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NEEA Code Baseline and Assumption Review

Prepared For NEEA:
Meghan Bean, Principal Market Research & Evaluation Scientist

Prepared By:
Industrial Economics, Inc. (IEc)
2067 Massachusetts Ave.
Cambridge, MA 02140

and

Resource Refocus LLC
221 Mountain Ave.
Piedmont, CA 94611

Northwest Energy Efficiency Alliance
PHONE
503-688-5400
EMAIL
info@neea.org

This report was prepared for NEEA by:

Industrial Economics, Inc. (IEc):
Christine Lee, Principal
Daniel Kaufman, Principal
Greg Englehart, Senior Associate
Carly Harris, Senior Research Analyst
2067 Massachusetts Ave.
Cambridge, MA 02140

Resource Refocus LLC:
Carrie Brown, PhD, Director
Anna LaRue, Principal
Nate Heckman, Associate Technical Consultant
221 Mountain Ave.
Piedmont, CA 94611

Table of Contents

Executive Summary

Introduction

Dating back to its inception in 1996, the Northwest Energy Efficiency Alliance (NEEA) has worked to advance state-level residential and commercial building energy codes across the Northwest Region (Idaho, Montana, Oregon, and Washington). NEEA and its partners (which include, among others, utilities, environmental, energy efficiency, trade organizations, and energy code collaboratives) strategically focus on introducing code changes that Northwest states are unlikely to adopt for multiple code cycles without their influence. In addition to its work on code development, NEEA and its partners also support energy codes through training and education to support code compliance, above-code programming to increase builder and market readiness for code changes, conducting and/or sharing technology and practice research, and advancing market transformation on products and practices covered by code. NEEA then estimates the energy savings generated by these efforts. As part of the process to determine these savings, NEEA develops a counterfactual *Natural Market Baseline* for state codes in the Northwest representing when codes would likely have been adopted without NEEA and its partners' influence.

Currently, NEEA's assumption is that energy code updates occur approximately ten years (that is, approximately three International Energy Conservation Code (IECC) cycles) earlier than they would have without NEEA and its partners' involvement. To quantify this assumption in the Natural Market Baseline, NEEA reports 100% of the savings generated by the code change for ten years after construction starts under the new code. NEEA applies this approach to all states in the Northwest Region and to both the residential and commercial sectors, adjusting reported savings to include savings only for the proportion of buildings estimated to comply with the new code.

To determine the validity of NEEA's assumptions and process for developing this baseline, NEEA hired Industrial Economics, Inc. (IEc) and Resource Refocus (RR) (hereafter the "IEc/RR team" or "team") to evaluate its existing assumptions and methodology. Specifically, this study aimed to answer the following research questions:

- Is NEEA employing the most reasonable way to develop the Natural Market Baseline for building energy codes in the Northwest Region?
    - If not, how should NEEA update its baseline and other assumptions to more accurately capture NEEA and its partners' influence on code changes in the Northwest?
- Is it appropriate to apply the same approach to all states in the Northwest Region and to both the residential and commercial sectors?

To guide this study, NEEA provided a series of criteria that any recommended changes to the methodology must meet. For example, the recommended approach cannot be cost prohibitive within NEEA's current budget, and it should enable savings reporting within one year of code adoption to work within NEEA's existing savings reporting cadence.

This report summarizes the IEc/RR team's evaluation findings and recommendations for changes NEEA could make to its methodology to ensure it remains a reliable way to measure savings from NEEA and its partners' codes work moving forward.

Methodology

The IEc/RR team completed two primary data collection activities:

Theory of Change/Stakeholder Analysis: The team conducted in-depth interviews with 13 key stakeholders including NEEA staff, key Northwest code stakeholders, and national experts to understand topics including NEEA's historical and current role in the codes development process across each state in the Northwest and nationally, NEEA's partners and other key stakeholders contributing to code development, the potential codes landscape absent NEEA's involvement, perceptions about NEEA's methodology and more.

Literature Review: The team also conducted a targeted literature review of existing NEEA documentation and approaches used by other states and/or peer organizations around the country that work on advancing energy efficiency in building energy codes. Reviewing NEEA documentation and extra-regional approaches provided information on the degree to which NEEA's current method meets NEEA's criteria (simplicity, resources, etc.) and whether other methods would better meet the organization's needs. The literature review provides information on the strengths and weaknesses, as well as budgetary, schedule, data, and stakeholder requirements of alternative approaches.

Throughout data collection, the IEc/RR team worked closely with NEEA to understand the implications of the interview and literature review findings for NEEA's current methodology and developed recommendations to update the methodology moving forward.

Key Findings

- **Interview respondents generally agreed that NEEA and its partners historically played a major and foundational role in codes development, which likely accelerated the code by 2-3 IECC code cycles (10 years) through at least the mid-2010s.** Although NEEA's early work has likely contributed to the Northwest's status as a leader in codes development today, over the last decade respondents were less sure that code is still this far ahead of where it would have been without NEEA and its partners, especially in Oregon and Washington.
- **Respondents credited more of the recent progress in codes to NEEA and its partners in Idaho and Montana than in Oregon and Washington.** Respondents also believe NEEA and its partners have played an influential role in advancing codes at the national level.
- **Interview respondents did not have clear understanding of NEEA's definition for "partner," the organizations NEEA considers to be partners, or the specific role that NEEA and its partners play in advancing codes.** This lack of clarity about NEEA partners and their role hinders NEEA's efforts to communicate about its influence on codes and the energy savings resulting from its codes work.
- **Respondents provided mixed feedback on whether NEEA and its partners have had more influence in accelerating residential or commercial codes.** While respondents generally agreed that commercial codes are more prescriptive, some felt that this meant NEEA had a greater role in the overall code process because of its influence at the national level, while others felt that the uniform nature of the commercial codes would make their adoption easier absent NEEA and its partners, compared to their more specific involvement with state residential codes.
- **In Idaho and Oregon, interview respondents credited NEEA's above-code work with signaling when the market is ready to adopt a more stringent base code and in preparing builders for these changes.** They felt that this work serves to familiarize the

builders working to meet above-code requirements with the measures and practices that will become a part of future base codes. Additionally, successfully introducing these above-code measures and practices into the new home market in a given state can serve as an important data point to decision makers to signal the feasibility of incorporating these new elements into an upcoming code cycle.

- **The literature review did not find any alternative approaches that could easily replace NEEA's simple, straightforward approach.** Others are complex, costly, and not necessarily more accurate.

Elements of NEEA's existing data collection efforts could inform state and sector specific analysis for determining NEEA's baselines. For example, extensive information is already and/or can be collected as part of NEEA's forward-looking State Code Roadmaps and retrospective Codes Market Progress Evaluation Reports (MPERs). NEEA's State Code Roadmaps are internal planning and strategy documents that NEEA has recently begun developing throughout each state's code update cycle to document specific activities, priorities, context, and tactics NEEA and its partners plan to leverage for each State's code update process. These documents provide critical ex-ante information on the barriers and challenges to advancing code in each state and/or sector and then the work, programs, and activities planned by NEEA and its partners plan to address key barriers to advancing code. MPERs, in contrast, are conducted on a periodic basis as means to assess (ex-post) the influence of NEEA's various activities to support and advance code development and adoption in the Northwest. As discussed in more detail in Section 4, these two documents/studies can be effectively leveraged to inform NEEA's natural market baseline, by state and sector.

Recommendations

Based on the findings, the IEc/RR team developed four recommendations to update NEEA's baseline development approach and ensure it accurately captures NEEA and its partners' activities in future code cycles:

- **Recommendation #1:** Rather than apply a default baseline assumption for all states and sectors (residential and commercial), NEEA should conduct analyses to establish separate baseline assumptions for each energy code update, state, and sector.
- **Recommendation #2:** As part of the process to establish the baseline assumption for each code cycle, state, and sector, NEEA should more clearly define, document, and communicate the role of its partners.
- **Recommendation #3:** Based on an independent qualitative assessment of NEEA and its partners' role in a specific code cycle, state, and sector, NEEA should adjust code baselines to reflect the number of code cycles (one, two, or three) that NEEA and partners' work likely accelerated code adoption. This would enable greater flexibility and accuracy in measuring NEEA and its partners' role in the code development process while still meeting NEEA's requirements (for example, not cost prohibitive, able to be reported within a year).

The "Assessment of Current Approach and Recommended Updates" section of this report provides additional details for each of these recommendations. It also provides guidance on how to best implement these recommendations in future evaluations and research.

