Natural Gas Advisory Committee
Q2 2023 Meeting (Hybrid)

DATE: April 20, 2023

TIME: 9:30am – 3:15pm Pacific

LOCATION: In-Person option: Columbia Conference Room, NEEA Office (700 NE Multnomah, Portland)

WEBINAR: MS Teams – See link in calendar invite or register here

AGENDA (All Times Pacific)		**Lead / Page #**
9:30-9:50 (20 min)	**Welcome, Introductions, Agenda Review**	Alisyn Maggiora
9:50-10:10 (20 min)	**Round Robin** • Share-out on recent key activities/developments *Desired Outcome: Committee aware of relevant activities/developments across our organizations.*	NGAC Members
10:10-10:30 (20 min)	**Minnesota Center for Energy & Environment (MN CEE)** • Introductions and Overview *Desired Outcome: Committee apprised on current collaborations with MN CEE and how it impacts NEEA's gas portfolio.*	Peter Christeleit Carl Nelson
(15 min)	***Break***	All
10:45-11:00 (15 min)	**Annual Savings Overview** • Regional summary of gas savings for 2022 and expectations for the 2020-2024 cycle • Other value metrics (avoided carbon emissions and benefit-cost assessment) *Desired Outcome: Committee apprised on reportable gas savings and associated vale metrics*	Ryan Brown **Pg. 3-9**
11:00-12:00 (60 min)	**Portfolio Update** • 2022 Financial Results (final) and 2023 Budget Check-in • Progress Report highlights *Desired Outcome: Committee apprised on gas portfolio developments.*	Peter Christeleit Noe Contreras Aaron Winer Jason Jones Tamara Anderson Mark Rehley **Pg. 10-20**
(45 min)	***Lunch***	All

12:45-1:25 (40 min)	**Washington Code Update & Impacts**
	• Update on Washington's 2021 residential and commercial code changes with a focus on impacts to natural gas usage.
	  ○ New Construction – what is allowed and pathways to using natural gas appliances.
	  ○ Existing buildings – what building changes could trigger code and the codes impact on fuel choices.
	Desired Outcome: Awareness of potential impacts from Washington's 2021 code due to go into effective July 2023.
		Meghan Bean
		Ty Jennings (CNGC)
		Mark Rehley
		Pg. 21

1:25-2:10 (45 min)	**Dual Fuel & Gas Heat Pump Research** • Findings from recently completed market research report	Lauren Bates Lieberman Research **Pg. 22**

	Desired Outcome: Awareness of market research findings informing NEEA portfolio considerations	
(20 min)	***Break***	All
2:30-2:50 (20 min)	**Proposal: Dual Fuel Work Group** • Highlight opportunity for regional collaboration regarding ongoing and future dual fuel work *Desired Outcome: Committee is apprised and identifies appropriate staff from home organizations to participate as desired.*	Peter Christeleit Debbie Driscoll **Pg. 23-25**

2:50-3:05
(15 min)
	Housekeeping & Looking Ahead
	• Notes & action items from Feb 1 meeting (on neea.org here)
	• Product Council updates
	• Looking ahead
	  ○ FYI - RPAC Federal Funding Work Group
	  ○ June 1 interim webinar
	  ○ Efficiency Exchange (EFX) May 2-3 (PDX)
	  ○ GTI Emerging Tech Program (ETP) meeting May 2-4
	  ○ Q3 anticipated topics
	  ▪ Washington codes work
	Desired Outcome: Committee refreshed on previous meeting notes/action items and aware of significant upcoming topics.
		Alisyn Maggiora
		Noe Contreras
		Peter Christeleit

3:05-3:15 (10 min)	**Public comment, wrap up and adjourn**	Alisyn Maggiora

Informational Updates:

- Pg. 26-28: Memo – Update on Federal Funding Opportunity Coordination (RPAC Work Group)

Additional Resources:

- Q1 2023 Newsletter – Market Research and Evaluation
- Q1 2023 Newsletter – Emerging Technology
- Q4 2022 Newsletter – Codes, Standards and New Construction

Memorandum

April 13, 2023

TO: Natural Gas Advisory Committee

FROM: Ryan Brown, Manager - Planning and Analytics
Stephanie Rider, Director - Data, Planning and Analytics

SUBJECT: 2022 Annual Report and Business Cycle Natural Gas Savings Update

Background

NEEA is an alliance of utilities and energy efficiency organizations that pools resources and shares risks to transform markets toward energy efficiency that benefits consumers in the Northwest. NEEA's role is to establish technology and market conditions that advance energy efficiency in markets in a sustainable way.

Energy savings are enabled by the alliance's market transformation programs, codes and standards work, and investment in tools, training, resources, data, and research to support greater efficiency. The programs seek to affect sustainable changes in markets, which then result in energy savings.

NEEA is a dual fuel organization and there is a companion memo to this that outlines the updates for the electric portion of NEEA's portfolio.

NEEA Energy Savings Approach

NEEA's work in the region and in the market is designed to create long-term, sustainable changes that transform markets to support greater efficiency over the long-term. NEEA aims to manage a portfolio that spans early development of technologies and market transformation opportunities, through program and market development, and finally to the long-term, sustained state of efficiency well beyond NEEA's direct investment in these markets.

NEEA's tracking and reporting of energy savings is one way to measure changes in the market toward energy efficiency. NEEA employs a lifecycle management framework for each program in the portfolio. The bolded programs under Market Development in Table 1 are included in our regional reporting of savings above market transformation baseline **("Co-Created Savings")** for 2022 as they are at the stage of recognizing market change and savings above baseline. In all cases, NEEA tracks and reports incremental first year savings on an annual basis to monitor both adoption levels and associated energy savings.

