop Units (Efficient RTUS)
  - a. Working with MNCEE to align with offerings to show the manufacturers that these are being promoted.
  - b. Prescriptive path specification. Boston CEE was talking about taking ownership, but now have cooled on that.
  - c. Hot Air Forum had a lot of good conversation on commercial HVAC and collaboration on field tests.
  - d. Field study for KBOO is continuing to be delayed.
- F. Efficient Gas Water Heaters
  - a. All goals have been updated to align with 2023 Operations plan. This means we will do as much as we can to understand the likelihood of commercialized residential gas heat pump water heater by

2025. Want to make sure that staying on current track is the right option. All goals are driving towards making an informed decision about the future.

- b. Delays on HeatAmp residential integrated prototype assembly, but still anticipating on that being completed this year.
- c. Looking to understand commercialization likelihood/timelines by major manufacturers. A lot of dialogue occurring with manufacturers promoting the technology and gaining information on commercialization.
- d. Also working to understand if utilities are looking to make significant financial commitments to this technology that would drive adoption. In general, we are probably not there on a larger scale but team will seek to further evaluate regional commitment.
- e. Moderated two sessions at ACEEE Hot Water/Air Forum, with one including the HeatAmp technology. Another was a session that covered multiple heat pump technologies.
- f. There are commercial-scale GHP products currently available that can heat water or air or both, that is something we are monitoring to understand value of a potential shift focusing on them

#### G. High-Performance Windows

- a. Most important thing happening is the builder pilot. Last year worked with four different builders and did exit interviews. Two of the four have committed to using HPWs going forward, the other two would with caveats. This year working with three different builders. One of the perceived barriers of the product is the extra weight, but one person can still install the window. Installer was not having issue with weight of product.
- b. On target to engage with manufacturers. Another national manufacturer that is approaching a commercial launch of the truly thin triple window.
- c. Anticipating to be on track to meet threshold of third goal. Critical path right now is securing data for the program. Doing heavy outreach right now to try and secure data for the program.
- d. High-performance windows are getting lighter and smaller. The hybrid triple window has three panes roughly the same size but is only ten to fifteen percent heavier and the same size as similar double-pane windows. The thin triple has a thinner piece in the middle and uses the glass from televisions or cell phones, so the glass is commonly available.
- e. Habitat for Humanity presented at BuildRight on triple pane windows and discussed how it was cost-effective for their project. Have two new pieces of collateral: [Habitat for Humanity Case Study](#) and [Triple-Pane Window Flyer](#).
- f. Will be at Efficiency Exchange, hosting a round table May 3.

#### H. Codes, Standards, and New Construction

- a. Had a slower first quarter for federal standards than last year
- b. Comment letter on consumer furnaces was not super impactful for natural gas
- c. There are a lot of activities happening on federal standards going forward, but items are proceeding to negotiated rulings. This means fewer comment letters, but they are more important.
- d. Washington Code
  - i. Covered later
- e. Oregon Code
  - i. Started residential process last year, finishing final disposition and looking at an effective date of October. Different than Washington code as it still supports efficiency for natural gas, no fuel normalization table. Oregon is in dual fuel space and still attempting to ratchet down to net zero.
  - ii. Last cycle Oregon linked commercial code directly to ASHRAE code. Oregon will adopt new ASHRAE code intact. Adoption process will begin in July of this year, six months after publication.
- f. IECC
  - i. IECC is the national model code and can be used by states to build their own code on. Vetted and supported by DOE. Have a ways to go before finished but will establish 2024

level. Idaho and Montana usually reference IECC code. Oregon and Washington usually have a more stringent code.

- g. New Construction
  - i. NEEA staff is continuing to support utility programs for above code new construction and collecting data monthly. Continuing as it has been.

## Discussion

**Jackie Goss (ETO):** GHPWHs, some of the barriers we have with electric versions is that they produce cold air and they're noisy, if the absorption products aren't as noisy and don't put out cold air these might be consumer friendly features.

**Aaron (NEEA):** 2025 would be the earliest we'd see something on the market. Gas leans toward being more favorable to consumers in regards to those issues Jackie mentioned.

**Noe (NEEA):** HeatAmp side, water heater is under 6 feet tall and there is no compressor. The pros for this technology are significant. The SMTI is more like the electric heat pump water. Gas heat pumps are less affected by colder ambient temperatures than their electric counterparts.

