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Commercial Code Enhancement Market Progress Evaluation #1

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1 EXECUTIVE SUMMARY

The Northwest Energy Efficiency Alliance (NEEA) contracted with Energy & Resource Solutions (ERS) to conduct a study of NEEA's Commercial Code Enhancement initiative (CCE) program. The study was conducted between June 2020 and March 2021.

CCE began as a market transformation program with the objective of changing the energy code adoption and implementation processes found in the four Northwest states of Idaho, Montana, Oregon, and Washington. The intended result of the program was to accelerate code stringency levels in commercial construction in each of the four states.

As CCE was introduced in the marketplace, it became apparent to the program team that the affinity for developing and adopting building energy codes varied significantly across each state. In Washington, stakeholders aggressively pursue improved codes for their state and many of their code provisions influence the International Energy Conservation Code (IECC) national model code. In Idaho and Montana, stakeholders pursue adoption of the IECC national model codes without significant commercial amendments. In Oregon, officials made a decision to adopt the ASHRAE 90.1 energy code without amendments in lieu of the prior code which was based on IECC.

Given the variances across the states, the program team determined that the original market transformation strategy was not an optimal approach to achieve the CCE objective. They evolved the program from the initial market transformation approach to a strategy of pursuing the opportunities for code improvements with the greatest impact potential given the state contexts.

CCE Market Progress Evaluation Report (MPER) Objectives

An MPER study is intended to assess whether and how the program is aligning with its documented program theory, chiefly by tracking progress toward market transformation goals (i.e., conduct an assessment of activities and their influence on the market's operating structure). As this program evolved from the initial market transformation approach, the evaluation focus evolved as well. In addition to examining the program theory and progress toward stated CCE outcomes, documented in the CCE Logic Model, this study also examined the evolution of CCE program theory and implementation and progress made due to the opportunities CCE pursued.

Evaluation Methodology

The study methods included:

- Program documentation review, including program logic model review.

- Interviews with six NEEA staff members and twenty-five state and local stakeholders (utilities, state representatives, CCE's local liaisons and partners, and implementation vendors).
- Two work sessions with NEEA CCE and Codes program staff, during which the research team shared findings, discussed possible interpretations and implications, and obtained additional program background information.

Findings, Conclusions, and Recommendations

The CCE program evolved from the original Logic Model design, both to take advantage of near-term opportunities in the Washington 2018 code cycle, as well as in response to stakeholder insights in Idaho and Montana. The CCE documentation, interviews with program staff and stakeholders, as well as recent Codes program logic model, included as Appendix C, reflect this evolution by highlighting a more targeted role for CCE. The CCE program's primary activity as reported by CCE staff is to develop market evidence of above-code technologies and practices. This activity should result in outputs that include technical roadmaps, case studies, and demonstrations of above-code technologies and practices. This role aligns with many of the primary achievements of CCE: supporting the Washington Roadmap and developing case studies in Idaho and Montana. These activities and outputs are designed to inform the market about new technologies and set the strategic direction for code changes. Informing the market and setting up the strategic direction for code changes is one of many objectives outlined in the Codes logic model and reflects the role of CCE in practice as a component of the Codes program.

Given this insight, the research team concluded that CCE operates more as a component of the Codes program than as a stand-alone market transformation program. The program was able to make progress by focusing on the opportunities and unique code development environment in each state, as well as leveraging resources better by working together with the Codes Team. However, the adapted approach resulted in a customized approach for each state that deviated from the original CCE market transformation logic.

- **Recommendation:** Merge CCE into the Codes program. The NEEA team already operates under this context, particularly in Idaho and Montana, and integration of the two efforts would align the internal structure with the market presence.
- **Recommendation:** Update the CCE market transformation logic, either separately or within the Codes logic model, to document changes made to the implementation and logic, and to re-assess the metrics measuring CCE's success.

2 INTRODUCTION

NEEA's Commercial Code Enhancement (CCE) program began as a market transformation program with the intent to change the code adoption and implementation processes found in each state and thus provide an improved foundation to accelerate code stringency levels in commercial construction. As CCE was introduced in the marketplace, it became apparent to the program team that the original market transformation strategy was not an optimal approach to achieve the CCE objective. The CCE program team then evolved the program strategy away from the initial market transformation approach to a strategy more in line with the varied code environments found in each state.

Initially, the program team didn't identify these differences as barriers to the smooth transformation of the market. NEEA CCE staff undertook three types of activities in each state (the state-specific coordination plans, technology and practice assessments, and strategic market interventions) as the most effective way to both move the energy code forward and improve the code process in each state. This proved to be problematic because the affinity for developing and adopting building energy codes varies so significantly across each state. Code stakeholders in Washington were aggressively pursuing code provisions that would enhance the base International Energy Conservation Code (IECC), and thus had immediate interest in engaging with NEEA on code efforts in multiple ways, whereas Idaho and Montana targeted only the adoption of the base IECC for commercial buildings. These distinctions between the states led to changes in program execution, which were tailored to the code environment found in each state. Staff focused most of their efforts on Washington state, with an expectation that building code changes in Washington will affect the national base IECC revisions and that Montana and Idaho, which typically adopt the base IECC code every 3+ years, will continue to adopt and implement the latest version of IECC. The Oregon CCE effort also evolved due to Oregon transitioning in 2019 from an IECC-based code to a code based on ASHRAE 90.1-2016 energy standard.

To address this situation, NEEA CCE program staff lessened their focus on market transformation – i.e., on changing code adoption and implementation processes – and increased focus on supporting specific code improvements with the greatest potential influence, depending on the state. At the same time, collaboration between CCE and NEEA's Codes program expanded, as more of CCE's efforts overlapped with NEEA Code program objectives.

2.1 CCE Market Progress Evaluation Report (MPER) Objectives

An MPER is intended to review program logic or theory of change and assess the degree to which the program is achieving its stated logic model outcomes. The aim is to assess progress toward market transformation (i.e., assessment of activities and their influence on the market), using metrics called Market Progress Indicators (MPIs), and to recommend changes needed to improve the program effectiveness. This particular MPER examined the CCE program theory of change (the CCE logic model and associated documentation), progress against MPIs, and the program implementation approach and evolution.

2.2 CCE Program Objectives

Per NEEA staff, the principal objectives of the CCE program are to:

1. Either accelerate or meet commercial building energy code policy targets in states that NEEA serves.
2. Encourage regional collaboration with utilities, the commercial building community, and state and local stakeholders on code policy development and implementation.

These two objectives have not changed since the design of the program. They align with the commercial new construction market transformation goal of incorporating enhanced code measures into current adoption processes where feasible as well as making sure jurisdictions do not dilute adopted code changes. Included in this market transformation effort is raising awareness of future code cycle efforts, especially among utilities to help them align program efforts with future energy code. Per NEEA staff, CCE was designed to identify new code opportunities, prioritize them for inclusion in future codes, communicate those priorities to allow utilities to develop programs ahead of code adoption, and then prepare the market actors such that they are comfortable supporting them.

2.3 Evolution of CCE Implementation Design

CCE targets processes by which energy codes are developed and adopted in the four Northwest states of Idaho, Montana, Oregon, and Washington. The code processes generally found within these states include the following: proposal development, comment periods, code adoption/approval, training and compliance, and enforcement. CCE is not currently involved with the code compliance and enforcement processes. The primary market actors who influence the processes referenced above include code officials, policymakers, developers, utilities, trades or advocacy associations, architects, contractors, and engineers.

Per NEEA staff, when the CCE program was first designed, staff considered implementing a regional strategy across all four Northwest states. Staff learned that the different code development and adoption processes as well as varying legislative environments and receptiveness to enhancing commercial building energy code in each state made this approach impractical. Thus, the program staff pivoted the implementation strategy from a regional approach to a state-by-state tailored approach. In turn, program activities in each state evolved.

As illustrated in the 2017 CCE Logic Model (see Appendix B), the original CCE program sought to achieve the objectives referenced above by focusing on three categories of activities and outputs:

1. **Development of State-Specific Coordination Plans (SCPs).** The SCPs were designed to establish a strategic approach in each state for near- and long-term CCE program implementation activities and coordination with key state stakeholders, including utilities and code advocates. Key stakeholders were invited to meet with NEEA CCE and Codes

program staff to inform and develop the SCP, review progress, and participate in annual updates.

