Effective Use of Third Party Inspectors for Enforcing the Building Energy Code

Introduction

The Maine Uniform Building and Energy Code (MUBEC) adopts as a minimum the 2009 edition of the International Energy Conservation Code (IECC) as the statewide energy code with an effective date of June 2010. By doing this, Maine joins all the Northeastern states which have adopted (or will adopt) this same model code sometime in 2010. The energy code includes requirements for both residential one and two family dwellings and multi-family residential buildings not over three stories in height (Chapter 4 - residential) as well as commercial buildings and multi-family residential buildings over three stories in height (Chapter 5- commercial). However, adopting an energy efficient code moves Maine only part of the way towards the desired energy savings. To realize the energy saving potential embodied in the energy code, residential and commercial buildings must comply with the code not only when designed but when constructed and occupied. This white paper addresses the implementation of specialized inspections using third party inspectors in conjunction with building regulatory programs as a means of improving compliance with the building energy code. This white paper is structured as follows:

1. Energy Savings Potential Attributable to Compliance with the Building Energy Code
2. Reasons for Low Compliance Rates
3. Use of Third Parties to Increase Compliance Rates
4. Licensing Requirements for Third Party Inspectors

Sections 3 and 4 also include preliminary recommendations for how to structure an enforcement program that will result in a sufficient number of qualified plan checkers and inspectors being available.

1. Energy Savings Potential Attributable to Compliance with the Building Energy Code

According to the Maine Public Utilities Commission, only 16 percent[1] of the buildings subject to the energy code in the state (an earlier version of the IECC) actually comply. This level of compliance leaves large potential energy saving on the table. For example, achieving 90 percent compliance (as required by the American Recovery and Reinvestment Act of 2009) with the code, Maine would generate, by 2020, an additional 10 trillion btus annually due to captured energy savings.

According to analysis done by the Building Codes Assistance Project and Northeast Energy Efficiency Partnerships (NEEP), achieving full compliance with the code would result in the following energy savings and reduction in carbon dioxide emissions in the state:

Annual Energy Savings and Carbon Emissions Reductions for Maine in 2020[2]

Building Type	Energy Savings (trillion BTUs)	Equivalent # of Homes	CO2 Emission Reductions (thousand metric tons)	Equivalent # of Cars
Residential	5	42,000	320	50,000

[1] A 2008 report by Efficiency Maine documented a compliance rate of 16 percent with the building energy code. Report on LD 1655 Building Energy Codes by the Maine Public Utilities Commission and MaineHousing.

[2] These savings come from adopting and fully implementing energy codes that are 30% more energy efficient than the 2006 International Energy Conservation Code.

Commercial	9	75,000	430	70,000

This situation is not unique to Maine. Most every study done on code compliance finds that compliance rates range between 40 and 60 percent indicating that the difficulty in achieving compliance.

2. Reasons for Low Compliance Rates

A number of factors result in the low compliance rates, including:

- **Funding**: Municipalities suffer from chronic underfunding with respect to most of their required functions, including code implementation, administration and enforcement. As a result, too few code officials (either plan checkers or inspectors) exist in relation to the amount of construction needing to be reviewed, permitted, inspected and approved for occupancy.
- **Priorities**: Given the limited time to check and inspect construction, officials must prioritize. Consequently, officials deal with life safety and public health issues (such as structural, fire and sanitation) first often leaving little time for review of energy related items.
- **Training**: Code officials do not receive sufficient training on energy code issues in comparison with other aspects of the code such as structural or fire codes.
- **Lack of Awareness:** Architects, engineers, contractors, builders and others may not be fully aware of the code and its requirements.
- **First Cost versus Life-Cycle Cost**: Owners and developers, concerned with first cost and wanting to get buildings constructed in a timely manner to generate income may be less adamant on energy code compliance.
- **Lending Institutions:** Lenders may not send appropriate messages about the importance of energy code compliance and the consequent impact of monthly costs when reviewing loan applications for construction or for purchase of new buildings.

3. Use of Third Party or Specialized Inspectors to Increase Compliance.

In the absence of available inspectors from local government and/or other appropriate checks and balances to assure compliance, one of the most effective ways to address compliance uses third party specialized energy code inspectors. Building department do not directly hire these individuals but rather contract with them or with the approval of the building department, they contract directly with the permit applicant (under the rubric of special inspector). In either situation, they undertake the code enforcement role that many not happen due to lack of local government resources.

Third party entities that perform plan review and/or inspection of buildings for code compliance function as an additional resource to ensure that the energy code provisions get adequate attention by adding to the existing complement of code officials. Regular building code inspectors can then spend more time on life/safety issues without compromising energy code inspections (the third party inspectors perform this task). Second, with the establishment of a training and certification program (for both municipal building officials and third party inspectors), there will be a group of people specifically trained and knowledgeable in the energy code. Finally, in the case of third party inspectors which contract directly with the permit applicant, the position does not use municipal

funds, although this does require the local government to establish a program to review and approve third parties.

