Successful Strategies for Improving Compliance with Building Energy Codes

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ABSTRACT

Considering that buildings in the U.S. represent 72% of all electricity consumption and 38% of CO2 emissions, national, state and local energy policy leaves a staggering amount on the table for the effective use of and adherence to building energy codes and standards. Despite this clear connection, compliance with building energy code requirements across the United States often goes unchecked. As a result, compliance rates in most states are very low. Advocacy to improve compliance with energy codes, through enforcement, has failed to take a holistic approach and has subsequently seen dismal results. However, as a condition of receiving energy funding under the American Recovery and Reinvestment Act of 2009, all states are required to achieve 90% compliance with the 2009 International Energy Conservation Code (IECC) and ASHRAE Standard 90.1-2007.

There is no "one-size-fits-all" answer for energy code enforcement. Varying state and local statutes, governing structures and political climates play critical roles in how and if energy codes are enforced. A holistic approach recognizes these varying influences and acknowledges that code officials have numerous codes to enforce with limited resources. This paper will address the following successful strategies that have proven effective in various states and local jurisdictions: (1) streamlining compliance processes, (2) third-party enforcement, and (3) advanced training.

Introduction

The national model building energy codes have increased energy saving potential by nearly 30% from 2006 to 2012. (U.S. Department of Energy 2011) Unfortunately, a Building Codes Assistance Project (BCAP) report shows that compliance rates with building energy codes are less than 50% in many jurisdictions. (Yang 2005) Compliance with building energy codes is simply a term that implies that the requirements of the code are being met. There are many ways of raising the potential for achieving compliance, including, educating building designers, contractors, trades, code officials and consumers on the requirements of the energy code. Enforcement by local or state government is the traditional and arguably the most effective means of ensuring compliance. Regardless of the enforcement strategy used, educated energy code inspectors and plan reviewers are at the core of effective and accurate enforcement. While educated personnel are an underlying necessity, alone it will not solve the problem of low compliance rates. Local government support and resources are also needed.

Ensuring compliance with building energy codes is typically the responsibility of local governments. The U.S. has over 39,000 general purpose local governments and each has one of five governing structures. (U.S. Census Bureau; Governments Division 2007) The strategies

presented here can be adapted to suit the needs, governing structure and political climate of any local government.

Why Should Local Governments Enforce The Energy Code?

Local building departments commonly cite a lack of funding or resources as their reason for not enforcing or adequately enforcing building energy codes. Many in the building community correctly categorize building energy codes as outside the typical scope of work to protect against acute hazards in our built environment – such as fire, structural collapse, and other life-safety requirements. As such, building energy codes are often seen as less important. While it is unfortunate that building energy codes take a back seat to other health and safety related building codes, there is evidence to suggest that local and state governments need to take another look at building energy codes for their economic development potential, and as an expectation of prospective home buyers.

Local Economic Growth

A U.S. Department of Energy (DOE) report (U.S. Department of Energy 1996) addressed the impact of energy efficiency on local economic development. The report found that energy efficiency had a local economic multiplier of $2.23, meaning that every dollar spent on activities to improve energy efficiency generates economic activity of $2.23 to the local economy. An economic multiplier is a measure of how much economic activity can be generated in a community by different combinations of purchasing and investment. An ordinary purchase of one dollar of consumer goods at a local store typically produces $1.90 of economic activity for the local economy while the purchase of petroleum products has an economic multiplier of $1.51, and utility services, $1.66. The DOE report states: “A higher economic multiplier will lead to greater economic vitality because business activity is encouraged, and jobs are created and sustained. Economic growth is enhanced when expenditures with a good economic multiplier are implemented. From the perspective of local government, this policy approach leads to growth in the local tax base and a healthier fiscal picture.”

In the early 1980’s, the town of Fremont, Nebraska, population 24,000, found that its annual energy bill was $45 million, of which $36 million (80%) left Fremont. (U.S. Department of Energy 1996) Enforcing the requirements of the energy code for new buildings and additions and renovations to existing buildings is a simple way to reduce energy consumption and the flow of energy dollars out of local communities.

