



Cost-effectiveness & Evaluation Advisory Committee Meeting

Northwest Energy Efficiency Alliance

November 4, 2024

CLASSIFICATION LEVEL: PUBLIC





Introductions & Ice Breaker

- Name
- Organization
- What's was/is your favorite Halloween candy?





Agenda

1:00PM	Welcome/Agenda Review
1:15	Key Inputs and Assumption Updates
1:45	State Energy Code Baseline and Key Assumption Review
2:25	BREAK
2:35	MRE Updates
3:05	Kickoff for Annual Reporting Process
3:20	Wrap Up



10
YEARS

LEADERSHIP IN
ENERGY EFFICIENCY
AWARDS 

Join us for the hybrid ceremony!

NEEA's Board and staff will recognize individuals and teams for their exemplary dedication and performance in energy efficiency during the NEEA Board Annual Meeting on **December 5.**

To RSVP* go to: nea.org/leadershipawards

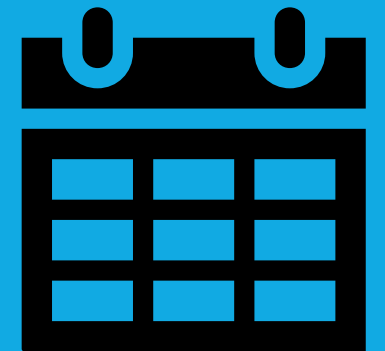
**in-person attendees must RSVP by Nov. 20*





2025 CEAC Dates

- Q1 – Wednesday, March 6th
- Q2 – Wednesday, April 30th and Thursday, May 1st
- Q3 – Wednesday, August 27th
- Q4 – Wednesday October 30th





Inputs and Assumption Updates



Objective/Agenda

- Process Reminder
- Specific updates for committee:
 - Ductless Heat Pumps displacing electric forced air furnaces
 - Gas Residential Furnace Standards Evaluation





Why are we here again?

CEAC Charter

Responsibilities

1. Review and advise regarding NEEA cost-effectiveness and savings information to inform annual reporting.
2. Review and advise regarding market transformation cost and savings measurement and estimation methods.
3. Review evaluation findings that affect cost and savings information to inform annual reporting.
4. Work with your organization to provide NEEA staff with relevant incentive data for regional tracking and reporting purposes.
5. Review and advise regarding new market research and evaluation methodologies.



Input Development and Review Process



Develop Inputs

NEEA staff develops Key Assumptions in alignment with the region through:

- Internal analysis,
- External studies,
- Regional Technical Forum



Validate Assumptions

NEEA staff commissions 3rd party evaluations for new Key Assumptions and for changes to Key Assumptions used in the reporting of savings.



Report Inputs and Assumptions

NEEA staff reviews new and updated Key Assumptions with CEAC every quarter. Additionally, NEEA staff will highlight any Key Assumptions that may warrant updating and solicit input from the committee for better data to inform a Key Assumption.



Post Inputs and Assumptions

Full set of regional key assumptions used for reporting is made available on [NEEA Funder Portal](#)



System of Documentation Available

Funder Portal

nea.org

Updated in April

Data Sources

List of data sources NEEA uses to estimate savings & cost effectiveness and explanation of approach

Cost Effectiveness Table

ProCost Inputs for programs in Market Development

Methodology Documentation

Report on energy consumption calculations, data sources and technical assumptions