Clear guidance needs to be established to ensure that municipalities can properly integrate third party plan review and/or inspections into the code enforcement process. Such guidance should include:

- Specifying the procedure that allows a municipality to establish a program that allows for the use of third party plan reviewer/inspector in lieu of municipality staff;
- Specifying the qualifications that third parties must satisfy to be licensed to act as an agent of the municipality in reviewing and approving construction;
- Specifying the type of documentation required to determine a given project's compliance with the code;
- Ensuring how a municipality will make its final determination as to the compliance of a building "approved" by a third party inspector;
- Ensuring there is no conflict of interest on the part of the third party inspector.

Appendix A provides examples of third party inspection programs.

3a. Existing Supply of Third Party Plan Checkers/Inspectors

As the MUBEC statute calls for the inclusion of third party plan checkers/inspections as part of the enforcement infrastructure, it is important to examine whether such an infrastructure currently exists. Many states run energy efficiency programs "above code programs" tied to improving the energy performance of homes and commercial buildings. Within these programs, an important part of the task involves determining whether the dwellings and commercial buildings actually save energy. Therefore, these programs use the services of inspectors trained in evaluating the quality of construction with respect to energy use. Overlap exists between the work of inspectors for above code programs and actual energy code inspections. For residential dwellings, programs typically rely on the Energy Star Homes program; while for commercial buildings, the programs are based on above code guidelines such as the New Buildings Institute Core Performance Guide (CPG).

The Energy Star Homes Program requires the builder to:

- Construct the dwelling based on the 2004 Edition of the IECC.[3]
- Insure that the homes pass the requirements contained in the "Thermal Bypass Checklist" which addresses heat and air leakage.
- Incorporate additional requirements such as installing Energy Star rated appliances.
- individuals who inspect these dwellings typically get trained through the Home Energy Rating System (HERS) as administered by the Residential Energy Services Network (RESNET

For commercial buildings, the Core Performance Guide requires the inclusion of several measures that are typically more stringent than those found in the energy code including: more stringent requirements for roof and wall insulation, more stringent fenestration requirements, requirements for: more efficient heating and cooling equipment, lighting controls and commissioning requirements.

Since the Energy Star Homes program uses the IECC as the jumping off point, individuals experienced in inspecting Energy Star Homes will have some experience with code inspections. The same situation holds for Core Performance Guide Inspectors. In the end, HERS raters and above code inspectors can be viewed as an existing infrastructure of potential third party inspectors. However, a caveat should be included. These inspectors are not specifically trained on the IECC requirements. The strength of the proposed training and certification briefly described above rests on giving everyone the same basic

[3] The requirements of the Energy Star program will be upgraded in 2011 so that a builder must construct to the prevailing energy code in the state.

knowledge base and ensuring that everyone possesses a minimum amount of understanding of the code being enforced. Therefore, neither HERS raters nor commercial above code program inspectors should automatically receive certification but would have to go through the licensing method describe in Section 4.

In addition, there are numerous design and construction professionals such as architects, engineers and builders who will undoubtedly be familiar with the code and will have experience in either designing or constructing (or both) to its specifications. These persons will also be part of the pool of potential third party inspectors and, therefore, the above conditions apply to them as well.

4. Licensing Requirements for Third Party Inspectors

Given the multiplicity of potential candidates for third party inspectors, the governing agency should establish a licensing or accreditation system to ensure a minimum level of competence from everyone desiring work as a third party inspector. Such a system should incorporate at least four requirements:

1. Minimum level of experience.
2. Participation in a training program on the code.
3. Certification as a result of passing certifying exam.
4. Continued exhibiting or competency and recertification.

Plan review and inspections of different building types require different skills. Requirements would likely vary between one and two family dwellings, low rise multi-family buildings, small commercial buildings and large commercial buildings. The former requires potentially less expertise and experience than the latter. To illustrate the difference, the following chart shows the level of experience required for third party commercial energy code inspectors in Washington State when the special inspection program was in force (See Appendix A).

Licensing Requirements for Third Party Inspectors for the Washington State Special Plan Examiners/Inspectors Program

Qualification Level	Type of Project	Required Qualifications for Third Party Inspectors
Basic/Category 1	Simple	Written Exam
Category II (Level 1)	Less than 3 Stories; Not Involving a Professional Engineer or Licensed Architect	Written Exam; Recommendation Letters; Relevant 2 Year Degree; Job Experience
Category II (Level 2)	Greater than 3 Stories; Involving a Professional Engineer of Licensed Architect	Written Exam; Professional Engineer of Licensed Architect.