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Table 1: Natural Gas Programs in NEEA's portfolio	
Program Development	Market Development
Efficient Gas Water Heaters High-Performance Windows	Efficient Rooftop Units[1] Residential Building Codes Commercial Codes Federal Standards

2022 Savings Results

NEEA estimates and reports the annual energy savings from the NEEA portfolio each year in order to support the ongoing long-term viability and estimation of the market transformation value as well as to serve as a foundation for funder needs and their local regulatory reporting activities. Table 2 highlights the actual reported savings for 2022.

Table 2: 2022 Co-Created Savings		2022 Actual
Natural Gas	Annual Therms	827,379[2]

The market transformation portfolio for natural gas is in early maturity. The reportable gas savings for 2022 come predominantly from codes, both residential and commercial. The specific codes NEEA is reporting 2022 savings on are the IECC 2018 Idaho code for residential, the WSEC 2018 code for both residential and commercial, and the OR 2021 OEESC for commercial. The current gas codes savings forecast is lower than previously expected due to a delay in advancement of gas measures in the recent Oregon code, as well as recent studies by NEEA of WSEC 2018 code that indicate a decline in the use of gas for space and water heating in new residential construction (see Appendix A below for additional discussion of code savings by state).

Additional Value Metrics

In addition to tracking and reporting the co-created savings for NEEA's regional portfolio, NEEA staff also estimates the regional value of a set of additional value metrics.

Benefit Cost Assessment

One such metric is the benefit cost assessment of the NEEA portfolio. For our current Cycle 6 (2020-2024) portfolio, there is now one market transformation program that has advanced into market development: Efficient Rooftop Units. Leveraging regional assumptions and data from the Northwest Power and Conservation Council's (NWPCC) ProCost tool, NEEA has assessed the benefit-cost ratio for this program at 1.1-1.6. As new programs advance into market development, we will add those to the portfolio aggregation for this metric.

[1] NEEA's HVAC Supplier Data Collection for 2022 is underway and as in prior years will be available for analysis in Q3 2023. NEEA will report 2022 regional market savings from Efficient Rooftop Units when that data is available and analyzed.

[2] This value does not include savings from Efficient Rooftop Units. See footnote 1 above.

Avoided Carbon Emissions

NEEA staff also partners with the NWPCC to enable the regional reporting for avoided carbon emissions. For the estimation of avoided carbon emissions, NEEA includes the benefit from all of the co-created savings of the gas portfolio. The 2022 co-created savings value of 827,379 Therms translates to a total of over 4,800 tons of avoided carbon emissions in 2022, at a monetized value of $323,838.

Savings Forecast – 2020-2024 Business Plan

It is important to look at a longer time horizon for NEEA's Market Transformation portfolio. The above figures provide an annual snapshot but need to be considered in the context of the market transformation horizon in which NEEA works.

The natural gas market transformation portfolio remains in early development stages. In addition to longer than expected product commercialization timelines for efficient gas products in the space and water heating markets, energy savings potential through code advancement has been impacted by rapidly changing state energy codes and policy discussions that are impacting builder fuel decisions in the new construction markets. As a result, the natural gas portfolio is not expected to meet the savings expectations forecast at time of the business plan for this cycle.

Table 3: 2020-2024 Savings			2020-2024 Business Plan Range	2020-2024 Current Forecast *(range)*
Fuel	**Unit of Measurement**	**Savings Category**		
Gas	Annual Therms	Total Regional[3]	11-18M	2.8M *(2.7-4.2)*
Gas	Tons	Avoided Carbon	n/a	16,400 *(15,600-24,200)*

As NEEA continues to invest in emerging technology opportunities for the portfolio, NEEA expects to see additional savings streams continue to materialize during this business plan period. In addition to the code and standard savings that are currently being reported to funders, the following programs are projected to deliver savings in the coming years:

Table 4: Savings Expectations		
Program	**Products**	**Year Expected for Reporting**
Commercial Code	Specific proposals advanced in WA 2018 Specific proposals advanced in 2021 OEESC Working on future code development in ID	2021 2021 TBD
Residential Code	Residential Codes WA 2018 IECC 2018 with Idaho amendments Or. Specialty Code 2023	2021 2021 2024
Efficient Rooftop Units	Efficient Rooftop Units	2022 (Available in Q4)
Standards	Commercial Kitchen Equipment (WA) Commercial Kitchen Equipment (OR) Commercial Boilers (Federal)	2021 2022 2023
High-Performance Windows	Windows	2023/2024[4]
Efficient Gas Water Heater	Gas Heat Pump Water Heaters	2025

[3] NEEA's 2020-2024 Business Plan only included Total Regional Savings forecast range for Natural Gas.

[4] High-performance Windows and Efficient Gas Water Heaters have yet to advance into the market development phase so the expected first year of savings reporting remains uncertain.

Appendix A: Program-Specific Updates

The following descriptions of progress made in each of the areas of NEEA's gas portfolio were included in the memos provided to funders along with 2022 Natural Gas Savings Reports.

Codes and Standards

NEEA employs a consistent approach to involvement with and support for the code process in each state and for each sector; however, each state has different code timing, needs and opportunities. The sections below describe the current status for each individual state code process.