Operational Guidelines

Overview on energy savings & cost effectiveness calcs

*Ductless Heat Pumps (DHP)
displacing electric forced-air
furnace (eFAF)*



NEEA seeks to align with RTF

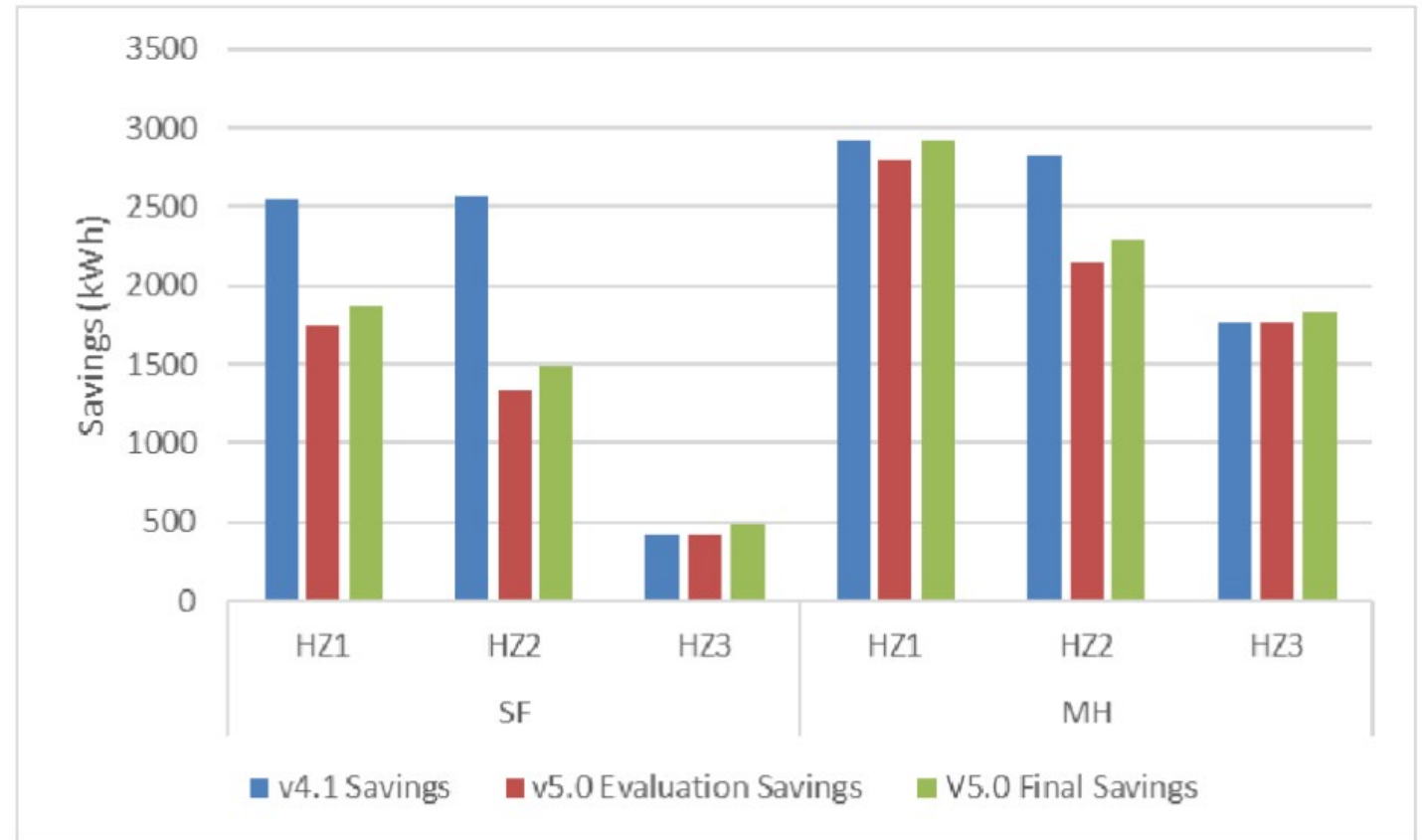
- Generally, NEEA seeks to align with the Regional Technical Forum (RTF) wherever possible and sensible
 - Currently, NEEAs Ductless Heat Pump (DHP) measures for Electric Forced Air Furnaces (eFAF) homes are in alignment with RTF UES workbook v4.1
- Due to a misalignment in measure definition and NEEA's units accounting, we are proposing not to update to UES values used in RTF UES workbook v5.0



Ductless Heat Pumps – eFAF Savings Update

- RTF UES workbook v5.0 for DHP eFAF applications released in September 2024
 - Based on billing analysis studies of aggregate program data
 - Included sites with multiple DHPs or where DHPs are not displacing eFAF heating within the same space

RTF Updated eFAF Savings v5.0



[Sept 2024 Ductless Heat Pumps for SF and MF Homes Electric Forced AF Presentation](#)