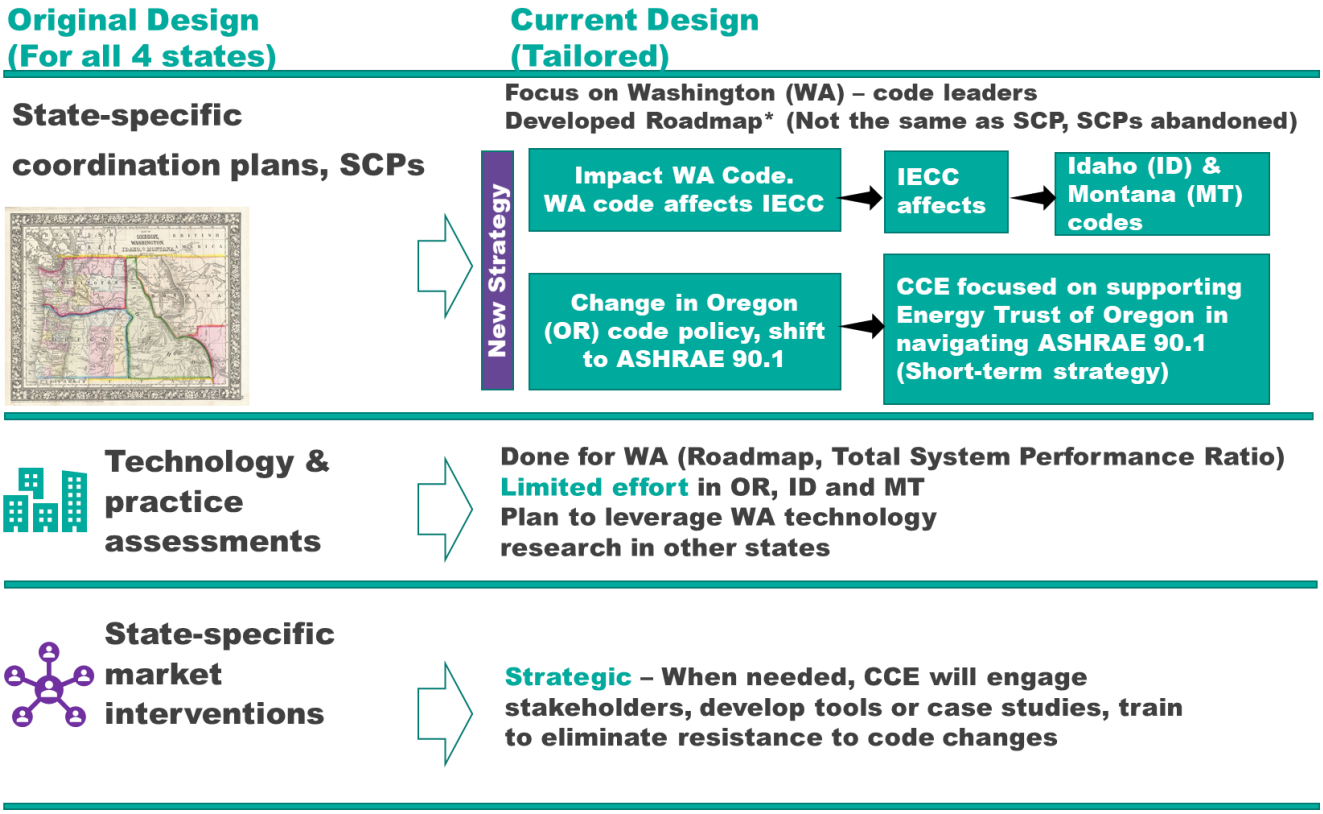
2. **Technology Practice and Assessments (TPAs).** TPAs were designed as a structured approach to scan, identify, and assess code improvement opportunities in the building sector. These assessments could be conducted for each state, sharing technologies and strategies as applicable throughout the region.
3. **Market Interventions.** To prep the market for code change, CCE market interventions generally focused on developing tools and/or case studies, supporting trainings or strategic research, and outreach and collaboration with critical stakeholders.

When CCE staff documented this first set of activities, they assumed that a unified approach leveraging the three activities referenced above in each state would move the energy code forward and provide a platform to improve the process in each state. Program staff soon found that this assumption did not hold because the environment was different in each state. Some states, such as Washington, were aggressively pursuing code measures that would enhance the base International Energy Conservation Code (IECC) to meet their 2030 building energy reduction mandate,[1] whereas states such as Idaho and Montana targeted only the adoption of the base IECC for commercial buildings. Given this context, program staff adapted CCE activities. They focused most of their efforts on Washington state, with an expectation that building code changes in Washington will affect the national IECC code and that states such as Montana and Idaho, who typically adopt the base IECC code every 3+ years, will continue to adopt and implement the latest version of IECC (see Figure 1, below). Thus, the activities referenced above pivoted away from SCPs and TPAs to align with evolving strategies in each state.

The Oregon CCE activities also evolved. When CCE was launched, the energy code in Oregon was the 2014 Oregon Energy Efficiency Specialty Code, based largely on the 2019 IECC. In 2019, Oregon transitioned from an IECC-based code to the ASHRAE 90.1-2016 energy code (Figure 1). This policy change resulted in CCE staff shifting focus from Oregon IECC amendments to helping Energy Trust of Oregon understand ASHRAE 90.1 to support Energy Trust's efforts to re-design their new construction commercial program to align with the ASHRAE code.

[1] Washington has a state policy to reduce annual net site energy consumption for commercial buildings under the 2030 energy code by 70% relative to the 2006 Washington state Energy Code.

Figure 1. Evolution of CCE Implementation Activities



Notes: NEEA and the WA State Department of Commerce developed a State Energy Code Technical Roadmap ("Roadmap") that identifies a set of technologies and building strategies that need to be put in place to achieve the 2030 goal.

2.4 CCE Integration with the Codes Team

An important shift in management of the CCE program took place in 2019. Originally, CCE reported into the former Commercial Market Development department, but it now reports to the Codes, Standards, and New Construction department (referred to as the "Codes program" throughout this document). Both departments are under NEEA's Market Development and Transformation Division. Although CCE reports to the Codes program, CCE funding is separate from Codes program funding – that is, CCE is considered a stand-alone market transformation program.

NEEA Codes and CCE program staff explained that both teams closely collaborate on code efforts because both teams serve the same goal of code advancement throughout NEEA's jurisdiction. Codes program management staff, which oversee CCE efforts, noted that they leverage CCE for long-term or strategic code research (e.g., Roadmap for the State of Washington) as well as efforts specific to identifying solutions to remove the resistance to energy code changes from the market. Conversely, although there is some overlap, near-term code efforts such as the need to provide a code proposal for an active code adoption cycle or to offer

training when code changes, are typically funded by the Codes program budget. However, Codes program staff did note that if CCE was not around, the Codes program would likely still have pursued strategic long-term research activities such as the Roadmap for the State of Washington.

3 EVALUATION METHODOLOGY

This chapter documents the methodology used to assess the CCE program theory, implementation strategy evolution, and CCE progress.

Program documentation review: The evaluation team reviewed program documentation, including original draft SCPs, available meeting minutes from state CCE quarterly meetings with stakeholders, and documentation on CCE activities in each state (case studies, educational and/or training materials, email CCE correspondence, and the Roadmap for the State of Washington).

CCE logic model review: The evaluation team reviewed the latest (2017) version of the CCE program logic model and associated market progress indicators (MPIs) and documentation.

Program staff in-depth interviews: The evaluation team interviewed six NEEA staff to learn about past, current, and planned CCE activities, CCE goals, program evolution, challenges, and CCE's context within NEEA's Codes program group.

CCE stakeholder in-depth interviews: The evaluation team interviewed 25 of NEEA's CCE state and local stakeholders, such as utilities, utility partners, policymakers, state code boards and collaborative members, and partner organizations involved with code activities. Table 1 shows the stakeholders interviewed.

Table 1. Type and Number of Interviewed Contacts

State	Utilities and Their Representatives	State and Local Policymakers	NEEA-Funded Organizations Involved with Code Activities	State Code Boards, Advisory Groups, and Collaborative Members[c]
Washington	3	2	2	2
Oregon	3[a]	2	1	2
Idaho	1	2	2	2
Montana	1	4[b]	2	2

[a] Organizations and their representatives implementing energy efficiency programs for utilities.

[b] The team conducted an interview with one contact from the Montana state agency involved with code compliance assistance and training, as well as a group interview with a local county, city, and their non-profit (3 contacts) working on policy solutions that could increase commercial building energy efficiency in their local jurisdictions.

[c] This group overlaps with other groups (Example: Idaho code collaborative includes utility representatives.)

Work sessions: The evaluation team hosted two work sessions with NEEA staff. In the first session, the team presented interim findings and discussed whether any adjustments should be made to the remaining data collection activities. In the second session, the team presented final findings and discussed implications of this research for CCE with NEEA.

4 REVIEW OF PROGRAM THEORY AND METRICS

For this review, we have examined the latest CCE Logic Model diagram (last revision 04/11/2017) and the associated documentation[2,3] as well as all interview data and documentation collected on CCE implementation and evolution.

4.1 Assessment of Logic Model Theory of Change and Approach

NEEA staff reported that the documented 2017 CCE Logic Model activities, outputs, and outcomes that address market barriers and opportunities to code enhancement have considerably changed since 2017. The Logic Model has not been updated to document these changes.

