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Codes Market Progress Evaluation Report #6

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Executive Summary

On behalf of the Northwest Energy Efficiency Alliance (NEEA), NMR Group, Inc., (NMR) completed the sixth Market Progress Evaluation Report (MPER) of NEEA's Codes Program. The NEEA Codes Team, in collaboration with stakeholders in the Northwest Region (Idaho, Montana, Oregon, and Washington) and nationally, seeks to increase energy codes' efficacy. The NEEA Codes Team does so by identifying potential new code measures, participating in public code processes, funding and providing research in support of codes, and providing training and education to energy code stakeholders.

Each state in the Northwest Region engages in the code development process along different cycles and code versions and differs in how they implement and enforce codes. The NEEA team tailors its efforts to each state's approach and the current phase of that state's code cycle.

MPER #6 overarching research objectives:

- Assess NEEA's progress on **select logic model outcomes.** This includes some assessed in the prior study (MPER #5) and **others that have not yet been studied.**
- Conduct a **qualitative assessment of NEEA's influence on code development and adoption** in the Northwest.
- Conduct a **formative evaluation of key code compliance tools** that building and design professionals use.

Key research activities:

1. Review of NEEA documentation of codes activity
2. Progress indicator review, refinement, and development
3. Code influence interviews (*n* = 18)
4. Code training attendee survey (*n* = 191)
5. Non-participant market actor interviews (*n* = 13)

Key findings and recommendations:

1 *There are a number of viable progress indicators for outcomes not previously assessed, but some proposed indicators rely on secondary data and market research that may not be available on the same cadence as future MPERs.*

The prior study, MPER #5[1], established several progress indicators (PIs) related to code training and education outcomes. This study continued to measure those PIs. For MPER #6, NMR and NEEA established and measured new PIs for logic model outcomes that had not yet been studied. These outcomes relate to utility above-code programs, voluntary building energy efficiency certifications, jurisdictional progress towards energy or climate goals, state support for energy code, and clarity of energy code. Section 6 lists detailed descriptions of these new PIs, NMR's assessments of their viability, and results from this study.

Many of the proposed PIs rely on secondary market data collected through new construction program evaluations and code compliance evaluations, which are typically conducted every few years. NEEA may need to collect this information less frequently than an every-MPER cadence when the results of new evaluation reports are available.

Other indicators rely directly on primary data collection activities traditionally included in Codes MPER studies (e.g., code influence interviews, trainee surveys) and can therefore be easily incorporated into future evaluations.

Related recommendation. Adopt the recommended PIs (marked with a green check in Table 12 in Conclusions and Recommendations) and continue to measure them in future Codes MPERs. Consider measuring PIs relying on secondary market data on an every-other evaluation cadence.

2 *The code training and education PIs developed in MPER #5 remain easy to measure and continue to provide meaningful results to track longitudinally.*

These PIs effectively describe the impacts of NEEA sponsored trainings and are easy to measure. Measuring results longitudinally across MPERs is key to understanding the impact of NEEA's activities over time and to measure market trends. It was easy to replicate the PIs and survey questions associated with trainee understanding of and attitudes towards code; they also produced meaningful results that will enable longitudinal comparison. Most of these PIs showed improvement from MPER #5; detailed results and comparisons are found in Section 4.

Related recommendation. Continue to measure PIs first developed in MPER #5 that support logic model outcomes 1-4.

[1] https://neea.org/resource/codes-mper-5/

3 *NEEA and its partners play a key role in code development and adoption at the state and national level; their consistent presence in this ecosystem has led to high levels of respect and credibility.*

All code influence interview respondents confirmed NEEA's importance to the code development and adoption process in the Northwest Region and nationally with the International Energy Conservation Code (IECC). Interviewees noted NEEA's long-term outlook, coalition-building orientation, and incorporation of bottom-up feedback as integral to increasing code stringency, adoption, and compliance. NEEA's influence is evident through the funding, completion, and dissemination of well-respected research that informs code proposals. Its influence is also demonstrated through its contributions across code cycles to iteratively support adoption of new code proposal opportunities. Respondents noted that NEEA can respond to pushback from opposing forces in the code process while maintaining broad credibility through sustained open dialogue. This allows them to remain highly involved in public processes around code development at the state and national level. Across these and other activities cited by respondents, NEEA facilitates active communication between diverse stakeholders such as builders, code officials, and code developers to maintain balance in the code between clarity, comprehensiveness, and flexibility.

Related recommendation: Continue to fund research on code impacts, compliance rates, and emerging technology to provide data-driven support for code development processes and proposals.

Related recommendation: Given interviewee feedback on NEEA's importance in the IECC development process, maintain a strong presence in code development at the state and, particularly, national level.

4 *Many residential market actors do not currently use software tools to verify code compliance, but a sizable portion of those expressed willingness to learn with additional training.*

Nearly half (41%) of code trainee survey respondents reported not using any software tools for code compliance on their projects. Among those who reported not using such tools, one-quarter (26%) expressed interest in learning about them. This is more common for residential respondents, 63% of whom reported not using software tools and 32% expressed interest in learning. Most training non-participants interviewed for the study reported only using software tools occasionally when required.

Related recommendation. Encourage the use of software tools via program marketing, particularly in the residential sector. Consider offering specific training and coaching for state-specific tools and/or more universal tools like REScheck or COMcheck.

5 *Respondents commonly use third-party experts to verify code compliance.*

Over one-third (35%) of trainee survey respondents and non-participant interviewees reported using third-party experts, such as Home Energy Rating System (HERS) Raters and sustainability consultants, to verify the compliance of their new construction buildings. This was more common among residential respondents, 44% of whom reported using third-party experts.

Related recommendation. Third-party experts such as HERS Raters and sustainability consultants are often strong allies in educating market actors about code and increasing compliance. Build and maintain strong relationships with these groups, specifically in the residential sector. Support them with the information and resources they need to continue to educate the market.

Section 1 *Introduction*

The Northwest Energy Efficiency Alliance (NEEA) selected NMR Group, Inc., ("NMR" or "The team") to conduct the sixth Market Progress Evaluation Report (MPER) for the NEEA Codes Team.

The NEEA Codes Program, in collaboration with stakeholders located in Idaho, Montana, Oregon, and Washington (collectively, the "Northwest Region"), seeks to increase the effectiveness of energy codes in the region in the following ways:

- Identifying new potential code measures.
- Participating in public processes.
- Providing data and analysis.
- Working with state code bodies to support code implementation.
- Providing training and education to energy code stakeholders.

The four states in the Northwest Region engage in the code development process along different cycles and code versions, and these states and their local jurisdictions differ in how they implement codes. NEEA tailors its efforts to each state's approach and the current phase of that state's code cycle.

Research Objectives

This study builds upon the fifth Codes MPER, which included an in-depth review of the program's logic model, assessed influence on code development and adoption, and proposed and assessed progress indicators (PIs) related to code training and education.

The Research Objectives of MPER #6 are:

1) **Assess NEEA's progress on select logic model outcomes.** As noted, MPER #5 proposed and assessed PIs related to code training and education activities. These PIs were assessed again during the trainee survey in MPER #6, providing some longitudinal comparisons across MPERs. This study also proposed and assessed new PIs for logic model outcomes that had not yet been assessed:

a. Utility programs offer incentives to encourage above code construction.
b. Voluntary certifications help builders differentiate their homes.
c. Jurisdictions can progress towards building sector energy or climate goals.
d. State agencies increase support for education and enforcement of code.

2) **Analyze NEEA's influence on code development and adoption in the Northwest** (hereinafter referred to as "code influence"), particularly since the previous MPER (mid-2023 onward). NMR assessed code influence via a set of 18 interviews with a diverse group of market actors and stakeholders involved in the code process in the Northwest. Interviewees confirmed the significance of NEEA and their partners' activities during recent code cycles.

3) **Conduct a formative evaluation of key code compliance tools.** NMR conducted a set of 13 interviews with key market actors who had not yet participated in NEEA-sponsored code trainings, including builders, architects, design professionals, and others, to gauge familiarity with key code compliance tools including the WSEC-C tool, COMcheck, and REScheck. Key topics included awareness of the presence and functionality of these tools, features within the tools that are of particularly high or low value to these groups, and other resources they use to determine compliance with energy code.

Section 2 *Methodology*

The team undertook a variety of research tasks to assess logic model outcomes and conduct formative research for the Codes Program. More details about the trainee survey methodology can be found in Appendix A. All surveys and interview guides can be found in Appendix C.

Core Study Tasks:

NEEA Staff Interviews (*n* = 4). The team interviewed four NEEA staff across two virtual interviews to identify any relevant changes to program activities, any changes made to the logic model based on prior MPER recommendations, and to ensure the study would cover topics to meet program needs.

Review of NEEA Materials. NEEA provided hundreds of documents for NMR review, predominantly related to code influence type activities. This included communications, tracking sheets, meeting minutes, and draft and final proposal materials from NEEA's involvement in IECC development as well as OR and WA residential and commercial code processes. Other documentation included materials from NEEA-sponsored trainings, including topics and locations as well as lists of attendees, the latter of which informed trainee survey recruitment.

Progress Indicator Review and Refinement. NMR, in consultation with NEEA staff, reviewed PIs developed during MPER #5 pertaining to code training and education, and worked to propose new PIs for logic model outcomes not previously assessed.

Code Influence Interviews (*n* = 18). The team interviewed various stakeholders involved in the code development and adoption process in the Northwest to gather qualitative feedback about NEEA's role in these code processes. NEEA provided NMR with 54 contacts from their work in the codes space who would be able to speak to NEEA's role, and NMR completed interviews with 18 of them.

Table 1 shows the breakdown of respondents by state and IECC-only. The respondents also represent a mix of residential (seven) and commercial (four) expertise (the remaining seven working in both sectors), as well as a variety of roles including municipal code officials, university researchers, and state officials.

Table 1: Code Influence Interview Disposition

State or Code	Completes
Idaho and Montana	4
Oregon	5
Washington	7
IECC	2
Total	18

Code Trainee Survey (*n* = 191). The team conducted a web-based survey with builders, designers, architects, and code officials who attended NEEA-sponsored code trainings in 2023 and 2024. The primary purpose of the survey was to measure PIs related to training and education logic model outcomes. This included several PIs established and measured in MPER #5 for logic model outcomes 1-4, which primarily concern increasing builder and code official understanding and perceived value of code. This iteration of the survey also included measurements of newly proposed PIs related to the following logic model outcomes not previously assessed (Appendix B lists all outcomes and PIs):

- Voluntary certifications help builders differentiate their buildings
- Jurisdictions can progress towards building sector energy or climate goals
- State agencies support education and enforcement of code
- Codes become or remain clear, simple, and enforceable

Respondents were recruited from trainee attendance lists provided by NEEA. After merging and deduplicating these lists, the overall sample of unique attendees was 4,087 for the time period covered by this study. The goal was to achieve 90% confidence and 10% precision (90/10) for results at the state level, which are represented in the "targets" column in Table 2 below. This target was achieved in Oregon and Washington, but fell short of the admittedly-aggressive targets set in Idaho and Montana despite extra recruitment efforts. The team also established building sector targets (residential/ commercial); these were achieved fairly easily, given that two-fifths (39%) of the achieved sample worked in both sectors, with another two-fifths (39%) active in residential only and one-fifth (22%) in commercial only.

Table 2: Code Trainee Survey Disposition

State	Sample	Target	Total Completes	Completes by Sector		
				Commercial	Residential	Both
Idaho and Montana	261	57	35	9	15	11
Oregon	867	63	66	7	39	20
Washington	2,859	66	88	25	20	43
Total	**4,087**	**186**	**189**	**41**	**74**	**74**

Market Actor Interviews. The team conducted a set of 13 interviews with building and design professionals who had *not* attended NEEA-sponsored trainings, with the goal of gaining insights and perspectives on energy code from a group with which NEEA may not typically engage. A primary goal of these interviews was to inform the formative evaluation of code compliance tools. Respondents were asked about their awareness, use, and attitude towards various code compliance tools, specifically focusing on software-based tools such as COMcheck, REScheck, and the WSEC-C tool, while also assessing any other tools or methods employed to comply with code. These included software tools, non-software tools, or relying on third-party professionals.

NMR utilized NEEA's ConstructConnect subscription to build a sample of relevant market actors. After cleaning and deduplicating against the trainee attendance lists, roughly 1,500 relevant market actors remained. Via email recruitment, NMR completed 13 interviews. The team offered respondents a $300 incentive to complete an approximately 45-minute interview.

Synthesis Session. On October 1, 2025, NMR led a synthesis session with several NEEA Codes staff members to present preliminary findings and discuss future research efforts. Results included assessments of established PIs as well as the measurement and viability of newly proposed PIs. NEEA provided valuable reactions and feedback, which informed much of the content of this report.

Section 3 *Assessment of Code Development and Adoption Influence*

This section presents results from the team's assessment of NEEA's code influence activities. Code influence was assessed via interviews with 18 stakeholders involved in the code development and adoption process in the Northwest Region and nationally with the IECC. Key findings from these interviews are summarized below:

- All code influence interviewees confirmed that NEEA and its partners play a key role in code development and adoption in each of the four states in the Northwest Region and nationally. This has remained consistent across several MPER studies.
- Interviewees noted NEEA's long-term outlook, coalition-building, and incorporation of bottom-up feedback.
- Interviewees indicated NEEA can respond to pushback from opposing forces in the code process while maintaining broad credibility, avoiding conflict, and maintaining open communication.
- Several national-level interviewees mentioned that NEEA is more involved than most regional energy-efficiency organizations (REEOs) in IECC development.
- Some interviewees lamented the increased tension and politicization of the codes development process; however, in all four states, interviewees characterized NEEA as an organization with broad credibility.
- Interviewees identified evaluation of real-world energy impact and verification of operational and as-built costs as opportunities for additional research.
- Interviewees noted that strengthening communication and collaboration with homebuilding industry groups earlier in the process was increasingly important as affordable housing becomes a greater concern.
- As other organizations shift their focus to electrification, NEEA provides crucial support for other aspects of efficiency, such as building shell, lighting, and ventilation.

- Maintaining balance in the code between clarity, comprehensiveness, and flexibility requires well-supported technical research and active communication between builders, officials, and code developers. Interviewees reported that NEEA is aware of this delicate balance and its role in supporting a code that works for a diverse and growing region with substantial climate goals.

Each Northwest state develops and maintains energy code differently. Each state generally has a department responsible for overseeing the development of energy code, with advisory groups informing the content. Codes fall under the following departments: the Division of Occupational and Professional Licenses (DOPL) in Idaho, the Department of Labor and Industry (DLI) in Montana, the Building Codes Division (BCD) in Oregon, and the State Building Code Council (SBCC) in Washington.

Advisory groups in Idaho (Idaho Building Code Board) and Montana (Building Codes Division) manage both residential and commercial codes. In Oregon and Washington, these sectors are the responsibility of different groups: the Construction Industry Energy Board (commercial) and Residential and Manufactured Structures Board (residential) in Oregon and the Commercial Technical Advisory Group (TAG) and Residential TAG in Washington.

Oregon has made the most substantial change since the previous MPER, updating the basis of its commercial code from ASHRAE 90.1 2019 to 2022. Idaho has not changed code but did avoid weakening it, while Montana has weakened its commercial code and Washington has strengthened both its residential and commercial codes with amendments. However, proponents in Idaho and Montana both suggested that the states are considering adopting an amended version of the 2024 IECC this cycle. Table 3 lists the code in place at the time of the study in each state and sector.

Table 3: Most Recent Code Version by State and National Code Organization Affiliation

State	Commercial	Residential
Idaho	2018 International Energy Conservation Code ("IECC") with Idaho amendments	2018 IECC with Idaho amendments
Montana	2021 IECC with Montana amendments*	2021 IECC with Montana amendments
Oregon	2025 Oregon Energy Efficiency Specialty Code (OEESC) (ASHRAE 90.1-2022 with amendments)*	2023 Oregon Residential Specialty Code (ORSC) (custom state-developed code)
Washington	2021 Washington State Energy Code - Commercial (WSEC-C) (2021 IECC with many amendments)*	2021 Washington State Energy Code - Residential (WSEC-R) (2021 IECC with many amendments)*

* Updated since MPER 5 was completed in April 2024

IECC

NEEA is a vocal participant in NGO-REEO coordination meetings. The New Buildings Institute and 2050 Partners organize these committee meetings to coordinate research and proposals between these organizations and the six REEOs. One member suggested that NEEA is the most consistent and active participant. Another stated that NEEA, along with their Midwest counterpart MEEA, are the most well-funded and thus most active REEOs, but that NEEA plays a greater role in coordination. This is consistent with feedback on its role in state-level code development.

The introduction of topic groups has led to a more structured process with greater technical depth within each topic area. NEEA is a member of the Commercial HVAC and Residential Modeling subgroups, which build on NEEA-supported research and evaluation at the state level. Beginning with the 2024 IECC cycle, IECC board-selected consensus committee members vote on final code inclusion, rather than a larger committee of government-appointed representatives as in the past.[2] Kevin Rose of NEEA ranks among those consensus committee members.

