

ADVANCED ENERGY CODES PROGRAM: PROCESS EVALUATION PHASE II

Final

Prepared For:

New York State Energy Research and Development Authority (NYSERDA)
Albany, NY

Patricia Gonzales
NYSERDA Project Manager

Prepared By:

INDUSTRIAL ECONOMICS, INCORPORATED (IEc)

2067 Massachusetts Avenue
Cambridge, Massachusetts 02140
617/354-0074

Angela Vitulli, Project Manager

Notice

This report was prepared by Industrial Economics, Inc. in the course of performing work contracted for and sponsored by the New York State Energy Research and Development Authority (hereafter “NYSERDA”). The opinions expressed in this report do not necessarily reflect those of NYSERDA or the State of New York, and reference to any specific product, service, process, or method does not constitute an implied or expressed recommendation or endorsement of it. Further, NYSERDA, the State of New York, and the contractor make no warranties or representations, expressed or implied, as to the fitness for particular purpose or merchantability of any product, apparatus, or service, or the usefulness, completeness, or accuracy of any processes, methods, or other information contained, described, disclosed, or referred to in this report. NYSERDA, the State of New York, and the contractor make no representation that the use of any product, apparatus, process, method, or other information will not infringe privately owned rights and will assume no liability for any loss, injury, or damage resulting from, or occurring in connection with, the use of information contained, described, disclosed, or referred to in this report.

NYSERDA makes every effort to provide accurate information about copyright owners and related matters in the reports we publish. Contractors are responsible for determining and satisfying copyright or other use restrictions regarding the content of reports that they write, in compliance with NYSERDA’s policies and federal law. If you are the copyright owner and believe a NYSERDA report has not properly attributed your work to you or has used it without permission, please email print@nyserda.ny.gov.

Executive Summary

Project Scope and Methods

The Energy Conservation Construction Code of New York State (ECCCNYS, or the “Energy Code”) is a minimum building standard for energy efficiency that applies to commercial and residential buildings across the State. To increase compliance with the Energy Code and to reduce the State’s energy consumption, the New York State Energy Research and Development Authority (NYSERDA) provides a range of training and support services through the Codes initiative of its Advanced Energy Codes and Standards program

The primary goal of this phase of the process evaluation is to understand the contribution of NYSEDA training to behavioral changes among training participants that improve Energy Code compliance. The evaluation relied primarily upon a survey of design professional and code official trainees who attended NYSEDA Energy Code training and a comparison group of non-participants.

A secondary goal of the evaluation is to evaluate the effectiveness of NYSEDA’s Energy Code support services to municipalities. IEc conducted interviews with 10 individuals in municipalities that received plan review and inspection support services offered by NYSEDA through its contractor T.Y. Lin. The goal of the interviews was to qualitatively assess satisfaction with these services and changes in knowledge or behavior.

Key Findings – Design Professionals

- It appears that trainees displayed a gain in understanding after taking the training; however, the gains eroded over time to some degree. The difference between trainees and non-trainees with respect to understanding of the code overall is statistically significant; however, trainees’ reported understanding of the code was lower than non-trainees, although the difference is substantively small (0.3 points).
- The findings suggest that design professionals signing up for training may have a lower baseline understanding of the Energy Code compared to non-participating design professionals, and therefore may have been more motivated to take the training course. This suggests that NYSEDA Energy Code training is “raising the floor” in terms of the understanding of the Energy Code among architects and other design professionals.
- Respondents report a statistically significant drop of one point on the rating scale from directly after training to the current survey when asked about the impact of training on their behaviors. This suggests participants’ intentions directly after training were more ambitious than their behavior in practice; this is a common finding among interventions that seek behavior change.
- Overall, the findings for the impact of training on reported implementation of the selected residential and commercial behaviors is mixed. A statistically significant higher percentage of trainees report implementing all of the residential and commercial provisions after training than before training. When comparing trainees to non-trainees for residential provisions, all of the provisions are applied more often by trainees, with one exception (although the difference is not

statistically significant for that provision). When comparing trainees to non-trainees for commercial provisions, there is mixed evidence of the effect of training.