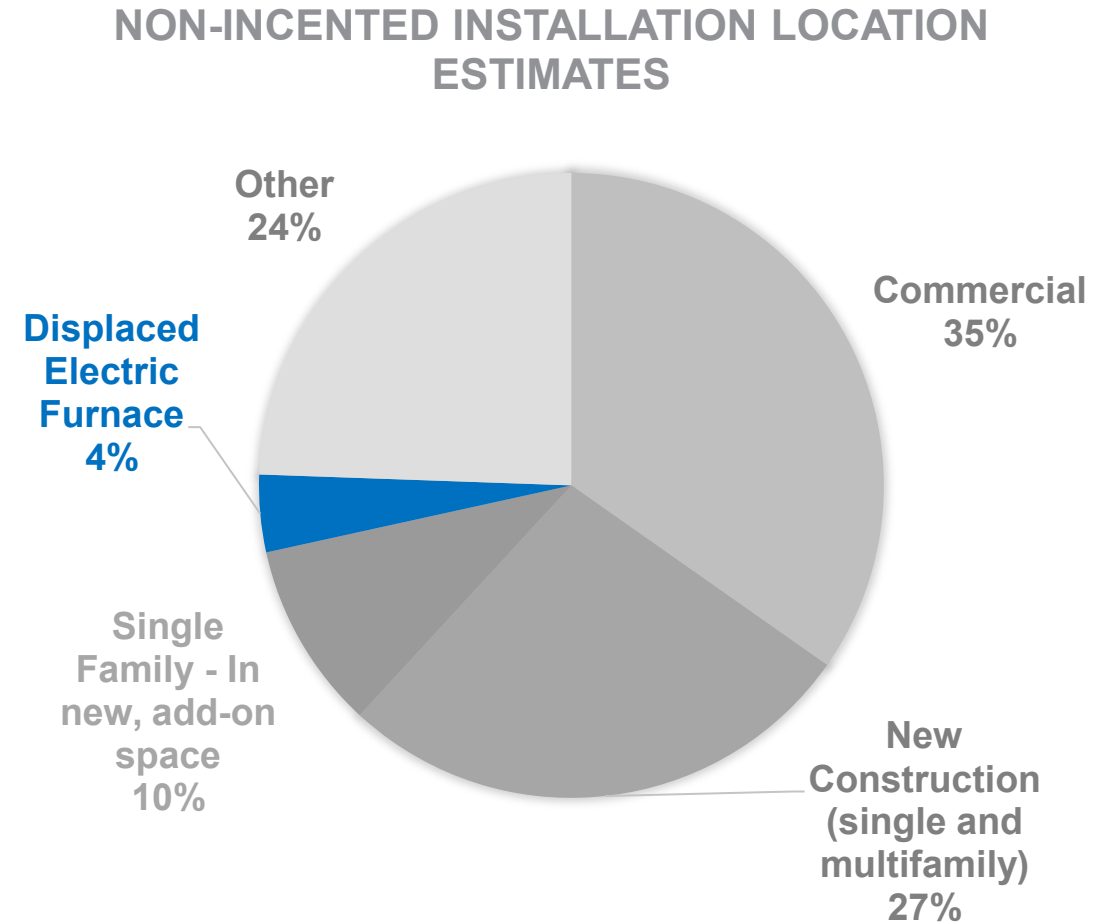
Ductless Heat Pumps – eFAF Savings Update

- NEEAs Ductless Heat Pump initiative aims to displace electric zonal resistance and electric forced air resistance heating in single-family and manufactured homes
 - Displacement defined as adding DHP into primary living space to serve as main heating source for the home
 - Primary focus is 1:1 displacement, with one outdoor condenser and one indoor head



DHP for eFAF – NEEA Units Accounting

- NEEA currently reports program units based on survey findings that screen for DHPs installed in displacement applications
 - Currently the DHP market for displacement of eFAF SF homes represents ~4% of total DHP sales
 - LTMT 3 will perform another installer survey with results expected by Q2 2025



Source: NEEA Installer Surveys



Ductless Heat Pumps – eFAF Savings Update

- NEEA plans to retain previous UES for eFAF measures
- NEEA will continue use installer surveys to screen for intended applications
- **Do you have any feedback or concerns with the approach?**



Non-Weatherized and Mobile Home Gas Furnaces Standard Evaluation

Meghan Bean

Principal Market Research & Evaluation Scientist



NEEA Standards Influence

The NEEA Codes and Standards team supports standards development and rulemaking processes for a variety of product classes to make permanent market change. NEEA supports standards that are:

Tied to market transformation strategy

or

Opportunistic when NEEA has relevant relationships, data, or other resources



Non-Weatherized and Mobile Home Gas Furnaces Standard

- Approved in 2023, effective in 2029
- Modeled for the Northwest by Cadeo
- Expected to create 4.5 million MMBtu of year 1 savings in the region over 10 years
- Michaels Energy determined that it is reasonable for NEEA to track 18.6% of the savings above baseline



NEEA's "Other Standards" Evaluations

- **Qualitative assessment** of NEEA and its partners' influence on the standard, guided by the NEEA Standards logic model
 - What were the barriers to adoption?
 - What were NEEA and its partners' activities and how successful were they?
 - What role did NEEA and its partners play (lead, major, minor)?
- **Quantitative estimate** of the share of savings resulting from NEEA and its partners' involvement



Methods



- Document review
 - Publicly available documents
 - NEEA internal documents
- Interviews with standards process stakeholders
 - NEEA partners
 - Manufacturers, trade associations & other key actors



Analysis of Barriers

Logic Model Barrier

Manufacturer opposition to regulation or more stringent standards

Lack of data to conduct analyses to support rulemaking

Lack of common interest among stakeholders

Insufficient funding for U.S. DOE staff

Insufficient market adoption of more efficient product models prior to the standards process

Cyclical political opposition

TOTAL



Analysis of Barriers

Logic Model Barrier	NW & MH Gas Furnaces Standard	% Significance
Manufacturer opposition to regulation or more stringent standards	Y	21%
Lack of data to conduct analyses to support rulemaking	Y	42%
Lack of common interest among stakeholders	Y	37%
Insufficient funding for U.S. DOE staff	N	
Insufficient market adoption of more efficient product models prior to the standards process	N	
Cyclical political opposition	N	
TOTAL		100%



Analysis of Activities

Logic Model Barrier& Activity	% Importance
Manufacturer opposition to regulation or more stringent standards	21%
<i>NEEA and partners submitted comments & attended the public webinar in support of the standard</i>	21%