NEEA's work has influence across cycles, as NEEA revises proposals or other parties pursue them as the market develops. One code advocate offered the example of a heat/energy recovery ventilator (H/ERV) proposal from the prior cycle that NEEA (in collaboration with TRC, Stator, and 2050 Partners) revised and resubmitted after cost-effectiveness improved due to advancements in fan technology. Several interviewees noted that NEEA's presence is consistent. This will prove helpful as political will and technological opportunity fluctuate over time. One committee member emphasized the value of this multi-cycle approach to address committee concerns and move with the market.

NEEA has the resources to advance research on cutting-edge technology with regional potential, such as luminaire-level lighting controls and heat recovery ventilators. NEEA's market transformation and research efforts on such products increase awareness and familiarity within the Northwest Region, which paves the way for adoption of technologies within state and national code. For example, NEEA's regional H/ERV work was identified as a factor in increasing demand for and efficiency of such systems, which improved their cost-effectiveness and thus the case for their adoption in IECC.

Idaho

Through the Idaho Energy Code Collaborative, NEEA engages with many types of stakeholders to maintain and develop energy code, from permit technicians to IECC staff to utilities. Per interviewees, code "would not exist today" without this collaboration. NEEA's engagement of permit technicians was cited as a national example with benefits for compliance and bottom-up workforce development in the industry. Stakeholders praised NEEA's willingness to bring together opposing viewpoints and maintain credibility while remaining a strong advocate for advanced codes.

In partnership with NEEA, The University of Idaho Integrated Design Lab (IDL) conducts research into fire prevention, ice dams, smoke and IAQ, affordability, and current standard practice. This research was crucial in supporting code through the Zero-Based Regulation initiative in 2021/22, and in encouraging further progress. For example, fire concerns surrounding the adoption of lithium-ion

[2] Demystifying Energy Code Development (NRDC blog post)

batteries were cited as a compelling reason for the state to adopt the 2024 fire code, which would support an update to the 2024 IECC to prevent disconnection between code families.

As Idaho's housing stock grows the fastest of any state,[3] NEEA helps ensure the pace of code adoption does not compromise compliance by providing equipment training. Interviewees noted that inspectors are generally familiar with code in larger jurisdictions, whereas in smaller jurisdictions, energy inspectors are in short supply and in need of specialized equipment. Through the Code Collaborative, NEEA coordinates and funds the development of training materials and technical guidance, such as an air-sealing checklist for builders, modeled after a similar offering at the Energy Trust of Oregon, and informed by the Circuit Rider's experience in the field.

NEEA supports the Circuit Rider program, maintaining a feedback loop between research, code, and compliance, and working throughout the state to maintain consistency and incorporate local input. Idaho stakeholders noted that, due to the geographic and political landscape, energy efficiency would not be as credible if it were not driven by feedback and input from those close to the ground throughout the state. There is one Circuit-Rider and another trainer who work in tandem, one focused on compliance and the other on best practices, and each have a seat in code debates.

Montana

NEEA funds the National Center for Appropriate Technology (NCAT), the Montana State University Integrated Design Lab (IDL), and the Montana Homes Collaborative (MHC), which conduct education and advocacy throughout the state. Similar to Idaho, rurality and political concerns have led to a compliance-first approach and emphasis on whole-state outreach.

Because most Montana homes are self-certified, NEEA's research and evaluation provide valuable data to measure and advocate for code progress. State law requires demonstration of energy code compliance, but approximately two in three Montana homes are outside of building code jurisdiction and thus self-certify with posted labels. Deliberation about amendments and adoption of more advanced IECC iterations must begin with an understanding of existing home performance, and state officials indicated that this on-site evaluation is essential in their efforts considering this self-reported compliance paradigm. NEEA's Market Research and Evaluation Team collaborated with Industrial Economics, Inc. and Resource Refocus, LLC to complete the Montana Residential Code Compliance Evaluation (Report #E25- 493) in May 2025.[4] Montana is considering adoption of 2024 IECC with amendments, supported by a NEEA-sponsored Energy350 analysis of modelled impacts.

Oregon

The state has tried to broaden the building code adoption process to include owners and occupants. NEEA has supported trainings and panels where the process of code development is explained to a broader group of stakeholders. For example, one code official mentioned the benefit of having both an ODOE stakeholder panel, which is more technical, alongside a general-audience Energy 101 training

[3] Population Growth Reported Across Cities and Towns in All U.S. Regions
[4] Montana Residential Code Compliance Evaluation - Northwest Energy Efficiency Alliance (NEEA)

series. NEEA training efforts were characterized as useful in disseminating information about code changes to those in the building trades so that they can be active participants in an increasingly technical process.

The NEEA-funded Code Collaborative convenes a diverse group of stakeholders to gather feedback on draft code language, which is then submitted to the BCD. Interviewees stated that NEEA's role in the Collaborative increases transparency and aids objectivity of adopted measures. More communication before code is submitted to committee has allowed for greater depth and less conflict.

Estimates from energy modeling are the metric that guides the rate of code progress, and NEEA ensures accountability by estimating a more conservative value. NEEA's modeling and evaluation estimate that there is 20% remaining towards the state's goal of 60% energy usage reduction from 2006 by 2030. NEEA uses different modeling assumptions than the state, which results in a more conservative savings estimate.

Washington

Driven by aggressive savings goals, Washington serves as a "lab" for the Northwest Region and beyond, but relies on NEEA funds for research to guide development and measure the impact of code. Stakeholders consistently agreed that measures usually, but not always, are adopted in Washington before Oregon and IECC. NEEA-funded cost and engineering studies, such as recent work on H/ERVs and long-term very high efficiency dedicator outdoor air system (VHE DOAS) research, are essential because of the limited funding and all-volunteer structure of the Washington TAGs.

In Washington, interviewees emphasized NEEA's role as a convener of government, university, and industry stakeholders. Parties meet for months ahead of the WSEC Technical Advisory Group (TAG) meetings to coordinate proposals and supporting research. The TAG refines and selects proposals before making recommendations to the SBCC. These pre-TAG coordination activities allow well-written, technically sound code to be produced to meet the state's ambitious targets. Per one respondent:

"NEEA does a little bit of everything in WA, code influence but also enforcement. They fund inspectors in rural areas, and they are also doing research on heat pump technologies… they do a really good job paying to put out HVAC education and other things to fill niches in the industry."

The state pioneered the credit-table approach, which relies on constant revision and evaluation to properly assign credit values, largely funded by NEEA. It has been an especially useful framework in allowing the code to withstand federal rules proscribing mandates of particular equipment efficiencies or types. A ninth-circuit federal court ruling, *City of Berkeley, CA vs. California Restaurant Association*, set off a last-minute scramble in the previous cycle when it confirmed that bans on gas equipment would not survive court challenges, but the credit table was able to be designed, with help from NEEA studies, to create a fuel-neutral framework that kept the codes on track to meet state goals.

The increased salience of decarbonization goals and metrics has further politicized the codes development process. NEEA's diverse composition has been an asset as they maintain credibility and a focus on saving energy. One code expert suggested that traditional efficiency areas such as lighting and shell measures have become a more open lane for NEEA influence as national groups have shifted focus to electrification (e.g., EVs).

The state's advanced codes necessitate more support for training and education. NEEA funds many efforts including a commercial code hotline, support through the *waenergycodes.com* website, and through the Washington State University (WSU) Energy Program which serves over 6,000 people a year. The WSU hotline not only supports compliance but is a mechanism to gather feedback on cutting-edge measures for subsequent revisions and adoption in other jurisdictions. It also serves to ensure that those in the industry are well-supported in applying the code smoothly and efficiently, contributing to the credibility of the code and minimizing resistance to continued development.

Section 4 *Assessment of Code Training and Education*

This section presents measurement results for progress indicators (PIs) tied to energy code training and education activities. The team measured these PIs via the code trainee survey, consistent with the method used for their measurement in MPER #5. As such, the team provides comparisons between the two MPERs to demonstrate how attitudes and practices have shifted over time. Statistical significance between these results was measured at the 90% confidence interval; this section indicates that significance with an asterisk within tables (although only one result was statistically significant, PI 3.2). If no indication is present, then the differences are not statistically significant. The section groups PIs by logic model outcome. Additional results and methodological details regarding the code trainee survey can be found in Appendix A.

Outcome 1: Market Actors (Builders, Manufacturers, Supply Chain) Understand Requirements of Code

Trainees continue to report that trainings help them with energy code changes and that they frequently share information with colleagues; all PIs related to this outcome showed an increase since MPER #5 (Table 4**)**. These PIs center around trainees' increased understanding of code. The percentage of trainees indicating that their training increased their understanding of code requirements increased from MPER #5 from 35% to 40%. Those indicating that their training helped them better work with energy codes also increased, from 55% to 60%. Over three-quarters (77%) of respondents indicated that they share information with colleagues—also an increase from MPER #5 (70%).

Table 4: Trainee Understanding of Code Requirements

Progress Indicator	MPER #5		MPER #6	
	n	%	n	%
PI 1.1: Trainees indicating increased understanding of code requirements	187	35%	165	40%
PI 1.2: Trainees indicating trainings helped them better work with energy code changes	172	55%	163	60%
PI 1.3: Trainees indicating they share information with colleagues	187	70%	165	77%

Outcome 2: Market Actors Neutral Toward or Value Energy Codes

Trainees continue to advocate for energy-saving policies, and attitude towards energy code has remained relatively consistent. (Table 5**)**. MPER #6 found that the percentage of trainees reporting at least a neutral attitude toward energy code, and that the training improved their view of code, has decreased slightly from MPER #5 from 56% to 51%. Two-thirds of non-code officials (67%) advocated for energy-saving policies in their professional role due to their experience attending the training, the same proportion found in MPER #5.

Table 5: Market Actor Attitude Toward Energy Code

Progress Indicator	MPER #5		MPER #6	
	n	%	n	%
PI 2.1: Trainees reporting at least neutral attitude toward energy code and that training improved their view of energy code	187	56%	183	51%
PI 2.2: Non-code officials that advocate for energy saving policies because of training	163	67%	165	67%

Outcome 3: Increased Builder Industry Understanding of Product Availability and Use of or Application of New Products

Awareness of product availability and applications of new technology due to training has increased compared to the last MPER study (Table 6**).** Nearly one-third (30%) of trainees indicated an increased understanding of product availability in MPER #6, up from 24% in MPER #5. Almost one-half (48%) of trainees in MPER #6 indicated that training had increased their understanding of applications of new technology, a statistically significant increase from 28% in MPER #5.

Table 6: Market Actor Understanding of Product Availability

	MPER #5	MPER #6
n	*187*	*166*
PI 3.1: Trainees indicating training increased understanding of product availability	24%	30%
PI 3.2: Trainees indicating training increased understanding of applications of new technology	28%	48%*

*statistically significant difference at the 90% confidence interval

Outcome 4: Code Officials and Other Participants in the Code Process Understand the Value of Energy Code and How to Achieve Their Code Compliance Goals

The majority of code officials continue to report sharing information from trainings, while the number reporting that trainings have changed their behavior has decreased slightly since MPER #5 (Table 7Error! Reference source not found.**)**. Of the 20 code officials who responded to these questions, those indicating that training improved their ability to assess code compliance decreased since the prior MPER, from 52% to 40%. Most code officials (85%) indicated they shared information from their training with colleagues, a slight increase from MPER #5 (81%). The number of code officials recommending trainings to colleagues remained consistent since MPER #5 (slight decrease from 46% to 45%). Fewer code officials changed procedures as a result of the training (43% to 40% since MPER #5), and indicated that training increased their understanding of code requirements (58% to 35%). Continued tracking in future MPERs will provide a better sense of trends for these PIs.

Table 7: Code Official Understanding of the Value of Energy Code

Progress Indicator	MPER #5		MPER #6	
	n	%	n	%
PI 4.1: Code officials indicating training increased ability to assess compliance	21	52%	20	40%
PI 4.2: Code officials that share information from training	26	81%	20	85%
PI 4.3: Code officials that recommend trainings to others	26	46%	20	45%
PI 4.4: Code officials that changed procedures as a result of training	21	43%	20	40%
PI 4.5: Code officials indicating trainings increased understanding of code requirements	26	58%	20	35%

Section 5 *Formative Evaluation of Code Compliance Tools*

One of the primary research objectives of MPER #6 was an evaluation of market actor awareness and use of various code compliance tools. This topic was investigated via two data collection activities: the code trainee survey (*n* = 191) and in-depth interviews with market actors who had *not* participated in NEEA-sponsored trainings (*n* = 13). Eliciting the perspectives of non-participants was particularly important, as they provide insight into an otherwise-unengaged market segment.

Code books are a key tool for verifying code compliance among trainees and non-participants, and most trainees use some non-software resources. The majority of trainee survey respondents (84%) reported using at least some non-software tools during their code compliance verification. The most common resources that respondents used were physical and electronic codebooks, including IECC, ASHRAE 90.1, and state-specific codebooks (60%), followed by third-party experts including raters and efficiency consultants (35%), and code fact sheets including the WSEC-R code cookbook or BetterBuiltNW materials (26%).

Figure 1 details the full list of non-software tools used by survey respondents.

Use of non-software tools overall was common and consistent across exclusively residential and exclusively commercial respondents (83% of each group)[5]. Survey respondents who worked exclusively in the commercial sector were more likely to use codebooks (71%) than those who worked exclusively in the residential sector (56%). In contrast, respondents in the residential sector used third-party experts (44%) more often than those in the commercial sector (24%), a statistically significant difference.

Half of the 13 non-participant interviewees reported using some non-software resources, including code books, external consultants, and local code officials. However, most noted that prescriptive requirements were straightforward enough that they often did not need tools to comply.

[5] Many survey respondents reported working in both sectors (73 respondents, or 39%) and are excluded from sector level splits. Comparisons between sectors in this section are between those who reported exclusively working in residential (74 respondents, or 39%), and commercial (41 respondents, or 22%).

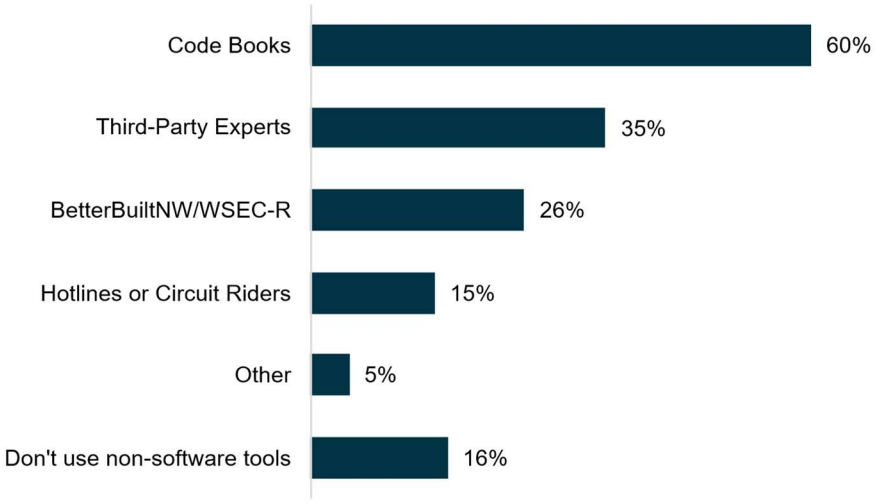

Figure 1: Non-Software Tools Used by Code Trainees (*n* = 191)

Over half of trainee survey respondents and three-quarters of non-participants interviewed for the study reported using software- or web-based compliance tools. Among survey respondents who had attended NEEA-sponsored trainings, 59% reported using software tools to verify energy code compliance. The most common software tools among trainees were the WSEC-C compliance webtool (33%), COMcheck (19%), and ASHRAE 90.1 performance-based compliance form (16%). Figure 2 illustrates the full list of software tools that survey respondents used. Respondents also mentioned a handful of less common state-specific or private subscription software tools.

Commercial respondents use software- or web-based compliance tools far more often than residential respondents (63% compared to 37%, a statistically significant difference). This makes sense considering that the three most common software tools reported (WSEC-C, COMcheck, and ASHRAE 90.1) are all geared towards commercial code, and it follows that each of these were used significantly more often by commercial respondents compared to residential ones.

Nine of 13 nonparticipant interviewees reported using COMcheck or REScheck, at least when required by specific jurisdictions. Many reported difficulty or confusion using the software, centered mainly on understanding how the software computes their compliance.

