Code to Zero Initiative Market Evaluation Report:

Year 2 Evaluation Report

Final Report

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Introduction

This Year Two report presents the Market Evaluation Team's evaluation findings for NYSERDA's Code to Zero Initiative based on surveys with training participants and in-depth interviews with representative jurisdictions. This report also provides a preliminary estimate of initiative savings, which will be finalized at the end of the evaluation in 2024. Through this research, the Team continued to gather data to estimate final initiative impacts and track progress toward the initiative goals:

- Code compliance increases by 10% throughout New York State (NYS)
- 13,250 individuals receive training
- Ten jurisdictions adopt a stretch code
- Eight jurisdictions adopt alternative code enforcement structures

Initiative Overview

Through its Code to Zero Initiative, NYSERDA aims to overcome barriers impeding code compliance and enforcement, establish a path toward the development of a stretch-to-zero energy code, and assist in the enactment of NYS and local energy codes. The initiative builds on NYSERDA's past efforts to help support the adoption of energy codes with higher performance goals and strengthen compliance and enforcement through several activities:

- Supporting code compliance and enforcement by providing support services (such as training) to local jurisdictions statewide.
- Promoting code development and advancement activities, including stakeholder engagement, market research of stretch codes, and validation of savings from advanced technologies.
- Conducting pilots to identify barriers and opportunities surrounding code development and advancement, testing alternative code enforcement structures, and assessing approaches to stretch and zero energy codes.
- Supporting state adoption of the Energy Conservation Construction Code of New York State (ECCCNYS) and local adoption of stretch codes, including NYStretch Energy Code–2020 (NYStretch) and Stretch to Zero.
- Developing a path to energy codes that addresses all aspects of a building's energy use and moves the market in a prompt and supportive way without being disruptive.

NYSERDA designed the Code to Zero Initiative activities to increase the percentage of buildings that are energy code compliant and the number of jurisdictions adopting stretch codes; to improve energy code enforcement by increasing the number of jurisdictions that adopt alternative code enforcement structures; and to accelerate the advancement of the energy code and stretch codes to achieve energy use reductions.

Challenges to Initiative Progress

In 2020 NYSERDA launched Code to Zero Initiative web-based training seminars for a wide range of energy code topics. As of mid-August 2021, NYSERDA had trained 6,171 individual local code official and building professionals (4,763 in 2020 and 1,408 in 2021) through the initiative. In 2021 NYSERDA also offered solicitations to begin implementing Code to Zero Initiative Alternative Code Compliance support activities, which will include pilots being implemented in five jurisdictions. NYSERDA has focused Code to Zero support for NYStretch adoption on direct engagement with jurisdictions rather than on jurisdiction-specific pilots.

NYSERDA anticipates implementing Code to Zero Initiative stretch code jurisdiction pilots as part of promoting the adoption of Stretch to Zero, the next iteration of the New York stretch code. The timing around implementing alternative code enforcement activities and the focus to implement stretch code–related pilots for Stretch to Zero mean that the initiative is unlikely to achieve its 2021 pilot targets, as noted in the Clean Energy Fund Codes Chapter.

Summary of Evaluation Objectives and Methods

The Market Evaluation Team initiated a longitudinal measurement of the key objectives listed in Table 1, which were developed to track the progress of energy code compliance and stretch code adoption throughout NYS as it relates to the activities of the Code to Zero Initiative. The Market Evaluation Team will use the results of these evaluation activities to assess initiative impacts.

Table 1. Evaluation Objectives and Methods

Objective	Purpose	Methods
Determine the percentage of the market complying with the energy code	Estimate the level of energy code compliance to determine change over time	Delphi panel; representative jurisdiction in-depth interviews
Determine the number and percentage of jurisdictions adopting a stretch code	Estimate NYSERDA influence in advancing the stretch code	Delphi panel; representative jurisdiction in-depth interviews; stretch code interviews
Determine the number and percentage of jurisdictions adopting alternative code enforcement business structures outside the initiative	Understand the impact of the alternative code enforcement pilots as well as the needs and motivations of jurisdictions seeking alternative ways to enforce the energy code	Delphi panel; representative jurisdiction in-depth interviews; alternative code adoption jurisdiction interviews
Determine the extent to which stretch code concepts are integrated into the ECCCNYS and future cycles of model codes	Understand the impact of the stretch code on NYS and national model energy codes	Literature review; stretch code expert interviews
Assess the impact of NYSERDA's training on compliance levels, decision-making, and behaviors	Estimate the effects of energy code training and education on the market	Training participant surveys

In Year 2 the Market Evaluation Team developed a methodology to estimate the indirect impacts of the Code to Zero Initiative under the Clean Energy Fund. The methodology, included as *Appendix – CEF Indirect Savings* Methodology, outlines the methods and data inputs required to estimate final initiative savings in Year 5 of the evaluation. The methods shown above in Table 1 form key building blocks of the indirect savings methodology.

In Year 2 the Market Evaluation Team also began providing preliminary savings estimates from the Code to Zero Initiative. The methodology for this estimation is included as *Appendix – Clean Energy Fund Analysis* .

Challenges to the Year 2 Evaluation

In 2021 the Market Evaluation Team followed up with code officials and building professionals who had been interviewed for the Year 1 evaluation. However, despite repeated outreach to previously interviewed individuals, the Team was only able to interview five of the nine building professionals and code officials previously interviewed. While the Market Evaluation Team was able to conduct interviews with two new code officials, including one code official from New York City, recruiting jurisdiction experts and maintaining engagement with them continues to be a significant challenge. To address this challenge and to reduce the number of respondents who do not wish to participate in interviews in future years, the Market Evaluation Team will streamline the interviews for code officials and building professionals moving forward.

2020 Evaluation Findings (Prior Evaluation Report)

A Delphi panel, which was convened in Year 1 (2020) as part of the previous year's evaluation report, provided estimates of statewide compliance with the Energy Conservation Construction Code of New York State (ECCCNYS). At the time the panel was convened the 2020 ECCCNYS had not yet been adopted, so compliance estimates were based on the 2016 ECCCNYS. Table 2 shows Year 1 ECCCNYS code compliance estimates.

Table 2. Estimated 2020 Compliance with 2016 ECCCNYS

Building Type	New Construction	Additions and Alterations
Commercial buildings	83%	70%
Residential buildings	77%	71%

In Year 1, the Market Evaluation Team gathered feedback from code officials and building professionals in three representative jurisdictions through in-depth interviews. The code officials and building professionals in the representative jurisdictions stated general agreement with the Delphi panel estimates.

Progress toward Goals and Initiative Impacts

The Outputs and Outcomes of the Code to Zero Initiative were undergoing revision at the time that this report was finalized. The goals discussed in this report are based on the latest information available, but may change for in future reporting. A key goal of the Code to Zero Initiative is for energy code compliance to increase by 10% throughout NYS. The current compliance estimate for commercial new construction is 83% and the current compliance estimate for residential single-family new construction is 77%.

Another key goal of the initiative is to have 10 jurisdictions, other than those participating in pilots, adopt stretch codes. As of August 2021, there were 15 jurisdictions, including New York City, that had adopted a stretch code, none of which had participated in a pilot. The initiative also had a goal that eight jurisdictions outside of those participating in pilots would adopt alternative code enforcement structures, but that part of the initiative had not started work by August 2021.

A final goal of the initiative is to train 13,250 (cumulative) individuals, including code officials and building professionals. Per 2020 records, 4,763 individuals were trained. Up to August 2021, an additional 1,408 individuals were trained.. The Market Evaluation Team reported that prior to March 2020, before the current round of trainings were launched, 2,041 persons received training.[1] In surveys, both immediately after training and six months later, training participants indicated high satisfaction with the trainings, a greater understanding of the ECCCNYS and NYStrech codes, and having made changes to day-to-day activities related to code implementation. The initiative's progress towards goals is shown in Table 3, below.

Table 3. Initiative Progress Towards Goals

	Indicator	Baseline	2021 Target (Cumulative)	2021 Progress (Cumulative)
Outputs	Number of individuals receiving NYSERDA-supported training by market segment and building type	2,041	13,250	Unique individuals trained: 6,171 Total persons attending training since March 2020: 18,602
	Number of Pilots	0	6	0[a]

[1] The Market Evaluation Team did not search for duplicates for the number of persons trained before March 2020. The Market Evaluation Team searched if training attendees participated in multiple training after March 2020. After deduplicating training attendee names, the Market Evaluation team found that that in total 6,171 individuals had been trained since March 2020.

	Indicator	Baseline	2021 Target (Cumulative)	2021 Progress (Cumulative)
	Number of entities NYSERDA supports in the enactment of energy codes	0	5	TBD[b]
Outcomes	Percentage of market complying with the energy code	TBD	Increase 10%	TBD[c]
	Number of jurisdictions (outside of pilots) adopting alternative code enforcement business structures	TBD	8	0[d]
	Number of jurisdictions (outside of pilots) adopting stretch code	TBD	10	15

[a] No pilots had been conducted at the time of reporting. [b] The Market Evaluation Team did not have this information for this report. [c] This metric was not evaluated for this report. [d] This part of the Initiative had not started at the time of reporting.

Savings Estimates

The Code to Zero Initiative has received funding from two sources: first from the Technology and Market Development Program and later from the Clean Energy Fund. In 2021 the Market Evaluation Team provided a methodology for estimating indirect savings from the Code to Zero Initiative under the Clean Energy Fund. This methodology (outlined in *Appendix – CEF Indirect Savings* Methodology) is aimed at providing initiative energy savings at the end of a four-year evaluation process, with the Team collecting data to inform the final evaluation steps. To deliver interim savings estimates, the Team reviewed NYSERDA's methods for estimating Code to Zero Initiative–induced energy savings and delivered an additional methodology for providing preliminary savings estimates in advance of the final estimates. In 2021 the Market Evaluation Team also estimated the energy impacts of the Code to Zero Initiative using funding from the Technology and Market Development Program. The full analysis is provided in *Technology and Market Development Savings Calculation*.

NYSERDA estimated the percentage of overall program funding that came from the Clean Energy Fund and from the Technology and Market Development Program from 2015 through 2021. The tables below show estimated Code to Zero Initiative savings with Technology and Market Development Program funding and the preliminary Initiative savings with Clean Energy Fund budget. Each year's savings is distributed according to the percentage of budget that came from each funding source.

Table 4. Preliminary Code to Zero Savings Estimates in GWh

Savings - Total GWh	2015	2016	2017	2018	2019	2020	2021
Cadmus Analysis of Savings (GWh) T&MD Review (2015-2019) & CEF Preliminary Assessment (2020 & 2021)	116.88	78.88	88.35	84.19	89.00	53.11	55.58
Percent Funded by CEF	0	0	0%	26%	69%	99%	100%
Precent Funded by T&MD	100%	100%	100%	74%	31%	1%	0%
CEF Savings (GWh) after accounting for budget allocation	0	0	0.34	21.59	61.79	52.44	55.58
TM&D Savings (GWh) after accounting for budget allocation	116.88	78.88	88.01	62.60	27.21	0.67	0.00

Table 5. Preliminary Code to Zero Savings Estimates in MW

Savings - Total MW	2015	2016	2017	2018	2019	2020	2021
Cadmus Analysis of Savings (MW) T&MD Review (2015-1019) & CEF Preliminary Assessment (2020 & 2021)	33.23	22.52	25.01	23.76	25.35	14.90	15.50
Percent Funded by CEF	0%	0%	0%	26%	69%	99%	100%
Precent Funded by T&MD	100%	100%	100%	74%	31%	1%	0%
CEF Savings (MW) after accounting for budget allocation	0.00	0.00	0.10	6.09	17.60	14.71	15.50
T&MD Savings (MW) after accounting for budget allocation	33.23	22.52	24.91	17.67	7.75	0.19	0.00

Table 6. Preliminary Code to Zero Savings Estimates in Billion BTU

Savings - Total (Billion Btu)	2015	2016	2017	2018	2019	2020	2021
Cadmus Analysis of Savings (Billion BTU) T&MD Review (2015-1019) & CEF Preliminary Assessment (2020 & 2021)	135.40	106.56	103.51	100.13	100.69	78.22	82.42
Percent Funded by CEF	0%	0%	0%	26%	69%	99%	100%
Precent Funded by T&MD	100%	100%	100%	74%	31%	1%	0%
CEF Savings (Billion BTU) after accounting for budget allocation	0.00	0.00	0.40	25.68	69.90	77.24	82.42
T&MD Savings (Billion BTU) after accounting for budget allocation	135.40	106.56	103.11	74.45	30.79	0.98	0.00

Training Surveys

The Code to Zero initiative has provided training webinars to code officials and building professionals since March 2020. As part of evaluating this training, the Market Evaluation Team conducted online surveys with training participants both immediately after the training and six months after the training. Immediate surveys were primarily intended to gather feedback about the classes, such as the relevance of topics and overall participant satisfaction with the training. Follow-up surveys were intended to allow the Team to understand how training participants applied the information from the trainings in their work and what changes they made after participating in trainings. Training survey results are key inputs into the final indirect savings evaluation, as they will be shared with an independent evaluation panel that will provide estimates of the degree to which initiative training activities have impacted overall code compliance in New York.

Immediate Survey Results

The Market Evaluation Team launched the immediate survey in June 2020. These surveys are sent out to participants promptly after they participate in the training webinars, with participants receiving an invitation for every webinar they attend. This chapter covers the results pertaining to the objectives (listed in the *Research Objectives* section below); the remaining survey questions are covered in the quarterly memo (in *Appendix – Detailed Survey Results*).

Research Objectives

The immediate survey results provided below address three research objectives:

- Review of courses offered, number of respondents, and mean training score
- Geographic representation of jurisdictions of respondents
- Impacts of training on respondents' work in energy code implementation

The analysis incudes statistical significance testing, which is reported as applicable.[2] For this analysis, the Market Evaluation Team aggregated total results.

[2] This statistical significance testing included sample *t*-tests for the continuous data, proportions tests for the binary data, and chi-squared tests for the categorical data.

Courses Provided in 2020 and 2021

Between March 2020 and July 2021, three implementers worked with NYSERDA to deliver energy code training webinars to code officials, builders, contractors, and others in the field. These three implementers (PSD Consulting, Urban Green Council, and Newport Ventures) offered courses for the updated NYS energy code (the ECCCNYS), the New York City Energy Conservation Code (NYCECC), and the state stretch code (NYStretch Energy Code-2020). Overall, 6,171 unique participants attended at least one webinar (4,763 in 2020 and 1,408 as of August 10, 2021).[3]

Table 7 shows the training topics offered by each implementer, the number of survey invites sent, and the number of survey responses received. For the immediate survey, participants could receive multiple invites and provide feedback for multiple webinars, as each participant received a survey link for each webinar they attended. The Market Evaluation Team sent invites out soon after the webinar was conducted in order to obtain feedback as close as possible to the day of training attendance.

Table 7. Webinar Participants and Immediate Survey Respondents through July 2021

Implementer	Course Title	Invitations Sent	Survey Responses Received [a]	Response Rate
PSD Consulting	A Process for Energy Code Compliance and Enforcement / Energy Code Plan Reviews in 15 Minutes or Less	1,816	185	10%
	A Process for Energy Code Compliance and Enforcement / Energy Code Inspections in 15 Minutes or Less	1,689	157	9%
	Air Sealing to 3 ACH50	1,601	162	10%
	Other IECC Envelope Requirements	1,516	135	9%
	Whole-House Mechanical Ventilation	1,335	164	12%
	Efficient Forced Air Distribution	1,250	137	11%
	ECCCNYS for Large Commercial Buildings (Part 1): Mechanical Systems	1,036	125	12%

[3] This was calculated using unique email addresses provided by the implementers to the Market Evaluation Team from training attendee reports.

Implementer	Course Title	Invitations Sent	Survey Responses Received [a]	Response Rate
	ECCCNYS for Large Commercial Buildings (Part 2): Lighting Systems	963	118	12%
	Prioritizing ECCCNYS Enforcement for Commercial Buildings (Part 1)	343	54	16%
	Prioritizing ECCCNYS Enforcement for Commercial Buildings (Part 2)	443	49	11%
	NYStretch Overview and Thermal Envelope Requirements (Part 1)	262	52	20%
	NYStretch Mechanical, Plumbing, Lighting, and Electric Power (Part 2)	241	45	19%
	NYStretch Energy Code for Commercial Buildings (Part 1): Building Thermal Envelope, Mechanical Systems, Commissioning, and Additions and Alterations	51	3	6%
	NYStretch Energy Code for Commercial Buildings (Part 2): Electric Power and Lighting, Total Building Performance, Additional Efficiency Package Options, and Appendices	48	4	8%
Urban Green Council	What's New in the 2020 NYC Energy Code	1,932	126	7%
	What's New in the 2020 New York Energy Code	337	52	15%
	Crushing the NYS Energy Code: Commercial	415	89	21%
	Crushing the NYC Energy Code: Commercial	480	80	17%
	Crushing the NYS Energy Code: Residential	176	44	25%
	Crushing the NYC Energy Code: Residential	147	44	30%

Implementer	Course Title	Invitations Sent	Survey Responses Received [a]	Response Rate
Newport Ventures	2020 ECCCNYS for Commercial Buildings: Overview	145	23	16%
	2020 ECCCNYS for Residential Buildings: Overview	722	102	14%
	2020 ECCCNYS and NYStretch Energy Code for Commercial Buildings	92	10	11%

[a] These responses include both fully and partially completed online surveys.

Immediate survey respondents were asked to rate a variety of aspects of the training they had just attended on a scale of 1 to 7, where 7 was the best possible score. As shown in Table 8, most trainings were rated highly by respondents for all elements, with "relevancy to work" generally being rated slightly lower than the "quality of information" from the webinar or their "likelihood to recommend" the trainings to others. The only element that received a score less than 5 was the relevance of the NYStretch Energy Code for Commercial Buildings Part 1 and Part 2 to the attendees' work; this may be low due to attendees being interested in the stretch code but working in a jurisdiction that had not yet implemented a more stringent energy code.

Table 8. Webinar Scores by Training Topic through July 2021

Implementer	Course Title	Quality of Information	Relevancy to Work	Likelihood to Recommend
PSD Consulting	A Process for Energy Code Compliance and Enforcement / Energy Code Plan Reviews in 15 Minutes or Less	6.3	6.1	6.3
	A Process for Energy Code Compliance and Enforcement / Energy Code Inspections in 15 Minutes or Less	6.5	6.1	6.3
	Air Sealing to 3 ACH50	6.3	6.0	6.1
	Other IECC Envelope Requirements	6.3	6.0	6.3
	Whole-House Mechanical Ventilation	6.4	5.9	6.3

Implementer	Course Title	Quality of Information	Relevancy to Work	Likelihood to Recommend
	Efficient Forced Air Distribution	6.5	5.9	6.3
	ECCCNYS for Large Commercial Buildings (Part 1): Mechanical Systems	6.3	5.8	6.1
	ECCCNYS for Large Commercial Buildings (Part 2): Lighting Systems	6.3	5.7	6.2
	Prioritizing ECCCNYS Enforcement for Commercial Buildings (Part 1)	6.3	5.6	6.4
	Prioritizing ECCCNYS Enforcement for Commercial Buildings (Part 2)	6.5	6.2	6.6
	NYStretch Overview and Thermal Envelope Requirements Part 1	6.3	6.0	6.2
	NYStretch Mechanical, Plumbing, Lighting, and Electric Power Part 2	6.5	6.2	6.4
	NYStretch Energy Code for Commercial Buildings Part 1: Building Thermal Envelope, Mechanical Systems, Commissioning, and Additions and Alterations	5.7	4.3	7.0
	NYStretch Energy Code for Commercial Buildings Part 2: Electric Power and Lighting, Total Building Performance, Additional Efficiency Package Options, and Appendices	5.3	4.8	5.8
Urban Green Council	What's New in the 2020 NYC Energy Code	6.3	6.4	6.5
	What's New in the 2020 New York Energy Code	6.0	5.7	6.0

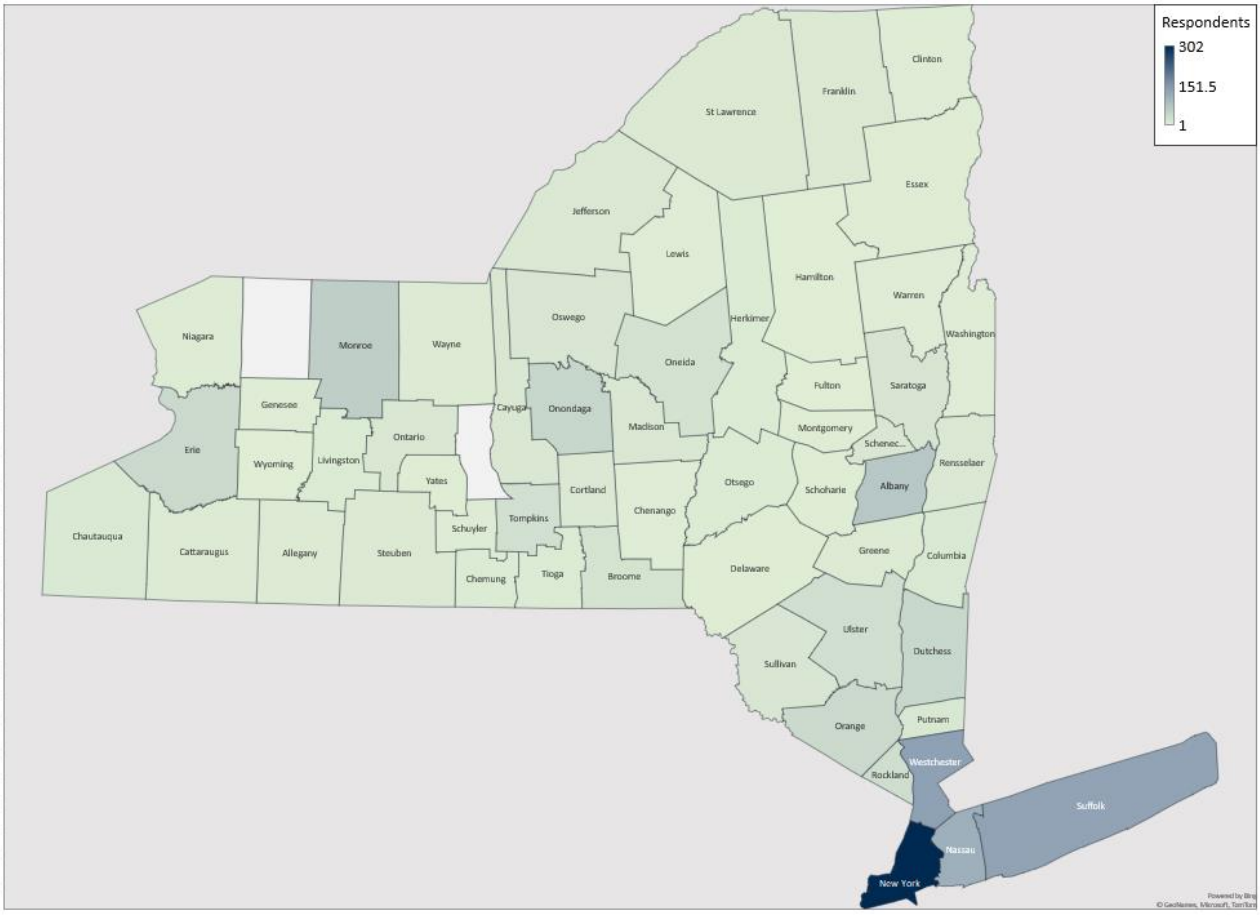
Implementer	Course Title	Quality of Information	Relevancy to Work	Likelihood to Recommend
	Crushing the NYS Energy Code: Commercial	6.3	6.0	6.2
	Crushing the NYC Energy Code: Commercial	6.6	6.2	6.7
	Crushing the NYS Energy Code: Residential	6.4	5.8	6.6
	Crushing the NYC Energy Code: Residential	6.6	6.0	6.6
Newport Ventures	2020 ECCCNYS for Commercial Buildings: Overview	6.3	6.4	6.2
	2020 ECCCNYS for Residential Buildings: Overview	6.1	5.7	6.2
	2020 ECCCNYS and NYStretch Energy Code for Commercial Buildings	5.3	5.0	5.1

Geographical Representation

Immediate survey respondents were asked to list up to three jurisdictions they work in, in order for the Market Evaluation Team to ensure that the webinars are reaching attendees across New York State. While the original intent was to collect the names of towns, a notable number of respondents specified counties or regions; because of this, the Team converted all responses to county-based entries, then applied these to a state map.

As shown in Figure 1, 60 of 62 counties were represented (97% of all state counties) by immediate survey respondents. The counties with the highest representation were the five boroughs of New York (30% of respondents), Westchester county (13%), and Suffolk county (13%). The average number of immediate survey respondents per county was 23, with a mean of eight respondents.

Figure 1. Immediate Survey Representation by County (n=999)



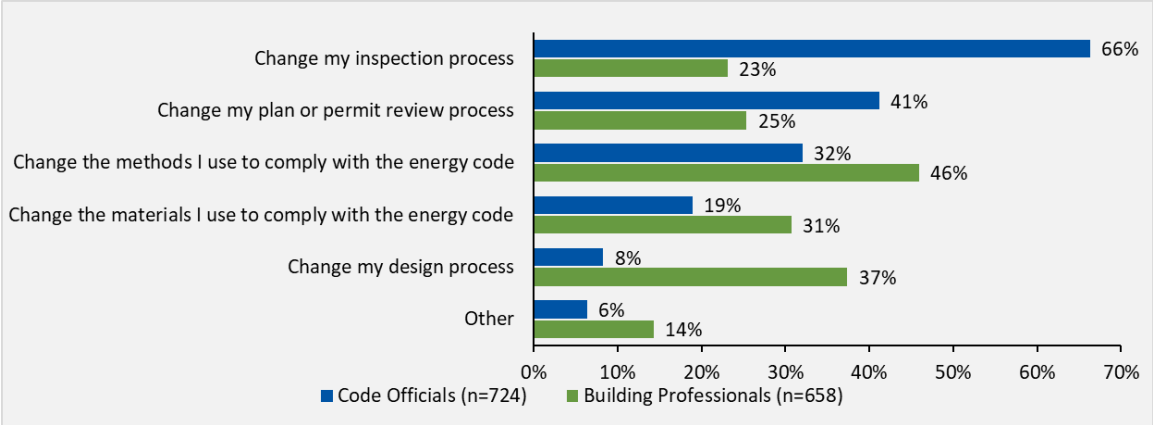
Expected Impacts on Implementation

Immediate survey respondents were asked whether they planned to use what they had learned in the webinar in their work. Overall, 92% of respondents (n=1,603) said they did plan to use what they had learned. Only 1% said they did not plan to use their new knowledge—the remaining respondents said the information they learned was not relevant to their work. The findings were consistent between code officials (92%) and building professionals (93%).

When asked how they planned to apply what they learned, code officials most commonly said they planned to change their inspection process (66%, as shown in Figure 2, compared to 23% of building professionals). Building professionals most commonly said they planned to change the methods they use to comply with energy code (46% compared to 32% of code officials). The difference between code officials and building professionals was statistically significant for all

response options, indicating that code officials and building professions plan to apply new knowledge to their work in different ways[4]

Figure 2. How Respondents Plan to Apply Knowledge



Source: Immediate Survey Question: "How will you use the training in your work?" August 2021.

In verbatim comments, many building professionals noted that what they learned would lead to improved communication, with both clients and with contractors and designers:

- "[I can] map out a different way to explain [the] code to clients."
- "I will talk to my clients differently about ways to build."
- "I plan on changing how I communicate with my clients, especially regarding clarifying pathways."
- "This knowledge will help me support building owners and designers."
- "[I] will understand my engineers better."
- "The work is normally performed by subconsultants ... This allows us to better understand what they do."

Follow-Up Survey Results

The Market Evaluation Team launched the follow-up survey in March 2021. These surveys are sent out to participants six months after they participate in the training webinars; no follow-up survey respondent is asked to take an additional survey even if they participate in additional trainings, to ensure there is no double-counting of results. This chapter covers the results

[4] The Team uses a proportion test; all *p*-values were less than 0.05, indicating statistical significance at 95% confidence.

pertaining to the objectives (listed in the *Research Objectives* section below); the remaining survey questions are covered in the quarterly memo (in *Appendix – Detailed Survey Results*).