Furthermore, the Institute for Market Transformation led a diverse task force of organizations that determined every dollar spent on energy code enforcement yields $6 in energy savings and will save the average household $300 annually on energy bills. (Institute for Market Transformation 2010)

Consumer Expectations

Not only can the energy savings from enforcing an energy code lead to economic growth, but consumers expect a new home to comply with these standards. As part of a joint project with the Building Codes Assistance Project, Consumers Union’s Consumer Reports National Research Center completed a survey with over 5,000 respondents in February of 2011. The survey found that 75% of respondents “agreed” or “strongly agreed” with the statement: “Energy

codes should be enforced like other safety and quality standards of construction." (Building Codes Assistance Project and Consumers Union 2011) Although this survey would have likely returned very different results just three or four years ago, it clearly shows that consumers are becoming much more aware of energy codes and their impact on home energy consumption.

This paper will look at proven strategies that local governments can implement to improve their enforcement of building energy codes. The strategies include streamlining compliance processes, third-party enforcement and advanced training.

Streamlining Compliance Processes

Streamlining is the practice of improving building regulatory processes to remove overlap and duplication and create more efficient administrative procedures. When implemented properly it not only makes building departments more efficient and effective at enforcing construction code requirements, but it also improves customer service and provides financial savings for the local government, its citizens and private industry. Streamlining can also improve compliance with building energy codes.

Why Streamline?

A 2010 report from the National League of Cities and the International Economic Development Council called "The Role of Local Elected Officials in Economic Development: 10 Things You Should Know", identifies the "regulatory environment" as one area to consider in a local economic development strategy. The report states: "For business leaders, time is money; they want to know that the regulatory process provides for timely, reliable and transparent resolution of key issues. If your city's regulatory policies are riddled with delays, confusing and redundant steps and multiple approval processes, a prospective business may very well choose to locate or expand in another community." (McFarland and Seeger 2010) The report also suggests that elected officials should consider going through the process themselves as a new business or a developer to gain firsthand experience of the time, cost, hassles and clarity of the process.

Burdensome and complicated regulatory processes can drive business out of town. A study published by the U.S. Department of Housing and Urban Development states: "In the early 1990's, jurisdictions in the San Jose/Silicon Valley region were surprised when several large information technology firms moved their operations to Austin, Texas. Leadership flew to Austin to learn why. One of the major factors contributing to attracting firms to Austin was a streamlined building codes administration and enforcement program that reduced the amount of time (and cost) for processing permits, gaining plan reviews and conducting inspections." (Wible and Fitch 2006)

According to the Alliance for Building Regulatory Reform in the Digital Age (the Alliance) "it is about increasing the efficiency of modern construction codes, rules and regulations and reducing the amount of time it takes to move a new building or building renovation through the regulatory process by as much as 80% annually, saving both the private and public sectors tens of billions of dollars." (Alliance for Building Regulatory Reform in the Digital Age 2012) A response to a survey conducted by the National Conference of States on Building Codes and Standards (NCSBCS) and the Alliance provides evidence that streamlining worked in Ventura County, California. Ventura County (pop. 825,000) noted that for their investment of $160,000 for a permits and inspections software package, the County had saved

over $1,000,000 in costs and reduced staff by 3 people while the building department's workload increased by 80% over a 6-year period. Furthermore, the final report from the survey stated: "Jurisdictions of all sizes ranging from Los Angeles, CA (population 3,649,000) to Cobleskill, NY (population 4,533) provided data documenting reductions in processing time from 20% to 80% with the application of information technology to one or more codes administration and enforcement processes. Jurisdictions also reported marked improvements in their relationships with their clients/stakeholders (the construction industry, citizens, and their elected officials)." (NCSBCS/Alliance 2005)

Beginning the Streamlining Process-Regulatory Review

The first step in the streamlining process is to determine what regulatory barriers may exist in a jurisdiction's code administration and enforcement program. This should include both an internal review, as well as soliciting input from clients and other stakeholders. A complete mapping (flow chart) of the regulatory process, across all agencies/departments involved, is essential to identifying areas for improvement. A few examples of burdensome or inefficient processes include:

- Poor communication among departments involved in plan approval
- Lengthy and complicated process from permit application to certificate of occupancy
- Multiple applications/forms across departments
- Multiple public hearings
- Multiple fee collections from different departments at different locations

Following the review of the regulatory process, a jurisdiction must identify the strengths and weaknesses, determine the "low-hanging fruit" and prioritize needed changes. This should include a plan for working with the local governing body if changes to a regulation/ordinance or existing government structure are required to implement a more efficient process. For example, an investment in software can significantly enhance the efficiency of the plan approval process but the purchase is likely to require approval of the governing body.