1 Introduction

Dating back to its inception in 1996, the Northwest Energy Efficiency Alliance (NEEA) has worked to advance residential and commercial building energy codes across the Northwest Region (Idaho, Montana, Oregon, and Washington). Through this work, NEEA and its partners strategically introduce code changes that Northwest states and model codes (such as the International Energy Conservation Code (IECC) or ASHRAE 90.1) are unlikely to adopt for multiple code cycles without their influence (for example, high-performance residential wall assemblies). In addition to its work on code development, NEEA and its partners support energy codes through training and education to support code compliance, above-code programming to increase builder and market readiness for code changes, conducting and/or sharing technology and practice research, and advancing market transformation on products and practices covered by code. NEEA then estimates the energy savings generated by these efforts. As part of the process to determine savings, NEEA develops a counterfactual *Natural Market Baseline* for state codes in the Northwest representing when codes would likely have been adopted without NEEA and its partners' influence. NEEA hired Industrial Economics, Inc. (IEc) and Resource Refocus (hereafter the "IEc/RR team" or "team") to evaluate the existing methodology and determine the validity of NEEA's process for developing this baseline. This report summarizes the IEc/RR team's findings from the evaluation, along with recommendations for changes NEEA could make to this methodology to ensure it remains reliable to measure savings from NEEA and its partners' codes work moving forward.

Background and Study Objectives

NEEA and its partners work to influence state building energy codes (code) for new residential and commercial buildings in Idaho, Montana, Oregon, and Washington to reduce residential and commercial building energy consumption to become increasingly more energy efficient. NEEA's code development work is multi-faceted. NEEA works with entities located in the Northwest Region to identify new potential energy code measures and participates in the public process by providing technical expertise, data, and analysis. NEEA's participation in the national code development process also influences the Northwest Region as a whole, as some states adopt model codes fully or with some variations. NEEA's work also supports code compliance through training, education, and additional resources for local code bodies and market actors, such as builders. In addition to its direct work on codes and compliance, NEEA leads several activities that increase builder and market readiness for code changes, increasing the feasibility of adoption. This includes above-code programming, technology and practice research, and market transformation work. NEEA uses these activities to prepare builders and other stakeholders to use more energy efficient measures and practices and to provide data to decision makers that shows the feasibility of requiring these measures and practices in more stringent codes without putting an unrealistic burden on the market.

These combined efforts focus on both the upcoming code cycle and long-term goals. For example, NEEA and its partners' strategy occasionally involves introducing code changes that they believe the state will not adopt for multiple code cycles, as it can take years for market actors and other code stakeholders to become comfortable with more stringent or novel code requirements.

Currently, NEEA's assumption is that energy code updates in the Northwest Region occur approximately ten years (that is, approximately three IECC code cycles) earlier than they would have without NEEA and its partners' involvement. To quantify this assumption in the Natural Market Baseline, NEEA reports 100% of the Total Regional Savings as Co-Created Savings for ten

years after construction starts under a new code.[1] Specifically, NEEA defines Co-Created Savings as: *"Energy savings above the Natural Market Baseline — Market adoption of energy efficiency which would have occurred naturally without intervention by NEEA and its partners."* NEEA calculates Co-Created Savings as follows:

> Co-Created Savings = Total Regional Savings - Natural Market Baseline
>
> where: [2]
>
> Total Regional Savings: The energy savings from builders complying with code in a given state.
>
> Natural Market Baseline: Adoption of the more stringent code that would have occurred naturally without intervention by NEEA and its partners.
>
> Co-Created Savings: Energy savings above the Natural Market Baseline.

NEEA uses the Natural Market Baseline to account for energy savings that would have occurred without NEEA and its partners' intervention. The estimate is meant to recognize that, in some cases, the market would eventually adopt the efficient code (and realize the associated energy savings) without the intervention.[3]

This approach is applied to all states in the Northwest Region and to both the residential and commercial sectors. For each state, sector, and code cycle, NEEA applies a compliance factor to the savings calculations, so savings are only reported for the proportion of buildings estimated to comply statewide.[4] Further, NEEA only reports savings for new construction buildings permitted and built under the new code (major renovation projects are not included).

NEEA's assumption that codes would not be accepted for an additional three code cycles without the work of NEEA and its energy efficiency partners was developed in 2014. As noted in NEEA's *Estimating Residential and Commercial Code Energy Savings* documentation, "NEEA's Cost Effectiveness Advisory Committee supported this assumption to acknowledge the long-term nature of code development, the significant role NEEA and utilities have had in product/practices prior to proposing energy codes improvements, and the complexities of disentangling influence from the many aspects of code Market Transformation work." This is a simple, straightforward approach that can be applied rapidly and with a relatively low cost compared to alternative approaches.

NEEA believes that the code landscape of the Northwest Region has changed considerably since the time of development, however. For example, there are many more parties representing a broader array of interests involved in the code development and adoption process, and the Northwest states' code processes and priorities are likely influenced by new and changing factors such as state-level carbon reduction goals.

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[1] Code-to-code modeled savings with a compliance rate applied.

[2] Steinhoff, C. *Estimating Residential and Commercial Code Energy Savings.* Northwest Energy Efficiency Alliance, April 18, 2024.

[3] NEEA also uses the Natural Market Baseline to establish the justification for investment and to support the development of market intervention strategies. Steinhoff, C. *Overview of NEEA's Natural Market Baseline for Codes.* PowerPoint slides for project kickoff meeting. December 16, 2024.

[4] To estimate the share of homes and commercial buildings that comply with codes, NEEA commissions compliance evaluations that assess the market's response to updated energy codes in the Northwest (Idaho, Montana, Oregon, and Washington). While the specific objectives of these studies vary to address the team's specific involvement in and questions about a state's most recent code cycle, an overarching goal of these studies is to provide or inform estimates of state-wide, whole-building compliance with the most recent code and fuel selection.

Therefore, this study aims to answer the following research questions:

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

Any recommended approaches or adjustments to NEEA's current approach should address the following objectives:

- Not be cost prohibitive
- Enable savings reporting within one year of code adoption
- Be transparent, straightforward, and easily reviewable
- Be unlikely to overestimate savings
- Account for the long-term nature of market transformation/code influence
- Recognize the full set of NEEA activities that influence code
- Be applicable to future code changes
- Be appropriate for all four Northwest states
- Be appropriate for both the residential and commercial sectors

This study builds on previous NEEA efforts such as the *Codes Market Progress Evaluation Reports (MPERs) #1-5*, which assessed NEEA's codes-related activities and influence on Northwest energy code development and adoption; *Independent Assessment of NEEA Approaches to Estimating Influence Over State Energy Codes*; energy code savings analyses such as the *Idaho, Montana, and Oregon Residential Energy Code Savings Analysis*; compliance studies such as the *Idaho Residential Code Compliance Evaluation* and *Code Savings Technical Assumptions Review*; and NEEA's recent efforts to develop State Code Roadmaps, which will describe NEEA's strategy and activities for strengthening the energy codes in each Northwest state and sector.

2 Methodology

To assess NEEA's current Natural Market Baseline assumptions and methodology and understand the existing approaches that other states/organizations use to develop baseline assumptions for quantifying these types of savings, the IEc/RR team collected data through a theory of change/stakeholder analysis and a literature review.

Theory of Change/Stakeholder Analysis

The theory of change/stakeholder analysis relied on findings from in-depth interviews, which were conducted with the following objectives:

1. Understand the current process of code development in each state and market (residential and commercial) in the Northwest, and how that process has changed since NEEA's current method was developed,

2. Identify the role of NEEA and its partners in state- and national-level code development,
3. Understand the landscape of stakeholders involved in state codes, including identifying the strategies used by those stakeholders relative to NEEA and its partners, and what the markets may look like absent NEEA's involvement, and,
4. Identify existing or possible alternative methodologies that could improve NEEA's baseline development.

To conduct the theory of change/stakeholder analysis, IEc worked closely with NEEA to develop key research topics and develop an interview guide. The teams also worked together to identify stakeholders who could effectively speak about these topics. **Table 1** shows a summary of the four stakeholder groups that IEc and NEEA identified, along with the organizations and number of participants who completed interviews, and the key information the team sought to understand from conversations with each group. Each interview was conducted via video conference using Microsoft Teams and took approximately 30 to 60 minutes to complete.

Table 1. Key Stakeholder Groups, Interview Participants, and Information Sought

Stakeholder Group	Interview Participants (# of Individuals)	Key Information Topics
Current and former **NEEA staff** who are/were involved in the development and implementation of NEEA's existing methodology	• Current NEEA staff (3) • Former NEEA staff (1)	• NEEA's approach to residential and commercial codes development • How NEEA's codes work builds on and interacts with NEEA's Market Transformation (MT) programs • The long-term nature of NEEA's work in the residential and commercial code sectors in each Northwest state • How NEEA and its partners work to influence IECC and ASHRAE model codes (which in turn influence Northwest state codes) • How NEEA defines and reports on its work in advancing codes
Building energy codes experts from the four Northwest states who are aware of both the code development process and NEEA's role	• Idaho Codes Collaborative (1) • Montana Department of Environmental Quality (1) • Montana Department of Labor and Industry (1) • Washington Energy Technical Advisory Group/City of Seattle (1) • Oregon Building Codes Division (1)	• The residential and commercial code structure and development process in each Northwest state • How NEEA has historically impacted and currently impacts code development • Other key stakeholders in the code development process
Extra-regional codes expert aware of the methodologies used across the country to develop baselines for codes studies	• American Council for an Energy-Efficient Economy (ACEEE) (1)	• Perceptions of how NEEA influences state and national-level code development • NEEA's methodology for developing code baselines • Best practices for measuring code influence and establishing baselines

Stakeholder Group	Interview Participants (# of Individuals)	Key Information Topics
Above-code stakeholders in Idaho and Oregon aware of NEEA's above-code work in those states	• NEEA (1) • Energy Trust of Oregon (2)	• How NEEA's work in the stretch/above-code markets can influence adoption and compliance with base codes

Following the completion of the interviews, the team analyzed results to identify key findings and assess similarities and differences across each state and sector.