Residential New Construction (Code)

Washington

Washington's 2018 residential code went into effect in February 2021. The code includes fuel normalization credits that favor the use of electric fuels over natural gas. NEEA completed a post code adoption market research report[5] in May 2022 to assess the early effects of the credits on building practices. The study, which was based on 178 approved permits for single-family homes throughout the state, showed that approximately 12% of the builders chose natural gas space heating and water heating. Previously, most builders selected natural gas.

NEEA has since conducted a follow-up study to allow more time for builders to adjust to the new code and to collect data on single-family homes that have been built under the code. The new study used data from virtual home audits to assess compliance with the code and explore gas use throughout the home, including whether homes built under code have gas hookups, dual-fuel systems, and gas appliances. NEEA is using the draft results for both the 2022 savings estimate and to update the 2021 estimates. The draft results estimate that the compliance rate is between 76-78% and that 18% of the new homes are using gas as the primary source for space heating. NEEA plans to finalize this study by mid-2023 and will present the full results of the study to the Natural Gas Advisory Committee later this year.

NEEA expects the share of homes with gas as the primary fuel source will continue to remain low over the next few years. Washington also adopted the 2021 WSEC in late 2022. Currently, builders do not have commercially available natural gas HVAC and water heating products to help them meet this new code that goes into effect in July 2023. The implication for NEEA's gas portfolio is a reduction in the current savings forecast of approximately 0.36 MM Therms statewide from NEEA's Q3 2022 update. The reduction will show up in the 2024 annual savings estimates to NEEA's Washington funders. Meanwhile, NEEA is working on opportunities to propose new efficient gas products for the next code advancement. These include:

- Gas Heat Pumps
- Dual-fuel Heat Pumps
- Efficient Gas Water Heaters

NEEA expects at least one manufacturer to begin selling residential Gas Heat Pumps in 2023. This product might be the best opportunity to add as an option in the WSEC 2024. NEEA will contribute to the code path

[5] https://neea.org/resources/washington-residential-post-code-market-research-report

by testing the products as soon as they become commercially available. If they work well, the gas team could develop a Market Transformation program to increase adoption prior to the next code update.

NEEA will also continue to monitor advancement in other gas products such as hearths, backup generators, and kitchen equipment that can be used in residential new construction.

Finally, NEEA will monitor the effects this new code has on fuels selection in residential homes.

Oregon

NEEA is currently working on code proposals for the 2023 Oregon Residential Specialty Code. The actual savings rate will depend on final approval by the state. The current forecast assumes 55 therms per single-family home. NEEA expects the code will be adopted in 2023. Afterwards, NEEA will update the therms estimate.

Idaho

Idaho adopted IECC 2018 in 2021. Gas savings from the new code was approximately 13% across all homes.[6] This reflects the effects of code-mandated insulation/window improvements and air tightness improvements on gas-heated homes.

Commercial Codes

Washington

The 2022 savings come from work on the 2018 Washington State Energy Code, which went into effect in February 2021. The share of new construction floor area permitted under the code begins to ramp up from the code effective date. The savings analysis comes from NORESCO.[7] NEEA also worked on code proposals for the 2021 Washington State Energy Code, which was approved in late 2022. Similar to the process on the residential side, NEEA will monitor the effects the new code will have on the adoption of gas-fuel products in commercial new construction.

Oregon

The 2021 savings come from work on the 2021 Oregon Energy Efficiency Specialty Code, which went into effect in October 2021. The share of new construction floor area permitted under the code begins to ramp up in late 2021. The savings analysis comes from Pacific Northwest National Laboratory.[8] NEEA is now working on code proposals for Oregon Energy Efficiency Specialty Code 2023.

[6] See analysis at neea.org, portal login, savings, codes.
[7] NORESCO. 2022. 2018 Washington State Energy Code Energy Savings Analysis for Nonresidential Buildings.
[8] https://www.energycodes.gov/prototype-building-models

Idaho

Idaho's version of IECC 2018 became effective in 2021 but had little effect on commercial natural gas usage, according to analysis by PNNL[9]. NEEA will continue to work on the next code cycle.

Standards

Federal Standards

The Department of Energy published a new Commercial Packaged Boilers standard in 2020. NEEA and its energy efficiency partners influenced the outcome of the rule making by supporting a more stringent efficiency level, according to an evaluation completed by Michaels Energy in 2022[10]. The standard goes into effect in 2023.

State Standards

NEEA is reporting Net Market Effects savings from the Oregon and Washington commercial equipment appliance standards based in draft evaluation results from Michaels Energy. The company determined that NEEA and its partners had a primary role in providing regional data and generating alignment among stakeholders on the Oregon and Washington commercial kitchen equipment standards. The draft evaluation allocates 10 percent of the savings to above baseline adoption. NEEA will publish the full results in late May 2023.

Voluntary Programs

Efficient Rooftop Units

The Efficient Rooftop Units program advanced to Market Development[11] in late 2022. The program's goal is to accelerate the adoption of efficient gas rooftop units in the like-for-like replacement market while working to influence the adoption of improved test procedures and more stringent federal standards.

NEEA expects to measure progress above baseline as early as 2022. To measure savings, NEEA collects sales data annually from HVAC distributors and manufacturers in addition to data from the annual local utility program survey. The HVAC sales data for 2022 will likely not be available until August 2023 because of the time needed for recruitment and data submission. NEEA expects the data collection process to improve over time as the number of participating manufacturers and distributors grows. Pending on-time HVAC sales data delivery, NEEA will report savings for 2022 as soon as feasible.

