

Process Evaluation of the Building Energy Code Compliance Program

June 2011 through May 2012

Prepared for:
Illinois Department of Commerce and Economic Opportunity

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Final Report: October 2013

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Executive Summary

This report presents the findings of ADM Associates' process evaluation of the Building Energy Code Compliance Program offered by the Illinois Department of Commerce and Economic Opportunity (DCEO). This report presents results for electric program year four and natural gas program year one (EPY4/GPY1), which is defined as the period from June 2011 through May 2012.

The primary techniques utilized in the evaluation are as follows:

- Thorough desk review of program materials, including course curriculum and a report from the implementation contractor.
- A survey of Building Energy Code Compliance Program participants.
- Literature review of code compliance issues and programs to support code compliance.

The Building Energy Code Compliance Program plays an important role in improving Illinois statewide compliance with the energy code. The majority of participants surveyed by ADM reported that the course was useful and had improved their knowledge of the code. This finding suggests that the program is helping to improve compliance with the energy code and is reducing building energy consumption by educating building professionals about code requirements. In addition to reporting educational benefits of the program, participants identified barriers to code compliance which have yet to be addressed by the program. These barriers include the cost of implementing code requirements, a resistance to code compliance, and a lack of code enforcement.

The following conclusions were drawn from the evaluation:

- **Course is Highly Valued:** The majority of course participants indicated on both the ADM survey and a post-training survey administered by the program implementer, International Energy Conservation Consultants, LLC (IECC), that the training increased their knowledge of code requirements and led to better understanding of how to incorporate code compliance into their professional practice. It was observed that knowledge gained through the program provides real value to not only the program participant, but to the Illinois building industry as a whole.
- **High Level of Interest in Course:** Many of the comments from the IECC survey respondents indicated that the course was at maximum capacity. Participants indicated that the room was often crowded or too full to enroll, which suggests that there is sufficient demand to necessitate additional training sessions. Some respondents to ADM's survey reported that courses offered in a convenient location were full and that they were only able to attend at a less convenient location.
- **Room for Improvement with Commercial Codes Content:** Overall, participants indicated a higher level of satisfaction with material pertaining to residential codes than with material

pertaining to commercial codes. Some participants noted that less time was dedicated to discussing the applicability of the codes to commercial buildings than to residential buildings. For this reason, some participants suggested that the course could be improved by spending more time on commercial issues and increasing the depth of coverage about those commercial issues.

- **Knowledgeable Instructors:** The most positive feedback was related to the instructors' performance and their level of expertise. Many participants said the quality of the instructors was the best part about the course.
- **Few Participants Reported Learning about Compliance Software:** Fifty-six percent of survey respondents indicated that their level of knowledge about how to use software to document compliance improved "not at all" or "a little." The level of self-reported improvement in knowledge about compliance software was lower than for improvement in knowledge about the energy code and how to comply with the codes in practice.
- **Participants Utilize Other Resources to Understand Code Compliance Issues:** Most survey respondents indicated that they utilize other resources in addition to those provided through the Building Energy Code Compliance Program. Participants most commonly reported that they also used resources provided by professional organizations and the U.S. Department of Energy (DOE). Although participants reported having other resources available, they stated that the resources provided through the Building Energy Code Compliance Program were as valuable or more valuable than those available elsewhere. Additionally, most participants reported that the course was somewhat or very useful.
- **Lack of Awareness of Technical Assistance:** Only 12% of the survey respondents indicated that they had utilized the email or telephone technical assistance available through the program. Of those respondents who had not utilized the technical service, 40% indicated that they were not aware that it existed. This finding suggests that utilization of the service may be increased if it was better promoted.
- **Barriers to Code Compliance:** More than 80% of survey respondents indicated that they thought there were barriers to code compliance. These respondents stated that rudimentary understanding of the code (specifically, the design and construction practices that comply with the code), high costs associated with code compliance, and a lack of code enforcement were the greatest barriers to compliance.

The following are recommendations which ADM believes DCEO should consider in an effort to improve the delivery and effectiveness of the Building Energy Codes Training Program.

- **Increasing the Number of Courses Offered:** There is strong demand for the courses; if the program can meet the demand, there is potential to save energy and improve building code compliance statewide.
- **Partitioning the Curriculum into Separate Commercial and Residential Courses:** Feedback suggests that too much material was presented in too short of a time frame and that more in-depth coverage was needed. In addition, nearly half of the survey respondents

reported that their work related to either residential or commercial buildings, but not both. Separating the content will ensure that the material is covered in greater depth and that it is relevant and geared to the participants' specific learning needs.

- **Identify Lessons Learned and Elicit Feedback from Partners to Improve the Administrative Aspects of Program Delivery:** Training course delivery requires the cooperation and involvement of several key stakeholders. DCEO, the Illinois Green Economy Network (IGEN), IECC, and the host college all have a specific role in the delivery process. Setting expectations and defining roles will help to make the delivery process more fluid, and will allow more attention to be given to content presentation and to meeting the needs of the participants.
- **Improve Promotion of Technical Assistance:** The technical assistance provided by the program was not utilized by the majority of survey respondents. Although many of the respondents indicated that they had not needed it, a sizable percentage of respondents reported that they were not aware of it. Improving the promotion of the technical assistance may increase its use by participants, thereby enhancing the value of the program.

1. Introduction

This report presents the findings of ADM Associates' process evaluation of the Building Energy Code Compliance Program offered by the Illinois Department of Commerce and Economic Opportunity (DCEO). This report presents results for electric program year four and natural gas program year one (EPY4/GPY1), which is defined as the period from June 2011 through May 2012.

1.1. Description of Program

The Building Energy Code Compliance Program was developed to ensure that the State of Illinois achieves a 90% compliance rate with the applicable energy code by 2017 as required by the U.S. Department of Energy under the 2009 American Recovery and Reinvestment Act (ARRA).

DCEO's Building Energy Code Compliance Program consists of a full day training course for building professionals as well as a communication service through which building professionals can receive technical assistance on interpreting the building energy code. Based on records received from DCEO's implementation partner, International Energy Conservation Consultants, LLC (IECC), during the June, 2011 through May, 2012 period, 866 building professionals attended the training at one of 25 training sessions held. Additionally, 174 technical interpretations of the building code were made during the period.

1.2. Organization of Report

This report on the process evaluation of the Building Energy Code Compliance Program is organized as follows:

- Chapter 2 presents and discusses the methods used for and results obtained from the process evaluation of the program.
- Chapter 3 presents the conclusions and recommendations from the process evaluation.
- Appendix A provides a copy of the questionnaire used for the survey of training participants.
- Appendix B presents the results from the survey of training participants.

2. Process Evaluation

This chapter presents the results of the process evaluation of the Building Energy Code Compliance Program activity during the program year, the period from June 1, 2011 through May 31, 2012. The purpose of the process evaluation is to examine program operations and results throughout the program year, and to identify potential program improvements that may prospectively improve program efficiency or effectiveness in terms of participation and satisfaction levels.

Key research questions to be addressed by this evaluation of EPY4/GPY1 activity include:

- Is the program attracting the intended audience?
- Is the course designed and delivered in a way that provides value to the participants?
- Are the participants satisfied with the knowledge acquired by participating?
- What are the barriers to code compliance?
- The chapter begins with a summary of data collection activities, followed by a description of the program and the rationale for offering it for the purpose of improving code compliance. This discussion is followed by findings from the survey of participants. Finally, conclusions, recommendations, and other findings from the process evaluation are presented, which may be useful as a means to compare program activity over time, and in conducting future planning efforts.

2.1. Summary of Primary Data Collection

ADM administered an email survey of EPY4/GPY1 Building Energy Code Compliance Program participants in January, 2013. The survey focused on participants' overall experience with the course, and addressed specific factors related to the program participation process. The topics addressed specifically by the participant survey include:

- Overall level of satisfaction with the course;
- Prior knowledge of the course material;
- The appropriateness of course curriculum;
- The location and convenience of the course;
- Impressions of the instructor; and
- The quality of the technical assistance provided through the program.

In total, 195 participants who had attended the Building Energy Code Compliance Program course during the program year responded to the survey.