This chart presents an **example** of the type of qualification requirements that should be developed for third party inspectors. Please note that the Washington State Program applied to commercial buildings only. Residential third party inspectors will require a similar set of licensing requirements.

The licensing requirements above refer to the need for certification through successful completion of an exam and should also include a review of proficiency in field inspections.

4a. Training and Certification Requirements

The licensing requirements must couple to a robust training and certification program (although a "firewall" must exist between those training and those performing professional qualification, evaluation or certification).

This need is explicitly recognized in the statute that created the MUBEC, as it includes mandates to develop:

- Requirements for training and certification;
- Program to achieve these requirements. (See Appendix B)

§ 9723 mandates the development of training and certification requirements by a 5 member committee appointed by the Technical Building Codes and Standards Board (Board). The same section instructs the Board to develop a training and certification program and for the State Planning Office to implement the program. In terms of requirements, NEEP proposes the following recommendations:

NEEP recommends that these training requirements include:

- All third party inspectors need to complete a training module on building science, the residential portion of the code and the commercial portion of the code.
- All third party inspectors obtain certification through successful completion of a certification exam.

4b. Training and Certification Program

Training Program

Per the statute, the work to develop a training and certification program goes to the Bureau of Codes and Standards (§ 9723 (2)). The training and certification program should be comprehensive and include:

- Development of a curriculum;
- Determining the amount of training required;
- Logistics of the actual training, including the locations and accessibility.

Curriculum development should be straightforward. Because MUBEC mandates the use of the IECC (or ASHRAE 90.1) as the energy code, the training materials developed by the ICC (publishers of the IECC) can be used. Additionally, the can work with the ICC to figure the typical amount of training.

Implementation of the training program falls to the State Planning Office (SPO). The SPO can either make use of trainers that work directly for the ICC or contract directly with trainers that specialize in the IECC. With respect to ASHRAE 90.1, there are trainers who specialize in this standard and the SPO can work directly with them (ASHRAE does not include trainers as part of their staff). As with the IECC, extensive materials exist for ASHRAE 90.1 training.

Implementation of the training program will need to incorporate the logistics of the trainings. The SPO will be a need to determine the number of training sessions given by the state, the length of time for each session as well as the locations. The SPO should coordinate with utilities, municipalities and other interested parties (such as the Maine Chapter of the American Institute of Architects (AIA)) to help provide locations. The trainings should, ideally, be available to building code officials, as well as persons wishing to be part of the third party inspection programs.

With regards to elements of a training program, NEEP recommends

- Using training and educational materials developed by the International Code Council specifically for the 2009 IECC should be employed.
- Employing trainers used by the ICC. These trainers can certainly supplement any trainers identified by the Board.
- Coordinating with utilities, state agencies and other interested stakeholders to identify centrally located facilities for the trainings.
- Implementing an outreach strategy to contact code officials, architects, engineers and builders (as possible third party inspectors or simply to increase the number of building professionals familiar with the code).
- Partnering with the Maine Building Officials and Inspectors Association and the Maine Municipal Association, along with other groups such as the Maine Chapter of the American Institute of Architects and the Maine Chapter of ASHRAE.

Certification Program

A professional certification program that adequately tests a candidate's knowledge and understanding of the energy code is the lynchpin of any successful third party inspection plan. The ICC develops (for each new edition of the IECC) an exam that addresses the codes which can be used to certify expertise with the energy code. The ICC offers programs for residential and commercial plan review and field inspection of the IECC. As with the training program, the SPO will need to work with the ICC and local stakeholders to formulate the logistics behind the administration of the exams. This will include determining the number of test locations and the number of times the exam will be given. The ICC typically administers its exams including proctoring and grading. However, the SPO will need to develop a process for actually registering and keeping track of candidates who have passed the exam.

With regards to a certification program, NEEP recommends:

- Using examination materials developed by the International Code Council should be used.
- Coordinating with the ICC to ensure that sufficient number of test dates and test locations are available.
- Providing resources for the administration of the exams. This includes registrations, proctoring and grading.
- Developing a process by which the SPO certifies the individuals who have passed the exam. A process will also be needed to adjudicate appeals.
- Maintaining a readily accessible list of individuals who have passed the exams.

Continuing Training and Certification

As the IECC and ASHRAE 90.1 are updated every three years, the Board should develop a continuing education program. Building officials and third party inspectors who want to maintain their certification should have to update their training and recertify on both codes at least once every three years (the typical time between new editions of both the IECC and ASHRAE 90.1).

Appendix A: Examples of Third Party Plan Check and Inspection Programs

Washington State Special Plan Examiner/Inspector (SPE/I) Certification Program:

In 1994, upon adoption of an updated commercial energy code in Washington State, the state utilities came together to design and fund a new certification system called the SPE/I Certification Program. The purpose was to help support efforts to implement the newly updated code by incorporating an additional complement of trained plan checkers and inspectors.