As shown in Table 9, the responses reported below are from participants who attended a webinar between September 2020 and February 2021.

Table 9. Follow-Up Survey Respondents through August 2021

Month Attended	Year Attended	Invites Sent	Responses [a]	Response Rate
September	2020	1,003	69	7%
October	2020	857	75	9%
November	2020	234	12	5%
December	2020	435	34	8%
January	2021	383	41	11%
February	2021	347	10 [b]	3% [b]
Total		**3,259**	**241**	**7%**

[a] Responses include both partial and fully completed responses.

[b] The survey for February 2021 training participants was launched in August, and these values only include responses through August 10 when data was pulled for analysis. The Market Evaluation Team continued to collect responses from this group for future reporting.

Research Objectives

The follow-up survey results provided below address several research objectives:

- Geographic representation of respondent jurisdictions
- Square footage of respondents' work since participating in trainings
- Impact of education on respondents' work in energy code implementation
- Dissemination of educational content beyond NYSERDA-sponsored events
- COVID-19 impacts on code compliance

The analysis includes statistical significance testing, where possible, and is reported if present. For this analysis, the Market Evaluation Team aggregated total results.

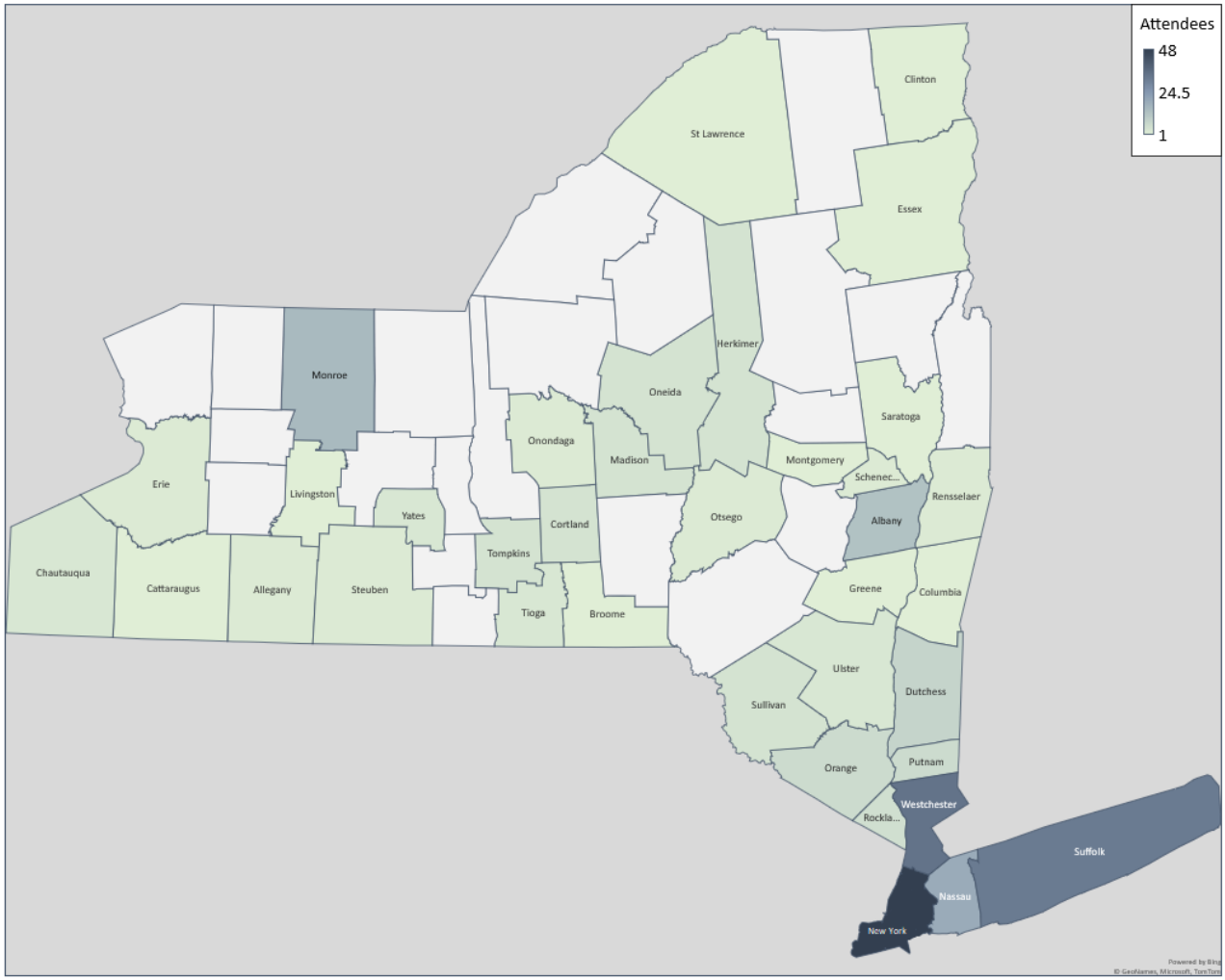
Geographical Representation

Follow-up survey respondents were asked to list up to three jurisdictions they work in, in order for the Market Evaluation Team to ensure that the webinars are reaching attendees across New

York State. While the original intent was to collect the names of towns, a notable number of respondents specified counties; because of this, the Team converted all responses to county-based entries, then applied these to a state map.

As shown in Figure 3, 44 of 62 counties were represented (71% of all state counties) by follow-up survey respondents, with the lowest number of counties represented in the northwest portion of the state (which has a more rural population than that in the southeast, which had the most representation). The counties with the highest representation were the five boroughs of New York (25% of respondents), Westchester county (18%), and Suffolk county (16%). These were also the top three counties represented by the immediate survey participants. Most counties were represented by only a few respondents (generally between one and four).

Figure 3. Follow-Up Survey Representation by County (n=194)

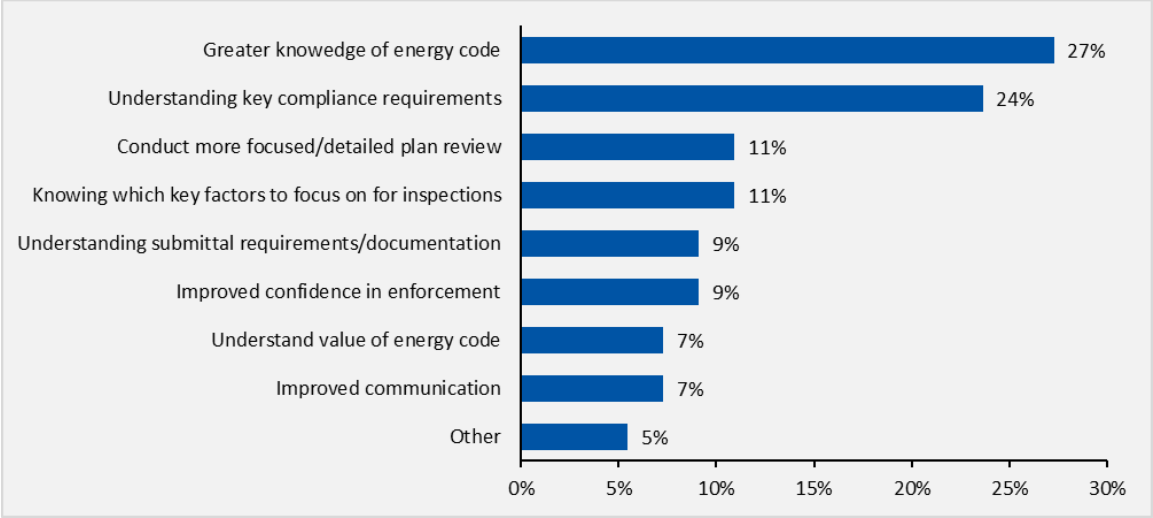


Energy Code Implementation

The Market Evaluation Team asked follow-up survey respondents if, after six months, they had changed the way they address code compliance issues compared to before they attended their first training session. Overall, just over half (52%) responded affirmatively. This was fairly consistent for both respondent types (51% of code officials and 55% of builders and others).

When asked to describe how they address compliance issues differently, respondents most commonly reported a general increase in their knowledge of the energy code (for example “the training was helpful in pointing out details that were previously misunderstood concerning concealed areas of the building envelope”) and understanding key compliance requirements (for example “increased citation and delineation of code requirements on construction documents”); the results are shown in Figure 4.

Figure 4. How Follow-Up Survey Respondents Address Compliance Issues Differently after Training (n=55)



Source: Follow-Up Survey Question: "Please describe how you are addressing the compliance issues differently because of the training." August 2021.

Square Footage Calculation

Follow-up survey respondents were asked to estimate the number of projects and the square footage of space for projects completed since participating in the webinars. Overall, 55 respondents provided usable information, although most respondents only work in certain sectors (such as commercial construction or residential construction).[5] The number of respondents for each project and respondent types are included in the tables below.

Overall, 31 code officials provided a response for at least one category. As shown in Table 10, respondents were more likely to work on a residential new construction project than a commercial new construction project, and were more likely to have worked on additions and alterations projects than new construction projects.

[5] 75 respondents provided at least partial data for these questions. The Team removed twenty of these 75 responses after checking the data for validity, so the analysis below is based on the 55 valid responses.

Table 10. Projects in the Six Months since Attending Training (Code Officials)

Category	n	Average Number of Projects	Average Cumulative Square Footage
Commercial New Construction	10	5.9	47,520
Commercial Additions and Alterations	14	6.4	21,100
Residential New Construction	19	9.6	19,748
Residential Alterations and Additions	24	11.1	11,072

Overall, 22 building professionals provided at least one response (the remaining two respondents identified themselves as "other"). As shown in Table 11, respondents worked on average fewer projects compared to code officials, but square footages ranged in similar patterns, with the lowest average cumulative square footage worked on per respondent in residential alterations and additions and the highest square footage per respondent in commercial new construction.

Table 11. Projects in the Six Months since Attending Training (Building Professionals)

Category	n	Average Number of Projects	Average Cumulative Square Footage
Commercial New Construction	7	2.0	32,379
Commercial Additions and Alterations	8	3.9	20,500
Residential New Construction	10	3.0	11,070
Residential Alterations and Additions	15	3.5	10,147

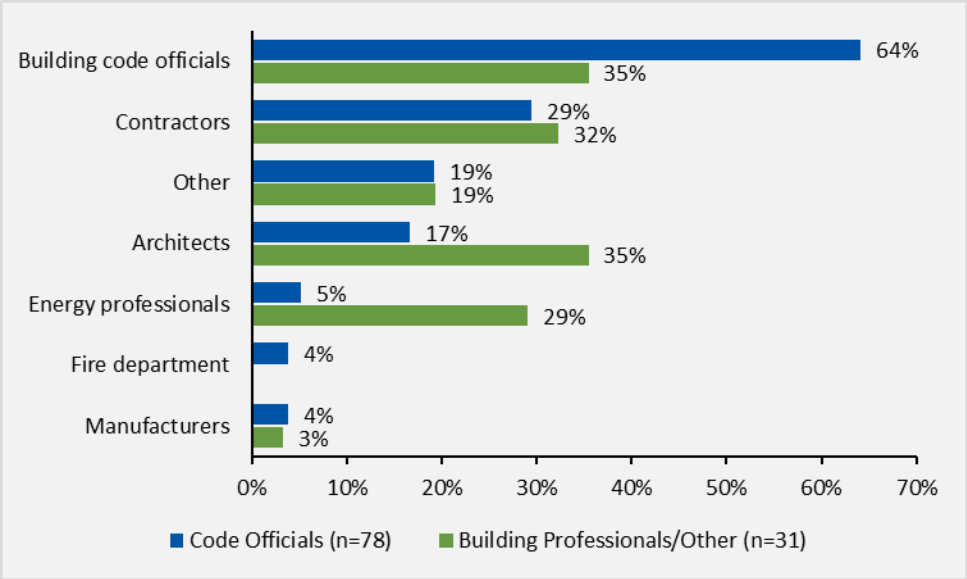
The square footage analysis is based on a relatively low number of responses. As the follow up survey continues to be fielded the estimates provided in this analysis may change due to larger number of responses.

Information Sharing

The Market Evaluation Team had follow-up survey respondents review who they shared information with that they learned at the webinars. As shown in Figure 5, code officials most often shared information with other code officials (64%), which is significantly higher than the

percentage of building professionals who shared information with code officials (35%).[6] Thirty-five percent of building professionals also reported sharing information with architects. The high proportion of code officials sharing with other code officials may be due to the two respondent types most commonly sharing information with others in their own industry.

Figure 5. Webinar Information Shared with Other Professionals



Source: Follow-Up Survey Question: "With which parties listed below have you shared any information from the webinars?" Multiple response allowed, August 2021.

Those who shared information with code officials then estimated how many code officials they shared newly learned information with. Fifty-one respondents answered, with the average response being that each passed information onto an average of 4.2 code officials.

Those who shared information with code officials also estimated how much of what they learned at the webinars they passed on. As shown in Figure 6, respondents most commonly reported sharing 20% of what they learned in the webinars with code officials. Seventeen percent said they had shared everything from the webinars, indicating room for improvement (efforts such as providing links to printable handouts post-webinar, or requesting that implementers suggest sharing lessons learned at the end of a course are options that can be implemented to try and improve information sharing).

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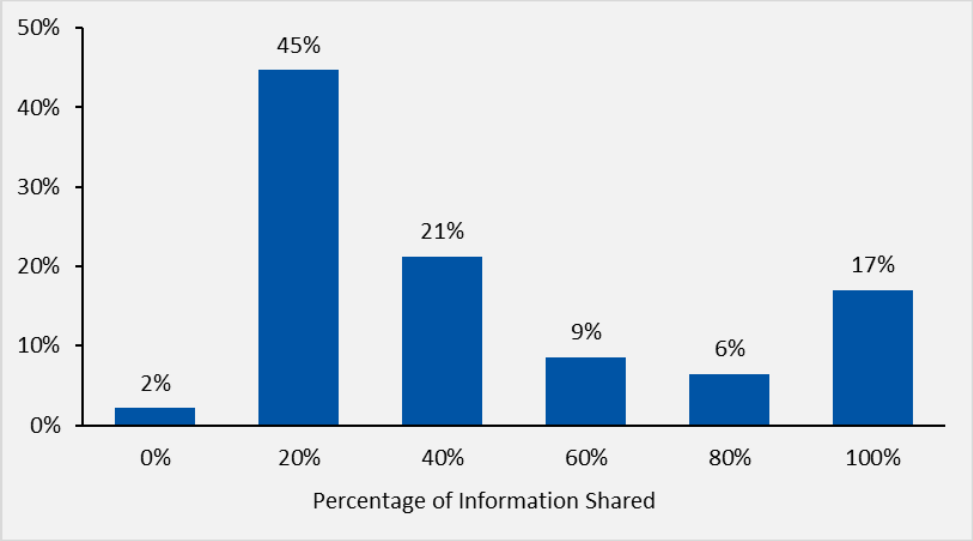
[6] This difference is statistically significant at the 95% confidence level.

Figure 6. Percentage of Information Passed on to Code Officials



Source: Follow-Up Survey Question: "And what percentage of what you learned at the training sessions did you pass on to these [#] code officials? (Your best estimate is fine.)" August 2021.

Respondents also estimated the number of projects worked on by the code officials with who they shared information. As shown in Table 12, respondents estimated that since sharing information learned six months ago, the code officials they educated worked mostly on additions and alterations projects in the residential sector.

Table 12. Number of Projects Affected by Information Shared with Code Officials

Sector	Project Type	Number of Code Officials Educated	n (number of respondents)	Average Number of Projects
Commercial	New Construction	83	31	3.9
	Additions/Alterations	91	31	11.6
Residential	New Construction	78	30	6.2
	Additions/Alterations	73	27	20.4

Feedback on Future Training

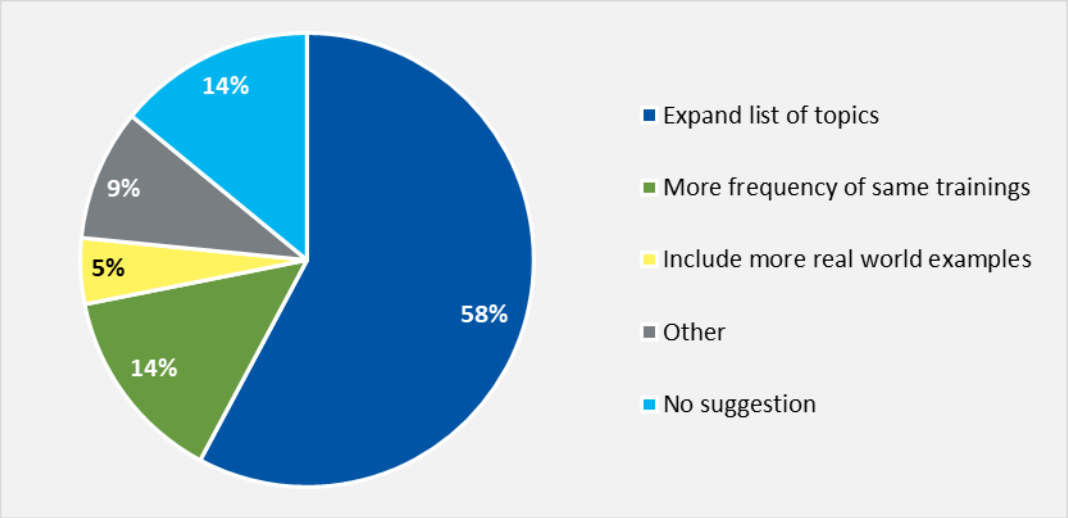
When asked what sort of training they would find most useful for future webinars, more than half of respondents suggested expanding the list of topics, as shown in Figure 7. Respondents suggested several topics for these future webinars to cover:

- COMcheck and REScheck

- Manual J and Manual S
- Passive solar and daylighting
- Constructability challenges due to stretch code on existing buildings
- Solar installations
- Energy modeling
- Commercial signage

Fourteen percent of respondents said they wanted more frequency of the existing training courses; 5% said they would like the existing trainings to include more real-world examples. Fourteen percent of respondents said that they were satisfied with current options and had no suggestions at this time.

Figure 7. Suggestions for Future Webinars (n=64)



Source: Follow-Up Survey Question: "What sort of training topics would you find most useful for [implementer] to cover in future webinars to help you in your work?" August 2021.

The Code to Zero Initiative is currently working to expand the types of topics covered in trainings. Additional training topics under consideration include code issues related to building electrification and addressing thermal bridging issues.

Overall, 69% of follow-up survey respondents rated the value of the webinars they attended as a 6 or 7 on a 7-point scale (with a mean score of 5.83), suggesting that six months after attending respondents were finding the education provided valuable.

COVID-19 Impacts

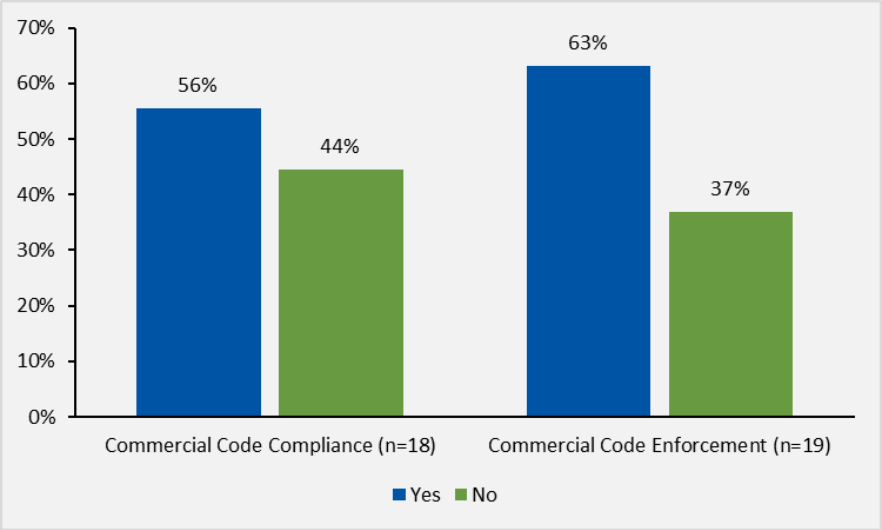
The Market Evaluation Team had follow-up survey respondents consider if the COVID-19 pandemic had impacted commercial and residential building code compliance and enforcement activities. Respondents considered this for the sectors where they previously indicated having work experience.

Commercial Energy Code

Follow-up survey respondents who reported completing projects on commercial properties were asked to note how, if at all, the COVID-19 pandemic had affected energy code compliance and enforcement. As shown in Figure 8, more than half (56%) of respondents observed impacts on commercial energy code compliance, and nearly two-thirds (63%) indicated seeing impacts on commercial energy code enforcement.

Compliance impacts included increased difficulty in interacting with colleagues, difficulty sourcing materials (and the associated costs), and the fact that fewer or less-detailed inspections left room for noncompliant contractors to get away with more noncompliance. The enforcement impacts they noted included a shift to virtual inspections (for some communities), difficulty finding staff willing to conduct site visits, and generally finding it more difficult to work with other people due to social distancing and staffing issues.

Figure 8. COVID-19 Impacts on Commercial Energy Code



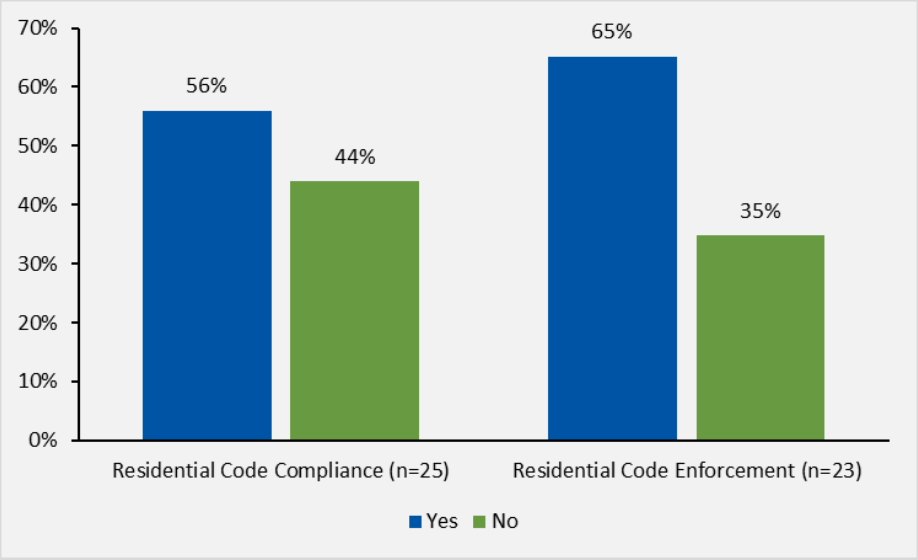
Source: Follow-Up Survey Question: "How has the COVID-19 pandemic impacted commercial code compliance and enforcement?" August 2021.

Residential Energy Code

Follow-up survey respondents who reported completing projects on residential properties were also asked to note how, if at all, the COVID-19 pandemic had affected energy code compliance and enforcement. As shown in Figure 9, more than half (56%) said they had observed impacts on residential energy code compliance (the same as for commercial properties), while nearly two-thirds (65%) indicated impacts on code enforcement (slightly higher than the 63% for commercial code enforcement).

The compliance impacts they noted included both increased timelines for projects (slowed down due to staffing or material sourcing issues), which affected work plans, as well as a lack of adequately trained people and the fact that fewer or less-detailed field inspections left room for noncompliant contractors to get away with more noncompliance. One respondent noted that the timeline delays may have had a positive impact on compliance, due to having more time to spend on compliance while awaiting materials or contractor staff. The enforcement impacts respondents noted included a shift to virtual inspections (for some communities), longer plan review times, and that an increase in retrofit projects placed a burden on code officials who were already struggling, leading to longer timelines for projects.

Figure 9. COVID-19 Impacts on Residential Energy Code



Source: Follow-Up Survey Question: "How has the COVID-19 pandemic impacted residential code compliance and enforcement?" August 2021.

Code Compliance Trends

Follow-up survey respondents were asked to consider the past 12 months and indicate if they felt that during that time compliance with the energy code in New York State had increased, decreased or stayed the same. Overall, 72% of all respondents said they felt that energy code compliance had increased over the past 12 months. Of those respondents who said that they had observed an increase in code compliance, 85% said that they thought the services provided by the NYSERDA technical support and training initiatives had played a role in this increased compliance, 2% said they did not think the NYSERDA initiative was a notable contributing factor, with the remaining 12% not sure.

Respondents who had reported an increase in energy code compliance were also asked to identify other factors that they thought contributed to the increased code compliance in New York State. Respondents identified several factors, including market demand for greater energy efficiency (23%), increased focus on energy code in planning and permitting (22%) and increased builders' knowledge about code requirements (22%). Greater detail on breakdown by respondent job category and the full list of other factors identified by respondents is provided in *Appendix – Detailed Survey Results*.

Jurisdiction In-Depth Interviews

Per the Year 2 work plan and original scope of work, the main purpose of the jurisdictional in-depth interviews (IDIs) is to provide additional information and context around the findings of the Delphi panel (last conducted in Year 1). These findings are based on the experiences of New York State professionals who work with the code in rural, suburban, and urban environments and who have experience with energy code compliance practices, code enforcement, and/or stretch code adoption. Since a panel study was not conducted in Year 2, the Market Evaluation Team reviewed the findings from the IDIs to assess any changes respondents made to their consideration of Delphi panel findings between Year 1 and Year 2. The review focused on the potential for stretch code adoption and any changes to jurisdictional code compliance and enforcement since the implementation of the 2020 ECCCNYS in May 2020.

The Market Evaluation Team intended to interview the same experts in the jurisdictional IDIs each year. However, in Year 2, the Team was only able to re-interview six of the original nine jurisdiction experts. The Team made significant efforts to recruit additional code officials from New York City and other suburban areas. Despite these efforts, the Market Evaluation Team was only able to recruit one additional expert, a code official from New York City. To address this challenge and to reduce the number of respondents who do not wish to participate in interviews in future years, the Market Evaluation Team will streamline the interviews for code officials and building professionals moving forward.

Stretch Code Adoption

Interview respondents were asked to comment on the Delphi panel's finding from Year 1 that approximately 23% of jurisdictions would have adopted the stretch code by 2030 without the support and advocation NYSERDA provides. The new code official respondent from New York City said that he felt this was a low estimate; he said that given increased public awareness of climate issues, there should be more public support across the state for these initiatives. The six respondents from Year 1 all remained consistent with their stance from the previous evaluation and did not change their opinion of the estimate. Of these six respondents, three agreed that, considering all regions of the state, the estimate was reasonable while the other three thought it was a little high.

The respondents who said the Delphi panel estimate was reasonable noted that stretch codes are more likely to be adopted in urban areas where there was more wealth and more code support

staff, and that rural areas are not as likely to adopt. Those who said they thought the estimate was high noted that that rural and low-income areas were unlikely to sign on due to either a lack of support from the local population, or an overall lack of money to afford meeting requirements but did not think as many of the more urban jurisdictions would be interested as the other respondents.

The respondents from the rural and suburban jurisdictions all work under the 2020 ECCCNYS and were asked to discuss the potential for their jurisdiction to adopt the stretch code. A rural code official who had noted in Year 1 that he saw no political appetite for the stretch code in his jurisdiction re-emphasized that sentiment in Year 2. He went on to say that he felt that the state was putting too many barriers in place to implementing projects, particularly for single-family home construction. He observed that in less affluent rural areas families were already struggling to meet the current energy code—a much less a strict version—and he would not put his support behind stretch code adoption in his area.

A rural contractor supported this, and said the state would need to prove that it would create tangible benefits for the local community to get a stretch code implemented in a community like his. Compared to Year 1, the contractor was tentatively more interested in a stretch code, but emphasized that if New York wanted their jurisdiction to implement it, the state would need to provide education to contractors as many struggle to keep up with changing energy codes (he was not aware of the webinars offered by NYSERDA prior to talking with the Market Evaluation Team). He also noted a need for financial support to cover the costs of building to a stricter code. Without more educational and financial support, he was not interested in pushing for a stricter code.