2.2. Document Review

ADM reviewed program-related documentation and literature, which included the program description, course materials, and a report of the program year activity prepared by the program implementation contractor, IECC. The IECC report included the results of a post-training survey administered to participants at the end of the course. In total, 817 participants responded to this survey. The survey covered several topics including some similar to those addressed by the ADM-administered survey, such as overall satisfaction, impressions of the course and the instructors, prior understanding of the building codes, and the convenience of course locations.

2.3. Program Description

The intent of the Building Energy Codes Training Program is to improve Illinois's compliance with the state residential and commercial building energy efficiency code. During the period covered in this evaluation, the 2009 International Energy Conservation Code was enforced. As of January 1, 2013, the 2012 International Energy Conservation Code supplanted the 2009 code.

A primary goal of the Building Energy Codes Training Program is to ensure that the state meets the 90% compliance rate by 2017 as required by the American Recovery and Reinvestment Act (ARRA).¹ A secondary goal is to produce energy savings through increased compliance.

2.3.1 Noncompliance with the Energy Code

Energy efficiency codes and standards are intended to improve the energy efficiency of new construction and major rehabilitation projects by requiring the incorporation of energy efficient technologies and design features. However, despite the energy efficiency requirements, studies have documented that many buildings do not comply with the applicable energy efficiency codes. For example, studies of code compliance performed in Maine, Massachusetts, and Vermont have found compliance rates ranging from 16% to 70%.²

Buildings that incorporate technologies or design features which do not fully comply with the energy code likely consume more energy than they would if they were fully compliant. The "lost" savings that result from noncompliance can arise from a variety of building components. A study completed by the New York State Energy Research and Development Authority (NYSERDA) found that, in residential buildings, the components accounting for the largest share of lost energy savings due to noncompliance were basement wall construction, which accounted for 53% of the lost savings, and walls, which accounted for 10% of the lost savings. In commercial buildings, noncompliance in energy recovery and cooling efficiency accounted for

¹ Misuriello, H., Kwatra, S., Kushler, M., & Nowak, S. (2012). *Building Energy Code Advancement through Utility Support and Engagement*. American Council for an Energy-Efficient Economy.

² Elneceve, I. (2012). *Utility Programs and Building Energy Codes*. Midwest Energy Efficiency Alliance. Chicago, IL.

60% of the lost energy savings, and interior lighting efficiency and control noncompliance accounted for 23% of the lost savings.³

Energy code noncompliance has also been documented in Illinois. In 2011, a study of Illinois's code compliance was performed using the checklist methodology developed by the U.S. Department of Energy's Pacific Northwest National Laboratory (PNNL). This study found an 87% compliance rate for a sample of residential new construction projects in participating jurisdictions and a 79% compliance rate in a sample of buildings in non-participating jurisdictions (those that have not adopted the building codes despite the statewide requirement).⁴ A compliance rate was not calculated for commercial new construction projects because time constraints prevented the researchers from collecting a statistically significant sample.

The Illinois compliance study also identified common patterns of noncompliance with the 2009 International Energy Conservation Code that was in effect at the time of the study. The areas of noncompliance identified for residential buildings include:

- “Right sizing” of HVAC systems;
- Insulation and weather-resistant protection of basement walls and slab foundations;
- Installation of ducts in exterior walls;
- Software use for compliance assessment;
- Fenestration and door labels that do not address air leakage limitations.

Patterns of noncompliance identified for commercial facilities include:

- Finding lighting controls for exterior lighting with 10-hour backup batteries;
- “Right sizing” of HVAC systems;
- Fenestration and door labels that do not address air leakage limitations.

The Illinois compliance study thus identifies energy savings potential that would result from enhanced code compliance. Moreover, noncompliance issues noted by the baseline study may be mitigated by the training and technical assistance provided through the Building Energy Code Compliance Program, thereby generating program-attributable energy savings.

2.3.2 Program Logic

There are a variety of reasons for noncompliance with the code, including a lack of knowledge of code requirements, a lack of understanding about how to design and construct code compliant

³ Harper, B., L., Badger, J.C., Reed, G., & Wirtshafter, R. (2012). *Improved Code Enforcement: A Powerful Policy Tool—Lessons Learned from New York State*. Proceedings of the 2012 ACEEE Summer Study on Energy Efficiency in Buildings. Washington, DC: American Council for an Energy Efficient Economy.

⁴ Association of Professional Energy Consultants, Inc. (2011). *Measuring the Baseline Compliance Rate for Residential and Non-residential Buildings in Illinois against the 2009 International Energy Conservation Code*.

buildings, insufficient code enforcement, the costs of achieving code compliance, the availability of compliant products, and general resistance to complying with the code.

The Building Energy Code Compliance Program seeks to improve compliance by providing information about the code requirements and about how to achieve compliance. The program is targeted towards building professionals who play a role in any aspect of the building lifecycle: design, construction, or code enforcement (inspection). Figure 2-1 represents the logic for how the program improves compliance rates and generates energy savings.