Currently, the program is forecasting 12,000-80,000 therms of co-created savings for the 2020-2024 Business Plan.

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[9] Pacific Northwest National Laboratory. 2018. Energy and Energy Cost Savings Analysis of the 2018 IECC for Commercial Buildings. Raw data. Analysis of 2018 IECC energy use intensity for commercial new construction.

[10] https://neea.org/resources/commercial-boilers-standard-evaluation

[11] The purpose of this phase is to create lasting market change through direct market interventions designed to remove barriers, leverage market opportunities, and tap influencers and existing channels for diffusion. Interventions are strategic, planned and adaptively managed as market dynamics change and more information is gained. During annual planning, NEEA staff look for the most impactful market levers and activities that could bolster or accelerate the achievement of alliance MT goals.

High Performance Windows

The program goal is to stimulate national builder and consumer demand for high-performance windows, and will partner with manufacturers to meet that demand with scaled production. NEEA worked closely with ENERGY STAR to increase the current specification level to a 0.22 U-value performance level and plans to work within the codes process to include this specification level as a measure in future building codes. NEEA is aiming for the program to advance to Market Development in 2024.

Efficient Gas Water Heaters

The program is in early development and has a technical potential of 100-200 MM Therms for Oregon, Washington, and Northern Idaho. While there are still many unknowns, NEEA is evaluating the likelihood of a product launch for a Gas Heat Pump Water Heater by 2025. This will likely be preceded by a large scale North American field study which will include the first units installed in the NW. NEEA will provide forecasted savings when a product launch timeline and associated market adoption forecast more certain.

Memorandum *– Agenda item*

April 13, 2023

TO: Natural Gas Advisory Committee (NGAC)

FROM: Peter Christeleit, Manager, Natural Gas Portfolio and Strategy

SUBJECT: Natural Gas Portfolio Budget

Due to a timing mismatch between the Q2 meeting and the close of 2023 Q1 financials, the Q2 budget report will be provided to NGAC members sometime shortly after the time of the meeting, with a verbal update provided during the meeting.

Should you have any questions or concerns in the interim, please don't hesitate to contact me: PChristeleit@neea.org

Natural Gas Progress Report

Northwest Energy Efficiency Alliance (NEEA)

Q1 2023

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Scanning

- Combi
    - Field testing SMTI 80 kBTU gas heat pump (GHP) is ongoing at two single-family homes and a multi-family home
    - Working with GTI Energy to receive Vicot V20 gas heat pump for lab testing, delayed since mid-2022
    - Finalizing research report outlining HVAC installer and end-user perceptions and feedback
- Dual Fuel Ongoing work:
    - Modeling of a dual fuel ASHP and a natural gas furnace
    - Research report outlining installer and end-user perceptions and feedback
    - Report detailing key players and product performance
- Commercial Dryers
    - Finalizing cost savings report of modulating dryer technology in the Northwest
    - Continue scoping a liquid desiccant-based heat recovery solution for commercial clothes dryer systems
- Engine-Driven Gas Heat Pump
    - Scoping opportunity with a Yanmar system for a space heating application in the Portland, Oregon area

Codes, Standards, and New Construction

Codes & Standards

In the first quarter of 2023, NEEA staff submitted one comment letter to a request from the Department of Energy.

- Consumer Furnaces – Standard – Preliminary TSD (Technical Support Document)

Washington

- Commercial Code: Expected to go into effect July 1, 2023
- Residential Code: Expected to go into effect July 1, 2023

Montana

- The Montana Homes Collaborative group met in Q1 2023, discussing topics including wall assembly and building envelope best practices, cold climate foundations, and more, the group has been working on a Montana Roadmap to Home Energy Efficiency and Affordability document that is expected to be published in 2023. The document will include 10 recommendations of the Montana Homes Collaborative for building efficiently and affordably in cold climates like Climate Zone 6, where Montana is located.

Oregon

- Commercial – A new version of the national model commercial energy code, ASHRAE Standard 90.1-2022, was published in January. Given Oregon's recently formalized process for adopting the most recent version of ASHRAE 90.1 as the energy provisions of its commercial energy code, the Oregon Energy Efficiency Specialty Code (OEESC), Oregon will begin its next OEESC update process no later than July 2023.
- Residential - This quarter, the Residential Code review committee formed by Oregon Building Codes Division (BCD) finished processing the public comments received last year on the first draft of the energy efficiency chapter of the 2023 Oregon Residential Specialty Code (ORSC). A representative of NEEA was selected to fill one of the nine seats on this committee. The committee's recommendations regarding the energy code were incorporated into the 2023 ORSC final draft, which was subsequently approved by the Oregon Residential and Manufactured Structures Board (RMSB) at its March 8 meeting. Pending a public comment period and final approvals, the 2023 ORSC is expected to go into effect October 1, 2023.

Idaho

- Idaho's Building Code Board is preparing to review the energy code again in 2023 in order to eliminate portions in line with the Zero-Based Regulations executive order. Two board seats have changed, and it isn't clear how supportive the new board members will be of energy code. NEEA is helping convene the Idaho Code Collaborative to encourage a coordinate response to the questions board members are raising.

International Energy Conservation Code (IECC):

- The 2024 IECC development process continued in Q1 2023. Last quarter's public comment period for the first draft of the 2024 IECC led to the submittal of hundreds more code change proposals; the Residential and Commercial IECC committees (and their subcommittees) undertook most of the review of this second round of proposals this quarter. Of the four proposals submitted by NEEA staff in this second round, one is on track for committee approval. For said proposal, NEEA staff coordinated with industry and achieved a compromise on one of our proposals that was not approved in the first round.