A suburban contractor agreed with the rural contractor regarding what parts of the state might be more open to stretch code adoption, saying “that is more downstate than up here – there is no real conversation.” He also noted that he was not convinced of the benefits of the “incremental gain” between the 2020 ECCCNYS and the stretch code. The other suburban builders said that everything depends on building official buy-in, financial incentives, and education. They went on to say that energy code is perceived as expensive and it would benefit the state to present the business case to prove that implementing the stretch code is not just to meet a statewide goal, but convince local officials and building professionals that buildings do actually work better.

Changes to Compliance and Enforcement

The Market Evaluation Team asked IDI respondents to discuss their opinion of Delphi panel findings on overall energy code compliance: (1) if there were any changes to the way building professional respondents demonstrate energy code compliance, and (2) for code officials, if there were any changes to how they handled code enforcement since the implementation of the new energy code.

For this study, the Team defined the compliance rate as the average percentage of requirements that are in compliance. Overall compliance rate is the average percentage of requirements that are in compliance for the entire building. As described in the following sections, most repeat respondents provided similar feedback to Year 1 findings; any changes to respondent opinion on code compliance estimates are included in the discussion below.

Commercial Energy Code Compliance

Respondents were asked if they agreed with the Year 1 Delphi panel finding that overall commercial new construction energy code compliance was approximately 83% across the state. Those who had commented in Year 1 provided consistent feedback, with the two rural respondents suggesting it should be slightly higher, the suburban respondents agreeing that the panel estimate is about right, and the urban repeat respondent saying she feels that in the city it is closer to 90%, but that is likely lower statewide. The new New York City code official respondent thought that statewide the estimate was high due to the challenges associated with compliance for larger buildings.

For commercial additions and alterations, respondents were asked if they agree with the Delphi panel estimate for overall compliance of 70%. The urban code official respondent said he agreed that the additions and alterations compliance rate was generally lower than new construction and considered the estimate to be fair. Three respondents (the two rural respondents and one suburban respondent) all stated that it should be slightly higher, and estimated 75%. This was consistent with the Year 1 respondents for both rural respondents but was up slightly for the suburban respondent who had agreed with the panel estimate in Year 1.

Respondents were asked if they thought the panel's estimated drop in compliance due to the launch of a new energy code (estimated by the Delphi panel at 7%) was in line with their observations now that they are approximately a year into the new energy code. Two of the four respondents said the estimate was low, one agreed it was about right (while contractors and

builders got up to speed), and another said there should be no notable dip in compliance, despite the lags due to reviewing plans and documents under a new code.

When asked what would help support commercial compliance, respondents provided the following suggestions:

- Increase contractor training opportunities, ideally marketed through local hardware stores (Lowes, etc.)
- Provide resources to help contractors and homeowners know what to buy (what type of insulation, what kind of windows, etc.)
- Improve access to reference books or other printed materials to help guide building professionals, particularly in helping them interpret energy code requirements
- Provide more examples and case studies

Residential Energy Code Compliance

Respondents who work in residential building were asked to consider the same Delphi panel estimate for residential compliance. For new construction in Year 1, the Delphi panel estimated overall compliance at 71% [7] for residential new construction. An urban code official agreed with the panel estimate saying that the Year 1 finding was reasonable. The rural code official also agreed with the panel study finding, which was consistent with his previous response. The rural builder said he felt it should be higher, closer to 75% to 80%, which is up from generally agreeing with the estimate in Year 1. When asked for more detail, he said he felt that higher levels of compliance with HVAC equipment due to new technologies and licensing requirements were beneficial but did caution that his higher estimate depended on contractors statewide being educated on code changes. Two of the suburban builders also provided a higher compliance estimate, both compared to the code officials and to their Year 1 responses. For Year 1, these two suburban builders provided estimates closer to the panel study finding, but for Year 2, they thought it should be higher (estimating 85% to 90%). The third suburban builder said he "hoped" it was higher than 71% when he provided feedback in in Year 1, but in Year 2 he said that between 70% and 80% seemed right.

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[7] In Year 1, IDI respondents were presented with preliminary, unweighted Delphi panel estimates. In Year 2, the respondents were again asked about the preliminary Delphi panel estimates to maintain consistency. The preliminary estimate for residential new construction compliance was 71%, and the final weighted compliance rate was 77%.

For residential additions and alterations, the Year 1 Delphi panel estimated 67%[8] overall energy code compliance. The urban code official again agreed with the estimate, noting that it was in line with his expectations. The rural code official also agreed, estimating 65%, consistent with his Year 1 feedback when he noted that this type of project has less stringent requirements to prove compliance. For Year 2, he said that additions often get started before permitting is complete and that the requirements are less intuitive for builders as they are working on an existing structure. The rural builder also agreed with the Delphi panel estimate in his Year 2 feedback compared to his Year 1 response. In Year 1, he suggested compliance should be higher for these projects because "whether new or building on to something… its inspected." In his responses to the question in Year 2, he considered that due to the costs of compliance, people may try to avoid costly upgrades.

The two suburban builders who work on residential retrofit projects both thought the estimate (of 67% overall) was too high, consistent with Year 1 findings. For Year 1, feedback included that the implementation and interpretation of code was more complex for additions and alterations and that working with pre-existing structures made compliance more difficult. For Year 2, one respondent estimated 55% and agreed that additions and alterations compliance is lower than new construction in general.

When asked if they thought the Delphi panel's estimated drop in compliance due to the launch of a new energy code (estimated by the Delphi panel at 9%) was in line with what they observed, the urban code official said, like for commercial code, he thought the decrease should be less, stating that compliance needed to be proven before applications are approved so that only non-reviewed projects are affected. The rural code official, on the other hand, agreed with the Delphi panel's estimate, saying that it would be a slightly bigger and longer dip in compliance for residential than commercial. This is because builders in this market are slower to get up to speed on the new code, and in his jurisdiction, they push back more with a "this is how we have always done things" mentality. He also said that residential builders are just more attuned with costs in their area and more focused on owners' budgets than commercial builders. The rural builder went on to say he felt the estimate was low, saying that it is harder for contractors and homeowners to

[8] The preliminary estimate for residential alterations compliance was 67%, and the final weighted compliance rate was 71%.

comply with new changes in residential building. For the suburban respondents, all three building professionals agreed that around 9% was reasonable, looking statewide.

When asked what would help support residential compliance, respondents provided the following suggestions for Year 2:

- Offer cost reduction measures or subsidies
- Provide assistance to builders to help address complex compliance challenges
- Provide more opportunities for contractors to attend trainings
- Offer tip lines to connect builders with a "pro" when questions come up
- Provide more support to rural and small-town code officials
- Provide more examples and case studies
- Increase educational efforts

Energy Code Enforcement

The new urban code official for Year 2 said code officials in New York City use standard enforcement activities, including visiting job sites that are being permitted and issuing violations to noncompliant projects. He said that making sure buildings are built to the approved design is the most significant challenge to energy code enforcement because inspectors would need to be on site at the moment when certain components are installed in order to catch some of those issues and that is not always possible. He did note that he felt a way to address this was to invest in specialized inspectors for building components, who would then supply a form to the building department to prove compliance with that component. This is similar to Year 1 and Year 2 feedback from one of the building professionals who suggested using outside professionals as a tool to monitor compliance as a way to improve energy code compliance when local building department staff were overwhelmed.

Most of the six respondents from Year 1 noted that after some slow-down due to adjusting COVID-19 safety requirements (PPE, sanitizing products, etc.), little had changed in the way the code is enforced in their jurisdictions since the new code was implemented (with enforcement being conducted through conventional plan review and inspection processes). However, one urban building professional said the methods were the same, but that two more drawings are required by the Department of Buildings: a plan to guide the inspector and thermal bridging calculations. Additionally, a rural code official noted greater usage of virtual meetings. He said

this allowed his team to stay on top of projects, but said he felt it did not allow for the same level of control as they had to rely on the person holding the tablet or device. However, he did think this was a helpful tool and that they may continue to utilize virtual meetings for certain types of contact with builders.

COVID-19 Impacts

The Market Evaluation Team added questions for the Year 2 guide for the jurisdictional contacts to ask about impacts from COVID-19. Building professionals and code officials were asked to comment on the impacts of the COVID-19 pandemic on building code compliance and enforcement in their jurisdiction. Overall, while respondents noted impacts on their work (commonly delays and unexpected expenses), few respondents thought that COVID-19 had significantly impacted overall compliance or enforcement activities.

1.1.1.1 Code Compliance (Building Professionals)

Building professionals said the main impacts from COVID-19 were overall impacts on project timelines and building department delays. Builders reported that in 2020 they needed to invest in PPE, which added costs and slowed down work, and that there were further delays in getting permits and scheduling inspections (one suburban respondent noted this extended from days to weeks). Two building professionals also noted projects slowed down due to supply chain issues and increased costs of materials. One rural respondent also noted the high cost of wood, and a suburban respondent noted the high cost of materials overall. While these factors did not directly affect the compliance of the completed project, they added challenges to builders in completing projects to plan and to budget. Another suburban building professional noted that any time there is "turmoil" in the process, that it affects code compliance as code officials are stretched thin. She noted that this was likely to affect compliance as verification and inspection activities were reduced. An urban builder said the threat of having the local building department staff show up on site was slightly decreased, but that overall the impact on compliance was not significant.

1.1.1.2 Code Enforcement (Code Officials)

The urban code official, as previously noted above, said that he and his team completed many more virtual inspections that ever before. He said there were a lot of home projects during 2020 and 2021 (so far) and they had to keep projects moving forward. He said virtual inspections affected the level of detail collected during the inspections and that access to high-speed internet could be a challenge. However, he said his team was able to complete more inspections in his

rural area, whereas in-person inspections could mean driving hundreds of miles a day—this created a trade-off between doing more frequent inspections virtually but losing some of the detail of a "boots on the ground" inspection (this could potentially continue to be a way to reach rural areas more frequently for those inspections where an in-person visit may not be necessary; for areas with few code officials, lessons learned during COVID-19 can be investigated in future years to see if these methods continue to offer ways to improve enforcement). The urban code official did not note any big impacts and said that construction continued as planned, though there was a reduction in the number of inspections and a transition in the building department to remote working.

New Technologies

In Year 2, the Market Evaluation Team asked respondents to consider what new and emerging technologies they observed for creating greater energy savings. A rural contractor said a barrier in his jurisdiction to new technologies for electrification and electric equipment is frequent power outages in bad weather. He did note that the energy towers in the area were being upgraded, which should support installation of better and more energy efficient equipment in buildings. He said "that is key to updating buildings, and making sure equipment will work as expected."

Respondents noted the following new or emerging energy-saving technologies and strategies they are seeing in their jurisdictions:

- More mini-splits due to ease of installation (but still hindered by upfront cost)
- Heat pump PTACs (respondent noted that like mini-splits, this was also an attractive technology option due to ease of installation in a retrofit)
- Heat pump water heaters
- Energy recovery ventilation systems with HVAC installation
- Use of spray foam insulation in joists
- Use of rigid foam insulation on the exterior
- More solar
- Geothermal heat pumps

Two respondents also noted more use of blower-door tests. While this is not a new technology, they noted seeing it used more regularly, which is leading to a stronger focus on achieving good building envelope construction.

When discussing the potential for implementing new technologies, one suburban building professional respondent noted that before adding more layers of code the state needed to ensure inspectors are up to speed on the new 2020 ECCCNYS requirements, citing his observation that smaller towns in upstate New York are struggling to keep up with code changes and are overwhelmed.

Additionally, one urban builder noted that, while not a technology, a greater range of buildings should be required to file benchmarking reports with portfolio manager (currently it is buildings 25,000 sq ft or larger)[9] and that it should be expanded statewide. She said this provided the city's builders with a great deal of data and helped them create plans, and generally helped generate useful data for future projects.

[9] New York City Local Law 84 - https://www.linkedin.com/pulse/calling-all-nyc-buildings-over-25000-sq-ft-city-grade-alex/

Preliminary CEF Savings Estimates

In Year 2, the Market Evaluation Team calculated a preliminary estimate of the Code to Zero Initiative for stretch code adoption and for the impacts associated with trainings with budget from the Clean Energy Fund. Table 13 shows the estimated savings for 2020 and 2021 in terms of energy, demand, and fossil fuel savings. For 2021 stretch code adoption and training impacts, the Market Evaluation Team used the 2020 impacts. This is because the total 2021 building square footage, an important component of the savings calculation, was not yet available. The Team will update the 2021 estimates during the next evaluation cycle.

Table 13. Preliminary Savings Estimates

	Electric Savings (GWh)		Demand Savings (MW)		Fossil Fuel Savings (Billion BTU)	
	2020	2021	2020	2021	2020	2021
Stretch Code Adoption	4.10	6.57	1.1	1.7	6.76	10.97
Training	49.01	49.01	13.8	13.8	71.45	71.45
Total	53.11	55.58	14.9	15.5	78.22	82.42

Because two sources provided funding for the Code to Zero Initiative in 2020, the Clean Energy Fund and the Technology and Market Development Program, the Team adjusted 2020 savings based on the percentage of funding coming from the Clean Energy Fund. The revised 2020 estimate is shown in Table 14.

Table 14. Budget Adjusted Preliminary Savings Estimate

	Electric Savings (GWh)		Demand Savings (MW)		Fossil Fuel Savings (Billion BTU)	
	2020	2021	2020	2021	2020	2021
Stretch Code Adoption	4.05	6.57	1.1	1.7	6.68	10.97
Training	48.39	49.01	13.6	13.8	70.55	71.45
Total	52.44	55.58	14.7	15.5	77.24	82.42

Stretch Code Adoption

To calculate the impacts of stretch code adoption, the Market Evaluation Team used the following variables: Jurisdictions that have adopted the NYStretch Code, the building square footage affected by NYStretch Code adoption, and the per-square-footage change in energy use intensity per square foot affected. Additionally, the Team applied an attribution factor estimating the percentage of energy savings from jurisdictions' stretch code adoption that should be attributed to the Code to Zero Initiative.

Variable	Source/Notes
Affected Square Footage	Dodge data provided by NYSERDA: assumed square footage is evenly distributed throughout

Variable	Source/Notes
	the year and assumed compliance with the code was achieved upon adoption of the code Assumed 2021 construction is the same as the 2020 pace Adjusted county-level Dodge data to jurisdictions based on census information
Attribution Factor	Market Evaluation Team panel based interviews with NYSERDA initiative manager and New York City Code official
Energy Use Intensity Change Per Square Footage	Cost-Effectiveness of ASHRAE Standard 90.1-2016 for the State of New York, August 2020, Pacific Northwest National Laboratory Cost-Effectiveness Analysis of the Residential Provisions of the 2018 IECC for New York, April 2021, Pacific Northwest National Laboratory NYSERDA 2020 NYStretch Energy Code Commercial Cost Effectiveness Analysis: July 2019 NYSERDA Energy Savings and Cost-Effectiveness Analysis of the 2020 NYStretch Energy Code Residential Provisions: July 2019

Table 15 details the total impacts of the adoption of the NYStretch Code. The Market Evaluation Team identified 15 jurisdictions that have adopted the NYStretch Code across all three climate zones. Most significantly, NYC adopted the NYStretch Code in May of 2020. NYC contains greater than 99% of the affected square footage and energy savings of code adoption.

Table 15. Local Impacts of New York Stretch Code Adoption

Jurisdiction or Climate Zone	Stretch Code Enhanced (1,000 sq ft)	Adoption Date	Attribution Factor	Electric Energy Savings (MWh)	Electric Demand Savings (MW)	Fossil Fuel Savings (Million BTU)
Statewide Total	**45,279.7**	**N/A**	**34%**	**10,670**	**2.768**	**17,734**
NYC - Total	44,834.7	N/A	33%	10,405	2.699	17,038
New York City	44,834.7	5/12/2020	33%	10,405	2.699	17,038
Climate Zone 4 - Total	258.4	N/A	75%	136	0.035	244
Hastings-on-Hudson, Village of	48.3	6/16/2020	75%	26	0.007	46
Dobbs Ferry, Village of	49.5	11/10/2020	75%	26	0.007	47
Bedford, Town of	5.7	2/2/2021	75%	3	0.001	5
New Rochelle, City of	121.0	4/20/2021	75%	64	0.017	114
Ossining, Town of	27.7	5/11/2021	75%	15	0.004	26
Mamaroneck, Town of	6.1	6/16/2021	75%	3	0.001	6
Climate Zone 5 - Total	117.6	N/A	75%	83	0.022	266
Beacon, City of	111.5	4/20/2020	75%	79	0.021	251
Niskayuna, Town of	5.3	4/27/2021	75%	4	0.001	12
Lima, Village of	0.8	4/27/2021	75%	1	0.000	2
Climate Zone 6 - Total	68.9	N/A	75%	45	0.012	187
Kingston, City of	45.0	4/6/2021	75%	30	0.008	121
Bethel, Town of	8.6	5/12/2021	75%	6	0.001	24
Dryden, Town of	2.5	5/20/2021	75%	2	0.000	7
Montour Falls, Village of	9.0	2/18/2021	75%	6	0.002	25

Jurisdiction or Climate Zone	Stretch Code Enhanced (1,000 sq ft)	Adoption Date	Attribution Factor	Electric Energy Savings (MWh)	Electric Demand Savings (MW)	Fossil Fuel Savings (Million BTU)
Marbletown, Town of	3.7	6/1/2021	75%	2	0.001	10

The Market Evaluation Team convened an internal panel of experts to estimate the attribution that the Code to Zero Initiative should receive based on the initiative's work to develop and promote the NYStrech code. The internal panel made the following determinations following an interview with the initiative manager and an interview with a New York City code official:

- For New York City, the internal panel estimated that 33% of the savings from adopting the stretch code is attributable to the initiative. This attribution is for the following reasons: New York City has a history of adopting local codes that are more stringent then state code and would have adopted a more stringent code regardless of NYSERDA's stretch code work. However, NYSERDA engaged with New York City throughout the development of NYStrech. Therefore, the internal panel determined that NYSERDA facilitated the adoption of a more stringent code and contributed to New York City adopting a code that was more energy efficient than what they would have otherwise adopted.
- For other municipalities, the internal panel estimated that 75% of the stretch codes savings are attributable to the Code to Zero Initiative. Without NYSERDA, the jurisdictions adopting the stretch code would not have had a code to adopt. However, the initiative cannot take full credit for the savings from these municipalities since the NYSERDA Clean Energy Communities Leadership Round (CECLR) provided significant incentives for the adoption of stretch codes. Additionally, CECLR promoted the stretch code and many municipalities may not have heard about the opportunity to adopt stretch codes without the CECLR's work.

Training Impacts

To calculate the impacts of trainings the Market Evaluation Team used the following variables: the building square footage affected by trained code officials and building professionals, the

percentage of increased compliance resulting from training activities, the per-square-footage change in energy use intensity per square foot affected. Table 16 identifies the source for each of these variables.

Table 16. Data Sources for Training Impacts Validation

Variable	Source/Notes
Affected Square Footage	Market square footage according to Dodge data provided by NYSERDA: square footage estimates reduced to account for above code new construction based on initial NYSERDA estimates of 15% for residential new construction and 30% for commercial new construction
Change in Compliance Due to Initiative	Benchmarked: Massachusetts TXC47 Non-Residential Code Compliance Support Initiative Attribution and Net Savings Assessment, July 26, 2018, NMR and Cadmus
Energy Use Intensity Change Per Square Footage for Percentage of change in Code Compliance	Cost-Effectiveness of ASHRAE Standard 90.1-2016 for the State of New York, August 2020, Pacific Northwest National Laboratory Cost-Effectiveness Analysis of the Residential Provisions of the 2018 IECC for New York, April 2021, Pacific Northwest National Laboratory

Originally, the Market Evaluation Team intended to base affected square footage on follow-up survey responses with training participants and then attribute an average impact to the population of trainees. However, the average square footage estimates applied to training participants would have yielded an impacted area that was greater than the total market. The high square footage estimate from training surveys was probably due to the code officials and building professionals working on the same projects or respondents providing inaccurate responses estimates about the

scale of their work. Due to the high square footage estimates with the original methodology, the Market Evaluation Team applied the total market square footage for training impacts.

Table 17 shows the preliminary energy savings impacts from trainings for 2020 (square footage estimates for 2021 were not yet available when the analysis was conducted). The table shows the various building segments, market square footages, and final electric savings and fossil fuel savings. The final estimated 2020 energy savings is 49,014 MWh, the demand savings estimate is 13.82 MW, and the fossil fuel savings estimate is 71,453 MMBTU.

Table 17. Preliminary Energy Savings Impacts: Training

Segment	Market Square Footage (thousand sq-ft) [a]	Energy Savings (MWh/year)	Energy Savings (MW)	Energy Savings (MMBTU/Year)
Statewide Total	**71,921**	**49,014**	**13.82**	**71,453**
Commercial New Construction	42,258	35,332	10.70	33,723
Commercial Major Alteration and Additions	5,511	6,464	1.92	6,169
Residential New Construction	23,999	7,164	1.19	31,326
Residential Major Alteration and Additions	153	54	0.01	235

[a] Dodge data provided by NYSERDA: square footage estimates reduced to account for above code new construction based on initial NYSERDA estimates of 15% for residential new construction and 30% for commercial new construction

Technology and Market Development Savings Calculation

In Year 2, the Market Evaluation Team calculated the energy impacts of the Code to Zero Initiative under the Technology and Market Development funding framework. *Appendix - Technology and Market Development Analysis Memo* includes the full description of the analysis. The Market Evaluation Team estimated impacts for 2015 through 2020. Table 18 shows a full accounting of the impacts.

Table 18. Code To Zero Energy Savings

Savings – Total	2015	2016	2017	2018	2019
Electric					
Usage Savings (GWh)	116.88	78.88	88.35	84.19	89.00
Demand Reduction (MW)	33.2	22.5	25.0	23.8	25.4
Fossil Fuel					
Savings (Billion Btu)	135.40	106.56	103.51	100.13	100.69

Funding for the Code to Zero Initiative was provided from the Technology and Market Development Program and from the Clean Energy Fund in 2017 through 2020. Because the proportion of budget allocations differed by year, NYSERDA adjusted the savings estimates provided above according to relative budget fund. After adjusting for budget allocation, the Code To Zero Energy savings under the Technology and Market Development Program (Table 19).

Table 19. Code To Zero Energy Savings with Technology and Market Development Funding: Adjusted for Budget Allocation

Savings – Total	2015	2016	2017	2018	2019
Electric					
Usage Savings (GWh)	116.88	78.88	88.01	62.60	27.21
Demand Reduction (MW)	33.2	22.5	24.9	17.7	7.8
Fossil Fuel					
Savings (Billion Btu)	135.4	106.6	103.1	74.5	30.8
%	100%	100%	100%	74%	31%

Policy Analysis

In Year 2, the Market Evaluation Team began work projecting the impacts of a net zero construction code and complementary building policies in New York State. The project seeks to identify the parameters of a potential net zero code and relevant policies; model the energy use of various buildings under these policy alternatives; and extrapolate these findings to understand statewide energy, cost, and emissions impacts. Using a series of agreed-upon building energy models from the Department of Energy (Table 20), the Market Evaluation Team is working to estimate changes in customer costs, energy consumption and carbon emissions resulting from the adoption of six discrete policies recommended by the Energy Efficiency and Housing Panel of the Climate Action Council (see Table 21).

Table 20. Policy Analysis Reference Models

Building Category	Typology	Vintage
Residential	Single-Family Home	New Construction
		1980s
		Pre-1940
	Low-Rise Multifamily	New Construction
		1980s
		Pre-1940
	Mid-Rise Multifamily	New Construction
		1980s
		Pre-1940
Commercial	Stand-Alone Retail	New Construction
		1980s
		Pre-1940
	Education (secondary)	New Construction
		1980s
		Pre-1940
	Medium Office	New Construction
		1980s
		Pre-1940

Table 21. Proposed Code and Policy Levers with Implementation Timeline

Policy	Lever	Implementation Timeline
Codes: Adopt Advanced Energy Codes for New Construction/ Major Renovation to advance CLCPA goals at points of capital investment	Expand existing building triggers in the Energy Code	2025: Single Family Homes 2030: Multifamily & Commercial
	Net Zero Carbon Construction Code (new construction and major renovation)	2025: Single Family Homes 2030: Multifamily & Commercial
	Require onsite renewables (solar PV, geothermal) for new construction and major renovation of rooftops	2023: All sites
Performance Standards for Existing Buildings: Adopt Performance Standards for Existing Buildings to assist in improvement towards zero carbon over time	Punitive standard for excess emissions (like NYC LL97)	2030: Large commercial properties
	Required energy use data disclosure at point-of-sale/point-of-lease	2023: Large multifamily & commercial 2025: All multifamily & commercial 2027: Single Family Homes
	Energy Audit/Retro-commissioning required	2025: Large multifamily & commercial

Using these building energy models, market segmentation, and new construction data from the NYSERDA Building Efficiency and Electrification Model (BEEM) tool, the Market Evaluation Team is developing a stock turnover model to identify the statewide impacts of these codes and policies through 2050.

To date, the Team has developed clear parameters for the net zero code and other related policies, developed the initial building models and a new relational database tool for managing EnergyPlus models, and established a framework for extrapolating energy model findings into a stock turnover analysis. This includes the following activities:

- Conducted in-depth literature reviews to identify specific performance and installation requirements for a net zero construction code building off of the state's current stretch code.

- Tailored its relational database tool to manage the high volume of building energy models required to assess market-wide impacts at a granular level.
- Developed baseline and measure building energy models for the new construction analysis of each of the six building typologies in each of the three climate zones.
- Worked with the NYSERDA BEEM team to capture costs, market segmentation, and construction projection data necessary to assess statewide energy, cost, and emission impacts.

The project will run through the end of 2021, with expected deliverables phased across the end of the year. Beginning with the new construction analysis, the Market Evaluation Team will provide outputs from its energy modeling and stock turnover analysis at the end of September, October, and mid-November according to the schedule detailed in Table 22.

Table 22. Policy Analysis Schedule

October 1	October 29	November 19
New Construction Net Zero Code Analysis: Energy, cost, and emissions impacts to new construction buildings of the net-zero new construction code.	**Existing Building Analysis & Retrocomissioning:** Energy, cost, and emission impact of the net-zero building code and retrocomissioning policy on existing building retrofits.	**Complimentary Policy Analysis:** Energy, cost, and emission impacts of the on-site renewables, expanded code triggers, data disclosure, and performance requirement policies on new and existing buildings.

Findings and Recommendations

The Market Evaluation Team offers the following findings for Code to Zero Initiative activities occurring between March 2020, when activities primarily funded by the CEF were launched, and August 2021 and recommendations for future initiative years.

Finding 1: The Code to Zero Initiative is reaching a very significant number of code officials and building professionals.

Training records indicate that Code to Zero Initiative trained 4,763 unique code officials and building professionals in 2020 and 1,408 unique code officials and building professionals in 2021. The total number of persons attending training sessions, not accounting for the same individual attending trainings was 18,603, including trainings held before March 2020. Training participants represented all areas of the state. While most of the training participants were code officials (77%), trainings also touched a significant number of building professionals. The initiative's progress in providing trainings has allowed NYSERDA to make progress towards the Code to Zero goal of training 13,250 individuals..

Further expanding the impact of the trainings, both code officials and building officials share the information they learn in trainings with other professionals; most notably, 64% of code officials said that they shared what they learned in trainings with other code officials. Additionally, based on estimates from training participants regarding the square footage that they worked on following the training, the initiative touched, through its training, much of the construction market in New York State.

Finding 2: Training has affected the work of code officials and building professionals.

Training participants rated the trainings highly in terms of relevance to their work and quality in surveys conducted immediately after participation. All courses received nearly the best possible score from survey respondents in terms of quality of information, relevancy to work, and likelihood to recommend. When surveyed six months after participation, over half of training attendees indicated that they adjusted their work due to the trainings, primarily due to greater understanding of the energy code. Additionally, 72% of training participants indicated that they felt code compliance had increased in the past year.

Finding 3: To date, 15 jurisdictions have adopted stretch codes; however, the impact is largely concentrated in New York City.

To date, 14 municipalities and New York City have adopted a stretch code. On a square footage basis, the impact of stretch code adoption is largely concentrated in New York City (98% of the square footage of stretch code adopting jurisdictions) due to its large size, and the relatively small size of the other jurisdictions. With the adoption of stretch codes by 15 jurisdictions, the initiative's goal of 10 jurisdictions adopting a stretch code has been surpassed.

