



Natural Gas Advisory Committee

Q2 2023 Meeting

April 20, 2023

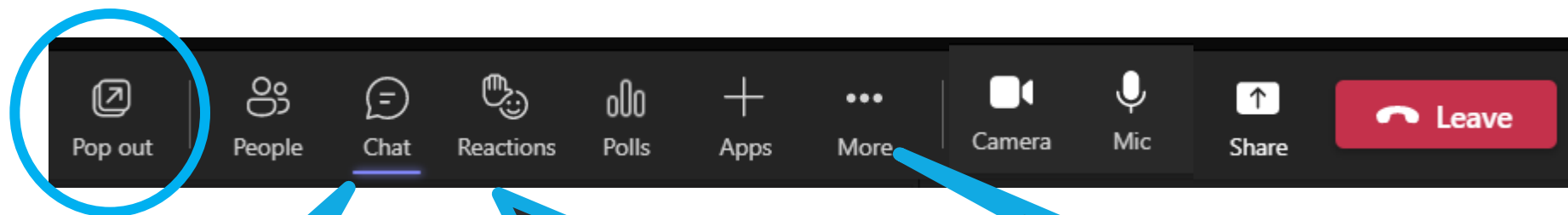
Hybrid Format

This meeting will be recorded and transcribed





Tools for Today: Engaging on Teams



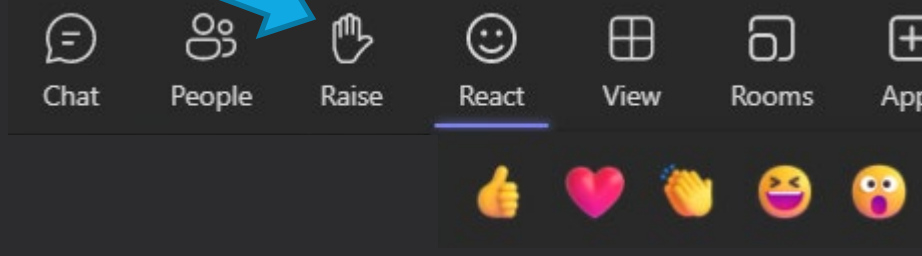
The chat is not captured in the recording.

Do you have any accessibility challenges with this technology today?



Comments/Questions?

Please raise your virtual hand or chime in
Chat & reactions also welcome



“...” More includes:

- ✓ Settings: mic & video
- ✓ Background effects



Agenda

All times Pacific

9:30-9:50	Welcome and Introductions
9:50-10:10	Round Robin
10:10-10:30	Minnesota Center for Energy & Environment (MN CEE)
(15 min)	Break
10:45-11:00	Annual Savings Overview
11:00-12:00	Portfolio Update
(45 min)	Lunch
12:45-1:25	Washington Code Update & Impacts
1:25-2:10	Dual Fuel & Gas Heat Pump Research
(20 min)	Break
2:30-2:50	Proposal: Dual Fuel Work Group
2:50-3:05	Housekeeping & Looking Ahead
3:05-3:15	Wrap up, public comment, adjourn



Introductions

- Name
- Organization
- *And...*

XX





Round Robin

- **Focus: Organizational & program highlights since February**





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The Efficient Technology Accelerator: Minnesota's New Market Transformation Program

NEEA Natural Gas Advisory Cmte
May 20, 2023

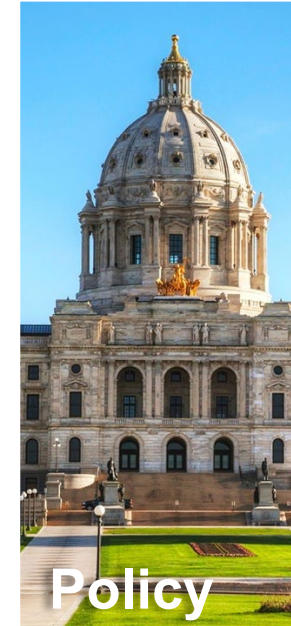
Carl Nelson, Sr Director of Market Transformation



Center for Energy and Environment



Center for Energy and Environment





Setting Stage for Next Generation of Energy Efficiency

Minnesota's 2021 Legislative Policy Wins

Energy Conservation and Optimization Act (ECO)

Enables “Efficient Fuel
Switching”

Integrates Load Management
with Energy Efficiency

Increases low-income
spending

Natural Gas Innovation Act (NGIA)

Enables gas utilities to submit
“Innovation Plans”

Can fund renewable natural
gas, efficient fuel switching, or
other innovative
decarbonization projects

Must include deep energy
retrofit + ASHP program

MN Efficient Technology Accelerator (ETA)

Creates a market
transformation framework to
advance emerging
technologies

Statewide approach with
central program administrator

Allows longer-term timeframe
to consider cost-effectiveness



NEEA's Success Informed MN's Approach to MT

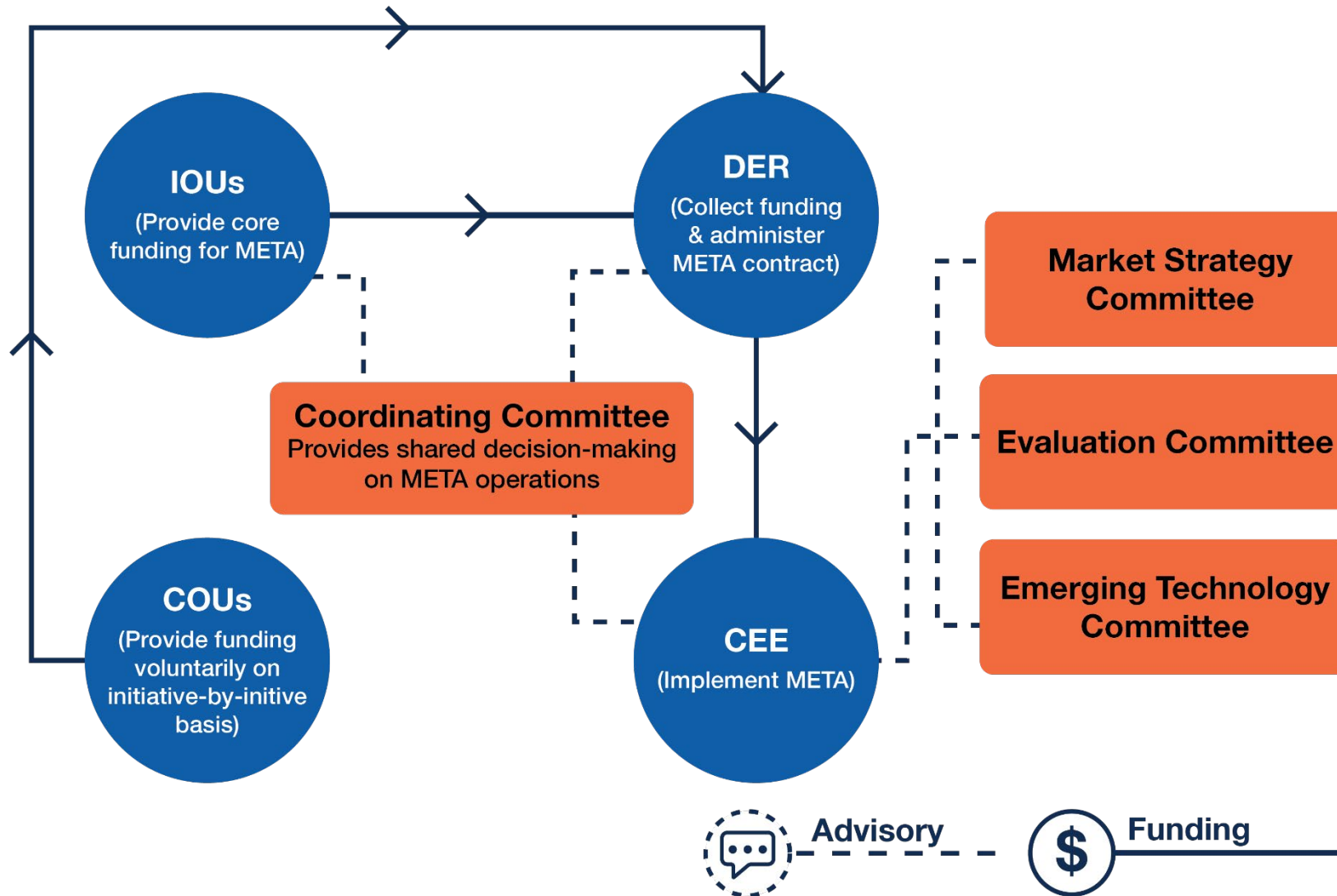
- ETA modeled on NEEA's approach to MT
 - Non-profit, utility-funded, collaborative approach
 - Proven model for MT implementation, cost-effective energy savings
 - NEEA aided in proposal development
- CEE will collaborate with NEEA in ETA implementation

Northwest Energy Efficiency Alliance Background

Non-profit organization
Funded by 145 utilities (~ \$40M/yr)
4 states
13 million consumers
2019 energy cost savings of \$574M
Over 7,183 GWh energy savings



Ongoing Collaboration in ETA is Built into ETA Program Design





Other Key Attributes of MN Approach



Statewide program with central administrator

- Department of Commerce collects funds and oversees program
- Mandated funding from electric & gas IOUs; Voluntary from consumer-owned utilities



Five-year funding cycles

- Matches the longer-term time horizon of market transformation
- Total program evaluation conducted at end of first cycle



Program will measure and claim savings

- This includes from codes and standards advancement
- Savings allocated to participating utilities in proportion to their funding



Portfolio approach

- ETA has a mix of different initiatives, across res and C&I sectors
- Four-stage lifecycle process from concept to market deployment for each initiative

