Cost Effectiveness and Evaluation Advisory Committee Meeting

DATE: November 4, 2024

TIME: 1:00PM – 3:30PM

LOCATION: **Microsoft Teams**
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AGENDA

TIME	TOPIC	PRESENTER(S)	Electric/ Gas/Both	Link or Page
1:00PM (15 min)	**Welcome/Agenda Review** 1. Agenda check 2. Announcements	Jonathan Belais, NEEA Staff		1
1:15 (40 min)	**Key Inputs and Assumption Updates** NEEA staff will provide a brief presentation and discussion of the following updates: • Ductless heat pumps displacing electric forced air furnace savings rates • Consumer Gas Furnace federal standard evaluation NEEA staff will also answer questions on other updates provided in the meeting packet as requested. Objective: TBD	Tim Runyan Meghan Bean, NEEA Staff	Both	3
1:55 (40 min)	**State Energy Code Baseline and Key Assumption Review** NEEA staff will review current approach and the process for baseline review and solicit feedback: 1. What questions or feedback do you have about the process and/or scope? 2. Are you supportive of the scope?	Christina Steinhoff, Meghan Bean, and Jonathan Belais	Both	9

TIME	TOPIC	PRESENTER(S)	Electric/ Gas/Both	Link or Page
	Objective: Inform and solicit feedback.			
2:35 (5 min)	**BREAK**			
2:40 (30 min)	**MRE Update** NEEA staff will provide a brief overview and answer any questions regarding the upcoming market research and evaluation activities outlined in the quarterly newsletter. Objective: Committee awareness of market research and evaluation activities	Amy Webb, NEEA Staff	Both	16
3:10 (15 min)	**Kickoff for Annual Reporting Process** Reminders about annual local programs survey and high-level preview of the annual reporting process. Objective: Prepare committee for annual local programs survey and annual reporting in Q1	Ryan Brown, NEEA Staff	**Both**	
3:25 (5 min)	**Wrap up**			

Memorandum

November 4, 2024

TO: Cost Effectiveness Advisory Committee

FROM: Ryan Brown, Manager, Planning and Analysis, NEEA

SUBJECT: Key Inputs and Assumptions Quarterly Update

Background on this standing agenda item:

The Cost Effectiveness and Evaluation Advisory Committee (CEAC) primary functions[1] include:

1. Review and advise regarding NEEA cost-effectiveness and savings information to inform annual reporting, and
2. Review and advise regarding market transformation cost and savings measurement and estimation methods.

NEEA staff provide various touchpoints for committee members throughout the year to support the committee in their execution of these charter objectives.

NEEA maintains a system of documentation and communication that includes three primary means for committee members to access documentation: methodology documents posted to a funder portal via neea.org[2], data provided in funder reports, and meeting materials and presentation content at each quarterly CEAC meeting (Figure 1).

[1] In addition to the two responsibilities listed above there are 3 more in the charter:
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.

[2] Link to the funder portal: https://neea.org/portal/sign-in

Figure 1: System of Documentation for Key Inputs and Assumptions

Funder Portal neea.org	Funder Reports Emailed Directly	CEAC Meeting Materials Emailed in Packet
Updated in April	*Updated Q1/Q2, upon request*	*Updated Quarterly*
Data Sources List of data sources NEEA uses to estimate savings & cost effectiveness and explanation of approach	**Annual Report** Memo summarizing annual savings results and market updates	**Annual Summary** Memo summarizing portfolio savings & cost effectiveness results as well as program updates.
Cost Effectiveness Table ProCost Inputs for programs in Market Development	**Customized Workbook** Workbook with annual savings values, variance summaries, methodology descriptions, measure-level units and other key assumptions specific to the individual funder requests.	**Key Assumptions Update** Updates to key assumptions (baselines, savings rates, units estimates, etc.), along with contact information for follow-up questions.
Methodology Documentation Report on energy consumption calculations, data sources and technical assumptions		**Presentations** Slides describing results & updates to inputs used in NEEA's savings and cost effectiveness analyses.
Operational Guidelines Overview on energy savings & cost effectiveness calcs		

Updates for committee review this quarter:

For the Q4 CEAC meeting NEEA is presenting the following updates for the committee's consideration. Please come to the meeting prepared to ask clarifying questions and advise NEEA on any recommended improvements you would like to share.

- Ductless Heat Pumps displacing electric forced air furnace heating
  - NEEA is seeking agreement or feedback on staff's proposal to not update to the recently updated Regional Technical Forum savings rates due to a misalignment of the measure definition we are using in our units accounting method.
- Products: Standards - Non-Weatherized and Mobile Home Gas Furnaces
  - NEEA staff will present the findings from Michaels Energy's recent evaluation of NEEA and its partners' work on the federal standard for Non-Weatherized and Mobile Home Gas. This portion of the agenda is intended to be informational for the committee to better understand NEEA standards evaluations and how the results of this particular one inform the savings NEEA will track.
- Residential and Commercial New Construction (Electric and Natural Gas)
  - A summary of upcoming state code activity that are influencing NEEA's savings forecast is included below for informational purposes. Staff will not plan to discuss these during the Q4 CEAC meeting unless committee members have specific questions about the content.

Please continue reading for more details on these updates.

Ductless Heat Pumps

NEEA's market transformation program accelerated market acceptance and adoption of inverter-driven ductless heat pumps (DHPs) in electrically heated homes through establishing relationships with manufacturers, distributors, and retailers to enhance product design and availability. NEEA formally began its program in 2008 with a large-scale pilot project to demonstrate the product and assess its performance in the field. By 2022, more than 150,000 DHPs have been installed. NEEA is now monitoring the diffusion in the market. NEEA is using learnings from this program to support new advance heat pump technology and influence codes.

Key Assumptions Update

In September 2024, the Regional Technical Forum (RTF) released version 5.0 of the savings workbook for Residential Ductless Heat Pump for Forced Air Furnace for Single Family and Manufactured Homes measures. This revision incorporated findings from recent field studies conducted by Energy Trust of Oregon, Eugene Water and Electric Board and Bonneville Power Administration and led to a significant reduction in savings for both measures. These studies assessed pre and post energy use based on all observed installation configurations for DHPs, including large multi-head installations as well as installations outside of the primary living space of the home.

NEEA's Market Transformation theory and measure definition is based on displacement of electric resistance heat in the primary living space. To estimate this in calculations of reportable market transformation savings, NEEA performs regular installer surveys to inform and maintain assumptions about the percentage of DHP installations that align with our program definitions[3]. This method allows NEEA to account for the factors that led to this decrease in the RTF measure savings through removing units in our annual accounting. As such we intend to continue to use the previous UES values for our measures that were based primarily on systems with single indoor heads and more optimal installation locations rather than update to the values in revision 5.0.