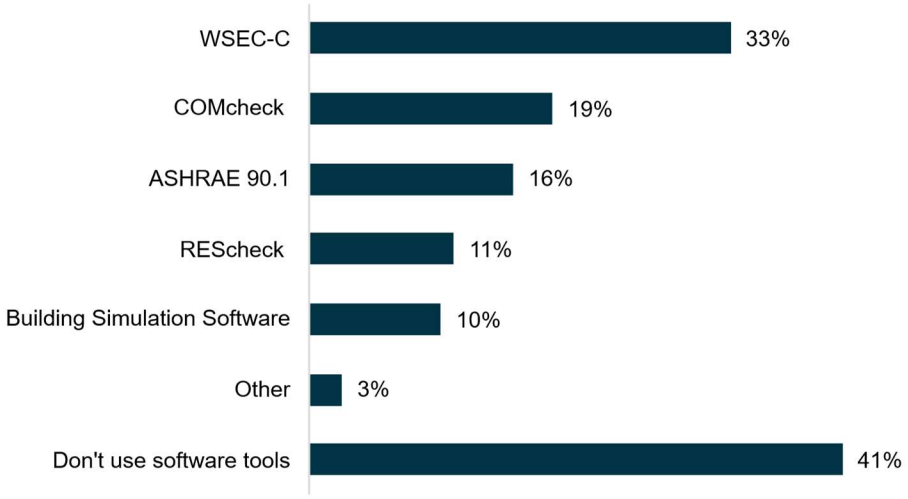

Figure 2: Software Tools Used by Code Trainees (*n* = 191)

Approximately one-quarter of respondents who don't use software compliance tools expressed interest in using them. Twenty-six percent of respondents who did not currently use software or web-based compliance verification tools reported an interest in using them but required training (Figure 3). The most common reason reported for not using software tools is that someone else in their organization is responsible for code compliance—though which tools this other party uses is unclear. A small portion of trainees reported that non-software tools alone sufficed for code compliance (14%), or that they use other support resources like building departments, hotlines, and circuit riders (15%).

Interest in learning software tools was higher among residential respondents (32%) than commercial respondents (13%), although most commercial respondents already use them, as noted previously. Residential respondents also more commonly reported that another party verifies compliance on their projects (43%) compared to commercial respondents (27%).

Non-participant interviewees reported some barriers to learning standard compliance software as well as some cost barriers for software outside of COMcheck or REScheck. Similar to the trainees, these non-participants commonly cited other people on the project handling code compliance or relying on third-party support as reasons they do not use software compliance tools.

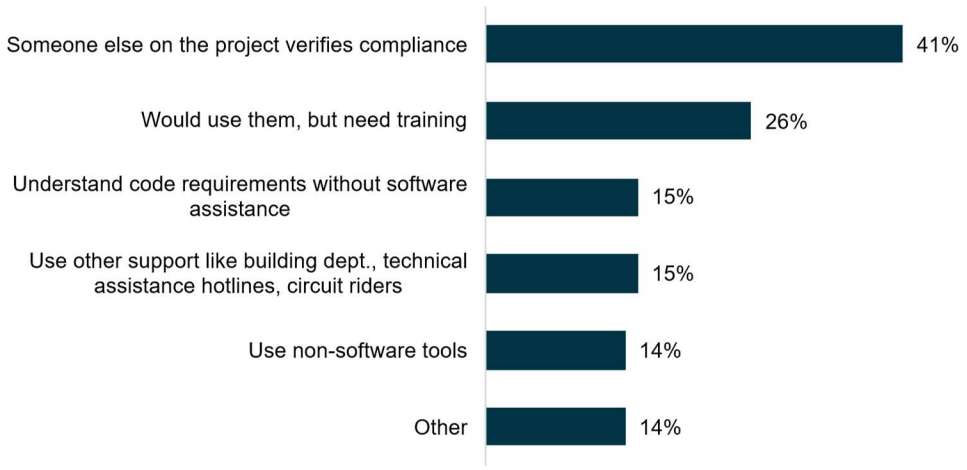

Figure 3: Reasons for Not Using Software Compliance Tools (*n* = 81)

Most trainees and non-participant market actors described software tools as important to code compliance. Among trainee survey respondents, 65% of code officials and 71% of non-code officials reported that software tools were either mandatory or very important to their work (Figure 4). A smaller percentage of code officials (24%) than non-code officials (38%) reported these tools as mandatory. Respondents working exclusively in either the commercial or residential sector tended to describe software tools as mandatory or very important to their work (82% and 80%, respectively). Non-participant market actors interviewed for the study reported using software compliance tools like REScheck or COMcheck when required by jurisdictions to meet prescriptive compliance pathways.

The majority of survey participants reported using code compliance software tools for either prescriptive compliance checks (44%) or both prescriptive and performance-based compliance checks (45%). Only a small share (10%) reported using software tools for performance-based checks alone. About one-quarter (23%) of residential respondents used software tools exclusively for performance-based compliance, while none of the commercial respondents reported doing so. Both residential and commercial respondents commonly reported using these tools for both prescriptive and performance pathways (45% and 50%, respectively).

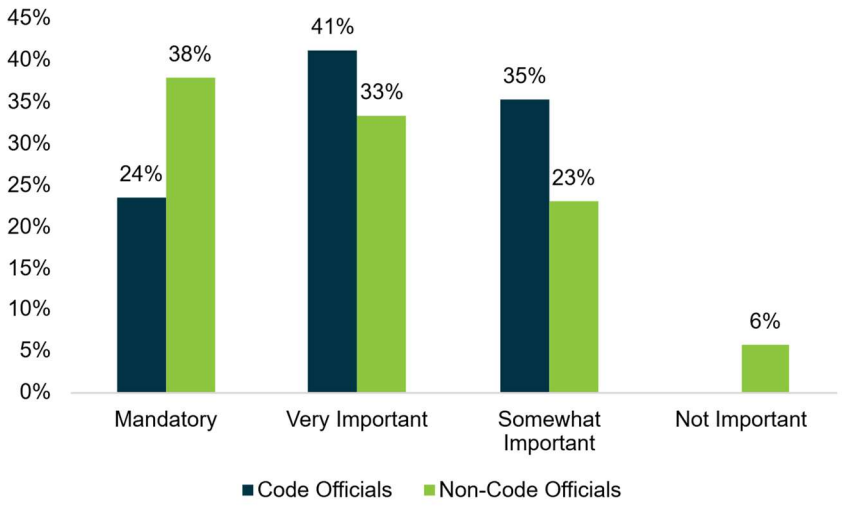

Figure 4: Importance of Software Compliance Tools Among Code Trainees (*n* = 104)

Section 6 *Proposed Progress Indicators and Tracking Results*

In addition to remeasuring training and education progress indicators (PIs) established in MPER #5, a primary goal of this study was to develop and measure new PIs for the following logic model outcomes that had not yet been assessed:

- Utility programs offer incentives to encourage above-code construction.
- Voluntary certifications help builders differentiate their homes.
- Jurisdictions are able to progress toward their building sector-related energy or climate goals.
- State agencies increase support for education and enforcement of code.
- Codes become or remain clear, simple, and enforceable.

NMR proposed a list of potential PIs related to these logic model outcomes, which was refined to the final list below through discussion with NEEA. These proposed PIs draw from a variety of sources; some employ secondary market research to provide quantitative evidence of progress, while others provide qualitative feedback by adding topics to existing data collection activities undertaken by the study. All proposed PIs include an assessment of the usefulness and viability of the indicator to provide evidence of the outcome—essentially a recommendation as to whether to continue collecting the data in future Code MPERs.

Outcome 5: Utility Programs Offer Incentives to Encourage Above Code Construction

PI 5.1: The number of utility programs promoting above code construction does not decrease, year over year.

The team measured this indicator by gathering secondary market data on above-code programs from multiple sources. NEEA provided a list of previously gathered data, which NMR cross-checked with several new data sources: CEE Residential New Homes Program Summary, DSIRE database, and BetterBuilt NW. NMR then compiled a list of residential and commercial new construction above-code programs found in NEEA territory, counts of which are listed in Table 8.

Table 8: Above-Code Programs found in NEEA Territory

State	Res	Com
ID	4	1
MT	1	-
OR	7	1
WA	16	1
Multistate	2	-
Total	30	3

NMR Assessment of PI 5.1: The team recommends continuing to measure this PI in future Codes MPER studies. It is a relatively quick research task to update given the sources provided above and provides a concrete quantitative data point for this outcome.

PI 5.2: Utility program penetration by state, where programs exist.

The team measured this PI similarly to 5.2, using secondary market data on the same above-code construction programs. While the team was able to obtain program participation counts from various program evaluations across the years, NMR experienced limited success attempting to map residential permits to utility service territory in order to calculate penetration for any given program. This was equally true in attempting to calculate overall penetration by state, as many programs operated across multiple states. Commercial and industrial census data is in dollar ($) amounts and not permit counts, which prevented the team from calculating penetration.

Table 9 below presents program participant counts for each program documented by sector and state.

Table 9: Above-Code Programs Participation Counts by Sector and State

State	Program	Program Participants										
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
ID	Commercial New Construction							104				
	ENERGY STAR® Homes				19				73			
	Residential New Construction							15				
ID + OR	New Construction (Building Efficiency)				81							
MT	Residential New Construction											
OR	New Buildings (Com)	326		356	328	419	468	468	456			
	New Homes (Res)	1,319	1,540	2,178	2,530							
OR + WA	New Homes (Res)					4,013	3,918	3,466	3,792			
WA	Commercial New Construction										88	
	ENERGY STAR® Homes		5		28				81			77
	Multifamily New Construction								44			

Table 10 is a rough approximation of program penetration by state and for the Northwest Region. As noted above, the mapping of permit counts to utility program home counts was not always accurate; additionally, some programs operate in multiple states. These factors lead to inaccurate estimates—for example, a 102% penetration for Oregon in 2015. Above-code program participation counts are based on evaluation reports, which can occur infrequently depending on the program. This can result in an often-incomplete year-to-year picture. Participation counts in such reports were particularly inconsistent after 2020; as a result, this table currently ends in 2019. Future MPERs can potentially address gaps.

Table 10: Estimation of Residential Above-Code Program Penetration by State

State	2013	2014	2015	2016	2017	2018	2019
ID	-	-	5%	-	-	-	1%
OR	84%	99%	102%	41%	40%	51%	15%
WA	-	-	-	37%	34%	30%	8%
Northwest Region Total	15%	21%	26%	39%	39%	34%	39%

NMR Assessment of PI 5.2: This PI, as written, may not be replicable in future MPERs unless data on program participation counts become more readily available year over year and residential permits are more accurately mapped to utility service territory and state. However, tracking participation counts by program, sector, and state is worthwhile to support assessment of above-code program activity in the Northwest Region. Considering that each of these above-code programs does not undergo annual evaluation, an every-other-MPER cadence for this and other market-scanning PIs might be appropriate to allow for future evaluation reports to be published. Other resources like the AXIS database or documentation from the Regional Technical Forum may also provide more consistent new construction data for each year.

Outcome 6: Voluntary Certifications Help Builders Differentiate Their Homes

NMR used the trainee survey and non-participant market actor interviews to assess the level of awareness and participation in voluntary certifications, as well as to measure specific PIs developed for this outcome.

Although it was not specifically established as a PI, trainees and market actors were first asked about their familiarity with various voluntary certifications (Figure 5). The most common voluntary certifications recognized by respondents were ENERGY STAR® (87% familiar) and LEED (71%). Nearly all respondents (92%) were familiar with at least one of the listed voluntary certifications, and over one-half (61%) had been involved with a project that achieved one or more of them. Among non-participant market actors interviewed, nearly all (12 of 13) were familiar with voluntary certifications, and two-thirds (eight of 13) had pursued them in some capacity for their projects. One-third (four of 13) also mentioned participating in non-listed ones. The most common certifications known to non-participants were LEED (eight of 13 aware) and Energy Trust of Oregon's Energy Performance Score (three of 13).

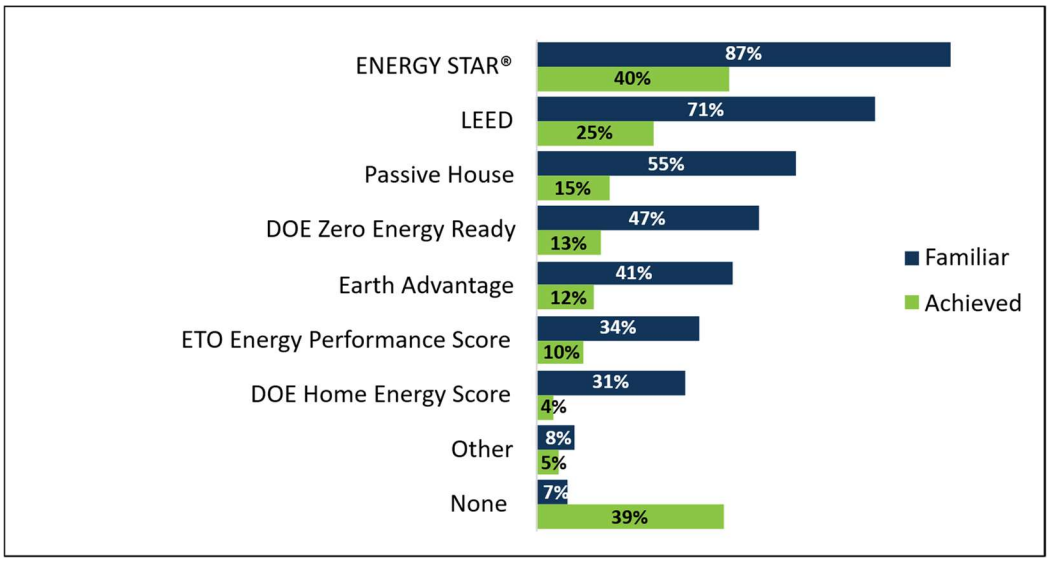

Figure 5: Trainee Awareness of and Experience with Voluntary Certifications (*n* = 163)

PI 6.1: Percentage of builders who report that voluntary certifications helped to differentiate homes that received them.

Figure 6 shows that over one-half (52%) of non-code officials who were familiar with voluntary certifications agreed that they generate more buyer or tenant interest. A smaller but still sizable portion agreed that these projects sell or rent for more (39%) and/or spend less time on the market (30%).

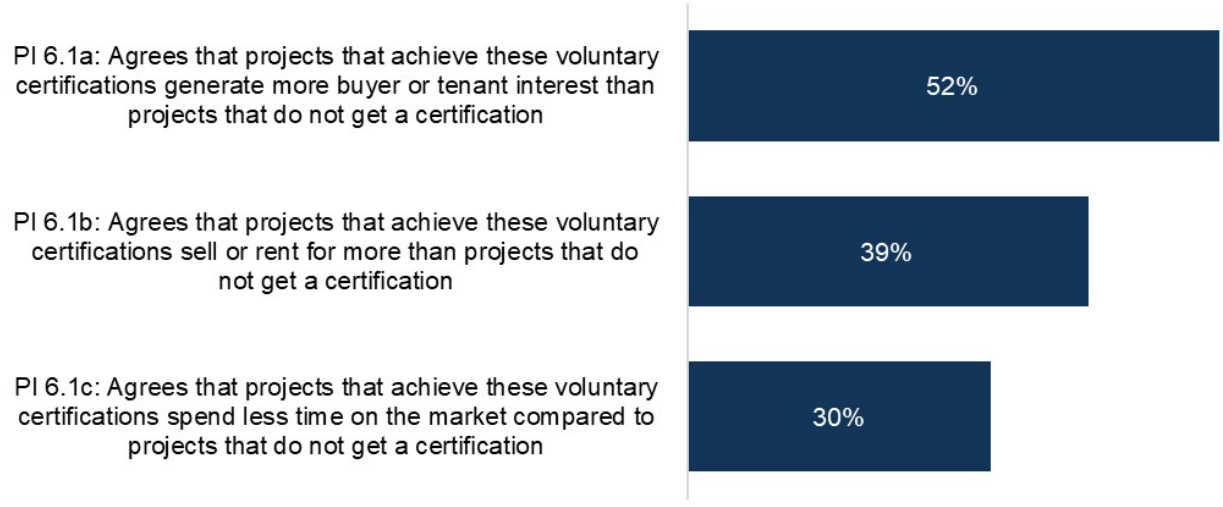

Figure 6: Trainee Attitudes Towards Voluntary Certifications (*n* = 149)

Among non-participant market actors who were aware of voluntary certifications, one-third (four of 12) described voluntary certifications as increasing the marketability and payback of projects for both builders and homeowners. A handful of non-participants also listed increased home reliability/self-sufficiency for customers, education on energy code and efficiency for builders, and increased social responsibility as additional benefits of pursing certifications.

NMR Assessment of PI 6.1: The team recommends assessing this PI in future MPERs, as it is easily replicated and provides insight into market perception and awareness regarding voluntary certifications.

PI 6.2: Growth in number of projects achieving voluntary certifications.

Figure 7 through Figure 10 show the number of projects achieving common voluntary certifications by state across several recent years. The project numbers fluctuate year to year, and while there has been a decrease in LEED certifications in recent years, this is offset by an increase in ENERGY STAR® Homes certifications. When looking at all certifications in aggregate, there has been a clear upward trend in project counts since at least 2016.

