

Codes and Standards for Carbon Neutral Buildings Initiative Year 4 Market Evaluation Report: Baseline Estimates and Progress Toward Goals

Executive Summary

Prepared for:

New York State Energy Research and Development Authority

Albany, New York

Patricia Gonzales, Ph.D.

Senior Project Manager, Performance Management

Prepared by:

Cadmus

Portland, Oregon

Jeremy Eckstein,
Project Manager

Jordan Decker,
Deputy Project Manager

Casandra Guillén,
Assistant Project Manager

Amalia Hicks,
Principal Investigator

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Executive Summary

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 4 report presents the Market Evaluation Team's evaluation findings for NYSERDA's Codes and Standards for Carbon Neutral Buildings initiative based on the Delphi Panel study conducted in Year 3, surveys with participants in NYSERDA-funded trainings, interviews with code officials and building professionals in representative jurisdictions, and interviews with representatives of jurisdictions participating in alternative code compliance technology and third-party support pilots. This report also provides a preliminary estimate of initiative savings.

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 2023, a total of 70,665 seats were filled in NYSERDA-supported trainings. In surveys, 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. The Team has referred to Delphi Panel findings from Year 4 that code compliance is estimated to have increased across all building sectors and activities since 2015, with current compliance estimated at 85% for both commercial and residential single-family new construction. In Year 5 the Team will convene a panel of independent experts to assess to further assess code compliance.

Another key goal of the initiative is to influence policymakers 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. As of August 2023, forty-two jurisdictions, including New York City (NYC), had adopted stretch codes with NYSERDA's support. NYSERDA has continued its work to refine NYStretch2020 (now in v1.1) in Year 4. New building energy policies have also led to NYSERDA's work with the New York Department of State on the Advanced Energy Code for introduction to the Code Council in 2024.

Also during Year 4, New York State released a dataset identifying areas of the state that meet the criteria for disadvantaged communities (DACs) and Year 4 evaluation was expanded to include research on energy code impacts in disadvantaged communities and review of how new data may be leveraged in NYSERDA's work to support communities.

Savings Estimates

The tables below show initiative preliminary savings estimates from 2015 through 2023. The estimates in Tables 1 and 3 are summarized in Table 4 as converted to MMBtu. Table 5 provides a breakdown of savings estimates by impact area.

Table 1. Preliminary Initiative Savings Estimates, GWh

	2015	2016	2017	2018	2019	2020	2021	2022	2023	Cumul. 2015-2023
CEF CIP (GWh)	-	-	0.34	21.59	61.79	52.44	55.58	57.11	57.11	305.96
Total Savings (GWh) ^a	116.88	78.88	88.35	84.19	89.00	53.11	57.25	70.38	70.38	708.42
Percentage Funded by CEF	0%	0%	0%	26%	69%	99%	100%	100%	100%	-
Percentage Funded by T&MD	100%	100%	100%	74%	31%	1%	0%	0%	0%	-
CEF Savings (GWh)	0	0	0.34	21.59	61.79	52.44	57.25	70.38	70.38	334.17
T&MD Savings (GWh)	116.88	78.88	88.01	62.6	27.21	0.67	0	0	0	374.25

Table 2. Preliminary Initiative Savings Estimates, MW

	2015	2016	2017	2018	2019	2020	2021	2022	2023
CEF CIP (MW)	-	-	-	-	-	-	-	-	-
Savings (MW) ^a	33.23	22.52	25.01	23.76	25.35	14.90	15.42	18.99	18.99
Percentage Funded by CEF	0%	0%	0%	26%	69%	99%	100%	100%	100%
Percentage Funded by T&MD	100%	100%	100%	74%	31%	1%	0%	0%	0%
CEF Savings (MW)	0.00	0.00	0.10	6.09	17.60	14.71	15.42	18.99	18.99
T&MD Savings (MW)	33.23	22.52	24.91	17.67	7.75	0.19	0	0	0