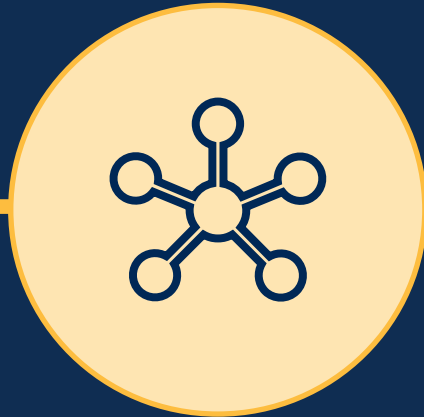
Four Stages of Individual ETA Initiatives

1. Concept Development



Scan and assess a broad range of technologies & approaches

2. Program Development



Conduct planning and testing to successfully launch a handful of MT initiatives

3. Market Development



Deploy market intervention strategies that result in measurable savings

4. Long Term Monitoring & Tracking



Engage in codes or standards process to lock in savings

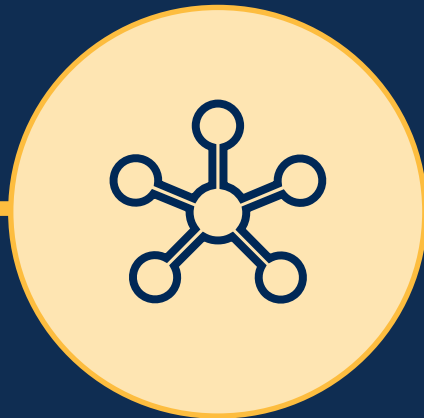
2023 Focus on Planning for Starter Portfolio

Concept Development



Scan and assess a broad range of technologies & approaches

Program Development



Conduct planning and testing to successfully launch a handful of MT initiatives

Market Development



Deploy market intervention strategies that result in measurable savings






Long Term Monitoring & Tracking



Estimate savings and periodically assess need for market re-entry



Starter Portfolio Initiatives

	Initiative
★	 Air Source Heat Pumps
	 Luminaire-Level Lighting Controls
	 High Performance Windows
★	 High Performance RTUs
	 Gas-Fired Heat Pump Technologies

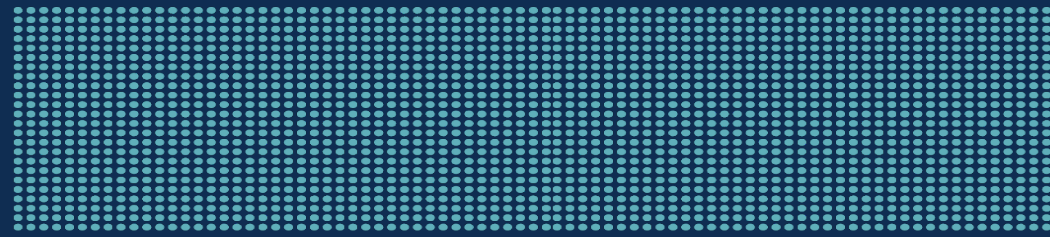
Total long-term savings potential from all five = 13% reduction in total state energy use

★ *Electrification / efficient fuel switching technologies*



Key Takeaways

- Market transformation is key part of strategy for next generation of programs in Minnesota and beyond
- Collaboration among stakeholders is critical
- Heat pumps, lighting controls and windows have significant savings potential, and will be the initial focus of the program
- Markets are regional, and cooperation among states will be critical for long-term MT success (such as ASHP Collaborative pre-conference event)



THANK YOU!

Carl Nelson
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mncee.org/mt

Signup for updates



Break!



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» Gas Savings Update

(packet pg. 3-9)

Ryan Brown

Manager, Planning and Analysis

Rbrown@neea.org





NEEA's Gas Portfolio

Table 1: Natural Gas Programs in NEEA's portfolio

Program Development

Efficient Gas Water Heaters
High-Performance Windows

Market Development

Efficient Rooftop Units
Residential Building Codes
Commercial Codes
Federal Standards



2022 Co-Created Therm Savings

Standards,
25,957

Commercial Codes, 71,847

Residential
Codes,
729,756

2022 Co-created Savings

Expecting
2022 Savings
from Efficient
Rooftop Units



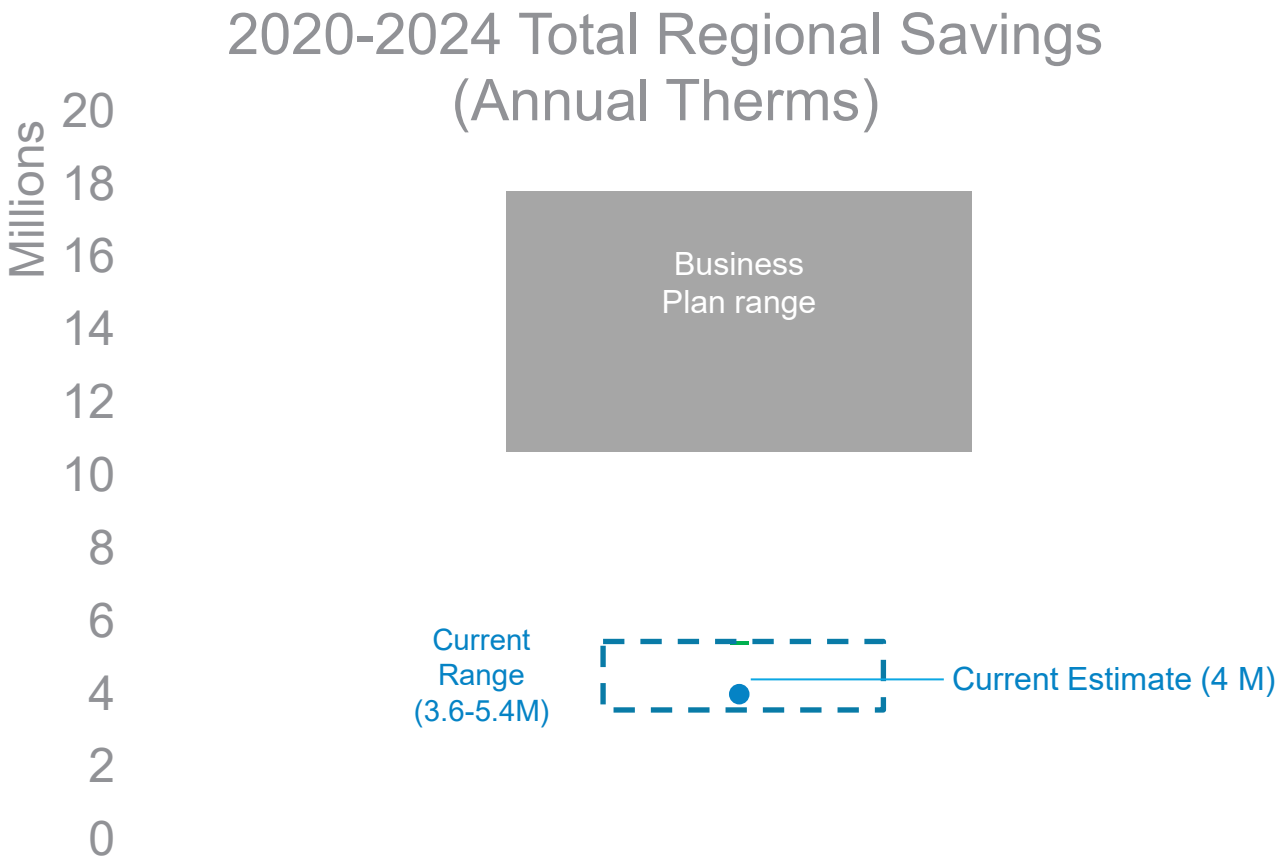
Regional 2020-2022 Co-Created Savings Estimates

(Annual Therms)

Program	2020	2021	2022	Source
Total Savings	158,939	387,536	827,379	
Building Codes		370,839	801,423	
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
Standards		16,697	25,957	
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.
Programs	158,939	0	TBD	
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.



Cycle 6 Expectations Reset for Natural Gas Portfolio



**Avoided
Carbon
Emissions:**

15,600 –
24,200 tons



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



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➤ PORTFOLIO UPDATE

- *Financials Review*
- *Q1'23 Progress Report Highlights*



LUNCH!
[Please return by 12:45 Pacific]





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Washington Code » Update & Impacts

(packet pg. 21)

Meghan Bean, NEEA

Kevin Rose, NEEA

Ty Jennings, Cascade Natural Gas Co.



Washington Code Update & Impacts (Research & Evaluation)

Meghan Bean, NEEA





NEEA Codes Work and Research & Evaluation Approach

- NEEA's Codes team seeks to increase the efficiency of energy codes in the Northwest
- NEEA conducts code evaluations for each state at least once per business cycle
 - Assess compliance with the most recent code
 - Assess underlying assumptions and/or conduct market research



Washington Residential Code Research

- WSEC 2018 went into effect February 2021
- Washington Residential Post-Code Adoption Market Research Study
 - Published May 2022
 - Sought to provide an *early look* at builders' response to WSEC 2018 using permits
- Washington Residential Code Evaluation
 - Data collection complete, report in progress
 - Sought to understand *as-built conditions* of homes built under WSEC 2018 using virtual home audits and permits



Washington Residential Code Evaluation

Key Research Topics

Under WSEC 2018...

- Code compliance
- Pathways builders are builders taking to comply
- Primary space and water heating fuel
- Gas hookups & other uses of gas
- How well permits represent as-built conditions



Washington Residential Code Evaluation

Key Research Topics

Under WSEC 2018...