Recommendation: To maximize the impact of stretch code adoption on energy savings, the initiative should consider focusing stretch code promotion on medium and large jurisdictions that represent sizable construction markets.

Finding 4: Survey findings suggest that code compliance is increasing, at least partially due to NYSERDA's programmatic activities.

The Code to Zero Initiative seeks to increase code compliance by 10%. While the Year 2 evaluation did not include a measurement of code compliance over the previous year, training participants indicated that they believed code compliance had increased since last year and that NYSERDA deserved credit for this trend. Additionally, representative jurisdiction experts expressed they generally thought code compliance had increased since their previous interviews, conducted in Year 1.

Evaluation Methodologies

In Year 1, the Market Evaluation Team used the findings from the Delphi panel and jurisdiction in-depth interviews to establish baseline estimates and assess progress toward the initiative's goals. In Year 2, the Team finalized the methodology for estimating the initiative impacts, began collecting training survey responses from training participants, and conducted additional interviews with representative jurisdictions.

Training Participant Survey Process

The Market Evaluation Team launched the immediate survey in June 2020. The surveys were sent out to webinar participants immediately after participation in the training sessions; participants received a survey invitation for every training session they attended, which allowed the Team to potentially gather feedback on multiple training topics for each attendee. Results from the objectives listed below are shown in this chapter; the other survey questions are covered in *Appendix – Detailed Survey Results*.

Representative Jurisdiction In-Depth Interview Process

Between May and July 2021, the Market Evaluation Team reached out to reinterview the nine survey respondents from Year 1, as well as recruit an additional code official respondent. The Team was able to successfully reinterview six of the nine respondents, as well as recruit one additional new code official, for a total of seven IDIs. The Team exhausted outreach attempts for the remaining contacts from Year 1, but one was out on maternity leave, and the other two did not provide any response to outreach attempts. The Team also attempted to reach out to additional code officials in several alternate jurisdictions to the suburban town, but received few responses, and all responses received noted that building department staff were not available due to staffing shortages and busy schedules.

Table 23 shows the count of completed interviews for Year 2 by jurisdiction type and work category.

Table 23. Completed Year 2 In-Depth Interviews by Jurisdiction Type

Jurisdiction Type	Building Professionals	Code Officials
Urban	1	1
Suburban	3	0
Rural	1	1

Clean Energy Fund Savings Validation

In Year 2, the Market Evaluation Team conducted a preliminary calculation of the energy saving attributable to the Code to Zero Initiative in 2020 and 2021 under the Clean Energy Fund budget. The full methodology was presented to NYSERDA during the evaluation period in memorandum format and is attached (*Appendix – Clean Energy Fund Analysis*).

Stretch Code Adoption

The Team first determined the building areas enhanced by a jurisdiction's adoption of the NYStretch Code through Dodge data by the year of the permit. To calculate the areas affected by a jurisdiction's mid-year adoption of the NYStretch Code, the Team assumed construction was evenly distributed throughout the year. For example if the code were adopted on June 30, the permitted areas were assumed to include half of the years permitted construction.

To estimate the energy impacts of the NYStretch Code, the Market Evaluation Team used the energy use intensities from the cost-effectiveness analysis of the commercial[10] and residential codes.[11] The Team analyzed the energy use intensities for residential and commercial buildings by climate zone (and for NYC due to separate baseline code) for electricity and fossil fuels.

The Team estimated the energy savings for the NYStrech Code to exclude energy savings from expected participation in other above code programs, including ENERGY STAR and utility-sponsored programs. The Team also assumed that compliance with the NYStrech Code was comparable to the 2020 statewide and NYC energy codes. This analysis considers the energy use intensities and compliance rates with the NYStretch Code of 2020 with ASHRAE 90.1-2013, ASHARE 90.1-2016, 2015 IECC, and the 2016 NYCECC.

Increased Code Compliance Due to Training

To estimate the impacts of training, the Team first analyzed survey data to determine the average square footage affected by code officials and building professional following training attendance. The Team then applied these per-trainee effects to the number of overall training participants and found that the total building square footage affected would have exceeded the total market square

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[10] NYSERDA 2020 NYStretch Energy Code Commercial Cost Effectiveness Analysis (July 2019)

[11] NYSERDA Energy Savings and Cost-Effectiveness Analysis of the 2020 NYStretch Energy Code Residential Provisions (July 2019)

footage, as shown in the 2020 Dodge data. There are two potential reasons for this discrepancy: (1) double counting when two training participants, such as code officials working in the same building department, work on the same projects, and (2) that survey respondents were not able to accurately represent the scale of their work following the trainings. Accordingly, based on the significant number of trainees, the Team assumed that the initiative touched the entire New York market through its training initiative and applied training effects to the entire market, as determined by Dodge data. The Team adjusted the Dodge data to account for homes that are built better than code.

While final evaluation will determine the percentage of compliance change that should be attributed to the Code to Zero Initiative through an independent expert panel, the preliminary savings estimation relied on a benchmarked value from a code compliance study conducted in Massachusetts. The study estimated that a similar program effected a 5% compliance increase in that state, which the Team applied to preliminary savings for this report. This percentage increase is a primary driver of the preliminary savings estimate. The independent expert panel, when presented with findings from the evaluation, may determine a different training impact on code compliance. As such, the preliminary savings estimates are highly sensitive to the determination of the independent panel. The 5% benchmarked value was sourced from the following study: Massachusetts TXC47 Non-Residential Code Compliance Support Initiative Attribution and Net Savings Assessment: July 26, 2018: NMR and Cadmus.

While an independent panel will base a final assessment on the percentage of code compliance increase that is attributable to the Code to Zero Initiative, and the 5% benchmarked value presents a preliminary estimate, findings from survey research (which will be reviewed by the independent panel) indicate that the initiative is likely to increase code compliance across the state. The following findings from the Year 2 research indicate this directional trend:

- Trainings touch a large number of code officials and building professionals from across the state.
- Training participants indicate high satisfaction with training courses and relevance of training courses.
- Over half of the training participants indicated that they have adjusted their work following the trainings.
- Code officials and building professionals indicated that they believe code compliance has increased over the last year and that NYSERDA has played a role in this trend.

- Representative jurisdiction expert expressed they generally thought code compliance had increased since their previous interview, conducted in Year 1.

To calculate the change in energy use intensities for each percentage of change in code compliance, the Team gathered the code energy use intensities from ASHRAE 90.1-2016 for commercial building and the 2020 ECCCNYS for residential buildings in each of the three climate zones. We then calculated a baseline energy use intensities (EUI) for each zone using the following equation:

$$Baseline\ EUI = \frac{Code\ EUI}{Benchmark\ Compliance\ Rate}$$

To determine the EUI from increased code compliance the team used the following equation;

$$Compliance\ EUI = \frac{Code\ EUI}{Benchmark\ Compliance\ Rate + 1\%}$$

The energy savings for one percentage increase in compliance was calculated as the difference between the Baseline EUI and the Compliance EUI.

Table 24. Energy Use Intensities Changes due to Increased Code Compliance

Segment	Climate Zone	Change in Energy Use Intensity per % change in compliance		
		MWh/thousand sq ft	kW/thousand sq ft	Million BTU/thousand sq ft
Commercial New Construction	4A	0.186	0.055	0.089
Commercial New Construction	5A	0.142	0.042	0.239
Commercial New Construction	6A	0.133	0.055	0.378
Commercial Additions and Alterations	4A	0.260	0.077	0.124
Commercial Additions and Alterations	5A	0.199	0.059	0.335

Segment	Climate Zone	Change in Energy Use Intensity per % change in compliance		
		MWh/thousand sq ft	kW/thousand sq ft	Million BTU/thousand sq ft
Commercial Additions and Alterations	6A	0.186	0.055	0.531
Residential New Construction	4A	0.057	0.009	0.213
Residential New Construction	5A	0.061	0.010	0.277
Residential New Construction	6A	0.062	0.010	0.309
Residential Additions and Alterations	4A	0.067	0.011	0.250
Residential Additions and Alterations	5A	0.071	0.012	0.325
Residential Additions and Alterations	6A	0.073	0.012	0.363

Technology and Market Development Savings Calculation

In Year 2, the Market Evaluation Team calculated the energy impacts of the Code to Zero Initiative under the Technology and Market Development Budget. The results and methodology presented to NYSERDA during the evaluation period in memorandum format, which is attached (*Appendix - Technology and Market Development Analysis Memo*).

Appendix – Detailed Survey Results

Introduction

This memo provides quarterly results from the Market Evaluation Team's ongoing evaluation of the energy code training provided in a series of instructional sessions through NYSERDA's Code to Zero Initiative. This memo provides analysis of data collected from the immediate and follow-up surveys (conducted approximately six months after trainees attended a session) and expands on the more condensed results of immediate surveys that are provided in the monthly summary memo.

The energy code training sessions are delivered to participants by the Urban Green Council (UGC), Newport Ventures, and Performance Systems Development (PSD). A third implementer, Karpman Consulting, has not yet provided registration information. Feedback on the training sessions is primarily captured through an immediate survey administered via email after each course. The immediate survey collects key information about training attendees and their experience with the training sessions. This quarterly memo summarizes results from the following immediate survey topics:

- Participant demographics and regions in which they work
- Participant knowledge of the Energy Conservation Construction Code of New York State (ECCCNYS) before and after attending the training
- Participant knowledge of the New York City Energy Conservation Code (NYCECC) before and after attending the training
- Participant knowledge of the NYStretch Energy Code (NYStretch) before and after attending the training
- Participant satisfaction with key training aspects
- Participant perception of the usefulness of training topics and suggestions on areas of improvement

Follow-up surveys are more focused on actions taken by training attendees after the sessions, as well as general activities and knowledge of code compliance and code adoption. The memo summarizes results from the following follow-up survey topics:

- Work procedures that have changed due to participation in NYSERDA trainings
- Participant and jurisdiction energy code characteristics

- Information filled with code officials for different project types
- Perceived changes in code compliance over time, and the potential impact of NYSERDA webinars on that change
- Participants' perception of the value of webinars after six months

Table 25 provides the current immediate survey response rate for each implementer, as well as the overall response rate. A list of specific courses for which surveys were distributed is included at the conclusion of this Appendix. The data provided in this memo reflect the cumulative responses received from training participants to date (training sessions were delivered between January 5, 2021, and July 29, 2021).

Table 25. Immediate Survey Response Rate

Implementer	Surveys Sent	Responses Received	Response Rate
UGC	479	151	32%
Newport Ventures	51	10	20%
PSD	5,098	723	14%
Total	**5,628**	**884**	**16%**

The first round of follow-up surveys was distributed in March 2021 to those who participated in webinars in September 2020. Those who completed a follow-up survey in one month, will not receive another invitation in a later month to ensue no double counting of experience and feedback. Of those who received a survey invite, 125 respondents completed the survey, with an additional 116 recorded as partial respondents (people who answered at least one question but did not complete the survey).

Table 26. Follow-Up Survey Response Rate

Attendance Month	Surveys Sent	Completed Surveys	Partially Completed Surveys	Response Rate
September 2020	991	31	38	7%
October 2020	841	40	35	9%
November 2020	234	7	5	5%
December 2020	435	24	10	8%
January 2021	383	20	21	11%
February 2021	347	3	7	3%
Total	**2,884**	**125**	**116**	**8%**

Immediate Survey Participant Characteristics

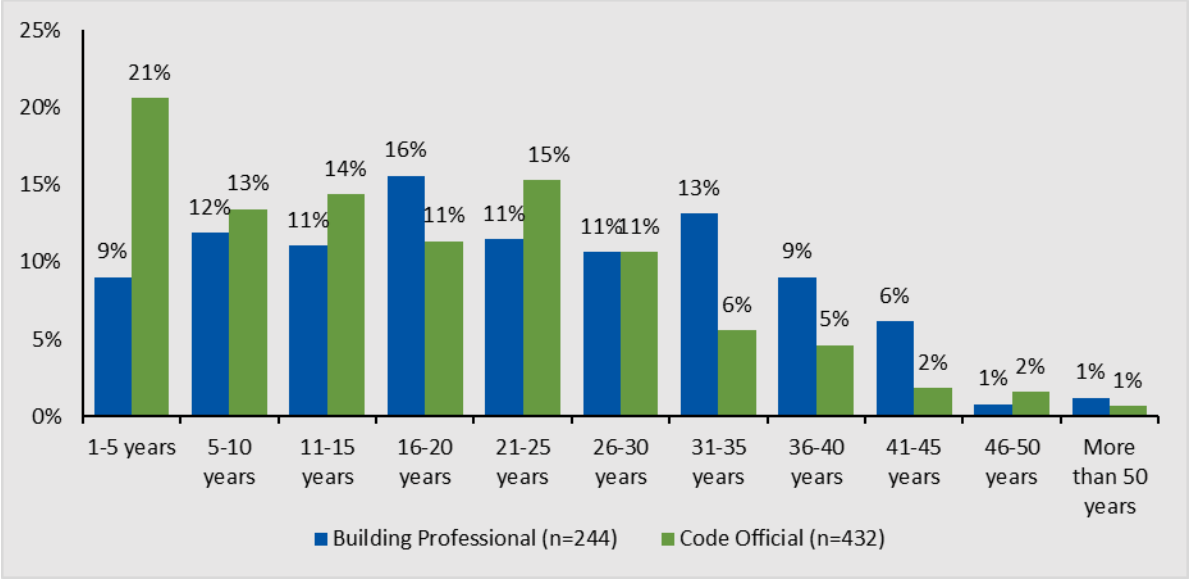
To understand who is participating in the sessions, the Market Evaluation Team asked respondents to identify if they were code officials or building professionals (which includes architects, engineers, contractors, etc.). As shown in Table 27, building professionals represented a lower proportion of participants (32%).

Table 27. Immediate Survey Occupation Type

Participant Type	Number of Participants	Percentage of Participants
Code Officials	527	60%
Building Professionals	283	32%
No Response Provided	74	8%
Total	884	100%

Participants' years of experience working in their position (or a similar position) ranged widely for both code officials and building professionals. Code officials were more likely to have less than 21 years of experience in their job (60%) compared to building professionals (48%).

Figure 10. Years of Experience for Code Officials and Building Professionals

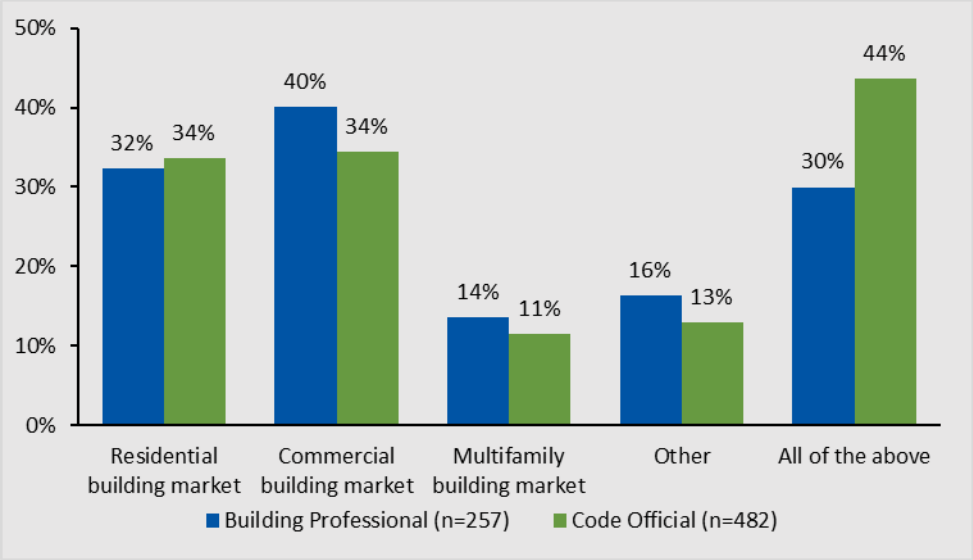


Source: Immediate Survey Question: "Years of experience in this (or similar) position."

Overall, 35% of building professional respondents and 15% of code officials said they worked in a jurisdiction that has adopted the NYStretch Energy Code 2020. An additional 32% and 55%, respectively, said they do not work in a stretch code jurisdiction. The remaining respondents were not sure.

To get more insight into who is participating in the energy code training sessions, the Market Evaluation Team also collected information of the markets and types of work participants do professionally. As shown in Figure 11, training is reaching participants in both residential and commercial markets, with 44% of code officials saying they work in all construction markets.

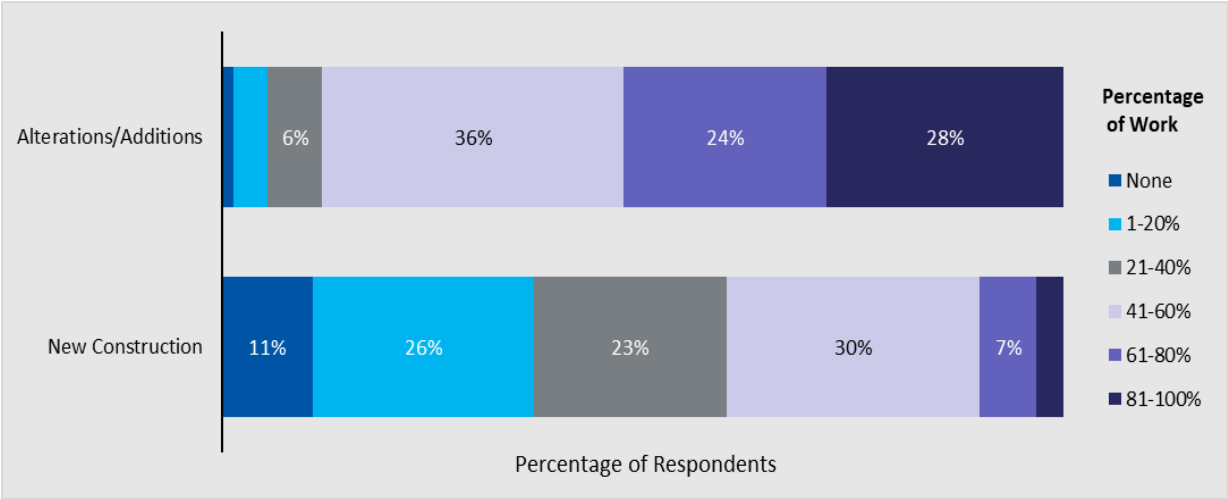
Figure 11. Market to which Participants' Work Applies



Source: Immediate Survey Question: "Please select the market to which your work applies."

Participants also reported on the percentage of their work that was new construction versus additions and alterations. As shown in Figure 12, 52% of respondents said that more than 60% of their work is in alterations and additions. Only 10% said that more than 60% of their work is new construction.

Figure 12. Breakdown of Participants' Time by Work Type (n=758)

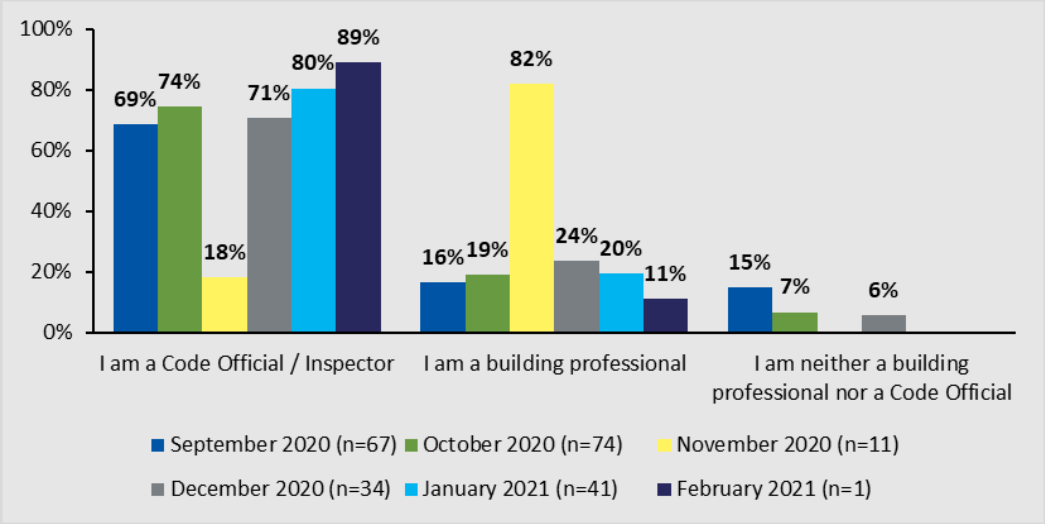


Source: Immediate Survey Question: "About what percentage of your work is … ?"

Follow-Up Survey Participant and Jurisdiction Characteristics

During the first six months of the follow-up survey data collection, 71% of respondents were code officials, with 22% building professionals (contractors, architects, etc.). This represents similar proportions of respondents by occupation type as from the immediate survey respondents shown above in Table 27. As shown in Figure 13, with the exception of November 2020 training respondents, this is fairly consistent between months. Those who said they did not fall into the two main categories (code officials and building professionals) self-reported a variety of positions including firefighters, planning board members, building maintenance staff, and health and safety professionals.

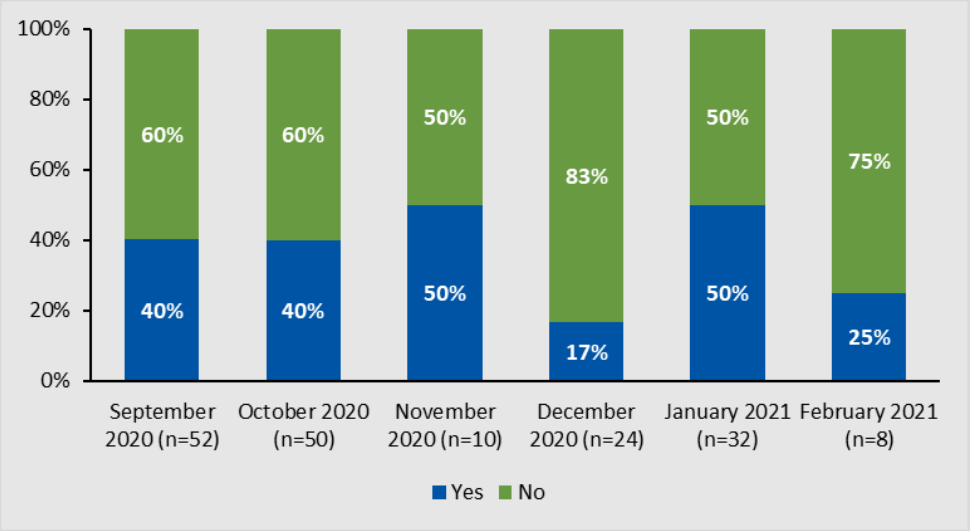
Figure 13. Survey Respondent Work Category (n=236)



Source: Follow-Up Survey Question: "Please select your area of work from the categories below."

Respondents were also asked to provide some information about the jurisdictions in which they work. As noted in Figure 14, between 7% and 50% of respondents each month who provided a response said that they work in at least one town or city that currently implements the NYStretch Energy Code-2020 (the current New York State stretch code).

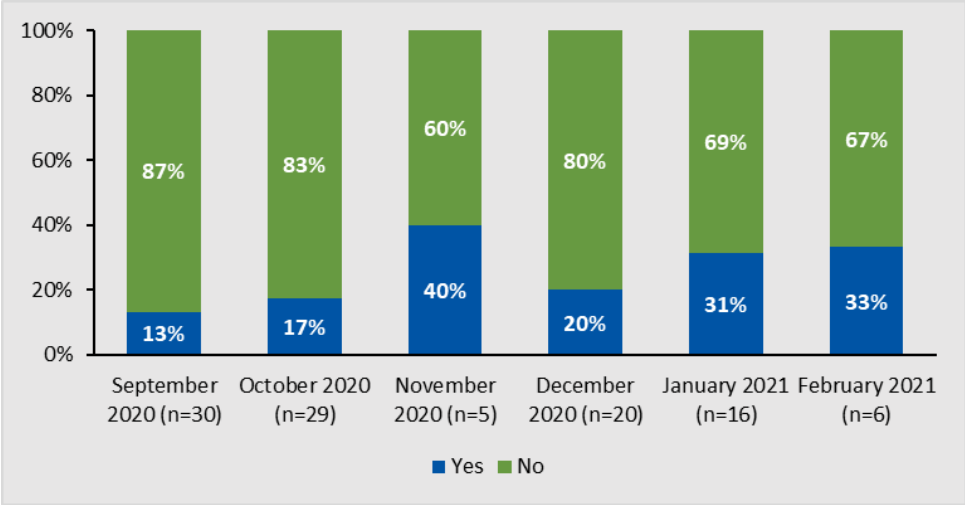
Figure 14. Municipality Under Stretch Code



Source: Follow-Up Survey Question: "Do you work in a jurisdiction that has adopted the NYStretch Energy Code – 2020?"

Those who said that they did not currently work in a jurisdiction that has adopted the stretch code were asked if any of the towns or cities they do work in are considering implementing the stretch code. Overall, 21% of respondents said that they worked in at least one jurisdiction planning to implement the stretch code. As shown in Figure 15, the majority of respondents that work in jurisdictions that have not yet adopted a stretch code say that their jurisdiction is not considering adopting the stretch code.

Figure 15. Municipality Considering Adopting the Stretch Code



Source: Follow-Up Survey Question: "Do you work in a jurisdiction that is planning to adopt the NYStretch Energy Code – 2020?"

Those towns identified by respondents that are considering adopting NYStretch are included in Table 28.

Table 28. Jurisdictions Considering Adopting the Stretch Code

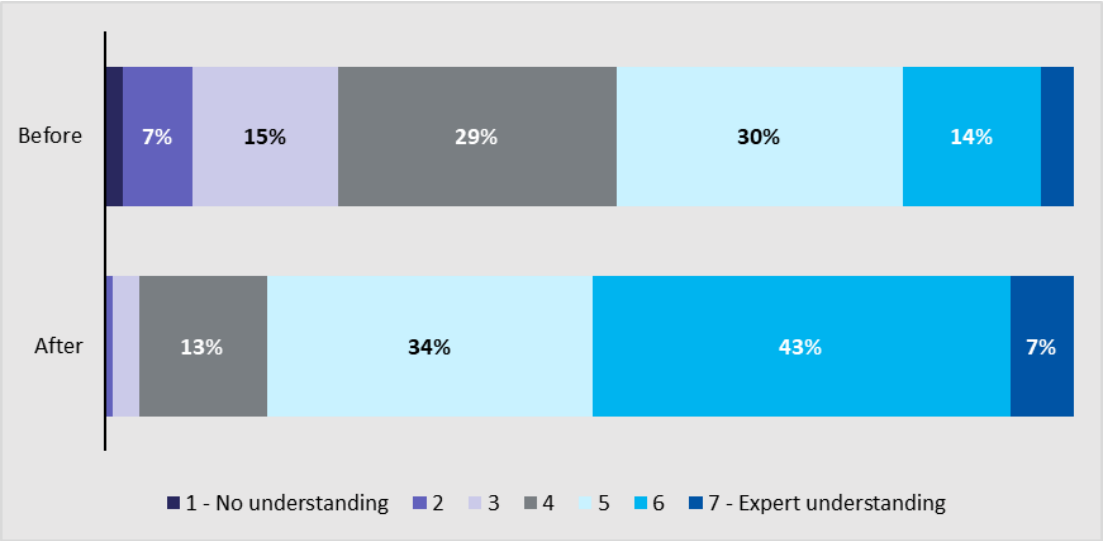
Jurisdiction Names
Ithaca
Mount Vernon
Rochester
Southampton Town
West Monroe
Watervliet
Town of Evans
Town of Pomfret
Town of Saugerties

Understanding of the ECCCNYS, NYCECC, and NYStretch (Immediate Survey)

To assess the impact of the training on attendees' understanding of the ECCCNYS, NYCECC, and NYStretch, the Market Evaluation Team asked immediate survey respondents to estimate their level of understanding of the energy code before and immediately following the event on a 7-point scale (where 1 is no understanding and 7 is expert understanding).