For more information contact Tim Runyan, Senior Market Analyst, at *trunyan@neea.org.*

[3] NEEA is launching a third Long Term Monitoring and Tracking study in 2024 that will include an updated installer survey and provide another update to the market estimates by Q2 2025.

Products: Standards

NEEA works on standards and test procedures to set the floor for efficiency and drive the motivation for innovation of new products. NEEA sometimes supports standards as part of its market transformation strategy for a product. In other cases, NEEA opportunistically supports standards for products that are not part of an MT program because NEEA has market experience, relationships, technical expertise, and and/or data to influence the standard. NEEA refers to these as "other standards."

Key Assumptions Update

NEEA staff will present the findings from Michaels Energy's recent evaluation of NEEA and its partners' work on the federal standard for Non-Weatherized and Mobile Home Gas Furnaces[4]. This portion of the agenda is intended to be informational for the committee to better understand NEEA standards evaluations and how the results of this particular one inform the savings NEEA will track.

The Non-Weatherized and Mobile Home Gas Furnaces standard is classified as an "other standard" because NEEA does not have a full market transformation initiative for gas furnaces and therefore does not have existing program logic or a naturally occurring baseline for these products. Thus, Michaels Energy reviewed documents and conducted interviews with key stakeholders to inform two assessments: 1) a qualitative assessment of NEEA and its partners' influence on the federal standard for Non-Weatherized and Mobile Home Gas Furnaces, and 2) a quantitative estimate of the share of savings resulting from the standard that were influenced by the combined efforts of NEEA and its partners.

Michaels Energy reported that collaboration among NEEA and its partners was effective at ensuring consensus and alignment among organizations that supported the proposed standard. Further, Michaels Energy found that comments made by NEEA during the standard setting process were influential on the Final Rule. Michaels Energy estimated that NEEA and its partners influenced 18.6% of the total energy savings for the federal standard.

For more information on Federal Standards contact Evan Hatteberg, Senior Technical Market Analyst, at ehatteberg@neea.org

[4] https://neea.org/resources/non-weatherized-and-mobile-home-gas-furnaces-standard-evaluation

Residential and Commercial New Construction

NEEA supports advancement in new construction practices through its work on emerging technology, market transformation initiatives, code proposals, and training and education. The region has adopted six new residential codes and five new commercial codes since 2020.

NEEA conducts energy use modeling and code compliance studies to assess regional effects. Table 1 provides current building energy codes and their effective dates for each state. Table 2 provides any updates to current codes since they went into effect, NEEA's upcoming/in progress analyses, and NEEA's estimated effective date for the next code cycle.

Table 1. Current Commercial and Residential Building Energy Code by State

State	Sector	Code Version	Effective Date
Idaho	Commercial	2018 IECC (International Energy Conservation Code)	1/1/2021
	Residential	2018 IECC with weakening amendments	1/1/2021
Montana	Commercial	2021 IECC	9/8/2022
	Residential	2021 IECC with weakening amendments	9/8/2022
Oregon	Commercial	2021 Oregon Energy Efficiency Specialty Code (OEESC) (ASHRAE 90.1-2019)	10/1/2021
	Residential	2023 Oregon Residential Specialty Code (ORSC) (custom state-developed code)	4/1/2024
Washington	Commercial	2021 Washington State Energy Code (WSEC) (2021 IECC with strengthening amendments)	3/15/2024
	Residential	2021 WSEC (2021 IECC with strengthening amendments)	3/15/2024

Status of Upcoming Code Changes

The following is a summary of upcoming state code activities and NEEA staff's expectations of the timing of these updates. This is provided to the committee for informational purposes because these upcoming code activities will impact NEEA's forecasted savings from codes. NEEA is not seeking any specific review or input on this at this time. Staff will not plan to discuss these during the Q4 CEAC meeting unless committee members have specific questions about the content.

Table 2. Energy Codes Update by State

State	Updates
Idaho	• At its June 18, 2024 meeting, the Idaho Building Code Board voted unanimously to consider 2024 IECC rather than 2021 IECC. • NEEA is anticipating Idaho to adopt 2024 IECC in 2026 and is working on updating the savings forecast.
Montana	

	• In Q2 2024, the Montana Building Code Council voted to approve proposed amendments to the state's current energy code, 2021 IECC. NEEA is reviewing how the amendment might affect the current 2021 IECC with MT amendments. • NEEA is anticipating Montana to adopt 2024 IECC in 2025.
Oregon	• 2024 OEESC (ASHRAE 90.1-2022 with amendments) adoption has been delayed from 10/1/2024 to 1/1/2025 due to COMcheck software quality issues. • The 2023 ORSC went into full effect on April 1, 2024. Savings rates analysis is in progress and the results of the analysis will be available in Q1 2025. • NEEA is anticipating Oregon to adopt 2026 OEESC and 2026 ORSC in 2026.
Washington	• 2021 WSEC-C went into effect in March 2024, with other more substantive proposed changes in process. NEEA will conduct savings rates analysis in 2025 when the changes have been finalized. • 2021 WSEC-R also went into effect in March 2024 and more significant code changes or interpretations have been requested since. NEEA plans to start conducting a Residential code compliance in late 2025 and assess the residential fuel split between gas and electric. • The Washington State Building Code Council (SBCC) began 2024 WSEC-C development process Q1 2024. SBCC is expected to solicit Residential technical advisory group (TAG) members to accept code change proposals for 2024 WSEC-R in early 2025. NEEA is anticipating Washington to adopt 2024 WSEC in 2026.

For more information on Commercial New Construction contact Kathryn Bae, Principal Market Analyst, at kbae@neea.org

For more information on Residential New Construction contact Christina Steinhoff, Principal Planning Analyst, at csteinhoff@neea.org

Memorandum – *Agenda item*

November 4, 2024

TO: Cost-Effectiveness and Evaluation Advisory Committee

FROM: Meghan Bean, Principal Lead, MRE; Chris Cardiel, Sr. MRE Scientist

SUBJECT: Third-Party Review of NEEA Code Baseline and Assumptions

NEEA plans to engage a third-party contractor to review the baseline and other assumptions that inform its energy code savings calculations. This work is occurring as part of NEEA's process to continually assess and seek methodological refinement to the inputs for its savings calculations. The baseline review will build on findings and recommendations from the most recent Codes Market Progress Evaluation Report #5, NMR Group's Independent Assessment of NEEA Approaches to Estimating Influence Over State Energy Code, and recent discussions with the Cost-Effectiveness and Evaluation Advisory Committee (CEAC) on July 31, 2024 and August 28, 2024 about the evaluation methodology NEEA employs to assess influence on advancing energy codes. Please see the *Final NEEA staff recommendation regarding influence evaluation approach for NEEA's state energy codes work starting in 2025* memo included in this packet for more information on prior CEAC discussions.