- Code compliance
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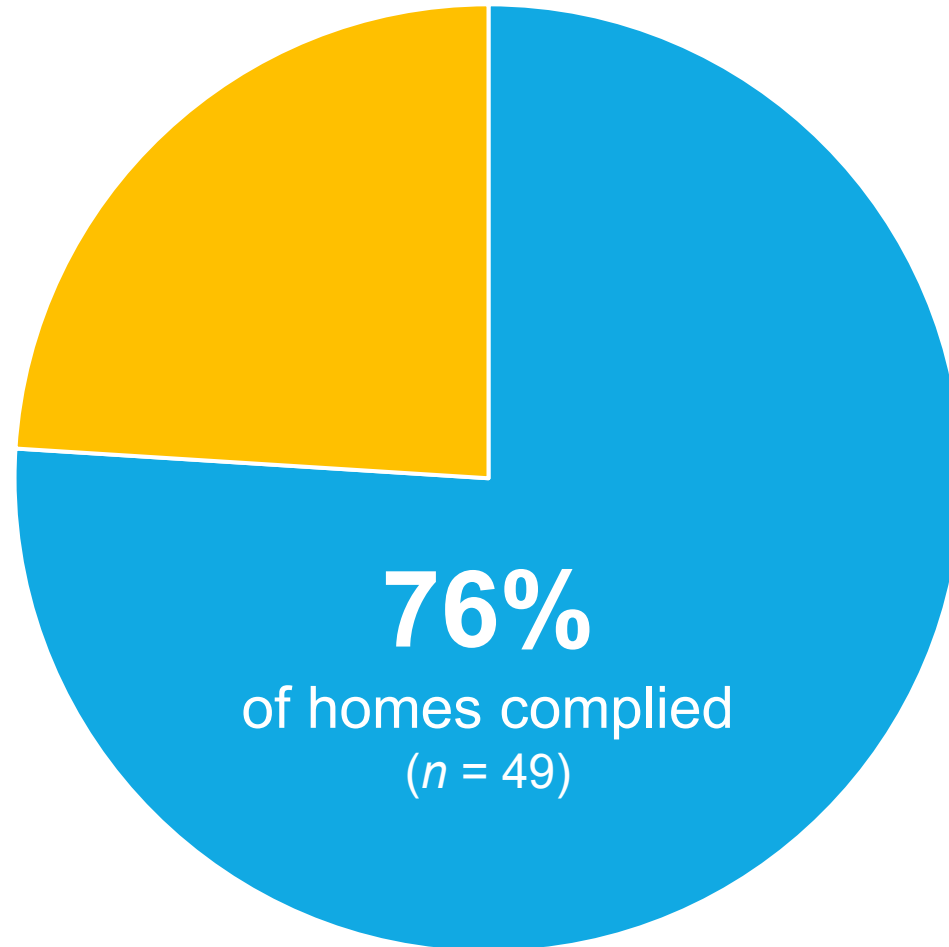
Washington Residential Code Evaluation

Methodology

- Stratified sampling of jurisdictions by construction volume (using data from Feb 2021-Feb 2022) and climate zone
- Virtual home audits + permit data for 56 homes
- Enabled state-wide estimates and comparisons for:
 - Low/medium volume jurisdictions vs. high volume jurisdictions
 - Climate zone 5B vs. climate zone 4C



Washington Residential Code Evaluation **Compliance Results**





Washington Residential Code Evaluation

Primary Space and Water Heating Fuel Results

WSEC 2018 market research and evaluation studies used different samples

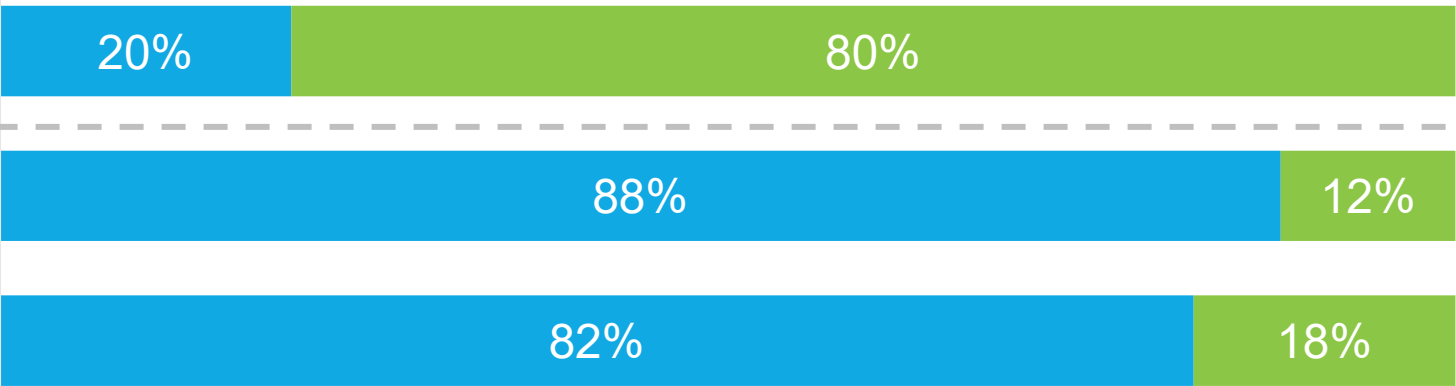
Electric Gas Non-Declared

Space Heating

WSEC 2015 Evaluation
On-site inspections (n = 178)

WSEC 2018 Market Research
Permits (n = 178)

WSEC 2018 Evaluation
Virtual home audits (n = 56)

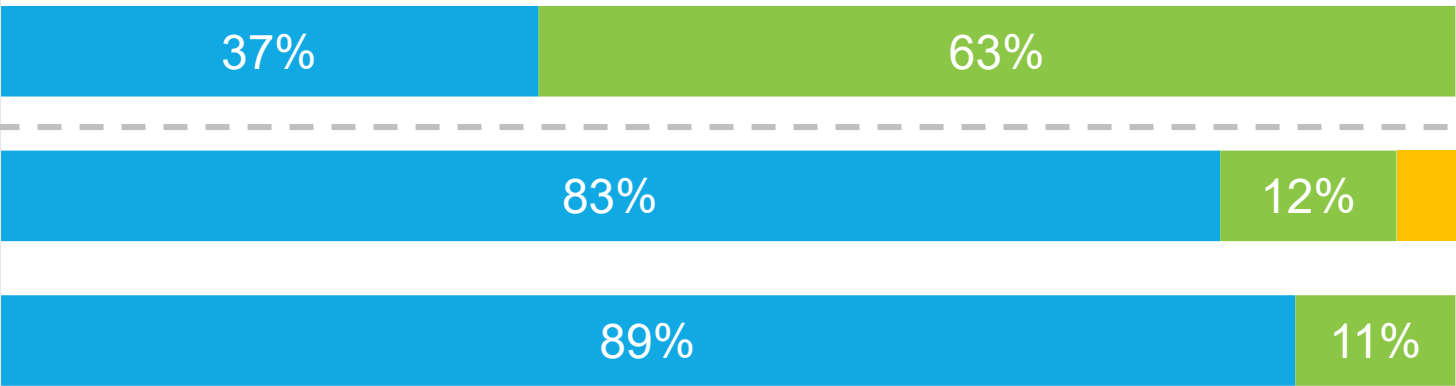


Water Heating

WSEC 2015 Evaluation
On-site inspections (n = 114)

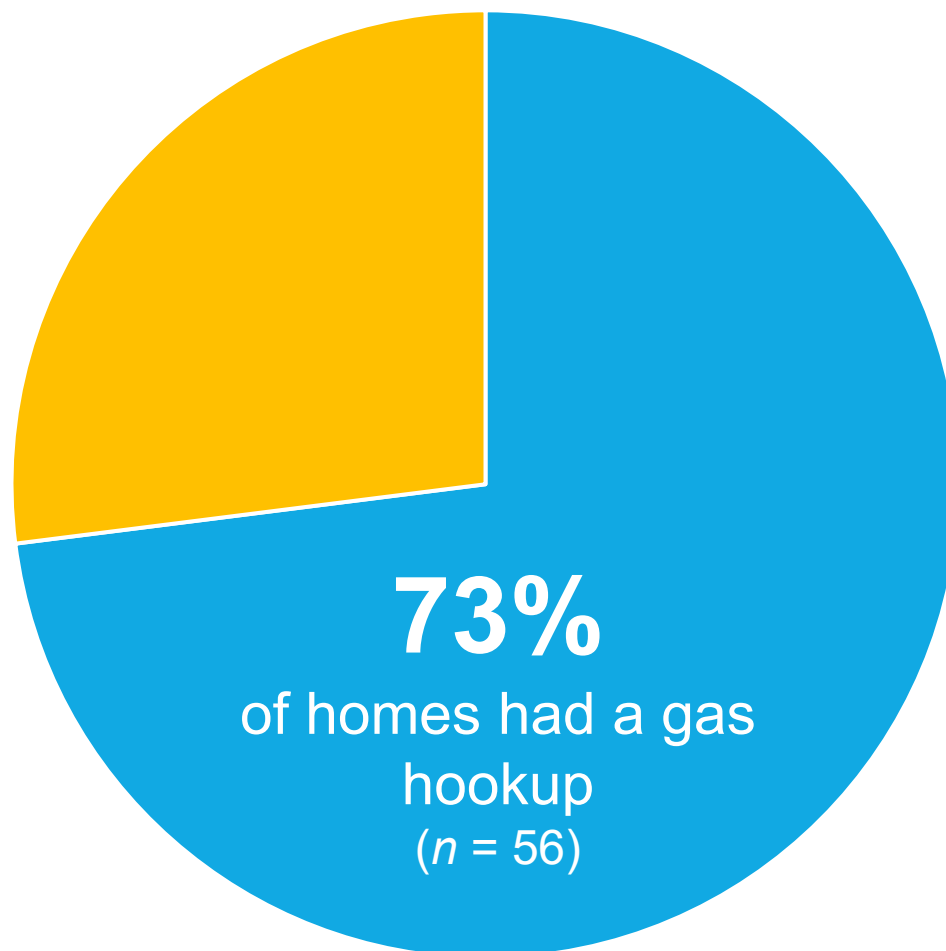
WSEC 2018 Market Research
Permits (n = 178)

WSEC 2018 Evaluation
Virtual homes audits (n = 56)