## Washington Code Updates and Impacts: Research and Evaluation and New Construction (packet p.21 | slides 30-56)

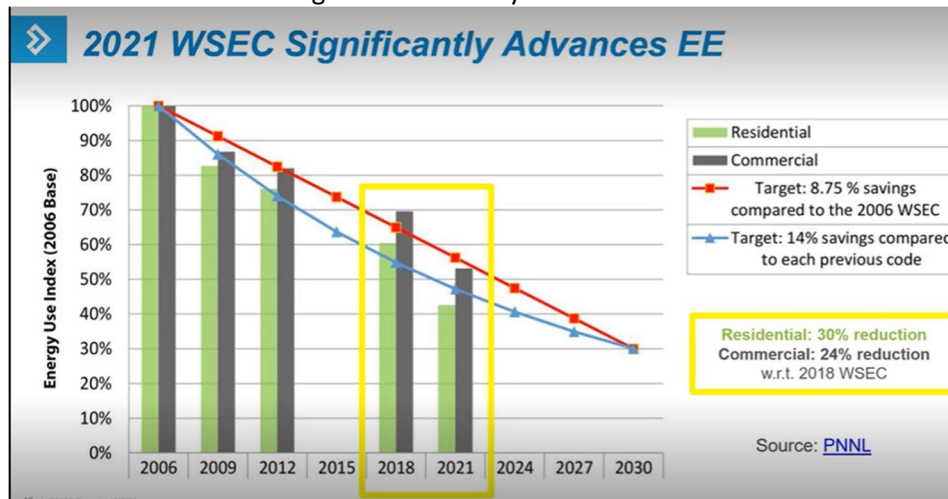
*Meghan Bean ([mbean@neea.org](mailto:mbean@neea.org)), Kevin Rose ([krose@neea.org](mailto:krose@neea.org)), and Ty Jennings went through the effects of the latest Washington residential and commercial code updates. The first section, led by Meghan Bean, illustrated NEEA's code research and evaluation. The second section, led by Kevin Rose and then Ty Jennings, discussed the code's effect on new construction.*

### Presentation Highlights

- A. NEEA's code team seeks to increase the efficiency of codes in each of the four northwest states. Activities differ quite a bit depending on the code landscape in each state and where each state is in terms of its code cycle.
- B. NEEA conducts code evaluations for each state at least once per business cycle
  - a. Additional research questions can vary from situation to situation
- C. WSEC 2018 went into effect February 2021, wanted to have strategic insight into how 2018 was affecting builders and chose to do an additional study in Washington. This is the Washington Residential Code Evaluation which began last summer and finished a couple of months ago. They key research topics were code compliance, ways builders are complying, primary space and water heating fuel, gas hookups and use, and permit data.
- D. Washington Residential Code Evaluation Methodology
  - a. TRC, who were contracted to do research, used a stratified sampling approach where they selected jurisdiction across the state.
  - b. Virtual home audits and permit data for 56 homes
  - c. Enabled state-wide estimates and comparisons for low and medium volume jurisdictions compared to high volume jurisdictions. Low and medium volume jurisdictions had to be combined to have enough results to compare. Also compared climate zone 5b versus climate zone 4c.
- E. Compliance results
  - a. 76% of homes complied with WSEC 2018. Sample size of 49 homes for which we have complete data.
- F. Results for primary space and water heating fuel results
  - a. Major transition towards electric being the fuel for primary space heating
  - b. 37% of homes have electric water heating, that jumps up to a percentage in the 80s
  - c. Majority of homes in sample of recent study did have a gas hookups
- G. WSEC 2021 Code change is significant in the advancement of energy efficiency
  - a. 24% commercial reduction from 2018 WSEC, 30% reduction for residential
  - b. 2021 WSEC requires heat pumps for space and water heating
    - i. Electric heat pump and heat pump water heater required for commercial
    - ii. For residential, there is a gas option but electric is favored



- c. 2021 WSEC scheduled to go into effect July 2023



- d.
- e. Heat pump requirements are the largest reason for energy savings increase
  - i. Requirement is only that electric HP meet 50% of capacity
  - ii. For residential, electric or gas heat pump is allowed in new codes, but electric is favored, especially in the options table
  - iii. Gas is allowed for multifamily
  - iv. These apply to new construction only
  - v. Commercial code was finalized April 2022, residential was finalized in November 2022