New Construction

NEEA staff is continuing to support utility programs for above code new construction. Data is collected monthly on homes built and rated.

Other Updates

- Highlights from the North American Gas Heat Pump (GHP) Collaborative include:
    - Two product-focused committees 2023 scoped work is underway, including:
        - Gas Heat Pump Water Heater (GHPWH) Committee- Codes/standards review and roadmap, Early adopter trade ally segmentation/market research and updated installer support materials (as needed)
        - Residential Space Heating Committee- Manufacturer outreach and engagement, Residential and commercial GHP collateral development, and Residential GHP TRM workpaper template, development of GHP adoption rates and standard program design/utility engagement plan.
    - Draft report developed summarizing findings for "Golden Carrot" type project driving GHP product commercialization/ broad adoption, final expected Q2 2023. Details below in Efficient Gas Water Heating.
    - Met with several GHP technology developers and manufacturers to share Collaborative overview, learn technology updates, and understand commercialization plans. Link to 1.5 hour interviews are available in this folder. Further in-person discussions at the March 9 ESC TMAF conference, notes are available here. *Links are accessible to Collaborative members only. Please contact Resource Innovations if you are having access issues.*
- Alliance staff attended multiple meetings/workshops to highlight Northwest progress, identify opportunities to collaborate and gain industry insight. Events included:
    - CEE Winter Meeting- Attended multiple sessions to highlight regional activities, share knowledge and network with stakeholders throughout North America.
    - ACEEE Hot Water/Air Forum – NEEA staff attended to present and/or moderate multiple sessions related to efficient gas technologies. Highlights in relevant sections below.
    - Air-Conditioning, Heating, Refrigerating Exposition (AHR Expo) – Engaged with multiple manufacturers that expressed interest in gas heat pump water heaters. Most manufacturers offered a dual fuel solution for space heating in the residential sector.
    - Energy Solution Center (ESC) Technology & Market Assessment Forum (TMAF) – Joined multiple consortiums to share regional needs and requirements and network with extra-regional influencer across North America.

Efficient Rooftop Units (Efficient RTUs)

2023 Goal	Key Success Metric	Status	Progress and Next Steps
Finalize specification and refine QPL; identify partner/ owner of specification and QPL.	Partner identified by Q1	Head's Up	• Prescriptive Path QPL is posted on BetterBricks.com and will be revised quarterly. • Consortium for Energy Efficiency (CEE) has delayed taking ownership of specification and QPL until late 2023 or 2024. • NEEA will continue to own and host specification.
Encourage manufacturers in developing and promoting efficient RTUs for the light commercial market.	Agreement from two manufacturers to produce and offer light-commercial units by Q2.	On Target	• Regular meetings with manufacturers are ongoing. • NEEA staff attended AHR Expo in February to meet and engage with manufacturers and other suppliers
Create awareness of and support for efficient RTUs from market actors (manufacturer reps, distributors, contractors) and utilities across the U.S. and Canada.	Three partners reference Efficient RTU specification by Q4	On Target	• Regular meetings are scheduled for regional market actors. • NEEA has partnered with MN-CEE to align on the ERTU specification for market transformation efforts in Minnesota. • NEEA is in discussions with Nicor Gas and other utilities to collaborate on commercial HVAC measures
Improve cost data, increase understanding of costs of Efficient RTUs.	Acquire data by Q3	On Target	• NEEA staff is working with manufacturers and suppliers to acquire cost data for Efficient RTUs and ERVs.

Activities, achievements, or events

- NEEA staff attended and presented at ACEEE Hot Air Forum. Presentations included ERTU's "whole-box" approach to RTU efficiency, and collaboration on field testing of commercial HVAC equipment, primarily RTUs.
- Due to weather events, the RTUs for the second field study site in Portland, the KBOO radio station, is still delayed and will be installed in Q2 of 2023 along with metering equipment for data collection for the remainder of the heating season. The field study will also include bolt-on ERVs in late 2023 to capture cost and savings information.

Efficient Gas Water Heaters

2022 Goal	Key Success Metric	Status	Progress and Next Steps
Drive GHPWH product advancement and testing	Successful lab demonstration, >1.0 UEF, of *both* absorbtion and adsorption GHPWH technologies (Threshold: Successful demonstration of one technology)	Head's Up	• Lab testing of adsorption GHPWH delayed due to technology developer staffing resource constraints. Testing expected Q3, 2023. • Technology developer of absorption GHPWH has decided to focus on commercialization of GHP furnace/combi product in the near term, NEEA staff maintaining ongoing engagement
Understand certainty of commercialization timelines	2 manufacturers initiating product commercialization (Threshold: 1 manufacturer initiating commercialization)	On Target	• Regular meetings with manufacturers and technology developers, ongoing • One-on-one sessions with 2 major manufacturers and 1 technology developer in tandem with ACEEE Hot Water/Air Forum. Sessions were designed to increase collaboration between tech developer and manufacturer(s), accelerating commercialization potential. • Engaged with multiple smaller manufacturers who expressed interest in learning about GHPWH at the Air-Conditioning, Heating, & Refrigerating (AHR) Expo
Assess utility commitment to supporting a GHPWH	NEEA NGAC + North American GHP Collaborative formalize commitment platform (Threshold: NEEA NGAC indicates significant support for GHPWH)	Head's Up	• North American GHP Collaborative "Golden Carrot" draft report indicates members are currently unable to make financial commitments commensurate with those previously identified as required to significantly affect manufacturer decision making. • Developing strategy and platform to engage NGAC assessing regional support, expected Q3 2023

Activities, achievements, or events

- Collaborated with NEEA's electric water heating team and additional stakeholders to conduct outreach informing stakeholders and garner support for joint residential water heater rulemaking recommendation submitted to the Department Of Energy.
- NEEA staff moderated ACEEE Hot Water/Air Forum session featuring HeatAmp residential GHPWH product update and request for North American manufacturing partner.
- Reviewed initial findings from commercial GHPWH feasibility screening analysis. Revised and final findings expected Q2 2023 for integration into ongoing program development.