Figure 16 illustrates the change in attendees' level of understanding of the ECCCNYS. The Team asked only individuals attending ECCCNYS-specific training to estimate their level of understanding of the ECCCNYS before and after the training. Overall, 18% of respondents ranked themselves as having an understanding of 6 or 7 on the 7-point scale prior to attending the training. When asked how they ranked themselves after the training, the scores improved such that 50% of respondents ranked themselves a 6 or 7. This resulted in an increase from a mean score of 4.3 to a mean score of 5.3.

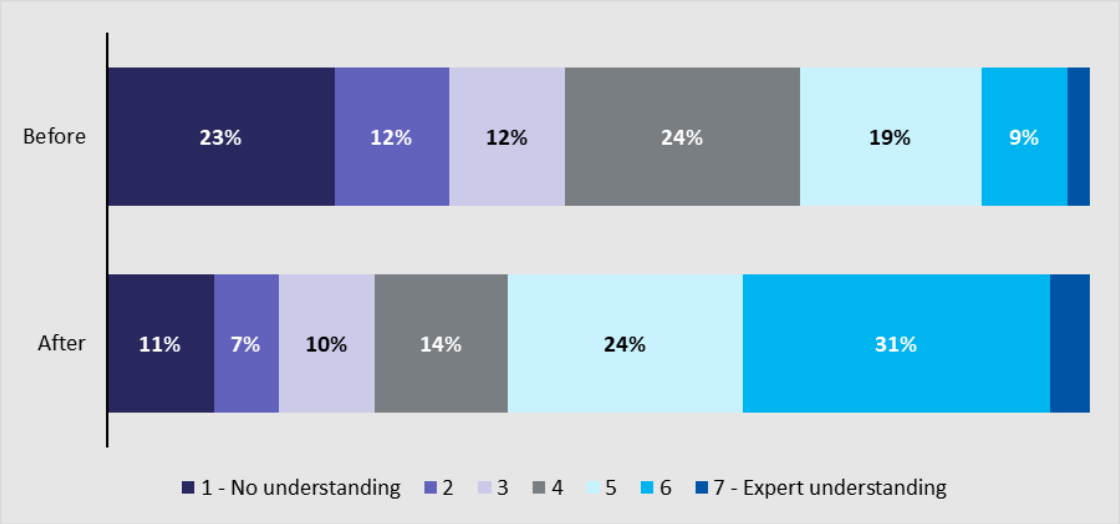
Figure 16. Understanding of the ECCCNYS (n=597)



Source: Immediate Survey Questions: "Prior to attending the training on [Course Title], what was your level of understanding of the Energy Conservation Code of New York State?" and "After attending the training on [Course Title], what is your level of understanding of the Energy Conservation Code of New York State?"

Figure 17 shows the change in attendees' level of understanding of the NYCECC. The Team asked individuals attending NYC-specific training to estimate their level of understanding of the NYCECC before and after the training events. Eleven percent of the respondents ranked themselves as having an understanding of 6 or 7 on the 7-point scale prior to attending the training. When asked how they ranked themselves after the training, the scores improved such that 35% of respondents ranked themselves as having an understanding of 6 or 7. This resulted in an increase from a mean score of 3.4 to a mean score of 4.4.

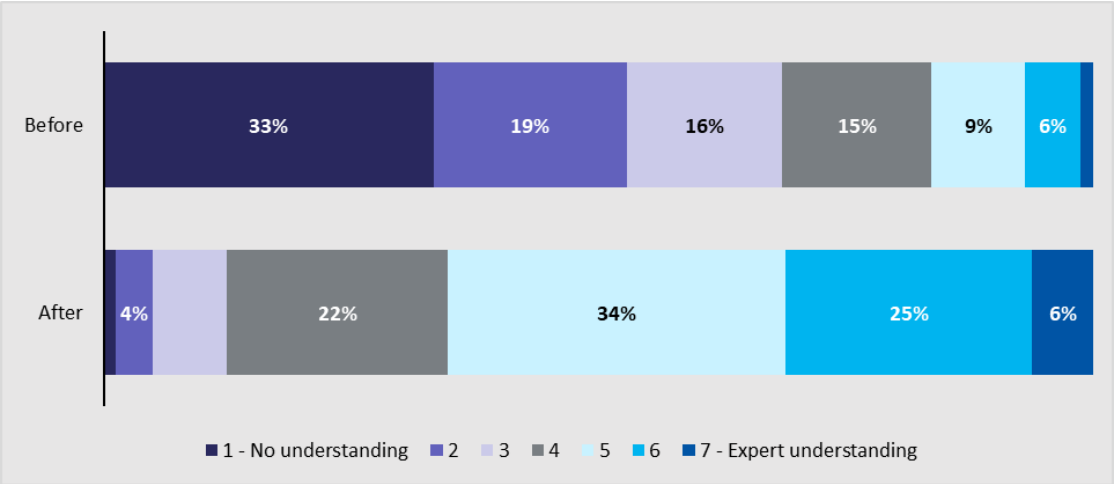
Figure 17. Understanding of the NYCECC (n=451)



Source: Immediate Survey Questions: "Prior to attending the training on [Course Title], what was your level of understanding of the New York City Energy Conservation Code?" and "After attending the training on [Course Title], what is your level of understanding of the New York City Energy Conservation Code?"

Figure 18 shows the change in attendees' level of understanding of NYStretch. The Team asked only individuals attending a training session covering NYStretch topics to provide their level of understanding of the stretch energy code before and after the training events. Only 7% of respondents ranked themselves as having a level of understanding of 6 or 7 prior to attending the training. The level of understanding increased to 31% rating themselves a 6 or 7 after the training. Overall, mean scores increased from 2.7 prior to the training to 4.8 after attending the training.

Figure 18. Understanding of NYStretch (n=161)

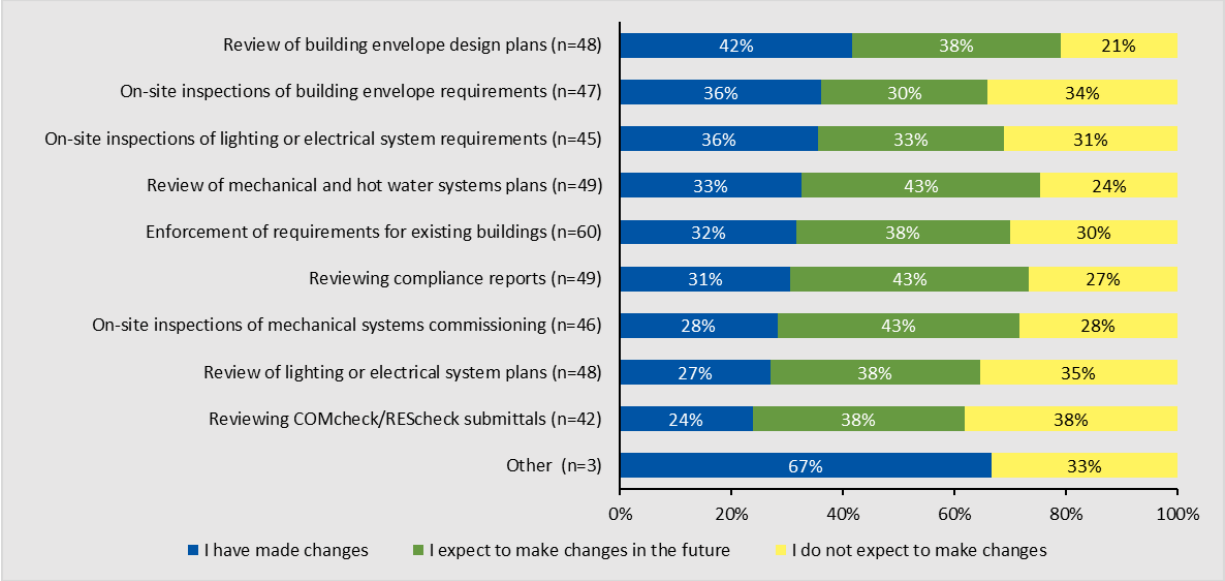


Source: Immediate Survey Questions: "Prior to attending the training on [Course Title], what was your level of understanding of the NYStretch Energy Code - 2020 on a scale from 1 to 7" and "After attending the training on [Course Title], what is your level of understanding of the NYStretch Energy Code - 2020 on a scale from 1 to 7"

Participant Changes to Work Procedures (Follow-Up Survey)

Code official were asked to identify what (if any) procedures of their work had changed as a result of attending the training webinars. As shown in Figure 19, code officials said that they had made changes to the way they review building envelope design plans (42%) and to their on-site inspections of both building envelope and lighting and electrical systems requirements (36% each). However, a similar percentage of code officials also said they were unlikely to make changes around on-site inspections for building envelope requirements (34%). Additionally, code officials said that they were unlikely to make changes when reviewing COMcheck or RES check submittals (38%) or when reviewing lighting or electrical systems plans (35%).

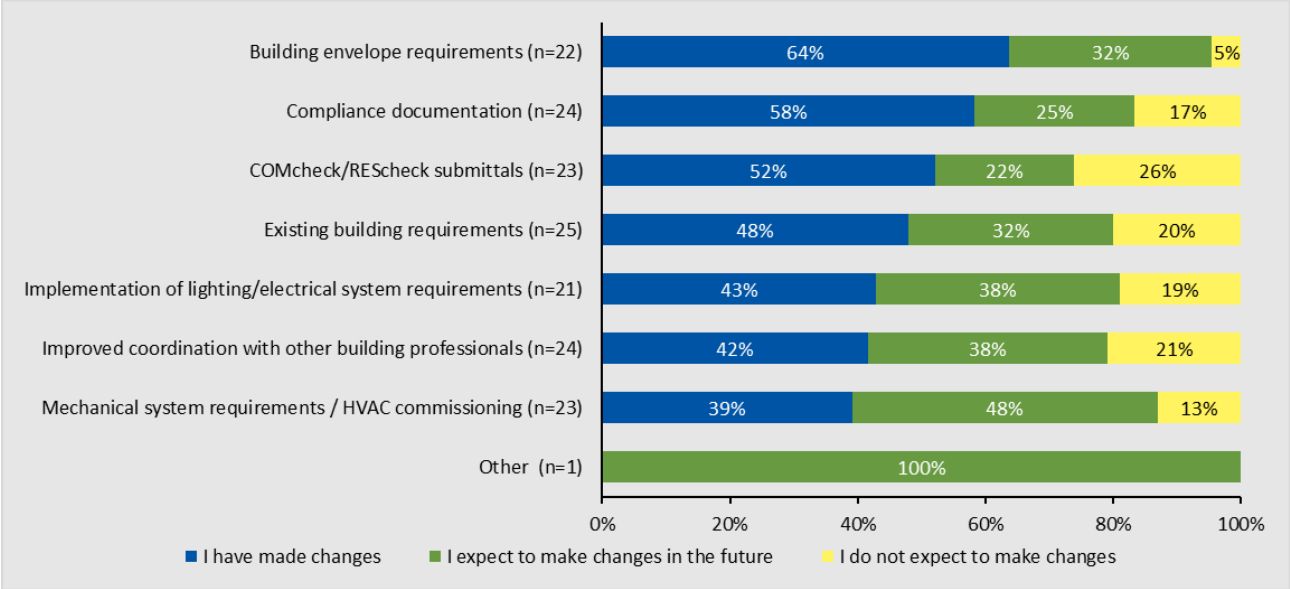
Figure 19. Work Procedures Changed from Lessons Learned at NYSERDA Webinars (Code Officials)



Source: Immediate Survey Question: "For each topic listed below, please identify if the procedures of your work have changed or will change as a result of what you learned at the webinars you attended."

Building professionals were also asked to consider if their work procedures had changed as a result of what was learned at NYSERDA-sponsored webinars. As shown in Figure 20, building professionals most often reported that they had made changes to their work around meeting building envelope requirements (64%), compliance documentation (58%), and COMcheck and REScheck submittals (52%). However, an additional 26% of building professionals indicted they were unlikely to make change to their work around COMcheck and REScheck submittals.

Figure 20. Work Procedures Changed from Lessons Learned at NYSERDA Webinars (Building Professionals)

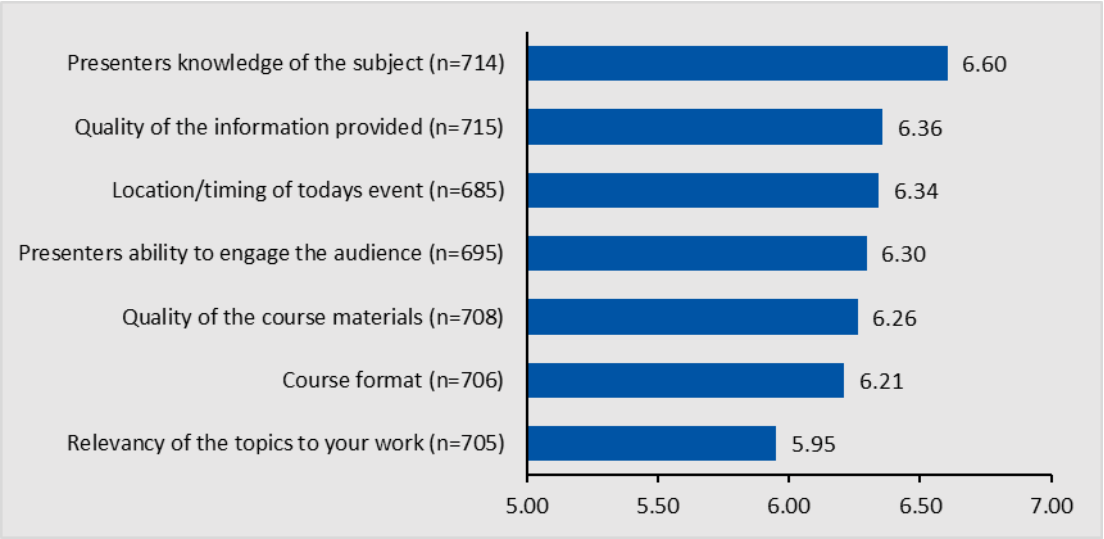


Source: Immediate Survey Question: "For each topic listed below, please identify if the procedures of your work have changed or will change as a result of what you learned at the webinars you attended."

Satisfaction with Training Elements (Immediate Survey)

The Market Evaluation Team asked respondents to rate their satisfaction with key aspects of the training on a 7-point scale, where 1 is not at all satisfied and 7 is very satisfied. Figure 21 shows that attendees are generally satisfied with all aspects of the training. The mean rating for all but one training element is higher than 6 on the 7-point scale. Figure 21 also shows that respondents were most satisfied with how knowledgeable the presenters were on the subject matter, followed by satisfaction with the quality of the information provided and the convenient timing of the webinars.

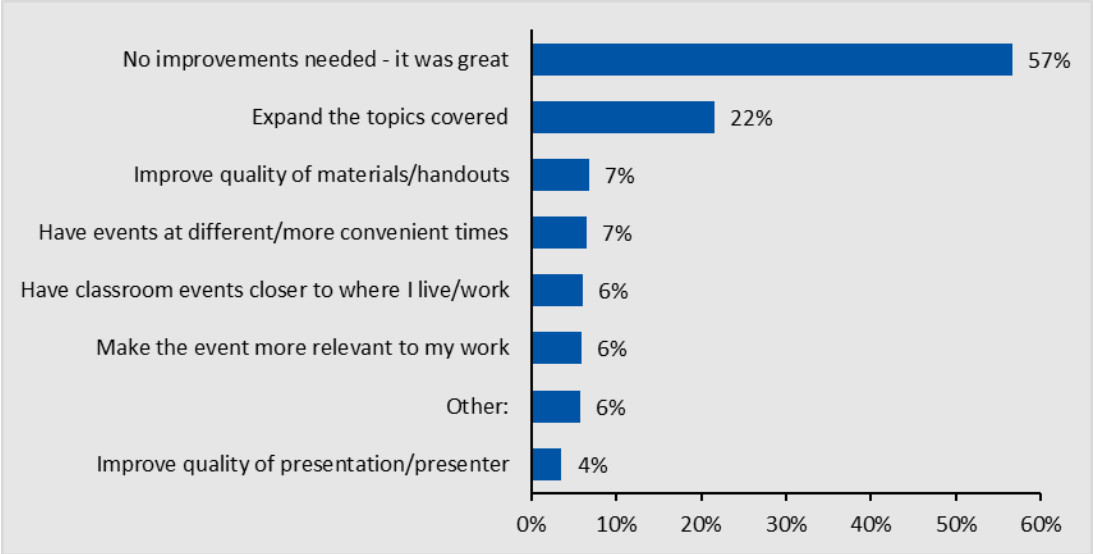
Figure 21. Respondent Mean Satisfaction Rating for Key Training Elements



Source: Immediate Survey Question: "Please rate your satisfaction with: … on a scale of 1 – Not satisfied at all, to 7 – Very satisfied."

When asked what could improve the training events, 57% of respondents said the training was great and no improvements were needed. Figure 22 shows the most common suggestions for improvements.

Figure 22. Respondent Suggests for Course Improvement (n=612)



Source: Immediate Survey Question: "How can we improve the [Course Title] training or similar events in the future?"

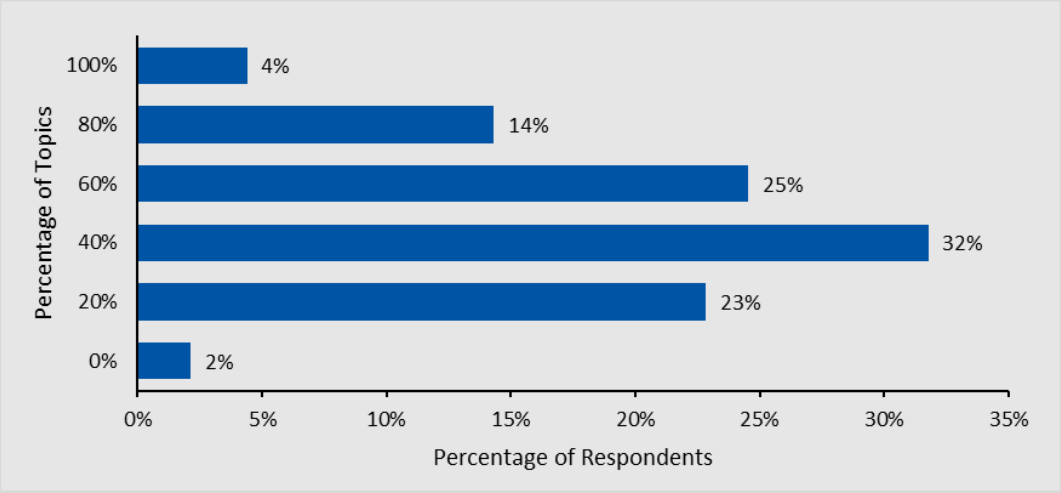
Recent verbatim responses provided by respondents included the following:

- "The entire premise on which these new codes are based may or may not be overstated. The additional costs to meet this code is tremendous for colleges and universities already with a huge operating deficit and limited capital construction funds available to upgrade 50-year-old infrastructure."
- "Correct the incorrect slide. Fix the quiz questions that the presenter felt were ambiguous."
- "The only objection was that it was very hard for an online class to follow 7 hours of lecture. I understand that format for classroom lectures to save travel time, but in this case probably it would be better to split it in two sessions. Thank you!"

Relevance and Usefulness of Training Topics (Immediate Survey)

The Market Evaluation Team asked respondents to identify the percentage of topics covered in the training sessions that covered new information. As shown in Figure 23, few respondents said that either all or none of the topics covered were new information. Nearly a third of respondents (32%) said that approximately 40% of the topics covered was new information.

Figure 23. New Information as a Percentage of Topics Covered (n=705)



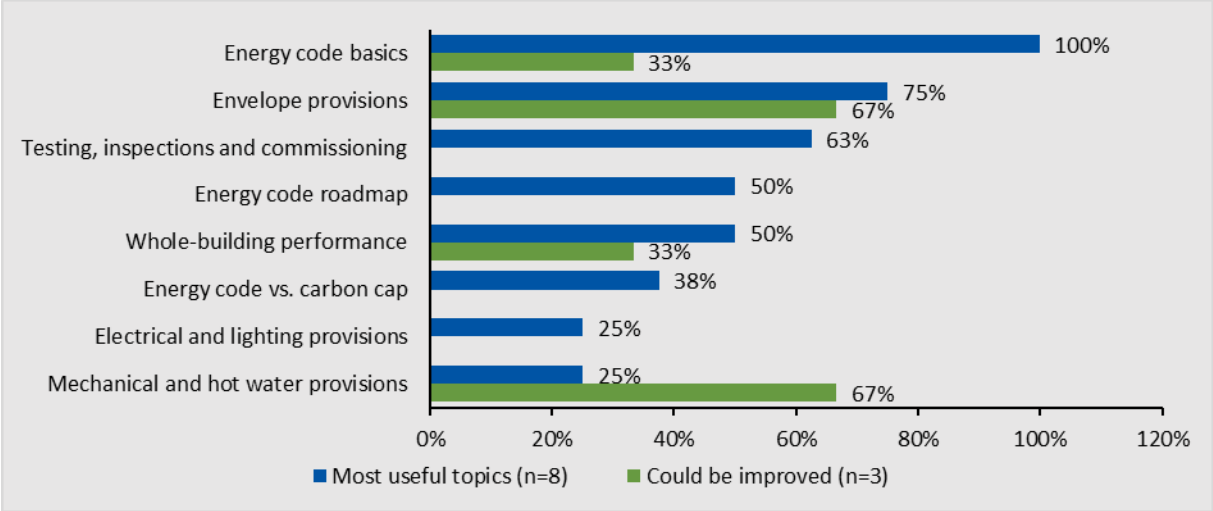
Source: Immediate Survey Question: "What percent of the topics covered in the training session today was new information for you?"

The most useful topics and the topics identified as needing improved content for each course are presented in the following sections.

What's New in the 2020 NYC Energy Code: Commercial (UGC)

Figure 24 shows the topics respondents who took the "What's New in the 2020 NYC Energy Code" training found most useful and those they suggested could be improved. As only three respondents answered to which topics need improvement, results are anecdotal.

Figure 24. Feedback on Topics Covered (What's New in the 2020 NYC Energy Code: Commercial)

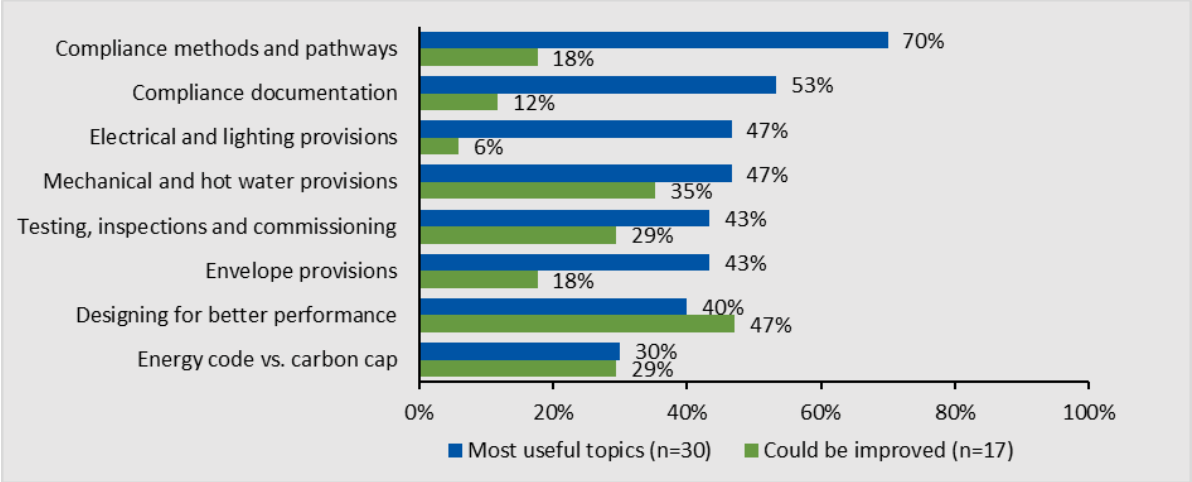


Source: Immediate Survey Questions: "What were the most useful topics of the training for you?" and "Are there any topics from today's training that could be improved?" Multiple response allowed.

Crushing the NYC Energy Code: Commercial (UGC)

Figure 25 shows the topics respondents who took the "Crushing the NYC Energy Code: Commercial" training found most useful and those they suggested could be improved. The topic respondents found most useful was compliance methods and pathways (70%). When asked which topic could be improved, 47% of respondents said designing for better performance.

Figure 25. Feedback on Topics Covered (Crushing the NYC Energy Code: Commercial)

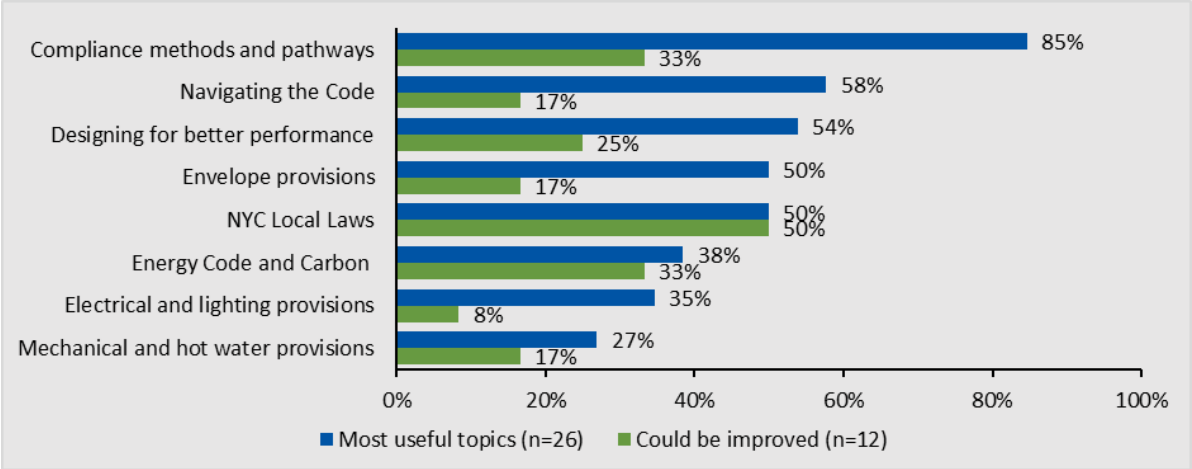


Source: Immediate Survey Questions: "What were the most useful topics of the training for you?" and "Are there any topics from today's training that could be improved?" Multiple response allowed.

Crushing the NYC Energy Code: Residential (UGC)

Figure 26 shows the topics respondents who took the "Crushing the NYC Energy Code: Residential" training found most useful and those they suggested could be improved. The topic respondents found most useful was compliance methods and pathways (85%). The topic that respondents most commonly said could be improved is NYC Local Laws (50%).

Figure 26. Feedback on Topics Covered (Crushing the NYC Energy Code: Residential)

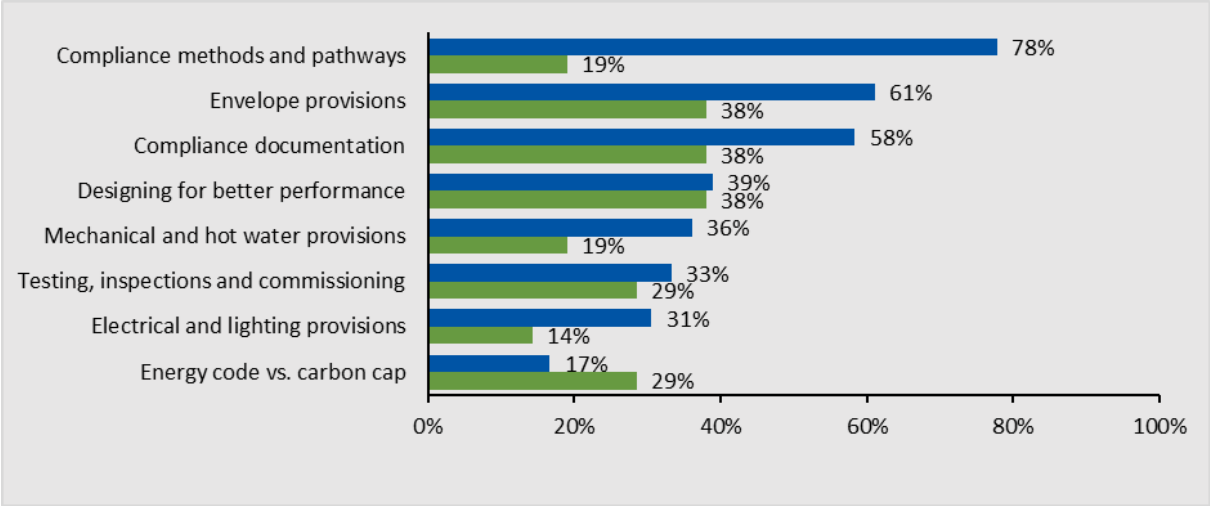


Source: Immediate Survey Questions: "What were the most useful topics of the training for you?" and "Are there any topics from today's training that could be improved?" Multiple response allowed.