Identifying Areas to Streamline

After inefficiencies in the regulatory framework have been streamlined, it is time to determine what administrative areas are appropriate for streamlining. All cost-effective improvements that will enhance the compliance process can be targeted, including: external and internal communication, permit applications, plan review, inspections, staff qualifications and training and code compliance through education. After a thorough review of potential areas to streamline, techniques for streamlining those areas identified as the most promising for process improvement should be determined. The next section will explore the techniques that have proven successful.

Strategies for Streamlining

Many governments across the United States have implemented streamlining to improve their code compliance processes. Technology is a common and effective way to improve many of the areas listed above. When implementing a streamlining strategy, it is best to start slow,

addressing one or two areas of weakness at a time and building upon success. Starting slow and obtaining successful results allows for less resistance to future streamlining efforts.

External communication. How well information is communicated to a local government's customers (i.e., citizens, designers, builders and developers) has a large impact on their impression of the services they receive. A clearly articulated web page, brochure or checklist containing all the necessary information for various types of projects, permits and approvals is key to understanding the regulatory process. Soliciting input from stakeholders is an easy and effective way to obtain valuable feedback on areas that need improvement.

Internal communication. Internal communication is as much about organization as it is about proximity. An organized and cohesive system across all departments involved in the building regulatory process allows for ease in tracking projects and clear communication among all the players. The use of software can greatly enhance internal communication by providing ease of project tracking and status updates.

Permit applications. A permit application is often the first official document submitted to begin the regulatory compliance process. A clearly written and easy to understand permit application accompanied by a checklist of items required to be submitted with the application is an excellent way to reduce questions and frustration with processing incomplete applications.

Plan review. The plan review and approval process is one of the most complaint-ridden areas of the regulatory compliance process because it usually takes the longest. It is important that the plan review and approval process be clearly communicated from start to finish. Designers need to know what codes their designs need to be in compliance with and any specific local requirements. Local building departments need an effective way to track plans and revisions upon submission and to determine a plan's status in the regulatory review process. Electronic plan submission has proven effective at streamlining plan review

Inspections. Inspections are a major part of the regulatory compliance process. When not handled efficiently, they can be a logistical nightmare and lead to wasted time and money. An effective system for scheduling inspections is one key area for consideration in the streamlining process. A central system that allows for online as well as automated phone scheduling can reduce the administrative burden on office staff and add efficiency to the process. Scheduling inspections based on their proximity to one another can greatly reduce travel time, while employing multi-discipline inspectors can reduce the number of trips to one building site..

Staff qualifications and training. Having qualified staff and providing adequate training allows work to be done more efficiently. Building codes are continuously revised and updated, so it is imperative that code officials stay up to date as the codes are updated in their jurisdiction. Requiring certifications, such as those offered through the International Code Council (ICC), is a great way of ensuring that local inspectors and plan reviewers have a minimum level of code knowledge. Requiring ICC Certifications (especially at the state level) allows for consistency across jurisdictions in establishing minimum qualifications for inspectors and code officials.

The City of Gillette, WY rewards their inspection staff with a 3% raise in pay for any ICC certification achieved with a maximum of two per fiscal year. By providing this incentive the city and its customers realize the benefit of well trained and multi-disciplined technical staff.

The city's mayor, city council, and city administrator recognize the value of investing in their employees.

Code compliance through education. By educating local builders, tradesmen and design professionals on code requirements, future violations can be reduced and compliance improved. Education can take many forms, including: printed brochures, online courses, classroom training, in-the-field training, and the publication of the most commonly found code infractions. Having local code officials conduct the training allows them to be seen as an educator rather than just a policing authority.