The Logic Model shows that CCE was designed to address four barriers to commercial code enhancement:

1. Lack of proof of technical viability of highly efficient technologies and practices
2. Lack of proof of affordability of highly efficient technologies and practices
3. Resistance to change among code officials
4. Disrupting "business as usual" approach of developers and builders on day-to-day technologies and construction practices

The Logic Model also shows that the CCE program aimed to address the following opportunity:

1. Align voluntary market efforts with state goals

To address the barriers and the opportunity referenced above, the Logic Model indicated that NEEA should develop a code enhancement strategy plan for each state (referred to as a state coordination plan, or SCP; see Chapter 2 for more details). These SCPs would guide the selection and assessment of highly efficient technologies and practices (referred to as the technology and practice assessments, or TPAs; see Chapter 2 for more details). As designed in the Logic Model, both SCPs and TPAs, as well as associated value propositions that would emerge from these activities, would provide content and support for code enhancement provisions. These activities, as illustrated in the Logic Model, would rely on support from professional organizations and feedback from local utilities and code officials. The CCE staff would also market, communicate, educate, and develop tools (when necessary) to help increase the industry support for proposed code provisions and help the industry better incorporate

[2] In Appendix B, we show the 2017 logic model diagram.

[3] Associated logic model documentation included the CCE logic model link tables, which described the rationale for linkages between barriers, activities, and outputs, as well as the Initiative Lifecycle (ILC) Milestone Document and early product definition. This documentation was dated April and May 2017 and provided by NEEA. The versions provided to the evaluators for both the ILC Milestone Document and the link tables included content sections that were either left blank or in redline versions.

proposed changes into construction practices (referred to as Market Interventions; see Chapter 2 for more details).

The CCE Logic Model presents the following rationale for the activities to achieve the CCE outcomes:

1. The SCP for each state provides guidance on the content and support needed for code proposals and would offer input that utility program staff can use for current and future program adjustments. This activity assumes that local utilities and code proposal stakeholders will engage with NEEA on the SCP.
2. Input from professional organizations will inform the development of SCPs. Documented support from professional organizations will serve as supporting information for code proposals. It is assumed that input and support from the professional organizations will positively influence code officials as they consider code changes.
3. It is also assumed that support from code officials will make it more likely that Code Boards will adopt CCE-promoted code proposals.
4. Research and demonstrations (the TPA activity guided by the SCP) and value propositions for specific technologies and practices are part of the key information for code proposals. These activities will bolster the support from professional organizations on code proposals, help CCE staff and vendors train and communicate content for architects, engineers, and contractors (AEC) as well as code officials on code proposals, and provide input to utility program planning. It is assumed that direct engagements and communications with code officials, utilities, and the AEC industry on research or outputs from the TPA process is needed to generate support on CCE-promoted proposals.
5. It is also assumed that utility programs can demonstrate the applications of specific technologies or practices and provide input to code development.
6. Data on costs, benefits (energy savings and non-energy benefits), and implementation are considered critical for:
    a. Developing/refining the SCP and code proposals
    b. Identifying needs for additional research
    c. Generating industry and code official support for new code proposals or technologies or practices
    d. Creating inputs for case studies, articles, and education curriculum, as well as program planning

    It is assumed that increased awareness, interest, and demand for new technologies and practices in the market will increase support of CCE code promoted proposals. The increased awareness, interest, and demand will occur if code officials and AEC community are informed of applications, costs, and benefits of proposed technologies and

practices through the SCP process, case studies, education, tools, and possibly utility programs. Development of tools can streamline this knowledge dissemination process, per the Logic Model, if tools enable easy-to-understand compliance with proposed new code.

7. Buildings built to the new code (if code is passed and there is education on compliance) will lead to energy savings.

Notable challenges arose when the CCE program launched, and the theory of how activities will lead to outcomes did not materialize, which introduced a need to change the approach. Additionally, Washington had an active IECC 2018 adoption process as well as high interest in enhancing their energy code, which was an opportunity for the CCE initiative. These factors prompted the CCE staff to pivot away from the original market transformation strategy, which leveraged SCPs, TPAs, and strategic market interventions in each state, to an approach focused mostly on supporting Washington state in meeting their 2030 building energy reduction mandate. CCE staff explained reasons for this change:

- In Idaho and Montana there was limited interest to engage in the SCP and TPA process. Further, legislators were cautious of regulation and there was limited appetite for the state-level code amendments (see Appendix A for more details). Thus, while draft SCPs were developed originally, the SCP process was abandoned and limited support was provided for research and education. Instead, the CCE staff focused on Washington, anticipating that code progress in Washington could affect the national IECC code. CCE staff expects that Montana and Idaho, who typically adopt the base IECC code every 3+ years, will continue to adopt the latest version of IECC.
- Staff also had to contend with a change to the code adoption process in Oregon. Oregon transitioned from IECC to ASHRAE 90.1-2016 code and plans to adopt each subsequent version of the ASHRAE 90.1 base code without significant amendments in the future. NEEA CCE staff assessed that this approach would align with CCE objectives and there was little opportunity to develop state-specific amendments, and thus they limited the CCE's strategy to targeted support and education regarding ASHRAE 90.1 implementation, specifically the Appendix G compliance path. NEEA's Codes Team also is engaged with ASHRAE 90.1 national code development, and measures enacted through that process would flow down to Oregon as they adopt subsequent base codes.
- Staff did not expect that utility programs encouraging above-code construction practices were much slower to evolve than what NEEA had anticipated at the time the Logic Model was developed. Thus, that element of the Logic Model (in terms of timing) was flawed.

- Staff further explained that building support among code officials, as illustrated in the Logic Model, was never fully implemented in any of the states other than Washington.[4] Staff who were involved in the development of the 2017 Logic Model explained that the Codes Team (as opposed to the CCE program team) was responsible for building support among code officials. CCE program staff incorporated that element into the Logic Model due to how important they thought it would be for the CCE program success. To not duplicate efforts, CCE and the Codes Team together decided how to best leverage CCE's limited funds to enhance broader code efforts undertaken by the Codes Team, illustrating that CCE was leveraged to support Codes program effort. That is, the CCE program did not function as a stand-alone market transformation program.

4.2 Review of Market Progress Indicators (MPIs)

As discussed in preceding sections, the approach and rationale for CCE has changed, which rendered many of the original short- and medium-term MPIs in the Logic Model outdated in three of the four NEEA states (i.e., Oregon, Idaho, and Montana). As NEEA substantially evolved away from the original CCE activities in those states, the outputs and the outcomes or MPIs were either not fully achieved or could not be measured. This section highlights CCE progress against the Logic Model outcomes, measured by MPIs, based on the research activities conducted in this study.

Note that the *CCE Logic Model Documentation Link Tables*[5] document identified MPIs or metrics and associated data sources (whether a program source or research from this study) to measure the metrics.

4.2.1 Short-Term MPIs

Per the CCE Logic Model, the timing for achievement of the short-term MPIs was 2017–2019. These short-term MPIs are listed below, along with an assessment of progress achieved to-date.

1. ***MPI I***: Increased market awareness, interest, demand for CCE-promoted technologies and practices by AECs
    a. *Assessment:* Minimal progress to-date in Oregon, Idaho, and Montana. Although the majority of progress was made in Washington (see State-Specific Findings in Chapter 5), even in Washington it was too premature to assess this MPI because the new commercial code provisions that NEEA supported went into effect in

[4] Washington CCE activities most closely resemble those in the Logic Model (see the Washington-Specific Findings Section in Chapter 5). CCE provided specific training to code officials and others on the CCE promoted new code provisions (specifically how to use the TSPR to ensure a project complies with the new code). CCE did not engage in code official communication or training in other states. In other states, activities were limited to supporting the development of a few case studies.

[5] This document accompanied the logic model and provided descriptions of the rationale for the logic model outcomes and associated MPIs to measure the outcomes.

February 2021. Furthermore, while the evaluators did not directly survey the AEC community, interviews with stakeholders across the NEEA states did not identify any changes in AEC awareness or demand for technologies and practices promoted by CCE. NEEA did fund case studies in Idaho and Montana, and while they have valuable content, interviewees reported that opportunities remain to promote and disseminate these materials throughout the industry. In Washington, where most progress was made, the utility stakeholders reported that there are still opportunities to further collaborate with NEEA's CCE staff to get the AEC community introduced to beyond-code technologies and practices.