High-Performance Windows

2023 Goal	Key Success Metric	Status	Progress and Next Steps
Builders engaged in pilot grow their use of HPW as a standard offering in new homes	3 builders grow their use of HPW as standard offering in new homes in the Northwest	Head's Up	• Two of the four builders who participated in the volume builder pilot for 2022 have committed to grow their use of High-Performance Windows as their standard offering in new homes in the Northwest, as documented in the exit interviews from the project and the 2022 final report. The other two builders who participated in the volume builder pilot for 2022 will continue to consider High-Performance Windows as a path to energy efficient homes. • The program is continuing the volume builder pilot in 2023 with three different builders and have confidence that at least one more will grow their use of High-Performance Windows as their standard offering in new homes in the Northwest.
Engage manufacturers to co-create strategies for scaling future supply of HPW to meet growing demand	By Q2, 1-2 leading manufacturers supplying the Northwest develop roadmap to scale production of HPW	On target	• Seven large window companies dominate sales in the Northwest and are also active in California and Canada. Currently, hybrid triple pane windows are available and scalable to meet demand from Andersen, Marvin, Milgard, Pella, PlyGem and Prime (the latter two are brands owned by Cornerstone Building Brands). • A national builder with regional manufacturing capacity is nearing commercial launch of its thin triple window (it does not make a hybrid triple at this time).
Finalize key intervention strategies and transition to market development.	Q4 Program Advancement presented to RPAC and NGAC.	Head's Up	• The program will require more time in program development than originally anticipated to assess NEEA's cost benefit ratio, refine program logic, target market(s) and intervention strategies. • The program team is on track to hit the threshold for this goal with presenting to RPAC and NGAC for Program Advancement in Q2 of 2024.

Activities, achievements, or events

- NEEA is sponsoring Habitat for Humanity (Bend/Redmond), one of the builders involved in our volume builder project for 2023, at the BuildRight conference in Portland, OR on April 19, 2023. You can read more about the conference session featuring Grace Weger from Habitat for Humanity and Marc Cregeur from Earth Advantage here.

- Stay tuned for a new Habitat for Humanity case study and updated Thin Triple Windows flyer aimed at builders to be posted on BetterBuiltNW (available in time for meeting follow-up notes).

- NEEA will be hosting a Lunch Roundtable at Efficiency Exchange on Wednesday, May 3rd. Come join us!

  Lunch Roundtable Session: Now is the Time for Advanced Window Solutions!

Windows usually account for 30%-40% of the heat loss in winter, which often adds to cooling peaks and discomfort in summer. Switching from today's code-compliant windows in a new home to advanced solution window with an R5 rating can save 7%-16% of a home's energy use, and even more in older homes. With a new ENERGY STAR® residential specification due in late 2023, and market innovations in commercial secondary glazing products, now is the time to focus on advanced window solutions for both residential and commercial customers. There is a growing recognition of both the benefits and critical role high-performance window products play in enabling a decarbonized future. Join us to discuss opportunities and challenges in this quickly evolving market.

- Jeld-Wen, Inc. won the Excellence Awards – ENERGY STAR Marketing.

Memorandum – *Agenda item*

April 13, 2023

TO: Natural Gas Advisory Committee (NGAC)

FROM: Mark Rehley, Director Codes, Standard, New Construction, and Emerging Technology

SUBJECT: Washington State's 2021 Code's implication for natural gas in new and existing buildings

Our Ask of You:

Bring your questions about Washington State's 2021 energy code. We know that the code is confusing, so this is an opportunity to get answers to your and your staff's questions.

Brief Overview:

The 2018 energy code has been active since February 2021 in Washington State. The 2018 code started a trend toward decarbonization through fuel selection by requiring more efficiency for buildings constructed using natural gas heating. The 2021 code has built on this by creating significant barriers to use of natural gas in new construction but also increasingly impacting gas selection in existing buildings.

During the April NGAC meeting, NEEA staff and Ty Jennings from Cascade Natural Gas will share a summary of the 2021 code changes that impact natural gas selection in new construction and existing buildings. The 2021 code is expected to go into effect in July 2023. Although there are legal and legislative challenges that could impact the final code or the effective date, now is a good time to get up to speed on the changes and their impact on utility programs and efficiency opportunities in Washington state.

Please contact Mark Rehley, Kevin Rose, or Ty Jennings if you have questions about the **2021 Washington State Energy Codes.**

Memorandum – *Agenda item*

April 13, 2023

TO: Natural Gas Advisory Committee (NGAC)

FROM: Lauren Bates, Senior Market Research and Evaluation Scientist

SUBJECT: Findings from Dual Fuel and Gas Heat Pump Market Research

Our Ask of You:

Come ready to learn more and ask questions about our soon-to-be-published Dual Fuel and Gas Heat Pump Market Research Study, how it applies to both NEEA's portfolio considerations, and how it could impact to your own utility program planning efforts. This will be an informational share-out with opportunity for discussion with the research team. The presentation will focus on dual fuel heat pumps (gas furnaces paired with electric air source heat pumps), though the report also addresses gas heat pumps and dual fuel RTUs.