The team compared the takeaways from this analysis to those from the literature review (described in the next section) and identified potential changes that NEEA could make to its existing methodology for developing the Natural Market Baseline. The team worked with NEEA to assess what changes would be feasible, then proposed our recommended updates to NEEA's approach. The "Assessment of Current Approach and Recommended Updates" section provides further details.

Literature Review

Concurrent with and complementary to this theory of change/stakeholder analysis, the IEc/RR team conducted a targeted literature review of the methods currently used by other states and/or peer organizations around the country. The review provided information on the strengths and weaknesses of each approach, along with any budgetary, schedule, data, and stakeholder requirements.

A full list of the resources reviewed is included in the bibliography. Several key documents included *Independent Assessment of NEEA Approaches to Estimating Influence Over State Energy Codes* (NMR 2024), *Codes Market Progress Evaluation Report #5* (ADM 2024), and *Utility Energy Codes Programs and Their Potential Extension to Building Performance Standards* (Garfunkel and Waite 2024).

While the recent NMR study provided a high-level summary of four alternative approaches to conducting influence evaluations for energy codes work, the intent of this literature review was to provide more detailed methodological information and additional approaches NEEA can consider for developing counterfactual baselines. For example, it was clear from NMR's report that a full implementation of California's approach would be prohibitively expensive and time consuming. Therefore, the literature review focused on a high-level overview highlighting elements that may be feasible for NEEA to implement, such as adjustment factors for Co-Created Savings.

3 Findings

This section provides findings from the theory of change/stakeholder analysis and literature review.

Theory of Change/Stakeholder Analysis

- NEEA staff and external stakeholders who participated in interviews generally agreed that NEEA and its partners played a major role in codes development in its early years, and that these efforts likely led to a 2-3 code cycle/10-year acceleration of more efficient code adoption through at least the mid-2010s.
- In the last decade, respondents were less sure that code is still this far ahead of where it would have been without NEEA and its partners' involvement, especially in Oregon and Washington, due to:
    - Respondents' lack of awareness of who is defined as a NEEA partner
    - Local/regional interests in promoting energy efficiency and emissions reductions
    - Legislation/statewide climate and net-zero goals (Washington and Oregon)
    - National progress on building codes (although NEEA and its partners have helped advance these)
    - Activities of other organizations/agencies
- Respondents credited more of the recent progress in codes to NEEA and its partners in Idaho and Montana than in Oregon and Washington.
- Respondents agreed that NEEA and its partners have played an influential role in advancing building energy codes at the national level.
- Respondents provided mixed feedback on whether NEEA and its partners have had more of an influence in accelerating residential or commercial codes. While respondents generally agreed that commercial codes are more prescriptive, some felt that this meant NEEA had a greater role in the overall code process because of its influence at the national level on these prescriptive codes, while others felt that the uniform nature of the commercial codes would make their adoption easier absent NEEA and its partners, compared to their more specific involvement with residential codes.
- Stakeholders in Idaho and Oregon felt that NEEA's above-code work in those states has been important in signaling to decision-makers when the market is ready to adopt a more stringent base code and in preparing builders for these changes. They felt that this above-code work has important implications on the adoption of elevated base codes.
- Respondents were largely unaware of the methods NEEA and others use for reporting savings from code adoption or developing a Natural Market Baseline.

Literature Review

- The team reviewed approaches around the country and did not find other examples that parallel NEEA's current baseline development and savings reporting approach.
- The majority of the extra-regional approaches have similar methodologies for reporting gross savings, which involve code-to-code comparisons, market size, and compliance estimates.

- The team did not identify any alternative approaches that could easily replace NEEA's simple, straightforward approach. Others are complex, costly, and not necessarily more accurate.
- Elements of NEEA's existing data collection efforts could inform state and sector specific analysis. For example, extensive information is already (or will soon be) collected as part of the State Roadmaps and Codes MPERs. The State Roadmaps will present the theory of change for NEEA and its partners' codes work in each state (that is, they will describe and illustrate how NEEA and its partners' codes activities are expected to maintain and increase code stringency); define NEEA's partners and their respective roles/activities; and identify the market barriers NEEA and its partners will address. The Codes MPERs are recurring evaluations that assess progress toward energy efficient code development and adoption, implementation, and compliance in the Northwest.

The remainder of this section describes findings from the interviews and literature review in greater detail.

Theory of Change/Stakeholder Analysis

Results from the interviews with each of the four groups are outlined below.

NEEA Staff

Through interviews with NEEA staff, the team developed an understanding of NEEA's deep-rooted partnerships that help shape the codes landscape across the Northwest. Further, these interviews revealed the substantial benefits that NEEA's codes work has produced over time, as NEEA has historically served as a leader in state codes development. This also raised the team's awareness of places where NEEA's methodology may underestimate the true savings that their work in building codes has produced, as the effective useful life of some measures exceeds ten years. These contributions meant that buildings dating back to the early 2000s across the Northwest were more energy efficient than they would have been absent NEEA's involvement and therefore produced savings for the lifecycle of these buildings, long after the ten-year savings window for which NEEA reports savings has expired.

Northwest Building Codes Experts

The IEc/RR team interviewed five stakeholders across the four states. It is important to note that due to this limited number of interviews (one per Idaho, Oregon, and Washington, and two in Montana) the feedback may not fully reflect the perceptions of all major stakeholders or the overall codes landscape in each state.

NEEA Partners

While interview respondents were able to identify some NEEA partners, others were not aware of who NEEA's partners in the code space are, and some identified NEEA partners when asked about non-partner stakeholders. This lack of awareness of NEEA's partners made it difficult for respondents to provide feedback on the activities or role of NEEA and its partners versus non-partner stakeholders, due to uncertainty of who comprised each group.

NEEA and Partners' Key Roles and Activities

Responses varied by state, but respondents frequently pointed to the data NEEA is able to provide and its training and educational activities with builders as key activities that have helped to accelerate market progress.

While stakeholders in Idaho and Montana recognized the NEEA's ongoing and current activities, those in Washington and Oregon felt NEEA has been less directly involved in the codes

development process, stakeholder engagement, and bringing parties together in recent years than it has been historically.

Several respondents identified the importance of NEEA in elevating model codes (IECC and ASHRAE) through providing data and the value of their advocacy role as a regional energy efficiency organization (REEO).

Major Barriers to Adoption

- Respondents in all states pointed to opposition from builders' groups and increased costs from code adoption as major barriers.
- Respondents in Oregon and Washington identified unique challenges including differences in the ease with which different parts of the state adopt new code (Oregon), and challenges associated with being the developer or an early adopter of advances that increase code stringency (Washington).

Non-Partner Stakeholders and Perception of a Landscape without NEEA

- Respondents identified various key stakeholders that advocate for and against more stringent energy efficiency code measures in each state. Respondents in Washington and Oregon identified more advocates, while respondents in Idaho and Montana named fewer organizations that could fill NEEA and its partners' role in their absence.
- Respondents in Idaho, Montana, and Oregon all felt that historically NEEA and its partners had helped advance the code to points it would not have reached absent NEEA and its partners' involvement through at least the mid-2010s. Respondents in Idaho and Montana felt that these states have remained 2-3 code cycles ahead of where they would be without NEEA and its partners' involvement, while the Oregon respondent was less sure that NEEA had continued to advance the market, due to the state's desire to keep up with accelerating national progress. The Washington respondent was also less sure that NEEA has contributed to recent code advancement, citing Washington's historical position as a national leader. Both the Oregon and Washington stakeholders felt that legislative directives were key in advancing the code in recent years.

Residential vs. Commercial Differences

Respondents were mixed on whether they felt NEEA has played a greater role on commercial or residential code adoption. Some felt that because the commercial code is more uniform, NEEA has provided more value in its contributions to residential code development where the process and issues are more variable. This was especially true in Oregon, where the commercial code follows the ASHRAE 90.1 guidance, but the residential code is specific to Oregon. Similarly, in Idaho, there has been greater pushback against the residential code and therefore the respondent felt NEEA's involvement has been more influential on the residential side. In Washington, the interviewee felt that NEEA's contributions to the national commercial code were more influential than what was done on the residential side.

Alternative Savings/Baseline Methodology

No respondents were aware of alternative methodologies for developing baselines/measuring savings from code activities, and most chose not to provide recommendations on how NEEA could improve their methodology.