The SPE/I program was based on Section 1704 of the International Building Code which details the specific requirements for the use of special inspectors. Special inspectors, in this context, refer to individuals hired directly by the permit applicant to review the plans and/or inspect the construction for fidelity with the building plans.

In order to ensure the basic competence of the special inspectors, the UCG instituted a training and certification program. The training consisted of an eight-hour session on the energy code. Once that was completed, individuals seeking certification were required to pass an exam. There were three levels of examination depending on the level of difficulty involved. In other words, the examination for individuals who wanted certification to only inspect a certain limited number or type of buildings were less complex than those that wanted the certification to inspect multi-story structures.

The Washington Association of Building Officials (WABO) was responsible for administering the exams. This included logistical work such as registration, scheduling the exams. Actual proctoring and grading was left to the International Council of Building Officials (ICBO), the organization that was responsible for developing and maintaining the certification exams. WABO was also responsible for processing appeals.

Finally, WABO maintained the list of qualified special inspectors which it made available to any local jurisdiction that wanted to participate in the program.

To participate in the program, a jurisdiction needed to inform the permit applicant of the availability of the program and what type of inspection activities were covered. The permit applicant was then required to contact, hire and pay the special inspector. At the end of the process, the special inspector submitted a report to the building department detailing compliance/lack of compliance.

County of Fairfax, Virginia

The following description is based on the document : *Certified (Third Party) Inspection Program*: *Implementation in Fairfax County, 2008 Edition* which gives a summary of the requirements for the use of third party inspectors, including the following: The requirements lay out the following requirements:

- Third party inspections must be supervised by a Registered Design Professional who has been approved by the Authority Having Jurisdiction prior to beginning work.[4]
- Private inspection firms must be hired by the permit applicant. The inspection firm must not have any financial interest in the project.
- The Commercial Inspections Division shall review and approve the submitted inspection reports.
- Both the Registered Design Professional and special inspectors involved in the project must have appropriate certifications as a result of passing the appropriate examinations. The exams include those developed by the International Code Council and the Virginia Department of Housing and Community Development.

[4] A Registered Design Professional is an architect or engineer licensed to practice in Virginia.

- The Registered Design Professional certifies the completion of the project. The certification is a statement by the Registered Design Professional indicating that the items reviewed by the third party inspectors comply with the building code.

Appendix B: Statutory Requirements

Lawmakers began to address this issue as part of the overall effort to set a statewide building code. The new statutory requirements adopted in 2007 (Chapter 699), allow for the use of third party inspectors; mandates the establishment of training and certification requirements by a certification committee; establishes the Bureau of Building Codes and Standards to develop a training program; lays out the different inspection options for municipalities. These requirements give municipalities the flexibility to pursue different options while mandating a consistent set of requirements for inspection personnel.

Statutory Requirements

§ 2371. Definitions

6. Third-party inspector. "Third-party inspector" means a person certified by the State to conduct inspections under Title 30-A, section 4451 for compliance with the code. A 3rd-party inspector may not hold a pecuniary interest, directly or indirectly, in any building for which the 3rd-party inspector issues an inspection report pursuant to section 2373 and may not be appointed as a building official.

§ 9723. Training and certification program standards

1. Appoint committee; establish requirements. The board shall appoint a 5-member training and certification committee, referred to in this section as "the committee," to establish the training and certification requirements for municipal building officials, local code enforcement officers and 3rd-party inspectors. For purposes of this section, "3rd-party inspector" has the same meaning as set forth in Title 25, section 2371, subsection 6.

2. Training program standards; implementation. The committee shall direct the training coordinator of the Bureau of Building Codes and Standards, established in Title 25, section 2372, to develop a training program for municipal building officials, local code enforcement officers and 3rd-party inspectors. The Executive Department, State Planning Office, pursuant to Title 30-A, section 4451, subsection 3-A, shall implement the training and certification program established under this chapter.

§ 2373. Municipal inspection options

Beginning July 1, 2010, the code must be enforced in a municipality that has more than 2,000 residents and that has adopted any building code by August 1, 2008. Beginning July 1, 2012, the code must be enforced in a municipality that has more than 2,000 residents and that has not adopted any building code by August 1, 2008. The code must be enforced through inspections that comply with the code through any of the following means:

1. Building officials. Building officials and local code enforcement officers;
2. Interlocal agreements. Interlocal agreements with other municipalities that share the use of building officials certified in building standards pursuant to Title 10, section 9723;
3. Contractual agreements. Contractual agreements with county or regional authorities that share the use of building officials certified in building standards pursuant to Title 10, section 9723; and

4. Third-party inspectors. Reports from 3rd-party inspectors certified pursuant to Title 10, section 9723 submitted to the building official prior to obtaining a certificate of occupancy in section 2357 that are obtained pursuant to independent contractual arrangements