2. ***MPI II***: Code officials support CCE promoted proposals
    a. *Assessment:* Some progress in Washington for IECC 2018 code adoption; no progress in other states.
        i. In Washington, NEEA's CCE and Codes Teams supported two successful code amendments: TSPR and ASHRAE 90.1 Appendix G. Both of these proposals were adopted into code. While the evaluators did not survey code officials directly, stakeholder interviewees (utilities, members of state code boards or advisory groups, and NEEA-funded partners working on code activities) did not report code official opposition. Stakeholders did report opportunities to educate the industry regarding the changes.
        ii. In Oregon, Idaho, and Montana, no code proposals were promoted by NEEA. Oregon moved to the ASHRAE 90.1 code with minimal amendments, Idaho adopted the base IECC 2018 code without commercial amendments, and Montana has not updated their base code since the launch of CCE. Also note that building code official support in these states was never fully implemented by CCE, as discussed above in Section 4.1.
3. ***MPI III***: AEC community supports CCE-promoted code proposals
    a. *Assessment:* Some progress in Washington for the IECC 2018 code adoption; no proposals in other states. The evaluators did not directly survey the AEC community, but the two NEEA-supported code proposals were adopted during the IECC 2018 code cycle in Washington, indicating CCE success.
4. ***MPI IV:*** AECs better able to incorporate proposed technologies and practices into buildings
    a. *Assessment:* Some progress in Washington; no progress in other states. The two new code proposals were adopted in Washington; however, not enough time has passed to be able to assess how the AEC community is incorporating these new practices into buildings. NEEA recognized the need for AEC community support and supported the development and delivery of a TSPR tool and its accompanying

training sessions throughout Washington to both the AEC professionals and code officials to educate the market and provide guidance on implementation.

4.2.2 Medium-Term MPIs

For the medium-term MPIs in the CCE Logic Model, the target date range was 2020–2024. While this timeframe is ongoing at the time of this report, we document any progress to-date below:

5. ***MPI V***: Interim code performance targets met
    a. *Assessment:* Too early to measure in Oregon and Washington, and no clear progress in other states. Oregon transitioned to ASHRAE 90.1 with the intent to regularly adopt the 90.1 base code; NEEA Codes and CCE staff reported that this approach will help Oregon achieve performance targets and achieve this MPI, though it is still too early to measure these influences. It is also too early to fully assess performance targets in Washington, as implementation of the IECC 2018 amendments is now underway. There have not been any commercial code amendments in Idaho, and Montana has not updated their base code since the launch of CCE.
6. ***MPI VI***: CCE-promoted code proposals have been adopted by Code Boards
    a. *Assessment:* Success in Washington IECC 2018 code cycle; no progress in other states.
7. ***MPI VII:*** AECs incorporate CCE-proposed technologies, practices, and code options into buildings.
    a. *Assessment:* Too early to assess in Washington with respect to IECC 2018 code adoption. NEEA funded case studies in Idaho and Montana, but additional support is needed to promote these materials to the AEC community. For Oregon, NEEA and CCE are not proposing technologies specifically in the state but are engaged in ASHRAE 90.1 national code development, which would flow through to Oregon as they adopt each subsequent 90.1 base code.

4.2.3 Long-Term MPIs

The long-term MPIs for the CCE program had a target achievement date window of 2025–2030. These MPIs are listed below, but not enough time has elapsed to assess them. However, in Washington, as discussed above, two options (TSPR and ASHRAE 90.1 Appendix G compliance path) were adopted into the base code.

8. MPI VIII: Options converted to base code
9. MPI IX: Code effectiveness achieves strategic plan goals for each state

4.2.4 Difficulty in Measuring MPIs

For all the MPIs referenced above (short-, medium-, and long-term), it is difficult to assess what share of the outcome was a result of the CCE program's influence on the market, as distinct from Codes program efforts, since the two efforts are intertwined.

Fourteen interviewed state and local stakeholders noted they were unfamiliar with or could not distinguish between the two efforts. Two stakeholders understood the distinction but noted there is overlap between the two efforts. Five recalled the purpose of CCE as a market transformation program without commenting on the overlap between the two efforts. Collectively, these findings illustrate that most stakeholders with whom CCE staff interact do not perceive CCE efforts as separate from Codes program efforts. NEEA staff explained that this is intentional because they did not want to introduce confusion in the market.

Codes and CCE program staff also noted that CCE program is one of the few market transformation programs for which savings are not reported. Typically, NEEA reports savings for each market transformation program. Staff explained that CCE savings are embedded in savings attributed to the Codes program because CCE staff members only focus on certain aspects of the code process – i.e., conduct strategic long-term research and prepare the market to be more accepting of new proposals – whereas new proposals as well as code education post code adoption are funded and supported by the Codes program. This feedback also illustrates the difficulty in measuring the success of CCE separately from the Codes program efforts.

4.3 CCE Evolution Documented in the Codes Logic Model

The key finding of this study is that the CCE program evolved from the original Logic Model design, both to take advantage of near-term opportunities in the Washington 2018 code cycle, as well as in response to stakeholder insights in Idaho and Montana. The Codes program logic model, developed in 2020 and included as Appendix C, reflects this evolution by highlighting a more targeted role for CCE. The CCE program's primary activity as documented in the Codes logic model is to develop market evidence of above-code technologies and practices. This activity should result in outputs that include technical roadmaps, case studies, and demonstrations of above-code technologies and practices. This role aligns with many of the primary achievements of CCE: supporting the Washington Roadmap and developing case studies in Idaho and Montana. These activities and outputs are designed to inform the market about new technologies and set the strategic direction for code changes. This activity is one of many outlined in the Codes logic model and reflects the role of CCE in practice as a component of the Codes program.

4.4 Implications of Deviating from the CCE Logic Model

The program was able to make progress by focusing on the opportunities and unique code development environment in each state, as well as leveraging resources better by working together with the Codes Team. However, the adapted approach resulted in a customized

approach for each state that deviates from the original Logic Model. Furthermore, CCE is not functioning as a stand-alone market transformation program because of close collaboration with the Codes Team. For this reason, the MPIs and rationale in the Logic Model are outdated and should be updated to reflect the program evolution if NEEA decides that CCE should function as a stand-alone market transformation program.

5 SUMMARY OF STATE-BY-STATE ACTIVITIES AND ACHIEVEMENTS

This chapter summarizes CCE program activities and achievements for each of the NEEA states. The activities resulted from CCE staff responding to opportunities in the marketplace and were not reflective of the program logic model design. Detailed findings are presented in Appendix A.

- **Washington.** The CCE opportunity in Washington focused on the state's 2030 policy goal of achieving a 70% reduction from the 2006 WSEC baseline. The primary opportunity for CCE in Washington was the IECC 2018 code adoption cycle; CCE and the Codes team provided targeted support for code measures that would help Washington move towards the 2030 target. These measures were adopted, and CCE follow-up activities included technical assistance to support the implementation of these measures, including funding training and tool development. CCE staff also supported the development of a Roadmap for Washington to identify the suite of technologies and building strategies to achieve the 2030 policy goal.
- **Oregon**. Effective October 1, 2019, Oregon transitioned its commercial energy code from the Oregon Energy Efficiency Specialty Code, which was based on 2009 IECC, to the 2019 Oregon Zero Energy Ready Commercial Code (OZERCC), which is based on ASHRAE 90.1-2016. The state expects to adopt each new version of ASHRAE 90.1 with minor administrative amendments. CCE's opportunity and activities reflect this shift; CCE and Codes teams together supported education and awareness regarding the ASHRAE 90.1 code and participated in workshops with key Oregon stakeholders regarding the new code's impacts on Energy Trust new construction program.
- **Idaho**. Idaho adopted the IECC 2018 base code effective January 1, 2021, and staff noted that the primary barrier to CCE in Idaho is that there is limited desire in the state for commercial amendments above the base IECC code. CCE activities included collaborations with local stakeholders to support Idaho's efforts to continue to adopt the latest IECC base codes at regular intervals. This included attending and supporting Idaho Code Collaborative meetings, as well as supporting the Idaho Integrated Design Lab (IDL) to develop case studies highlighting above-code commercial building best practices in Idaho.
- **Montana**. Montana has not yet adopted the IECC 2018 base code. Like Idaho, the primary barrier for CCE is that there is little appetite for commercial amendments above the IECC base code. CCE opportunities included engagement of the Montana Code Collaborative, as well as funding case studies through the Montana IDL.

CCE together with efforts from the Codes Team made the most progress in Washington. CCE and Codes program efforts influenced Washington state to adopt the TSPR and ASHRAE 90.1 Appendix G compliance path provisions during the 2018 IECC code adoption cycle.

6 CONCLUSIONS AND RECOMMENDATIONS

Based on the findings from this study, the evaluation team provides the following conclusion and recommendations.

Conclusion: CCE operates more as a component of the Codes program than as a stand-alone market transformation program. CCE has evolved away from its original design as a market transformation program and as a result of near-term opportunities in Washington and barriers to above-code adoption in the remaining three states, has been primarily leveraged to support the NEEA Codes program's efforts. The initial market transformation design proved difficult to implement. Many of the difficulties were inherent to market transformation program fundamentals, such as defining the market transformation product or practice in which influence measured could be attributed to program activities. In addition, the challenges of applying a unified program approach in the four-Northwest state region with vastly different policies, goals, and affinities for code proved to be a significant obstacle to implementing CCE as a market transformation program. The program appropriately responded by providing targeted support to leverage and amplify NEEA Codes program development and implementation work.