Washington Residential Code Evaluation ***Gas Hookup Results***





Next Steps for the Washington Residential Code Evaluation

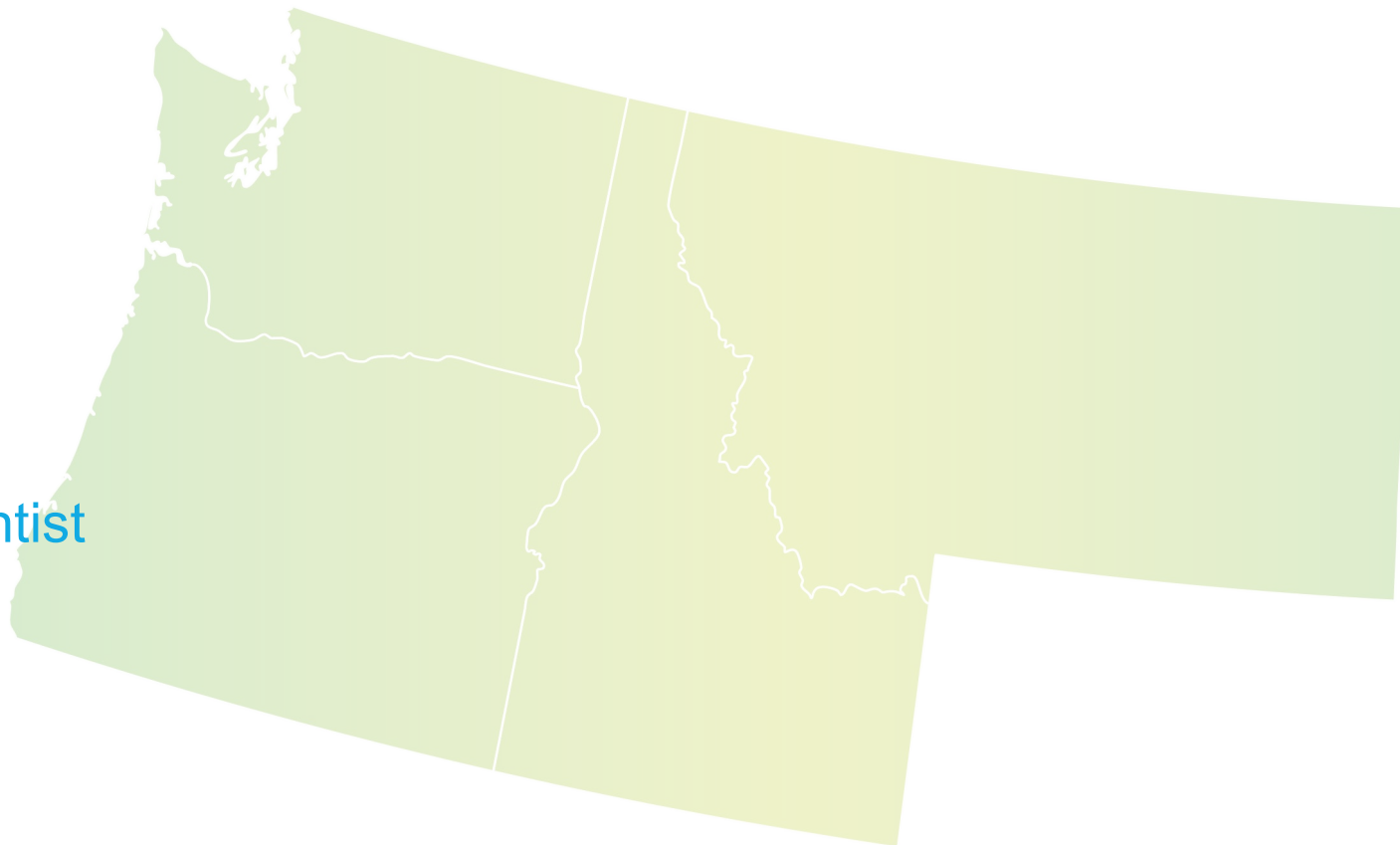
- Report publicly available this quarter (Q2 2023)
- Deeper discussion of methods and findings at Q3 NGAC meeting



Meghan Bean

Sr. Research & Evaluation Scientist

MBean@neea.org





Washington Code Update & Impacts (New Construction)

Kevin Rose, NEEA



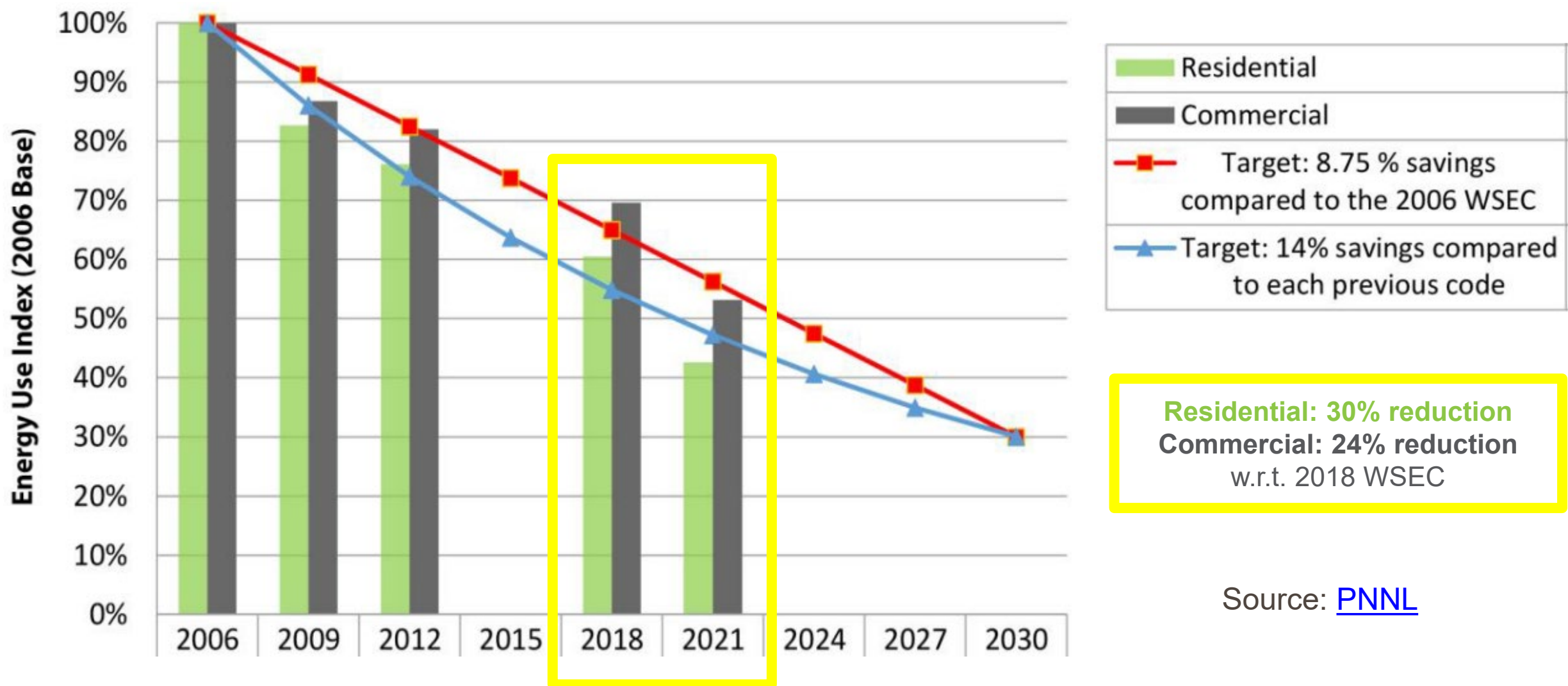


Summary

- WA's new code (2021 WSEC) significantly advances EE
 - Commercial: 24% energy use reduction from 2018 WSEC
 - Residential: 30% reduction
- 2021 WSEC requires heat pumps for space & water heating
 - Commercial: electric HP & HPWH required
 - Residential: gas option, but electric is favored
- 2021 WSEC scheduled to go into effect July 1, 2023



2021 WSEC Significantly Advances EE



Source: [PNNL](#)



New Heat Pump Requirements and Opportunity for Gas

		Commercial	Residential
Space heating	Electric HP Required?		
	Gas Opportunity		
Water heating	Electric HP Required?		
	Gas Opportunity		



Key Changes: 2021 WSEC–Commercial

HVAC:

- **Space Heating efficiency**
- **Water Heating efficiency**
- TSPR (multifamily)
- Fan Power
- Ventilation (DCV)
- Energy Recovery effectiveness
- Hydronic system flow rate
- WH tank, pipe insulation
- DR capability
- High-capacity / process boiler efficiency

Other:

- On-site renewable energy
- *Additional energy credits
- PTAC/PTHP U-Factor
- Thermal Bridging
- Exterior Lighting LPAs
- Interior Lighting LPDs
- Insulation R-values
- Window U-Factor
- Data Center MLCs
- Compressed Air (new section)
- Indoor Growing dehumidification efficiency