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Lock of data to conduct analyses to support rulemaking	42%
<i>NEEA's comments provided data on installation barriers, costs, and market share</i>	42%



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Logic Model Barrier & Activity	% Importance
Manufacturer opposition to regulation or more stringent standards	21%
<i>NEEA and partners submitted comments & attended the public webinar in support of the standard</i>	21%
Lock of data to conduct analyses to support rulemaking	42%
<i>NEEA's comments provided data on installation barriers, costs, and market share</i>	42%
Lack of common interest among stakeholders	37%
<i>NEEA partners held a meeting to educate stakeholders</i>	4%
<i>NEEA and partners submitted comments & attended the public webinar in support of the standard</i>	18%
<i>NEEA and partners aligned on strategies and messages</i>	15%
TOTAL	100%



Analysis of Effectiveness

Activity	% Importance	Effectiveness	Savings Share
NEEA and partners submitted comments & attend the public webinar in support of the standard (<i>manufacturer opposition</i>)	21%	Medium (40%)	8.4%
NEEA's comments provided data on installation barriers, costs, and market share	42%	High (60%)	25.2%
NEEA partners held a meeting to educate stakeholders	4%	Low (20%)	.8%
NEEA and partners submitted comments & attend the public webinar in support of the standard (<i>lack of common interest</i>)	18%	Medium (40%)	7.2%
NEEA and partners aligned on strategies and messages	15%	Low (20%)	3%
TOTAL	100%		



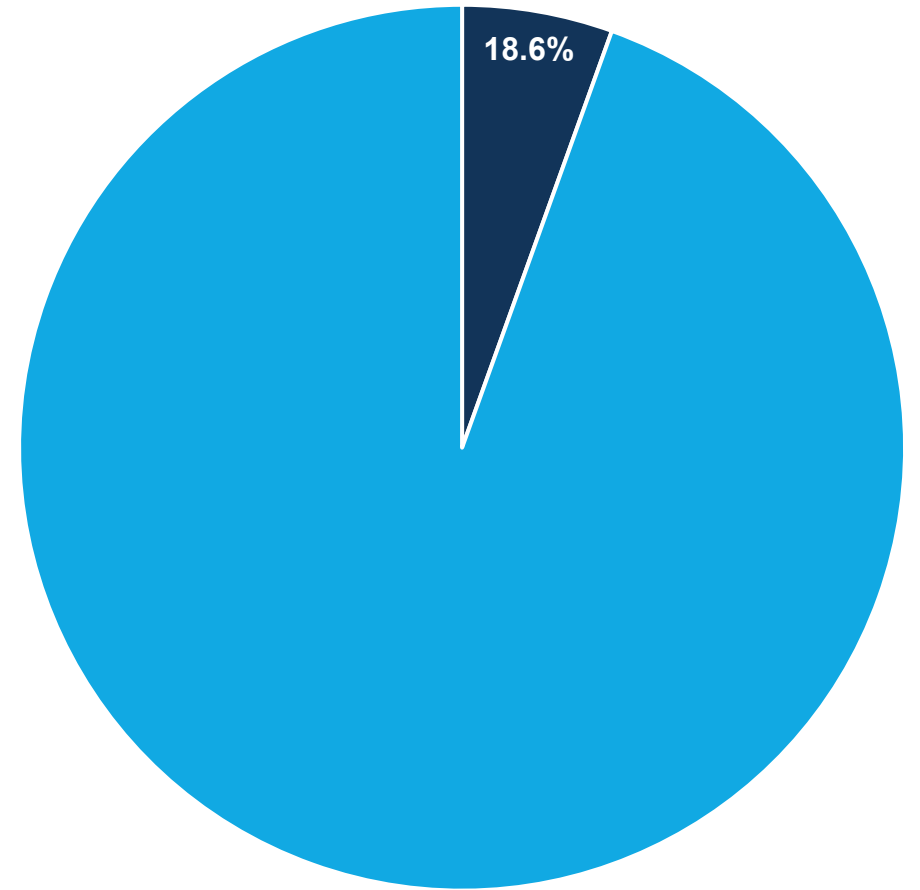
Analysis of NEEA & Partners' Role

Activity	Importance x Effectiveness Savings Share	NEEA & Partner Role	Final Savings Share
NEEA and partners submitted comments & attend the public webinar in support of the standard (<i>manufacturer opposition</i>)	8.4%	Major (30%)	2.5%
NEEA's comments provided data on installation barriers, costs, and market share	25.2%	Primary (50%)	12.6%
NEEA partners held a meeting to educate stakeholders	.8%	Primary (50%)	.4%
NEEA and partners submitted comments & attend the public webinar in support of the standard (<i>lack of common interest</i>)	7.2%	Major (30%)	2.2%
NEEA and partners aligned on strategies and messages	3%	Major (30%)	.9%
TOTAL			18.6%

Conclusions

NEEA and its partners ensured consensus among advocacy organizations in support of the proposed standards.