Technology. As some of the examples above depict, technology, including software, internet-based applications, mobile devices, electronic seals and signatures and electronic storage, all have the potential to improve the efficiencies of various code compliance processes. Most jurisdictions across the U.S. have implemented some type of electronic process in place of a less efficient paper version. Often the consideration of implementing new electronic tools is well suited for an overall streamlining initiative because it requires a close look at current processes when determining how to transfer them to electronic means. For example, Boca Raton, Florida reduced its application types from more than 150 to 90 and its permit types from 130 to 12 during its process of implementing a new software program. (Fichera and Stevens 2012)

Example: City of Gillette, WY

In Gillette, Wyoming which has a population of 30,000 and issues more than 3,000 permits annually, an investment in electronic plan review software allows all city departments as well as the county fire marshal and utilities to receive all land development, engineering, and building project documents electronically. This fully comprehensive "ePlan" internet based software solution for plan review has dramatically increased the efficiency of all departments and reduced the time and effort for businesses to navigate the process. On-going and near-term enhancements include online applications and payment of fees, application and plan review tracking by any associated party, and the next generation of "ePlan" which will in large part automate the actual plan review itself. A few examples of the benefits realized by the City of Gillette include:

- Improved accessibility to project status
- Coordinated and consistent review efforts
- Complete chronological history of each project
- Reduced errors and streamlined communications
- No more lost or misplaced documents
- Time savings-the system requires reviewers to do their part in a timely manner
- Reviewers and applicants can see all of the plan review comments in one place
- Enhanced participation by Campbell County Fire Department in the plan review process
- Unauthorized changes to building plans are immediately detected
- Access to approved electronic project plans from the field by inspection staff

In addition to their ePlan review, Gillette currently has their engineering, planning, and building departments on the same floor and adjacent to each other for their version of the "one

stop shop". They are also proposing a $750,000.00 renovation of the second floor to more fully integrate the three departments. The proposed renovation will have such features as:

- Shared service counter space
- A computer kiosk for customers
- Support staff work stations built in to the service counters
- A customer scanner / printer
- Adjacent conference rooms for all meetings

What can Streamlining do for Energy Efficiency?

As previously discussed, insufficient enforcement is one reason for such low compliance rates. Building officials and code compliance research tell us that energy code enforcement is often lacking for several reasons, including: (1) lack of funding for additional inspections, (2) lack of knowledge/understanding of building energy codes (qualified staff), and (3) building energy codes are seen as secondary to fire and life safety codes.

By improving the efficiency of regulatory and administrative processes, reasons (1) and (2) above have the potential to be resourced. As shown in the Ventura County, California example earlier, streamlining can provide substantial savings while improving services. Financial savings could be used to invest in new staff with energy code knowledge and/or certifications, train and certify existing staff on energy codes or contract with a third-party to provide energy code services. Additionally, improved efficiencies may allow existing staff to provide more thorough plan review and inspections for building energy code requirements.

Streamlining building regulatory processes is a sensible "win-win" approach for government and industry. Improving regulatory and administrative efficiencies can save both time and money for the public and private sectors while not compromising appropriate oversight and safety. When undertaking streamlining initiatives, jurisdictions should consider improvements to their enforcement of building energy code requirements. Building owners, home owners and tenants who spend less money on their energy costs have more money to invest in the local economy (restaurants, shops, etc.). Additional research is needed to determine whether the savings attributable to streamlining are adequate to support energy code enforcement. The next section will address the role third parties play in improving energy code compliance.

Third-Party Enforcement

Third-party enforcement can take on varying forms and levels of complexity. At the highest level is a comprehensive third-party program that encompasses nearly all activities of code compliance from plan review through inspection. Variations on the comprehensive program may utilize third-parties for one or more areas of compliance, including plan review, special inspections and performance testing.

A report by the DOE called "Compliance Verification Paths for Residential and Commercial Energy Codes" explains that "third-party compliance verification occurs when an individual or company without a vested interest in the project is responsible for verification of compliance, such as state and local building regulatory agencies." (Conover, et al. 2011) While DOE's definition of third-party compliance includes state and local regulatory agencies, the

report also explains that "privatization as applied to third-party compliance verification describes a situation where the third party is a private sector entity that verifies compliance on behalf of a government regulatory agency." Third-party privatization will be addressed in this section while the previous section on streamlining addressed the traditional role of state and local building regulatory agencies in the code compliance process.