Additionally, CCE and Codes program efforts are generally considered the same in the marketplace. The majority of interviewed stakeholders noted that they are unfamiliar with or could not distinguish between the CCE and Codes program efforts. This is intentional, per CCE and Codes program staff, though activities are distinguished internally between CCE and Codes.

- **Recommendation:** Merge CCE into Codes program. The NEEA team already operates under this context, particularly in Idaho and Montana, and integration of the two efforts would align the internal structure with the market presence.
- **Recommendation:** Update the CCE market transformation logic, either separately or within the Codes logic model, to document changes made to the implementation and logic, and to re-assess the metrics measuring CCE's success.

Appendix A: State by State Activities, Achievements, Challenges, and Opportunities

Appendix A describes state-by-state findings, which detail how CCE leveraged the opportunities in each state, dealt with challenges, and whether progress was achieved. This section also summarizes the program activities implemented by the CCE staff and whether there are state-specific opportunities for CCE as it continues to contribute to the Codes program effort.

A.1. Washington-Specific Findings

The CCE effort in Washington state centered on supporting the 2030 policy goal of 70% reduction from the 2006 WSEC baseline. CCE leveraged Washington's IECC 2018 adoption cycle to offer targeted support for code measures that would help Washington move closer to achieving their 2030 building energy use reduction goal.

A.1.1 CCE Activities

Due to the timing of the launch of CCE and the Washington codes process being underway, there was a large initial focus of CCE activity on Washington. Specifically, CCE staff engaged in the following activities:

1. Developed an initial draft of SCP. (Note that the Roadmap replaced the SCP. The evaluation team provides additional details on the Roadmap in the "CCE Achievement" section below.)
2. Analyzed and supported targeted code measures and strategies during 2018 IECC Code cycle, including the TSPR and adoption of ASHRAE 90.1 Appendix G compliance path.
3. Provided technical assistance to support TSPR rollout, such as trainings for AEC community and tool development.
4. Attended Washington state stakeholder working group sessions and conducted analyses to identify measures and technologies to support development of the Roadmap (a document that identifies a set of technologies and building strategies to achieve the 2030 goal).
5. Led quarterly Washington state CCE program meetings to share progress on CCE projects, including TSPR, trainings, and the Roadmap, with numerous Washington CCE stakeholders.

As alluded to previously, the CCE and Codes program staff collaborated on several of the activities listed above. Similarly, CCE and Codes program staff will collaborate on next steps,

which are: 1) to leverage the Roadmap to identify measures for Washington state's upcoming code cycles and 2) continue with the TSPR training. Staff also plans to apply the Roadmap concept to other NEEA states, where feasible.

A.1.2 CCE Achievements

NEEA's CCE and Codes program efforts influenced Washington state to adopt the TSPR and ASHRAE 90.1 Appendix G compliance path provisions during the 2018 IECC code adoption cycle.

Two interviewed Washington stakeholders noted that Washington state was already moving in the right direction because of the 2030 building energy use reduction mandate. They explained that NEEA leveraged this ongoing effort to support code efforts. CCE and Codes program staff supported adopting the TSPR in collaboration with the City of Seattle and encouraged the adoption of ASHRAE 90.1 Appendix G compliance path. Washington stakeholders indicated that NEEA support was instrumental for these measures, with one explaining further that TSPR and ASHRAE 90.1 Appendix G addressed specific Washington state requirements to leverage carbon emissions as a method to normalize fuels, which was necessary to move forward with enhancing the commercial energy code.

During the 2018 IECC code cycle, Washington state adopted the TSPR and ASHRAE 90.1 Appendix G compliance path code provisions.

CCE's Roadmap effort also appears to be influencing Washington state's strategy for achieving the 2030 building energy use reduction goal.

The CCE program funded the Washington Roadmap project and CCE staff completed the Roadmap report in collaboration with staff from the Washington state Department of Commerce. A stakeholder from the Department of Commerce explained that prior to the completion of the Roadmap, Washington state was about half-way to their goal of 70% building energy use reduction by 2030. They reported that the Roadmap helped them better visualize how to achieve the 2030 goal in a more cost-effective way, explaining:

> "If you follow code development, we have [made progress toward the 2030 goal] through incremental approaches. You look at the last code and ask what can we tack on this code cycle to get to another incremental savings. This [Roadmap] flips it the other way. It says this is our end point; we have to be at 70% reduction [2030 goal]. What does it take to get there? The Roadmap project funding [CCE funding] allowed us to look at prototypical commercial buildings; figure out a number of pathways to achieve the 70% reduction goal; and then map forward in several code cycles what the right approach would be to get to the goal. That was a super important thing. Stacking the incremental improvement on top of the old code does not always provide the most direct, least cost route that this [Roadmap] will enable."

A.1.3. Challenges and Opportunities

Achieving the 2030 building energy use reduction mandate will be a challenge.

NEEA CCE staff explained that the challenge is in introducing technologies that will move Washington state closer to the 2030 target. Staff from a NEEA-funded partner organization that helped develop the Roadmap noted that their analysis identified plug loads as a significant contributor to building energy use that is not currently governed by the energy code and would need to be addressed to achieve the 70% building energy use reduction by 2030. Two other Washington stakeholders highlighted a need to move to a performance-based path to get to the 2030 building energy use reduction target. They stated that very few commercial building owners are choosing a performance-based path through a utility program, likely due to risks and uncertainties regarding penalties or other recourse for buildings that do not perform as designed. As one stakeholder explained:

> "There are dis-incentives for projects to do that [opt for performance-based incentive] because there are risks. If an engineer takes that on and it does not perform, then what?"

A utility stakeholder did note they are trying out a performance-based program (using Energy Use Intensity or EUI to measure performance) and will pay the incentive based on performance. They indicated that NEEA could support them with this effort by compiling and maintaining data on EUI across the industry that would serve as the baseline. They also note they are not the only utility looking at performance-based pathways; the energy-efficiency industry in general is headed in that direction.

To support Washington's 2030 building energy use reduction target, NEEA's utility stakeholders want additional programmatic support from CCE staff.

CCE and Codes program staff do offer and provide code-related programmatic support to utilities through technical assistance and education or training efforts. Still, several interviewed utility stakeholders noted wanting additional programmatic support.

- One (a larger utility) explained wanting more support from NEEA with regards to their efforts on implementing an above-code performance-based new construction program.
- Another (also a larger utility) reported wanting to work with NEEA on marketing the Roadmap to "create incentive programs around that to get [new construction commercial] buildings a whole code cycle ahead." This contact explained that they need not only the technical expertise but also support in how to reach the market. They perceived that there is a substantial opportunity to better work with NEEA's CCE staff on leveraging the Roadmap for their utility incentive programs.
- A smaller utility stakeholder reported needing support around code compliance.
- A regional stakeholder representing multiple utilities noted wanting more clarity on how NEEA's broader code efforts will affect energy efficiency programs.

NEEA staff, in a work session, explained that CCE staff must be careful and not design programs for utilities. NEEA's role is to offer technical expertise. In this capacity, CCE staff hosted several meetings on the TSPR concept and how utilities can leverage TSPR for their programs, as well as offered NEEA's technical code expertise to the Washington utilities. Presently, CCE and Codes program staff are supporting one Washington utility by helping them estimate cost impact of the utility's above-code program proposal.

Code compliance will also be a challenge.

Although the CCE program was not designed to address code compliance, inconsistent enforcement of code compliance can hinder the success of CCE efforts and Washington progress toward its 70% reduction target by 2030. A CCE-funded partner that provided TSPR training noted that building officials are confused regarding how to use the TSPR in their enforcement process to approve projects. A smaller utility stakeholder also noted that smaller jurisdictions inconsistently enforce building energy code. This utility stakeholder explained that smaller jurisdictions perceive little value in building energy code; are generally not as familiar with technologies or approaches needed to comply with the latest code; and can get away with not complying. He further explained: "Small building community hates the energy codes. That is what we are up against."

It is also hard to engage the builder community in smaller jurisdictions because they do not want to travel far and are not interested in virtual trainings. As new code provisions are included in future Washington energy codes, continued integration of CCE and the Codes program is necessary to ensure that the AEC community and building officials have the necessary resources to comply with and enforce the code.

A.2. Oregon-Specific Findings

Effective October 1, 2019, Oregon transitioned its commercial energy code from the Oregon Energy Efficiency Specialty Code, which was based on 2009 IECC, to the 2019 Oregon Zero Energy Ready Commercial Code (OZERCC), which is based on ASHRAE 90.1-2016. The state expects to adopt each new version of ASHRAE 90.1 with minor administrative amendments. Discussions regarding adoption of ASHRAE 90.1-2019 began in October 2020. ASHRAE 90.1 promotes a systems approach to energy codes versus the more typical focus on prescriptive measures in IECC codes. The CCE effort in Oregon centered on supporting the transition to ASHRAE 90.1-2016.