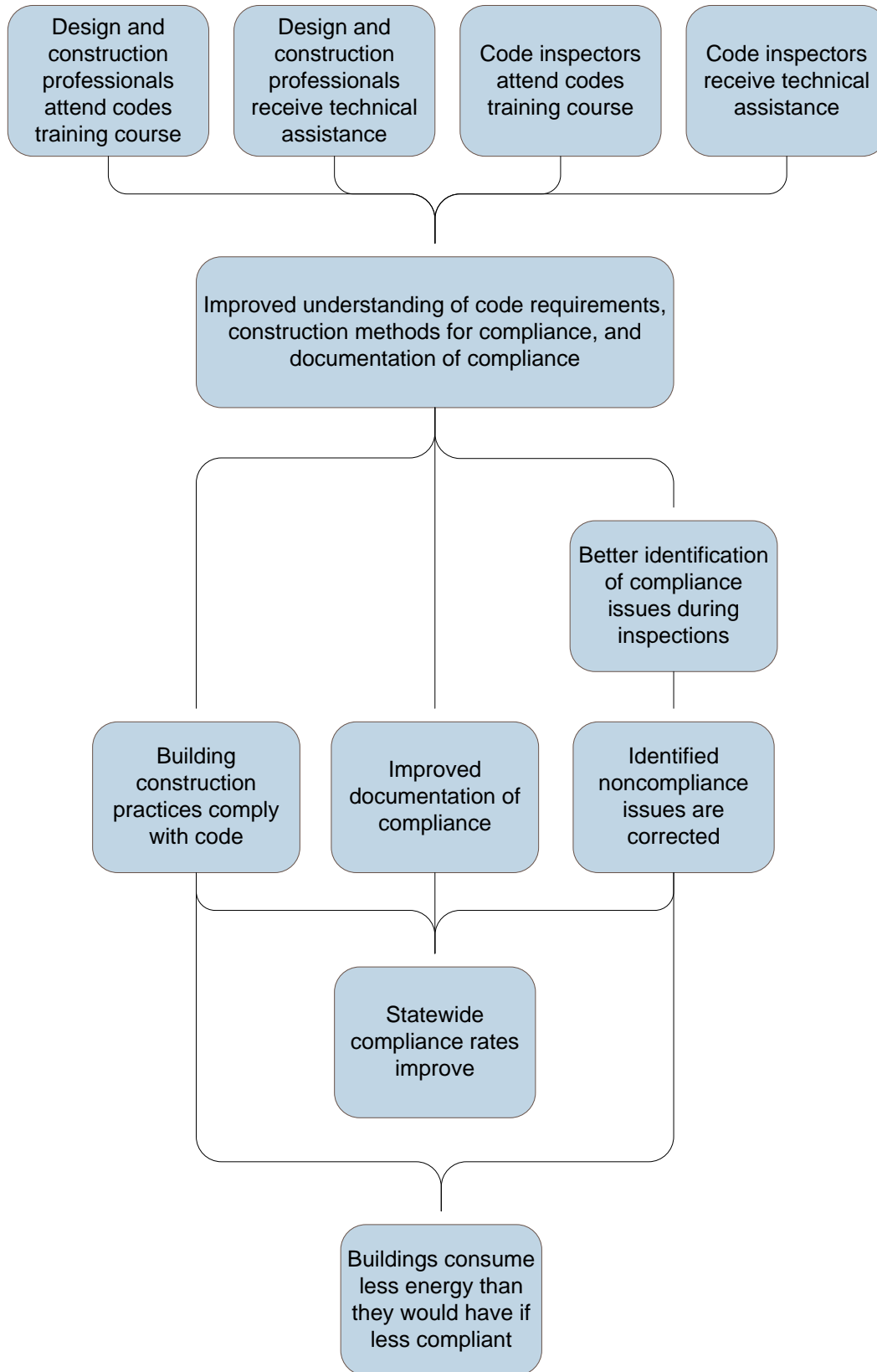


Figure 2-1 Building Energy Code Compliance Program Logic

2.3.3 Course Description

The Building Energy Code Compliance Program training session is divided into two sessions that focus on residential and commercial applications of the code, respectively. Each of the training sessions is designed to last three and a half hours. The residential session of the program is taught in the morning; it addresses a variety of topics including an overview of the code requirements and their administration and enforcement, a brief discussion of general definitions and design conditions, and, finally, an in-depth discussion of residential provisions. Topics covered during the more in-depth discussion include compliance methods for insulation and fenestration, air leakage and sealing, building mechanical systems, and methods for assessing and documenting compliance.

The afternoon session covers the commercial provisions of the code. The topics addressed include the applicability of the code to new construction and existing buildings, thermal envelope systems, lighting and power systems, and mechanical systems. The discussion of building systems covers specific provisions of the code as well as methods for documenting and assessing compliance.

2.3.4 Technical Assistance

A second component of the program is providing technical assistance to building professionals regarding the interpretation of the building code. This service allows building professionals to find answers to code-interpretation inquiries by telephone or email. The technical assistance is supervised by registered engineers and architects.

2.4. Building Energy Codes Training Participant Profile

Participants of the Building Energy Code Compliance Program come from the construction, design, building management, and development sectors. When participants completed the course, they were asked to identify which industry sector they work with. Figure 2-2 below displays the responses. Of those surveyed, 29% identified themselves as a Building Official, Plan Reviewer, or Field Inspector. Approximately 20% of respondents stated that they were an Architect, 17% a Builder/Contractor, 9% a Performance Contractor or Consultant, and 8% an Engineer.⁵ Because these professionals are most directly responsible for the planning, design, and enforcement of building codes, these results suggest that the program is reaching the intended and appropriate audience.

⁵ International Energy Conservation Consultants, LLC. (June 2012). *DCEO Building Energy Codes Training Program PY2011-12 Final Report*.

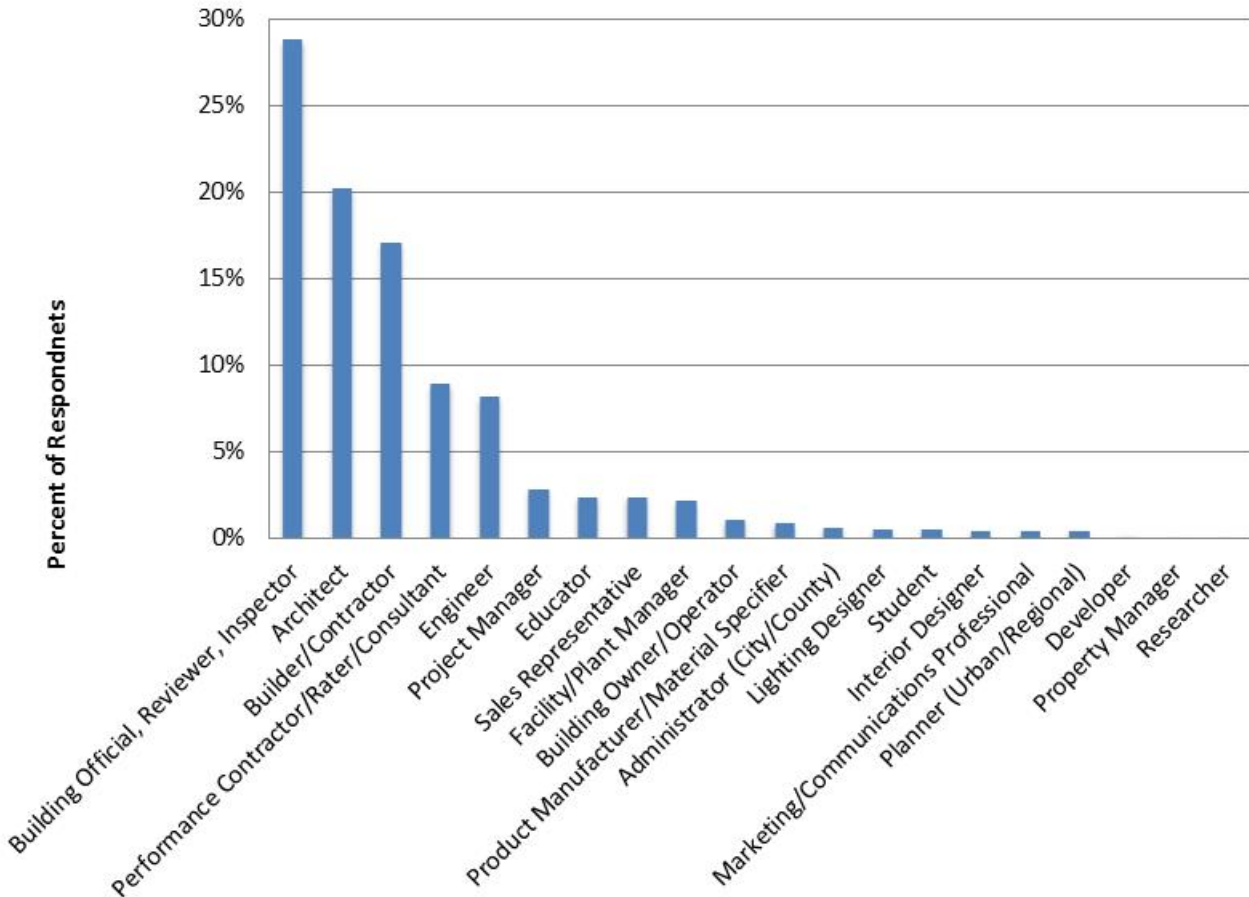


Figure 2-2 Participant Line of Work
 (Source: International Energy Conservation Consultants (June 2012). DCEO Building Energy Codes Training Program PY2011-12 Final Report)

2.5. Participant Survey Responses

ADM conducted an online survey to collect data about the participants’ experiences with the Building Energy Code Compliance Program in January, 2013. The responses were analyzed in an effort to better understand the most salient program issues and successes. Several questions were designed to elicit participant perspectives on the compliance issues and the nature and causes of barriers to code compliance.

2.5.1. Survey Respondent Background

Respondents to the ADM-administered survey were asked what type of construction projects their work pertains to. Their responses are shown in Table 2-1. Twenty-nine percent stated that their work primarily relates to residential construction and 20% stated that their work involved commercial construction. More than one-half of respondents stated that their work involved both residential and commercial construction.

Table 2-1 Type of Construction Respondents Work Pertains To

	<i>Response</i>	<i>Percent of Respondents (n=191)</i>
Does your work generally relate to residential or commercial buildings, or both?	Residential	29%
	Commercial	20%
	Both	51%
	Don't know	-

As shown in Table 2-2, the most common occupations of survey respondents were building official, plan reviewer, or field inspector (31%), architect (23%), builder or contractor (9%), building performance contractor, rater, or consultant (8%), and engineer (8%). These were also the most common occupations identified in the post-training survey administered by the program implementation staff. Since that survey was completed by most of the training participants, the findings suggest that the survey respondents are generally representative of the attendees.

Table 2-2 Respondents Occupation

	<i>Response</i>	<i>Percent of Respondents (n=195)</i>
What is your occupation?	Architect	23%
	Builder / contractor	9%
	Building official, plan reviewer, field inspector	31%
	Building performance contractor/rater/consultant	8%
	Designer	1%
	Educator	3%
	Engineer	8%
	Project manager	3%
	Sales representative	2%
	Other	11%

2.5.2. How Participants Learn About the Program

Table 2-3 displays the ways in which survey respondents reported learning about the Building Energy Code Compliance Program. Of those surveyed, 37% learned about the program via friends and colleagues, while 33% learned about the program via trade associations or business groups. Advertisements and the DCEO website were also common sources of program awareness, according to 28% of those surveyed.