NEEA staff will provide an overview of assumptions to be reviewed at the November 4, 2024 CEAC meeting. The remainder of this memo provides a high-level overview of the project's research objectives and an estimated timeline for the project.

Research Objectives

Currently, NEEA assumes that energy code updates in the Northwest and at the national level (International Energy Conservation Code, IECC) occur approximately 10 years (2-3 code cycles) earlier than they would have without NEEA and its partners' involvement. To quantify this in the *Natural Market Baseline*, NEEA reports 100% of the *Total Regional Savings* as *Co-Created Savings* for 10 years after construction starts under a new code. NEEA applies this approach to all Northwest states and to both the residential and commercial sectors.[5] NEEA applies a compliance factor to savings calculations (that is, savings are only tracked for the proportion of homes estimated to comply statewide) and only tracks savings for new construction buildings permitted and built under the new code. NEEA's approach does not currently include an additional adjustment factor to account for NEEA and its partners' influence on a specific code cycle.

This overall approach was approved by CEAC in 2014. However, NEEA believes that the code landscape has changed considerably since that time. For example, there are many more parties representing a broader array of interests involved in the code development and adoption process, and states' code processes and priorities are likely influenced by new factors, such as state-level carbon reduction goals. Therefore, NEEA will engage a third-party contractor to assess whether tracking 100% of the *Total Regional Savings* as *Co-Created Savings* for 10 years after construction starts without applying an additional adjustment factor is still the most reasonable way to calculate code-related savings. Further, NEEA would like the third-party contractor to assess whether it is appropriate to apply the same approach to all states in the Northwest and to both the residential

[5] This approach does not apply to NEEA's 2021 Power Plan Savings estimates. For reporting Power Plan savings, NEEA uses the baseline assumptions from the Northwest Power and Conservation Council's 2021 Power Plan.

and commercial sectors. NEEA would like the review to result in a recommended approach or adjustments to NEEA's current approach that are transparent, defensible, and can be conducted within the constraints of NEEA's current savings reporting timeline.

NEEA staff are in the process of developing the specific research questions to be included in the Request for Proposals (RFP) for this project and will provide a more detailed overview of the research questions at the November 4, 2024 CEAC meeting.

Estimated Timeline

October – NEEA is developing the RFP, which will be sent to approximately five firms with prior experience with both NEEA's codes work and the national code landscape.

November 4, 2024 – NEEA staff will share the assumptions under review with CEAC.

November 2024 – NEEA will receive and review proposals from bidders and award the contract.

December 2024 – The project will kick off and the selected contractor will begin data collection/analysis.

March 2025 – NEEA staff and staff from the selected contractor will share preliminary findings for discussion with CEAC.

April 2025 – The report will be finalized.

May 2025 – NEEA staff will share the report findings and implications for savings calculations with CEAC.

Memorandum

November 4, 2024

TO: Cost-effectiveness and Evaluation Advisory Committee

FROM: Chris Cardiel, Sr. MRE Scientist; Meghan Bean, Principal Lead, MRE

SUBJECT: Final NEEA staff recommendation regarding influence evaluation approach for NEEA's state energy codes work starting in 2025

On July 31, 2024, the Cost Effective and Evaluation Advisory Committee (CEAC) met to learn more about and provide feedback on NMR Group's initial assessment of the evaluation methodology employed to assess NEEA's influence on advancing energy codes. At the meeting, NMR provided a brief overview of their initial assessment with an opportunity for the Committee to seek clarification; NMR's interim memo was also distributed to Committee members for review and reference prior to the July 31 meeting. NEEA Staff took feedback and suggestions shared by Committee members during the July 31 meeting into account in determining a recommended organizational response to the recommendations made by NMR as a result of their assessment. During the Q3 CEAC meeting on August 28, 2024, NEEA Staff shared a draft version of their recommended organizational response to NMR's recommendations with Committee members, with the goal of seeking Committee feedback on NEEA's proposed approach to incorporating NMR recommendations into future state energy code influence evaluation studies. The present memo articulates NEEA Staff's final response to NMR's recommendations; as no material defects were noted during review by the Committee or internal NEEA stakeholders, these final responses very closely align with the draft recommendations shared during the August 28 meeting. NEEA Staff gratefully acknowledge the input and insights offered by Committee members, both during the July 31 and August 28 meetings and through other discussion forums.

NEEA Staff's final recommendation:

NEEA Staff propose adopting NMR's recommendations as described in their NEEA Approaches to Estimating Influence Over State Energy Codes final report. The following pages of the present memorandum outline each of NMR's four recommendations, followed by NEEA staff's planned approaches for incorporating the recommendations into organizational evaluation practice.

NMR Recommendation 1: ***In Market Progress Evaluation Reports (MPERs), conduct deeper, state-specific qualitative research to describe NEEA's work and its collaborations with partners to improve code outcomes.***

NEEA engages third-party evaluation contractors to conduct regular MPERs to inform a NEEA team's strategy for a given initiative and measure progress toward the outcomes documented in NEEA's program theory and logic models (PTLM). MPERs are designed to meet the research needs of a NEEA team and the

scope of each MPER is typically driven by the initiative's PTLM and any additional objectives that are important to the NEEA team and participants (for example., trainee satisfaction with NEEA-sponsored code trainings). Energy code development, adoption, and enforcement are complex, multi-stakeholder processes. Outcomes are determined by numerous factors and the evidentiary standard for assessing influence should be high when reporting a high level of impact on outcomes. Accordingly, the NMR team sees opportunities for NEEA to increase the extent to which it documents its role in those outcomes. NEEA should adapt the current codes MPERs to fully document its unique and specific role in each state through qualitative data collection performed longitudinally, with a focus on measuring progress against NEEA's PTLM and confirming the effects of NEEA's and its partners' own contributions to national and state-level code improvements. The goal of this work is not to establish an attribution score to quantify NEEA's efforts relative to those of its partners or other advocacy groups but to accurately characterize what role NEEA served in the partnership—influencer, facilitator, mediator—and whether NEEA's partnership included all influential actors in the process. This will help gather and document evidence in support of NEEA's efforts to influence the code update process. Some of the key questions to answer in codes influence research include:

- What other stakeholders contribute to code changes? If they are not actively part of NEEA partnerships, what role do they play relative to NEEA and its partners?
- Have stakeholders entered or exited this space, changing NEEA's role or relative influence?
- How comprehensive and impactful are NEEA's partnerships in each state and code cycle after characterizing the full array of stakeholders?
- How do other stakeholders, including NEEA's partners, describe and assess the involvement and contributions of NEEA to code improvements over time?
- What factors have changed in the policy or regulatory landscapes surrounding code development and adoption, and how has NEEA responded to or helped influence those changes?

