

**Codes and Standards for Carbon Neutral Buildings  
Initiative Year 3 Market Evaluation Report:  
Baseline Estimates and Progress Toward Goals**

**Final Executive Summary**

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## Executive Summary

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The Market Evaluation of the Codes and Standards for Carbon Neutral Buildings initiative was designed to span five years, with final indirect market impacts determined in Year 5. This Year 3 report presents the Market Evaluation Team's evaluation findings for NYSERDA's Codes and Standards for Carbon Neutral Buildings initiative based on a Delphi Panel study, surveys with participants in NYSERDA-funded trainings, interviews with code officials and building professionals in representative jurisdictions, and interviews with code officials and building professionals in jurisdictions that adopted stretch codes. This report also provides a preliminary estimate of initiative savings, which the Team will finalize in Year 5 of the evaluation, in 2024.

A key goal of the initiative is to train code officials and building professionals to increase code compliance in NYS by 5% compared with a business-as-usual case. As of August 2022, at least 9,220 individuals received training, with a total of 48,854 trainings completed (because individuals attended multiple trainings). In surveys, both immediately after training and six months later, training participants reported high satisfaction with the trainings and a greater understanding of the Energy Conservation Construction Code of New York State (ECCCNYS) and NYStretch codes; they also said they had made changes to day-to-day activities related to code implementation.

The estimated code compliance has increased across all building sectors and construction activities (new construction and additions/renovations) since 2015, with current compliance estimated at 85% for both commercial and residential single-family new construction. According to Delphi Panel estimates, code compliance increased between 8% and 16%, despite dropping initially when a new code was introduced. In Year 5 of the market evaluation the Team will convene a panel of independent experts to assess to what degree code compliance was affected by the Codes and Standards for Carbon Neutral Buildings initiative — that is, how much the initiative shifted code compliance from a business-as-usual case.

Another key goal of the initiative is to influence local-level policy makers to adopt approaches to code enforcement that lead to increased code compliance (pilot approaches) and to promote policies or codes that lead to energy savings. In July of 2019, NYSERDA published NYStretch-2020, and as of August 2022, forty-two jurisdictions, including New York City (NYC), had adopted stretch codes with NYSERDA's support. NYSERDA is currently developing NYStretch-2023 and aims to help NYS incorporate this code into the next iteration of the ECCCNYS.

## Savings Estimates

In Year 2 the Team began estimating preliminary savings for the Codes and Standards for Carbon Neutral Buildings initiative using a methodology based on the long-term indirect savings methods developed in Year 1. Table 1 shows the preliminary savings estimates of the initiative from 2015 through 2022.

**Table 1. Preliminary Codes and Standards for Carbon Neutral Buildings Savings Estimates in GWh**

Total Savings	2015	2016	2017	2018	2019	2020	2021	2022
GWh	116.88	78.88	88.35	84.19	89.00	53.11	56.28	57.11
MW	33.23	22.52	25.01	23.76	25.35	14.90	15.18	15.42
Billion BTU	135.4	106.56	103.51	100.13	100.69	78.22	101.73	103.57

## Findings and Recommendations

The Market Evaluation Team offers the following findings and recommendations for the Codes and Standards for Carbon Neutral Buildings initiative activities occurring between March 2021 and August 2022.

**Finding #1. Estimated code compliance is increasing overall across the state since 2015.**

According to Delphi Panels conducted in 2015, 2020, and 2022, code compliance has generally increased between 2015 and 2020 in both the residential and commercial building sectors and in construction activity (new construction or additions and alterations). However, code compliance increases have varied by year, building sector, and construction activity; from no increase for residential new construction between 2015 and 2020 to a 14% increase for commercial additions and alterations between 2020 and 2022.

Training survey respondents stated that they have seen an increase in code compliance and that NYSERDA played a role in this increase. However, the Delphi Panel also noted several building code components where compliance was below 80%, including commercial sector code provisions that require expert installation or other expert knowledge, such as thermal bridging, continuous air barrier installation quality, envelope insulation installation quality, and continuous air barrier, as well residential sector provisions for documentation, recessed lighting, and duct

testing. Insights related to the timing of code changes and the impact on compliance for these components were not addressed in this evaluation.