A.2.1. CCE Activities

In Oregon, NEEA CCE staff engaged in the following activities:

1. Developed initial draft of SCP. (Note: CCE staff are no longer using, nor actively updating the SCP.)

2. Supported IECC code proposals prior to the State's transition to an ASHRAE 90.1 code basis
3. Leveraged University of Oregon Integrated Design Lab (IDL) to develop technical briefs on a few key above code technologies.
4. Supported education and awareness regarding ASHRAE 90.1 and Appendix G compliance path
5. Participated in workshops with Energy Trust of Oregon (Energy Trust), Oregon Department of Energy (ODOE), Building Codes Division (BCD), and other stakeholders regarding ASHRAE 90.1 impacts on Energy Trust new construction program.

NEEA's efforts to support the transition to ASHRAE 90.1 as the state code basis reflect collaboration between CCE and the Codes program, as many of the key topics such as program design, adoption, training, and enforcement affect both CCE and Codes program objectives.

A.2.2. CCE Achievements

NEEA's CCE strategy has been properly adapted to reflect the energy code context in Oregon in the near-term.

NEEA's shift in CCE strategy reflects two recent key policy developments in the State:

1. In 2019, Oregon transitioned its code basis from IECC to ASHRAE 90.1, with the 2019 OZERCC becoming fully effective on January 1, 2020 after a three-month phase-in period. Oregon policymakers have indicated that the intent of this transition is to adopt each new version of ASHRAE 90.1 within a year of its release and with minor administrative amendments.
2. Oregon's Executive Order 20-04, signed in March 2020, set a goal to reduce net energy building consumption in commercial and residential new construction 60% from a 2006 state baseline by 2030.

These directives establish a state-specific target for new construction and streamline the code development and adoption processes. The Department of Energy, with the Pacific Northwest National Laboratory (PNNL[6]), released training and compliance tools such as COMcheck for each version of ASHRAE 90.1; without a customized commercial energy code, Oregon can take advantage of these tools out-of-the-box and does not need to invest significant resources to develop state-specific materials. Additionally, both CCE staff and a stakeholder from an Oregon State agency explained that initial analysis from PNNL suggests that by adopting each subsequent version of ASHRAE 90.1 on time and without significant amendments, Oregon will exceed the 60% reduction objective in Executive Order 20-04.

Given the context that Oregon has moved to ASHRAE 90.1 and has little appetite to undertake amendments, NEEA adapted the original CCE design, which focused on providing research and support for state-specific code proposals, to providing near-term educational and informational support to the market regarding the ASHRAE 90.1 transition. CCE NEEA staff also expressed in the work sessions that continued adoption of the ASHRAE 90.1 base code will meet the CCE objective of achieving commercial building code energy targets in Oregon.

NEEA CCE staff are collaborating with Energy Trust in the context of the ASHRAE 90.1 transition.

Both CCE and Codes program staff have been closely engaged with Energy Trust and several other state stakeholders in efforts to adapt Energy Trust's commercial new construction program design to the ASHRAE 90.1 code. NEEA staff representing both CCE and Codes participated in several workshops during 2020 regarding the Energy Trust programs, providing subject matter expertise and guidance in understanding key differences in whole building performance path compliance in ASHRAE 90.1 versus prescriptive path compliance that is more common in IECC codes, including the prior Oregon code. This collaboration is ongoing at the time of this report, and certain Energy Trust stakeholders did note being encouraged by the progress and anticipate opportunities to further strengthen this relationship over time and as subsequent ASHRAE 90.1 versions come into effect.

A.2.3. Challenges and Opportunities

Key personnel departures at Energy Trust have impacted NEEA CCE influence.

NEEA's CCE program worked extensively with personnel at Energy Trust who have subsequently left the organization, resulting in some lost institutional knowledge and impacting NEEA CCE influence. During Phase 1 of this evaluation, the evaluators struggled to identify appropriate contacts at Energy Trust that could speak to CCE efforts prior to the ASHRAE 90.1 transition. The evaluators interviewed third-party contractors in an attempt to gather some of this historical context, but both third-parties and Energy Trust staff were primarily able to provide insights related to the most recent stakeholder workshops or Energy Trust and NEEA interactions discussing the ASHRAE 90.1 transition and its impact on new construction program design.

NEEA's (CCE and Codes program) opportunity to influence Oregon codes is through the national ASHRAE 90.1 code development process.

Since Oregon plans to adopt the base ASHRAE 90.1 code with minimal amendments, NEEA's CCE opportunity to influence the Oregon code is through the national ASHRAE 90.1 code development process. NEEA CCE staff indicated that they already participate in this process, and continued engagement at the national level can help ensure that Oregon's anticipated adoption of base codes align with state policy objectives.

Commercial reach-codes could provide opportunity to explore above code measures in Oregon.

A reach-code (also known as stretch-code) is typically an alternative voluntary or mandated code compliance path that is more stringent than base code, encouraging builders and designers to achieve higher energy savings. While Oregon has had a commercial reach-code since 2011 (modelled after the International Green Construction Code), the reach-code is a voluntary code and has not been widely used to-date. The Oregon BCD staff indicated that they plan to revisit the commercial reach code in 2021 after adopting the new version of OZERCC which will be based on ASHRAE 90.1-2019. While there has not been much historical use, NEEA CCE staff could participate in this process to integrate above code measures.

Other states have had successes in leveraging reach-codes. For example, both Massachusetts and Rhode Island have adopted both residential and commercial building energy reach- or stretch-codes. Their processes and experiences differ and both examples are useful for considering the efficacy of such codes.

A.3. Idaho-Specific Findings

While Idaho recently adopted the IECC 2018 base code effective January 1, 2021, there is limited desire in the state for commercial code amendments above the base IECC code. NEEA CCE staff actively collaborates with local stakeholders to support Idaho in continuing to adopt the latest IECC base code every three to five years for commercial buildings.

A.3.1. CCE Activities

In Idaho, NEEA CCE staff engaged in the following activities:

1. Developed the initial draft of SCP. (Note CCE staff are no longer using the SCP.)
2. Attended the Idaho Code Collaborative meetings and worked with members of the Collaborative to generate and maintain support for the latest IECC base code adoption.
3. Leveraged the capabilities of the Idaho Integrated Design Lab or IDL, an organization funded by NEEA, to conduct the TPA and develop case studies highlighting above-code commercial building best practices in Idaho.

Idaho generally adopts the latest version of the IECC base commercial code with minimal state-specific amendments. Thus, CCE's opportunity to influence Idaho code adoption is by leveraging the Washington Roadmap research as staff participate in IECC national code development. CCE staff anticipate this work will lead to an enhanced IECC base code which will in turn lead to enhanced Idaho code during subsequent base code adoptions.

CCE and Codes program staff also explained that the ongoing collaborations with the Code Collaborative, utility partners, and the organizations such as IDL, are an important aspect of CCE Idaho strategy. These collaborations are raising awareness of the above-code building practices in Idaho, which can inform and prepare the market for future IECC base code adoption.

A.3.2. CCE Achievements

NEEA's CCE strategy has been appropriately adapted to reflect the energy code context in Idaho.

All interviewed Idaho stakeholders confirmed that Idaho generally updates their IECC base code on schedule for the commercial buildings – that is, every three to five years. A stakeholder further explained that (1) most commercial builders are out-of-state and used to designing buildings to higher energy code standards elsewhere and (2) general contractors involved in commercial building have continually supported the adoption of the latest IECC base codes. Thus, there is little resistance from the market on adopting the IECC base code for commercial buildings every three to five years in Idaho.

In 2019, Idaho adopted the IECC 2018 base code, which became effective on January 1, 2021, implying that CCE strategy to not intervene in Idaho's commercial adoption process, while participating in IECC national code development, will work.

Further, NEEA's strategy to use local actors to promote above-code best practices has helped NEEA code efforts in Idaho. An Idaho stakeholder who works for a state agency explained:

> "The best thing NEEA can do is to continue to provide, maybe enhance, funding for groups in Idaho to do it [support energy code efforts]. Any time someone from Portland and Seattle shows up and tells [Idaho] people what to do, that does not go over very well. Idaho legislature has to approve any code enhancements into the state rules. So, when we have an outside group advocating for that, quite often we get a group of more conservative legislators opposing it [the effort] on general principle. We found that it works better if we have Idaho people leading those efforts."

Still, there is a risk that the adapted CCE Idaho strategy may not result in the expected outcome.

Two Idaho stakeholders explained that a recent executive order by the Idaho Governor will stop energy code updates for the next five years. These two stakeholders were likely referring to the recent Idaho Governor's Executive Order 2020-01 (titled *Zero-Based Regulation*). Through this order, the Governor is mandating that moving forward, every rule chapter in effect, which includes the 2018 IECC base code rule, will need to be reviewed by the state agency that promulgated the rule, according to a staggered, five-year schedule. This indicates that Idaho will not look at commercial energy code until at least 2024 and thus may not adopt the next version of the commercial IECC base code within five years from 2019.