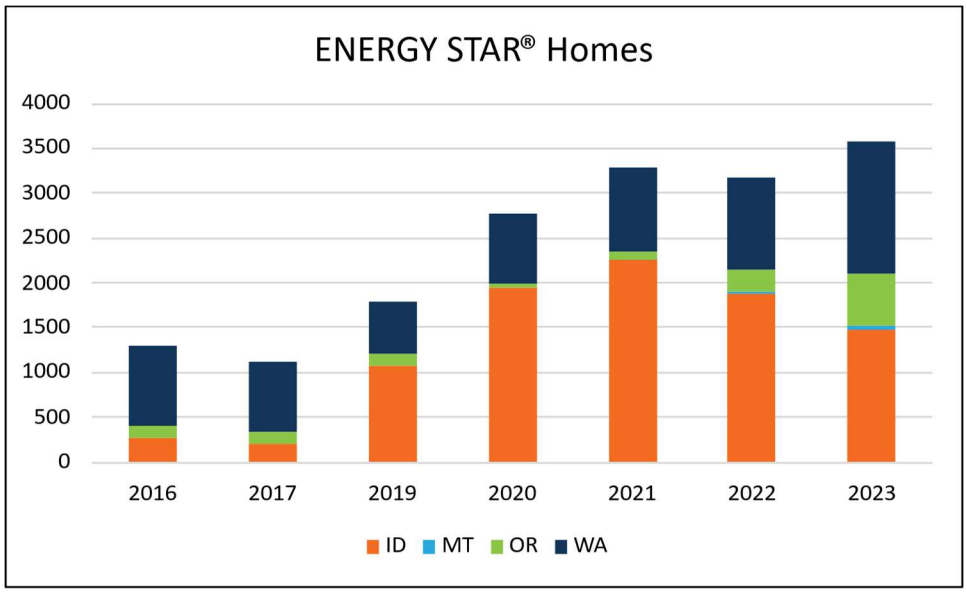

Figure 7: Number of Projects Achieving Voluntary ENERGY STAR® Homes Certification

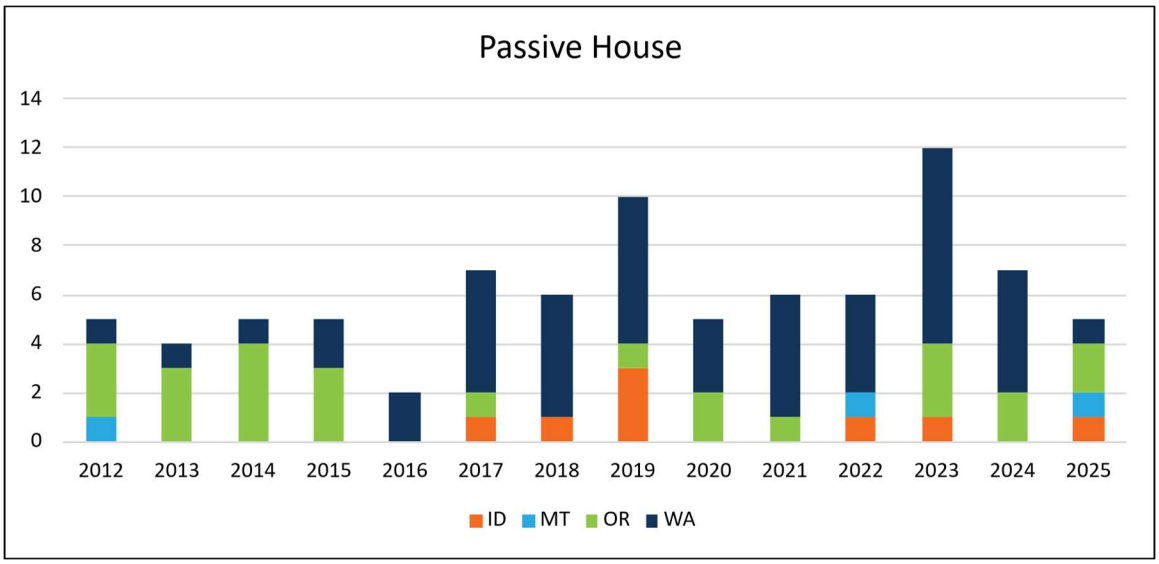

Figure 8: Number of Projects Achieving Voluntary Passive House Certification

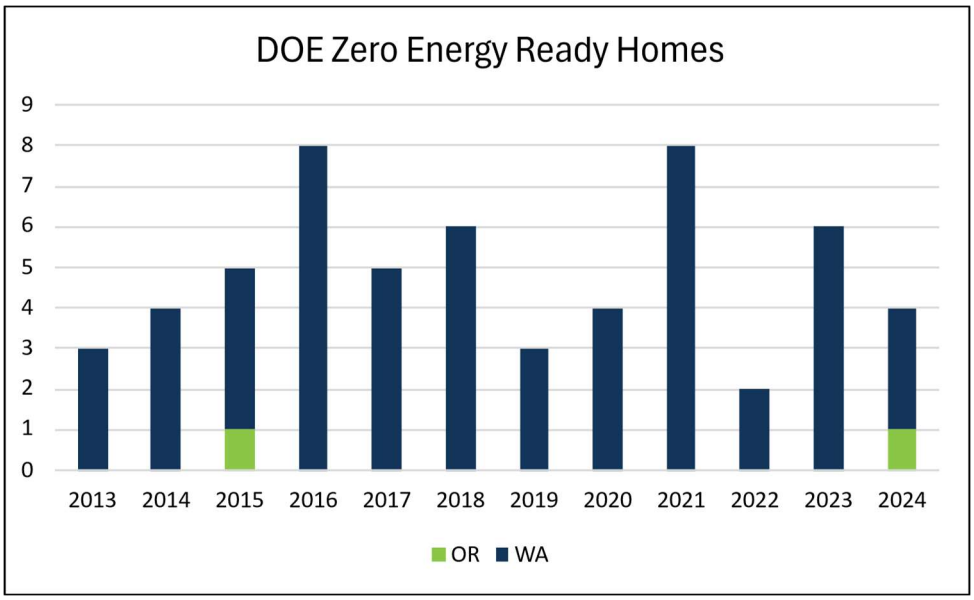

Figure 9: Number of Projects Achieving Voluntary DOE Zero Energy Ready Homes Certification

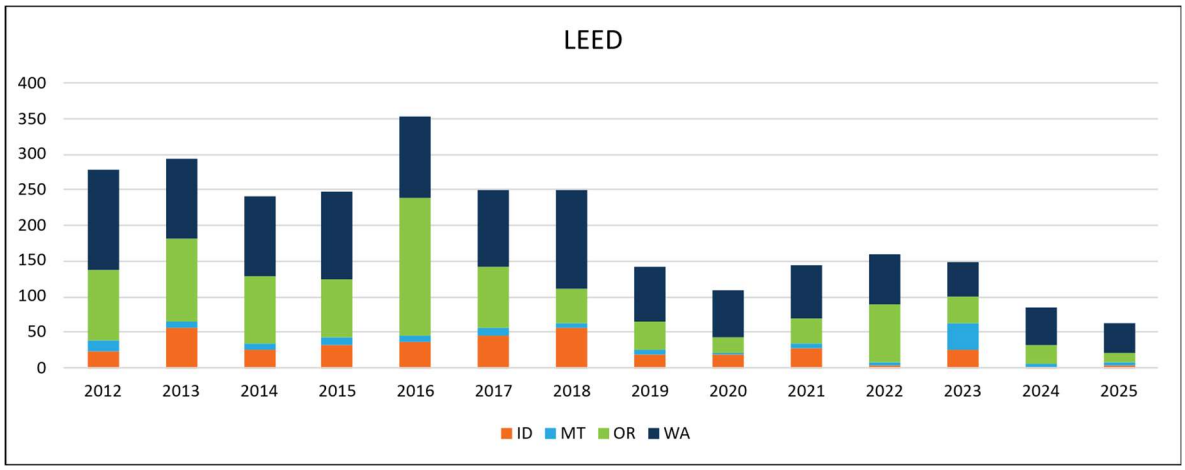

Figure 10: Number of Projects Achieving Voluntary LEED Certification

NMR Assessment of PI 6.2: NMR recommends assessing this PI in future MPERs. The data are readily available from each of the certifying organizations; existing tables or figures can incorporate data from subsequent years to monitor trends.

Outcome 7: Jurisdictions Able to Progress Toward Their Building Sector Related Energy or Climate Goals

PI 7.1: Qualitative confirmation or illustrative examples of states or jurisdictions progressing towards goals from code influence interviews.

Code influence interviewees were asked about progress towards energy or climate goals, and mentioned a few examples:

- Idaho has adopted 2018 IECC with efficiency considered closer to 2012, and is debating skipping to 2024 with efficiency closer to 2018.
- Oregon and Washington were reported to be within the last 10%–20% of their 2030 goals.

NMR Assessment of PI 7.1: NMR recommends continuing to include similar questions in code influence interviews in future MPERs. These questions do not add much time to the interviews, and while MPER #6 did not yield particularly fruitful responses, this may change in future years.

PI 7.2: Self-reported building sector progress from jurisdiction and state reporting.

NMR conducted secondary research to find evidence of building sector progress towards energy or climate goals via state or jurisdiction self-reporting. Some broad reporting was present at the state level, often greenhouse gas (GHG) emissions inventories or progress reporting. These reports typically present results by sector (residential, transportation, electricity, etc.), and therefore do not get to the level of

granularity needed to understand the impact of codes on new construction. Categories like "residential and commercial" or "buildings" within these reports may provide overall progress insights, but they also include the existing building stock. Some examples of state-level reporting include:

- Greenhouse Gas Emissions Report from Idaho (2024)
  - Entire residential sector, not just buildings or construction
- Two reports from Montana:
  - Montana Climate Solutions Plan (2020)
  - Montana Climate Assessment (2017)
- Two climate assessment reports from Oregon
  - Fourth Oregon Climate Assessment Report (2019)
  - Oregon Climate Action Commission, Biennial Report to the Oregon Legislature (2024)
- Two reports from Washington:
  - Clean Buildings Legislative Report (2024)
  - Greenhouse Gas Emissions Inventory (2025)

NMR Assessment of PI 7.2: The team recommends assessing this PI in subsequent MPERs. It is a relatively quick research task, easily incorporated into larger market scans or literature reviews employed for other PIs. Although new construction or codes were not reported separately from existing buildings in these reports, they may provide useful metrics to track state or jurisdictional progress. As these types of large progress reports are not necessarily published annually, an every-other-MPER cadence for this and other market-scanning PIs might be appropriate to allow for future evaluation reports to be published.

Outcome 8: State Agencies Increase Support for Education and Enforcement of Code

PI 8.1: Qualitative confirmation from code influence interviews of state agency support increasing (or not decreasing)

Code influence interviewees were asked about their awareness of state support for energy codes in their state or across the Northwest Region, and whether they had noticed an increase or decrease in that support in recent years. Respondents generally indicated that state support for energy codes has increased or stayed consistent, with none reporting major shifts in either direction.

NMR Assessment of PI 8.1: Keep this progress indicator for future MPER data collection. It is a relatively short battery of questions focused on awareness of state support for energy code and whether it has noticeably increased or decreased in recent years. While MPER #6 did not yield many concrete examples during the time period being studied, this may change in future years.

PI 8.2: Market actors perceive state support for energy codes increasing or remaining the same year-over-year.

Trainees rarely indicated state support for energy codes had decreased, and most indicated it has remained the same relative to previous years. Just over one-half (51%) of trainees indicated that support has increased in the form of live energy code trainings and resources like webinars and fact sheets (Figure 11). Similarly, most non-participant market actors described state and jurisdictional support for energy code enforcement and education as remaining the same or seeing slight improvement over recent years. Nearly one-half (six of 13) noted improvements in communicating with officials on energy code questions, and mentioned resources like webinars, classes, and hotline support offered.

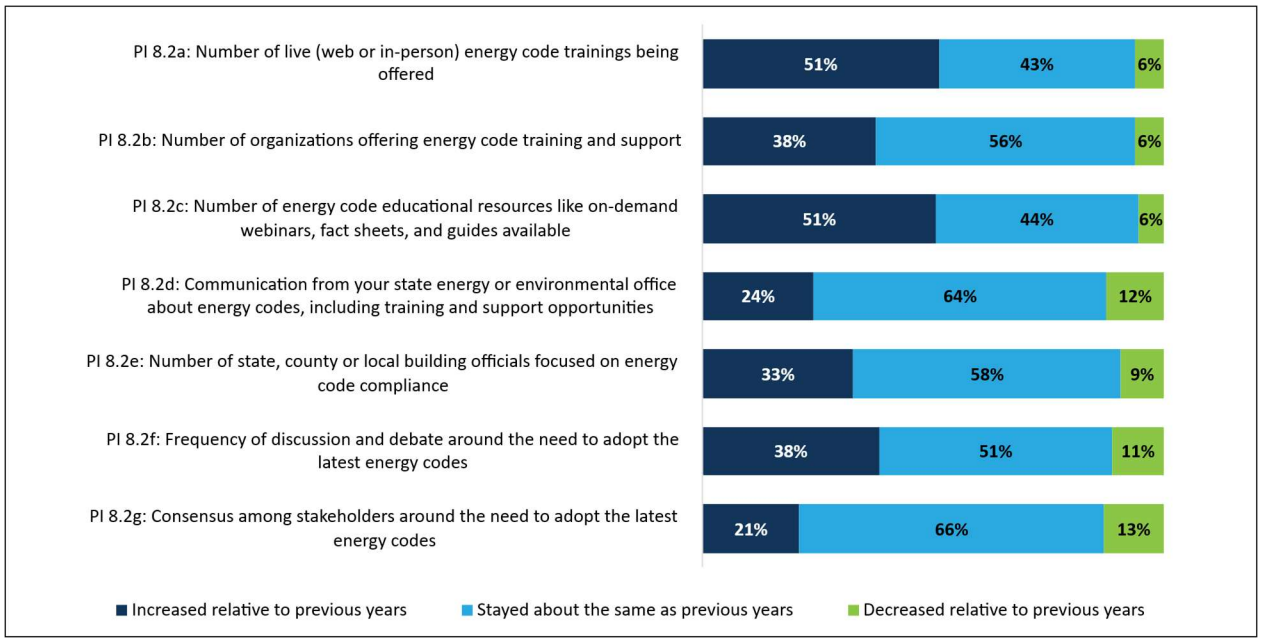

Figure 11: Trainee Attitudes Toward State Support for Energy Code Education and Compliance (*n* = 162)

NMR Assessment of PI 8.2: NMR suggests this progress indicator be tracked in future MPERs. It does not add significant time to the trainee survey and provides important perspectives on state support.

PI 8.3: Evidence of state offices supporting codes, including trainings, funding allocations, and launching of new initiatives.

The team emailed state energy offices requesting:

- Annual state funding levels for energy code support activities (trainings, technical assistance, and other resources).
- Specific examples of discrete training and educational activities.

- Examples of state support for code enforcement (workforce development, capacity-building, etc.) and funding levels for those activities.
- Other formal state energy code activates, including national coordination.

The team made at least three contact attempts to these offices, but did not receive much useful information. Three out of four state offices did not respond to our inquiry, and the one response received simply directed the study team to other publicly available documentation.

NMR Assessment of PI 8.3: The team does not recommend continuing to collect data for this progress indicator in future MPERs. The limited responses received from state offices appear to indicate these are not metrics that are readily available or tracked.

Outcome 9: Codes Become or Remain Clear, Simple, and Enforceable

PIs 9.1 through 9.4: Percentage of market actors who indicate energy codes are simple to understand and enforce/comply with, and that code has not become more difficult to understand over time.

These PIs can largely be thought of as one category, but are broken up by target audience in the following way:

PI 9.1: Percentage of *code officials* who indicate energy codes are simple to understand and enforce.

PI 9.2: Percentage of *non-code officials* who indicate energy codes are easy to understand and comply with.

PI 9.3 Percentage of *non-code officials* indicating code is easy to understand and comply with *and also* indicate that code has not become more difficult to understand.

PI 9.4 Percentage of *code officials* indicating code is clear, simple, and enforceable *and also* indicate that code has not become more difficult to enforce.

Two-fifths (40%) of code officials and 43% of non-code officials agree that code is easy to understand and enforce or comply with (Figure 12). Roughly one-half of each group, or one-fifth (20%) of code officials and non-code officials (21%), also agree that code has not become more difficult to understand over time. Because 9.3 and 9.4 are subsets of respondents who agreed with 9.1 and 9.2, the 20% listed for 9.4 could more clearly be stated as "half of the code officials who agreed that code is simple to understand and enforce (40%), *also agree* that code has not become more difficult to understand over time (20%)."

These patterns largely held true among training non-participants interviewed for the study. Less than half (five of 13) indicated complying with energy code was easy, and only four of the 13 indicated it was not getting more difficult over time.