Current codes MPER data collection covers related topics and addresses these questions in some ways. Ensuring that future MPERs include an additional focus on documenting the extent and nature of NEEA's influence will help confirm the legitimacy of NEEA's approach to reporting savings (in collaboration with its partners) from code updates. In addition, documenting the presence and roles of other stakeholders who have engaged in code development processes with NEEA over time offers opportunities to trace impacts over time, including how NEEA's influence may have changed over time.

NEEA Staff Response: ***NEEA accepts this recommendation in full and intends to incorporate evaluation methodologies that support deeper qualitative assessment of NEEA's collaborative influence on energy code outcomes at the federal and state level. Building on Codes MPER #5 (published in Q2 2024) and continuing with Codes MPER #6 (kicked off in Q4 2024), NEEA's Codes MPERs will include qualitative data collection activities and analyses that will provide rich qualitative description of the influence demonstrated by NEEA and its partners during current codes cycles.***

NMR Recommendation #2: ***Given the limited scope of this evaluation, the NMR team does not have evidence to suggest that NEEA should develop and apply a downward adjustment factor to the co-***

created savings it reports from its work with partners to influence code update cycles, though future evaluation research could suggest the need for such an adjustment.

As previously noted, this research effort focused on how NEEA assesses its influence on code outcomes, not specifically how it calculates savings from code cycle updates. Accordingly, this study did not assess the savings calculation approach sufficiently to suggest any specific adjustment factors beyond the strategies already used by NEEA to adjust reported savings. Based on our understanding of NEEA's codes work and NEEA's evaluation needs, this study does not specifically recommend that NEEA invest in evaluation to generate an adjustment factor for co-created savings or pursue strategies to further discount the amount of savings reported from a given code update cycle. It is possible that future MPERs, enhanced with some of the methodological recommendations outlined in this memo, could indicate that the influence of NEEA and partners on a particular code cycle does not match historical assumptions. In that case, it would be incumbent on NEEA to consider this evidence and consider an adjustment factor for reported savings.

NEEA Staff Response: ***NEEA accepts this recommendation in full, with no establishment of savings adjustment factor at present but remaining open to emergent evidence that may indicate increased value and feasibility of developing such a factor. NEEA will continue to (a) incorporate estimated code compliance rates as a decrementing factor when calculating savings associated with energy code activities and (b) conduct regular third-party reviews of its market baseline assumptions for residential and commercial energy codes, beginning with the Codes Savings Baseline and Assumptions Review kicking off in Q4 2024.***

NMR Recommendation #3: ***Create strategy plans for each state and code cycle as recommended in Codes MPER #5 and integrate their development and execution into the Codes PTLM.***

The recently published fifth Codes MPER reported the challenges of developing PIs for NEEA's work on codes, given its complexity and variability across states and code cycles. The MPER developed PIs for NEEA's code training efforts, where outcomes were straightforward to track over time. Developing state-specific plans, however, would make it more feasible to develop targeted PIs focused on state-level activities. These plans will also aid in longitudinal tracking of NEEA-supported code amendments that may not have been adopted during the code cycle in which they were proposed. As a part of developing state-level plans, NMR suggests the following:

- ***Edit the PTLM to include developing state-level plans as a NEEA activity, also adding relevant outcomes and, ideally, PIs.***
- ***Track the portion of adopted NEEA code proposals as a PI to supplement data collected in interviews.*** This was a component of the alternate approaches that was not deemed robust enough to be a stand-alone metric of NEEA influence, but it would add to the body of evidence related to NEEA's codes contributions.
- ***Where feasible, ensure all PIs from state plans are tracked longitudinally and are easily accessible in reports.*** Depending on the granularity of any new PIs for code development and adoption, there will be opportunities to track PIs longitudinally for each state. These PIs should be tracked and reported in future MPERs to highlight NEEA's impacts over time. Some potential outcomes or PIs

may not be longitudinal in nature, representing specific interventions unique to a given state and code cycle. MPERs can serve as opportunities to document such one-off efforts.

NEEA Staff Response: ***NEEA accepts this recommendation in full; the NEEA Codes team has already begun developing state- and cycle-specific strategy plans to align market intervention activities and intended outcomes as articulated in the PTLM. The Codes team will continue to develop these strategy plans for future state and federal code cycles, and NEEA's Market Research and Evaluation team will treat these plans (once developed) as key sources of programmatic information for future Codes MPERs, beginning with the current Codes MPER #6 to the extent feasible based on plan development progress.***

NMR Recommendation #4: ***Use MPERs to document and highlight the story of NEEA's codes work, including historical context, collaborative approaches with co-created savings, and the rationales for NEEA's chosen codes activities.***

The interviews NMR conducted with NEEA staff were critical to this evaluation. Interviewees provided rich historical context and insight into how and why NEEA influences and assesses its impact on code outcomes. In comparing the findings from these interviews to some of the available evaluation reporting on NEEA codes work, we noted opportunities to communicate insights we gained through interviews in NEEA public reporting such that outside evaluators and stakeholders can more easily understand NEEA's approach. Codes MPERs are a logical place to deploy these narratives to contextualize MPER findings and make each document a standalone resource for those seeking to understand NEEA's codes work. This step does not guarantee that all reviewers will agree with NEEA's approach, but it will ensure there is greater understanding of that approach.

NMR would also add that many of these recommended evaluation steps would be useful to NEEA as it considers pathways to maintain or even increase its influence on code development and adoption outcomes. The data derived from these research activities can point to new opportunities in the code development space or highlight activities to de-emphasize moving forward if, for example, other stakeholders are filling data analysis roles for a certain measure type.

NEEA Staff Response: ***NEEA accepts this recommendation in full, in alignment with NMR's Overall Recommendation. As specified in the response to that recommendation, NEEA intends to leverage current and future Codes MPERs as a platform for increasingly rich qualitative documentation of the alliance's collaborative efforts to support federal and state-level energy code processes. In particular, per NMR's Supporting Recommendation #3, NEEA Staff intend to include interviews or other qualitative data collection activities with alliance staff and regional and national partners as a necessary component of current and future Codes MPERs, beginning with the current Codes MPER #6.***

Summary of NEEA Staff's Recommended Response to NMR Group's Recommendations

In sum, NEEA Staff accept in full the four recommendations provided by NMR Group. The resulting refinements to NEEA's programmatic and evaluative approach are intended to support a continued high degree of methodological rigor and defensibility of results, both as pertaining to the findings of evaluation

research (for example, MPERs) and regarding energy code baseline development. The summary of specific planned and underway adjustments to NEEA's programmatic and evaluative approach is as follows:

- Current and future Codes MPERs (beginning with Codes MPER #6, kicked off in Q4 2024) will incorporate a study objective focused on generating rich qualitative data regarding NEEA and partners' influence on energy codes outcomes at the federal and state levels.
- Current and future Codes MPERs (beginning with Codes MPER #6) will incorporate sampling techniques and study methods that facilitate the collection of qualitative data from NEEA staff and regional and national partners, with a specific focus on documenting and highlighting the historical context, collaborative nature, and ongoing rationale underlying NEEA's codes market education and influence strategy and efforts.
- The NEEA Codes team will continue its ongoing development of state- and cycle-specific strategy plans for the purposes of ensuring alignment between targeted market intervention activities, intended outcomes, and the PTLM. These strategy plans will also serve as the foundation for a portion of the analyses conducted in each future Codes MPER (beginning in full no later than Codes MPER #7, with partial incorporation possible in Codes MPER #6 depending on strategy plan readiness).
    - While the establishment of a default savings adjustment factor is not recommended by either NMR or NEEA Staff, NEEA is currently conducting a third-party assessment of market baseline assumptions and methodology associated with residential and commercial energy code. This Baseline Review will be kicked off in mid-Q4 2024; detailed information regarding the specific scope and objectives of the review is available in a separate memorandum included in this meeting packet.

Budgetary and Staffing Implications of NEEA Staff Recommendations

These adjustments to programmatic and evaluative practice are strongly aligned with NEEA's existing market transformation approach and largely leverage preexisting structures and systems. As a result, NEEA does not anticipate significant incremental costs associated with their implementation. NEEA Staff are committed to continuing to field methodologically rigorous MPERs assessing market progress relative to the Codes PTLM (including but not limited to assessing outcomes related to market influence) on a kickoff-to-kickoff cadence of approximately 18 months. Likewise, NEEA Staff will continue NEEA's current standard practice of monitoring savings baseline and modeling assumptions and seeking third-party review of such assumptions when warranted, either on the basis of changing market conditions or due to significant adjustments in approach. NEEA Staff also acknowledge the potential that opportunities for further methodological refinement may be identified in the future and are committed to diligently assessing both the dynamics of the regional energy codes market and NEEA's internal organizational structures and processes for such opportunities for ongoing improvement.

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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Questions about this report may be addressed to:

Amy Webb

Sr. Manager, Market Research & Evaluation

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At a Glance

MARKET RESEARCH & EVALUATION PROJECTS

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

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

	PLANNING*	FIELDING*	REPORTING*
Standards: *Battery Chargers Standard Evaluation*		✓	
Standards: *Portable AC and Air Compressor Standard Evaluation*		✓	
Codes: *Codes Savings Baseline and Key Assumptions Review*		✓	
Codes: *Market Progress Evaluation Report #6*		✓	
Codes: *Assessment of Alternative Approaches to Estimating NEEA's State Energy Codes Influence*			✓
Residential Codes: *Home Energy Raters Market Research*		✓	
Residential Codes: *Idaho Residential Code Compliance Evaluation*			✓
Residential Codes: *Montana Residential Code Compliance Evaluation*			✓
Residential Codes: *Oregon Residential Code Compliance Evaluation*		✓	
Commercial Codes: *Idaho Commercial New Construction Code Compliance Evaluation*		✓	
Commercial Codes: *Montana Commercial New Construction Code Compliance Evaluation*			✓

Long-Term Monitoring & Tracking

Ductless Heat Pump Long-term Monitoring and Tracking, Year 3		✓	

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

Understanding Equity Implications of Market Transformation in Rural Areas

FIELDING

NEEA contracted with a team led by LD Consulting to conduct a research project that will support NEEA's Cycle 7 (2025-2029) Business Plan goal to "advance the equitable distribution of benefits to Northwest customers through Market Transformation." The objective of the study is to contrast and compare characteristics of rural, suburban, and urban markets (such as consumer purchasing behaviors and spending patterns, energy burden, building stock, and workforce features) to identify market transformation strategies that will accelerate the delivery of program benefits to rural markets. The study will take a mixed method approach, beginning with an analysis of existing data resources to characterize consumer behavior and supply chain practices. Interviews with consumers and other market actors will explore themes uncovered in the quantitative analysis, with participants drawn from county clusters – a sample design that will derive insights through comparisons of consumers and supply chain market actors in similar locales. The study will include participatory approaches where research participants are invited to receive, verify and help contextualize findings. This project launched in August 2024, and a final report is expected by the end of the year.

MRE Scientist: Amy Webb
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Fan Manufacturer Representative and Specifier Market Research

Efficient Fans | **FIELDING**

NEEA is planning a market research study in support of continued refinement of the Efficient Fans program design and intervention strategy. The study will focus specifically on addressing the following objectives, which are liable to change prior to finalization:

- Identify and document firmographic information regarding (a) regionally active sales representative firms for 6–8 specific fan manufacturers identified through prior market research and evaluation studies as having particular relevance to Efficient Fans program efforts, and (b) regionally active specifiers of commercial and/or industrial fan systems.
- Identify and document key challenges and "pain points" encountered by manufacturer representatives and specifiers throughout the fan specification and selection process.
- Clarify fan system terminology preferred by and resonant among market actors.

Study methods are likely to include secondary research accompanied by primary data collection (e.g., in-depth interviews, electronically administered surveys) to seek input and insight from regionally active fan specifiers and manufacturer representatives. The project kickoff is anticipated in Q4 2024.

MRE Scientist: Chris Cardiel
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Market Progress Evaluation Report #1

Efficient Rooftop Units (RTU) | **FIELDING**

As of late 2022, NEEA's Efficient RTU program is actively working to transform the market for efficient RTUs in gas-heated commercial buildings across the region. This study will be the first evaluation of the program's Market Transformation efforts. The program's overarching objectives for the study are to:

- Provide timely and actionable formative evaluation findings and recommendations to enable continuous improvement of the program.
- Assess Market Transformation progress as measured by program Market Progress Indicators.
- Qualitatively assess program influence on observed market transformation.

NEEA contracted with Apex Analytics and NMR Group to conduct the evaluation. NEEA kicked off the Efficient RTU evaluation in June 2023. The evaluation team conducted focus groups with two small groups of commercial building decision makers (e.g., building owners, operators, and facilities managers); surveyed commercial building decision makers across the region; and interviewed individuals who have or have considered having an efficient RTU on their building. In Q3 2024, the evaluation team plans to conduct focused interviews with a small number of manufacturer representatives active in the Northwest RTU market. The evaluation team will also review NEEA documentation and materials related to identified market progress indicators.