A 2019 study sponsored by NEEA addressed concerns from stakeholders and was cited by DOE in its Final Rule.



The evaluation estimates that the total share of savings influenced by NEEA and its partners' activities is **18.6%**.

Thank You!

Meghan Bean

mbean@neea.org





Codes Assumptions Review



Background

Total Regional Savings

$$\text{Total Regional Savings} = \text{Savings Rate} \times \% \text{ Market Adoption} \times \text{New Construction Completed}$$

- Inform Program Strategy
- Regional Tracking/Planning Metric
- Report as Power Plan Savings for codes approved after the Plan was developed

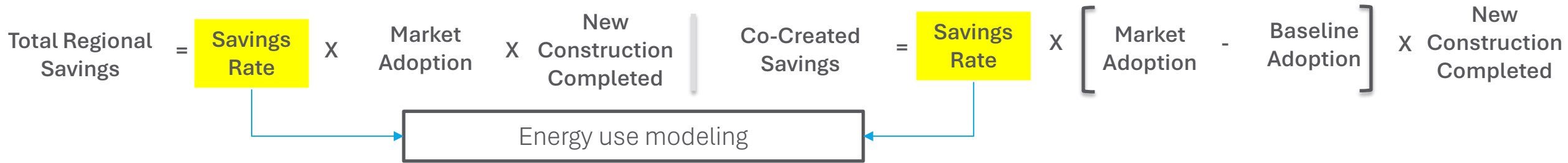
Co-Created Savings

$$\text{Co-Created Savings} = \text{Savings Rate} \times \left[\% \text{ Market Adoption} - \text{Baseline Adoption} \right] \times \text{New Construction Completed}$$

- Inform Program Strategy
- NEEA's Tracking/Planning Metric (feeds into Business Plan)
- Reported as Net Market Effects to Funders after Removing estimate of Local Programs



Savings Rate

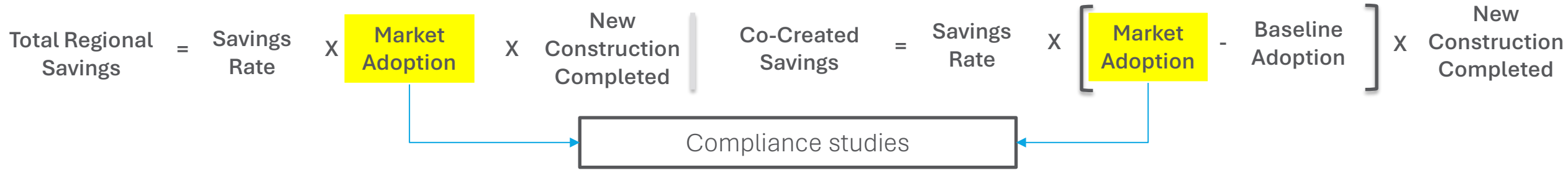


Current Analysis

State	Code	Sector	Update	Timeline
WA	2015, 2018 & 2021 WSEC	Res	Ecotope is running analysis using REEDR and SEEM for the 2021 WSEC; Possible review of adjustments to 2018 WSEC savings rate.	Q1 2025
	2021 WSEC	Com	NEEA will conduct analysis after amendments finalizes	Expected in 2025
	All		NEEA is analyzing data from the WA compliance tool to support updates to fuel selection mix. The review will check the fuel selection assumption updates.	TBD
OR	2023 Oregon Residential Specialty Code	Res	Ecotope is running analysis using REEDR.	Q1 2025
	2024 Oregon Energy Efficiency Specialty Code	Com	NEEA is assessing whether the amendments require adjustments from PNNL's savings analysis of ASHRAE 90.1-2022.	Expected in 2025
MT	2021 IECC with MT Amendments	Res	NEEA is pulling together PNNL analysis, analysis will be reviewed prior to reporting savings	Q1 2025
		Com	NEEA is reviewing how amendments currently under consideration will affect the savings rate analysis	Q1 2025



Market Adoption

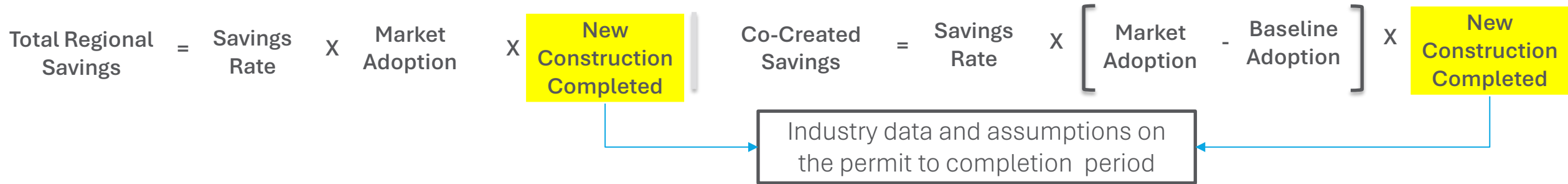


Current Analysis

State	Code	Sector	Update	Timeline
ID	IECC 2018 with Idaho Amendments	Res	Available on NEEA.org	July 2024
OR	2021 Oregon Residential Specialty Code	Res	NEEA is completing its code compliance study.	Q1 2025
MT	2018/2021 IECC with MT Amendments	Res	NEEA is completing its code compliance study.	Q1 2025