Crushing the NYS Energy Code: Commercial (UGC)

Figure 27 shows the topics respondents who took the "Crushing the NYS Energy Code: Commercial" training found most useful and those they suggested could be improved. Respondents said the most useful topic was compliance methods and pathways (78%). When asked which topics could be improved, respondents said designing for better performance, envelope provisions, and compliance documentation (all at 38%).

Figure 27. Feedback on Topics Covered (Crushing the NYS Energy Code: Commercial)

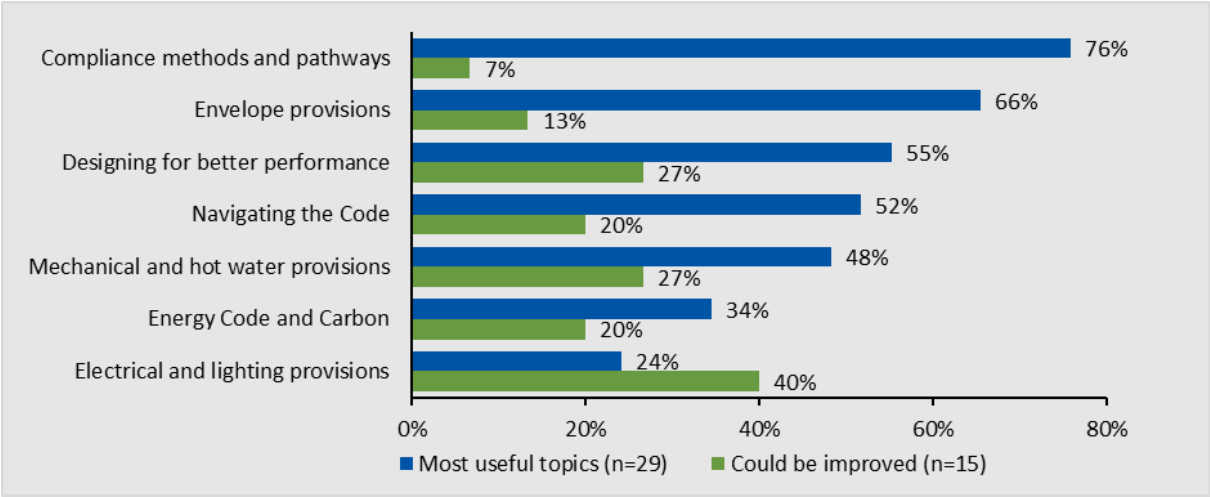


Source: Immediate Survey Questions: "What were the most useful topics of the training for you?" and "Are there any topics from today's training that could be improved?" Multiple response allowed.

Crushing the NYS Energy Code: Residential (UGC)

Figure 28 shows the topics respondents who took the "Crushing the NYS Energy Code: Residential" training found most useful and those they suggested could be improved. Respondents said the most useful topics were compliance methods and pathways (76%) and envelope provisions (66%). When asked which topics could be improved, respondents said electric and lighting provisions (40%).

Figure 28. Feedback on Topics Covered (Crushing the NYS Energy Code: Residential)

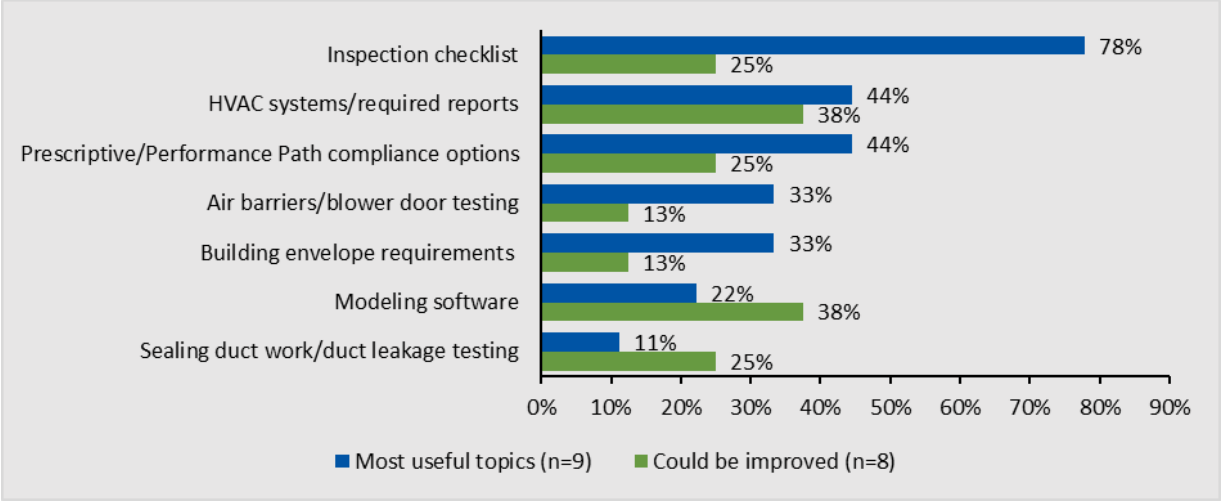


Source: Immediate Survey Questions: "What were the most useful topics of the training for you?" and "Are there any topics from today's training that could be improved?" Multiple response allowed.

2020 ECCCNYS for Residential Buildings: Overview (Newport Ventures)

Figure 29 shows the topics respondents who took the "2020 ECCCNYS for Residential Buildings: Overview" training found most useful and those they suggested could be improved. Respondents said the most useful topic was the inspection checklist (78%). When asked which topics could be improved, respondents identified HVAC systems/required reports and modeling software (38%).

Figure 29. Feedback on Topics Covered (2020 ECCCNYS for Residential Buildings: Overview)

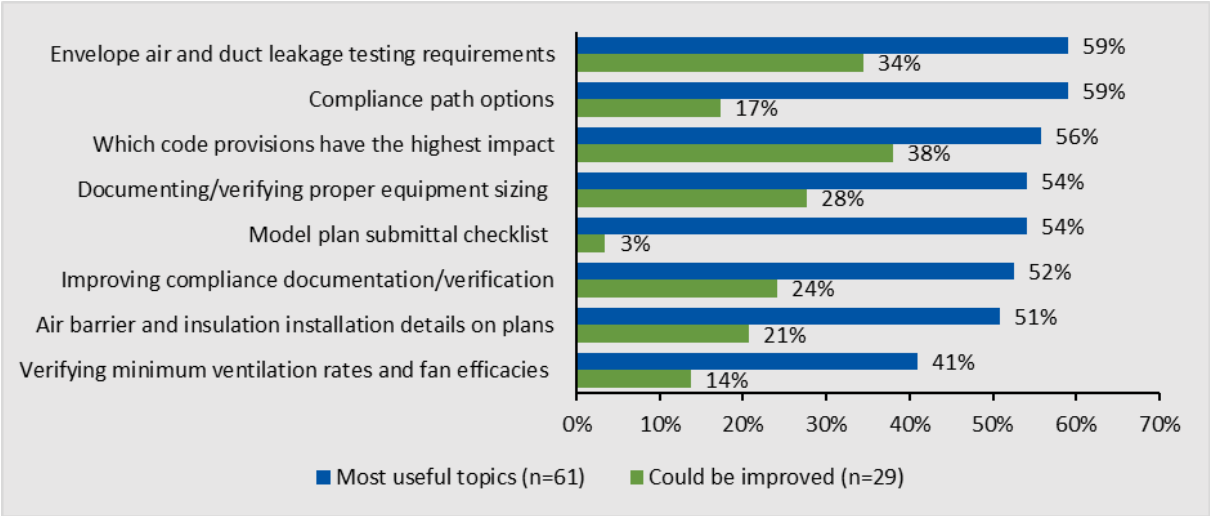


Source: Immediate Survey Questions: "What were the most useful topics of the training for you?" and "Are there any topics from today's training that could be improved?" Multiple response allowed.

R1.1 Energy Code Plan Reviews (PSD)

Figure 30 shows the topics respondents who took the "Energy Code Plan Reviews" training found most useful and those they suggested could be improved. Respondents said the most useful topics were both the information on compliance path options and envelope air and duct leakage testing requirements (59%). More than a third (38% and 34% respectively) of respondents suggested improving topics on which code provisions have the highest impact and envelope air and duct leakage testing requirements.

Figure 30. Feedback on Topics Covered (R1.1 Energy Code Plan Reviews)

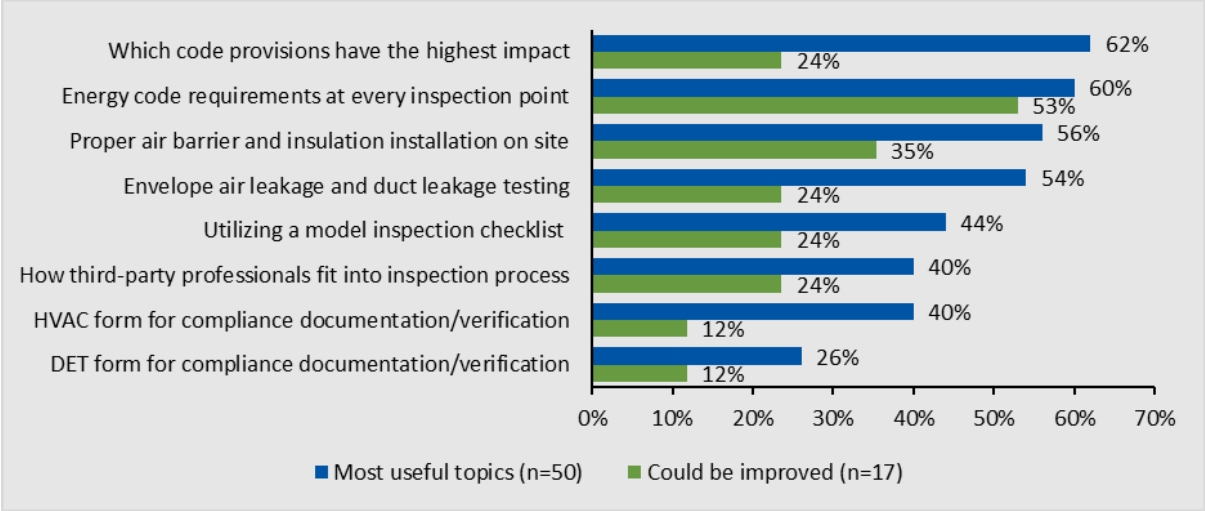


Source: Immediate Survey Questions: "What were the most useful topics of the training for you?" and "Are there any topics from today's training that could be improved?" Multiple response allowed.

R1.2 Energy Code Inspections in 15 Minutes or Less (PSD)

Figure 31 shows the topics respondents who took the "Energy Code Inspections in 15 Minutes or Less" training found most useful and those they suggested could be improved. The most useful topics were code provisions which have the highest impact (62%) and energy code requirements at every inspection point (60%). When asked which topics could be improved, 53% of respondents identified the energy code requirements at every inspection point topic.

Figure 31. Feedback on Topics Covered (R1.2 Energy Code Inspections in 15 Minutes or Less)

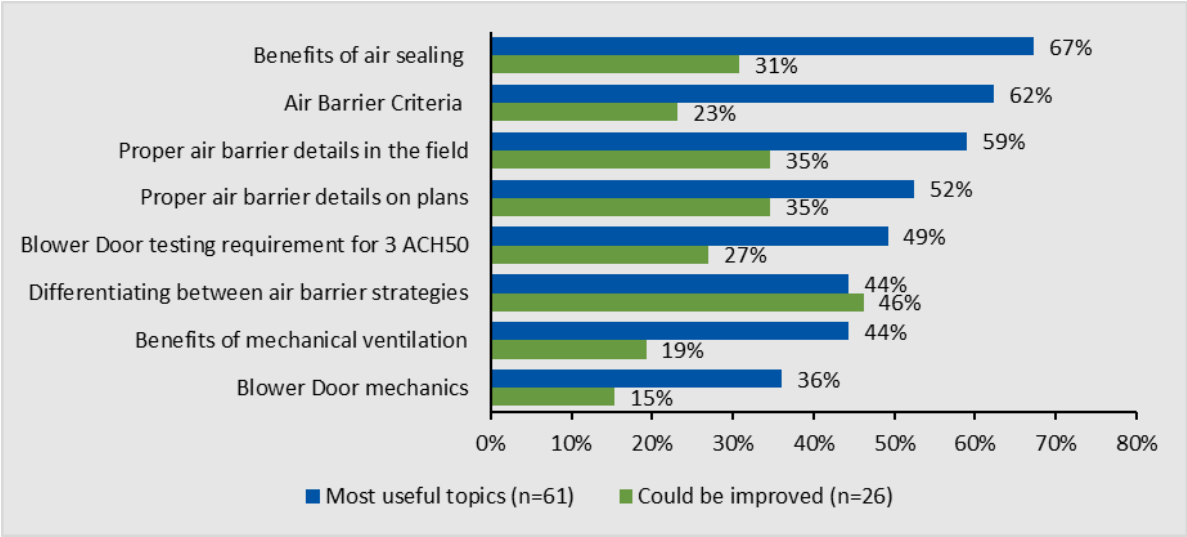


Source: Immediate Survey Questions: "What were the most useful topics of the training for you?" and "Are there any topics from today's training that could be improved?" Multiple response allowed.

R2.1 Air Sealing to 3 ACH50 (PSD)

Figure 32 shows the topics respondents who took the "Air Sealing to 3 ACH50" training found most useful and those they suggested could be improved. The most useful topics were the benefits of air sealing (67%), and air barrier criteria (62% each). The topic that could be improved most was differentiating between air barrier strategies (46%).

Figure 32. Feedback on Topics Covered (R2.1 Air Sealing to 3 ACH50)

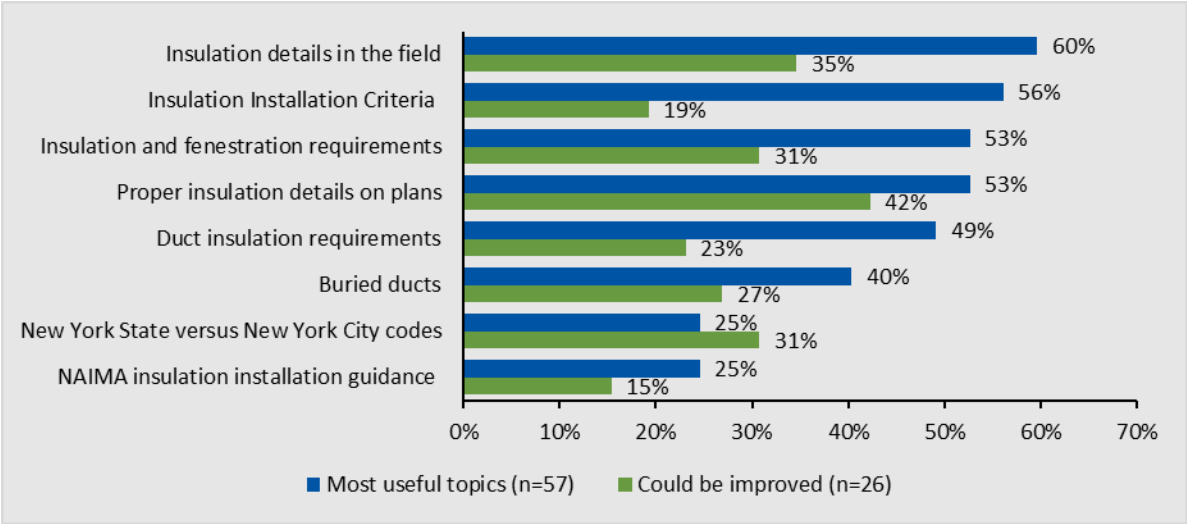


Source: Immediate Survey Questions: "What were the most useful topics of the training for you?" and "Are there any topics from today's training that could be improved?" Multiple response allowed.

R2.2 Other IECC Envelope Requirements (PSD)

Figure 33 shows the topics respondents who took the "Other IECC Envelope Requirements" training found most useful and those they suggested could be improved. The most useful topics were insulation details in the field (60%) and insulation installation criteria (56%). When considering what could be improved, respondents most commonly identified proper insulation details on plans (42%).

Figure 33. Feedback on Topics Covered (R2.2 Other IECC Envelope Requirements)

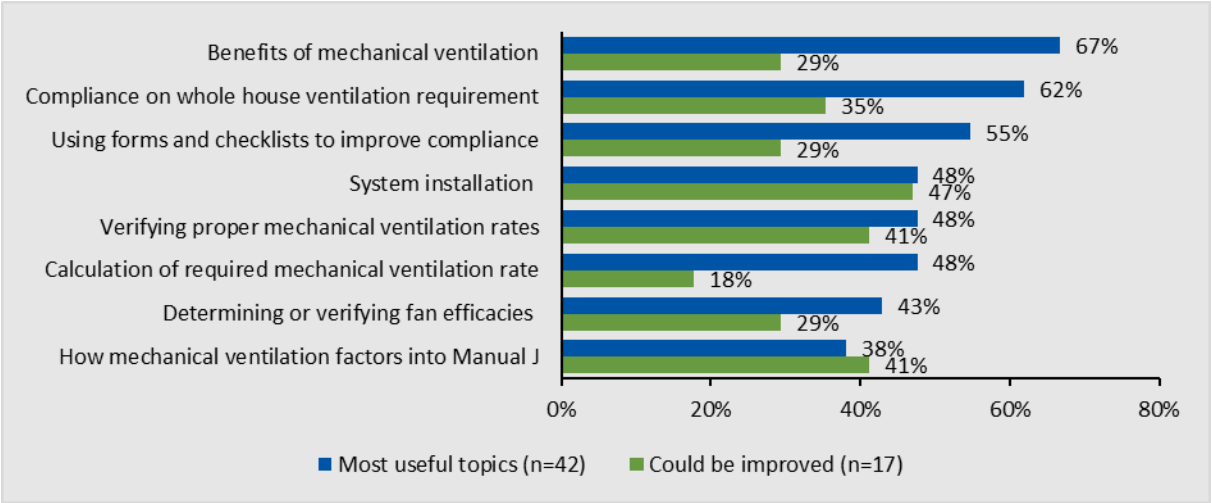


Source: Immediate Survey Questions: "What were the most useful topics of the training for you?" and "Are there any topics from today's training that could be improved?" Multiple response allowed.

R3.1 Whole-house Mechanical Ventilation (PSD)

Figure 34 shows the topics respondents who took the "Whole-house Mechanical Ventilation" training found most useful and those they suggested could be improved. The most useful topic was benefits of mechanical ventilations (67%). When asked what topics could be improved, 47% of respondents identified system installation.

Figure 34. Feedback on Topics Covered (R3.1 Whole-house Mechanical Ventilation)

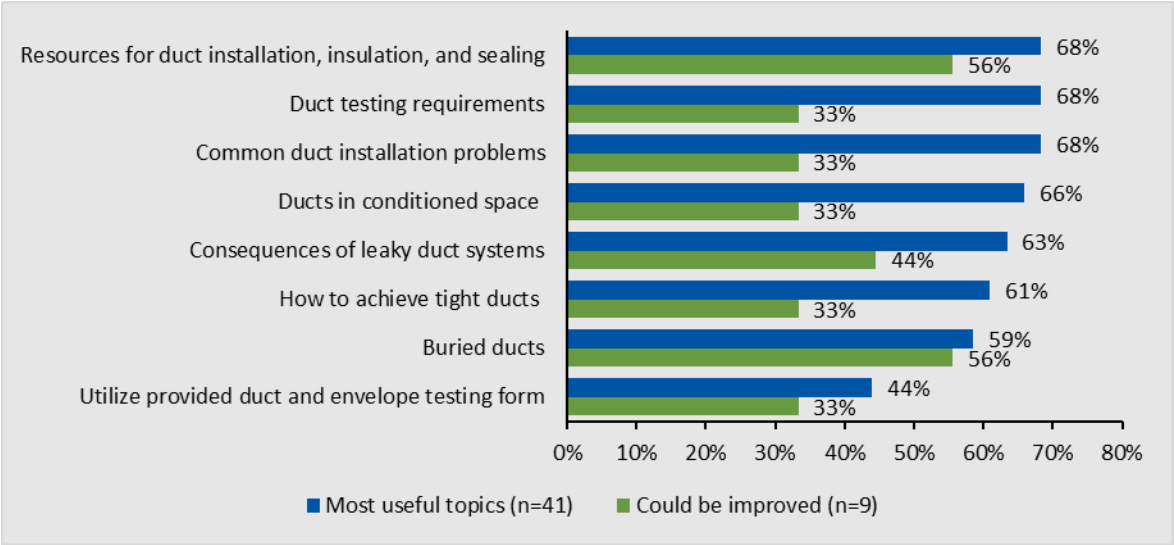


Source: Immediate Survey Questions: "What were the most useful topics of the training for you?" and "Are there any topics from today's training that could be improved?" Multiple response allowed.

R3.2 Efficient Forced Air Distribution (PSD)

Figure 35 shows the topics respondents who took the "Efficient Forced Air Distribution" training found most useful and those they suggested could be improved. The most useful topics were resources for duct installation, insulation, and sealing, duct testing requirements, and common duct installation problems (68%). When asked which topis could be improved, respondents most commonly identified buried ducts and resources for duct installation, insulation, and sealing (both 56%).

Figure 35. Feedback on Topics Covered (R3.2 Efficient Forced Air Distribution)

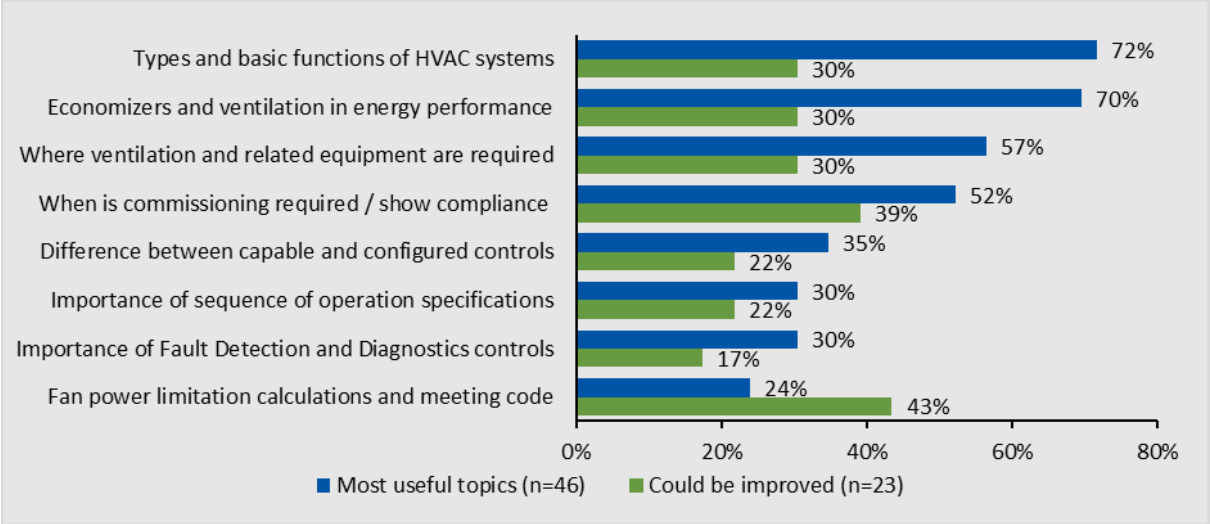


Source: Immediate Survey Questions: "What were the most useful topics of the training for you?" and "Are there any topics from today's training that could be improved?" Multiple response allowed.

C1.1 Mechanical Systems for Large Commercial Buildings (PSD)

Figure 36 shows the topics respondents who took the "Mechanical Systems for Large Commercial Buildings" training found most useful and those they suggested could be improved. The most useful topic was the information on types and basic functions of HVAC systems (72%). Respondents found the fan power limitation calculations and meeting codes topic (43%) to need the most improvement.

Figure 36. Feedback on Topics Covered (C1.1 Mechanical Systems for Large Commercial Buildings)

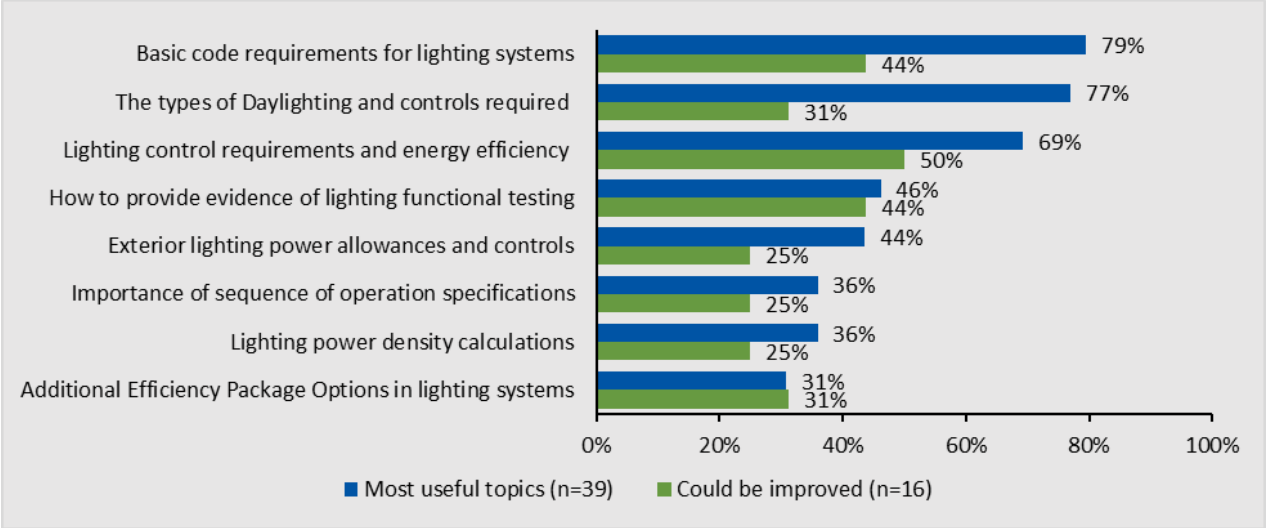


Source: Immediate Survey Questions: "What were the most useful topics of the training for you?" and "Are there any topics from today's training that could be improved?" Multiple response allowed.

C1.2 Lighting Systems for Large Commercial Buildings (PSD)

Figure 37 shows the topics respondents who took the "Lighting Systems for Large Commercial Buildings" training found most useful and those they suggested could be improved. The most useful topic was information on basic code requirements for lighting systems (79%). Respondents suggested that the lighting control requirements and energy efficiency topic could use improvement (50%).