Table 2-3 How Participants Learned about the Program

	<i>Response</i>	<i>Percent of Respondents (n=195)</i>
How did you learn about the Building Energy Codes Training Program?	Friends and colleagues	37%
	Trade associations or business groups you belong to	33%
	Brochures or advertisements	17%
	The DCEO website	14%
	Other	14%
	A utility representative	3%
	A DCEO representative	2%
	Don't know	2%
	Trade journals or magazines	1%

Survey respondents were then asked what motivated them to participate in the program. As shown in Table 2-4, 72% of respondents participated to ensure that projects they work on comply with the code. Other motivations for attendance included networking with other building professionals (29%) and a general interest in saving energy (23%). Nineteen percent of respondents indicated that they attended for some other reason. Most of the open-ended responses for motivations for attending referred to various continuing education requirements, such as those necessary for Home Inspection license renewal, Building Performance Institute (BPI) credit, American Institute of Architects (AIA) credit, or LEED learning units.

Table 2-4 Motivations for Participating in the Program

	<i>Response</i>	<i>Percent of Respondents* (n=195)</i>
What motivated you to participate in the Building Energy Codes Training Program?	To ensure projects I work on comply with code	72%
	To network with other building professionals	29%
	General interest in saving energy	23%
	Other	19%
	Required to attend by my employer	8%
	Don't know	-

**Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.*

2.5.3. Knowledge Gains from Participating in Training

Building Energy Code Compliance Program participants were asked about their level of knowledge of the Illinois Energy Conservation Code prior to attending the training. As shown in Table 2-5, 80% of respondents said they were “somewhat knowledgeable” to “not very knowledgeable.” Only 16% indicated that they were “very knowledgeable.” This finding suggests that a need exists in the market for the Building Energy Code Compliance Program and that program participants have the opportunity to gain valuable knowledge of changes in the code requirements by participating.

Table 2-5 Knowledge Level Prior to Attending the Training

	<i>Response</i>	<i>Percent of Respondents (n=193)</i>
Prior to attending the training course, how knowledgeable were you about the current Illinois Energy Conservation Code?	Very knowledgeable	16%
	Somewhat knowledgeable	62%
	Not very knowledgeable	18%
	Not at all knowledgeable	4%
	Don't know	-

Survey respondents were asked the extent to which the Building Energy Code Compliance Program increased their knowledge of the energy code and how to put it into practice. Their responses are shown in Table 2-6 and Table 2-7. A large majority indicated that the training program increased their knowledge “somewhat” or “significantly.” Specifically, 47% indicated that their knowledge of the code requirements increased “significantly” and 42% stated that it had increased “somewhat.” Similarly, 39% of respondents stated that the course had significantly

improved their knowledge of how to put the code into practice, while 47% indicated that their knowledge had improved “somewhat.”

Table 2-6 Improvement in Knowledge of Energy Code

	<i>Response</i>	<i>Percent of Respondents (n=191)</i>
How much did your knowledge of the current Illinois Energy Conservation Code requirements improve as a result of the training?	Significantly	47%
	Somewhat	42%
	A little	10%
	Not at all	2%
	Don't know	-

Table 2-7 Improvement in Knowledge of how to put Energy Code into Practice

	<i>Response</i>	<i>Percent of Respondents (n=195)</i>
How much did your knowledge of how to put the Illinois Energy Conservation Code into practice improve as a result of the training?	Significantly	39%
	Somewhat	47%
	A little	12%
	Not at all	2%
	Don't know	-

In order to gather further information about knowledge gained, participants were asked how much their knowledge of how to use compliance software improved as a result of the training. Table 2-8 shows that 40% of participants thought their knowledge improved “somewhat” or “significantly.” Another 28% indicated that their knowledge improved “a little” and 28% indicated that there was no improvement in their level of knowledge.

Table 2-8 Improvement in Knowledge of Compliance Software

	<i>Response</i>	<i>Percent of Respondents (n=191)</i>
How much did your knowledge of how to use software to document compliance with the Illinois Energy Conservation Code improve as a result of the training?	Significantly	6%
	Somewhat	34%
	A little	28%
	Not at all	28%
	Don't know	5%

While these self-report measures are subjective rather than objective measures of changes in technical aptitude, they are suggestive of what participants found to be of relatively greater value. Specifically, participants reported that their knowledge of the energy code and how to put

it into practice increased more than their knowledge of the compliance software. Participants may have found that their knowledge of the compliance software increased less because they had prior knowledge of it. Still, the course did not provide enough information on how to perform the compliance testing using the software, or the material was not relevant to some of the participants.

Participants were also asked how useful the Building Energy Code Compliance Program training was. Table 2-9 displays the responses; 68% of respondents indicated that the training was “very useful,” 30% indicated it was “somewhat useful” and only 2% said it was “not useful” at all. Once again, these responses indicate that participants associate a high level of value with the course.

Table 2-9 Usefulness of the Training

	<i>Response</i>	<i>Percent of Respondents (n=193)</i>
Overall, how useful did you find the Building Energy Codes Training Program?	Very useful	68%
	Somewhat useful	30%
	Not useful	2%
	Don't know	1%

2.5.4. Course Content and Delivery

Survey respondents were asked to rate how effectively the course content was communicated, and if that content was appropriately targeted to their professional learning needs. Tables 2-10 and 2-11 display those results, respectively. Seventy percent of respondents indicated that the course content was delivered “very effectively,” while 26% referred to the course delivery as somewhat effective. Only three percent of respondents indicated that the course material was “not very effectively” communicated. Overall, these responses show a high level of satisfaction with the communication of the course content.

Table 2-10 Effectiveness of Communication of Course Content

	<i>Response</i>	<i>Percent of Respondents (n=193)</i>
How effectively was the course content communicated?	Very effectively	70%
	Somewhat effectively	26%
	Not very effectively	3%
	Not at all effectively	-
	Don't know	1%

Participants were then asked to rate how appropriate the content of the course was considering their background. As shown in Table 2-11, 79% of the survey respondents indicated that the

course content was appropriately designed given their background, while the other 21% were relatively split between finding the content to be too advanced or too basic. Ten percent said that the course was “somewhat too advanced” and 8% said it was “somewhat too basic.” Very few participants found the content to be far too advanced or far too basic.

Table 2-11 Appropriateness of Course Content

	<i>Response</i>	<i>Percent of Respondents (n=194)</i>
How appropriate was the course content given your background?	Far too advanced	1%
	Somewhat too advanced	10%
	About right	79%
	Somewhat too basic	8%
	Far too basic	1%
	Don't know	1%

2.5.5 Barriers to Compliance

Survey respondents were asked if there were common ways that buildings are not compliant with either the requirements of the current 2012 version of the International Energy Conservation Code or with the past 2009 version of the International Energy Conservation Code. The most frequently mentioned area of noncompliance was with insulation or vapor barriers. Other frequently identified areas of noncompliance included air infiltration, HVAC or HVAC ductwork, and fenestration. Additionally, a number of respondents stated that they frequently encountered issues with poor enforcement and poor compliance assessment/documentation of the code.

Participants were asked if building professionals face barriers to ensuring that buildings comply with the Illinois Energy Conservation Code. The majority (82%) of those surveyed said that there were barriers to achieving full code compliance. Participants who indicated that there were barriers to ensuring code compliance were asked what they thought were the greatest barriers to compliance. The responses are shown in Table 2-12. Each of the barriers listed was identified as contributing to energy code noncompliance by approximately one-half of the respondents. Specifically, the most frequently identified barrier was a lack of knowledge of the building code, endorsed by 53% of respondents, followed by the costs of complying with the code (51%), and lack of knowledge of how to design or construct buildings so that they comply with the code (43%).