This study is being conducted in close coordination with the Market Progress Evaluation Report (MPER) for the High-Performance HVAC program, which is also being completed by Apex Analytics and NMR Group. Coordination between these studies brings about several efficiencies, such as reducing the burden on the market actors recruited to participate in the research and streamlining NEEA staff time and other resources.

The evaluation will continue through winter 2024, with a final report anticipated in Q1 2025.

MRE Scientist: Kirstin Moreno
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Market Progress Evaluation Report #1

High-Performance HVAC | **FIELDING**

As of late 2022, NEEA's High-Performance HVAC program is intervening to transform the market for very high efficiency Dedicated Outside Air Systems (DOAS) for electrically heated commercial buildings across the region. This study will be the first evaluation of the program's Market Transformation efforts. The program's overarching objectives for the study are to:

- Provide timely and actionable formative evaluation findings and recommendations to enable continuous improvement of the program.
- Assess Market Transformation progress as measured by program Market Progress Indicators.
- Qualitatively assess program influence on observed market transformation.

NEEA contracted with Apex Analytics and NMR Group to conduct the evaluation. NEEA kicked off the High-Performance HVAC evaluation in July 2023. In Q2 2024, the evaluation team completed the analysis of HVAC system designer and manufacturer representative survey data. In Q3 2024 we will plan and facilitate the fourth of five Synthesis Sessions with NEEA High-Performance HVAC program staff regarding preliminary findings from these data collection activities and prepare for final activities supporting the assessment of the program's Market Progress Indicators. This includes the market actor interviews to address gaps in Market Progress Indicator (MPI) knowledge.

This study is being conducted in close coordination with the MPER for the Efficient RTU program, which is also being completed by Apex Analytics and NMR Group. Coordination between these studies brings about several efficiencies, such as reducing the burden on the market actors recruited to participate in the research and streamlining NEEA staff time and other resources.

The evaluation will be ongoing through fall 2024, with a final report anticipated in Q4 2024.

MRE Scientist: Kirstin Moreno
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Market Progress Evaluation Report #1

Extended Motor Products (XMP) | **FIELDING**

NEEA contracted with ADM Associates, Inc., to field the inaugural XMP Market Progress Evaluation Report (MPER), which serves as the first evaluation of the program's Market Transformation efforts. The program's overarching objectives for the study are to:

- Review the XMP Market Transformation Theory, Program Logic Model, and Market Progress Indicators (MPIs) to assess their clarity and alignment in conveying (1) the program's strategy and planned activities to overcome market barriers and drive market changes that will increase efficient clean-water pump and circulator adoption, and (2) NEEA's proposed approach for evaluating XMP market progress.
- Conduct the first year of tracking MPIs to lay the groundwork for year-over-year evaluation, and report progress on several near-term outcomes.

A project kick-off was held in January 2024, followed by sample development and instrument preparation. Data collection began in late Q1 2024 with interviews with NEEA XMP program staff, implementation contractors, and industry partners, continuing through Q2 and into Q3 2024 with the administration of surveys or interviews across multiple market actor groups (including pump and circulator manufacturers' representatives, distributors, specifiers, contractors and project owners). Data analysis is expected to begin in Q3 2024 and will continue through Q4 2024. A final report is anticipated in late Q4 2024.

MRE Scientist: Chris Cardiel
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Agricultural Pumps Market Research

Extended Motor Products (XMP) | **FIELDING**

In order to support ongoing program planning and opportunity assessment, NEEA intends to field a research study exploring the dynamics of the agricultural pump market across NEEA's four-state region. Specific study objectives of this study are as follows:

- Identify and prioritize agricultural market barriers to uptake of highly efficient pumps for irrigation purposes.
- Document market actor motivations and agricultural irrigation pump path-to-purchase.
- Assess the accuracy of key market projections documented in NEEA's 2013 Agricultural Irrigation Market Characterization, specifically as pertaining to regional irrigated agricultural acreage and market actor technology usage.

Study methods are likely to include secondary research accompanied by primary data collection (e.g., in-depth interviews, electronically administered surveys) to seek input and insight from professionals active in this market. An RFP is currently under development and is anticipated to be released in Q3 2024; the project kickoff is anticipated for early Q4 2024.

MRE Scientist: Chris Cardiel
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Market Progress Evaluation Report #3

Luminaire Level Lighting Controls (LLLC) | **FIELDING**

NEEA is planning to launch a third MPER for its LLLC program in Q3 2024. This study is crucial for tracking changes in the market that indicate whether the LLLC program is effective in overcoming identified market barriers. Interviews and surveys will be collected at the end of 2024 and into 2025 with stakeholders, manufacturers, installers, designers, architects, engineers, and decision makers to address the following objectives:

- Review and verify that the LLLC program has conducted the strategic activities described in its quarterly progress tracking documents and outlined in its logic model since the previous MPER;
- Track identified MPIs focused on measuring the reduction of identified market barriers and conduct year-over-year analyses when indicated, in order to report progress on several program outcomes predicted by the logic model; and
- Conduct market research to describe the rationale of buyers and sellers of LLLC that include it in their initial project plans, but do not follow through with the sale.

A final report is anticipated in Q2 2025.

MRE Scientist: Zdanna King
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Exterior Luminaire Level Lighting Controls in Parking Lots

Lighting Strategy | **FIELDING**

NEEA is considering adding exterior LLLC in parking lots to the LLLC program. To support this, NEEA is planning to conduct a study that will:

- Determine and describe all items that trigger a parking lot lighting replacement or upgrade decision, as well as what factors go into the upgrade and/or replacement decision, so that NEEA can assess alignment of exterior LLLC with their existent LLLC Program.
- Assess the known and potential benefits of LLLC systems compared with other lighting solutions to assist NEEA in refining the value proposition for installing LLLC in exterior parking lots.

Interviews with decision makers for exterior parking lot lighting upgrades will be conducted in Q3 2024. A report is anticipated in Q4 2024.

MRE Scientist: Zdanna King
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ENERGY STAR Influence Study

High-Performance Windows | **REPORTING**

NEEA has contracted with Apex Analytics, LLC to conduct a study that will explore if and how NEEA's High-Performance Window program activities have influenced the new ENERGY STAR® Version 7.0 rating for windows and doors. Through the program's involvement in the Partnership for Advanced Window Solutions (PAWS), its letter to ENERGY STAR, and other related work, it is possible that NEEA influenced the adoption of the new rating. In order to document these findings, Apex Analytics will engage in document review and conduct interviews with PAWS members, NEEA staff, and ENERGY STAR representatives in Q3 2024 with a final report anticipated in Q4 2024.

MRE Scientist: Zdanna King
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Market Progress Evaluation Report #3

Retail Product Portfolio (RPP) | **PLANNING**

NEEA is preparing to release an RFP in support of the third MPER for its RPP initiative. This study will include ongoing assessment of key MPIs for each product in the portfolio, including documentation of NEEA and its partners' influence on recent federal standards and secondary research on the value of efficiency labels. The RFP is anticipated to release in late Q3 2024. The study kickoff is currently targeted for late Q4 2024.