#### H. Existing buildings

- a. Project classification
  - i. Existing buildings are classified as buildings undergoing additions, alterations, repairs or a change of occupancy. If you don't touch it, it can stay as is. Like-for-like replacements are fine within limits.
- b. Existing buildings residential
  - i. There are a series of decisions you must make based on energy code and then you get a result. Challenging atmosphere to understand what a project is going to require. No overarching rules or guidelines.
  - ii. Flowchart is available here <https://www.cngc.com/in-the-community/environmental-priorities/washington-state/state-of-natural-gas-in-washington/>
- c. Existing Buildings Commercial
  - i. Flowchart is available here <https://www.cngc.com/in-the-community/environmental-priorities/washington-state/state-of-natural-gas-in-washington/>
  - ii. Documents are available for new construction and residential, both existing and new construction (Alisyn posted these to the chat)
- d. WSEC-C Example – HVAC Alteration (Replacement)
  - i. Section C403.1.4 is where the requirement for heat pumps comes out. When adding or replacing a unit in an existing building, it needs to comply with the requirements as if for new construction, or within an alternate compliance option listed in table C503.4.6.
  - ii. You can go back in with a federal minimum natural gas appliance, an 80 percent furnace if it's going to cause you to go with an electrical service upgrade.
  - iii. Code officials will differ on exact definitions of terms.
- e. What's different from past code changes?
  - i. 2021 WSEC does not stipulate minimum efficiencies across the board
  - ii. 2021 WSEC disallows specific types of equipment
  - iii. Poses significant challenge for all parties
  - iv. Project specific condition-based requirements

#### Discussion:

**Corey Corbett (PSE):** Will gas be allowed commercial kitchen equipment?

**Ty Jennings (CNGC):** Yes, 2021 codes address water and space heating only. Also, the energy codes do not address any type of industrial or manufacturing process.

## Dual Fuel & Gas Heat Pump Research (packet p.22 | slides 58-77)

*Lauren Bates from NEEA ([lbates@neea.org](mailto:lbates@neea.org)) and Michelle Kirsznar and Rich from Lieberman walked through the research done on consumer and contractor awareness and attitudes to dual fuel heat pump technology.*

### Presentation Highlights

- A. Decided to do market research earlier than usual due to atypical dynamism in the current natural gas market in support of opportunity advancements. Looking for direction.
- B. Research background, objectives, and methodology
  - a. Wanted to investigate four technologies – dual fuel res. HVAC, gas heat pump for res. HVAC, dual fuel RTU, and commercial gas heat pumps.
  - b. Sought to understand who the potential target markets are for each of the four technologies
  - c. Strongest focus on Washington and Oregon
  - d. What are the barriers to adoption?
  - e. Both dual fuel and gas heat pump technologies were presented to respondents. What do you know about these technologies? Questions were asked in an unaided way. After response, participants were shown high-level overviews of the technology.
- C. High-level findings
  - a. Dual fuel heat pump value propositions uncovered from the residential and contractor side
  - b. Residential
    - i. Saving on fuel costs and energy efficiency
    - ii. Heating and cooling comfort from a single system, a cooling component is a very growing important in the northwest
    - iii. Carbon footprint reduction
  - c. Contractor
    - i. No need for electric back up heating installation
- D. Barriers
  - a. Residential
    - i. Cost prohibitive
    - ii. Reliability of a hybrid system
    - iii. Concern over physical footprint, can't tell how big the system will be. Noise concern.
    - iv. Unanticipated installation costs
  - b. Contractor
    - i. Unfamiliarity
    - ii. Installation cost for homeowners with access to natural gas
    - iii. Resistance to new technology among older buyers and lower income households
    - iv. Unwilling to invest unless living in home long enough to recognize sufficient cost savings
- E. Target Markets
  - a. Residential Target Mindset
    - i. Open to using natural gas
    - ii. Seeking cooling, one solution for their heating and cooling needs.
    - iii. Want significant fuel cost savings
    - iv. Favor a more eco-friendly system
    - v. Willing to pay a premium price to achieve their HVAC needs
  - b. Residential Target Typology
    - i. Mid to upper income households, rural and urban geographies with need for cooling.
    - ii. Existing residential air-conditioning market (new and replacement)
- F. Recommendations for residential DFHP tech
  - a. Educate and promote to HVAC contractors