Key Changes: 2021 WSEC–Residential

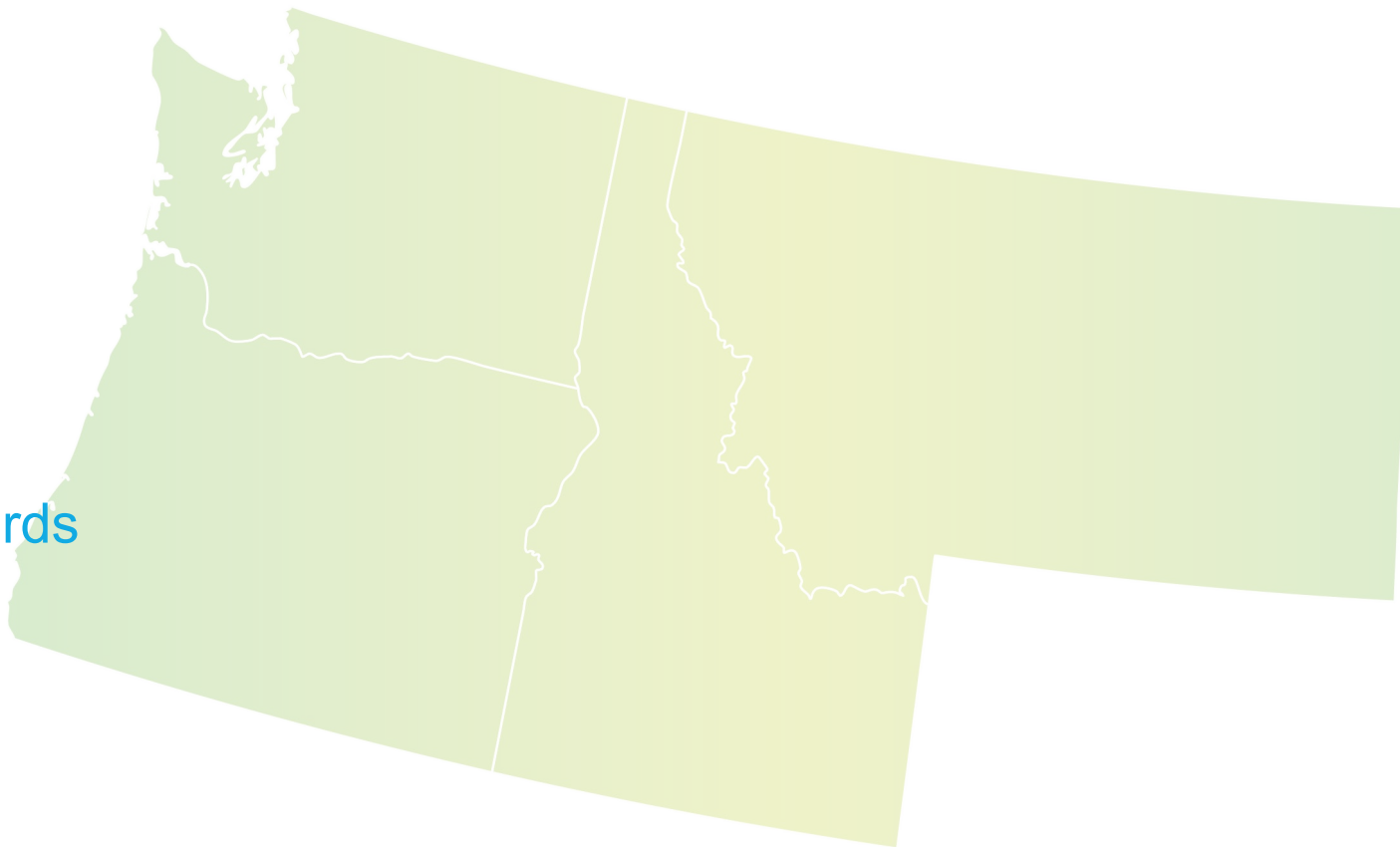
- **Space Heating**
- **Water Heating**
- **R406 (Options Table)**
- **Ceiling Insulation**
- **Wall Insulation**
- **Envelope Air Leakage**
- **Multifamily:** corridor type buildings shifted to Commercial
- **Exceptions for small additions**



Kevin Rose

Lead Engineer, Codes & Standards

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Ty Jennings, MCP

Building Codes Specialist

Ty.Jennings@cngc.com



In the Community to Serve®



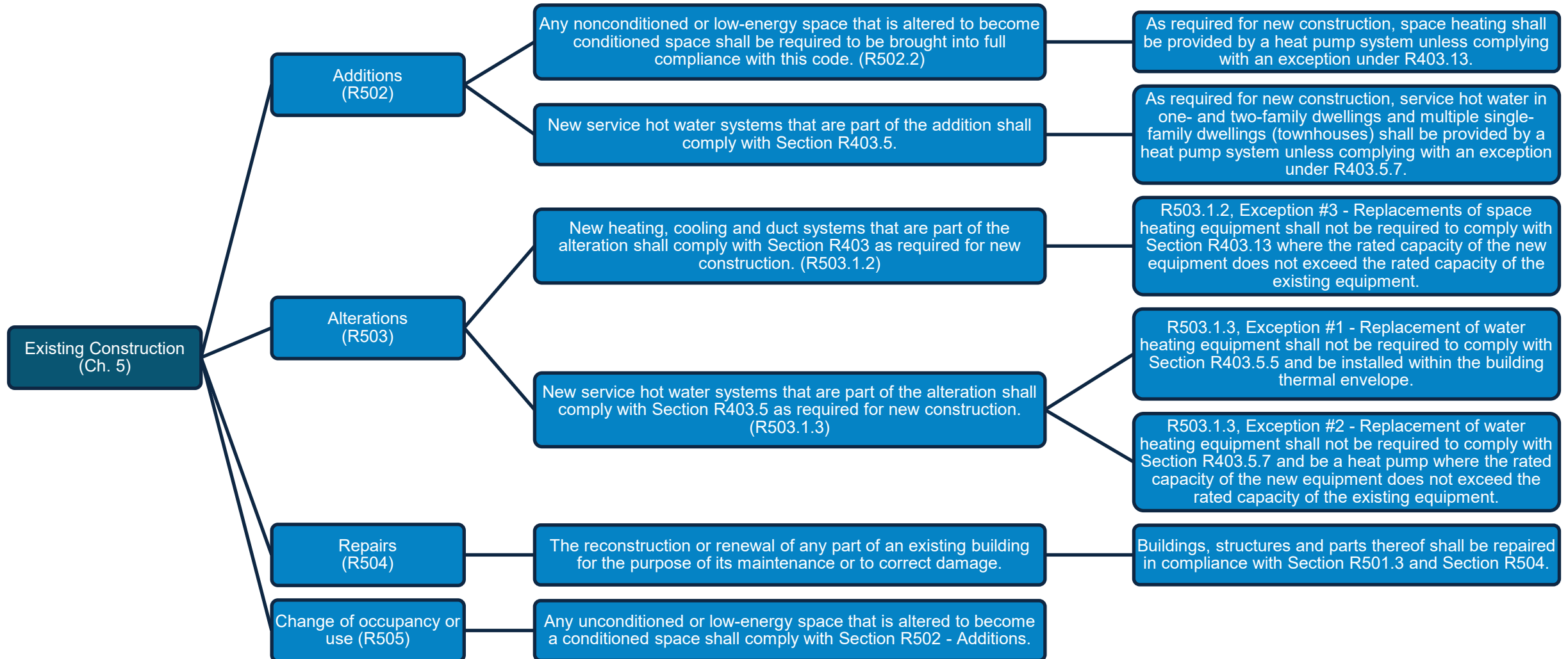


Existing Buildings

- Project classification
 - Additions
 - Alterations
 - Repairs
 - Change of Occupancy
- Guiding principles
 - If you don't touch it, it can stay as is
 - Like-for-like, with guardrails for efficiency gains

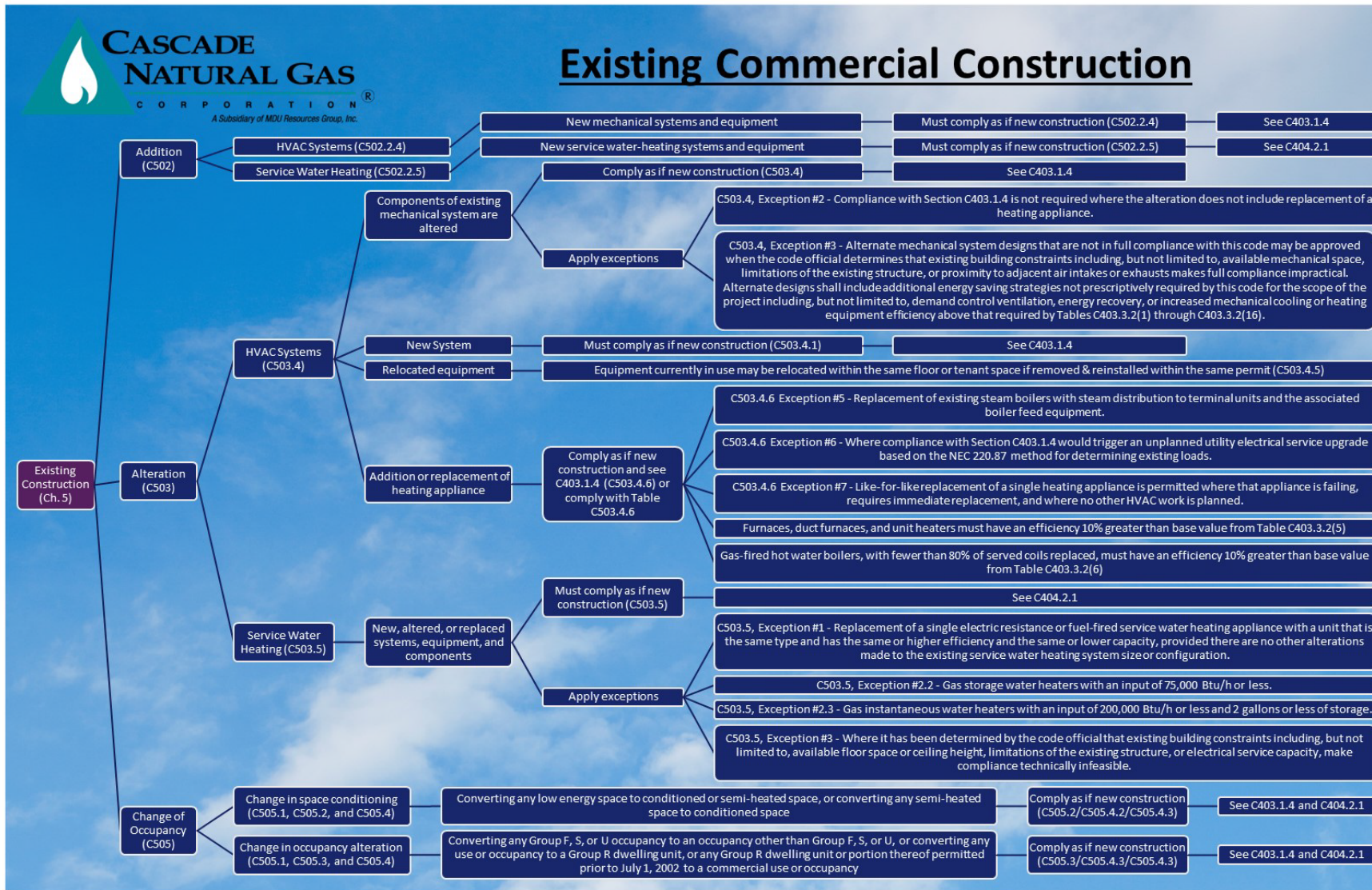


Existing Buildings (Residential)