Brief Overview:

In late 2022, NEEA contracted with Lieberman Research to conduct a market research study to gather HVAC system buyer and HVAC contractor perceptions and (when possible) feedback about four emerging HVAC technologies: residential dual fuel heat pumps, residential gas heat pumps, commercial gas heat pumps for space and/or water heating, and commercial dual fuel rooftop units. To date, only residential dual fuel heat pumps have market adoption in the Northwest; in fact, neither gas heat pump system is widely commercially available from typical distributors. Findings from the study will help NEEA determine which, if any, of these technologies to further investigate for market transformation programs.

We had three main research questions for each of the technologies:

1. What are the value propositions for buyers and HVAC contractors?
2. What are the possible target markets?
3. What are the barriers to adoption?

Additionally, we had two research questions for the residential technologies:

4. *For residential dual fuel heat pumps:* What drives actual dual fuel HVAC purchases?
5. *For residential gas heat pumps:* What are consumer and HVAC contractor attitudes about natural gas as a home heating source?

The Lieberman Research team completed a literature summary and 56 interviews with consumers, commercial building decision makers, and HVAC contractors to address these research questions. The research team will present key findings from the study.

Please contact Lauren Bates (lbates@neea.org) if you have questions about the study.

Memorandum – *Agenda item*

April 13, 2023

TO: Natural Gas Advisory Committee

FROM: Peter Christeleit, Manager - Natural Gas Portfolio and Strategy

SUBJECT: Establishment of dual fuel HVAC-focused work group

Our Ask of You:

Review the Dual Fuel Work Group Charter on the following pages and come ready to discuss your organization's potential interest in participating in a dual fuel HVAC work group. For interested organizations, ***please identify who from your organization would participate by May 20th.***

Brief Overview:

There is great interest in, and exploration of dual fuel HVAC products by a growing number of NEEA's funders. Staff see an opportunity to come together to share insights and coordinate efforts, with the ultimate goal of accelerating dual fuel adoption within the region. We envision the work group discussions will inform dual fuel programs and market transformation within the region, reduce duplication of efforts, and better steward ratepayer funds.

The level of relevant dual fuel activities within the region exceeds the available time for discussion within NGAC meetings so additional time via a work group is recommended.

Primary focus of discussions will be residential applications, but many topics may be relevant to commercial as well.

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NGAC WORK GROUP CHARTER

Purpose

The purpose of NEEA Work Groups is to support alliance success by collaborating with NEEA staff to achieve specific objectives identified by the Natural Gas Advisory Committee (NGAC) and/or NEEA staff, consistent with the goals and objectives of NEEA's then-current Business Plan and annual Operations Plan. Work Groups shall be formed on an as-needed basis and staffed with as-needed expertise, for a limited term and specific purpose that is distinct from that of NGAC.

An NGAC member and/or NEEA staff may propose to NGAC the formation of a work group, including guidance on desired stakeholder representation and expertise (i.e. right people, right topic, right time). NGAC is responsible for sponsoring the formation of all NGAC-related Work Groups, and shall conduct an annual review of each active Work Group to ensure its purpose remains both relevant and distinct from that of NGAC and any other active Work Group.

Responsibilities

1. Collaborate with NEEA staff to support the objective(s) identified by NGAC (see *Objectives* below), sharing knowledge, expertise and resources to achieve the identified objective(s).
2. Determine with NEEA staff the appropriate meeting cadence and required duration for the Work Group, and commit the resources required to achieve the identified objective(s) on schedule.
3. Ensure information and outcomes from Work Group collaboration are (a) shared within Work Group-member organizations, and (b) reported to NGAC, and the Natural Gas Board Committee (NGC) if applicable.
4. Sunset the Work Group (a) on schedule or upon extension[1] from NGAC, and (b) upon achieving the objective(s) set by NGAC.

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DUAL FUEL WORK GROUP

Statement of Purpose and Connection to Business and/or Operations plans

A work group is recommended for the purpose of informing and accelerating dual fuel work programs and market transformation within the region. The potential for overlapping activities likely exists and collaboration will likely avoid duplication of efforts, better steward ratepayer funds, and accelerate dual fuel market transformation efforts. The level of relevant dual fuel activities within the region exceed the available time for discussion within NGAC meetings and so additional time via a work group is recommended.

Primary focus of discussions will be on residential applications, but many topics may be relevant to commercial as well.

[1] In the event a Work Group requires additional time to achieve its objective(s), beyond the duration identified in Responsibility #2, a justification shall be provided to RPAC for approval.