Figure 37. Feedback on Topics Covered (C1.2 Lighting Systems for Large Commercial Buildings)

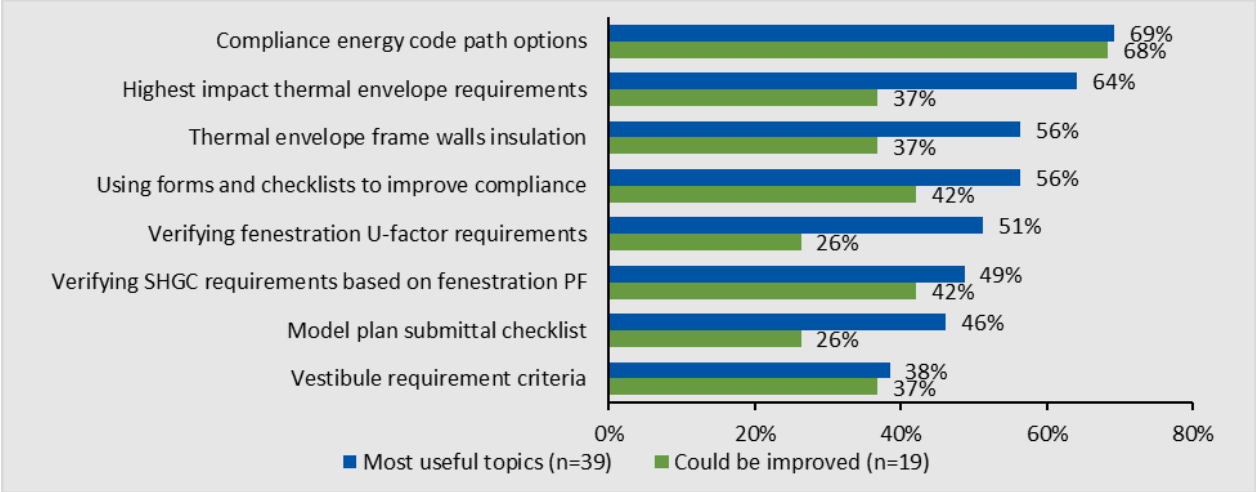


Source: Immediate Survey Questions: "What were the most useful topics of the training for you?" and "Are there any topics from today's training that could be improved?" Multiple response allowed.

C2.1 Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 1) (PSD)

Figure 38 shows the topics respondents who took the "Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 1)" training found most useful and those they suggested could be improved. The most useful topic was compliance energy code path options (69%). Respondents also suggested that the same topic could use the most improvement (68%).

Figure 38. Feedback on Topics Covered (C2.1 Prioritizing ECCCNYS Enforcement for Commercial Buildings)

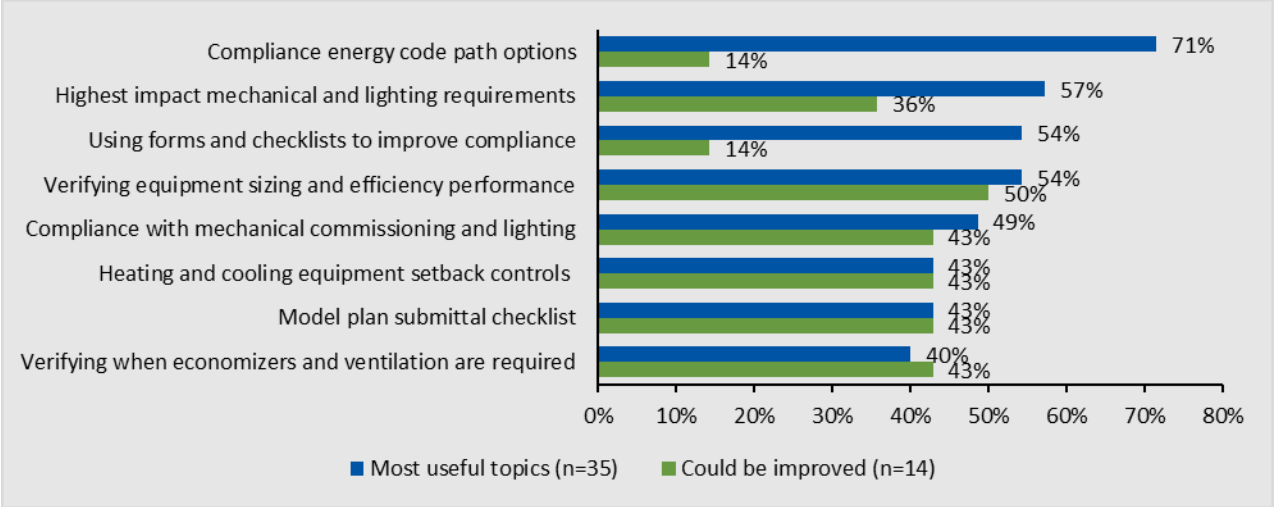


Source: Immediate Survey Questions: "What were the most useful topics of the training for you?" and "Are there any topics from today's training that could be improved?" Multiple response allowed.

C2.2 Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 2) (PSD)

Figure 39 shows the topics respondents who took the "Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 2)" training found most useful and those they suggested could be improved. The most useful topic was compliance energy code path options (71%). Respondents suggested the verifying equipment sizing and efficiency performance topic could use improvement (50%).

Figure 39. Feedback on Topics Covered (C2.2 Prioritizing ECCCNYS Enforcement for Commercial Buildings)

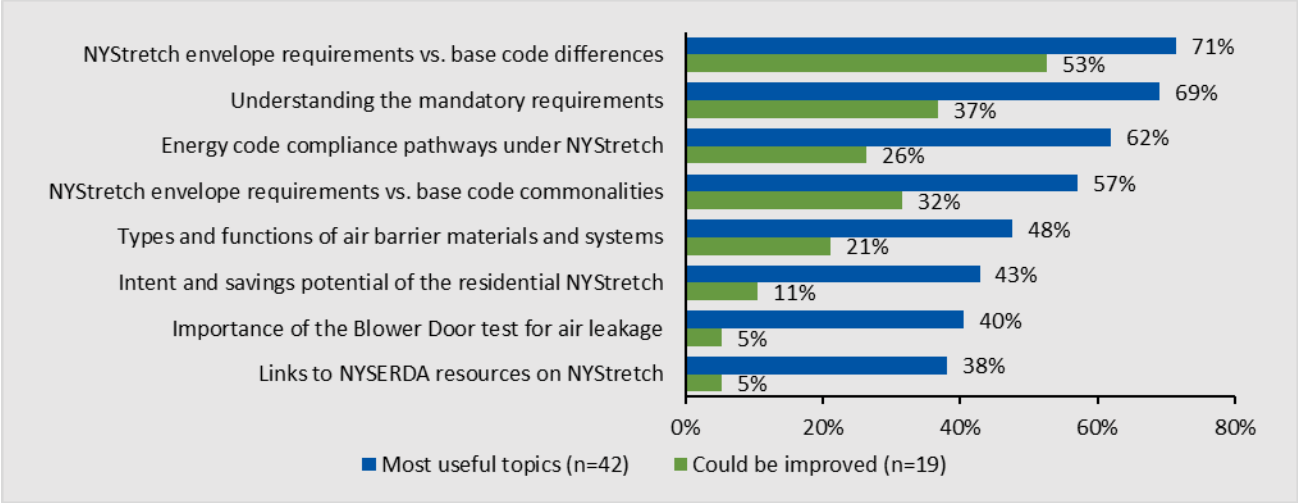


Source: Immediate Survey Questions: "What were the most useful topics of the training for you?" and "Are there any topics from today's training that could be improved?" Multiple response allowed.

S2.1 NYStretch Overview and Thermal Envelope Requirements Part 1 (PSD)

Figure 40 shows the topics respondents who took the "NYStretch Overview and Thermal Envelope Requirements Part 1" training found most useful and those they suggested could be improved. The most useful topic was identifying differences between NYStretch envelope requirements and the base code (71%). Respondents also suggested the same topic could use improvement (53%).

Figure 40. Feedback on Topics Covered (S2.1 NYStretch Overview and Thermal Envelope Requirements)

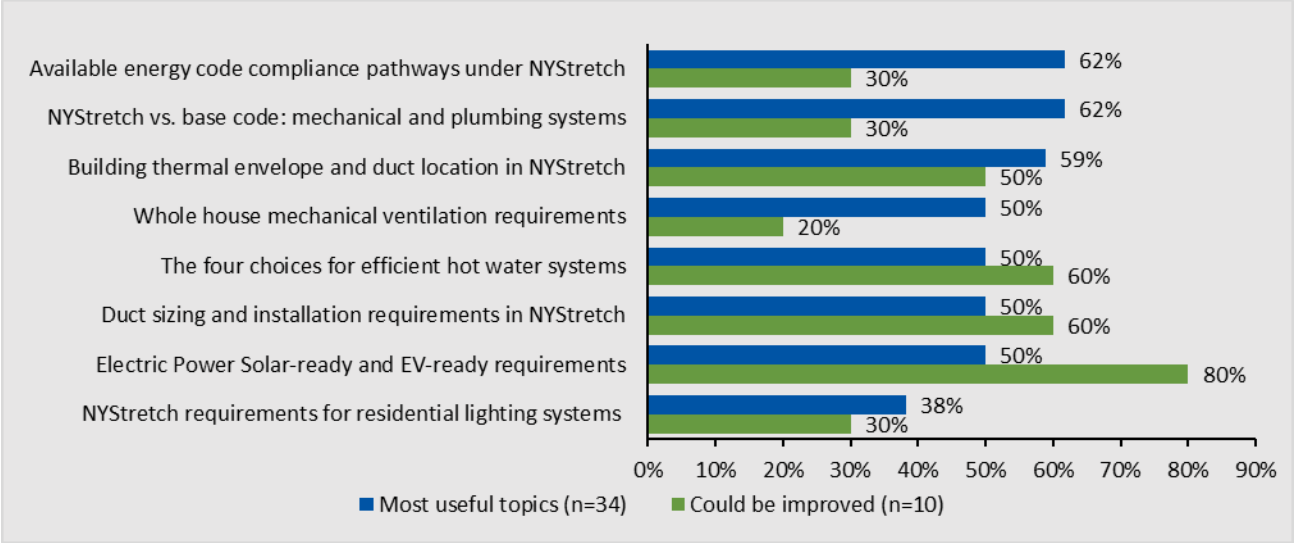


Source: Immediate Survey Questions: "What were the most useful topics of the training for you?" and "Are there any topics from today's training that could be improved?" Multiple response allowed.

S2.2 NYStretch Mechanical, Plumbing, Lighting, and Electric Power Part 2 (PSD)

Figure 41 shows the topics respondents who took the "NYStretch Mechanical, Plumbing, Lighting, and Electric Power Part 2" training found most useful and those they suggested could be improved. The most useful topics were identifying all available energy code compliance pathways under NYStretch and identifying differences between NYStretch and the base code for mechanical and plumbing systems (62%). Respondents also suggested that the Electric Power Solar-ready and EV-ready requirements topic could use improvement (80%).

Figure 41. Feedback on Topics Covered (S2.2 NYStretch Mechanical, Plumbing, Lighting, and Electric Power)

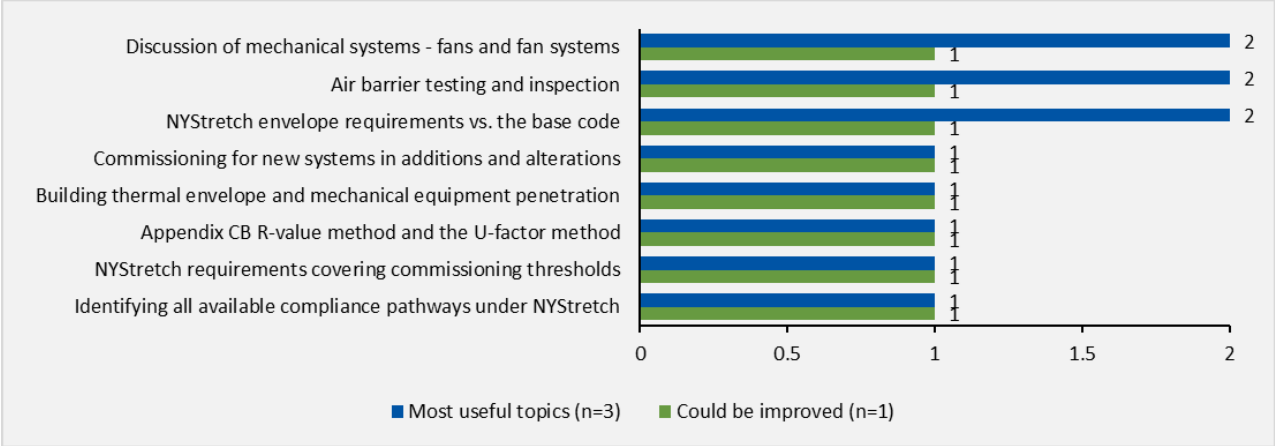


Source: Immediate Survey Questions: "What were the most useful topics of the training for you?" and "Are there any topics from today's training that could be improved?" Multiple response allowed.

S3.1 NYStretch Energy Code for Commercial Buildings Part 1: Building Thermal Envelope, Mechanical Systems, Commissioning, and Additions and Alterations (PSD)

Figure 42 shows the topics respondents who took the "NYStretch Energy Code for Commercial Buildings Part 1: Building Thermal Envelope, Mechanical Systems, Commissioning, and Additions and Alterations" training found most useful and those they suggested could be improved. As only three respondents answered, results are anecdotal.

Figure 42. Feedback on Topics Covered (S3.1 NYStretch Energy Code for Commercial Buildings Part 1)

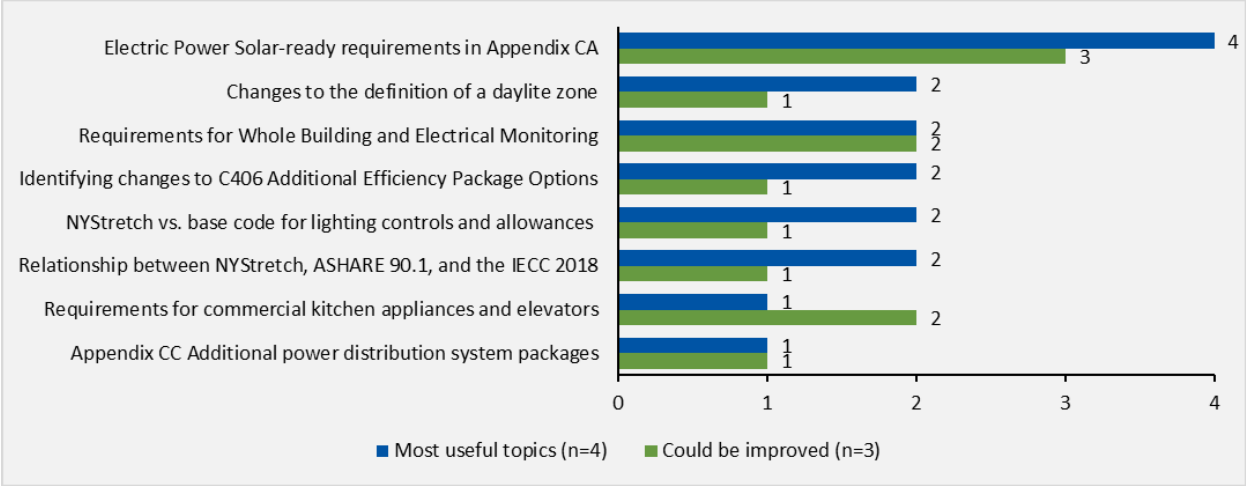


Source: Immediate Survey Questions: "What were the most useful topics of the training for you?" and "Are there any topics from today's training that could be improved?" Multiple response allowed.

S3.2 NYStretch Energy Code for Commercial Buildings Part 2: Electric Power and Lighting, Total Building Performance, Additional Efficiency Package Options, and Appendices (PSD)

Figure 43 shows the topics respondents who took the "NYStretch Energy Code for Commercial Buildings Part 2: Electric Power and Lighting, Total Building Performance, Additional Efficiency Package Options, and Appendices" training found most useful and those they suggested could be improved. As only four respondents answered, results are anecdotal.

Figure 43. Feedback on Topics Covered (S3.2 NYStretch Energy Code for Commercial Buildings Part 2)



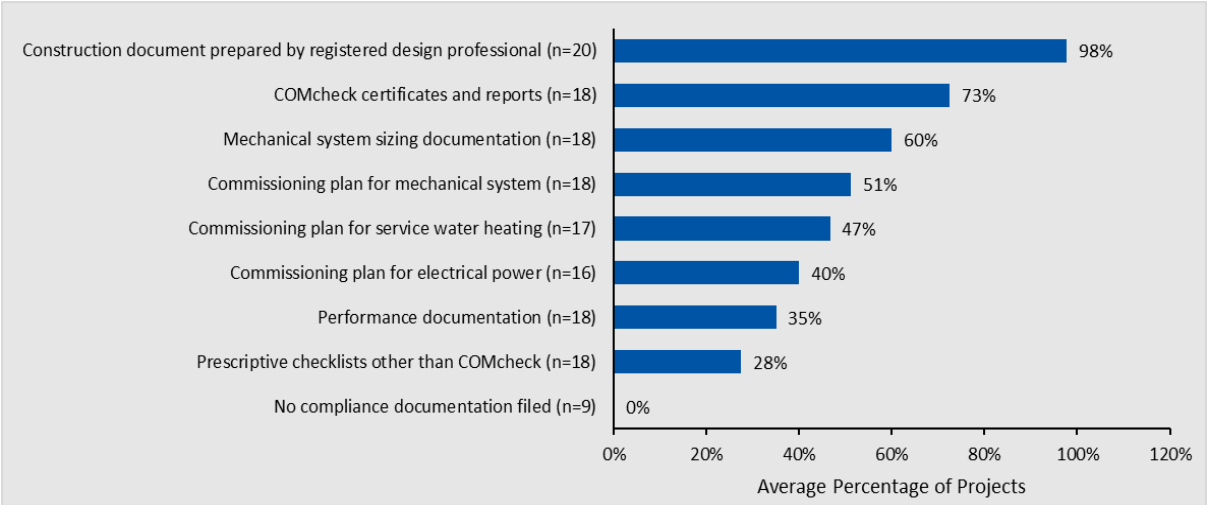
Source: Immediate Survey Questions: "What were the most useful topics of the training for you?" and "Are there any topics from today's training that could be improved?" Multiple response allowed.

Documentation Filed with Building Departments (Follow-Up Survey)

In order to investigate the types of information filed at building departments, code officials were asked about a range of documents associated with commercial and residential new construction and renovation work. For each project type, code officials were asked about a series of document types that might be included for a project, and asked to estimate the percentage of projects that included that type of compliance documentation.

As shown in Figure 44, for commercial new construction projects, no code official reported projects for which no compliance documents were filed. The documents respondents indicated were most consistently filed included construction documents prepared by a registered design professional (98% of projects) and COMcheck documents (73% of projects).

Figure 44. Documents Filed for Commercial New Construction Projects

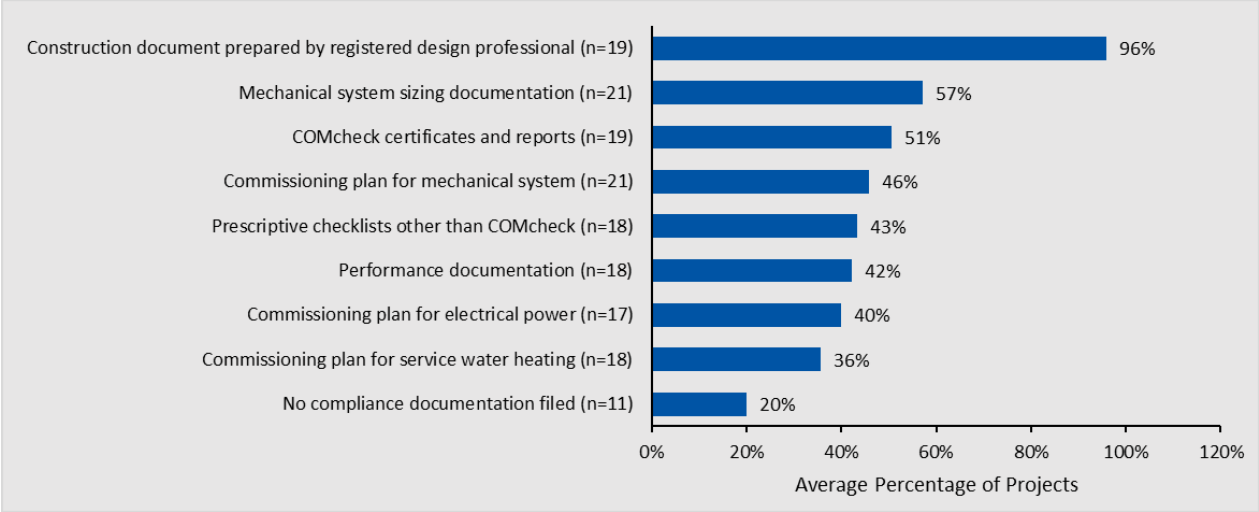


Source: Follow-Up Survey Question: "Approximately what percentage of new construction projects submit the following:"

For commercial addition and alteration projects, code officials also reported that they consistently saw construction documents prepared by a registered design professional; however, 11 code officials noted that they on a few occasions they did not see any compliance documents filed. [12]

[12] This discrepancy between 96% seeing construction documents and 20% seeing no documentation is likely due to respondents not filling out percentages for all document types (the response "n" is provided for each document type for which code officials provided a response).

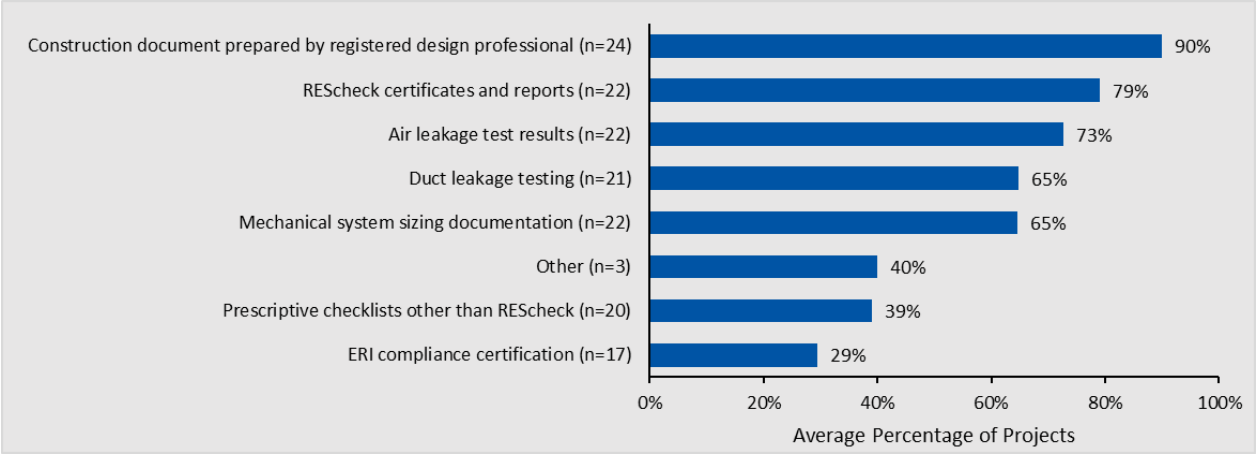
Figure 45. Documentation Filed for Commercial Addition or Alteration Projects



Source: Follow-Up Survey Question: "Thinking of documents relevant to the projects you have reviewed, approximately what percentage of projects submit the following:"

As with commercial new construction, code officials stated that the most commonly filed document for residential new construction projects were construction documents prepared by a registered design professional, with an average of 90% of projects providing this documentation. No respondent said that projects received, "No compliance documentation."

Figure 46. Documents Filed for Residential New Construction Projects

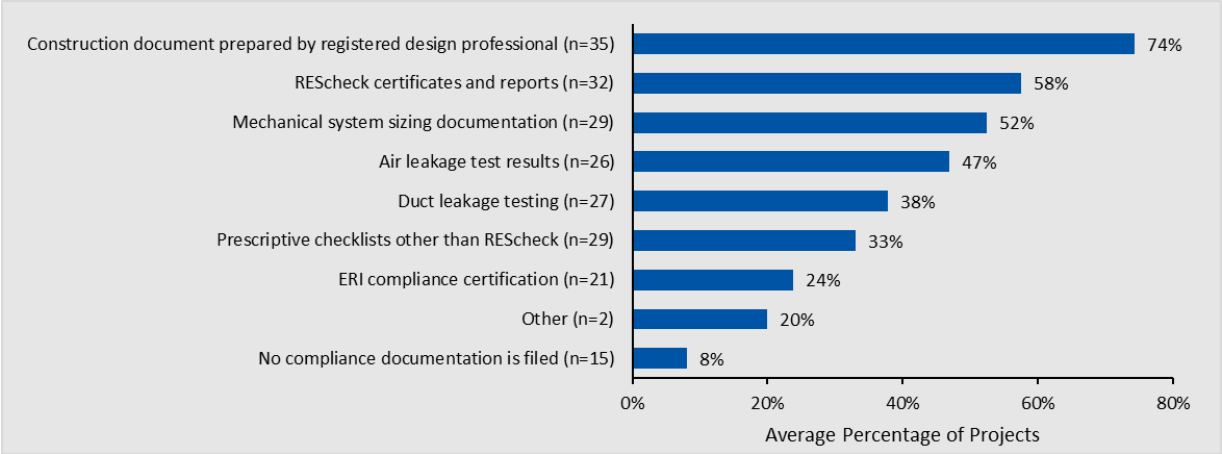


Source: Follow-Up Survey Question: "Approximately what percentage of new construction projects submit the following:"

As shown in Figure 47, construction documents prepared by a registered design professional continued to be the most commonly filed document for residential alteration and addition projects

(at 74% of projects). For these projects, code officials estimated that 8% of projects filed no compliance documentation at all.

Figure 47. Documentation Filed for Residential Addition or Alteration Projects

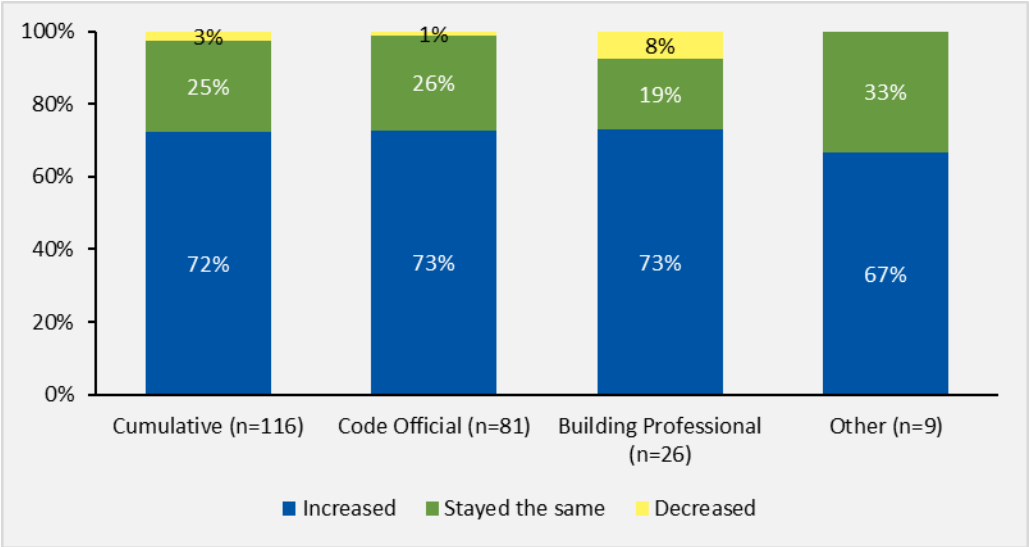


Source: Follow-Up Survey Question: "Thinking of documents relevant to the projects you have reviewed, approximately what percentage of projects submit the following:"

Trends (Follow-Up Survey)

Survey respondents were asked to consider the past 12 months and indicate if they felt that during that time compliance with the energy code in New York State had increased, decreased or stayed the same. Overall, 72% of all respondents said they felt that energy code compliance had increased over the past 12 months. As shown in Figure 48, job function (code officials compared to building professionals) did not affect the proportion who reported that they felt energy code compliance in New York State had increased.