Existing Buildings (Commercial)



Flowcharts for WSEC-C and WSEC-R are available via CNGC

[State of Natural Gas in Washington - Cascade Natural Gas Corporation \(cngc.com\)](http://cngc.com)



WSEC-C Example – HVAC Alteration (Replacement)

503.4.6 Addition or replacement of heating appliances. Where a mechanical heating appliance is added or replaced, the added or replaced appliance shall comply with **Section C403.1.4** or with an alternate compliance option in Table C503.4.6.

EXCEPTIONS:

Elec. Resistance
and NG prohibition

1. Terminal unit equipment including, but not limited to, hydronic VAV boxes, electric resistance VAV boxes, electric duct heaters, water source heat pumps, fan coils, or VRF indoor units that are served by an unaltered central system.
2. Air handling equipment with hydronic coils.
3. Air handling equipment designed for 100 percent outdoor air that is not subject to the requirements in Section C403.3.5 or that qualifies for an exception to Section C403.3.5.
4. Replacement of existing oil-fired boilers.
5. Replacement of existing steam boilers with steam distribution to terminal units and the associated boiler feed equipment.
6. Where compliance with Section C403.1.4 would trigger an unplanned utility electrical service upgrade based on the NEC 220.87 method for determining existing loads.
7. Like-for-like replacement of a single heating appliance is permitted where that appliance is failing, requires immediate replacement, and where no other HVAC work is planned.

NOTE: The above exceptions provide exemption from Section C403.1.4; thus, the use of electric resistance or fossil fuel combustion HVAC heating would be permitted where efficiency meets fed minimum/C403.3.2.



WSEC-C Example – HVAC Alteration (Replacement)

Table C503.4.6

Compliance Options for Mechanical Heating Equipment Alterations

	<u>Proposed Heating Equipment Type^a</u>	<u>Heating Efficiency Table Reference</u>	<u>Alternate Compliance Options to Section C403.1.4</u>
<u>1</u>	<u>Air-Cooled Unitary Heat Pumps</u>	<u>Table C403.3.2(2)</u>	<u>1. Compliance with C403.1.4, except heat pump rated capacity in accordance with Section C403.1.4 exception 5d is permitted to be sized equal to the supplemental internal resistance heating capacity in Climate Zone 4 or 5^c</u> <u>2. Compliance with C403.1.4, except electric resistance mixed air preheat is permissible^c</u>
<u>2</u>	<u>Packaged terminal, single-package vertical, and room air-conditioner heat pumps</u>	<u>Table C403.3.2(4)</u>	<u>1. Compliance with C403.1.4, except heat pump rated capacity in accordance with Section C403.1.4 Exception 5d is permitted to be sized equal to the supplemental internal resistance heating capacity in Climate Zone 4 or 5</u>
<u>3</u>	<u>Furnaces, duct furnaces, and unit heaters</u>	<u>Table C403.3.2(5)</u>	<u>1. Efficiency: +10%^b</u>
<u>4</u>	<u>Gas-fired hot water boilers with fewer than 80% of served coils replaced</u>	<u>Table C403.3.2(6)</u>	<u>1. Efficiency: +10%^b</u>
<u>5</u>	<u>Variable refrigerant flow air-to-air and applied heat pumps</u>	<u>Table C403.3.2(9)</u>	<u>No alternate compliance option</u>
<u>6</u>	<u>DX-DOAS equipment</u>	<u>Table C403.3.2(12) and Table C403.3.2(13)</u>	<u>1. DX-DOAS is provided with heat recovery if not required by C403.3.5.1.</u>
<u>7</u>	<u>Water-source heat pumps</u>	<u>Table C403.3.2(14)</u>	<u>No alternate compliance option</u>



In Summary

What's different from past code changes?

- The 2021 WSEC do not stipulate minimum efficiencies across the board.
- The 2021 WSEC disallow specific types of equipment, with permitted equipment's efficiency being dependent upon variables such as why the unit is replaced, electrical service capacity, occupancy type, equipment size, etc.
- Poses significant challenge for all parties
- Project specific condition-based requirements



Thank you!

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Ty.Jennings@cngc.com





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Dual Fuel and Gas Heat Pump Research

High Level Highlights

April 20, 2023

Prepared for:



Agenda

Background, Objectives & Methodology

HVAC Technologies Explored

Dual Fuel Heat Pumps – Residential Application

Dual Fuel RTUs - Commercial Application

Q & A

Research Background & Objectives

The primary objective of this research is to **understand buyer and HVAC contractor experience, perceptions toward, and (when possible) feedback on each of the following four technologies:**



Residential applications

1. Dual fuel heat pumps
2. Gas heat pumps



Commercial applications

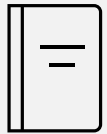
3. Gas heat pumps specific to space and/or water heating
4. Dual fuel rooftop units (RTUs)

Specific research objectives pertaining to each of the four technologies are to identify and understand:

- Identify the value propositions for residential buyers and HVAC contractors which are most relevant and effective.
- Ascertain the potential target markets.
- Uncover the barriers to adoption.
- *For residential dual fuel heat pumps:* Determine the drivers for dual fuel HVAC purchases.
- *For residential gas heat pumps:* Evaluate residential buyer and HVAC contractor attitudes toward natural gas as a home heating fuel source.

Overall Research Approach

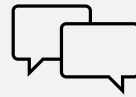
— The qualitative phase is part of a **two-phase research approach**:



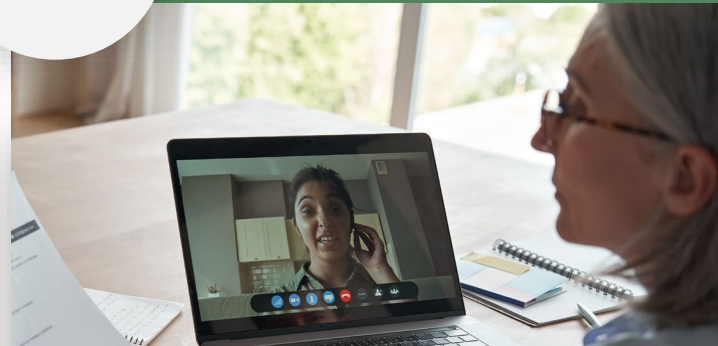
Phase 1



Phase 1 consisted of n=4 sixty-minute NEEA Stakeholder interviews between November 28th and December 2nd, 2022, followed by desk research into dual fuel and gas heat pump technologies.



Phase 2



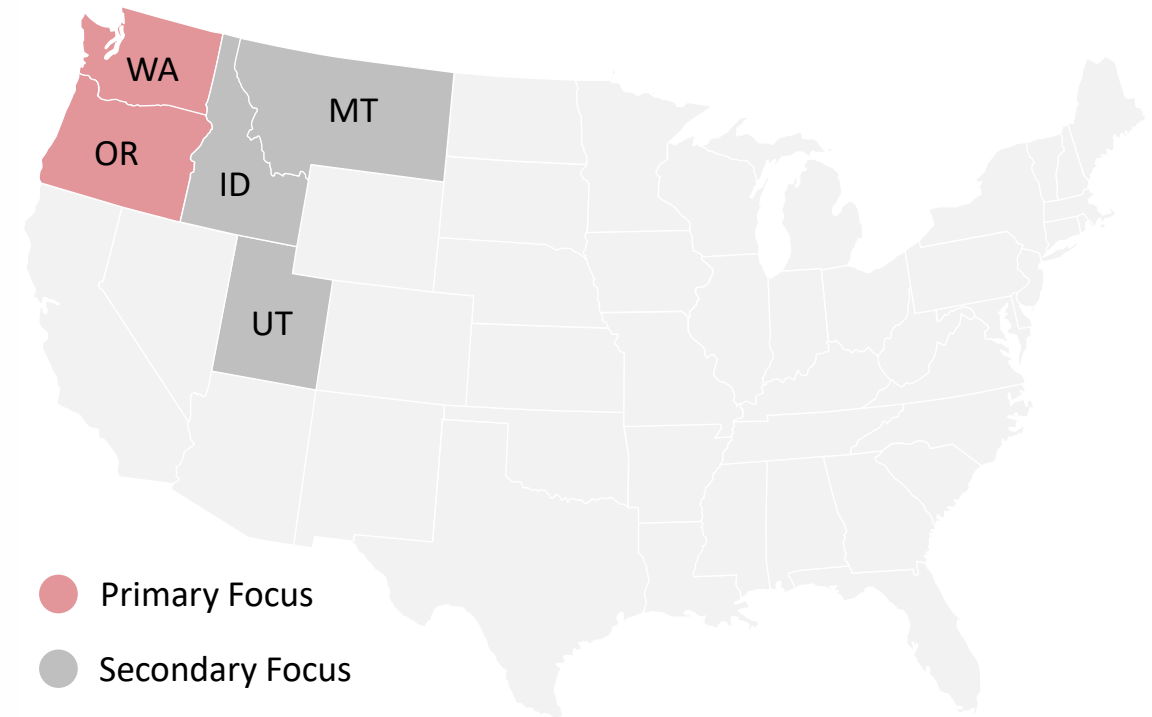
Phase 2 consisted of n=56 sixty-minute IDIs conducted with residential & commercial buyers, and HVAC contractors.