Extra-Regional Codes Expert
IEc/RR completed an interview with a national codes development expert at ACEEE. This individual is knowledgeable about energy codes programs and building performance standards and has conducted research on programs across the country, including their various savings/baseline development methodologies. The key takeaways from this interview were:

Role of NEEA
The respondent identified the importance of the research and analysis that NEEA contributes to the national code development process. The respondent also highlighted the value of NEEA's role as a REEO, which enables it to drive change across multiple states and advocate for more stringent energy efficiency codes regionally. NEEA also represents states that have varying state legislative objectives and policies and different challenges and barriers to code development. The respondent also highlighted NEEAs staff members' deep technical understanding of on the energy efficiency landscape and the codes development process as an area where NEEA provides support that not all other organizations can provide.

NEEA's Influence on Codes in the Northwest
Although the respondent was less aware of NEEA's specific role at the state level, they could say "with certainty" that Montana and Idaho would not have as stringent codes if not for NEEA's involvement. The respondent based this on their familiarity with similar states that are several cycles behind Montana and Idaho in their codes process. The respondent was less sure, however, that Washington and Oregon's current codes would look much different, absent NEEA and its partners.

Best Practices for Establishing Baselines/Claiming Codes Savings
Although the respondent was aware of the methods that many different organizations use to establish baselines and calculate savings, they did not have strong opinions on best practices.[5] The respondent recognized that NEEA's approach is fairly unique but felt that it was a good method "in terms of efficiency in trying to save energy [and] in terms of the reporting standpoint."

Above-Code Stakeholders
IEc/RR conducted interviews with above-code stakeholders in Idaho and Oregon, where NEEA supports above-code building programs. Respondents provided the following feedback:

Oregon[6]

- The Oregon stakeholders emphasized NEEA's crucial role in the success of Oregon's above-code programs. One respondent explained that above-code programs set up a baseline for the next code, influence builders to build to higher levels, and provide proof that there is space to improve the base code – all key activities in advancing more stringent code updates through to the next cycle.
- When asked about other stakeholders who could fill NEEA's role, the interviewees felt that without NEEA and its partners' leadership, above-code work would be diminished. They further felt that because the code adoption is a public process, NEEA's work serves as an

[5] When asked about Delphi Panel-based approaches, the respondent also noted a degree of uncertainty about whether Delphi panel approaches yield more precision than simpler methodologies like NEEA's.
[6] The responses by the Oregon above-code interviewees suggest that NEEA has a stronger role in base code development than what was reported in the Theory of Change/Stakeholder Analysis section of this document. Unlike the interviewees cited in the Theory of Change section, the above-code interviewees are not directly involved in the code development process in Oregon, although they do have a strong level of familiarity with the process and key stakeholders.

important model for the work of other energy efficiency advocates working to advance codes in the Northwest.

- Finally, these respondents identified builder pushback as a major barrier to code adoption and explained that NEEA's above-code work with builders and educational programs has been key in readying them to adopt new base codes when approved.

Idaho

- Similar to Oregon, the respondent familiar with Idaho explained the important role that NEEA's above-code work has played in preparing the market to advance to a more stringent base code. This respondent highlighted the "lynchpin" of developing the AXIS database of above-code homes in Idaho, which has provided data to key stakeholders in the code adoption processes to show that builders are actively implementing new measures and practices. This signals that the market is ready for more stringent base codes and has enabled advocates to push back against parties arguing the market is not ready for a new code or that it is too cost prohibitive.
- The respondent explained that NEEA's work in Idaho (and Montana) has been important in helping the builder community implement practices that will lead to energy efficiency improvements and greater health and safety in homes through the education and technical resources it provides. Demonstrating this value has helped builders self-select into using more efficient measures and practices even prior to more stringent code adoption.
- The respondent felt that absent NEEA, there is no other organization that would be a clear leader to conduct builder outreach or to collect data in AXIS that demonstrates market readiness.

Literature Review

NEEA's code savings reporting process has several steps, Total Regional Savings, Co-Created Savings, and Funder Reported Savings.[7] As noted above, NEEA reports 100% of the Total Regional Savings as Co-Created Savings for 10 years (approximately three IECC code cycles) after construction starts under a new code. The focus of this study (and the literature reviewed) was on the Co-Created Savings NEEA reports and its methodologies for defining the counterfactual (that is, what would have occurred without NEEA and its partners' involvement).

For reference, **Figure 1** provides a timeline of the codes for which NEEA reports energy savings resulting from its work in conjunction with its partners. Importantly, this figure shows the most recent codes work by NEEA and its partners in the Northwest, but as previously discussed, the work of NEEA and its partners in the codes landscape began with NEEA's inception in 1996 and continues to influence NEEA's codes work today.

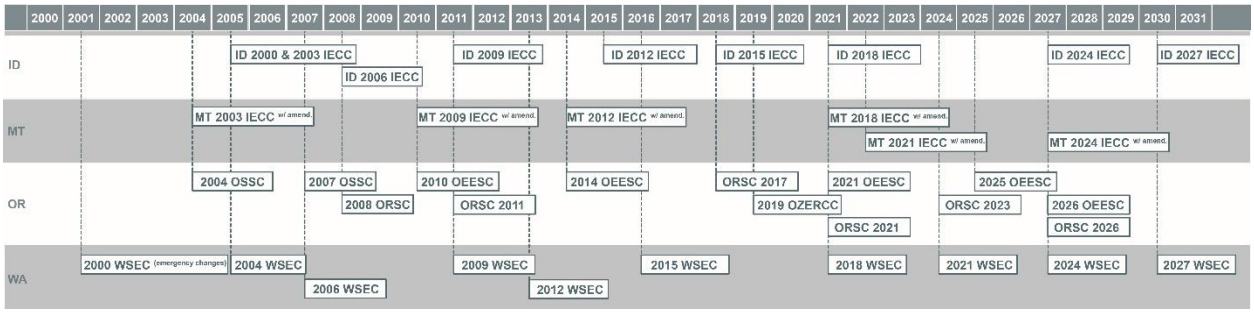

Figure 1. State Codes Tracked by NEEA

Source: Adapted from *Estimating Residential and Commercial Code Energy Savings* and communications with NEEA staff. Oregon Structural Specialty Code (OSSC), Oregon Energy Efficiency Specialty Code (OEESC), Oregon Residential Specialty Code (ORSC), Oregon Zero Energy Ready Commercial Code (OZERCC), Washington State Energy Code (WSEC)

Extra-Regional Approaches to Reporting Energy Code Savings

Much of the extra-regional documentation was in the context of utility savings attribution so that utilities can claim the savings from their energy code support programs. It is important to note that utility savings *attribution* efforts differ from NEEA's reporting needs and have a wider scope than this study. The IEc/RR team focused on baseline or counterfactual methodologies documented in these resources. In the literature, NEEA's Total Regional Savings are analogous to what others refer to as "gross" savings, whereas the Co-Created Savings are analogous to "net" savings, as shown in **Figure 2** below.

[7] NEEA reports codes savings to its funders either based on the Co-Created Savings estimate or a Total Regional Savings estimate adjusted to the current Power Plan baseline. Funders decide which value NEEA should report. Steinhoff, C. *Estimating Residential and Commercial Code Energy Savings.* Northwest Energy Efficiency Alliance, April 18, 2024.

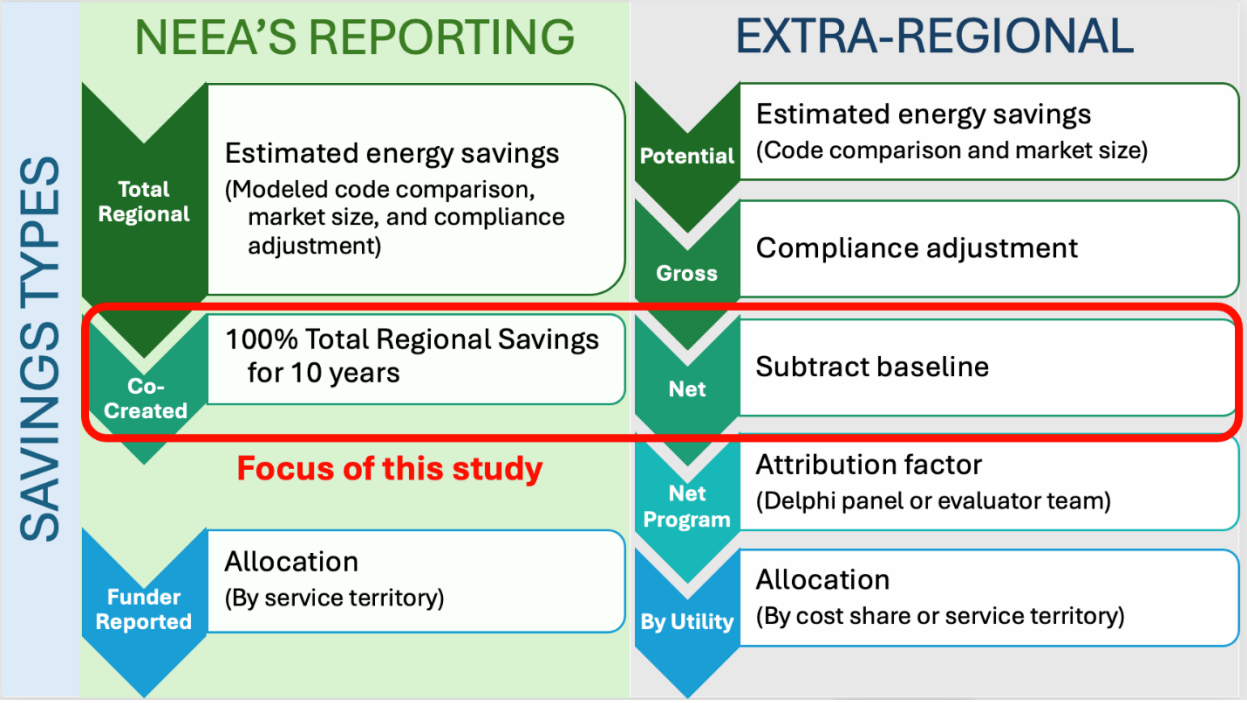

Figure 2. NEEA reporting compared to extra-regional approaches

In **Figure 3** below, the states highlighted in blue currently have an approach for reporting energy savings from codes. The yellow states are developing a reporting process, and orange states are considering a reporting process.