MRE Scientist: Zdanna King
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Connected Consumer Products Market Research

Retail Product Portfolio (RPP) | **FIELDING**

NEEA has contracted with Level 7 to conduct market research that will assess consumers' use of and attitudes toward purchasing connected consumer products in the Northwest. Primary and secondary research will be fielded during Q3, 2024 and will consist of a literature review and data collection from end-use customers (including online surveys, discussion boards, and focus groups). Final reporting is expected in Q1 of 2025.

MRE Scientist: Zdanna King
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Installer Call Back Research

Heat Pump Water Heaters (HPWH) | **FIELDING**

NEEA contracted with Lieberman Research to conduct research to better understand installer perception related to customer call backs regarding their HPWHs. The key objectives are to:

- Understand if they receive callbacks, the frequency of callbacks, and the nature of the issues at hand.
- Understand how installers resolve the problems.
- Identify the types of training support installers may need to minimize these situations in the future.

Data collection began in late Q2 2024, and a final report is anticipated in late Q4 2024.

MRE Scientist: Anu Teja
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Market Research on Existing Water Heaters in Select Commercial Buildings

Advanced Commercial Gas Water Heaters | **REPORTING**

NEEA contracted with Lieberman Research to conduct research in a select group of buildings regarding current water heating systems, including the decision making and purchase process, value propositions and barriers to their adoption.

Data collection, which started in late Q2 2024, will continue through Q3 2024 and will result in a final report anticipated for early Q4 2024.

MRE Scientist: Anu Teja
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Condensing Gas Water Heater Qualitative Market Research

Efficient Gas Water Heaters | **REPORTING**

NEEA contracted with ILLUME Advising, LLC to conduct research to better understand the purchase motivators among owners of the most efficient currently available gas storage water heaters (condensing gas water heaters) across North America. This qualitative research will inform the Efficient Gas Water Heater program's future efforts and development of the value proposition for commercialization of residential gas heat pump water heaters. The key objectives of the qualitative research effort are to:

- Understand purchaser behaviors and attitudes that result in the actual purchase and installation of highly efficient condensing gas storage units in their homes
- Understand purchasers' overall satisfaction with the unit and interaction with the unit
- Determine purchaser willingness to replace current units with newer, more efficient units and, if willing, under what scenarios (planned replacement, failure, etc.)

Data collection began in Q2 2024, and a final report is anticipated in early Q4 2024.

MRE Scientist: Anu Teja
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Battery Chargers Standard Evaluation | Standards | FIELDING

NEEA's Codes and Standards team engaged in efforts to increase the stringency of the battery chargers standard. NEEA contracted with Michaels Energy to conduct a qualitative assessment of NEEA's influence on the standards processes and provide a quantitative estimate of the share of savings resulting from the standards that are the result of NEEA and other efficiency organizations' efforts. The project kicked off in September 2023 but paused in late 2023 due to a change in the U.S. Department of Energy's (U.S. DOE) timeline for publishing the final rule. Michaels Energy is re-launching the project in August 2024, at which point they will review NEEA records and publicly available documents and will conduct interviews with key stakeholders from NEEA, U.S. DOE and other organizations. A final report is anticipated in Q4 2024.

MRE Scientist: Meghan Bean
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Portable AC and Air Compressor Standard Evaluation | Standards | FIELDING

NEEA's Codes and Standards team engaged in efforts to increase the stringency of the federal standards for portable air conditioners and air compressors. NEEA contracted with Michaels Energy to conduct a qualitative assessment of NEEA's influence on the standards processes and provide a quantitative estimate of the share of savings resulting from the standards that are the result of NEEA and other efficiency organizations' efforts. Both evaluations will kick off in November 2024. Michaels Energy will review NEEA records and publicly available documents and will conduct interviews with key stakeholders from NEEA, U.S. DOE and other organizations. Final reports are anticipated in late Q2 2025.

MRE Scientist: Meghan Bean
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Codes Savings Baseline and Key Assumptions Review

Codes | **FIELDING**

NEEA is developing an RFP for a third-party to conduct a review of its Naturally Occurring Baselines for commercial and residential energy codes in each Northwest state, as well as selected key assumptions associated with the estimation of residential and commercial code savings resulting from NEEA's energy code support activities. Specific assumptions include (note that additional assumptions may be identified as part of the research scoping process):

- The assumption that NEEA's intervention in a state's code process accelerates adoption of more efficient energy code measures by 10 years (approximately two code cycles).
- The assumption that it takes approximately one year from the construction start date for a commercial building to be complete.
- The schema NEEA has developed for mapping inconsistent commercial building categories across relevant datasets (e.g., Dodge Construction Network, DOE).

NEEA anticipates this model review to be kicked off in Q4 2024, with a final report published in Q1 2025.

MRE Scientist: Meghan Bean
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Market Progress Evaluation Report #6

Codes | **FIELDING**

NEEA released a RFP in support of the sixth MPER for its commercial and residential codes efforts. This study is intended to build on and complement the learnings generated through the recently completed Codes MPER #5 conducted by ADM Associates and will include ongoing assessment of NEEA's progress in the Northwest codes market relative to recently established MPIs. Additional study objectives will be determined during the scoping process. The study kickoff is currently targeted for late Q3 2024.

MRE Scientist: Chris Cardiel
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Assessment of Alternative Approaches to Estimating NEEA's State Energy Codes Influence

Codes | **REPORTING**

NEEA has contracted with NMR Group to conduct a review of several alternative approaches to evaluating NEEA's influence on the outcomes of state energy code processes. The review considers NEEA's efforts in both commercial and residential codes, and in each of the four states in the region (Idaho, Montana, Oregon, and Washington). The objective of this assessment is to support NEEA in identifying ways to assess its codes influence that more accurately document and describe the multiple workstreams of NEEA's market transformation approaches. The study includes two major activities:

- A review of current codes evaluation methods.
- An assessment of the feasibility and merit of several alternatives to the current approach.

In Q1, NMR completed interviews with NEEA staff familiar with NEEA's role in influencing state energy codes. In Q2, NMR finalized its assessment of four alternative approaches put forth by NEEA research and evaluation staff and presented its draft recommendations to NEEA's cost-effectiveness and evaluation advisory committee (CEAC). A final report summarizing study findings, including input from NEEA's CEAC members, is expected in Q4 2024.