Methodology

Segment	Total (N =)
Residential Buyers	
<i>Dual Fuel Heat Pump Owners</i>	8
<i>Recent HVAC Purchasers</i>	8
<i>HVAC Purchase Intenders</i>	9
Sub-total	25
Commercial Buyers	
<i>Small Businesses (1 – 99 employees)</i>	3
<i>Med/Large Businesses (> 100 employees)</i>	12
Sub-total	15
HVAC Contractors	
<i>Small Businesses (<10 employees)</i>	5
<i>Large Businesses (> 10 employees)</i>	11
Sub-total	16
TOTAL IDIs	56

A total of 42 respondents are located in Northwest (with 9 located in Idaho and Montana); 5 from outside the region (2 were in Canada).



Note: residential buyer DFHP owners were targeted in the qualitative interviews (N = 8). Additionally, 1 residential 1 GHP owner was included as part of the sample. Among commercial buyers, 3 have experience with DFRTUs and 2 with GHPs.



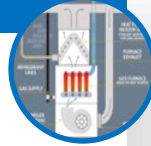
HVAC Technologies Explored

Dual Fuel and Gas Heat Pump

Both dual fuel and gas heat pump technologies were presented to respondents.

Residential

Dual Fuel Heat Pumps



- Electric air source heat pump coupled with a gas furnace.
- When it is HOT, system cools the home by blowing cold air through the ducts, similar to an AC.
- When it is COLD, the system works to heat your home by blowing hot air through the ducts.

Gas Heat Pumps



- New type of heat pump powered by natural gas.
- Allows for very high fuel efficiency with high capacity even on the coldest days.
- Provides heat only and uses less natural gas than a furnace.

Commercial

Dual Fuel RTUs



- Combines a gas furnace and an electric heat pump instead of a traditional A/C.
- The heat pump can provide heated OR cooled air through a building's duct system.
- The furnace component will provide heated air through the building's duct system.

Gas Heat Pumps



- New type of heat pump powered by natural gas.
- Allows for high efficiency with high capacity in cold climates.
- Capable of heating your space, heating your water, or both.
- Uses less gas than a conventional furnace



Descriptions of each technology were shown to respondents to aid the discussion (after first completing an unaided conversation).



Residential Dual Fuel Heat Pumps

Dual fuel heat pump technology addresses three key residential needs – integrated heating and cooling, fuel cost savings and reduced carbon footprint.



Dual Fuel Heat Pump Value Propositions

Residential Buyers

1. Energy efficiency and fuel cost savings.
2. Heating and cooling comfort from single system – no need for separate AC.
3. Carbon footprint reduction.

HVAC Contractors

Similar to Residential Buyers:

1. No need for electric back-up heating installation.

Common concerns about DFHPs include system reliability, physical footprint and the uncertainty of fuel savings.



Dual Fuel Heat Pump Barriers to Adoption

Residential Buyers

1. Cost concern - assume newer HVAC technology will incur higher upfront costs.
2. Hybrid system reliability concern – entire system goes down if one component fails.
3. Concern over physical footprint, system noise.
4. Unanticipated additional installation costs (e.g., electric panel upgrades, ductwork).

HVAC Contractors

1. Unfamiliarity or unfavorable prior DFHP installation experience.
2. Installation cost for homeowners with access to natural gas but not already connected.
3. Resistance to newer technology among older buyers (65+) and lower income households.
4. Unwilling to invest unless living in home long enough to recognize sufficient fuel cost savings.

Likely DFHP target markets are households with income in excess of \$75K who desire cooling and heating from a single HVAC system and wish to lower their carbon footprint.



Dual Fuel Heat Pump Potential Target Markets



Target Mindset

Residential Buyers

- Open to natural gas.
- Wants heating & cooling from single HVAC system and continuous HVAC comfort.
- Wants significant fuel cost savings.
- Favors a more-eco-friendly system (lowered carbon footprint).
- Willing to pay a premium price to achieve their HVAC needs.



Target Typology

HVAC Contractors

- Mid-to-upper income households (> \$75K), rural & urban geographies with need for cooling (and heating).
- Existing residential air-conditioning market (new and replacements).

Recommendations for residential DFHP technology

1. Educate and promote to HVAC contractors the dual heating and cooling capability; eliminating the need for a separately installed and operated heating and cooling system. This represents reduced total expenditures for buyer.
2. Partner with key distributors to help promote dual fuel heat pump technology to HVAC contractors to build confidence in the technologies.
3. Encourage distributors or manufacturers to develop dual fuel and gas heat pump technology certification programs – these will be valued by HVAC contractors.
4. Work with utilities to help promote the technologies to residential buyers and HVAC contractors. Recommend rebates/credits to help encourage technology adoption.



Recommendations for DFHP technology (continued)

5. Promote and emphasize consistent comfort – having a constant temperature in the home without the need to adjust two different systems means ease of use – important to residential buyers.
6. Promote energy efficiency as the ability to reduce fuel costs - a primary need and driver of residential buyers. This will help in the HVAC contractor sales pitch.
7. Promote and emphasize the ‘eco-friendliness’ because reduced carbon footprint is valued by the majority of residential buyers.
8. Prepare testimonials that emphasize customer satisfaction and realized fuel cost savings vis-à-vis their DFHP experience.





Commercial Dual Fuel RTUs

Dual fuel RTUs address commercial buyers' key needs – total lower cost of ownership, continued comfort and decarbonization.



Dual Fuel RTU Value Propositions

Commercial Buyers

1. Total lower cost of ownership and improved ROI.
2. Occupant comfort positively impacts productivity.
3. Reduced carbon footprint.

HVAC Contractors

1. Reduced HVAC operating costs.
2. Reduced carbon footprint.

Common dual fuel RTU concerns include system reliability, maintenance, footprint and weight, as well as compliance with potential carbon neutral codes.



Dual Fuel RTU Barriers to Adoption

Commercial Buyers

1. Potential high upfront cost and installation.
2. Unfamiliarity with product track record.
3. Concern about hybrid system effectiveness.
4. Concern over system durability and maintenance requirements.
5. Concern over system physical footprint and weight.
6. Carbon neutral codes.

HVAC Contractors

1. Concerns about reliability & durability.
2. Potential supply chain issues.
3. Limited knowledge and insufficient training.
4. Lack of rebates/tax credits to help offset buyer cost.
5. Technology constraints/required property structural changes.
6. Concern over natural gas restrictions.
7. Uncertainty over energy efficiency.

Dual fuel RTU technology appeals to a range of commercial business sizes led by eco-minded decision makers focused on ROI, decarbonization and the occupant comfort.



Dual Fuel RTU Potential Target Markets



Target Mindset

Commercial Buyers

- Eco-minded, typically managed younger commercial decision makers (under 45).
- Very focused on reducing total cost of ownership.
- Decarbonization is top of mind.
- Focused on continued comfort of property occupants.



Target Typology

HVAC Contractors

- Small to midsize business seeking reduced HVAC operating costs & reduced carbon footprint.
- Midsize buildings where temperature control is critical (e.g., gyms, medical facilities, restaurants, retail stores).
- Larger multi-residential living spaces, with high density of people, large number of individual rooms; shopping malls, etc.

Recommendations for commercial dual fuel RTUs

1. **Emphasize HVAC operating cost savings by highlighting the increased energy efficiency and no need for installation of a back-up resistance element for the indoor unit, which helps reduce total cost of ownership. This will help support seller sales pitch.**
2. **Highlight reduction of carbon footprint. Whether buyer is driven by an internal/external mandate or not, this is considered a positive selling aspect and will increase in importance in the Northwest. This will be especially important when targeting commercial property managers and energy consultants.**
3. **Reassure commercial buyers and HVAC contractors that space conditioning is not compromised by dual fuel RTU technology.**



Recommendations for commercial dual fuel RTUs (continued)

4. **Work with partners to help establish rebates/credits to help encourage technology adoption.**
5. **Prepare case studies that emphasize customer satisfaction and realized reduced total cost of ownership. Tailor for audience – different industries and business size.**
6. **Partner with key distributors and HVAC Contractors to help better educate DFRTU reliability, durability, technology constraints and required property structural changes to further build confidence in DFRTU technology.**
7. **Encourage distributors or manufacturers to develop DFRTU technology certification.**





Thank You!



Questions?



Break!