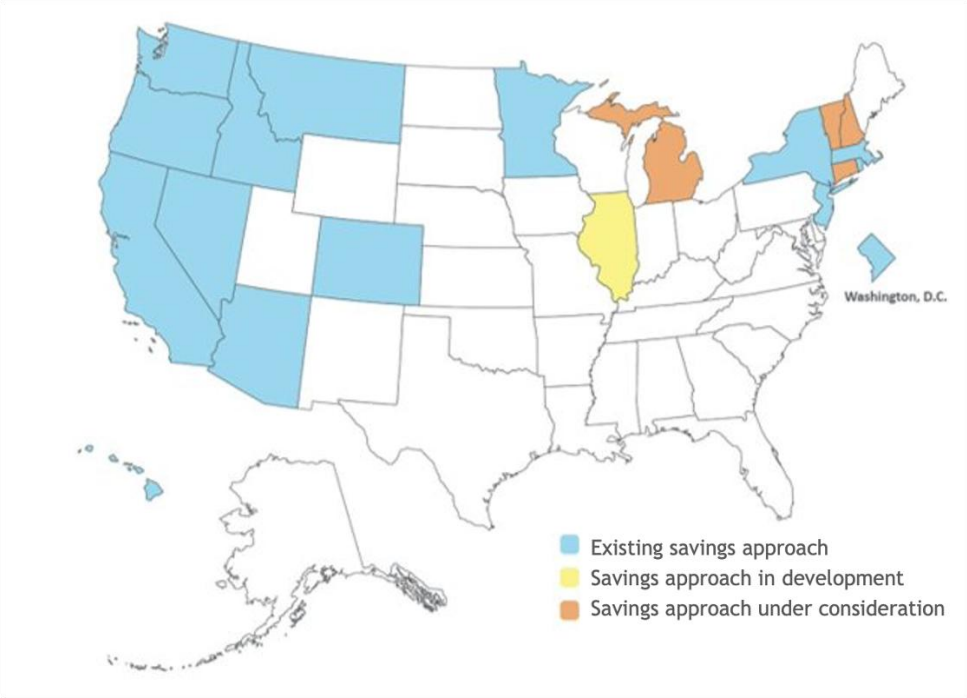

Figure 3. Status of energy code savings approaches by state

Source: Adapted from *Engaging and Crediting Utilities for Supporting Energy Code and Building Performance Standard Implementation*.

In 2005, California became the first state to develop an attribution approach for reporting energy code savings. This enabled utilities in California to claim energy savings from their energy code support programs, including programs focused on advancing building energy codes (adoption), increasing compliance, or both (Garfunkel and Waite 2024).

Since then, numerous states have adopted similar approaches, including Colorado, Hawaii, Massachusetts, Minnesota, Nevada, New Jersey,[8] and Rhode Island. At a high level, these approaches all calculate the net savings (analogous to the Co-Created Savings) by determining what proportion of the gross savings (analogous to the Total Regional Savings) can be attributed to a specific program implementor. Similar to NEEA, these are generally code-to-code comparisons that account for market size and compliance. Compliance studies are often utility-funded field studies. Some states that claim savings from increased compliance conduct compliance studies at the beginning and end of a program cycle to quantify the change in compliance rates (Effinger 2023).

A few states implement energy code reporting processes that deviate from the California model. For example, Arizona is the only state that uses a *deemed* attribution approach. Here, the state determines how much of the savings from energy code programs can be claimed, rather than an expert panel. The utilities need to document savings based on an evaluation, measurement, and verification study that incorporates field data and market baselines (Lee and Stacey 2018). The District of Columbia measures the difference in code compliance rates before and after activities and uses the gross savings (analogous to Total Regional Savings) rather than net savings (analogous to Co-Created Savings), so it does not adjust for the natural market baseline (NMR 2020). In New York, the New York State Energy Research and Development Authority (NYSERDA), claims savings from both stretch code adoption efforts and from increased base energy code compliance from training efforts (Cadmus 2022; Eckstein and Horkitz 2022).

Illinois does not count savings from energy codes or increased compliance yet, but potential activities to influence code compliance and adoption are being considered. The *2025 Illinois Statewide Technical Reference Manual for Energy Efficiency* discusses possible approaches for developing the Natural Market Baseline for the duration of a specific code. For example, one option is a fixed post-adoption baseline that changes to full adoption rates at the next code update. An alternative approach is a baseline that increases over time, resulting in declining savings credits. The Technical Resource Manual (TRM) notes that determining when to update the Natural Market Baseline can be difficult in regions already counting code savings. The TRM points to Delphi panels as a common approach to develop the Natural Market Baseline but notes that "finding enough independent experts and achieving convergence of opinion can be challenging. Trending market data or comparison with other similar code provision adoptions may also be used as alternatives. Ultimately, as with all counterfactual baseline estimation, there will need to be an aspect of professional judgement to determine the appropriate treatment of post-adoption baseline." The TRM also points out that it is important to establish the length of time that savings will be credited to the utility for the new code or standard, which is separate from the lifetime of the measures. The TRM states, "There is no quantitative analysis that can determine the duration of an energy code credit to the utilities; instead, it requires a policy that provides an appropriate level of credit to implementers that makes it worth the effort to support MT initiatives that target code changes, while not being so large as to be unfair to ratepayers."

All of the approaches reviewed follow a multi-step process with detailed protocols. They generally require third-party evaluation teams, Delphi panels, and/or site verification, so these approaches

[8] In New Jersey, utilities or state agencies administer energy efficiency programs, but not Codes and Standards programs. Energy savings from updated codes can count toward state targets (which reduces the savings required from other programs).

can be both costly and time consuming (Effinger 2023, Garfunkel and Waite 2024, Lee and Stacey 2018, Nadel 2020, NV Energy 2023, Xcel Energy 2022).

Other Approaches Evaluated in Prior NEEA Studies

In 2024, on behalf of NEEA, NMR conducted the *Independent Assessment of NEEA Approaches to Estimating Influence Over State Energy Codes* study. The study reviewed NEEA's current approach to assessing its influence on state energy codes and identified potential refinements to strengthen the defensibility of reported Co-Created Savings. Two approaches reviewed may be useful in enhancing NEEA's Natural Market Baseline development.

Count of Proposals: This simplified method assesses effectiveness by comparing the number of proposals successfully adopted into code with the total proposals to which NEEA contributed. NMR did not recommend this approach because it does not account for the relative impact of proposals but noted it could serve as a supplemental indicator of progress, highlighting NEEA's long-term role in advancing code updates without requiring additional data collection.

Qualitative Description of Influence with State Road Maps: This approach refines current MPER methods by better characterizing stakeholders and aligning influence measurement with state-specific code development activities. It builds on NEEA's existing intervention plans and logic models but would require more upfront effort to support *state-specific* plans and performance indicators. While more resource-intensive, it could improve transparency and defensibility. NEEA has begin developing State Code Roadmaps in response to this recommendation.

Above-Code Approaches

Some states also report savings from above-code programs or stretch codes. For example, in New York, NYSERDA calculates the stretch code impact for jurisdictions that have adopted NYStretch.[9] The methodologies used include Delphi Panel, in-depth interviews, and training participant surveys. Evaluations estimate the level of energy code compliance to determine changes over time, evaluate NYSERDA efforts in advancing the stretch code, understand the impacts of the alternative code enforcement pilots, and explore the needs of and motivations for jurisdictions seeking alternative ways to enforce the energy code (Eckstein and Horkitz 2022). Illinois, Rhode Island, Colorado, Hawaii, and Massachusetts are all considering expanding their current reporting efforts to include stretch code savings (Garfunkel and Waite 2024, Guidehouse 2024).