A.3.3. Challenges and Opportunities

There is limited desire to advance commercial energy code in Idaho if the policy is perceived as not driven by the market.

All four interviewed Idaho stakeholders expressed this sentiment as well as NEEA CCE staff. Stakeholders and NEEA staff noted that Idaho is cautious about establishing regulations. There is a concern that efforts designed to push the Idaho market too far can result in "big" resistance if the market is not ready to accept the change. Idaho stakeholders have seen this occur in the past, mainly with respect to the residential energy codes. Some noted that at times the Idaho legislature discussed elimination of all residential energy codes, which they note could have also impacted the commercial energy code revisions. Stakeholders also explained that in Idaho there is generally limited desire for commercial code amendments; the focus has always been more on the IECC base code adoption and training.

Idaho does respond to market forces, which can help NEEA's CCE efforts.

Three Idaho stakeholders reported that there is interest in building above-code in commercial new construction. Another stakeholder noted that critical market actors in the commercial space, specifically general contractors, have supported the adoption of the newest IECC base code. This contact also explained that code revisions typically support the building practices in the local market. Another Idaho stakeholder discussed that there is always interest in Idaho on technologies and building market trends. This contact suggested NEEA focus efforts on building trends that could profoundly affect building construction in the future (e.g., modular building), and less so on current best building practices since those will naturally change over time.

CCE and utility collaboration in Idaho on above-code efforts has been limited.

An important objective of the CCE program is to increase collaboration with utilities on above code efforts. CCE staff tried to meet with Idaho utilities about the TPA process, which was designed as a structured approach to scan, identify, and assess code improvement opportunities in the building sector. Idaho utilities expressed limited interest in that process.

An interviewed utility stakeholder noted that CCE effort has increased NEEA's presence in Idaho. They also noted that if CCE staff could be even more present in Idaho, that would help NEEA better gauge the Idaho climate. This stakeholder also expressed interest in NEEA's energy code efforts at IECC nationally. They reported knowing more about that effort will help them with future program incentive designs. The contact further explained that CCE email summaries on CCE efforts in each state do not provide any insight on NEEA's work at IECC nationally.

A.4. Montana-Specific Findings

Montana has not yet adopted the IECC 2018 base code. Similar to Idaho, there is little appetite for commercial amendments above the IECC base code. NEEA's CCE efforts rely on working with the Montana Code Collaborative and local contacts to exert influence – a similar approach as in Idaho.

A.4.1. CCE Activities

In Montana, CCE staff engaged in the following activities:

1. Developed the initial draft of SCP. (Note CCE staff are no longer using the SCP.)
2. Funded the Montana Code Collaborative meetings and through the TPA activity, developed a few technology case studies through the IDL.
3. Conducted limited outreach (shared case studies) and training via IDL.

In the future, CCE staff plan to leverage the Washington Roadmap research at IECC nationally to enhance the IECC base code. Montana, like Idaho, generally adopts the latest version of the national IECC base code with limited amendments for the commercial buildings, and CCE staff expect that this pattern will continue.

CCE and Codes program staff also indicated that the ongoing collaborations with the Montana Code Collaborative, utility partners, and the local organizations such as the Montana State University IDL and National Center of Appropriate Technology (NCAT), are important aspects of CCE's Montana strategy. Similar to Idaho, these collaborations are raising awareness of the above-code building practices in Montana, which can inform and prepare the market for future IECC base code adoption.

A.4.2. CCE Achievements

To date, there is no progress in Montana.

Montana has not yet adopted the IECC 2018 base code. A Montana stakeholder described the IECC 2018 adoption process as slow. There were delays in the rulemaking process due to Covid-19 and although the Department of Labor and Industry approved the IECC 2018 amendments recently, the Secretary of State has not yet approved the changes, which is a last step in adoption of the IECC 2018 code. A Montana stakeholder noted that the final adoption step may not occur for a while due to a recent change in administration. Thus, there is no indication that CCE and Codes program efforts at IECC nationally will materialize in Montana soon.

NEEA staff reported that the Montana IECC 2018 amendments, if adopted, will make Montana commercial energy code more stringent than the comparable code in Idaho.

A.4.3. Challenges and Opportunities

As in Idaho, there is limited desire to advance the commercial energy code in Montana.

As noted previously, there is limited appetite for the state level code amendments. Additionally, two Montana stakeholders noted the process of IECC base code adoption is slow and, in the past, has even been skipped (e.g., the 2015 IECC base code adoption). As one stakeholder explained:

> "Adoption of the IECC 2018 dragged on for two years now. And we are just now getting to the end of the rules making process for it. Finally came out with the Montana

> amendments. And now we have a change in the administration, so the rumor is, it [the process] will likely stop again."

Another stakeholder explained that Montana has many small commercial buildings and many one-off projects. Specifically, according to this contact, the challenge is that many Montana builders will build one or two commercial buildings in their lifetime while their customers will not ask for the buildings to be built above-code. Thus, there is no desire to build above-code.

A couple of stakeholders did note there is more interest in building above code on the commercial than residential side; however, one of them explained that more education is needed to convince the construction industry that building above code is economical.

One stakeholder also discussed enforcement, saying Montana does not have consistent and stringent code enforcement for energy code. Another explained there is lack of inspectors to implement code and in some rural areas, the communities resist implementation of energy codes. Collectively, this feedback indicates that many jurisdictions do not prioritize energy code enforcement.

Locally (at the city or county level), there is also no desire to leverage stretch-codes for encouraging building above code.

A Missoula City stakeholder explained that locally there is no appetite to leverage stretch-codes because local jurisdictions like Missoula cannot mandate them. They have to be voluntary and with an incentive attached. This stakeholder noted no Montana jurisdiction has tried or had interest in adopting voluntary stretch codes.

Key staff retirements are leaving a void in energy code leadership in Montana

NEEA as an outside organization, has limited influence in Montana, and thus relies on the Montana Code Collaborative and local liaisons to support energy code efforts. Several individuals that have been closely involved with Montana code development, education, and support, have either retired or are planning for upcoming retirement. Several Montana stakeholders identified this as a potential challenge, primarily regarding ensuring that there is a pipeline of energy code advocates in Montana that can step into vacancies and continue to drive energy code efforts in the State.

Select Montana cities and counties are pursuing clean energy goals, which could be an opportunity for CCE to engage other players and, by extension, influence energy codes at the local level.

Two counties and/or cities in Montana, Missoula and Bozeman, have recently passed climate action plans to strategically consider the impacts of climate change on their regions. These plans include considerations of existing and new buildings and as such provide an opportunity for building energy codes engagement. The City of Missoula and Gallatin County are working with a non-profit, Climate Smart, to specifically address new and existing buildings in Missoula in order to meet their carbon neutrality and clean energy goals. The three interviewed stakeholders

representing the City of Missoula, Gallatin County, and the non-profit Climate Smart, reported being behind other states in building performance and, in their jurisdiction, they are trying to catch up. Thus, they are soliciting input and feedback from the market and public officials on numerous policies in support of Missoula climate action plan, including:

- **Benchmarking.** The documentation and disclosure of commercial building energy use metrics.
- **Building energy performance standard.** A policy mandating a certain level of building performance over time (The stakeholders report that this policy is in the murky legal area. Although the City is not expressly prohibited from using it, there is some indication that the State may challenge it if the City decides to use it.)
- **Retro-commissioning.** Requiring commercial building owners to investigate a set of energy efficiency actions every three to five years. (The stakeholders reported planning to leverage the existing upgrades and strategies that the Missoula City buildings recently undertook to assess what is reasonable to ask owners to investigate from a cost and feasibility perspective.)

While state-level opportunities to enhance energy codes are limited in Montana, engagement at the local level could encourage development of policies and key personnel that can be applied more broadly to the state level in future code cycles.

Further, a utility stakeholder and a stakeholder representing a state agency expressed that there is an opportunity for NEEA to engage with Missoula stakeholders by providing education around building science and energy efficiency opportunities in new buildings.

Last, the City of Missoula and their county have engaged their utility to revisit the cost-benefit criteria for the energy efficiency programs. This activity is designed to help the City reach their climate action plan goals. One of the Missoula stakeholders explained:

> "The way they [the utility] uses TRC [Total Resource Cost] test is thin on benefits compared to other Northwest utilities, so our hope is to ensure that DSM [Demand Side Management] programs use TRC tests that fairly account for benefits and as a result will fund more energy efficiency efforts. The issue is how that test is structured and because of the low energy prices, on both the residential and commercial sides, the incentives were reduced. We hope that changes will come in 2021."

A.5. State-Specific Conclusions and Opportunities

Conclusion 1: Washington utilities want more program support. CCE is encouraging collaboration with utilities and other stakeholders on energy code advancement. Multiple interviewed utility stakeholders noted wanting additional programmatic support on above code programs or pilots, how to leverage the Roadmap for the utility above code programs, and how the upcoming code efforts will affect their above code program proposals.