Table 3. Preliminary Initiative Savings Estimates, Billion BTU

	2015	2016	2017	2018	2019	2020	2021	2022	2023	Cumul. 2015-2023
CEF CIP (Billion BTU)	-	-	0.4	25.7	69.90	77.24	82.42	103.57	103.57	462.78
Savings (Billion BTU) ^a	135.4	106.56	103.51	100.13	100.69	78.22	103.21	119.97	119.97	967.67
Percentage Funded by CEF	0%	0%	0%	26%	69%	99%	100%	100%	100%	-
Percentage Funded by T&MD	100%	100%	100%	74%	31%	1%	0%	0%	0%	-
CEF Savings (Billion BTU)	0	0	0.4	25.68	69.9	77.24	103.21	119.97	119.97	516.38
T&MD Savings (Billion BTU)	135.4	106.56	103.11	74.45	30.79	0.98	0	0	0	451.29

^a The market evaluation team analyzed savings using T&MD Review (2015–2019) & CEF Preliminary Assessment (2020–2023). The T&MD savings review is provided in the Appendix of this report.

Table 4. Preliminary Initiative Savings Totals Converted to MMBtu

	2015	2016	2017	2018	2019	2020	2021	2022	2023	Cumul. 2015-2023
Total	534,211	375,710	404,973	387,398	404,371	259,439	298,558	360,114	360,114	3,384,888
T&MD Only	534,211	375,710	403,413	288,050	123,634	3,266	-	-	-	1,728,284
CEF Only	-	-	1,560	99,348	280,736	256,173	298,558	360,114	360,114	1,656,604

Table 5. Preliminary Initiative Savings Estimates by Impact Area, 2020-2023

	Energy Savings, Tbtu			
	2020	2021	2022	2023
Stretch Code Adoption	0.02	0.07	0.07	0.07
Training	0.24	0.23	0.29	0.29
Total	0.26	0.30	0.36	0.36

Impact area estimates were first calculated with Year 2's establishment of the preliminary savings estimation methodology, they are available for years 2020 forward.

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 September 2022 and August 2023.

Finding 1: Estimated code compliance continues to increase overall across the state.

According to Year 4 survey findings and jurisdictional interviews, code compliance has been increasing. Seventy-two percent of training survey respondents thought code compliance was increasing and 60% said NYSERDA has played a role in this increase. Most of the expert longitudinal panel thought compliance has been increasing; however, there have been challenges. These respondents noted that additions and alterations are more challenging to bring up to code than are newly constructed buildings and that the community still has reservations about the requirements and impacts of the stronger energy code.

Recommendation 1 for NYSERDA program staff: To provide more support with the challenge of bringing additions and alterations up to code, consider adjusting the NYSERDA-approved trainings to include more in-depth topics on retrofitting additions and alterations. Target improving builder understanding of additions and alterations energy code requirements.

NYSERDA response to recommendation: Pending. Future solicitations for energy code training development and delivery will emphasize the need for a focus on existing buildings.

Recommendation 2 for market evaluation team: To better understand how builders are impacted by the training, add questions to gather data on builder training needs and motivations, as well as a self-identifying section in the surveys for builders. Currently, the two main categories are code officials and building professionals. With further breakdown, NYSERDA can better understand builder attendance by region, builder perceptions, opportunities, and barriers, if any.

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

Finding 2: Many jurisdictions have unmet basic needs that stymie code compliance; early responses to NYSERDA’s new pilots suggest addressing these needs is improving compliance. Alternate Code Compliance pilot participants and longitudinal jurisdictional panel respondents have shared that basic needs such as organizational capacity and funding are challenges to code compliance. Jurisdictions reported constraints such as insufficient resources for a dedicated inspector and reliance on a part-time code official shared between jurisdictions, and the lack of resources for trainings or technological advancements. Pilot participants are enthusiastic about the additional bandwidth and expertise on complex projects brought by the third-party support offered in the pilot, and they are successfully replacing antiquated software with technology that provides transparency to permit applicants around energy code requirements, increased efficiencies in compliance and enforcement activities, and better communication for all parties involved.