New Construction



Current Analysis

State	Code	Sector	Update	Timeline
All	All	Res	<p>NEEA is reviewing other datasets to check or inform its estimate single-family & low-rise multifamily new construction by state.</p> <p>What other datasets could NEEA use to check or inform the lag time from permit start to completion and how it could vary by state.</p>	TBD
All	All	Com	NEEA is reviewing is new datasets are available to estimate permit to completion.	TBD



Natural Market Baseline

$$\text{Total Regional Savings} = \text{Savings Rate} \times \text{Market Adoption} \times \text{New Construction Completed} \quad | \quad \text{Co-Created Savings} = \text{Savings Rate} \times \left[\text{Market Adoption} - \text{Baseline Adoption} \right] \times \text{New Construction Completed}$$

Current Assumption:

Codes would be 3 code cycles behind without the work of NEEA and its partners. (NEEA reports codes Co-Created Savings for 10 years)

- Few-to-no market actors were making energy efficiency code proposal.
- Above code Market Transformation programs were influencing codes.
- Long-term nature of NEEA's work meant comments from one period could influence future codes.
- A simplifying assumption was a cost-effective and reasonable approach to account for influence on codes.

NEEA is contracting a third-party to determine if this assumption is still reasonable.





Codes Natural Market Baseline Review

- NEEA's codes baseline approach was developed with CEAC in 2014
- A lot has changed since then
 - More parties representing a broader range of interests
 - Other factors driving efficiency (for example, state-level carbon reduction goals)
- Is NEEA's current approach still the most reasonable way to develop naturally occurring baselines for codes in the Northwest?



Research Context

- Requires an assessment of how the code development and adoption process has evolved in the Northwest states over the last ~10 years
- Should also consider what code development and adoption processes look like without the involvement of efficiency advocates like NEEA



Research Questions

- Is tracking 100% of the *Total Regional Savings as Co-Created Savings* for 10 years still the most reasonable way to develop the *Natural Market Baseline* for codes?
- If not, how should NEEA update its baseline and/or other assumptions to more accurately capture NEEA and its partners' influence on code changes in the Northwest?
- Is it appropriate to apply the same approach to all states in the Northwest and to both the residential and commercial sectors?



Timeline

- **December 2024:** Project kickoff
- **December 2024–March 2025:** Data collection & analysis
- **March 2025:** Overview of preliminary findings presented to CEAC for discussion
- **April 2025:** Final report
- **May 2025:** Report findings and implications presented to CEAC



Committee Questions

1. What questions or feedback do you have about the process and/or scope?
2. Are you supportive of the scope?



Market Research and Evaluation (MRE) Update

2024 Q3

Market Research & Evaluation Quarterly Newsletter

WHAT'S NEW:



Welcome to another issue of NEEA's Market Research and Evaluation quarterly newsletter!

Thank you for taking time to read over the team's plans for the fourth quarter. The end of the year is busy, with at least 15 studies in the field. Seven others are wrapping up and anticipating final reports. Evaluations are being fielded across nearly all of NEEA's Product Groups, including Market Progress Evaluation Reports (MPERs) for NEEA's two commercial HVAC programs, Luminaire Level Lighting Controls, Extended Motor Products and a few other programs. There are also a few market research efforts underway, including research into the market for agricultural pumps, a study of consumer use and attitudes toward connected consumer products, and research with home energy raters. These market research efforts deliver real time market insights that help develop strategy for new product markets or new applications of current products into NEEA's Market Transformation programs.

And finally, NEEA just launched a research project to compare and contrast market attributes across the region's rural, suburban, and urban areas to begin to understand whether and where there might be opportunities to be more equitable in the delivery of benefits of market transformation. The team is enlivened by the variety of research and evaluation topics being investigated to support the alliance's important work.

Thank you for your partnership, and please be in touch with your ideas and questions. Enjoy the fall!