Table 2-12 Barriers to Compliance Identified

	<i>Response</i>	<i>Percent of Respondents* (n=157)</i>
What do you think are the biggest barriers that building professionals face in ensuring that buildings comply with the Illinois Energy Conservation Code?	Lack of knowledge of code requirements	53%
	Costs of building to energy efficiency standards	51%
	Lack of knowledge of how to design or construct buildings so that they comply with code	43%
	Other	24%
	Don't know	-

**Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.*

Approximately one-quarter of respondents stated that there were other barriers to complying with code. The most common response, mentioned by 12 respondents, indicated that there is a lack of consistency with code enforcement. Other barriers to complying with energy code which participants noted were political, general resistance to adhering to the code, manufacturers’ products not complying with the code, concern that complying will put the building professional at a competitive disadvantage, and that code compliance is not required in some jurisdictions.

Although there are barriers to code compliance that are not related to training and information needs, when asked how important the training program is to improving statewide compliance, more than two-thirds (68%) reported that it was very important and another 27% stated that it was somewhat important.

Table 2-13 Importance of Training for Code Compliance

	<i>Response</i>	<i>Percent of Respondents</i>
Overall, how important do you think the Building Energy Codes Training Program is for improving statewide compliance with the Illinois Energy Conservation Code?	Very important	68%
	Somewhat important	27%
	Neither important nor unimportant	6%
	Somewhat unimportant	-
	Very unimportant	-
	Don't know	-

Most respondents stated that the training was important for compliance because it informed building professionals about the code and how to comply with it, and that it ensured that there was a consistent understanding of the code requirements.

2.5.6. Other Sources of Information on Code Compliance

Building Energy Code Compliance Program participants were asked about other sources of information that they rely upon to understand how to comply with the building code. Table 2-14

below shows that the majority of respondents (69%) reported that they use resources provided by professional organizations to better understand the IECC. Additionally, more than one-quarter of respondents stated that they use reference materials from the U.S. Department of Energy (35%) or other resources provided by the DCEO (28%). Twelve percent indicated that they attend courses offered through colleges and/or universities. Fourteen percent stated that they use other resources. The more frequently mentioned other sources for information were the International Code Council, resources provided by professional groups, and consultants or colleagues. These results suggest that most building professional count on multiple sources for information on code compliance, but that professional associations, US DOE, and the Illinois DCEO are key sources.

Table 2-14 Other Sources of Information for Understanding Code Compliance

	<i>Response</i>	<i>Percent of Respondents* (n=190)</i>
Aside from this training course, what other resources do you use to understand how to comply with the Illinois Energy Conservation Code?	Resources provided by professional organizations you belong to	69%
	Resources provided by the U.S. Department of Energy	35%
	Other resources provided by the Illinois Department of Commerce and Economic Opportunity	28%
	Other	14%
	Courses offered through colleges and / or universities	12%
	Do not use other resources	9%
	Don't know	2%

**Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.*

Participants were asked to rate how valuable the Building Energy Code Compliance Program was in comparison to other resources that they rely upon to understand code compliance. The responses are displayed below in Table 2-15. Of those surveyed, 55% indicated that the course was “of equal value” in comparison to the other resources they use for helping them achieve compliance with the Illinois Energy Conservation Code, while 40% stated that it was “of more value.” Only 4% of respondents stated that it was of less value than other industry resources and publications. These responses suggest that the Building Energy Code Compliance Program training content is a valued source for those seeking education and training on Illinois Energy Conservation Code compliance.

Table 2-15 Value of Building Codes Training Program in Comparison to Other Industry Resources

In comparison to the other resources you use, would you say that the Building Codes Training Program is more valuable, of equal value, or less valuable for helping you ensure compliance with the Illinois Energy Conservation Code?	<i>Response</i>	<i>Percent of Respondents (n=157)</i>
		Of equal value
	More valuable	40%
	Less valuable	4%
	Don't know	1%

2.5.7. The Impact on Professional Practice

Respondents were asked if they have made any changes to their professional practice that has improved building energy efficiency as a result of participating in the program. Table 2-16 shows that 57% of survey respondents indicated that participating in the program had impacted their professional practice and had improved the energy efficiency of their projects as a result. One-third of respondents stated that they had not made changes to their practice. The lack of changes may have occurred because of some of the barriers to code compliance previously identified, such as cost and lack of enforcement.

Table 2-16 Changes to Practice Resulting from Training

Have you made any changes to your professional practice that improves building energy efficiency as a result of the Building Energy Codes Training Program?	<i>Response</i>	<i>Percent of Respondents (n=190)</i>
		Yes
	No	34%
	Don't know	9%

Participants who reported that they made changes to their practice were asked to elaborate on the changes that they have made as a result of participating in the Building Energy Code Compliance Program. The most common responses, accounting for approximately one-quarter of responses, were characterized by changes participants made to compliance assessment, documentation, and enforcement. Another frequently mentioned change was that the participant had improved their communication about the compliance requirements.

Some of the participants also identified changes to building practices they made as a result of participating in the program. The most commonly mentioned change was paying more attention to building insulation. Other changes to practice noted by respondents included more attention to air infiltration, HVAC duct sealing, lighting, and fenestration.

2.5.8. Customer Satisfaction with the Program

Survey respondents were asked to rate their level of satisfaction with various aspects of the program. Table 2-17 shows that respondents were satisfied with most aspects of the program. Satisfaction levels were highest for the instructors' knowledge and the instructors' level of

preparation. Overall, 91% of respondents stated that they were either “satisfied” or “very satisfied” with the entire program experience. Participants were generally satisfied with the program logistics, that is, the convenience of scheduling, the location, and the registration process. At least three-quarters of respondents reported that they were “very satisfied” or “satisfied” with each of these logistical aspects of the program.

In terms of course content, most participants were satisfied with the residential course content. Specifically, 39% were “very satisfied” and 46% stated that they were “satisfied.” In comparison to the residential course content, respondents were less satisfied with the commercial course content. Twenty-two percent of respondents were “very satisfied,” 44% were “satisfied,” and 21% stated they were “neither satisfied nor dissatisfied.” Additionally, 89% of participants were satisfied or very satisfied with the course materials. A large share of participants reported that they were “very satisfied” or “satisfied” with the instructor’s level of knowledge and the instructor’s preparation, specifically, 95% and 91%, respectively.

Table 2-17 Decision Maker Satisfaction with Selected Aspects of Program Experience

<i>Element of Program Experience</i>	<i>Very satisfied</i>	<i>Satisfied</i>	<i>Neither Satisfied nor Dissatisfied</i>	<i>Dissatisfied</i>	<i>Very Dissatisfied</i>	<i>Don't Know</i>	<i>n</i>
Residential Codes Course Content	39%	46%	10%	3%	2%	1%	190
Commercial Codes Course Content	22%	44%	21%	6%	2%	5%	188
Course Material	43%	46%	11%	1%	-	-	189
Instructor’s Knowledge	68%	27%	5%	1%	-	-	191
Instructor’s Preparation	62%	29%	8%	1%	-	-	189
Convenience of Location	42%	36%	13%	9%	1%	-	191
Convenience of Course Scheduling	36%	47%	13%	4%	-	-	189
Course Registration Process	51%	43%	5%	1%	-	-	188
The Training Program Overall	45%	48%	6%	2%	-	-	191

Respondents reported the greatest dissatisfaction with the convenience of the locations, with 10% indicating that they were dissatisfied or very dissatisfied with the location. Additionally, 8% of the respondents were dissatisfied with the commercial codes course content and 5% were dissatisfied with the residential code content. When asked to elaborate on their reasons for dissatisfaction, a number of these comments discussed the inconvenience of the course scheduling either because the course was not offered near enough to the participant or because there were a limited number of courses nearby that were not full. Additionally, several of the respondents indicated that there was not enough information presented at the training. Several of these respondents indicated that too much time was spent on residential topics and that the

section on the commercial code was too brief. Similarly, a few respondents suggested that the residential and commercial codes should be covered in separate classes.

2.5.9. Technical Assistance

Some survey questions were geared toward the technical assistance provided by the implementation contractor, International Energy Conservation Consultants, LLC (IECC). Of those surveyed, 12% indicated that they used the technical assistance services. Table 2-18 shows the reasons that participants sought technical assistance. Sixty-five percent of respondents that said they used the technical assistance service indicated that they used it to better understand code requirements, 52% needed implementation assistance, and 30% indicated that they needed assistance with documentation.