Recommendation 3 for NYSERDA program staff: Expand the Alternate Code Compliance pilot to engage additional jurisdictions and bring these resources to more communities across the state.

NYSERDA response to recommendation: Pending. NYSERDA is working in partnership with the Department of State to expand online code compliance in Authorities that Have Jurisdiction (AHJs) across NYS with a focus on the needs of Disadvantaged Communities.

Finding 3: Jurisdictions face a number of challenges in accessing code compliance resources, even if those resources are confirmed internally to be needed and desirable. Interviews revealed a lack of bandwidth and access to information and resources in local governments responsible for compliance, which constrains or delays compliance activities. Even with the support of the Alternate Code Compliance pilot, some participant AHJs reported challenges in accessing the third-party support component due to questions around procurement, administration, and local access to knowledgeable third parties. Jurisdictional longitudinal

interview respondents also expressed desire for more materials, such as a simple and direct manual to guide them through changes of the energy code. Even in cases in which materials are available, such as NYSERDA's List of Qualified Third-Party Support Providers, many jurisdictional interviewees and survey respondents reported being unaware of them.

Recommendation 4 for NYSERDA program staff: Continue to support Alternate Code Compliance pilot participants with the application process and development of materials and assess additional resources that would be beneficial to guide jurisdictions and energy professionals. Explore new marketing techniques to effectively share the materials. Consider using case studies to give examples of utilization of third-party support.

NYSERDA response to recommendation: Pending. As noted in response to recommendation #2 above, NYSERDA is working in partnership with the Department of State to expand online code compliance in Authorities that Have Jurisdiction (AHJs). Future additional resources and third-party support that can enable code compliance in AHJs is expected.

Finding 4: Training participants are attaining meaningful information from the trainings. In the Year 3 evaluation 44% of respondents suggested expanding the training topics. In Year 4 training implementors responded by providing more trainings in the categories respondents suggested. When rating the trainings overall in Year 4, respondents gave the highest mean score since the beginning of the Initiative (a score of 6.05 out of 7). When asked how the training has impacted their work, 68% of the respondents shared that they either strengthened their knowledge of the energy code or now better understand key compliance requirements. The training implementors listening to survey feedback, the respondents' high ratings of the trainings, and the majority of respondents saying that they have applied knowledge from the trainings into their jobs demonstrates that training participants are gaining meaningful information from the trainings.

Recommendation 5 for NYSERDA program staff: Consider adjusting the trainings topics to include more of the training participants' interests and needs with compliance topics such as building decarbonization and new technologies. Continued response to respondent suggestions on topics will drive engagement and improve code compliance.

NYSERDA response to recommendation: Pending. Decarbonization mandates for new construction are expected to phase-in beginning 12/31/2025. Future energy code training will address this new paradigm.

Finding 5: Data limitations present some challenges in evaluating the Initiative’s impact in disadvantaged communities (DACs) and alternate opportunities for evaluation of this impact should be explored. The market evaluation team’s preliminary review of DAC data was not able to successfully isolate the indirect energy savings anticipated as occurring in DAC census tracts because geographic data lacked granularity (census tracts not necessarily aligning with city or county boundaries, lack of census tract-based new construction rates). The team found meaningful results from the interviews, but the savings analysis could not confidently draw conclusions about the savings.

Recommendation 6 for NYSERDA program staff: Explore other options and data sources that could be used to isolate the impact on indirect savings estimates of DACs and non-DACs. Consider other ways that the impact on DACs can be assessed, such as tracking the responses and progress of jurisdictions that serve DACs under the Alternate Code Compliance pilots.

NYSERDA response to recommendation: Pending. NYSERDA is developing and will execute a methodology for evaluating program impacts on DACs.