~ Amy Webb, Sr. Manager, Market Research & Evaluation ~

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At a Glance

MARKET RESEARCH & EVALUATION PROJECTS

Regional Studies

Integrated Systems

Products

		PLANNING*	FIELDING*	REPORTING*
Understanding Equity Implications of Market Transformation in Rural Areas			✓	
Efficient Fans: <i>Fan Manufacturer Representative and Specifier Market Research</i>			✓	
Efficient Rooftop Units: <i>Market Progress Evaluation Report #1</i>			✓	
High-Performance HVAC: <i>Market Progress Evaluation Report #1</i>			✓	
Extended Motor Products: <i>Market Progress Evaluation Report #1</i>			✓	
Extended Motor Products: <i>Agricultural Pumps Market Research</i>			✓	
Luminaire Level Lighting Controls: <i>Market Progress Evaluation Report #3</i>			✓	
Lighting Strategy: <i>Exterior Luminaire Level Lighting Controls in Parking Lots</i>			✓	
High-Performance Windows: <i>ENERGY STAR Influence Study</i>				✓
Retail Product Portfolio: <i>Market Progress Evaluation Report #3</i>		✓		
Retail Product Portfolio: <i>Connected Consumer Products Market Research</i>			✓	
Heat Pump Water Heaters: <i>Installer Call Back Research</i>			✓	
Advanced Commercial Gas Water Heaters: <i>Market Research on Existing Water Heaters in Select Commercial Buildings</i>				✓
Efficient Gas Water Heaters: <i>Condensing Gas Water Heater Qualitative Market Research</i>				✓

DUAL FUEL (Electric & Natural Gas) PROJECTS:



NATURAL GAS PROJECTS:



*PLANNING: MRE projects from inception through proposal selection

*FIELDING: MRE projects from kick-off through the completion of field work

*REPORTING: MRE projects in the analysis/synthesis stage through report posting



At a Glance

MARKET RESEARCH & EVALUATION PROJECTS

Codes, Standards, New Construction

Long-Term Monitoring & Tracking

		PLANNING*	FIELDING*	REPORTING*
Standards: <i>Battery Chargers Standard Evaluation</i>			✓	
Standards: <i>Portable AC and Air Compressor Standard Evaluation</i>			✓	
Codes: <i>Codes Savings Baseline and Key Assumptions Review</i>			✓	
Codes: <i>Market Progress Evaluation Report #6</i>			✓	
Codes: <i>Assessment of Alternative Approaches to Estimating NEEA's State Energy Codes Influence</i>				✓
Residential Codes: <i>Home Energy Raters Market Research</i>	 / 		✓	
Residential Codes: <i>Idaho Residential Code Compliance Evaluation</i>	 / 			✓
Residential Codes: <i>Montana Residential Code Compliance Evaluation</i>	 / 			✓
Residential Codes: <i>Oregon Residential Code Compliance Evaluation</i>	 / 		✓	
Commercial Codes: <i>Idaho Commercial New Construction Code Compliance Evaluation</i>			✓	
Commercial Codes: <i>Montana Commercial New Construction Code Compliance Evaluation</i>				✓
Ductless Heat Pump Long-term Monitoring and Tracking, Year 3			✓	

DUAL FUEL (Electric & Natural Gas) PROJECTS:  / 

NATURAL GAS PROJECTS: 

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*Extended Motor Products
Agricultural Pumps Market
Research*