Agenda

All times Pacific

9:30-9:50	Welcome and Introductions
9:50-10:10	Round Robin
10:10-10:30	Minnesota Center for Energy & Environment (MN CEE)
(15 min)	Break
10:45-11:00	Annual Savings Overview
11:00-12:00	Portfolio Update
(45 min)	Lunch
12:45-1:25	Washington Code Update & Impacts
1:25-2:10	Dual Fuel & Gas Heat Pump Research
(20 min)	Break
2:30-2:50	Proposal: Dual Fuel Work Group
2:50-3:05	Housekeeping & Looking Ahead
3:05-3:15	Wrap up, public comment, adjourn



Dual Fuel Work Group

(packet pg. 23-25)

Peter Christeleit
Manager of Gas Portfolio





Dual fuel work group

Purpose: *Inform and accelerate dual fuel programs and market transformation within the region*

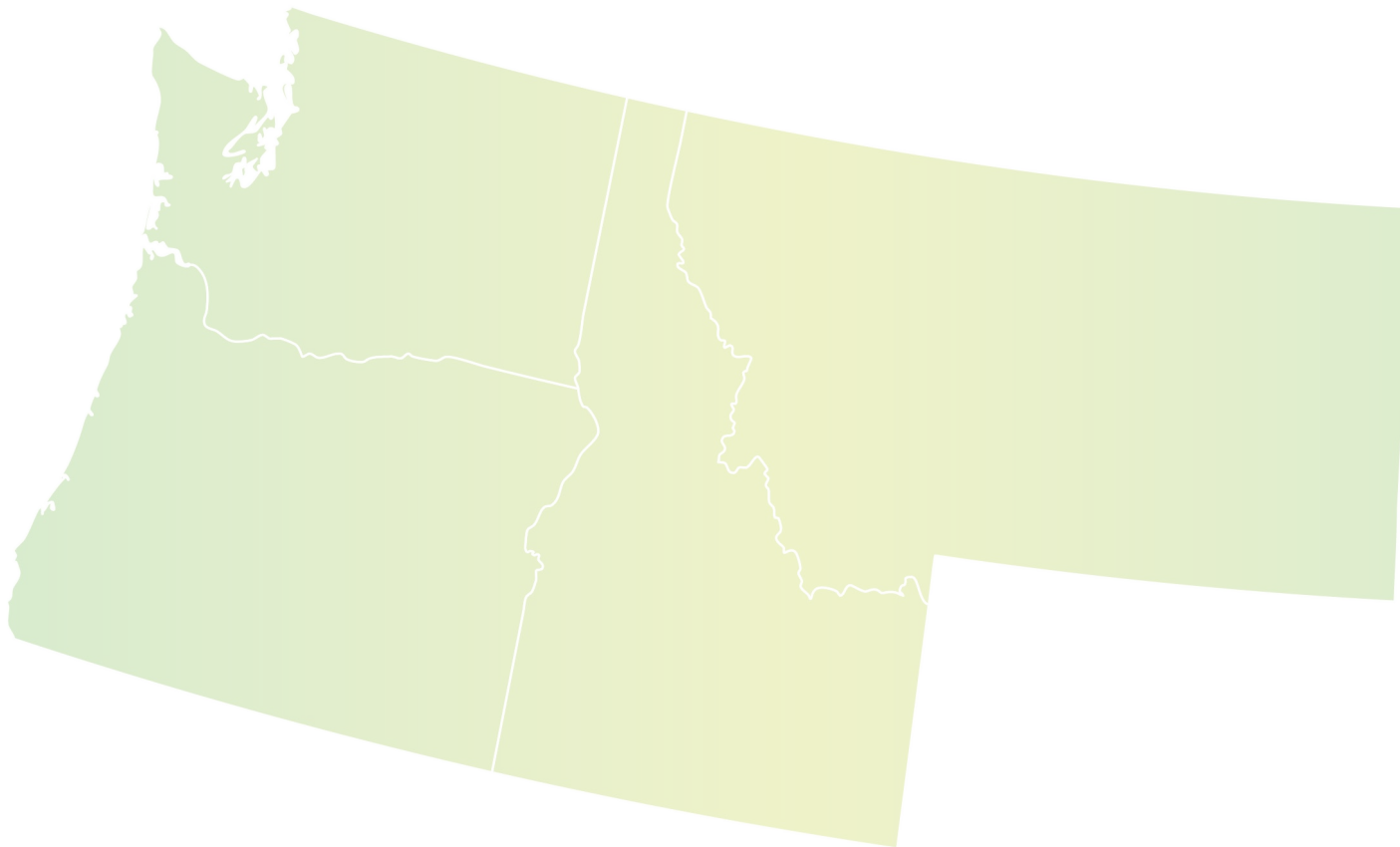
- **Who:** anyone working on dual fuel
- **When:** ID participants by May 20
- **Frequency:** 3-4x/yr, starting June 2023
- **Time:** ~2-5 hrs/quarter

*(please email pchrsteleit@neea.org w/ your organization's attendees)



Thank you!

Pchristeleit@neea.org





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Housekeeping & Looking Ahead

- Product Council updates
- [Notes](#) & action items from Feb 1
- Looking Ahead
 - Related meetings and events
- Other regional / industry announcements?



Product Council Updates

Noe Contreras

Product Manager, Gas

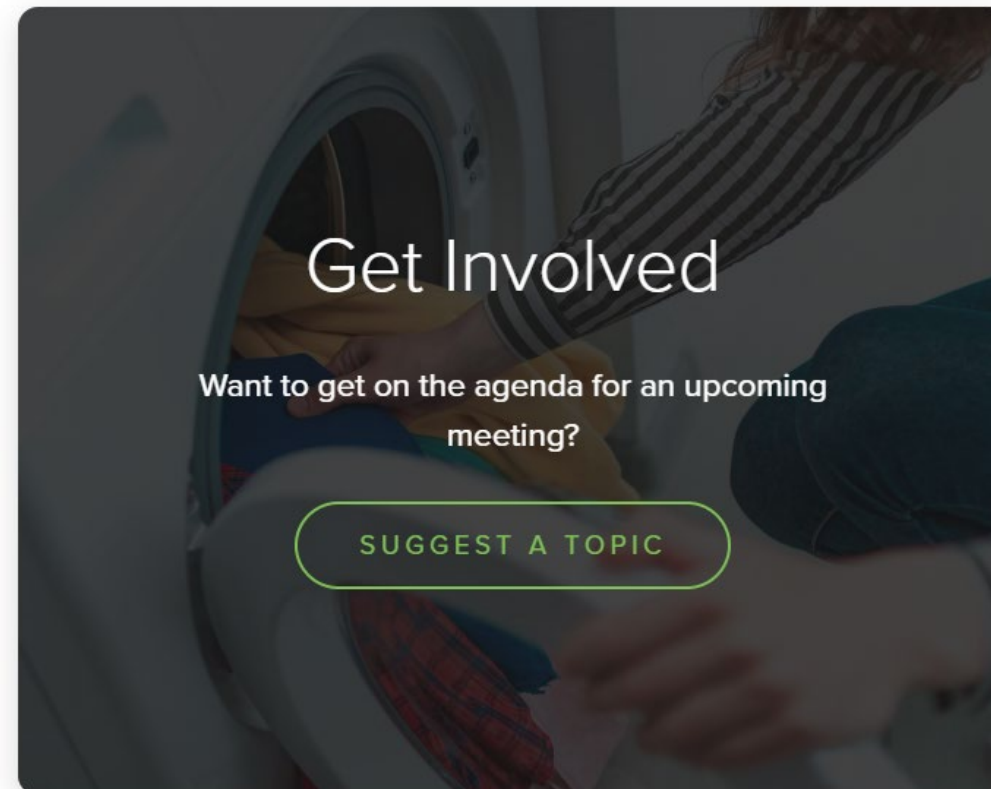
NContreras@neea.org





Product Council on NEEA.ORG

- Now using Microsoft TEAMS
- NEEA.org (Get Involved → Product Council)
 - Archives, Future Session, Suggest a Topic



[Northwest Energy Efficiency Alliance \(NEEA\) | Product Council](https://www.neea.org/product-council)



Integrated Design Labs

- University of Idaho

- Research branch of college of art and architecture
 - Technical Design Assistance
 - Building Simulation user Group
 - Energy Resource Library – Idaho Power Territory

- Topics

- Idaho Energy Codes Analysis
- Indoor Air Quality
- Insulation

[Northwest Energy Efficiency Alliance \(NEEA\) | Integrated Design Lab...](#)

- University of Oregon

- Integrated Design Laboratory
- Topics
 - Non-visual health in the workplace using LLLC
 - Façade thermal insulation

[Northwest Energy Efficiency Alliance \(NEEA\) | Integrated Design Lab...](#)

- Washington State University

- Integrated Design + Construction laboratory
 - Design
 - Construction
 - Operation
 - Occupancy
- Topics
 - Smart Power Strips

[Northwest Energy Efficiency Alliance \(NEEA\) | Integrated Design Lab...](#)



Central HPWH Multifamily Supply Side Assessment

- Central CO2 Heat Pump

- Major Components

- Primary heat source
 - Primary storage tank
 - Temperature maintenance tank
 - Controls & sensor

[Northwest Energy Efficiency Alliance \(NEEA\) |
NBI Central Heat Pump...](#)

- Barriers

- Installation complexity
 - Space constraints
 - Commissioning and operational education
 - Upfront cost

- Drivers

- Incentives
 - Codes and Policies



Feb 1 Notes & Action Items

- Notes
 - Any other edits/corrections?
 - Action items
 - NEEA staff send NorthWestern & PSE dual fuel info on CSA performance rating.
 - NEEA staff connect w/ Cascade Natural Gas staff to discuss new code impacts on natural gas.

➤ Looking Ahead

Date	Event
May 2-3	Efficiency Exchange (hybrid)
May 2-4	GTI Emerging Tech Program (ETP) Mtg
May 4	RPAC Federal Funding Workgroup Kick-off* (hybrid)
June 1	Interim NGAC webinar (if needed)
TBD, Q2	Dual Fuel Work Group (May 20 deadline)
July 26	Q3 NGAC Meeting** (virtual)



***p.26 in packet → Gas-only utilities: Do you want to be involved?**

➤ Email Alisyn Maggiora or Jonathan Belais ASAP if so: Jbelais@neea.org | Amaggiora@neea.org

****Key Q3 Topic: Washington Codes Work**



Efficiency Exchange 2023 - Registration Open



EFX23 Hybrid Conference
May 2-3 in Portland
In-person + Virtual

neea.org/efx23-registration

***Other regional / industry
events or
announcements?***



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3:05-3:15	Wrap up, public comment, adjourn

Recap: Action Items





Public Comment?
Closing Remarks?

» Until we meet again...

Upcoming Meetings:

- *Interim Webinar: Thursday, June 1; 1-2pm (if needed)*
- *Dual Fuel Work Group (TBD Q2, nominate by May 20)*
- *Q3: Monday, July 26, 2023 (virtual)*