- **Opportunity:** Washington's 2030 building energy use reduction target is difficult to achieve. Discuss with utilities how to get to the 2030 target and whether existing strategies such as TSPR and/or promoting new program concepts could help them be more aggressive to move the market ahead of code changes as close as possible to the 2030 target.

Conclusion 2: In Oregon, CCE has little opportunity to influence the energy code at the state level, as Oregon intends to adopt subsequent ASHRAE 90.1 versions on schedule and with minimal amendments. NEEA staff consider Oregon's transition to ASHRAE 90.1 and plan to adopt each subsequent base code version as an appropriate strategy to meet the 2030 state policy target and NEEA's Codes program supported the ASHRAE 90.1 transition. CCE and NEEA Codes program efforts have focused on providing near-term support to Energy Trust of Oregon and other stakeholders though the transition to ASHRAE 90.1. There is no indication that CCE staff will intervene in the Oregon adoption process long-term as long as Oregon continues to adopt ASHRAE 90.1. Implied in this is that ASHRAE 90.1 will help Oregon reach their 2030 goal if there is robust compliance – that market actors understand and adhere to the new requirements and code officials consistently enforce the code measures.

- **Opportunity:** While NEEA is already engaged in ASHRAE 90.1 code work at the national level, there are other viable strategies in Oregon. BCD staff indicated that they plan to revisit the commercial reach code in 2021 after adopting the new version of OZERCC which will be based on ASHRAE 90.1-2019. NEEA could participate in this process to integrate above code measures.
- **Opportunity:** While NEEA through the Codes program currently funds energy code training in Oregon, more targeted education on ASHRAE 90.1 can help stakeholders become more comfortable with the new requirements both in the short- and long-term. CCE could support or offer additional education to Oregon stakeholders regarding ASHRAE 90.1. particularly around savings analyses, compliance protocols, and anticipated measures likely to be included in future iterations.
- **Opportunity:** NEEA could also help Energy Trust adapt the TSPR approach developed for Washington to Oregon or develop additional customer-facing tools. An Energy Trust stakeholder noted they are looking for such support.

Conclusion 3: Idaho is receptive to market-driven policies, and there is interest in building above code in the commercial sector. All four interviewed Idaho stakeholders expressed there is limited desire to advance commercial energy code in Idaho if the policy is perceived as not driven by the market. They explained commercial energy code advancement through adoption of the latest IECC base code is generally accepted by the market actors, such as commercial builders and general contractors. Nearly all also reported that there is market interest in building above code in commercial new construction.

- **Opportunity:** CCE could focus on identifying market actors' interests in building above code, while the Codes program team could leverage such research to tailor training offerings through local liaisons.

Conclusion 4: To date, there is no code progress in Montana. To date, there is no clear indication that CCE and Codes program efforts at IECC nationally will filter down to Montana. Montana has not yet adopted the IECC 2018 base code due to the long adoption process, Covid-19 pandemic delays, and a recent change in administration. In the past, they have also skipped the IECC base code adoption (e.g., the 2015 IECC adoption). Further, there is limited desire to advance the commercial energy code in Montana and key staff retirements are leaving a void in energy code leadership in Montana.

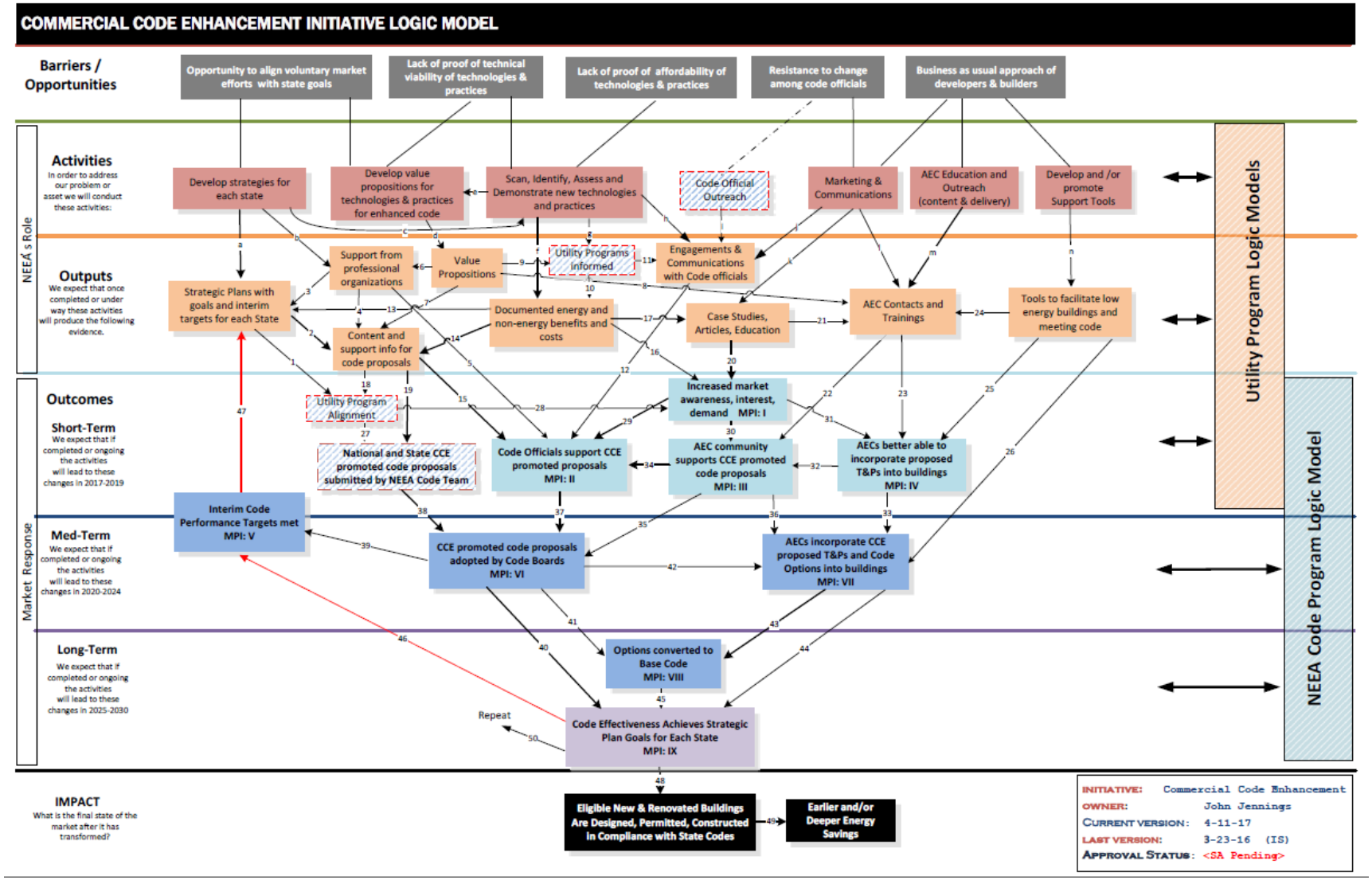
However, select Montana cities and counties are pursuing climate action plans that include clean energy goals, which could be an opportunity for CCE to engage other players and, by extension, influence energy codes at least at the local level.

- **Opportunity:** Delays in IECC adoption may warrant a continued focus on promoting alternative strategies such as providing education regarding how to construct high performance commercial buildings and actively promoting Montana-specific successes.

  Montana may also be able to integrate lessons learned from other jurisdictions facing similar challenges. The state of Maine is a good example of this. Maine does not yet have a statewide building energy efficiency code, though the state did accept grant funds under the American Recovery and Reinvestment Act, and that program mandated adoption of such a code. At that time, Maine adopted an energy code for towns with populations of over 5,000, and while smaller towns have the option of adopting a code, few have done so. Despite the lack of a statewide code, there is a very active high-performance, low-energy building movement across Maine. Builders and designers routinely promote low-energy buildings, and participation in programs such as LEED™, Passive House™, and the Collaborative for High Performance Schools Protocols (CHPS) is impressive. The governor's Energy Office and the Efficiency Maine Trust both actively promote and provide grant assistance for low energy projects, providing education along with funding.

- **Opportunity:** As an outside organization, NEEA has limited influence to advocate for Montana codes without trusted local liaisons. Participation in local climate and building performance processes where they are active in Montana would help secure a presence. While this activity is not directly related to the energy code advancement, there is local interest and a desire for a regional/national perspective. Stakeholders reported upcoming retirements for key local liaisons with whom CCE staff interact to influence code process in Montana, which is leaving a void in energy code leadership in Montana. Thus, there is an opportunity for NEEA CCE or Codes program staff to connect with city, county, and other staff working on local climate and building efficiency policies to cultivate future energy and code leaders in the state.

Appendix B: CCE Logic Model



Appendix C: Codes Logic Model