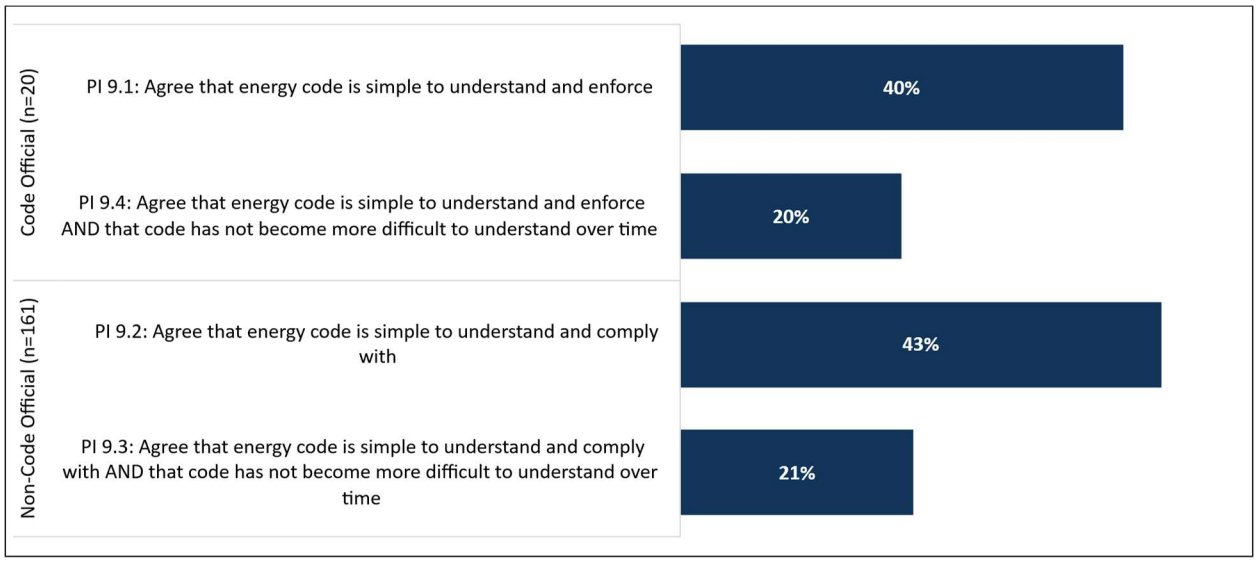

Figure 12: Clarity of Energy Code

NMR Assessment of PI 9.1-9.4: The team recommends continuing to collect this data during future trainee surveys, it is a relatively simple battery of questions that does not add much time to the survey.

PI 9.5: Code compliance rates for residential and commercial new construction do not decrease.

NMR gathered code compliance rates from NEEA-funded compliance studies within the states in the Northwest Region. Table 11 displays the code compliance rates found for these states beginning in 2012.

Table 11: Code Compliance Rates for Residential and Commercial New Construction Year over Year

State	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
ID		Res, 90%											Res, 98%	
MT	Res, 61%							Res*						Res 86%, Com*
OR			Res, 91%					Com, 89%	Res*					
WA		Res, 96%							Res*		Com, 85%	Res, 76%		

*Compliance rate was presented at the building component level, not overall

NMR Assessment of PI 9.5: The team suggests continuing to track this PI in future MPERs to confirm compliance rates are not decreasing. This may be another secondary market data point that is only collected every other MPER or at a similar cadence. Additionally, compliance rates change based on the complexity of the code in place, with higher compliance rates potentially expected in earlier years in the table above when code was less stringent and compliance may have been easier to achieve. As code becomes more stringent and often complex, compliance rates may decrease marginally. Ideally, future MPERS could assess compliance rates in both the early and late stages of the same code cycle, although this is methodologically challenging and resource-intensive.

Section 7 *Conclusions and Recommendations*

This research had three primary research objectives: assessing NEEA's progress on select logic model outcomes, a qualitative analysis of NEEA's influence on code development and adoption, and a formative evaluation of key code compliance tools. This section presents key conclusions and recommendations.

Progress on Select Logic Model Outcomes

Conclusion #1: Future MPERs should track several viable PIs for outcomes not previously assessed. Some metrics rely on secondary data and market research not available on the same cadence as MPERs are conducted. The prior study, MPER #5, had established several PIs related to code training and education outcomes that this study continued to measure. However, PIs for logic model outcomes related to utility above code programs, voluntary certifications, jurisdictional progress towards energy or climate goals, state support for energy code, and clarity of energy code had not been established or assessed. Detailed descriptions of the indicators, PI results from this study, and evaluator assessments of their viability can be found in Section 6.

Many of the proposed PIs rely on secondary market data, so future MPERs may include a specific literature review task to update them. It may also be prudent to establish a cadence at which some of these market data PIs are collected, considering that new evaluation reports on new construction programs or state reporting on progress towards climate goals are not necessarily published annually. Other indicators rely directly on primary data collection activities traditionally included in Codes MPER studies such as code influence interviews and the trainee survey and can therefore be easily incorporated into future iterations of the study.

Recommendation 1: Adopt the PIs marked with a green check in Table 12 below and continue to measure them in future Codes MPER studies.

Table 12: Assessment of Newly Proposed Progress Indicators

Logic Model Outcome	Proposed Indicator	Status	Recommendation
Utility programs offer incentives to encourage above code construction	5.1: Number of utility programs promoting above code construction does not decrease year over year	✓	Continue to assess in future MPERs
	5.2: Utility program penetration by state, where programs exist	?	Modify to instead be participation counts or energy savings from above code programs. Penetration could not be measured accurately due to incomplete or inconsistent program reporting on the residential side, and the fact that census data is tracked by dollar amount and not by unit on the commercial side.
Voluntary certifications help builders differentiate their homes	6.1: Percentage of builders who report that voluntary certifications help to differentiate their homes	✓	Continue to assess in future MPERs
	6.2: Growth in number of projects achieving voluntary certifications	✓	Continue to assess in future MPERs
Jurisdictions able to progress toward building sector energy and climate goals	7.1: Qualitative confirmation and illustrative examples from code influence interviews	✓	Continue to assess in future MPERs
	7.2: Self-reported building sector progress from jurisdiction or state reporting	✓	Continue to assess in future MPERs
State agencies increase support for education and enforcement of code	8.1: Qualitative confirmation from code influence interviews of state support increasing or remaining the same	✓	Continue to assess in future MPERs
	8.2: Market actors perceive state support for energy codes increasing or remaining the same year over year	✓	Continue to assess in future MPERs
	8.3: Evidence of state offices supporting codes including trainings, funding allocations, and launching new initiatives	✗	Do not collect in future MPERs. No response from most offices, and no useful information provided otherwise. It seems state offices do not track information in a way that would measure this PI

Logic Model Outcome	Proposed Indicator	Status	Recommendation
Codes become or remain clear, simple, and enforceable	9.1 – 9.4: Percentage of market actors who indicate energy codes are simple to understand and enforce/comply with, and that code has not become more difficult to understand over time	✓	Continue to assess in future MPERs
	9.5: Code compliance rates for residential and commercial new construction do not decrease	✓	Continue to assess in future MPERs

Conclusion #2: The code training and education PIs largely showed improvement since MPER #5, with the exception of training impacts among code officials. These PIs developed in MPER #5 are an effective tool to describe the impacts of NEEA sponsored trainings and are easy to measure. The ability to measure results longitudinally across MPER studies is a key function in understanding the impact of NEEA's activities over time and to measure trends in the market. The PIs associated with trainee understanding of and attitudes towards code, and the specific survey questions used to assess them were easy to replicate during this study and produced interesting results to begin to compare over time.

Recommendation 2: Continue to measure PIs first developed in MPER #5 that support logic model outcomes 1-4.

Code Influence

Conclusion #3: NEEA and its partners play a key role in code development and adoption in each of the four Northwest states and at the national level via the IECC; their consistent, long-term presence in this ecosystem has led to high levels of respect and credibility among stakeholders. All code influence interviewees for this study confirmed NEEA's importance to these processes and to where codes in the Northwest Region stand today. Interviewees noted NEEA's long-term outlook, coalition building, and incorporation of bottom-up feedback as integral to increasing code stringency, implementation, and compliance. Specifically, NEEA:

- Funds, conducts, and disseminates well-respected research that informs code proposals, including studying energy and cost impacts of potential code changes, code compliance data, and measure-specific market transformation efforts.
- Provides long-term influence and resources across code cycles to continue revising and building from as new code proposal opportunities arise.
- Acts as a countervailing force to well-funded builder lobbies while maintaining broad credibility and being mindful to attempt to avoid conflict and sustain open dialogue.
- Remains highly involved in public processes around code development at the state and national level, reportedly the most-involved REEO working on the IECC at the national level.
- Facilitates communication between diverse stakeholders (e.g., builders, code officials, and code developers) to maintain balance between clarity, comprehensiveness, and flexibility of code.

Recommendation 3: Continue to fund research on code impacts, compliance rates, and emerging technology. In the context of increasingly contentious code development processes, data-driven support for proposals becomes particularly important.

Recommendation 4: Maintain a strong presence in code development processes at the state level and (particularly) nationally. Many interviewees stressed NEEA's importance in the IECC development process and that they are a trusted contributor that is depended upon to continue to advance code.

Compliance Tool Evaluation

Conclusion #4: Many market actors do not currently use software tools to verify code compliance, but a sizable portion of those expressed willingness to learn with additional training. Nearly half (41%) of code trainee survey respondents indicated they did not use any software tools for code compliance on their projects. Of that 41% not using software tools, one quarter (26%) expressed that they were interested in using these tools but required training to do so. This is particularly pronounced among respondents in the residential sector; almost two-thirds (63%) of residential respondents did not use software tools and one third of those (32%) expressed interest in learning them. Most training non-participants interviewed for the study reported using COMcheck or REScheck occasionally when required to by certain jurisdictions but otherwise did not have much experience with software compliance tools.

Recommendation 5: Support market actor awareness and use of code compliance software tools via program marketing, particularly in the residential sector. Consider offering specific training and coaching for market actors interested in learning to use either state-specific tools or more universal ones like REScheck or COMcheck.

Conclusion #5: Third-party consultants or experts are commonly used to verify code compliance. Over one-third (35%) of trainee survey respondents and roughly the same portion of non-participant interviewees reported using third-party experts for compliance. Among trainees who did not use software tools, 41% indicated this was because another project team member handled compliance. Again, this is more pronounced in the residential sector; 44% of residential respondents use third-party experts and 43% of those not using software tools indicated this was because another party verified compliance.

Recommendation 6: Third-party experts such as HERS raters and sustainability consultants are often strong allies in educating builders and other market actors about code and increasing compliance. Build and maintain strong relationships with these groups, particularly those working in the residential sector, and support them with the information and resources they need to continue to educate the market.

A

Appendix A Code Trainee Survey Detail

The following section describes the results of the Code Training Participant Survey that was distributed in spring 2025. NMR conducted a survey of market actors who attended NEEA code trainings in 2023 and 2024 to assess progress on training/education outcomes and jurisdictional goals.

Methodology

Sample Frame Development

NEEA provided trainee data containing a total of 10,639 records including participants in residential and commercial trainings from four different states: Idaho, Montana, Oregon, and Washington. The raw data were organized by training, so trainees often appeared on multiple lists. The team removed records without email addresses, leaving 10,114 records, and also reviewed and deduplicated records, leaving a total sample of 4,087 unique individual trainees. The team classified trainees into states using tracking data from the trainings and cross-referencing with the name of the training they took (i.e., Washington would be assigned to a trainee who took the 2021 WSEC training). Trainees were classified into sectors (residential, commercial) in a similar manner by making a determination based on the subject matter of those trainings. For trainees who had taken multiple trainings across sectors, they were assigned based on the majority (for example, a trainee who took three commercial trainings and one residential training would be assigned to commercial).

Sample Design

The initial sample frame of over 4,000 companies and a target of 90% confidence with 10% precision (90/10) called for at least 57 respondents from Idaho/Montana (combined due to relatively lower trainee representation), 63 from Oregon, and 66 from Washington, for a total of 186 respondents.

Soft targets were initially set for building sector within each state; however, the commercial trainee populations for Idaho, Montana, and Oregon were quite small, rendering 80/10 or 90/10 targets infeasible. Instead, NMR set an aggressive target of a 33% maximum response rate, recognizing the actual response rates would likely be lower. The survey asked respondents to self-report the sectors in which they worked; the team considered these responses more reliable and therefore treated them as superseding our initial assessments of each respondent's sector. This further complicated sector-level targets. Regardless, overall sector targets for the sample were achieved: two-fifths (39%) of the respondents worked in both sectors, with another two-fifths (39%) working residential only and one-fifth (22%) in commercial only.

Outreach, Fielding, and Responses

NMR implemented the survey via the Qualtrics web platform and used emails to recruit respondents. The team sent emails to 2,617 individuals at unique email addresses. Each trainee received up to five recruitment emails unless they responded requesting that they not be included in the survey outreach. Table 13 describes the total sample, targets, and achieved responses. Survey participants were compensated with $50 gift cards for their responses.

Table 13: Trainee Survey Sample, Targets, and Disposition

	Sample	Target	Achieved
Idaho/Montana	261	57	35
Oregon	867	63	67
Washington	2,859	66	89
Overall	**4,087**	**186**	**191**

FIRMOGRAPHICS

Respondents primarily work as architects or architectural designers. One in four survey respondents (25%) described themselves as architects or designers at an architecture firm (Figure 13). The next most common profession identified by respondents was general contractors (14%) followed by engineers and equipment contractors/vendors (8% of each).

Figure 13: Respondents' Primary Professional Role (n=191)

Respondents identified as "Other" included home inspectors, utility and program implementation staff, manufacturer and marketing/sales representatives, building permit and resource conservation specialists, and facilities managers.

Survey respondents were relatively evenly represented across sectors. Trainee respondents commonly worked across sectors, with nearly two-fifths (39%) of respondents working in both the residential and commercial sectors. Most respondents worked at least in part in the residential sector (77%), and over one-half worked at least in part in commercial buildings (53%). Almost two-fifths of respondents worked exclusively in the residential sector (39%), while over one-fifth worked exclusively in commercial (22%). Figure 14 details the work sectors of trainee participants in the survey.

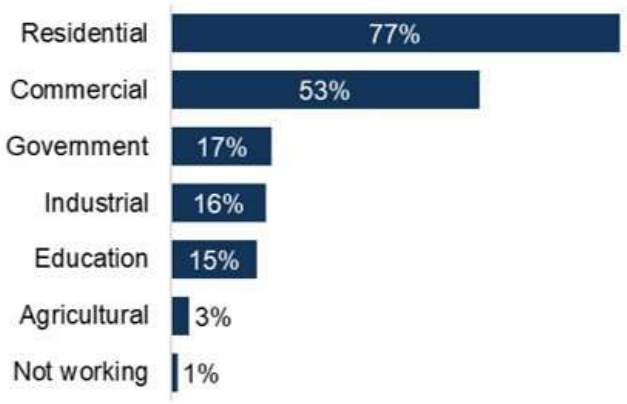

Figure 14: Trainee Work Sectors (n= 190, multiple response)

Respondents are highly experienced in construction and code compliance work. Survey respondents most commonly worked in an area related to code compliance for more than 10 years (51%). This includes current or previous work in building design or construction as well as code development or enforcement (Figure 15).

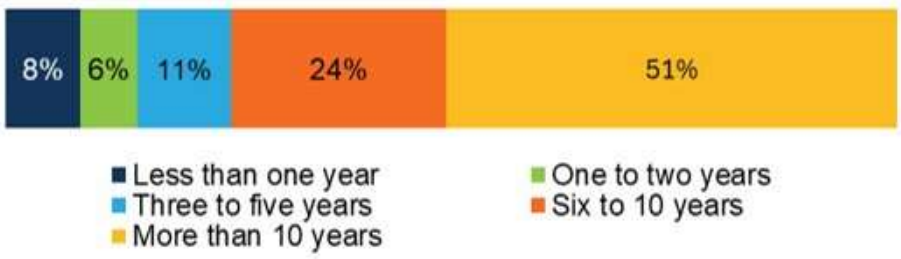

Figure 15: Tenure in Energy Code Compliance (n=191)

MARKETING AND MOTIVATION FOR ATTENDING

NEEA trainings result in notable matriculation. Four-fifths of respondents (80%) had taken NEEA-sponsored trainings before the training in question. Among those respondents, one-third (32%) reported that the prior training influenced their decision to attend the training in question, indicating a notable level of matriculation between trainings.

Respondents learned about the NEEA-sponsored training through a variety of channels (Figure 16). The most common among these was word-of-mouth from a colleague who had attended the training (20%), in addition to newsletters (17%) and NEEA website notifications (13%).

Figure 16: How Respondents Learned About Training (n=189)

Respondents attended trainings predominantly to expand their understanding of energy code and technical concepts. Respondents stated that they were motivated to attend NEEA trainings to expand their technical knowledge (69%) and to better understand energy code (63%). Another one-third (31%) indicated personal interest as motivation. Table 14 details the reasons listed by survey respondents for attending NEEA trainings.