Table 2-18 Purpose of Technical Assistance Inquires

	<i>Response</i>	<i>Percent of Respondents* (n=23)</i>
Why did you use the technical assistance?	Understanding code requirements	65%
	Assistance with implementation to meet code requirements	52%
	Assistance with documenting code compliance	30%
	Other	9%
	Don't know	-

**Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.*

Participants who utilized the technical assistance were asked to rate their level of satisfaction with various aspects of it. Table 2-19 displays those responses. The majority of those who received technical assistance stated that they were “very satisfied” or “satisfied” with all aspects of the technical assistance provided by IECC. A few respondents, 4%, indicated that they were dissatisfied with the length of time it took for questions to get answered and the overall quality of the information.

Table 2-19 Satisfaction with Technical Assistance

<i>Element of Technical Assistance Experience</i>	<i>Very satisfied</i>	<i>Satisfied</i>	<i>Neither Satisfied nor Dissatisfied</i>	<i>Dissatisfied</i>	<i>Very Dissatisfied</i>	<i>Don't Know</i>	<i>n</i>
The Length of Time to Get Questions Answered	48%	39%	9%	4%	-	-	23
The Knowledge Level of TA Staff	65%	35%	-	-	-	-	23
Quality of Information	61%	30%	4%	4%	-	-	23

Survey respondents who indicated that they had not used the technical assistance provided by telephone or email through the Building Energy Code Compliance Program were asked why they hadn't used it. Fifty-two percent of respondents stated that they had not used the service because they had not needed it, while another 40% stated that they did not know it was available. Seven percent of the respondents stated that they did not use the technical assistance for a variety of other reasons, including access to other resources and not remembering it was available.

These responses suggest that there may be a sizable number of building professionals who are not aware of the technical assistance service provided through the program and that additional promotion of this service may increase the program's impact on code compliance.

Table 2-20 Reasons for Not Using Technical Assistance

	<i>Response</i>	<i>Percent of Respondents (n=163)</i>
Why have you not used the technical assistance?	Have not needed it	52%
	Didn't know it was available	40%
	Other	7%
	Don't know	1%

2.5.10. Customer Recommendations and Overall Impressions

Survey respondents were provided an opportunity to make additional comments about the program or provide recommendations for program improvements. A number of comments suggested that the content of the training should be expanded. Some of the suggestions made were to increase coverage of commercial compliance, remodeling, specific building systems, and field inspections. Additionally, some respondents made suggestions about improving the delivery of the training and the delivery process. These suggestions include using multiple instructors to teach a course, providing more practical examples, making the delivery more engaging, and holding training close to the time the codes go into effect. Other suggestions made were to split the commercial and residential content into separate sessions, offer more courses, and improve the marketing of courses.

A number of respondents made positive comments about the training experience. Some examples of these comments include:

Keep up the good work! Our presenter, [Presenter Name], was excellent!

It's a great program. I really appreciated the opportunity to participate in that setting.

The programs are VERY helpful and I believe if funding is available they can be slightly expanded to become a much more effective tool to achieve the goal of the energy law which is voluntary compliance.

3. Conclusions and Recommendations

The Building Codes and Standards Program is playing an important role in helping the State of Illinois achieve higher levels of compliance with the energy efficiency building code. Participants in the training and recipients of technical assistance were generally satisfied and found the information to be useful.

3.1 Key Conclusions

The following conclusions were developed from ADM's evaluation:

- **Course is Highly Valued:** The majority of course participants indicated that on both the ADM survey and a post-training survey administered by the program implementer, International Energy Conservation Consultants, LLC (IECC), the training increased their knowledge of code requirements and led to better understanding of how to incorporate code compliance into their professional practice. It was observed that knowledge gained through the program provides real value to not only the program participant, but to the Illinois building industry as a whole.
- **High Level of Interest in Course:** Many of the comments from the IECC survey respondents indicated that the course was at maximum capacity. Participants indicated that the room was often crowded or too full to enroll, which suggests that there is sufficient demand to necessitate additional training sessions. Some respondents to ADM's survey reported that courses offered in a convenient location were full and that they were only able to attend at a less convenient location.
- **Room for Improvement with Commercial Codes Content:** Overall, participants indicated a higher level of satisfaction with material pertaining to residential codes than with material pertaining to commercial codes. Some participants noted that less time was dedicated to discussing the applicability of the codes to commercial buildings than to residential buildings. For this reason, some participants suggested that the course could be improved by spending more time on commercial issues and increasing the depth of coverage about those commercial issues.
- **Knowledgeable Instructors:** The most positive feedback was related to the instructors' performance and their level of expertise. Many participants said the quality of the instructors was the best part about the course.
- **Few Participants Reported Learning about Compliance Software:** Fifty-six percent of survey respondents indicated that their level of knowledge about how to use software to document compliance improved "not at all" or "a little." The level of self-reported improvement in knowledge about compliance software was lower than for improvement in knowledge about the energy code and how to comply with the codes in practice.
- **Participants Utilize Other Resources to Understand Code Compliance Issues:** Most survey respondents indicated that they utilize other resources in addition to those provided

through the Building Energy Code Compliance Program. Participants most commonly reported that they also used resources provided by professional organizations and the U.S. Department of Energy (DOE). Although participants reported having other resources available, they stated that the resources provided through the Building Energy Code Compliance Program were as valuable or more valuable than those available elsewhere. Additionally, most participants reported that the course was somewhat or very useful.

- **Lack of Awareness of Technical Assistance:** Only 12% of the survey respondents indicated that they had utilized the email or telephone technical assistance available through the program. Of those respondents who had not utilized the technical service, 40% indicated that they were not aware that it existed. This finding suggests that utilization of the service may be increased if it was better promoted.
- **Barriers to Code Compliance:** More than 80% of survey respondents indicated that they thought there were barriers to code compliance. These respondents stated that rudimentary understanding of the code (specifically, the design and construction practices that comply with the code), high costs associated with code compliance, and a lack of code enforcement were the greatest barriers to compliance.

3.2 Program Recommendations

The following are recommendations which ADM believes DCEO should consider in an effort to improve the delivery and effectiveness of the Building Energy Codes Training Program.

- **Increasing the Number of Courses Offered:** There is strong demand for the courses; if the program can meet the demand, there is potential to save energy and improve building code compliance statewide.
- **Partitioning the Course into Separate Commercial and Residential Courses:** Feedback suggests that too much material was presented in too short of a time frame and that more in-depth coverage was needed. In addition, nearly half of the survey respondents reported that their work related to either residential or commercial buildings, but not both. Separating the content will ensure that the material is covered in greater depth and that it is relevant and geared to the participants' specific learning needs.
- **Identify Lessons Learned and Elicit Feedback from Partners to Improve the Administrative Aspects of Program Delivery:** Training course delivery requires the cooperation and involvement of several key stakeholders. DCEO, the Illinois Green Economy Network (IGEN), IECC, and the host college all have a specific role in the delivery process. Setting expectations and defining roles will help to make the delivery process more fluid, and will allow more attention to be given to content presentation and to meeting the needs of the participants.
- **Improve Promotion of Technical Assistance:** The technical assistance provided by the program was not utilized by the majority of survey respondents. Although many of the respondents indicated that they had not needed it, a sizable percentage of respondents

reported that they were not aware of it. Improving the promotion of the technical assistance may increase its use by participants, thereby enhancing the value of the program.