Key Findings – Code Officials

- There are increases in participant reported levels of understanding directly after training that persist beyond training. Participants report a greater overall understanding than non-participants, and participants report higher levels of confidence and comfort in applying the Energy Code to their work.
- For code officials, it appears that training has a significant impact on participants, both when looking at participants before and after training, and when looking at participants versus non-participants. The consistent gains in understanding suggest that all code officials could benefit from NSYERDA’s Energy Code training.
- Respondents report a small drop of one point on the rating scale from directly after training to the current survey when asked about the impact of training on their behaviors. This suggests participants’ intentions directly after training were more ambitious than their behavior in practice; this is a common finding among interventions that seek behavior change.
- Overall, the findings for the impact of training on reported implementation of the selected residential and commercial behaviors is positive. In both building plan reviews and building inspections, all participants check for the included provisions more often than they did before training, by substantial margins. Participants also conduct prescribed inspection practices more after training than before training. When comparing participants to non-participants, in general for both plan reviews and building inspections, more participants report checking for the included provisions than non-participants.

Key Findings – Municipal Support Services

- Overall, municipalities who received the services felt the services met their needs, and reported high levels of satisfaction with the services. All municipalities would recommend the services to a colleague, and would use the service again in the future.
- Most interviewees reported that their familiarity with the Energy Code increased in terms of level of understanding of the Energy Code, confidence level in enforcing the Energy Code, and comfort describing how to comply with the Energy Code to colleagues. Interviewees also reported that they have changed the way they do plan reviews and inspection due to what they learned.
- Most interviewees (4 of the 5 who responded to this question) indicated that the support services offered by T.Y. Lin are an effective way to increase code compliance.

Recommendations

IEc suggests the following recommendations for improving NYSERDA training on implementing and enforcing the Energy Code and municipal support services, based on the findings summarized below:

- **Recommendation 1.** Continue to offer code training to code officials and design professionals. As the impact and retention of training topics appears mixed, *NYSERDA should consider creating more targeted training courses as one strategy to address persistence of benefits*. The largest differences in trainees’ versus non-trainees’ application of the Energy Code is for specific provisions. Smaller, topic-based training courses may better address potential information gaps, and attract more trainees (due to the smaller time commitment). This was also a recommendation that came out of the Phase I process evaluation.
- **Recommendation 2.** *Consider an outreach campaign to communicate the available resources to trainees*. Increasing communication about available resources to trainees to refresh knowledge may be helpful.
- **Recommendation 3.** *Continue offering plan review and inspection services to municipalities*. NYSERDA may also want to consider pursuing policy change that would aid enforcement by local code officials, given comments by municipal interviewees that changes required by code officials are sometimes blocked by design professionals. In addition, *consider offering an overview training that covers the Energy Code in its entirety*, rather than just the changes with each new Energy Code update.
- **Recommendation 4.** *Consider ways to increase trainee commitment to apply their knowledge*. For example, at the end of training, trainees could be asked to formally set goals that are communicated to NYSERDA, and tracked through a system monitored by trainers (or NYSERDA). By tracking commitments, NYSERDA could periodically contact trainees to remind them of their goals, discuss progress and implementation challenges, and potentially offer additional support if needed; commitments may help reinforce material covered in training. Other effective strategies for maintaining a high level of commitment in action include: (1) using interactive activities during training that encourage participation (e.g., collaborative activities, role plays, small group exercises); (2) implement post-training evaluation of skills (e.g., track and measure after training); or (3) ensure that the content is relevant to actual job duties (i.e., activities that resemble behaviors, challenges, and scenarios faced by trainees).¹

Recommendation for Evaluation Team

Consider conducting a similar, but potentially more streamlined behavioral survey with a statistically valid sample for code officials, so that conclusions may be extrapolated to the population. This evaluation found positive results of training for code officials in particular, but those results cannot be statistically extrapolated. Having a statistically valid finding may better inform the investment of training resources moving forward. Also, given NYSERDA’s intended use of this study as an attribution method for code compliance studies, having a statistically valid finding for code officials may be helpful to NYSERDA.

¹ Lisa A. Burke and Holly M. Hutchins. “A Study of Best Practices in Training Transfer and Proposed Model of Transfer.” *Human Resource Development Review*, Vol. 19, No. 2, Summer 2008, pages 107-128.