Illinois will be implementing a *Stretch Codes Market Transformation Initiative Theory-Based Evaluation Plan* from 2024-2028, which will be completed by third-party evaluators, Commonwealth Edison, Midwest Energy Efficiency Alliance, Illinois Commerce Commission, and the Illinois Stakeholder Advisory Group Market Transformation Working Group members. These efforts will examine whether the preponderance of evidence suggests the Stretch Codes Market Transformation Initiative's goals are achieved (Guidehouse 2024). The Illinois TRM notes that energy savings from advanced code compliance activities are typically claimed for the period of time that the particular code is in place since the savings are tied to that specific set of measures. Key triggers for Natural Market Baseline adjustments may include changes in stretch codes, new market data, and significant adoption rates. During the stretch code evaluation, a third-party evaluator will analyze data on single-family and multifamily new construction permits, as well as commercial building renovations, to validate trend assumptions and identify municipality-specific adjustments.

California's Reach Code program is considered a non-resource program, so savings are not claimed. However, there are reporting processes in place. For example, a 2022 study evaluated the energy savings of non-resource programs administered by local government partnerships (LGPs) and

[9] https://www.nyserda.ny.gov/All-Programs/Clean-Resilient-Building-Codes/NYStretch-Energy-Code-2020

regional energy networks (RENs) (Tierra 2022). The methodology included engineering analyses to calculate gross and net savings, channeling analysis and participant surveys, and in-depth interviews with LGP, REN, and staff. A similar effort analyzed non-resource programs offered by two community choice aggregation (CCA) programs, Marin Clean Energy and Lancaster Choice Energy. This evaluation used a channeling analysis to identify customers who participated in CCA non-resource activities and then later participated in at least one resource program or energy efficiency program that resulted in energy savings. The surveys provided information on identified energy efficient equipment and behavioral changes, and the study team quantified the gross and net energy savings (Opinion Dynamics 2020).

4 Assessment of Current Approach and Recommended Updates

Through the findings described above, the IEc/RR team concluded that NEEA's current methodology for defining the Natural Market Baseline for purposes of calculating Co-Created Savings is generally reasonable and appropriate given the scope of NEEA's codes development program and the nine criteria that NEEA identified that its baseline approaches must meet. However, the team also identified several opportunities to improve the methodology. These improvements could address weaknesses identified by the team and stakeholder feedback received during the interviews. The team provides recommendations for improving the method, including recommendations for implementing new methodology, and a discussion of considerations that were *not* included in the recommendations in this section.

Assessment of Current Approach

As noted in the Introduction, NEEA's code baseline development approach must meet nine guidelines to meet the Alliance's needs. As part of its analysis, the IEc/RR team reviewed NEEA's current baseline approach against these guidelines (Table 4) and identified several potential areas for improvement.

Table 4. Natural Market Baseline Criteria and Assessment of Current Approach

NEEA Criteria	Assessment of Current Approach
Not be cost prohibitive	Yes
Enable savings reporting within one year of code adoption	Yes
Be transparent, straightforward, and easily reviewable	No
Be unlikely to overestimate savings	Maybe
Account for the long-term nature of market transformation/code influence	Yes
Recognize the full set of NEEA activities that influence code	Yes
Be applicable to future code changes	Maybe
Be appropriate for all four Northwest states	Maybe
Be appropriate for both the residential and commercial sectors	Maybe

Below we provide more detail for the five criteria where the team's assessment resulted in a finding of "No" or "Maybe."

Be transparent, straightforward, and easily reviewable (No): Based on the stakeholder analysis, the team identified that there is a perceived lack of transparency for some stakeholders. While the reporting process may be clear to NEEA staff involved, improved communication could help clarify the process for parties that are one step removed (for example, third-party evaluators, code stakeholders). Interviewees were largely unaware of the methods NEEA and others use for

reporting savings from code adoption or developing a Natural Market Baseline. Importantly, there is a lack of understanding of who is defined as a NEEA partner.

Be unlikely to overestimate savings (Maybe): The current approach does include state- and code-specific compliance and construction data, but otherwise it does not differentiate across states, which NEEA may influence to differing degrees. Furthermore, the lack of clarity/documentation about NEEA's partners and their roles makes it difficult to assess whether reported savings might be overestimated.[10]

Be applicable to future code changes (Maybe): NEEA staff and external stakeholders generally agreed that NEEA and its partners played a major role in codes development in its early years, and that these efforts likely led to 2-3 code cycle/10-year acceleration through at least the mid-2010s. But, respondents were less sure that code is still this far ahead, especially in Oregon and Washington.

Be appropriate for all four Northwest states (Maybe): Stakeholders felt that NEEA and its partners have been more influential Idaho and Montana than in Oregon and Washington in recent years. In Montana and Idaho, stakeholders recognized the importance of the work of NEEA and its partners directly in the code development process and through its code compliance activities (for example, education and training) and market readiness activities (for example, data sharing and above-code programs). In Washington and Oregon, NEEA and its partners continue to provide important contributions, for example informative data and above-code program support, but respondents were less certain that the acceleration in code adoption would have been slower in recent years without NEEA and its partners, due to market forces including the emergence of additional non-partner energy efficiency advocates and state-level legislative directives on advancing state codes.

Be appropriate for both the residential and commercial sectors (Maybe): Stakeholders provided mixed feedback on whether NEEA and its partners have had more of an influence in accelerating residential or commercial codes.

Recommendations

The team recommends updates to NEEA's approach for establishing residential and commercial codes Natural Market Baselines for each state in the Northwest Region. Specifically, our recommendations provide a framework to adjust the years for which savings from a code are reported based on an independent, qualitative assessment (as part of the regular MPER process) of whether NEEA and its partners' role accelerated the code by one, two, or three code cycles. Our recommendation of a qualitative assessment is grounded in two primary reasons:

- Qualitative assessment allows for the consideration of the wide-ranging and long-term nature of NEEA and its partners' work in state codes development, including market transformation programs, above-code programs, training activities, and historical activities. It also ensures that the long-term influence of NEEA and its partners, including NEEA's role as a national leader and early advocate of more stringent code adoption to promote energy efficiency in the Northwest, can be considered in cases where short-term quantitative metrics may not capture this long-term effect.

[10] During the interviews, some NEEA staff noted that NEEA's current ten-year approach may underestimate savings as it does not capture impacts across the full measure life of homes (e.g., 30 years) subject to more stringent codes.

- Qualitative assessment can be completed cost effectively and within a timely fashion. Based on an in-depth literature review and an interview with a national codes expert, most quantitative-based methodologies are both time- and resource-intensive and will **not** necessarily provide a substantive improvement in the quantitative assessment of Co-Created savings relative to the current methodology.

Importantly, as will be further discussed, the team's recommended updates reflect the relationship between influence and the counterfactual or baseline. To define the counterfactual, it is necessary to characterize the activities of NEEA and its partners and then assess the effectiveness of those activities. Only by knowing this information can the counterfactual (that is, what would have happened in a world without the work of NEEA and its partners) be defined. This is a notable difference between NEEA's codes work and NEEA's conventional Market Transformation work. NEEA's Market Transformation programs can use existing market share data to define the Natural Market Baseline. No equivalent market data exists for the codes baseline. Without actual market data, NEEA would have to construct the counterfactual using expert judgment (a Delphi Panel or similar approach). Such a process would be time-consuming, resource-intensive, and disproportionate relative to NEEA's overall investment in codes activities.

Recommendation #1: Rather than apply a default baseline assumption for all states and sectors (residential and commercial), NEEA should conduct analyses to establish separate baseline assumptions for each energy code update, state, and sector.

Based on the interviews conducted to date, it is clear that the pace of, and barriers facing, code development differ in each state. As such, the IEc team recommends assessing the role of NEEA and its partners separately for each state and market.

Recommendation #2: As part of the process to establish the baseline assumption for each code cycle, state, and sector, NEEA should more clearly define, document, and communicate the role of its partners.

- There is a lack of existing documentation on who NEEA's partners are by state/market. The energy savings that NEEA calculates are intended to reflect the collective work of NEEA and its partners, so it is critical for NEEA to clearly define who its partners are. Interviews conducted for this study confirmed this lack of clarity, which in turn leads to confusion as to what code activities are then included in the Co-Created energy savings calculations.
- We recommend that NEEA provide a summary of the partners and their roles along with any reports of Co-Created code savings.

Recommendation #3: Based on an independent qualitative assessment of NEEA and its partners' role in a specific code cycle, state, and sector, NEEA should adjust code baselines to reflect the number of code cycles (one, two, or three) that NEEA and partners' work accelerated code adoption.