*Ductless Heat Pumps
Longterm Monitoring &
Tracking, 3rd Study*



*Regional Energy Efficiency
Equity (Market
Characterization) Research*

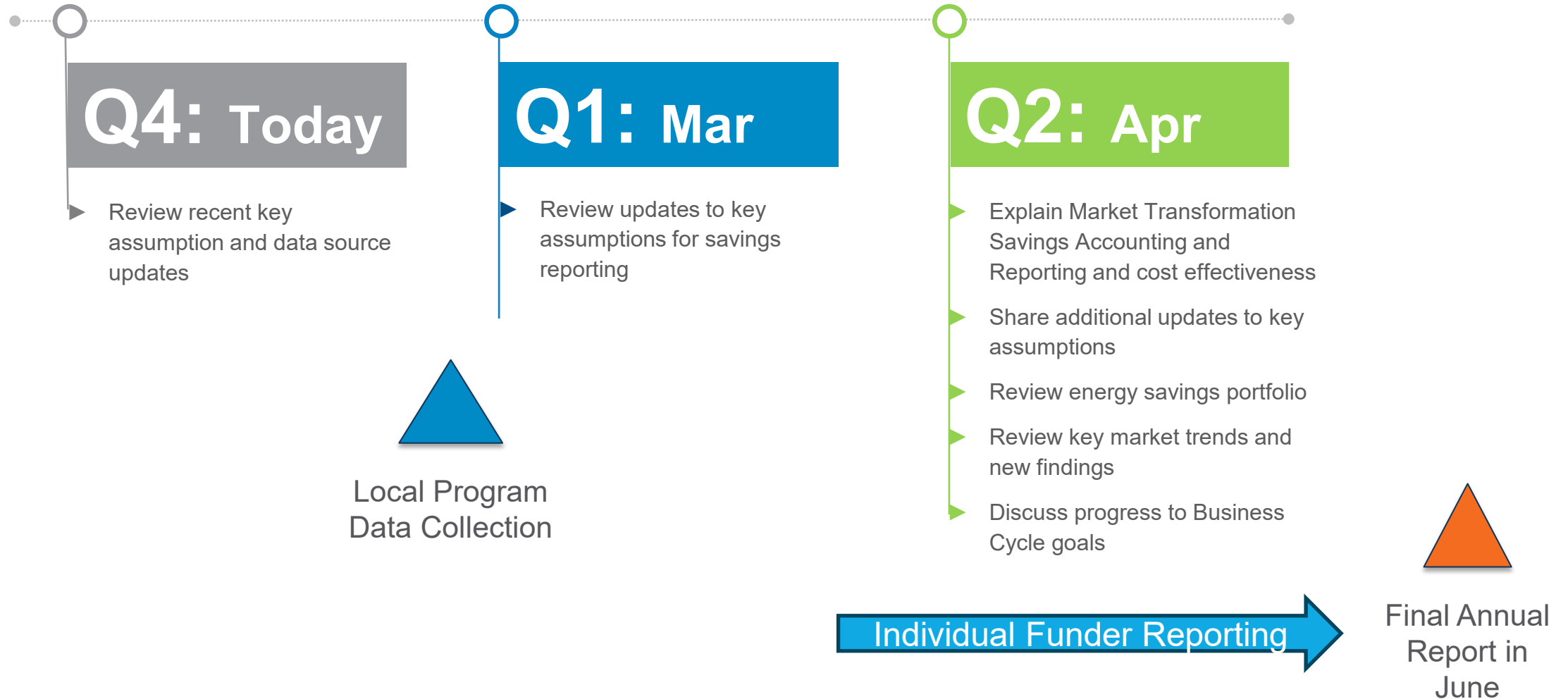
Kickoff for Annual Reporting

Objectives

- ❑ Inform about the Annual Reporting timeline



Annual Reporting Process and Engagement with CEAC





NEEA's Annual Local Programs Survey

- NEEA requests locally-claimed units to avoid double counting
- Respondents can either:
 - Fill in excel-based survey template, or;
 - Provide raw data of incentive records

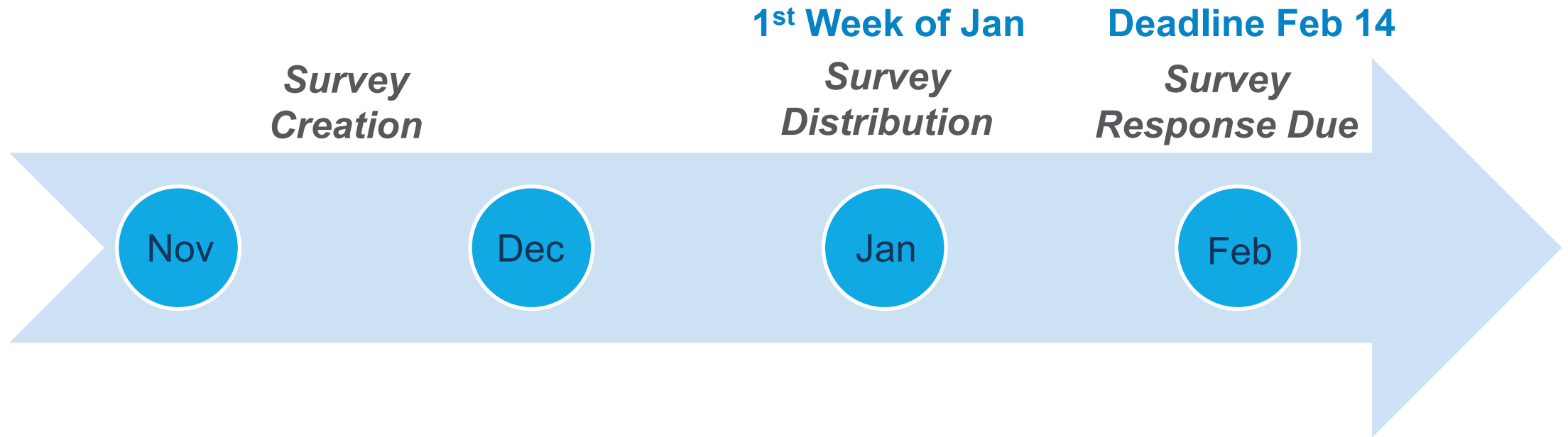
Survey Example:

Product	Channel	Measure Description	2024 Locally Incentivized Units	Comments	Savings Rate Used If available (kWh/Unit)	2024 Incentive Costs (Approx. \$ per unit or Total \$)
Freezers	Retail	Any Energy Efficient Freezer (Total)				
		ENERGY STAR v5 (Total)				
		Compact (<=13.5 Cubic Feet) (CEE Tier 1) Standard (CEE Tier 1)				
Manufactured Homes	Homes	Northwest Energy Efficient Manufactured Home (NEEM 1.1)				
		Northwest Energy Efficient Manufactured Home (NEEM Plus)				

Send questions/requests to Ben Spearing: bspearing@neea.org



Local Programs Survey Timeline





Questions?



Wrap Up



Meeting Wrap-up

- Public Comment?
- Upcoming Meetings:
 - March 6, 2025
- Feedback:
 - Overall
 - Agenda
 - Packet Materials
 - What went well?
 - What needs work?