Table 14: Respondents' Motivation to Attend Training

Motivation for Attending	% of Respondents
Expand technical knowledge	69%
Better understand energy code	63%
Personal interest	31%
Earn Continuing Education Units (CEUs)	28%
Improve qualifications	24%
Learn to teach others	16%
Network with others	9%
Required by employer	4%
Don't know	1%

Outside of NEEA-sponsored trainings, most respondents have attended other energy code-related trainings. Over two-thirds (69%) of respondents had attended some non-NEEA-sponsored energy code-

related training since the beginning of 2023. The most common organizations for these outside trainings were Earth Advantage (33%), Energy Trust of Oregon (26%), and the Washington State University Energy Program (24%). Table 15 details the full list of organizations.

Table 15: Training Organizations Attended by Respondents

Training Organization	Number of Respondents	% of Respondents
Earth Advantage	63	33%
Energy Trust of Oregon	49	26%
Washington State University Energy Program	46	24%
Building Officials Association (IDABO, OBOA, WABO)	32	17%
Evergreen Technology Consulting (WSEC Commercial Tech Support Team)	28	15%
Oregon Home Builders Association	19	10%
Oregon Department of Energy	15	8%
Montana Department of Environmental Quality	8	4%
The Idaho Codes Circuit Rider (Dave Freelove)	5	3%
Association of Idaho Cities	6	3%
National Center for Appropriate Technology (NCAT)	3	2%

Prior training with other organizations contributed to interest in NEEA-sponsored trainings. One-third (31%) of respondents who attended trainings at other organizations rated those trainings as influential or extremely influential in their decision to attend the NEEA training in question.

TRAINING SUGGESTIONS AND RECOMMENDATIONS

Two-thirds of respondents provided feedback on topics they would like to see offered in future trainings. Respondents described topics that they would either like to see more of or like to see in new future trainings (Table 16). Nearly one-quarter (23%) of respondents requested more trainings on implementing specific measures in the energy code, including insulation, lighting, and duct and air sealing. In addition, respondents commonly requested increased training on energy code changes to keep up with regular code updates, as well as heat pump and HVAC-specific trainings.

Table 16: Recommended Future Training Topics

Training Topic	Number of Respondents	% of Respondents
Implementation of different measures	29	23%
Code changes and refreshers	21	17%
Heat pump and HVAC training	17	12%
Green buildings and embodied carbon	12	9%
Specific state energy codes	12	9%
Commercial compliance	11	9%
Comparing products, equipment, and vendors	8	6%
Implementation in different climate scenarios	8	6%
Trainings for specific professional audiences	8	6%
Compliance best practices	7	6%
Energy modeling	6	5%
Residential renovations/additions, retrofit, rehab	6	5%
Compliance software and tools	5	4%
New technology	4	3%
Energy efficiency credits	4	3%

Respondents also provided suggestions for improving future trainings. Over one-fourth (26%) of respondents suggested providing training materials, such as PowerPoints, recordings, reference notes, and case studies, at the end of trainings. Responses also included suggestions for having more hands-on examples during training courses. Almost one-fifth (18%) of respondents also requested more availability among training offerings, including expanded time slots for courses and courses in more areas.

Table 17 details the most common suggestions made by respondents.

Table 17: Suggestions for Improving Future Trainings

Training Suggestion	Number of Respondents	% of Respondents
Improved course materials	19	26%

Expanded training availability	13	18%
Better Q&A sections	7	9%
More in-depth topics	7	9%
More virtual trainings	6	7%
Expand trainings for different professional audiences	4	5%
More in-person trainings	3	4%

Appendix B PI Measurements

Table 18 shows the Codes Program logic model outcomes, associated PIs, and measurements for the PIs addressed in the current MPER. It also identifies the data sources used to develop the PI measurements, and as applicable, where related findings are discussed in the MPER. If PIs were measured in two ways, both measurements are provided. The rightmost column summarizes progress for that PI.

Table 18: MPER #6 PI Tracking

PI	Metric	Data Source	Location	Measurement 1	Measurement 2 (if applicable)	Summary of Progress
Outcome I. Market actors (builders, manufacturers, supply chain) understand requirements of code						
1.1. Percentage of market actors indicating NEEA-supported trainings increased understanding of code requirements	Portion of market actors giving a 4 or 5 rating or "not applicable" for at least three items: ▪ How much did the training increase your understanding of the relevant energy code(s)? ▪ How much did the training increase your mastery of the training's subject in general? ▪ To what degree has your training improved your ability to identify current energy code requirements for equipment upgrade or replacement projects? ▪ To what degree has your training improved your ability to identify current energy code requirements for new construction projects?	Trainee survey	Section 4	40% gave a 4 or 5 rating to at least three items	N/A	**Summary:** Increase to 40% from 35% in MPER #5
1.2. Percentage of market actors indicating NEEA-supported trainings helped them implement new strategies for working with energy code changes	Portion of market actors giving a 4 or 5 rating for one survey item: The training helped me implement new strategies for working with code change.	Trainee survey	Section 4	60% of market actors gave a 4 or 5 rating	N/A	**Summary:** Increase to 60% from 55% in MPER #5
1.3. Percentage of market actors indicating they are sharing information from NEEA-	Portion of market actors responding "yes" to one survey item: Since taking the training, have you shared information from the training with your colleagues?	Trainee survey	Section 4	77% of market actors responded "yes"	N/A	**Summary:** Increase to 77% from 70% in MPER #5

PI	Metric	Data Source	Location	Measurement 1	Measurement 2 (if applicable)	Summary of Progress
supported trainings with colleagues						
Outcome II. Builders have at least a neutral attitude towards energy code						
2.1. Percentage of respondents reporting at least neutral attitude toward energy code and that training improved their view of energy code	Portion of market actors giving a rating of 3, 4, or 5 ("at least neutral") for first item and a rating of 4 or 5 ("agree") for second item: ▪ It is valuable to have energy codes in place. ▪ The training improved my view of the importance of energy codes.	Trainee survey	Section 4	51% gave both a rating of 3, 4, or 5 for the first item and a rating of 4 or 5 for the second item	N/A	**Summary:** Decrease to 51% from 56% in MPER #5
2.2. Percentage of non-code officials that report advocating for energy saving policies because of training	Portion of non-code officials giving a "yes" to either item: ▪ Since taking the training, have you advocated for, or changed, any other practices that would reduce your organization's energy use because of what you learned through the training? ▪ Since taking the training, have you advocated for, or changed, any other work practices to help *customers or clients* reduce energy use because of what you learned through the training?	Trainee survey	Section 4	67% of non-code officials gave a "yes" to either item	N/A	**Summary:** Consistent with MPER #5 at 67%
Outcome III. Increased builder industry understanding of product availability and use of or application of new products						
3.1. Percentage of respondents indicating training increased understanding of product availability, related to energy code measures.	Portion of market actors giving a rating of 4 or 5 for one item: ▪ How much did the training increase your knowledge of new product availability?	Trainee survey	Section 4	30% of market actors gave a rating of 4 or 5	N/A	**Summary:** Increase to 30% from 24% in MPER #5
3.3. Percentage of respondents indicating training increased understanding of applications of new technology, as introduced in the energy code	Portion of market actors giving a rating of >3 or "not applicable" to at least two items: ▪ How much did the training increase your knowledge of best practices in the construction of new buildings? ▪ How much did the training increase your understanding of new product applications? ▪ To what degree has your training improved your ability to estimate energy savings from upgrades?.	Trainee survey	Section 4	48% of market actors gave a rating of >3 or "not applicable" to at least two items	N/A	**Summary:** Increase to 48% from 28% in MPER #5
Outcome IV. Code officials and other participants in the code process understand the value of energy code and how to achieve their code compliance goals						
4.1. Percentage of code officials indicating training increased ability	Portion of code officials giving a rating of 4 or 5 for one item: ▪ To what degree has this training improved your ability to assess code compliance?	Trainee survey	Section 4	40% of code officials gave a rating of 4 or 5	N/A	**Summary:** Decrease to 40% from 52% in MPER #5

PI	Metric	Data Source	Location	Measurement 1	Measurement 2 (if applicable)	Summary of Progress
to assess code compliance						
4.2. Percentage of code officials that share information from training with others	Portion of code officials giving a "yes" for one item: ▪ Since taking the training, have you shared information from the training with your colleagues?	Trainee survey	Section 4	85% of code officials gave a "yes"	N/A	**Summary:** Increase to 85% from 81% in MPER #5
4.3. Percentage of code officials indicating they recommended training to anyone else	Portion of code officials giving a "yes" for one item: ▪ Since taking the training, have you recommended this training to anyone else?	Trainee survey	Section 4	45% of code officials gave a "yes"	N/A	**Summary:** Decrease to 45% from 46% in MPER #5
4.4. Percentage of code officials that changed procedures as a result of training (exclude those that changed type of work)	Portion of code officials giving a "yes" for one item: ▪ Since taking the training, have you recommended changed your procedures when conducting inspections?	Trainee survey	Section 4	40% of code officials gave a "yes"	N/A	**Summary:** Decrease to 40% from 43% in MPER #5
4.5. Percentage of code officials indicating NEEA-supported trainings increased understanding of code requirements.	Portion of code officials giving a rating of 4 or 5 for one item: ▪ How much did the training increase your understanding of the relevant energy code(s)?	Trainee survey	Section 4	35% of code officials gave a rating of 4 or 5	N/A	**Summary:** Decrease to 35% from 58% in MPER #5
Outcome V. Utility programs offer incentives to encourage code+ construction						
5.1. Number of utility programs promoting code+ construction does not decrease, year over year	Track number of programs by state and utility from CEE survey of residential and commercial programs: DSIRE database	Secondary data	Section 6	Identified 30 residential and 3 commercial programs across states	N/A	**Summary:** 33 total programs documented
5.2. Utility program penetration by state, where programs exist	Percentage to be tracked over time: program participant units/relevant new construction units from utility program evaluation reports and census permit and state tax accessor data	Secondary data	Section 6	Program participant counts tracked from 2012 to 2022 across states and by region. Penetration was calculated for residential programs, but with incomplete program data, which is likely inaccurate. Commercial could not be calculated due to census data only tracking dollar amounts.	N/A	**Summary:** Documented program participation counts, rough estimates of penetration

PI	Metric	Data Source	Location	Measurement 1	Measurement 2 (if applicable)	Summary of Progress
Outcome VI. Voluntary certifications help builders differentiate their homes						
6.1. Percentage of builders who report that voluntary certifications helped to differentiate homes that received them	Portion of builders giving a rating of 4 or 5 for either option: Projects that receive these voluntary certifications: • Generate more buyer or tenant interest than projects that do not • Sell or rent for more than projects without them • Spend less time on the market compared to projects without them	Trainee survey	Section 6	52% of builders gave a rating of 4 or 5 for option one, 39% for option two, 30% for option 3	4 of 12 non-participants agreed certifications increase marketability	**Summary:** 52% agree more buyer interest, 39% sell or rent for more, 30% spend less time on market
6.2. Growth in the number of projects achieving voluntary certifications	Number of projects in certification databases	Market scan, Database review	Section 6	Documented ENERGY STAR®, LEED, Passive House, and DOE Zero Energy Ready certifications. Upward trend in overall certifications achieved since 2016	N/A	**Summary:** Clear upward trend since 2016
Outcome VII. Jurisdictions able to progress toward their building sector related energy/climate goals						
7.1. Qualitative confirmation from interviewees in the code influence interviews, with some illustrative examples	Qualitative/narrative confirmation of progress with illustrative examples for four questions: • Are you aware of specific goals or initiatives in [state], either at the state level or in key jurisdictions, to reduce energy use or emissions in the building sector? • [If yes] Would you say there has been noticeable progress in the last several years in reaching these goals? • [If yes] Could you provide some examples of progress measurement for specific building sector goals? • Are you aware of any forthcoming policy changes or programs at the state or local level aimed at reducing energy use and emission in the building sector?	Code Influence Interviews	Section 6	Interviewees gave confirmation of progress in Idaho, Oregon, and Washington	N/A	Interviewees indicated clear progression towards goals in ID, OR, and WA
7.2. Self-reported building sector progress from jurisdiction and state reporting	Available metrics could include: • Reductions in building sector GHG emissions relative to a baseline • Rates of building electrification	Market scan/ Literature review	Section 6	Identified two climate progress reports for Oregon and Washington each, one GHG emissions report for Idaho	N/A	Self-reported progress identified in ID, OR, and WA
Outcome VIII. State agencies increase support for education and enforcement of code						

PI	Metric	Data Source	Location	Measurement 1	Measurement 2 (if applicable)	Summary of Progress
8.1. Qualitative confirmation from interviewees in the code influence interviews	Qualitative/narrative rather than metrics: Confirmation of increased support with illustrative examples for three questions: • Are you aware of specific [state] efforts or initiatives to support code education and enforcement? • [If yes] Have you observed any changes in the level of support [state] has provided for energy code training and enforcement? • [If yes] Could you provide some examples of how the state is further supporting energy code training and enforcement?	Code Influence Interviews	Section 6	Interviewees confirmed an increase or consistent level of state support	N/A	**Summary:** State support has increased or stayed consistent
8.2. Market actors (builders, code officials) perceive state support increasing or remaining the same year over year	Portion of market actors giving an 'increase' or 'no change' for the following code training and support resources:: • Number of live energy code trainings being offered • Number of organizations offering energy code training and support • Number of energy code educational resources • Communication from your state energy or environmental office about energy codes • Number of state, county, or local building officials focused on energy code compliance • Frequency of discussion around the need to adopt the latest energy code • Consensus among stakeholders around the need to adopt the latest energy code	Trainee survey	Section 6	~90% indicated "increase" or "no change" for each option	6 of 13 non-participants noted improvements	**Summary:** Around 90% indicating consistent or increased support, rarely indicating a decrease
8.3. Key performance indicators for state offices that support codes, including number of trainings, funding allocations, launch of new initiatives, etc.	Qualitative feedback on state increasing volume of activities, funding for code initiatives, or adding new initiatives	Market scan and outreach to state energy offices	Section 6	No response from most, limited information from one office. State offices do not seem to track information in a way that would be helpful for this PI	N/A	**Summary:** Not consistently measured, do not recommend continuing to track this PI
Outcome IX. Codes are/become/remain clear, simple, and enforceable						

PI	Metric	Data Source	Location	Measurement 1	Measurement 2 (if applicable)	Summary of Progress
9.1. Percentage of code officials who indicate energy codes are easy to understand and enforce	Portion of code officials giving a rating of 4 or 5 for one item: It is easy for me to understand the requirements of the energy code and what I must verify in project designs to ensure compliance	Trainee survey	Section 6	40% of code officials gave a rating of 4 or 5	N/A	**Summary:** 40% of code officials
9.2. Percentage of non-code officials who indicate energy codes are easy to understand and comply with	Portion of non-code officials giving a rating of 4 or 5 for one item: It is easy for me to understand the requirements of the energy code and what I must do for my projects to comply with energy code provisions.	Trainee survey	Section 6	43% of non-code officials gave a rating of 4 or 5	N/A	**Summary:** 43% of non-code officials
9.3. Percentage of non-code officials indicating code is easy to understand and comply with who indicate that code has **not** become more difficult to understand	Portion of non-code officials giving a rating of 4 or 5 for PI 9.2 and indicating option one or two for one item: Please select the option you consider most accurate: Over time, energy code requirements have become: • Easier to understand • Neither easier nor more difficult to understand • More difficult to understand	Trainee survey	Section 6	21% of code officials who gave a rating of 4 or 5 for PI 9.2 indicated option one or two	N/A	**Summary:** 21% of those non-code officials
9.4. Percentage of code officials indicating code is clear, simple, and enforceable who indicate that code has **not** become more difficult to enforce	Portion of code officials giving a rating of 4 or 5 for PI 9.1 and indicated option of one or two for one item: Please select the option you consider most accurate: Over time, energy code requirements have become: • Easier to enforce • Neither easier nor more difficult to enforce • More difficult to enforce	Trainee survey	Section 6	20% of code officials who gave a rating of 4 or 5 for PI 9.1 indicated option one or two	N/A	**Summary:** 20% of those code officials
9.5. Code compliance rates	Early/late cycle compliance rates do not drop compared to prior evaluation findings from similar timeframes.	Literature review	Section 6	Compliance findings from NEEA-funded code compliance studies	N/A	**Summary:** Documented based on available res and com reporting from 2012 to present

Appendix C Instruments

Trainee Web Survey

Recruitment Email

Subject Line: Tell us about your experience with [**TRAINING**] and we'll thank you with a gift card

Dear [**CONTACT**],

The Northwest Energy Efficiency Alliance (NEEA) supports energy code trainings throughout the Northwest, including the [**TRAINING**] conducted this past year through [**ORG**]. As part of its efforts to assess these trainings, NEEA is asking for feedback about your experience with this and other codes-related trainings you may have attended.