- NEEA's Natural Market Baseline approach answers the question: "When would a code of similar stringency have been adopted without NEEA and its partners' work?" This framing emphasizes the acceleration effect – that is, how much sooner each state adopts the code, compared to when it would have adopted the code without NEEA and its partners' involvement.[11]

[11] The team considered adjusting the proportion of modeled savings (the "100% of the Total Regional Savings" assumption) to reflect the level to which NEEA and its partners affect a code change. However, based

- The IEc team recommends assessment by an independent evaluator, which is consistent with best practices and will help to assure third parties that the results of the assessment are credible and unbiased.
- The IEc team recommends reporting savings for a minimum of one code cycle given NEEA and its partners' historical work to set up a strong foundation for building energy code advancement in the Northwest.
- The IEc team also recommends that NEEA assume an acceleration of no greater than three code cycles. While interviews indicated broad support for a significant acceleration of state code development in the 2010s due to NEEA and its partners' work, the team did not hear support for the same timeframe of influence based on the current codes landscape.

Implementation Framework

The IEc/RR team provides the following standard framework for use by the independent evaluator to guide their assessment and determination of the role of NEEA and its partners (**Table 5**). In developing the framework presented, the key objective is to clearly document NEEA's theory of change for each state and sector as part of NEEA's State Code Roadmaps[12] and then engage a third party to conduct an ex-post analysis as part of the Codes MPER process[13] to qualitatively assess how well NEEA and its partners effectuated the activities identified to address barriers in each market, consistent with NEEA's Codes logic model.

- The qualitative assessment outlined in Table 5 should be performed by an independent evaluator as part of NEEA's existing MPER process. After NEEA completes the first cycle of MPERs using this new methodology for calculating Co-Created savings, NEEA could use the natural market baseline (NMB) estimate from the *previous* MPERs to report a *preliminary* Co-Created savings estimate pending the next MPER.
- The framework identifies two factors for the evaluator to consider: (1) Stakeholders and Their Activities and (2) Code Changes. The outcome of this ex-post analysis is a single, qualitative assessment with respect to the role/influence of NEEA and its partners, which can be translated to a baseline reflecting a one, two, or three code cycle acceleration. The team recommends the number of years associated with each code cycle be based on the actual forward-looking code cycles. So, NEEA would report for the next one, two, or three code cycles as they occur in each state.

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on our research, focusing on the number of code cycles that NEEA accelerated the market is consistent with the focus of the work of NEEA and its partners – to accelerate the adoption of more stringent energy code measures. Additionally, consistent with previous evaluations, the team also concluded that there is no clear way to derate reported savings based on a quantitative influence factor.

[12] NEEA's State Code Roadmaps are state- and sector-specific internal planning and strategy documents that NEEA has begun developing throughout each state's code update cycle to document specific activities, priorities, context, and tactics NEEA plans to leverage for that code update process. For example, the document describes the specific context and goals within each state; NEEA's actions and its interaction with other Code stakeholders in that state; current and past NEEA research, resources, relevant program goals, and Code support infrastructure; any other relevant context. NEEA primarily uses the documents (1) at the beginning of each code cycle as a planning document and (2) at the end of each code cycle as a retrospective document to capture successes and lessons learned for future cycles.

[13] NEEA's Codes MPER are conducted on a periodic basis as means to assess the influence of NEEA's various activities that support and accelerate code development and adoption in the Northwest. To date, NEEA has conducted five MPERs associated with its codes work. A sixth MPER is currently under development.

We provide the following additional details on how to implement the framework:

1) **In preparation for the independent evaluator's qualitative assessment, IEc suggests that NEEA document:**
    - Major changes in the current code cycle that drive energy savings.
    - Which NEEA partners were involved and what role they played.
    - What other parties (not NEEA partners) were involved and what role they played.
    - How NEEA's historical/ongoing activities and efforts at both the state and national level contributed to code changes.
2) **Assign three, two, or one code cycle acceleration assumption using a consistent framework to qualitatively assess NEEA and its partners' role relative to barriers and to the influence of other groups/factors driving efficiency:**
    - See **Table 5** below. The table includes key factors and guiding questions for each factor. After answering all of the guiding questions, the third-party evaluator would assign one, two, or three code cycles based on the totality of factors and its best professional judgment:

      Three (3) code cycles: It is reasonable to assume that NEEA and its partners accelerated the code by **three (3)** code cycles. NEEA and its partners played a clear, significant role in developing and/or influencing the code updates.

      Two (2) code cycles: NEEA and its partners played a clear role in developing and/or influencing the code updates and it is reasonable to assume that NEEA and its partners accelerated the code by **two (2)** code cycles.

      One (1) code cycle: NEEA and its partners, in conjunction with other parties, played a role in developing and/or influencing the code updates. There is little or no clear evidence that the work of NEEA and its partners was a significant factor in the outcome.

      Note, there is currently no scenario in which the role/influence of NEEA and its partners falls below one code cycle. The team believes this is appropriate given the foundational role played by NEEA and its partners, dating back to the early 2010s, which included setting up the basis for much of the codes in place and code development work throughout the Northwest whose benefits endure through the present day and reasonably continue into the future.
    - The table shows how the State Code Roadmaps and MPERs could help to inform and validate the key factors driving the code cycle assignments. While these assignments would be made by a third-party evaluator, they would be informed by conversations with the NEEA Codes team and the documentation the Codes team provides. This assessment process would require the NEEA team to carefully document its code development activities in preparation for the MPER. Tying this effort to the Roadmaps and MPERs would enable NEEA to leverage information that NEEA is already collecting to tell the story of NEEA and partners' role. Feedback from external-to-NEEA market actors can help validate NEEA's role and influence.
    - Rather than defining the timeframe of each code cycle as the same across all states and markets, the team recommends basing the number of years on the actual forward-looking code cycles in each state and market.

3) Reassess the three, two, or one code cycles adjustment as part of the State Roadmap and Codes MPER processes.

- Once NEEA adopts and implements the new method at least once, they could then use the adjustment factor (one, two, or three code cycles) from the previous MPER as the default assumption for the current code cycle, pending the results of the next MPER. NEEA uses a similar process when reporting the Total Regional Savings (and thus the Co-Created savings). NEEA initially uses the statewide compliance rate from the most recently completed compliance study, which is often based on a previous code cycle.[14] Then, when new compliance results are available, the reported savings are updated as needed.
- Aligning the Natural Market Baseline adjustments with the State Roadmaps and the Codes MPER will allow NEEA to leverage work that is already being completed. However, the team understands the concern that MPERs may be spaced too far apart. The Codes MPERs #1-5 were released in 2005, 2008, 2010, 2017, and 2024. However, MPER #6 is already underway.
- While the third-party ex-post analysis in the Codes MPER would be the primary source for the one, two, or three code cycle adjustment, State Roadmaps could provide interim feedback for adjustments as well. If a State Roadmap indicates a substantial shift in the level of NEEA's codes activities, NEEA could opt to change the adjustment between MPERs.

[14] Even if NEEA does not make any interim adjustments, the team recommends that NEEA update and report the current list of NEEA partners and their roles in the most recently completed code cycle. This will provide transparency and will serve as a good starting point for the evaluator who conducts the MPER.

Table 5. Proposed Baseline Assessment Approach by State and Market (Residential and Commercial)

FACTOR	EX-ANTE DOCUMENTATION State Roadmaps	EX-POST ANALYSIS MPERs	EX-POST ANALYSIS Qualitative Guiding Questions for NMB
STAKEHOLDERS AND THEIR ACTIVITIES	Identify: • NEEA partners • Other efficiency advocates that are not NEEA partners • Advocates for less stringent codes Logic model that identifies barriers and proposed activities to address barriers. Describe/outline: • Training and education • Technology or practice research (technical expertise, data, and analysis) • Above-code programming • Tracking measurement compliance and performance (both base and above-code measures) • Market Transformation programs • Product-specific code strategies	Who was active in the subject code cycle (by sub-group: NEEA partners, other efficiency advocates that are not NEEA partners, advocates for less stringent codes)? What supporting activities did NEEA and its partners complete as planned? Were there modifications to the planned activities? If yes, what was the reason for the changes? Was the logic model accurate in identifying key barriers? Were there any new, significant barriers identified during the last code cycle that impeded NEEA and its partners' supporting activities and/or were not addressed by NEEA and its partners' supporting activities? What key supporting activities were also implemented by efficiency advocates that are not NEEA partners? Did NEEA and its partners support above-code activities that helped prepare the market for the adoption of some element(s) of the new code?	In the subject code cycle, what role did NEEA and its partners play relative to other efficiency advocates that are not partners with NEEA? What was the overall effectiveness of the activities undertaken by NEEA and its partners in overcoming barriers?
CODE CHANGES	Market readiness and preparedness: Describe historical activities that NEEA and its partners will build on for the subject code cycle, such as: • State energy savings goals • Prior code proposals (both IECC and State) • Above-code programming • High-compliance measures Planned code changes for IECC and State Amendments, classified as 'material' or 'marginal' importance in terms of energy savings.	Outcome for each proposed code change by: • Level (IECC or State amendment) • Adopted or Rejected • For adopted code changes, identify and describe contribution of historical activities (for example, prior code proposal, above-code measure). Identify code changes adopted without any support from NEEA and its partners and their relative importance to energy savings (for example, classifying adopted changes as either 'marginal' or 'material' in nature).	To what extent were the material adopted code changes proposed by NEEA and its partners, where 'material' is defined in terms of expected energy savings? Code rollback scenario: To what extent did NEEA and its partners preserve material (energy saving) code provisions?