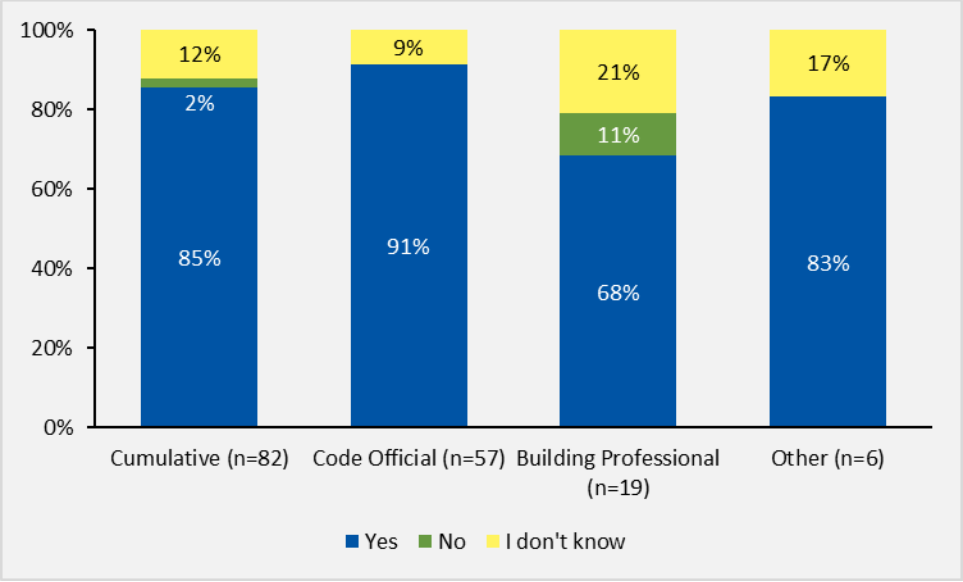
Figure 48. Change in Energy Code Compliance



Source: Follow-Up Survey Question: "In the last year or so, do you think compliance with the energy code in New York State has increase, stayed the same, or decreased?"

Of those respondents who said that they had observed an increase in code compliance, overall 85% said that they thought the services provided by the NYSERDA technical support and training initiatives had played a role in this increase in compliance, with an additional 12% saying they were not sure. Figure 49 shows the breakdown by respondent type.

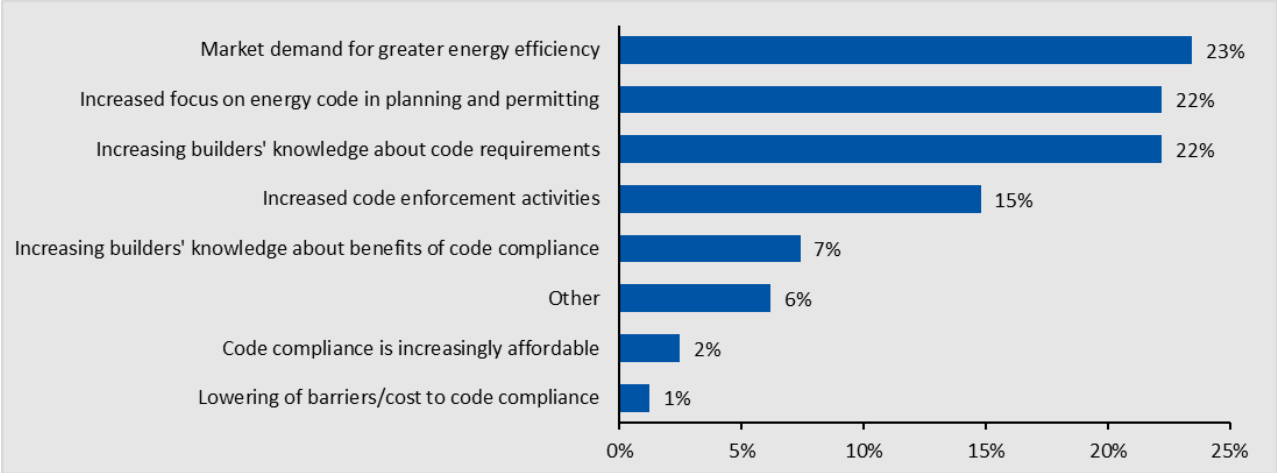
Figure 49. Whether NYSERDA-Sponsored Events Impact Compliance Improvements



Source: Follow-Up Survey Question: "Do you think the services provided by the NYSERDA Initiative, including training and technical assistance, have played a role in this?"

Respondents who had reported an increase in energy code compliance were also asked to identify other factors that they thought contributed to the increased code compliance in New York State. As shown in Figure 50, respondents identified several factors, including market demand for greater energy efficiency (23%), increased focus on energy code in planning and permitting (22%) and increased builders' knowledge about code requirements (22%).

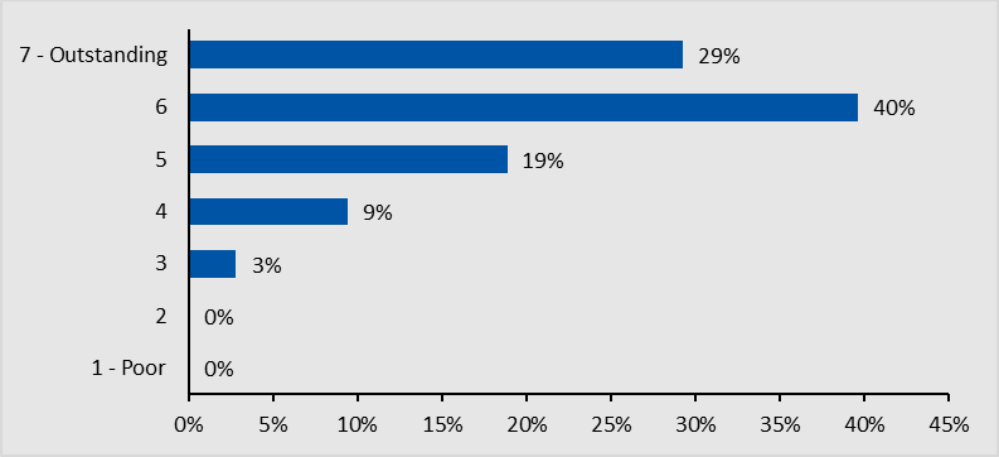
Figure 50. Other Factors Contributing to Increased Compliance (n=81)



Source: Follow-Up Survey Question: "What factors do you think have contributed to the increase in code compliance other than the NYSERDA initiatives?"

Overall, taking everything into consideration, survey respondents rated the value of the webinars they attended as a 5.83 on a scale of 1 to 7 (with 1 being poor and 7 being outstanding) in helping attendees better understand and implement New York State energy code. As shown in Figure 51, the most common rating was a six, more than a third of respondents (40%) giving that score.

Figure 51. Overall Value of NYSERDA Training Initiative (n=106)



Source: Follow-Up Survey Question: "Taking everything into consideration, how would you rate the overall value of the webinar you attended?"

Courses Included in Memo

Table 29 lists the courses offered in 2021 to date, covered by immediate survey results in this memo.

Table 29. Training Courses

Course Title	Implementer	Training Type	Date
ECCCNYS for Large Commercial Buildings (Pt 1): Mechanical Systems	PSD Consulting	Webinar	1/5/2021
ECCCNYS for Large Commercial Buildings (Pt 2): Lighting Systems	PSD Consulting	Webinar	1/5/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 1)	PSD Consulting	Webinar	1/6/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 2)	PSD Consulting	Webinar	1/6/2021
A Process for Residential Energy Code Compliance and Enforcement/Energy Code Plan Reviews	PSD Consulting	Webinar	1/12/2021
A Process for Residential Energy Code Compliance and Enforcement / Part 2 Energy Code Inspections in 15 Minutes or Less	PSD Consulting	Webinar	1/12/2021
Air Sealing to 3 ACH50	PSD Consulting	Webinar	1/13/2021

Course Title	Implementer	Training Type	Date
Other IECC Envelope Requirements	PSD Consulting	Webinar	1/13/2021
Whole-house Mechanical Ventilation	PSD Consulting	Webinar	1/14/2021
Efficient Forced Air Distribution	PSD Consulting	Webinar	1/14/2021
ECCCNYS for Large Commercial Buildings (Pt 1): Mechanical Systems	PSD Consulting	Webinar	1/19/2021
ECCCNYS for Large Commercial Buildings (Pt 2): Lighting Systems	PSD Consulting	Webinar	1/19/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 1)	PSD Consulting	Webinar	1/20/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 2)	PSD Consulting	Webinar	1/20/2021
A Process for Energy Code Compliance and Enforcement / Energy Code Plan Reviews in 15 Minutes or Less	PSD Consulting	Webinar	1/26/2021
A Process for Energy Code Compliance and Enforcement / Energy Code Inspections in 15 Minutes or Less	PSD Consulting	Webinar	1/26/2021
Air Sealing to 3 ACH50	PSD Consulting	Webinar	1/27/2021
Other IECC Envelope Requirements	PSD Consulting	Webinar	1/27/2021
Crushing the NYS Energy Code (Residential)	UGC	Webinar	1/21/2021
Crushing the NYS Energy Code: Commercial	UGC	Webinar	1/22/2021
Crushing the NYS Energy Code (Residential)	UGC	Webinar	1/28/2021
Whole-house Mechanical Ventilation	PSD Consulting	Webinar	1/28/2021
Efficient Forced Air Distribution	PSD Consulting	Webinar	1/28/2021
ECCCNYS for Large Commercial Buildings (Pt 1): Mechanical Systems	PSD Consulting	Webinar	2/2/2021
ECCCNYS for Large Commercial Buildings (Pt 2): Lighting Systems	PSD Consulting	Webinar	2/2/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 1)	PSD Consulting	Webinar	2/3/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 2)	PSD Consulting	Webinar	2/3/2021
2020 ECCCNYS for Residential Buildings: Overview	Newport Ventures	Webinar	1/26/2021

Course Title	Implementer	Training Type	Date
A Process for Energy Code Compliance and Enforcement / Energy Code Plan Reviews in 15 Minutes or Less	PSD Consulting	Webinar	2/9/2021
A Process for Energy Code Compliance and Enforcement / Energy Code Inspections in 15 Minutes or Less	PSD Consulting	Webinar	2/9/2021
A Process for Energy Code Compliance and Enforcement / Energy Code Plan Reviews in 15 Minutes or Less	PSD Consulting	Webinar	2/10/2021
A Process for Energy Code Compliance and Enforcement / Energy Code Inspections in 15 Minutes or Less	PSD Consulting	Webinar	2/10/2021
Air Sealing to 3 ACH50	PSD Consulting	Webinar	2/10/2021
Other IECC Envelope Requirements	PSD Consulting	Webinar	2/10/2021
Whole-house Mechanical Ventilation	PSD Consulting	Webinar	2/11/2021
Efficient Forced Air Distribution	PSD Consulting	Webinar	2/11/2021
Crushing the NYS Energy Code: Commercial	UGC	Webinar	2/11/2021
ECCCNYS for Large Commercial Buildings (Pt 1): Mechanical Systems	PSD Consulting	Webinar	2/16/2021
ECCCNYS for Large Commercial Buildings (Pt 2): Lighting Systems	PSD Consulting	Webinar	2/16/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 1)	PSD Consulting	Webinar	2/17/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 2)	PSD Consulting	Webinar	2/17/2021
Crushing the NYC Energy Code (Residential)	UGC	Webinar	2/19/2021
Crushing the NYS Energy Code : Commericial	UGC	Webinar	2/23/2021
Crushing the NYC Energy Code: Commercial	UGC	Webinar	3/4/2021
Whats New in the 2020 NYC Energy Code	UGC	Webinar	3/5/2021
Crushing the NYC Energy Code (Residential)	UGC	Webinar	3/10/2021
Crushing the NYS Energy Code (Residential)	UGC	Webinar	3/18/2021 - 3/19/2021

Course Title	Implementer	Training Type	Date
A Process for Residential Energy Code Compliance and Enforcement/Energy Code Plan Reviews in 15 Minutes or Less	PSD Consulting	Webinar	3/23/2021
A Process for Residential Energy Code Compliance and Enforcement / Part 2 Energy Code Inspections in 15 Minutes or Less	PSD Consulting	Webinar	3/23/2021
Air Sealing to 3 ACH50	PSD Consulting	Webinar	3/24/2021
Other IECC Envelope Requirements	PSD Consulting	Webinar	3/24/2021
Whole-house Mechanical Ventilation	PSD Consulting	Webinar	3/25/2021
Efficient Forced Air Distribution	PSD Consulting	Webinar	3/25/2021
What's New in the 2020 NYC Energy Code	UGC	Webinar	3/26/2021
Crushing the Code NYS: Commercial	UGC	Webinar	3/30/2021
ECCCNYS for Large Commercial Buildings (Pt 1): Mechanical Systems	PSD Consulting	Webinar	3/30/2021
ECCCNYS for Large Commercial Buildings (Pt 2): Lighting Systems	PSD Consulting	Webinar	3/30/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 1)	PSD Consulting	Webinar	3/31/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 2)	PSD Consulting	Webinar	3/31/2021
Air Sealing to 3 ACH50	PSD Consulting	Webinar	4/1/2021
Other IECC Envelope Requirements	PSD Consulting	Webinar	4/1/2021
NYStretch Overview and Thermal Envelope Requirements Part 1 – 90 minutes	PSD Consulting	Webinar	4/1/2021
NYStretch Mechanical, Plumbing, Lighting, and Electric Power Part 2– 90 minutes	PSD Consulting	Webinar	4/1/2021
Whats New in the 2020 NYC Energy Code	Urban Green Council	Webinar	4/6/2021
A Process for Energy Code Compliance and Enforcement / Energy Code Plan Reviews in 15 Minutes or Less	PSD Consulting	Webinar	4/6/2021
A Process for Energy Code Compliance and Enforcement / Energy Code Inspections in 15 Minutes or Less	PSD Consulting	Webinar	4/6/2021

Course Title	Implementer	Training Type	Date
Air Sealing to 3 ACH50	PSD Consulting	Webinar	4/7/2021
Other IECC Envelope Requirements	PSD Consulting	Webinar	4/7/2021
Whole-house Mechanical Ventilation	PSD Consulting	Webinar	4/8/2021
Efficient Forced Air Distribution	PSD Consulting	Webinar	4/8/2021
Crushing the NYC Energy Code: Commercial	Urban Green Council	Webinar	4/9/2021
Crushing the NYC Energy Code: Residential	Urban Green Council	Webinar	4/13-4/14/2021
ECCCNYS for Large Commercial Buildings (Pt 1): Mechanical Systems	PSD Consulting	Webinar	4/13/2021
ECCCNYS for Large Commercial Buildings (Pt 2): Lighting Systems	PSD Consulting	Webinar	4/13/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 1)	PSD Consulting	Webinar	4/14/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 2)	PSD Consulting	Webinar	4/14/2021
NYStretch Overview and Thermal Envelope Requirements Part 1 – 90 minutes	PSD Consulting	Webinar	4/15/2021
NYStretch Mechanical, Plumbing, Lighting, and Electric Power Part 2 – 90 minutes	PSD Consulting	Webinar	4/15/2021
A Process for Energy Code Compliance and Enforcement / Energy Code Plan Reviews in 15 Minutes or Less	PSD Consulting	Webinar	4/16/2021
A Process for Energy Code Compliance and Enforcement / Energy Code Inspections in 15 Minutes or Less	PSD Consulting	Webinar	4/16/2021
A Process for Energy Code Compliance and Enforcement / Energy Code Plan Reviews in 15 Minutes or Less	PSD Consulting	Webinar	4/20/2021
A Process for Residential Energy Code Compliance and Enforcement / Part 2 Energy Code Inspections in 15 Minutes or Less	PSD Consulting	Webinar	4/20/2021
Air Sealing to 3 ACH50	PSD Consulting	Webinar	4/21/2021
Other IECC Envelope Requirements	PSD Consulting	Webinar	4/21/2021

Course Title	Implementer	Training Type	Date
Whole-house Mechanical Ventilation	PSD Consulting	Webinar	4/22/2021
Efficient Forced Air Distribution	PSD Consulting	Webinar	4/22/2021
ECCCNYS for Large Commercial Buildings (Pt 1): Mechanical Systems	PSD Consulting	Webinar	4/27/2021
ECCCNYS for Large Commercial Buildings (Pt 2): Lighting Systems	PSD Consulting	Webinar	4/27/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 1)	PSD Consulting	Webinar	4/28/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 2)	PSD Consulting	Webinar	4/28/2021
NYStretch Overview and Thermal Envelope Requirements Part 1 – 90 minutes	PSD Consulting	Webinar	4/29/2021
NYStretch Mechanical, Plumbing, Lighting, and Electric Power Part 2– 90 minutes	PSD Consulting	Webinar	4/29/2021
Crushing the NYS Energy Code: Commercial	Urban Green Council	Webinar	4/29/2021
Crushing the NYC Energy Code: Commercial	Urban Green Council	Webinar	4/30/2021
Crushing the NYC Energy Code (Residential)	Urban Green Council	Webinar	5/6/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 1)	PSD Consulting	Webinar	5/3/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 2)	PSD Consulting	Webinar	5/3/2021
A Process for Energy Code Compliance and Enforcement / Energy Code Plan Reviews in 15 Minutes or Less	PSD Consulting	Webinar	5/4/2021
A Process for Residential Energy Code Compliance and Enforcement / Part 2 Energy Code Inspections in 15 Minutes or Less	PSD Consulting	Webinar	5/4/2021
Air Sealing to 3 ACH50	PSD Consulting	Webinar	5/5/2021
Other IECC Envelope Requirements	PSD Consulting	Webinar	5/5/2021
Whole-house Mechanical Ventilation	PSD Consulting	Webinar	5/6/2021
Efficient Forced Air Distribution	PSD Consulting	Webinar	5/6/2021

Course Title	Implementer	Training Type	Date
ECCCNYS for Large Commercial Buildings (Pt 1): Mechanical Systems	PSD Consulting	Webinar	5/11/2021
ECCCNYS for Large Commercial Buildings (Pt 2): Lighting Systems	PSD Consulting	Webinar	5/11/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 1)	PSD Consulting	Webinar	5/12/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 2)	PSD Consulting	Webinar	5/12/2021
NYStretch Overview and Thermal Envelope Requirements Part 1 – 90 minutes	PSD Consulting	Webinar	5/13/2021
NYStretch Mechanical, Plumbing, Lighting, and Electric Power Part 2– 90 minutes	PSD Consulting	Webinar	5/13/2021
Crushing the Code New York State: Residential	Urban Green Council	Webinar	5/14/2021
Crushing the Code NYC Commercial	Urban Green Council	Webinar	5/18/2021
A Process for Energy Code Compliance and Enforcement / Energy Code Plan Reviews in 15 Minutes or Less	PSD Consulting	Webinar	5/18/2021
A Process for Residential Energy Code Compliance and Enforcement / Part 2 Energy Code Inspections in 15 Minutes or Less	PSD Consulting	Webinar	5/18/2021
Air Sealing to 3 ACH50	PSD Consulting	Webinar	5/19/2021
Other IECC Envelope Requirements	PSD Consulting	Webinar	5/19/2021
Whole-house Mechanical Ventilation	PSD Consulting	Webinar	5/20/2021
Efficient Forced Air Distribution	PSD Consulting	Webinar	5/20/2021
Crushing the Code NYS Commercial	Urban Green Council	Webinar	5/26/2021
ECCCNYS for Large Commercial Buildings (Pt 1): Mechanical Systems	PSD Consulting	Webinar	5/25/2021
ECCCNYS for Large Commercial Buildings (Pt 2): Lighting Systems	PSD Consulting	Webinar	5/25/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 1)	PSD Consulting	Webinar	5/26/2021

Course Title	Implementer	Training Type	Date
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 2)	PSD Consulting	Webinar	5/26/2021
NYStretch Overview and Thermal Envelope Requirements Part 1	PSD Consulting	Webinar	5/27/2021
NYStretch Mechanical, Plumbing, Lighting, and Electric Power Part 2	PSD Consulting	Webinar	5/27/2021
A Process for Residential Energy Code Compliance and Enforcement/Energy Code Plan Reviews in 15 Minutes or Less	PSD Consulting	Webinar	6/1/2021
A Process for Residential Energy Code Compliance and Enforcement / Part 2 Energy Code Inspections in 15 Minutes or Less	PSD Consulting	Webinar	6/1/2021
Air Sealing to 3 ACH50	PSD Consulting	Webinar	6/2/2021
Other IECC Envelope Requirements	PSD Consulting	Webinar	6/2/2021
Whole-house Mechanical Ventilation	PSD Consulting	Webinar	6/3/2021
Efficient Forced Air Distribution	PSD Consulting	Webinar	6/3/2021
Crushing the Code New York State: Residential	Urban Green Council	Webinar	6/3/2021
Crushing the Code New York State: Commercial	Urban Green Council	Webinar	6/9/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 1)	PSD Consulting	Webinar	6/9/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 2)	PSD Consulting	Webinar	6/9/2021
NYStretch Overview and Thermal Envelope Requirements Part 1	PSD Consulting	Webinar	6/10/2021
NYStretch Mechanical, Plumbing, Lighting, and Electric Power Part 2	PSD Consulting	Webinar	6/10/2021
Crushing the NYC Energy Code (Residential)	Urban Green Council	Webinar	6/16/2021
A Process for Energy Code Compliance and Enforcement / Energy Code Plan Reviews in 15 Minutes or Less	PSD Consulting	Webinar	6/15/2021

Course Title	Implementer	Training Type	Date
A Process for Residential Energy Code Compliance and Enforcement / Part 2 Energy Code Inspections in 15 Minutes or Less	PSD Consulting	Webinar	6/15/2021
Air Sealing to 3 ACH50	PSD Consulting	Webinar	6/16/2021
Other IECC Envelope Requirements	PSD Consulting	Webinar	6/16/2021
Whole-house Mechanical Ventilation	PSD Consulting	Webinar	6/17/2021
Efficient Forced Air Distribution	PSD Consulting	Webinar	6/17/2021
Whats New in the 2020 NYC Energy Code	Urban Green Council	Webinar	6/22/2021
ECCCNYS for Large Commercial Buildings (Pt 1): Mechanical Systems	PSD Consulting	Webinar	6/22/2021
ECCCNYS for Large Commercial Buildings (Pt 2): Lighting Systems	PSD Consulting	Webinar	6/22/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 1)	PSD Consulting	Webinar	6/23/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 2)	PSD Consulting	Webinar	6/23/2021
NYStretch Overview and Thermal Envelope Requirements Part 1	PSD Consulting	Webinar	6/24/2021
NYStretch Mechanical, Plumbing, Lighting, and Electric Power Part 2	PSD Consulting	Webinar	6/24/2021
NYStretch Energy Code for Commercial Buildings Part 1: Building Thermal Envelope, Mechanical Systems, Commissioning, and Additions and Alterations	PSD Consulting	Webinar	6/25/2021
NYStretch Energy Code for Commercial Buildings Part 2: Electric Power and Lighting, Total Building Performance, Additional Efficiency Package Options, and Appendices	PSD Consulting	Webinar	6/25/2021
Crushing the NYC Energy Code: Commercial	Urban Green Council	Webinar	6/29/2021
Crushing the NYS Energy Code: Commercial	Urban Green Council	Webinar	6/30/2021

Course Title	Implementer	Training Type	Date
A Process for Residential Energy Code Compliance and Enforcement/Energy Code Plan Reviews in 15 Minutes or Less	PSD Consulting	Webinar	6/29/2021
A Process for Residential Energy Code Compliance and Enforcement / Part 2 Energy Code Inspections in 15 Minutes or Less	PSD Consulting	Webinar	6/29/2021
Air Sealing to 3 ACH50	PSD Consulting	Webinar	6/30/2021
Other IECC Envelope Requirements	PSD Consulting	Webinar	6/30/2021
Whole-house Mechanical Ventilation	PSD Consulting	Webinar	7/1/2021
Efficient Forced Air Distribution	PSD Consulting	Webinar	7/1/2021
ECCCNYS for Large Commercial Buildings (Pt 1): Mechanical Systems	PSD Consulting	Webinar	7/6/2021
ECCCNYS for Large Commercial Buildings (Pt 2): Lighting Systems	PSD Consulting	Webinar	7/6/2021
NYStretch Energy Code for Commercial Buildings Part 1: Building Thermal Envelope, Mechanical Systems, Commissioning, and Additions and Alterations	PSD Consulting	Webinar	7/7/2021
NYStretch Energy Code for Commercial Buildings Part 2: Electric Power and Lighting, Total Building Performance, Additional Efficiency Package Options, and Appendices	PSD Consulting	Webinar	7/7/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 1)	PSD Consulting	Webinar	7/8/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 2)	PSD Consulting	Webinar	7/8/2021
NYStretch Overview and Thermal Envelope Requirements Part 1	PSD Consulting	Webinar	7/13/2021
NYStretch Mechanical, Plumbing, Lighting, and Electric Power Part 2	PSD Consulting	Webinar	7/13/2021
A Process for Energy Code Compliance and Enforcement / Energy Code Plan Reviews in 15 Minutes or Less	PSD Consulting	Webinar	7/14/2021

Course Title	Implementer	Training Type	Date
A Process for Energy Code Compliance and Enforcement / Energy Code Inspections in 15 Minutes or Less	PSD Consulting	Webinar	7/14/2021
Air Sealing to 3 ACH50	PSD Consulting	Webinar	7/15/2021
Other IECC Envelope Requirements	PSD Consulting	Webinar	7/15/2021
Whole-house Mechanical Ventilation	PSD Consulting	Webinar	7/20/2021
Efficient Forced Air Distribution	PSD Consulting	Webinar	7/20/2021
ECCCNYS for Large Commercial Buildings (Pt 1): Mechanical Systems	PSD Consulting	Webinar	7/21/2021
ECCCNYS for Large Commercial Buildings (Pt 2): Lighting Systems	PSD Consulting	Webinar	7/21/2021
NYStretch Energy Code for Commercial Buildings Part 1: Building Thermal Envelope, Mechanical Systems, Commissioning, and Additions and Alterations	PSD Consulting	Webinar	7/22/2021
NYStretch Energy Code for Commercial Buildings Part 2: Electric Power and Lighting, Total Building Performance, Additional Efficiency Package Options, and Appendices	PSD Consulting	Webinar	7/22/2021
Crushing the NYC Energy Code: Commercial	Urban Green Council	Webinar	7/15/2021-7/16/2021
Crushing the NYC Energy Code (Residential)	Urban Green Council	Webinar	7/21/2021
Crushing the Code New York State: Residential	Urban Green Council	Webinar	7/28/2021
Crushing the Code New York State: Commercial	Urban Green Council	Webinar	7/29-7/30/2021
Whats New in the 2020 NYC Energy Code	Urban Green Council	Webinar	7/29/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 1)	PSD Consulting	Webinar	7/27/2021
Prioritizing ECCCNYS Enforcement for Commercial Buildings (Pt 2)	PSD Consulting	Webinar	7/27/2021

Course Title	Implementer	Training Type	Date
NYStretch Overview and Thermal Envelope Requirements Part 1	PSD Consulting	Webinar	7/28/2021
NYStretch Mechanical, Plumbing, Lighting, and Electric Power Part 2	PSD Consulting	Webinar	7/28/2021
A Process for Energy Code Compliance and Enforcement / Energy Code Plan Reviews in 15 Minutes or Less	PSD Consulting	Webinar	7/29/2021
A Process for Energy Code Compliance and Enforcement / Energy Code Inspections in 15 Minutes or Less	PSD Consulting	Webinar	7/29/2021
Air Sealing to 3 ACH50	PSD Consulting	Webinar	8/3/2021
Other IECC Envelope Requirements	PSD Consulting	Webinar	8/3/2021
Whole-house Mechanical Ventilation	PSD Consulting	Webinar	8/4/2021
Efficient Forced Air Distribution	PSD Consulting	Webinar	8/4/2021
ECCCNYS for Large Commercial Buildings (Pt 1): Mechanical Systems	PSD Consulting	Webinar	8/5/2021
ECCCNYS for Large Commercial Buildings (Pt 2): Lighting Systems	PSD Consulting	Webinar	8/5/2021

Appendix - Technology and Market Development Analysis Memo

In Microsoft Word, please double click on the following icon to review the Market Evaluation Team's calculation of initiative savings under Technology and Market Development program.

NYSERDA TMD Savings Memo.pdf

In the PDF, please click on the Attachments icon in the vertical menu to the left to review the Market Evaluation Team's calculation of initiative savings under Technology and Market Development program.

Appendix – Clean Energy Fund Analysis

Please double click on the following icon for details on the Market Evaluation Team's methodology for calculating preliminary savings for program activities under Clean Energy Fund program.

CEF Savings Validation Approach

In the PDF, please click on the Attachments icon in the vertical menu to the left to review the Market Evaluation Team's methodology for calculating preliminary savings for program activities under Clean Energy program.

Appendix – CEF Indirect Savings Methodology

Please double click on the following icon to review the Market Evaluation Team's CEF indirect savings calculation methodology.

In the PDF, please click on the Attachments icon in the vertical menu to the left to review the Market Evaluation Team's CEF indirect savings calculation methodology.