NEEA has hired NMR Group, a leading evaluation research company, to collect your valuable feedback. This survey should take about 25 minutes to complete, and we'll thank you with a $50 gift card. Your responses will be kept completely anonymous and will be combined with the responses of your peers for reporting; with no identifying information included. We will not share your name or organization with NEEA or other training sponsors. For additional information about this survey, please feel free to contact Chris Cardiel, ccardiel@neea.org, 503-688-5488, or Eugene McGowan, emcgowan@nmrgroupinc.com, 617-544-2010.

Click Here to Start the Survey

You can also copy and paste the link below into your browser to access the survey.

[**SURVEY LINK**]

Thank you and we look forward to hearing from you,

NMR Group, Contractor to NEEA

www.neea.org

Instrument

Screening

Q1. Our records indicate that you attended the [**TRAINING**] training sponsored by NEEA between 2023 and 2024. Is this correct?

1. Yes
2. No
3. Not sure

[**DISPLAY IF Q1 =2 OR 3**]

Q2. Have you taken any training(s) related to energy codes in the last year?

1. Yes
2. No [**TERMINATE**]
3. Not sure [**TERMINATE**]

[**DISPLAY IF Q2=1**]

Q3. What was the name of the training(s)? [**OPEN END**]

[**DISPLAY IF Q2=1**]

Q3a. Was the other energy code training you attended put on by any of the following organizations:

- Association of Idaho Cities
- Building Officials Associations (IDABO, OBOA, WABO)
- Earth Advantage
- Energy Trust of Oregon
- Evergreen Technology Consulting (WSEC Commercial Tech Support Team)
- The Idaho Codes Circuit Rider (Dave Freelove)
- Montana Department of Environmental Quality
- National Center for Appropriate Technology (NCAT)
- Oregon Department of Energy
- Washington State University Energy Program

1. Yes
2. No [**TERMINATE**]

[**DISPLAY IF Q2=1**]

Q4. Did you take the training(s) in person, as a live webinar, where the instructor interacted with the trainees, or did you view a recorded version of it?

1. In Person
2. Live webinar
3. Recorded

[**IF Q4 = 1, MODE = 2, IF Q4 = 2, MODE = 3**]

Background

Q5. Which one of the following best describes your professional role?

1. Architect/Designer
2. Building code official
3. Building official/plan reviewer/inspector

4. Consultant
5. Energy rater
6. Energy services provider
7. Engineer
8. Equipment contractor or vendor
9. Equipment manufacturer representative
10. General contractor
11. Home builder or related trades
12. Home inspector
13. Non-profit organization staff member
14. Utility staff member
15. Program implementation contractor staff member
16. Something else (please describe) [**OPEN END**]

Q6. What sector(s) do you work in? Please select all that apply. [**MULTISELECT**]

1. Commercial
2. Industrial
3. Agricultural
4. Government
5. Education
6. Residential
7. Other (please specify) [**OPEN-END**]

Q9. How long have you worked in an area related to energy code compliance? This would include your current work and any previous work in building design or construction as well as in code development or enforcement.

1. Less than one year
2. One to two years
3. Three to five years
4. Six to 10 years
5. More than 10 years

[**Display if Q1 = 2 or 3**]

Q10. How did you first learn about the [**TEXT BOX ENTRY FROM Q3**] training?

[**RANDOMIZE ORDER OF 1-10**]

1. Newsletter
2. A postcard or other mailing
3. Notice on a website
4. A contractor
5. An advertisement
6. Social networking site such as Facebook or Twitter
7. Word of mouth from a colleague
8. Another training
9. A webinar
10. In some other way (Please specify)
11. Don't know

[**Display if Q1 = 1**]

Q10a. How did you first learn about the [**TRAINING NAME FROM SAMPLE**] training?

[**RANDOMIZE ORDER OF 1-10**]

1. Newsletter
2. A postcard or other mailing
3. Notice on a website
4. A contractor
5. An advertisement
6. Social networking site such as Facebook or Twitter
7. Word of mouth from a colleague
8. Another training
9. A webinar
10. In some other way (Please specify)
11. Don't know

Q11. Why did you choose to take this training(s)? Select all that apply. [**MULTISELECT**]

[**RANDOMIZE ORDER OF 1-7**]

1. Expand technical knowledge
2. Better understand energy code
3. Improve qualifications
4. Personal interest
5. Required by employer
6. Network with others

7. Learn to teach others
8. Earn Continuing Education Units (CEUs)
9. Other (please specify)
10. Don't know

Q12. From which of the following organizations have you taken other energy codes-related trainings since the beginning of 2023? Please select all that apply. [**MULTISELECT**]

1. Association of Idaho Cities
2. Building Officials Associations (IDABO, OBOA, WABO)
3. Earth Advantage
4. Energy Trust of Oregon
5. Evergreen Technology Consulting (WSEC Commercial Tech Support Team)
6. The Idaho Codes Circuit Rider (Dave Freelove)
7. Montana Department of Environmental Quality
8. National Center for Appropriate Technology (NCAT)
9. Oregon Department of Energy
10. Oregon Home Builders Association
11. Washington State University Energy Program
12. Other, please specify: [**OPEN END**]
13. I have not taken any other energy code related trainings

[**DISPLAY IF ANY ITEM SELECTED IN Q12**]
[**DISPLAY IF Q1 = 2 or 3**]

Q13. How influential were those previous trainings on your decision to take the [**TEXT BOX ENTRY FROM Q3**] training?

1. 1 - Not at all influential
2. 2
3. 3
4. 4
5. 5 – Extremely influential

[**DISPLAY IF Q1 = 1**]

Q13a. How influential were those previous trainings on your decision to take the [**TRAINING NAME FROM SAMPLE**] training with NEEA?

1. 1 - Not at all influential
2. 2
3. 3
4. 4
5. 5 – Extremely influential

Change in Knowledge

[**DISPLAY TEXT IF ANY RESPONSE IN Q13 IS SELECTED**]

Unless otherwise stated, when answering all remaining questions about training, please consider all codes-related trainings you have taken in 2023 and 2024 from any of NEEA's code training partners listed above. Again, these are:

- Association of Idaho Cities
- Building Officials Associations (IDABO, OBOA, WABO)
- Earth Advantage
- Energy Trust of Oregon
- Evergreen Technology Consulting
- The Idaho Codes Circuit Rider (Dave Freelove)
- Montana Department of Environmental Quality
- National Center for Appropriate Technology (NCAT)
- Oregon Department of Energy
- Oregon Home Builders Association
- Washington State University Energy Program

Q14. How much did the training(s) increase….

[**SCALE: 1 = Not at all, 2 = A little, 3 = A moderate amount, 4 = A lot, 5 = A great deal, 97 = Not applicable**]

1. [**NON-CODE OFFICIALS ONLY**] Your knowledge of best practices in the construction of new buildings
2. Your understanding of the relevant energy code(s)
3. [**NON-CODE OFFICIALS ONLY**] Your knowledge of new product availability
4. [**NON-CODE OFFICIALS ONLY**] Your understanding of new product applications
5. Your mastery of the training's subject in general

[**DISPLAY IF NON-CODE OFFICIAL**]

Q15. To what degree has your training improved your ability to do the following?

[**SCALE: 1 = Not at all, 2 = A little, 3 = A moderate amount, 4 = A lot, 5 = A great deal, 97 = Not applicable**]

1. Assess energy savings opportunities
2. Estimate energy savings from upgrades
3. Identify current energy code requirements for equipment upgrade or replacement projects
4. Identify current energy code requirements for new construction projects

[**DISPLAY IF CODE OFFICIAL**]

Q16. To what degree has this training improved your ability to assess code compliance?

[**SCALE: 1 = Not at all, 2 = A little, 3 = A moderate amount, 4 = A lot, 5 = A great deal, 97 = Not applicable**]

Q17. Since taking the training(s), have you…. [**1=Yes, 2=No**]

1. Shared information from the training with your colleagues?
2. Recommended this training to anyone else?
3. Recommended any other [**ORG**] supported energy code training to anyone else?
4. [**NON-CODE OFFICIALS ONLY**] Advocated for, or changed, equipment purchasing processes because of what you learned about energy code?
5. [**NON-CODE OFFICIALS ONLY**] Advocated for, or changed, any other practices that would reduce a building's energy use because of what you learned through the training?
6. [**NON-CODE OFFICIALS ONLY**] Advocated for, or changed, any other work practices to help customers or clients reduce energy use because of what you learned through the training?
7. [**CODE OFFICIALS ONLY**] Changed your procedures when conducting inspections?

[IF THEY RECOMMENDED ANOTHER TRAINING BY A RELEVANT ORGANIZATION]

Q17b. What was the title or subject of the training that you recommended? [**OPEN END**]

[**DISPLAY IF Q1= 2 or 3**]

Q18. Have you encountered any challenges to applying what you learned at [**TEXT \ BOX ENTRY FROM Q3**] in your day-to-day job?

1. Yes
2. No

Q18a. Have you encountered any challenges to applying what you learned at [**TRAINING NAME FROM SAMPLE**] in your day-to-day job?

1. Yes
2. No

[**DISPLAY IF Q18= 1**]

Q18b. What challenges have you encountered?

Training Impact

[**DISPLAY IF TYPE=2 (NON-CODE OFFICIAL**)]

Q19. Please indicate your level of agreement with the following statements.

[**INSERT SCALE: 1 = STRONGLY DISAGREE, 2 = SOMEWHAT DISAGREE, 3 = NEUTRAL, 4 = AGREE, 5 = STRONGLY AGREE] [RANDOMIZE**]

1. It is valuable to have energy codes in place.
2. The training positively changed my view of energy efficiency.
3. The training helped me implement new strategies for working with code changes.
4. The training improved my view of the importance of energy codes.

Q20. How likely are you to recommend trainings sponsored by NEEA to other colleagues?

[**INSERT SCALE: 0 = NOT AT ALL LIKELY, 1 =1, 2 = 2, 3 = 3, 4 = 4, 5 = 5, 6 = 6, 7 = 7, 8 = 8, 9 = 9, 10 = VERY LIKELY, 98 = DON'T KNOW**]

Q21. Do you/did you need additional assistance after this training to implement what you learned?

1. Yes
2. No

[**DISPLAY IF Q21= 1**]

Q22. What additional assistance do or did you need? [**OPEN END]**

Voluntary Certifications [NON-CODE OFFICIALS ONLY]

Q23. We'd like to ask you about voluntary certifications related to energy efficiency that are available to new homes and buildings. Are you familiar with any of the following energy efficiency certifications? Please select all that apply. [**MULTISELECT**]

1. ENERGY STAR® certification
2. Passive House certification (PHIUS)
3. Department of Energy (DOE) Zero Energy Ready Homes
4. LEED (e.g., BD+C and Homes)
5. Energy Trust of Oregon Energy Performance Score
6. US DOE Home Energy Score
7. Earth Advantage Certification
8. Other, please specify: [**OPEN END**]
9. None

Q24. Have any of the projects you've worked on **pursued or achieved** any of the following certifications? Please select all that apply. [**MULTISELECT**]

1. ENERGY STAR® certification
2. Passive House certification (PHIUS)
3. Department of Energy (DOE) Zero Energy Ready Home
4. LEED (e.g., BD+C and Homes)

5. Energy Trust of Oregon Energy Performance Score
6. US DOE Home Energy Score
7. Earth Advantage Certification
8. Other, please specify: [**OPEN END**]
9. None

[**IF Q23 ≠ "NONE"**]

Q25: Please indicate your level of agreement with the following statements:

[**INSERT SCALE: 1 = STRONGLY DISAGREE, 2 = SOMEWHAT DISAGREE, 3 = NEUTRAL, 4 = AGREE, 5 = STRONGLY AGREE] [RANDOMIZE**]

1. Other factors being equal, projects that achieve these voluntary certifications generate more buyer or tenant interest than projects that do not get a certification
2. Other factors being equal, projects that achieve these voluntary certifications sell or rent for more than projects that do not get a certification
3. Other factors being equal, projects that achieve these voluntary certifications spend less time on the market compared to projects that do not get a certification

State Agency Support for Code Education and Compliance

[**DISPLAY Q26 if TYPE = NON-CODE OFFICIAL**]

Q26: For the following energy code training and support resources, please indicate whether you've observed any changes in the market over the past two years compared to the 2021- 2022 period.

[**REPEAT ANSWER CHOICES FOR EACH ITEM**]

- Increased relative to previous years
- Stayed about the same as previous years
- Decreased relative to previous years

1. Number of live (web or in-person) energy code trainings being offered
2. Number of organizations offering energy code training and support
3. Number of energy code educational resources like on-demand webinars, fact sheets, and guides available
4. Communication from your state energy or environmental office about energy codes, including training and support opportunities
5. Number of state, county or local building officials focused on energy code compliance
6. Frequency of discussion and debate around the need to adopt the latest energy codes
7. Consensus among stakeholders around the need to adopt the latest energy codes

Understanding and Enforcing Code

[**DISPLAY Q27 IF CODE OFFICIAL**]

Q27: Please indicate your level of agreement with the following statement: **It is easy for me to understand the requirements of the energy code and what I must verify in project designs to ensure compliance with the energy code.**

[**INSERT SCALE: 1 = STRONGLY DISAGREE, 2 = SOMEWHAT DISAGREE, 3 = NEUTRAL, 4 = AGREE, 5 = STRONGLY AGREE**]

[**DISPLAY Q28 IF NON-CODE OFFICIAL**]

Q28: Please indicate your level of agreement with the following statement: **It is easy for me to understand the requirements of the energy code and what I must do for my projects to comply with the energy code.**

[**INSERT SCALE: 1 = STRONGLY DISAGREE, 2 = SOMEWHAT DISAGREE, 3 = NEUTRAL, 4 = AGREE, 5 = STRONGLY AGREE**]

[**DISPLAY Q29 IF NON-CODE OFFICIAL**]

Q29: Please select the option you consider most accurate: Over time, energy code requirements have become

- Easier to understand and comply with
- Neither easier nor more difficult to understand and comply with
- More difficult to understand and comply with

[**DISPLAY Q30 IF CODE OFFICIAL**]

Q30: Please select the option you consider most accurate: Over time, energy code requirements have become

- Easier to understand and enforce
- Neither easier nor more difficult to understand and enforce
- More difficult to understand and enforce

Formative Research on Code Compliance Tools

Q31: We'd like to know more about software or webtools professionals like you use to assess compliance with state energy code. Before we ask about those tools, we'd first like to ask what kind of non-software resources you use to verify compliance with energy code. Please select all that apply: [**MULTISELECT**]:

- Physical or electronic code books (e.g., State-specific, IECC and ASHRAE 90.1)
- The WSEC-R code cookbook or other code fact sheets and tutorials provided by BetterBuiltNW
- Technical assistance hotlines or energy code circuit riders
- Third-party experts like energy raters and efficiency consultants
- Other, please specify [**OPEN END**]

- I do not use any of these tools

Q32: Please indicate if you use any of the following software tools to verify energy code compliance (Select all that apply): [**MULTISELECT**]

- REScheck
- COMcheck
- WSEC-C Compliance Webtool
- Building simulation software with code compliance functionality (e.g., REM/Rate, Ekotrope)
- ASHRAE 90.1 Performance-Based Compliance Form
- Other, please specify: [**OPEN END**]
- I do not use any software or web tools to assess code compliance

[**DISPLAY Q33 IF TYPE = NON-CODE OFFICIAL AND Q32 ≠ "I do not use software to assess code compliance"**]

Q33: Which of the following best describes how you use the code compliance software tool(s).

- Prescriptive: Verifying that specific design choices and building components meet minimum requirements of energy code.
- Performance: Using the tool to make integrated design decisions, understand UA tradeoffs, and hit performance benchmarks like overall envelope UA or an ERI/HERS score.
- I use the tool(s) for both prescriptive and performance-based compliance checks.
- I use the tool(s) in another way (please specify) [**OPEN END**]

[**DISPLAY Q34 IF TYPE = NON-CODE OFFICIAL AND Q32 ≠ "I do not use software to assess code compliance"**]

Q34: How important are these tools to your daily work? Please select the most accurate option for your work:

- Mandatory: These tools are required by the local jurisdiction where I operate to meet performance-based compliance pathways
- Very important: I rely heavily on these tools to make design decisions that comply with energy code requirements
- Somewhat important: They are useful for certain requirements or checks, but I can live without them
- Not important: I understand code requirements and/or have other sources I rely on to meet code requirements

[**DISPLAY Q35 IF TYPE = NON-CODE OFFICIAL AND Q32 = "I do not use software to assess code compliance"**]

Q35: Why do you not use energy code compliance software or webtools in your work? (Select all that apply) [**MULTISELECT**]

- Someone else involved in the project verifies compliance, like a rater or a consultant

- I understand code requirements and how to design projects to meet all requirements without software assistance
- I rely on documents like code books, checklists, spreadsheet tools, code factsheets and the WSEC-R code cookbook
- I use outside code support like my local building department, technical assistance hotlines and energy code circuit riders.
- I would use them if I knew more about them, but I have not had time to train on them.
- Other, please specify [**OPEN END**]

[**DISPLAY Q36 IF TYPE = CODE OFFICIAL AND Q32 ≠ "I do not use software to assess code compliance"**]

Q36: How important are these tools to your daily work? Please select the most accurate option for your work:

- Mandatory: These tools are required for me to verify code compliance
- Very important: I rely heavily on these tools to verify compliance with the energy code
- Somewhat important: They are useful for verifying certain code requirements, but I can live without them
- Not important: I use other sources to verify code compliance

[**DISPLAY Q37 IF TYPE = CODE OFFICIAL AND Q32 ≠ "I do not use software to assess code compliance"**]

Q37: What other key resources, if any, do you use to perform energy code compliance checks?