Appendix A: Building Codes and Standards Participant Survey

1. How did you learn about the Building Energy Codes Training Program? (Select all that apply)
 - A DCEO representative
 - The DCEO website
 - A utility representative
 - Brochures or advertisements
 - Trade associations or business groups you belong to
 - Trade journals or magazines
 - Friends and colleagues
 - Other (please describe)
 - Don't know

2. What motivated you to participate in the Building Energy Codes Training Program? (Select all that apply)
 - To ensure projects I work on comply with code
 - General interest in saving energy
 - To network with other building professionals
 - Required to attend by my employer
 - Other (please describe)
 - Don't know

3. How much did your knowledge of the current Illinois Energy Conservation Code requirements improve as a result of the training? Would you say...
 - Significantly
 - Somewhat
 - A little
 - Not at all
 - Don't know

4. How much did your knowledge of how to put the Illinois Energy Conservation Code into practice improve as a result of the training? Would you say...
 - Significantly
 - Somewhat
 - A little
 - Not at all
 - Don't know

5. How much did your knowledge of how to use software to document compliance with the Illinois Energy Conservation Code improve as a result of the training? Would you say...
 - Significantly
 - Somewhat
 - A little
 - Not at all

Don't know

6. Overall, how useful did you find the Building Energy Codes Training Program? Would you say...

- Very useful
- Somewhat useful
- Not useful
- Don't know

6a. What would have made the course more useful for you?

7. Prior to attending the training course, how knowledgeable were you about the current Illinois Energy Conservation Code? Would you say that you were...

- Very knowledgeable
- Somewhat knowledgeable
- Not very knowledgeable
- Not at all knowledgeable
- Don't know

8. How effectively was the course content communicated? Would you say...

- Very effectively
- Somewhat effectively
- Not very effectively
- Not at all effectively
- Don't know

8a. How could the course content be communicated more effectively?

9. How appropriate was the course content given your background? Would you say that the course content was...

- Far too advanced
- Somewhat too advanced
- About right
- Somewhat too basic
- Far too basic
- Don't know

10. Do you think that there are barriers that building professionals face in ensuring that buildings comply with the Illinois Energy Conservation Code?

- Yes
- No
- Don't know

10a. What do you think is the biggest barrier that building professionals face in ensuring that buildings comply with the Illinois Energy Conservation Code?

- Costs of building to energy efficiency standards
- Lack of knowledge of code requirements
- Lack of knowledge of how to design or construct buildings so that they comply with code
- Other (Please specify)
- Don't know

11. In your work, have you noticed any common ways that buildings are not compliant with the requirements of either the current 2012 International Energy Conservation Code (IECC) or the past 2009 IECC? If so, what are they?

12. Aside from this training course, what other resources do you use to understand how to comply with the Illinois Energy Conservation Code?

- Other resources provided by the Illinois Department of Commerce and Economic Opportunity
- Resources provided by the U.S. Department of Energy
- Resources provided by professional organizations you belong to
- Courses offered through colleges and / or universities
- Other (Please specify)
- Do not use other resources
- Don't know

12a. In comparison to the other resources you use, would you say that the Building Codes Training Program is more valuable, of equal value, or less valuable for helping you ensure compliance with the Illinois Energy Conservation Code?

- More valuable
- Of equal value
- Less valuable
- Don't know

13. Have you made any changes to your professional practice that improves building energy efficiency as a result of the Building Energy Codes Training Program?

- Yes
- No
- Don't know

13a. Could you describe the changes you have made that improve building energy efficiency?

14. Overall, how important do you think the Building Energy Codes Training Program is for improving statewide compliance with the Illinois Energy Conservation Code?

- Very important
- Somewhat important
- Neither important nor unimportant
- Somewhat unimportant

- Very unimportant
- Don't know

14a. Why do you think it is important for improving statewide compliance?

14b. Why do you think it is unimportant for improving statewide compliance?

15. For each of the following aspects of the Building Energy Codes Training Program, please indicate if you were Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied, or Very Dissatisfied.

- Course residential codes content
- Course commercial codes content
- Course materials (e.g., handouts)
- Instructor knowledge
- Instructor preparation
- Convenience of location
- Convenience of course scheduling
- Course registration process
- The training program overall

15a. Why were you dissatisfied with the Building Energy Codes Training Program?

16. Have you used the email or telephone technical assistance for code interpretations available through the Building Energy Codes Training Program?

- Yes
- No
- Don't know

16a. Why did you use the technical assistance? (Select all that apply)

- Understanding code requirements
- Assistance with implementation to meet code requirements
- Assistance with documenting code compliance
- Other (Please specify)
- Don't know

16b. For each of the following aspects of the technical interpretations, please indicate if you were *Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied, or Very Dissatisfied.*

- Length of time to get question answered
- Knowledge of staff
- Quality of information

16c. Do you have any suggestions for improving the technical assistance?

16d. Why have you not used the technical assistance?

- Have not needed it
- Didn't know it was available
- Other (Please specify)
- Don't know

17. Do you have any other comments that you would like to relay to the program staff about Building Codes Training Program?

18. What is your occupation?

- Architect
- Builder / contractor
- Building official, plan reviewer, field inspector
- Building performance contractor/rater/consultant
- Designer
- Educator
- Engineer
- Project manager
- Sales representative
- Other (Please specify)
- Don't know

19. Does your work generally relate to residential or commercial buildings, or both?

- Residential
- Commercial
- Both
- Don't know

Appendix B: Building Codes and Standards Survey Responses

As part of the evaluation work effort, a participant survey was performed. Each participant was surveyed using the questionnaire provided in Appendix A.

The following tabulations summarize program participant survey responses. The first column presents the number of survey respondents (n). The second column presents the percentage of survey respondents (n).

	<i>Response</i>	<i>(n=195)</i>	<i>Percent of Respondents</i>
1. How did you learn about the Building Energy Codes Training Program?	A DCEO representative	4	2%
	The DCEO website	28	14%
	A utility representative	5	3%
	Brochures or advertisements	34	17%
	Trade associations or business groups you belong to	64	33%
	Trade journals or magazines	1	1%
	Friends and colleagues	72	37%
	Other	27	14%
	Don't know	4	2%

	<i>Response</i>	<i>(n=194)</i>	<i>Percent of Respondents *</i>
2. What motivated you to participate in the Building Energy Codes Training Program?	To ensure projects I work on comply with code	141	72%
	General interest in saving energy	44	23%
	To network with other building professionals	57	29%
	Required to attend by my employer	15	8%
	Other (please describe)	38	19%
	Don't know	0	0%

*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.

	<i>Response</i>	<i>(n=191)</i>	<i>Percent of Respondents</i>
3. How much did your knowledge of the current Illinois Energy Conservation Code requirements improve as a result of the training?	Significantly	89	47%
	Somewhat	80	42%
	A little	19	10%
	Not at all	3	2%
	Don't know	0	0%

	<i>Response</i>	<i>(n=195)</i>	<i>Percent of Respondents</i>
4. How much did your knowledge of how to put the Illinois Energy Conservation Code into practice improve as a result of the training?	Significantly	75	39%
	Somewhat	90	47%
	A little	22	12%
	Not at all	4	2%
	Don't know	0	0%

	<i>Response</i>	<i>(n=191)</i>	<i>Percent of Respondents</i>
5. How much did your knowledge of how to use software to document compliance with the Illinois Energy Conservation Code improve as a result of the training?	Significantly	12	6%
	Somewhat	64	34%
	A little	53	28%
	Not at all	53	28%
	Don't know	9	5%

	<i>Response</i>	<i>(n=193)</i>	<i>Percent of Respondents</i>
6. Overall, how useful did you find the Building Energy Codes Training Program?	Very useful	131	68%
	Somewhat useful	57	30%
	Not useful	4	2%
	Don't know	1	1%

	<i>Response</i>	<i>(n=193)</i>	<i>Percent of Respondents</i>
7. Prior to attending the training course, how knowledgeable were you about the current Illinois Energy Conservation Code?	Very knowledgeable	31	16%
	Somewhat knowledgeable	119	62%
	Not very knowledgeable	35	18%
	Not at all knowledgeable	8	4%
	Don't know	0	0%

	<i>Response</i>	<i>(n=193)</i>	<i>Percent of Respondents</i>
8. How effectively was the course content communicated?	Very effectively	136	70%
	Somewhat effectively	50	26%
	Not very effectively	6	3%
	Not at all effectively	0	0%
	Don't know	1	1%

	<i>Response</i>	<i>(n=194)</i>	<i>Percent of Respondents</i>
9. How appropriate was the course content given your background?	Far too advanced	2	1%
	Somewhat too advanced	19	10%
	About right	153	79%
	Somewhat too basic	16	8%
	Far too basic	2	1%
	Don't know	2	1%

	<i>Response</i>	<i>(n=192)</i>	<i>Percent of Respondents</i>
10. Do you think that there are barriers that building professionals face in ensuring that buildings comply with the Illinois Energy Conservation Code?	Yes	157	82%
	No	20	10%
	Don't know	15	8%

	<i>Response</i>	<i>(n=157)</i>	<i>Percent of Respondents *</i>
10a. What do you think are the biggest barriers that building professionals face in ensuring that buildings comply with the Illinois Energy Conservation Code?	Costs of building to energy efficiency standards	100	51%
	Lack of knowledge of code requirements	103	53%
	Lack of knowledge of how to design or construct buildings so that they comply with code	84	43%
	Other (please specify)	46	24%
	Don't know	0	0%

*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.