Objective(s)

1. High-level awareness in product and market explorations within region.
2. Well-coordinated activities and investments among regional stakeholders (well-planned use of regional ratepayer funds, avoidance of duplication, etc.).
3. Aware of relevant extra-regional work and insights
4. Identify methods of staying coordinated beyond meetings in work group
5. Develop initial vision for alliance engagement in dual fuel in the Northwest

Outcomes Reported To: ☒ **NGAC only** ☐ **NGAC and NGC**

Estimated Duration and Meeting Cadence

- Start date: June 2023 (please have staff identified for attendance by May 20)
- Meeting frequency: 3-4 times per year
- Completion/sunset date: End of C6—4Q24
- Potential expected time commitment: Individual preparation time for each meeting, including review of materials and coordination within individual organization to prepare for share outs (1-2 hours). Occasional offline reviews or information gathering may be necessary (~1 hour)

Specific Expertise Needed

- Program developers; individuals conducting market research, pilots/demos, etc.; Invited experts who may share expertise on specific topics at individual meetings

NEEA Staff Representation Expected:

- Product management; Market, Research & Evaluation manager; HVAC Market Transformation manager; others with expertise as relevant to agenda

Memorandum – *Informational*

April 13, 2023

TO: Natural Gas Advisory Committee (NGAC)

FROM: Jonathan Belais, Policy Manager, NEEA Staff

SUBJECT: RPAC Federal Funding Regional Coordination Work Group

Our Ask of You:
Please review this memo and attached work group charter send any questions and requests to participate to Jonathan Belais (jbelais@neea.org).

Context:
As highlighted in your Q1 NGAC packet, NEEA continues to track and adapt to a number of new federal opportunities. Recognizing the need for regional coordination on these topics, NEEA's Regional Portfolio Advisory Committee (RPAC) sponsored a new Federal Funding Coordination Work Group meet that regional need. The Federal Funding Coordination Work Group scope and purpose is outlined in the attached work group charter. The work group will kickoff the morning of May 4, following the 2023 Efficiency Exchange Conference.

While the majority of energy efficiency funding opportunities are focused on electric efficiency, some of the identified opportunities may have value or relevance for our natural gas funders as well. If any NGAC members are interested in participating or designating a participant for this work group, the presence and participation would be welcome.

For Questions: Please contact Jonathan Belais (jbelais@neea.org – 503-688-5428)

RPAC WORK GROUP CHARTER: Federal Funding (IRA/IIJA) Coordination 2023

Purpose

The purpose of RPAC Work Groups is to support Alliance success by collaborating with NEEA staff to achieve specific objectives identified by the Regional Portfolio Advisory Committee (RPAC), Coordinating Committees (CCs) and/or NEEA staff, consistent with the goals and objectives of NEEA's then-current Business Plan and annual Operations Plan. Work Groups shall be formed on an as-needed basis and staffed with as-needed expertise, for a limited term and specific purpose that is distinct from that of RPAC and the CCs.

An RPAC member, CC member and/or NEEA staff may propose to RPAC the formation of a RPAC Work Group, including guidance on desired stakeholder representation and expertise (i.e. right people, right topic, right time). RPAC is responsible for sponsoring the formation of all Work Groups, and shall conduct an annual review of each active Work Group to ensure its purpose remains both relevant and distinct from that of RPAC, the CCs, and any other active Work Group.

Responsibilities

1. Collaborate with NEEA staff to support the objective(s) identified by RPAC (see *Objectives* below), sharing knowledge, expertise and resources to achieve the identified objective(s).
2. Determine with NEEA staff the appropriate meeting cadence and required duration for the Work Group, and commit the resources required to achieve the identified objective(s) on schedule.
3. Ensure information and outcomes from Work Group collaboration are (a) shared within Work Group-member organizations, and (b) reported to RPAC, and if applicable, to the relevant CC.
4. Sunset the Work Group (a) on schedule or upon extension[1] from RPAC, and (b) upon achieving the objective(s) set by RPAC.

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FEDERAL FUNDING REGIONAL COORDINATION WORK GROUP

Statement of Purpose and Connection to NEEA Business and/or Operations plans

Co-chaired by NEEA and BPA, the Federal Funding Regional Coordination Work Group will share information regarding upcoming federal opportunities flowing from the Infrastructure Investment and Jobs Act (IIJA) and the Inflation Reduction Act (IRA). The Work Group will coordinate activities where possible to enhance energy efficiency outcomes for Northwest consumers and market transformation efforts. Given the number of new and expanded federal programs and the complex patchwork of existing local and regional programs, including NEEA's market transformation programs, purposeful coordination is necessary to ensure these new opportunities braid effectively with existing programs and to mitigate unintended program impacts where they may undermine existing regional efforts.

Objective(s)

1. Share information about federal funding opportunities with regional utilities and other stakeholders.
2. Engage with regional stakeholders, including state energy offices, regarding priorities for federal funding and how to best work with the region's utilities.
3. Identify and discuss topics and opportunities of particular interest (i.e. workforce development, reaching underserved communities, existing program models, manufacturer and distributor engagement).

[1] In the event a Work Group requires additional time to achieve its objective(s), beyond the duration identified in Responsibility #2, a justification shall be provided to RPAC for approval.

4. Engage with US Department of Energy (DOE) staff regarding rules, guidelines, and other useful information and to share regional feedback.
5. Identify any ongoing needs for continued engagement regarding federal opportunities.

Outcomes Reported To: ☒ **RPAC only** ☐ **RPAC and CC** (*Specify CC*)

Estimated Duration and Meeting Cadence

- Start date: May 4, 2023
- Meeting frequency: Quarterly with option for interim workshops as warranted.
- Completion/sunset date: December 31, 2023

Specific Expertise Needed

- Understanding of the Northwest utility landscape and existing energy efficiency programs
- Knowledge of IIJA and IRA opportunities related to energy efficiency
- Knowledge of state and local priorities related to energy efficiency
- Additional expertise as identified by workgroup members

Stakeholder Representation Needed:

- NEEA funders and regional utilities
- Northwest Power and Conservation Council
- State Energy Offices
- US DOE Staff (as needed)
- Additional stakeholders as identified by workgroup member