Appendix A: Other Options Considered but not Recommended

This Appendix presents additional options considered by the team to improve NEEA's Natural Market Baseline approach and the reasons each option was not included in the team's final recommendations.

The IEc team considered whether adjusting the proportion of the modeled savings was a viable approach for updating NEEA's code savings estimates but decided to focus on the number of code cycles for the following reasons:

- NEEA has observed that the Natural Market Baseline "is meant to recognize that, in some markets, consumers would have eventually adopted the efficient product/code without any 3rd party intervention"; therefore, NEEA's Natural Market Baseline approach answers the question: "When would a code of similar efficiency have been adopted without NEEA and its partners' work?" This framing of the Natural Market Baseline emphasizes the acceleration effect of NEEA and its partners – that is, how much *sooner* each state adopts the code provisions with the involvement of NEEA and its partners, compared to when they would have adopted the code provisions without NEEA and its partners.
- Historically, NEEA assumed the Natural Market Baseline codes would be three cycles behind the actual code. Consistent with NEEA's framing of the Natural Market Baseline, the team focused on the timing of code adoption; our adjustment factor (one, two, or three code cycles) acknowledges interviewee feedback that a default assumption of three code cycles might not hold anymore given changes in the market over the past decade.
- Based on the interviews, the IEc team believes that some stakeholders outside of NEEA are misinterpreting the "100% of savings" that NEEA tracks for 10 years to mean that NEEA (individually) is trying to take full credit for the reported energy savings. Clarifying who NEEA's partners are in each code cycle should make it clearer (and less contentious) to count all Co-Created savings for the first 10 years. Also, focusing on the acceleration effect (number of years/code cycles) avoids the appearance of trying to parse out credit across the various parties that were involved in the code cycle.
- Finally, the team did not find any methods in the literature for rigorous and affordable ways to adjust the proportion of influence within NEEA's time and budgetary constraints.

The IEc team also considered an alternative approach in which the evaluators are asked to assign a one, two, or three code cycle acceleration to each market (e.g., State and sector), but based on our evaluation experience, posing that question to an evaluator would likely result in a much different methodology – for example, a Delphi Panel in which the experts look specifically at the code-to-code changes and then determine when each change would have been adopted absent the work of NEEA and its partners. This approach is inconsistent with NEEA's criteria for the Natural Market Baseline methodology; most notably, it is much more resource intensive.

The team also considered an alternate approach in which the evaluators assign separate low/medium/high scores to each of the two factors (stakeholders and their activities and code changes) based on a more prescriptive rubric for arriving at their assessment of one, two, or three code cycles. This approach was determined to be unnecessarily complicated.

Finally, the IEc team assessed whether NEEA could adjust compliance rates to account for influence. The IEc team does not recommend adjusting the compliance rate for the following reasons:

- The compliance rate is the one field-verified number included in the code influence savings calculation, which adds rigor to NEEA's calculation of Co-Created savings.
- It would be difficult to quantitatively adjust this figure without commissioning a separate, recurring study to estimate what the compliance rate would be absent the work of NEEA and its partners.
- Additionally, due to NEEA's long-term market transformation work, it would likely be very difficult to fully identify NEEA's influence on compliance rates. For example, some builders in the Northwest may have apprenticed/learned skills from someone who participated in a NEEA training dedicated to skills to improve compliance and therefore also picked up those skills. However, if they were unaware of their educator's involvement with NEEA, they may not be able to identify NEEA's influence on their current practices.

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Memorandum

November 21, 2025

TO: Meghan Bean, Manager, Market Research and Evaluation, NEEA

FROM: Sarah Widder, Codes and Standards Strategist, NEEA;
William Gehrke, Senior Market Analyst, NEEA

SUBJECT: Response to NEEA Codes Baseline Assumption Review

Background

NEEA engaged Industrial Economics (IEc) and Resource Refocus (together "the IEc team") to review NEEA's Natural Market Baseline (NMB) assumptions for building energy codes in the Northwest, the results of which are summarized in the NEEA Codes Baseline Assumptions Review report ("the IEc report"). This work is occurring as part of NEEA's commitment to continually review assumptions/approaches for its code savings calculations. This review builds on findings and recommendations from the most recent Codes Market Progress Evaluation Report #5 and NMR Group's Independent Assessment of NEEA Approaches to Estimating Influence Over State Energy Code.

The IEc team recommends updates to NEEA's approach[1] for establishing NMBs for building energy code advancements, including recommendations for enhancing NEEA's process for documenting and evaluating influence on code processes in the Northwest (Idaho, Montana, Oregon, and Washington). NEEA believes that it is reasonable to accept these recommendations for codes adopted after 2024. These changes will affect savings calculations for funders in Idaho, Montana, and Oregon whose service territories are not covered by Bonneville Power Administration.

IEc Recommendations and NEEA Response

Recommendation 1: Rather than apply a uniform baseline assumption across all state and sectors (residential and commercial), NEEA should conduct analyses to establish separate baseline assumptions for each energy code update, state, and sector.

[1] The Natural Market Baseline is an estimate of the energy savings occurring from natural market change since a program's start without NEEA and partners' influence on the market. NEEA uses this estimate to calculate Co-Created Energy Savings, which include all savings above the Natural Market Baseline that occur in the market due to the combined efforts of NEEA and its partners.

Northwest Energy Efficiency Alliance
700 NE Multnomah Street, Suite 1300, Portland, OR 97232
503.688.5400
neea.org | info@neea.org

NEEA accepts this recommendation and is committed to its implementation for all codes adopted after 2024. Previously, NEEA applied a uniform NMB assumption. Going forward, NEEA will establish distinct NMB assumptions for each energy code update, state, and sector. This will impact evaluation of codes including but not limited to the 2024 Washington State Energy Code, the 2026 Oregon Residential Specialty Code, and the 2024 International Energy Conservation Code with Montana and Idaho amendments. Details on how NMBs will be established for each code update, state, and sector can be found in the responses to Recommendations 3 below.

Recommendation 2: As part of the process to establish the baseline assumption for each code cycle, state, and sector, NEEA should more clearly define, document, and communicate the role of its partners.

NEEA accepts this recommendation. This process will involve detailed tracking of NEEA's strategies, activities, and partners for each code cycle, state, and sector through State Code Roadmaps and other documentation developed by the NEEA Codes team. To put this into practice, NEEA will allocate additional staff time to ensure thorough documentation. NEEA began developing State Code Roadmaps in 2024 and will continue to build out this documentation based on the recommendations in the IEc report. In addition to documenting its involvement in each code development and adoption process, NEEA will document activities that may directly or indirectly influence market readiness and code adoption and the specific role of NEEA and its partners as compared to other market actors in the code update process and supporting activities.[2]

Recommendation 3: Based on an independent qualitative assessment of NEEA and its partners' role in a specific code cycle, state, and sector, NEEA should adjust code baselines to reflect the number of code cycles (one, two, or three) that NEEA and partners' work accelerated code adoption.[3]

NEEA accepts this recommendation. NEEA will implement and refine its approach over several code cycles and Market Progress Evaluation Reports (MPERs), beginning with codes adopted after 2024. As detailed in the response to Recommendation 2, NEEA's Codes team will track information about its activities relevant to each code cycle, state, and sector. In advance of each MPER, this documentation will be shared with a third-party evaluator to assess using the framework developed by the IEc team.

The third-party assessment conducted during the MPER process serves as an ex-post analysis, offering a qualitative evaluation of the extent to which NEEA and its partners addressed barriers in each market. In accordance with IEc team's recommendation, NEEA will track savings for a

[2] Note, as IEc describes in the report, the assumed code cycles acceleration is meant to capture NEEA's aggregate level of influence and impact in a given state and sector, as well as the actual timeframe of acceleration. Also, it takes into account all the various code proposals and market interventions that occur from one code cycle to the next, including NEEA's role in other states and at the national level in influencing adoption in a specific state.

[3] The IEc team recommends that NEEA report savings for at least one code cycle if the NEEA Codes team contributes to code updates, reflecting NEEA and its partners' longstanding efforts to advance building energy codes in the Northwest. However, the team suggests assuming no more than three accelerated code cycles, due to the current codes landscape.

minimum of one code cycle when the Codes team plays a role in developing code updates. Importantly, the third-party assessment will determine how many additional code cycles should be included for reporting savings beyond the initial code cycle, with a maximum of three total code cycles. This methodology establishes a clear structure for assessing the influence of NEEA and partners on code adoption for each cycle, state, and sector. If NEEA or its third-party evaluators identify any code cycles for which this approach may need to be modified, NEEA will propose a revised approach to solicit input from its Cost Effectiveness and Evaluation Advisory Committee.

Accepting this recommendation will expand the scope and budgets for NEEA's Code MPERs because it will require separate assessments of each code cycle, state, and sector. In addition, increasing the documentation of NEEA's code influence strategy and activities will require an increase in staff time.