MRE Scientist: Amy Webb
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Home Energy Raters Market Research

Residential Codes | **FIELDING**

NEEA contracted with TRC to conduct market research with home energy raters in the Northwest to meet the following objectives: 1) Develop an estimate of the number of home energy raters currently working in the new construction market in each state in the Northwest, and 2) Provide an assessment of:

- Current raters' business practices
- Raters' perceptions of the current market for home energy ratings
- How raters' practices and perceptions differ across urban and rural areas

This project kicked off in February 2024, and a final report is anticipated in Q3 2024.

MRE Scientist: Meghan Bean
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Idaho Residential Code Compliance Evaluation

Residential Codes | **REPORTING**

NEEA contracted with Industrial Economics, Inc. (IEc) to review assumptions underlying its estimation of energy savings resulting from NEEA's and its partners' involvement in the Idaho state code processes. Using data collected through permit review, site visits to residential new construction building sites, and interviews with market actors, this research will address the following objectives:

- Assess statewide compliance with selected code requirements among single-family homes built under IECC 2018 with Idaho amendments.
- Develop estimates of statewide energy code compliance and compliance within urban and rural jurisdictions separately.
- Provide statewide findings regarding primary space and water heating fuel and above-code elements.

Energy modeling analysis indicated that 97.8% of homes built under IECC 2018 with Idaho amendments comply with the code and that external wall insulation has the lowest rate of compliance and the highest potential for energy savings if non-compliant homes were brought to code-minimum levels. The study also found that a large majority of homes built under IECC 2018 with Idaho amendments have gas primary space and water heating. A final report is available on neea.org.

MRE Scientist: Meghan Bean
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Montana Residential Code Compliance Evaluation

Residential Codes | **REPORTING**

NEEA contracted with IEc to review assumptions underlying its estimation of energy savings resulting from NEEA's and its partners' involvement in the Montana state code processes. Using data collected through permit review, site visits to residential new construction building sites, and interviews with market actors, this research will address the following objectives:

- Assess statewide compliance with selected code requirements among single-family homes built under IECC 2018 with Montana amendments.
- Develop estimates of statewide energy code compliance and compliance within urban and rural jurisdictions separately.
- Provide statewide findings regarding primary space and water heating fuel and above-code elements using data collected on individual code requirements.

This work kicked off in Q1 2023 but paused in mid-2023 due to challenges with collecting permit data. The project re-launched in January 2024 with a new data collection plan that relies on on-site data collection. A final report is expected in Q4 2024.

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Oregon Residential Code Compliance Evaluation

Residential Codes | **FIELDING**

NEEA contracted with IEc to review assumptions underlying its estimation of energy savings resulting from NEEA's and its partners' involvement in the Oregon state code processes. This evaluation will:

- Assess statewide compliance among single-family homes built under the 2021 Oregon Residential Specialty Code (ORSC).
- Provide statewide findings regarding primary space and water heating fuel and above-code elements using data collected on individual code requirements.
- Provide an analysis of builders' choices regarding compliance pathways and efficiency level to which the home is built.

IEc will collect data from permits, site visits to residential new construction building sites, and interviews with market actors. In addition, NEEA contracted with NMR Group to collect data on inhabited homes using homeowner self-audits. These data will be provided to IEc for analysis.

This project kicked off in February 2024, and a final report is expected in Q4 2024.

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Idaho Commercial New Construction Code Compliance Evaluation

Commercial Codes | **FIELDING**

The Idaho Commercial New Construction Code Evaluation study focuses on (a) assessing the path(s) by which and degree to which code compliance is achieved with the amended 2018 International Energy Conservation Code (IECC) in newly constructed buildings, and (b) measuring the energy performance of a subset of these buildings as compared with the average energy performance of buildings constructed under previous code. The results of the study will provide direction to the development and implementation efforts of the NEEA Codes team and will provide other regional code stakeholders guidance in targeting their energy efficiency work in the commercial new construction sector.

NEEA contracted with Opinion Dynamics to undertake this study. The study design and methodology selected for this project focuses on permit data and building plans as the primary sources of construction and compliance information, with virtual or in-person site visits planned for a subsample of participating buildings in order to validate the accuracy of permit data. The project kicked off in mid-Q3 2023, with planning and sample development continuing through Q1 2024. Data collection focusing on desk review of permit data is scheduled to commence in Q2 2024 and conclude in Q4 2024. This study includes analysis of billing data; collection of this data is planned to continue through early Q4 2024, with analysis and report preparation to follow.

A final report is anticipated in Q4 2024.

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Montana Commercial New Construction Code Compliance Evaluation

Commercial Codes | REPORTING

The Montana Commercial New Construction Code Evaluation study focuses on (a) assessing the path(s) by which and degree to which code compliance is achieved with the 2018 IECC in newly constructed buildings, and (b) measuring the energy performance of a subset of these buildings as compared with the average energy performance of buildings constructed under previous code. The results of the study will provide direction to the development and implementation efforts of the NEEA Codes team and will provide other regional code stakeholders guidance in targeting their energy efficiency work in the commercial new construction sector.

NEEA contracted with Michaels Energy to undertake this study. The study design and methodology selected for this project focuses on permit data and building plans as the primary sources of construction and compliance information, supplemented by telephone or virtual interviews with building owners and operators to contextualize and enrich the results of permit and plan analysis. The study also includes virtual or in-person site visits planned for a subsample of participating buildings in order to validate the accuracy of permit data. The project kicked off in mid-Q2 2022, with planning and sample development continuing through Q1 2023. Data collection, including interviews with site contacts and desk review of permit data, commenced in Q2 2023 and concluded in Q2 2024, while in-person/virtual site visits commenced in Q4 2023 and concluded in Q2 2024. Billing data collection was attempted for this study but has been excluded from ongoing project activities due to a prohibitively low response rate from eligible building contacts.

Compliance analyses are currently underway; a final report outlining the result of compliance analysis and comparative site visits is anticipated in late Q3 or early Q4 2024.

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Ductless Heat Pump Long-Term Monitoring and Tracking, Year 3

FIELDING

Once NEEA scales back investments in a Market Transformation program, the organization continues to monitor market diffusion of the energy-efficient product or practice through a series of annual longitudinal evaluations called long-term monitoring and tracking (LTMT) studies. In Q4 2024, NEEA will contract with a third-party evaluator to conduct the third LTMT study for the Ductless Heat Pump (DHP) Market Transformation program. NEEA actively worked to accelerate adoption of DHPs in the Northwest from 2008 to 2020. The objective for this evaluation, consistent with the prior two LTMT studies, is to track diffusion of DHPs across the Northwest's residential HVAC market, specifically within the program's three target markets. This evaluation will track pre-defined diffusion indicators to confirm whether market transformation outcomes are being sustained. NEEA aims to launch this evaluation in Q4 2024 with a final report anticipated in Q2 2025.

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Tacoma Power Tacoma Public Utilities