	<i>Response</i>	<i>(n=190)</i>	<i>Percent of Respondents *</i>
12. Aside from this training course, what other resources do you use to understand how to comply with the Illinois Energy Conservation Code?	Other resources provided by the Illinois Department of Commerce and Economic Opportunity	55	28%
	Resources provided by the U.S. Department of Energy	69	35%
	Resources provided by professional organizations you belong to	134	69%
	Courses offered through colleges and / or universities	24	12%
	Other	28	14%
	Do not use other resources	17	9%
	Don't know	4	2%

**Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.*

	<i>Response</i>	<i>(n=157)</i>	<i>Percent of Respondents</i>
12a. In comparison to the other resources you use, would you say that the Building Codes Training Program is more valuable, of equal value, or less valuable for helping you ensure compliance with the Illinois Energy Conservation Code?	More valuable	63	40%
	Of equal value	87	55%
	Less valuable	6	4%
	Don't know	1	1%

	<i>Response</i>	<i>(n=190)</i>	<i>Percent of Respondents</i>
13. Have you made any changes to your professional practice that improves building energy efficiency as a result of the Building Energy Codes Training Program?	Yes	108	57%
	No	64	34%
	Don't know	18	9%

	<i>Response</i>	<i>(n=192)</i>	<i>Percent of Respondents</i>
14. Overall, how important do you think the Building Energy Codes Training Program is for improving statewide compliance with the Illinois Energy Conservation Code?	Very important	130	68%
	Somewhat important	51	27%
	Neither important nor unimportant	11	6%
	Somewhat unimportant	0	0%
	Very unimportant	0	0%
	Don't know	0	0%

	<i>Response</i>	<i>(n=190)</i>	<i>Percent of Respondents *</i>
15a. On a scale of 1 to 5, where "5" is very satisfied and "1" is very unsatisfied, how satisfied are you with the course residential codes content?	5	74	39%
	4	88	46%
	3	19	10%
	2	5	3%
	1	3	2%
	Don't know	1	1%
	Average		

**Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)*

	Response	(n=188)	Percent of Respondents *
15b. On a scale of 1 to 5, where “5” is very satisfied and “1” is very unsatisfied, how satisfied are you with the course commercial codes content?	5	41	22%
	4	82	44%
	3	40	21%
	2	11	6%
	1	4	2%
	Don't know	10	5%
	Average		

**Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)*

	Response	(n=189)	Percent of Respondents *
15c. On a scale of 1 to 5, where “5” is very satisfied and “1” is very unsatisfied, how satisfied are you with the course materials (e.g., handouts)?	5	81	43%
	4	86	46%
	3	20	11%
	2	2	1%
	1	0	0%
	Don't know	0	0%
	Average		

**Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)*

	Response	(n=191)	Percent of Respondents *
15d. On a scale of 1 to 5, where “5” is very satisfied and “1” is very unsatisfied, how satisfied are you with the instructor knowledge?	5	129	68%
	4	52	27%
	3	9	5%
	2	1	1%
	1	0	0%
	Don't know	0	0%
	Average		

**Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)*

	Response	(n=189)	Percent of Respondents *
15e. On a scale of 1 to 5, where “5” is very satisfied and “1” is very unsatisfied, how satisfied are you with the instructor preparation?	5	118	62%
	4	55	29%
	3	15	8%
	2	1	1%
	1	0	0%
	Don't know	0	0%
	Average		

**Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)*

	Response	(n=191)	Percent of Respondents *
15f. On a scale of 1 to 5, where “5” is very satisfied and “1” is very unsatisfied, how satisfied are you with the convenience of location?	5	81	42%
	4	68	36%
	3	24	13%
	2	17	9%
	1	1	1%
	Don't know	0	0%
	Average		4.1

**Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)*

	Response	(n=189)	Percent of Respondents *
15h. On a scale of 1 to 5, where “5” is very satisfied and “1” is very unsatisfied, how satisfied are you with the convenience of course scheduling?	5	68	36%
	4	89	47%
	3	25	13%
	2	7	4%
	1	0	0%
	Don't know	0	0%
	Average		4.2

**Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)*

	Response	(n=188)	Percent of Respondents *
15i. On a scale of 1 to 5, where “5” is very satisfied and “1” is very unsatisfied, how satisfied are you with the course registration process?	5	96	51%
	4	81	43%
	3	10	5%
	2	1	1%
	1	0	0%
	Don't know	0	0%
	Average		4.4

**Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)*

	Response	(n=191)	Percent of Respondents *
15j. On a scale of 1 to 5, where “5” is very satisfied and “1” is very unsatisfied, how satisfied are you with the the training program overall?	5	85	45%
	4	91	48%
	3	11	6%
	2	4	2%
	1	0	0%
	Don't know	0	0%
	Average		4.3

**Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)*

	Response	(n=189)	Percent of Respondents
16. Have you used the email or telephone technical assistance for code interpretations available through the Building Energy Codes Training Program?	Yes	23	12%
	No	165	87%
	Don't know	1	1%

	<i>Response</i>	<i>(n=23)</i>	<i>Percent of Respondents *</i>
16a. Why did you use the technical assistance?	Understanding code requirements	15	65%
	Assistance with implementation to meet code requirements	12	52%
	Assistance with documenting code compliance	7	30%
	Other (please specify)	2	9%
	Don't know	0	0%

**Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.*

	<i>Response</i>	<i>(n=23)</i>	<i>Percent of Respondents *</i>
16b. On a scale of 1 to 5, where “5” is very satisfied and “1” is very unsatisfied, how satisfied are you with the length of time to get question answered?	5	11	48%
	4	9	39%
	3	2	9%
	2	1	4%
	1	0	0%
	Don't know	0	0%
	Average		

**Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)*

	<i>Response</i>	<i>(n=23)</i>	<i>Percent of Respondents *</i>
16c. On a scale of 1 to 5, where “5” is very satisfied and “1” is very unsatisfied, how satisfied are you with the knowledge of staff?	5	15	65%
	4	8	35%
	3	0	0%
	2	0	0%
	1	0	0%
	Don't know	0	0%
	Average		

**Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)*

	<i>Response</i>	<i>(n=23)</i>	<i>Percent of Respondents *</i>
16d. On a scale of 1 to 5, where “5” is very satisfied and “1” is very unsatisfied, how satisfied are you with the quality of information?	5	14	61%
	4	7	30%
	3	1	4%
	2	1	4%
	1	0	0%
	Don't know	0	0%
	Average		

**Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)*

	<i>Response</i>	<i>(n=163)</i>	<i>Percent of Respondents</i>
16e. Why have you not used the technical assistance?	Have not needed it	84	52%
	Didn't know it was available	65	40%
	Other	12	7%
	Don't know	2	1%

18. What is your occupation?	<i>Response</i>	<i>(n=195)</i>	<i>Percent of Respondents</i>
	Architect	45	23%
Builder / contractor	17	9%	
Building official, plan reviewer, field inspector	61	31%	
Building performance contractor/rater/consultant	15	8%	
Designer	2	1%	
Educator	5	3%	
Engineer	16	8%	
Project manager	6	3%	
Sales representative	3	2%	
Other	22	11%	

19. Does your work generally relate to residential or commercial buildings, or both?	<i>Response</i>	<i>(n=191)</i>	<i>Percent of Respondents</i>
	Residential	56	29%
Commercial	38	20%	
Both	97	51%	
Don't know	0	0%	