- b. Partner with key distributors to promote the technology and build confidence. Contractors take confidence from distributors.
  - c. Encourage distributors or manufacturers to develop certification programs
  - d. Work with utilities to promote to residential buyers and HVAC contractors.
  - e. Promote and emphasize the benefits of consistent comfort
  - f. Promote energy efficiency as the ability to reduce fuel costs
  - g. Promote and emphasize the environmental benefits
  - h. Use testimonials that emphasizes customer satisfaction
- G. Dual Fuel RTU Value propositions
- a. Commercial Buyers
    - i. All about costs. Total lower cost of ownership.
    - ii. Occupant comfort
    - iii. Reduced carbon footprint
  - b. HVAC Contractor
    - i. Reduced HVAC operating costs, easier sell when talking to buyers
    - ii. Reduced carbon footprint
- H. Dual Fuel RTU Barriers to Adoption
- a. Commercial
    - i. Upfront costs and installation, more prevalent among commercial buyers who are driven by cost.
    - ii. Unfamiliarity with track record, need to know they can rely on the technology
    - iii. Concern about hybrid system effectiveness
    - iv. Concern over system durability and maintenance requirements
    - v. Concern over system physical footprint and weight
    - vi. Carbon neutral codes
  - b. Contractors
    - i. Concerns about reliability and durability
    - ii. Potential supply chain issues, need to be able to get the product in a timely fashion
    - iii. Limited knowledge and insufficient training
    - iv. Lack of rebates/tax credits to help offset buyer costs
    - v. Technology constraints and/or required property structural changes
    - vi. Concern over natural gas restrictions
    - vii. Uncertainty over energy efficiency
- I. Dual Fuel RTU Potential Target Markets
- a. Commercial
    - i. Eco-minded, typically managed younger commercial decision makers
    - ii. Very focused on reducing total cost of ownership
    - iii. Decarbonization is top of mind
    - iv. Focused on continued comfort of property occupants
  - b. Contractors
    - i. Small to midsize business seeking reduced HVAC operating costs and reduced carbon footprint. Tech startups are a good example.
    - ii. Midsize buildings where continued comfort is ideal. Gyms, restaurants, retail stores are a good example.
    - iii. Larger multi-residential living spaces with high density. Shopping malls may be ideal as well.
  - c. Recommendations for commercial dual fuel RTUs
    - i. Emphasis on operating cost savings
    - ii. Highlight reduction of carbon footprint
    - iii. Reassure commercial buyers
    - iv. Work with partners to establish rebates and/or credits

- v. Prepare case studies. Everyone wants case studies, both buyers and contractors.
- vi. Partner with key distributors and HVAC contractors. Remember, contractors take the lead from distributors.
- vii. Encourage distributors or manufacturers to develop certification

### Discussion

Jackie Goss: How do the contractors talk about this equipment? Are we speaking the same language they are?

Richard: We had a mix of experience with this technology.

Debbie: Were they also using the words dual fuel and hybrid?

Richard: Yes, they were using them interchangeably, probably heard dual fuel more than hybrid.

Jason: For some residential rural contractors, initially dual fuel for them meant gas or propane.

Aaron: There was a lot of goodwill towards gas among the everyday consumer.

Richard: Everyone agreed that gas is the most effective. Most people were neutral on gas.

## Proposal: Dual Fuel Work Group (packet p.23-25 | slides 80-81)

*Peter Christeleit, Debbie Driscoll briefed the group on a proposal for a dual fuel work group.*

### Presentation Highlights

- A. Purpose: Inform and accelerate dual fuel programs and market transformation within the region
- B. Who: anyone working on dual fuel
- C. When: ID participants by May 20
- D. Frequency: Three to four times a year, starting in June 2023
- E. Time: Two to five hours a quarter
- F. Why: To help speed up the NEEA evaluation process with regards to the ILC and make more effective the work stakeholders are participating in
- G. There is a memo in the packet further describing the working group

### Discussion

**Monica Cowlshaw (Cascade):** If someone we're looking to identify to join can't make the June meeting, can they still be a member?

**Peter Christeleit (NEEA):** Yes.

**Jackie Goss (ETO):** Is this about tech that runs on dual fuel or about anything dual fuel such as weatherization?

**Peter Christeleit (NEEA):** Focus will be on residential dual fuel, but there may be benefits to collaborating on non-residential dual fuel opportunities. Fuel neutral would be outside of the scope of the group.

**Holly Braun (NWN):** Is this redundant with the efforts of other groups?

**Peter Christeleit (NEEA):** No, this will be a unique opportunity.

## Housekeeping (slides 84-92)

- A. Product Council Updates
  - a. Product Council is now using Microsoft Teams, previously it was GoToMeeting.
  - b. Product Council is on neea.org (Go to Get Involved and then Product Council). You can access archives, see future session, and suggest a topic.
    - [Northwest Energy Efficiency Alliance \(NEEA\) | Product Council](#)
    - i. Integrated Design Lab participants are: University of Idaho, University of Oregon, and Washington State University. These universities present on a variety of energy efficiency topics.
  - c. Central HPWH Multifamily Supply Side Assessment
    - i. Central Co2 Heat Pump
      - 1. Major components are primary heat source, primary storage tank, temperature maintenance tank, and a sensor with controls.
    - ii. Barriers

1. Installation is complex
  2. It can be difficult to fit into small or awkward spaces
  3. Commissioning and operations education
  4. The upfront cost
- iii. Drivers
1. Incentives
  2. Codes and policies

## Discussion

**Jackie Goss (ETO):** Are the product council products linked to/described/is there a database/ tags?

**Noe Contreras (NEEA):** Yes: [Northwest Energy Efficiency Alliance \(NEEA\) | Product Council](#)

## Feedback, Wrap-Up, & Adjourn

- A. Upcoming Meetings:
- 1) Interim Webinar: June 1st (to be confirmed)
  - 2) Q3 Meeting: July 26