[**OPEN END**]

Q38. What training topics would you like to see offered in the future? [**OPEN END**]

Q41. What suggestions or recommendations do you have to improve future training

opportunities? [**OPEN END**]

CODE INFLUENCE INTERVIEW GUIDE

Recruitment Email

Hello, My name is _____ and I am working with NEEA – the Northwest Energy Efficiency Alliance – to study their influence on the content of energy codes in the Northwest Region. I am reaching out to you because I understand you are familiar with NEEA's work relating to energy code development and adoption in [STATE(S)] and that you have a role in helping develop energy code language and/or engaging in the code adoption process in [STATE]. We recognize you may have participated in similar research in prior years, which we appreciate. This research is focused on your energy code work in the last two to three years.

Do you have an hour or so in the next week or two when I could talk to you about your work with NEEA and the energy code process in [STATE]? We are offering a $200 incentive as thanks for taking the time to speak with us. The incentive is optional, and the gift card service we use provides the option for charitable donations to a limited number of organizations.

Background and Context

Thanks for agreeing to speak with me today about your work on energy codes and your experience collaborating with NEEA. We're interested in learning more about your collaboration with NEEA on all aspects of the energy code, including development of code provisions and the code adoption and implementation processes. For brevity we'll refer to code development and adoption below, but please speak to the full extent of your work with NEEA on energy codes. If it is ok with you; I would like to record this call for my notes. Is that ok with you? This recording and notes will not be shared with anyone outside of my research team at NMR Group.

We'd like to begin by learning about your background and where you focus your work on codes.

[**ASK ALL**]

Q1. Our records indicate you focus on energy codes [**in STATE OR nationally with the model IECC or ASHRAE codes**]. Is this correct?

[**IF RESPONDENT INDICATES WORKING ON ENERGY CODES IN MULTIPLE STATES, PROBE ON DIFFERENCES IN THEIR WORK ACROSS STATES. IF THERE ARE NUANCES ACROSS STATES, PROBE ON DIFFERENCES ACROSS STATES IN THE QUESTIONS TO FOLLOW**]

Q2. At the [**STATE/NATIONAL level**], do you work on the commercial energy code, the residential energy code, or both? [**IF BOTH**] How, if at all, does your work vary between the sectors?

Q3. Please describe how you are involved with energy code development, adoption or implementation in [**STATE**] and/or nationally (IECC or ASHRAE). What types of activities do you conduct? For example, do you draft code changes, conduct technical or market analysis, work to prevent weakening amendments or other code backsliding, etc.?

[**IF NOT COVERED ABOVE**]
Q3a. How has your work on energy codes changed over time, if at all?

Q5. Please describe how you are involved with NEEA and its work on energy code development and adoption in [**STATE**] and/or nationally (IECC or ASHRAE), or to what extent you are aware of their work on that topic.

Q6. What other stakeholders, if any, do you collaborate with on work related to energy code development, adoption, or implementation?
[**PROBE on the following groups if not already mentioned, depending on STATE/IECC**]

- **Idaho**: Association of Idaho Cities/Idaho Energy Code Collaborative, University of Idaho Integrated Design Lab
- **Montana**: Montana Homes Collaborative (MHC), NCAT, DEQ.
- **Washington**: Residential and Commercial Technical Advisory Group (TAGs) members, including New Buildings Institute, RMI, Department of Commerce and (separate) collaboration on proposals with state and local officials, utility staff, the Pacific Northwest National Laboratory (PNNL), nonprofit organizations, industry representatives, and other energy code stakeholders
- **Oregon:** Collaborations with private engineering firms, nonprofit organizations, and coalitions of efficiency organizations
- **IECC**: Commercial Consensus Committee, C&I and Res HVAC subcommittees

Q7. Are you aware of other organizations or actors who work on energy code development and adoption at the [**STATE/NATIONAL level**] that you don't collaborate with on a regular basis?

Q7b. [**IF YES**] What do you know about [**OTHER ORGANIZATION'S**] work on energy code development and adoption? Do they focus on different aspects of the energy code than NEEA does, as far as you know?

Q8. Have there been changes in the stakeholders involved in code development and adoption in [**STATE**] in recent years, for example new organizations joining the process or certain stakeholders becoming more or less prominent?

NEEA Code Influence Questions

We'd like to discuss more about the specifics of code development and adoption in [**STATE**] [**AND IF RELEVANT: nationally with the IECC or ASHRAE**].

[**ASK ALL**]
Q9. We discussed other stakeholders above, but I'd like to confirm who you consider your key partners (individual people and/or organizations) in the code development and adoption processes in [**STATE**]?

Q10. How would you characterize the role NEEA played in recent code development and adoption processes in [**STATE**]? Some recent code processes we are particularly interested in from the last two to three years are:
[**Choose by State**]:
Washington:

- 2021 WSEC development
- Recent work to develop and submit code change proposals for the 2024 WSEC – Commercial Integrated draft in January of this year
- Preparation for 2024 WSEC - Residential Energy Technical Advisory Group for Residential Energy Code

Oregon:

- Development of 2023 Oregon Residential Specialty Code
- Development of the recently adopted 2025 Oregon Energy Efficiency Specialty Code (OEESC), (effective January 1, 2025)
- Code change proposals for the Oregon Commercial Reach Code update (due 12/2024)

Idaho:

- Idaho Energy Codes Collaborative preparation for review of the 2024 IECC in Idaho and public comment
- Any takeaways from 2018 Idaho process and weakening amendments

Montana:

- 2021 IECC adoption and amendment process
- Weakening amendments to commercial code in September 2024.

IECC:

- 2024 IECC development process
- 2027 IECC preparation (Including NEEA participation in the commercial committee)

Q11. How if at all do you feel these processes [**in STATE or Nationally in the IECC**], and the outcomes from these processes would have differed if contributions from NEEA had been significantly diminished or absent altogether? [**PROBE on key activities/outcomes like funding, technical support, and the number and quality of proposals submitted**].

Q12. Do you think there are opportunities for NEEA to do more to support better outcomes in the code development and adoption process [**IN STATE/ AT NATIONAL level**]? If so, what would those be? For example, focusing on different activities, strategies, or partnerships?

Historical and Long-Term Impacts

Q12. How long have you worked on energy code development and adoption [IN STATE/ AT NATIONAL level]?

Q13. In your experience, how if at all has NEEA's role or stature in the energy code development and adoption process evolved over time?
[Refer to relevant topics/activities by state/IECC below and probe as needed**]**

- **Idaho**: Collaboration with/funding of Association of Idaho Cities/Idaho Energy Code Collaborative, University of Idaho Integrated Design Lab
- **Montana**: Collaboration with/funding of Montana Code Collaborative and Montana Homes Collaborative (MHC).
- **Washington**: Interactions with:
    - Residential and Commercial Technical Advisory Group (TAGs) members, including New Buildings Institute, RMI, Department of Commerce and
    - Collaboration on proposals with state and local officials, utility staff, the Pacific Northwest National Laboratory (PNNL), nonprofit organizations, industry representatives, and other energy code stakeholders
- **Oregon:** Collaborations with private engineering firms, nonprofit organizations, and coalitions of efficiency organizations
- **IECC**: Past work on Commercial Consensus Committee, C&I and Res HVAC subcommittees, etc.

Q14. Without NEEA's historical presence in these code development and adoption processes, how different do you think things would look today? Where would NEEA's absence be felt the most?

Q14a. In your experience, how important are the cumulative impacts of working to influence code outcomes over multiple code cycles? For example, building awareness for emerging technologies and practices or pushing for more stringent code language that might not be adopted in the current cycle but helps to shape future debates over code provisions.

Jurisdictional Progress Toward Building Sector Climate Goals

While we have you, we'd also like to get some feedback on building sector climate goals and code education and enforcement support in [STATE].

Q15. Are you aware of specific goals or initiatives in [STATE], either at the state level or in key jurisdictions, to reduce energy use or emissions in the building sector, specifically?

Q15a. [IF YES] Would you say there has been noticeable progress in the last several years in reaching these goals?

Q15b. [IF YES] Could you provide some examples of progress measurements for specific building sector goals? Are these being measured in reports from state and local governments, or public facing dashboards?

Q16. Are you aware of any forthcoming policy changes or programs at the state or local level aimed at reducing energy use and emission in the building sector?

Increase in State Agency Support for Code Education and Enforcement

Q17. Are you aware of specific [**STATE**] efforts or initiatives to support code education and enforcement?

Q17a. [**IF YES**] Have you observed any changes in the level of support [**STATE**] has provided for energy code training and enforcement?

Q17b. [**IF YES**] Could you provide some examples of how [**STATE**] is supporting energy code training and enforcement? For example, increasing the number of trainings, increasing the number of code support and enforcement staff, or investing in new resources to support code training and enforcement.

Closing

Q18. [**OPTIONAL: SKIP IF INTERVIEW IS RUNNING LONG**] Are you aware of efforts to make the energy code more clear, simple and enforceable during the code development process? In your opinion, has there been progress in making the energy code clearer and more enforceable, or at a minimum preventing it from becoming more complex?

Q19. [**OPTIONAL: ABOVE CODE PROGRAMS, ASK SPECIFICALLY OF RESPONDENTS IN OR and ID**] Are you aware of any above code programs in [STATE]?

> [IF YES] Dide the existence of the above code program impact the code development process? [Example: demonstrating pathways to comply with potential new code requirements, providing examples of cost effective building practices to meet new code requirements, emboldening advocates to push new code further than they might have otherwise]

Q20. Is there anything else the Team should know about your work with NEEA on energy codes [**in STATE or at the NATIONAL level**]?

Q21. Do you have any suggestions for how NEEA could improve their support for local code development in your area?

Those are all the questions I have. Thanks for your time.

MARKET ACTOR INTERVIEW GUIDE

Recruitment Text

Subject Line: Tell us about your experience with building energy codes and receive $300.

Dear [CONTACT],

NMR Group, a leading evaluation research company, is conducting research across the Northwest on how the construction industry approaches energy code compliance and adapts to code changes. To better understand how energy code training and education efforts can support the building sector in the Northwest, NMR is asking for feedback from professionals like you about your experience with the energy code. If you have experience learning energy code requirements and applying these requirements to your projects you may be eligible to participate in these interviews and receive a cash incentive for your time.

NMR's staff are trained in building science principles and enjoy the opportunity to learn more from professionals like you. This conversation should last for about 45 minutes. Your input is valuable to us, so we're offering a $300 gift card in return for taking the time to speak with us. Your responses will be kept completely anonymous and will be combined with the responses of your peers for reporting; with no identifying information included. We will not share your name or organization as part of our research.

If you are interested in participating in these interviews, please reply to this email with a brief description of your experience engaging with your company's respective energy code compliance for new construction in the Northwest. Please provide your upcoming availability and we will do our best to accommodate it. If there are additional contacts in your organization who you think we should interview, please send me their contact information; if you believe you have received this email in error, please let me know.

For additional information about these interviews, please feel free to contact Eugene McGowan, emcgowan@nmrgroupinc.com, 617-544-2010.

Introduction

Thanks again for taking the time to speak with us about your work and experience with the energy code in [**STATE**]. We're interested in learning about how energy codes impact your work and how building professionals like yourself adapt to energy code updates.

1. Our records indicate you work as a [**TYPE**] in the [**SECTOR**] new construction sector. Is that correct?
    a. Do you work in any others states besides [STATE]?

2. When designing your projects, who typically takes the lead in verifying that the design will comply with energy code? Is it you or a colleague? Is it another firm or consultant that you partner with?

3. [IF NOT ADDRESSED ABOVE] How familiar are you with [**SECTOR**] energy code requirements in [**STATE**]?

[**IF THEY REPORT A LACK OF FAMILIARITY WITH THE ENERGY CODE AND LACK OF EXPERIENCE ASSESSING CODE COMPLIANCE ON PROJECTS, THANK RESPONDENT AND TERMINATE THE INTERVIEW**]

Training Awareness, Participation, and Impacts

4. Are you aware of energy code training opportunities in [STATE], including in-person and online options like webinars and on-demand resources?
    a. [**IF YES**] Have you attended any trainings on the energy code in the last 2-3 years, either in-person or online? If so, do you remember who conducted the training(s)?
    b. [**IF YES**] What was the subject of the training(s) [**RECORD FOR ALL TRAININGS, IF MULTIPLE**]?
    c. [**IF YES**] How, if at all, did the training(s) improve your understanding of the energy code requirements?
    d. [**IF NO**] If you knew more about available energy code training opportunities in [**STATE**] would you be interested in using them?
        i. [**IF NO**] Why not?

5. [**IF ATTENDED TRAINING**] How, if at all, did the training you attended impact your work? [**PROBE FOR INDICATOR TOPICS, INLCUDING**]:
    - Implementing new strategies
    - Advocating for energy saving practices
    - Increased knowledge of new building products and technology

6. [IF THEY HAVE ATTENDED ANY TRAININGS] How often, if at all, do you share information or strategies from the energy code training(s) you attended with colleagues?

7. How often, if at all, have other building professionals who attend energy code trainings shared knowledge with you about energy code requirements and compliance strategies, either on the job, socially, or at industry gatherings?

Formative Research on Code ComplianceTools

8. We'd like to know more about software or webtools professionals like you use to assess compliance with the state energy code. Before we ask about those tools, could you tell us

what kind of **non-software resources** you use to verify compliance with energy code? [**IF NEEDED**] Some examples we're interested in include:

- Physical or electronic code books (e.g., State-specific, IECC and ASHRAE 90.1)
- The WSEC-R code cookbook or other code fact sheets and tutorials provided by BetterBuiltNW
- Technical assistance hotlines or energy code circuit riders
- Third-party experts like energy raters and efficiency consultants

9. What types of software tools do you use in your day-to-day work to verify energy code compliance? [**IF NEEDED**] Some examples we're interested in include:

- REScheck
- COMcheck
- WSEC-C Compliance Webtool
- Building simulation software with code compliance functionality (e.g., REM/Rate, Ekotrope)
- ASHRAE 90.1 Performance-Based Compliance Form

10. [**IF THEY USE ANY KEY SOFTWARE TOOLS**] How important are these tools to your daily work? How do you use them?

11. [**IF THEY DON'T USE ANY KEY SOFTWARE TOOLS**] Why do you not use energy code compliance software or webtools in your work?
    a. What type of added functionality or capability would make these software tools more useful for you?

12. What other key resources, if any, do you use to perform energy code compliance checks?

Voluntary Certifications

13. Are you familiar with any of the major energy efficiency certifications available to new homes and buildings? [**IF NEEDED**] Some examples we're interested in include:
    i. ENERGY STAR® certification
    ii. Passive House certification (PHIUS)
    iii. Department of Energy (DOE) Zero Energy Ready Homes
    iv. LEED (e.g., BD+C and Homes)
    v. Energy Trust of Oregon Energy Performance Score
    vi. US DOE Home Energy Score
    vii. Earth Advantage Certification

14. Which of these certifications, if any, do the projects you've worked on **pursue or achieve**?
    a. [**IF THEY HAVE NOT PURUSED OR ACHIEVED**] Why have your projects not attempted to earn any energy efficiency certifications?

15. What benefits, if any, do you believe that these certifications offer to builders and developers? For example, increased interest from potential buyers or tenants or even higher sales or lease prices?

16. What value, if any, do you think these certifications offer to buyers and tenants?

State Agency Support For Code Education and Compliance

[**IF RESPONDENT WORKS ACROSS MULTIPLE STATES, PROBE FOR DIFFERENCES IN EACH STATE IN THE FOLLOWING QUESTIONS**]

17. In your experience, what role does the [**STATE**] government play in supporting or constraining energy code compliance? What type of strategies are you seeing from [**STATE**]? [**PROBE for increased training and educational resources, increased staffing around code support and compliance, increased communication from state energy offices on energy codes**]

18. Has this level of support from [**STATE**] changed in recent years? Are any of the strategies you mentioned recent changes?

Understanding and Complying with Energy Code

19. To what extent, if at all, would you say the complexity of the energy code is a barrier to achieving code compliance in new projects?
    a. Has this issue become better or worse over time?

20. Which particular requirements of the energy code, if any, do you find difficult to comply with and implement on your projects? What makes those requirements challenging?

21. Do you believe that it is valuable to have the energy code in place?
    a. Why do you say that?