**Recommendation:** NYSERDA should review the component-level jurisdiction compliance rates to identify specific opportunities for more targeted training to increase code compliance for building components where compliance is low. In the commercial sector, these components include thermal bridging, continuous air barrier installation quality, envelope insulation installation quality, and continuous air barriers. In the residential sector, these components include documentation, recessed lighting, and duct testing.

**NYSERDA response to recommendation:** Implemented. NYSERDA has used Delphi Panel findings to inform the currently offered training and other programmatic efforts and will continue to do so going forward. Thermal bridging, in particular, will be an area of focus in future trainings.

**Finding #2. Jurisdictions continue to adopt stretch codes, and NYSERDA plays a key role in stretch code adoption.** Since the prior evaluation report, the number of jurisdictions adopting stretch codes has more than doubled, from 15 to 42 jurisdictions. NYSERDA has played a key role in promoting stretch code adoption, through code development and technical and financial assistance. NYSERDA’s stretch code adoption technical expert support activities received mixed reviews: interviewees found the support provided by Clean Energy Community Coordinators and NYSERDA staff to be valuable, while several respondents were critical of the support provided by regional circuit rider contractors. Several jurisdictions also provided recommendations on improving how NYSERDA provides support, including making changes to the way the stretch code is presented and how training is provided.

**Recommendation:** NYSERDA should convene jurisdictions that have adopted NYStretch in a short online debriefing session or focus group to deepen understanding of jurisdictional experience with program support—particularly with circuit riders/consultants—and identify opportunities for improvements with the greatest potential to increase program impact. These improvements can enhance NYSERDA’s future stretch code support work.

**NYSERDA response to recommendation:** Pending. NYSERDA plans to issue a survey to NYStretch adopters and the stakeholders NYSERDA worked with in this effort to better understand their experiences and explore areas for improvement.

**Finding #3. The Codes and Standards for Carbon Neutral Buildings Initiative continues to reach a very significant number of code officials and building professionals with trainings. Trainings resulted in a significant increase in self-reported understanding of energy codes, and more than half of training participants report that the trainings have influenced their approach to code compliance.**

Training records indicate that Code to Zero Initiative trained at least 9,220 code officials and building professionals since March 2020, filling 48,854 seats. Survey respondents reported a higher level of understanding of the ECCCNYC and stretch codes following the training, that they applied what they learned in their work, and that they shared information with others. Survey results also suggest that there may be opportunities to improve the impact of specific trainings. While 91% of training participants said they intended to use what they learned, a smaller proportion (57%) of participants reported having made one or more changes the way they address code compliance issues six months after the training.

**Finding #4. While training attendees rated the courses highly overall, a few trainings received lower ratings and specific recommendations for improvement. These trainings included the “Performance-Based Compliance with ASHRAE Standard 90.1 2016” and the “2020 ECCCNYC for Commercial Buildings: Overview” training.**

Specific recommendations from training participants were to improve the topic of what documentation must be submitted by code officials in the “Performance-Based Compliance with ASHRAE Standard 90.1 2016” and the inspection checklist topic in the “2020 ECCCNYC for Commercial Buildings: Overview” training.

**Recommendation:** Conduct follow-up analysis to identify the specific trainings that generated lower reported impact in terms of behavior changes and information sharing, as well as trainings with lower ratings, to identify and prioritize potential improvements. Review analysis with implementers to determine potential adjustments to the training materials.

**NYSERDA response to recommendation:** Pending. This recommendation will be implemented in the next planned evaluation.

**Finding #5. The initiative logic model would benefit by some minor refinements, to ensure that it and the evaluation fully capture NYSERDA’s market influence.**

**Recommendation:** Refine the initiative logic model to include the influence of the New Construction and Buildings of Excellence Initiatives, align outputs and outcomes to reflect expected near- and mid- to long-term outcomes, and complete an evaluability map.

**NYSERDA response to recommendation:** Pending. This recommendation will be implemented as part of the next planned evaluation.