If it's Not Broke Don't Fix it!

The traditional government regulatory compliance verification model consists of government employees – whose responsibility is to the public interest – providing plan review and inspection services for private sector development. This system has long preserved important checks and balances to sometimes compromising perspectives. If it is effective and efficient, there should be no need to replace it. However, where no building code enforcement program or a poorly functioning program is in place, a new system might be considered.

Many state and local governments take advantage of a privatized third-party program for code compliance services. This model has proven to be effective in the provision of other government services and can save governments money while providing improved service. The National League of Cities Municipal Action Guide on "Privatizing Municipal Services" states: "the average American city currently works with private partners to perform 23 out of 65 basic municipal services," and "…governments often realize cost savings of 20 to 50 percent when the private sector is involved in service provision." The Guide goes on to say, "in addition to abundant technical and financial expertise, the private sector usually boasts superior access to newer technologies and far more diverse funding sources," and "operating in the private sector often involves less bureaucracy, which leads to expeditious project completion. And as municipalities confront tax and spending limitations, outside funding offers flexibility to increasingly constrained municipal budgets." (Rozsa and Geary 2010) The following sections will begin to outline the structure for a third-party code enforcement program.

Comprehensive Third-Party Enforcement

A comprehensive third-party enforcement program utilizes private sector companies to verify compliance with building codes on behalf of the government regulatory agency. The government regulatory agency authorizes these private sector companies to provide plan review and inspection services for building projects within their jurisdiction. Third-party enforcement programs can be found in local, state and federal government. The effectiveness of third-party enforcement lies in the availability of quality third-party companies and the government's ability to administer and oversee the program. There are three key players in the third-party program structure: (1) the government agency, (2) the third-party company and, (3) the building industry. Each of these players has certain key responsibilities as discussed below.

Key responsibilities of the government agency. The local government is responsible for administering the third-party program. This means they will be responsible for setting the criteria for approving a third-party entity, including staff qualifications, continuing education requirements, insurance requirements, the frequency of renewal and any fees associated with participation. After the criteria for approving third-parties has been set, local governments will have to set plan review and inspection requirements and determine quality control procedures. Such procedures may define what must be included on plans and what types of inspections must

be completed; and how often plans and inspections will be audited, and the consequences for deficiencies. Local governments will then be responsible for reviewing applications and approving qualified third-parties to participate in the program as well as maintaining a list of approved entities. As mentioned above, one of the keys to the effectiveness of a third-party enforcement system is the government's ability to administer the program. Establishing the program requirements on the front-end will take some time, but it is essential to an effective program that is easy to maintain in the long term. Although the local government will need a few well qualified personnel (Certified Building Official, Registered Architect or Licensed Engineer, etc.) to provide quality control and oversee the program, it will not need a fully staffed building department because third-parties will be providing the services.

Key responsibilities of the third-party agency. Third-party agencies would be responsible for meeting the qualification criteria, as well as performing plan review and inspection services as required by the local government. Third-parties would provide plan review services to determine compliance with all building codes and ordinances adopted by the local government. Upon approval, plans would be sent to the local government for permit issuance. When construction begins, third-parties would be responsible for providing the inspections and submitting inspection reports as required. A final report would be submitted for issuance of the certificate of occupancy by the local government.

Key responsibilities of designers, contractors and building owners. The entity responsible for the construction of the building (building owner) or their designee would be responsible for contracting with an approved third party for plan review and inspection services. Fees charged by the third party can be handled in one of two ways. The initial collaboration can be a contract or agreement with the governing body where fees for the services can be absorbed through the permit process as part of the Building Permit Issuance. The later way can be a direct relationship with the owner, design team and/or the construction company authorized by the governing body to agree on charges for the project. This provides for transparency between all of the parties and a formal agreement can be laid out acceptable to all of the team members. This process is very similar to engineering consultants who handle civil engineering improvements such as streets, curbs, sewer and water improvements. Governing bodies have been utilizing these types of engineering services to support their obligations of code compliance and accountability. The building owner and their design and construction team will primarily interact with the third-party throughout the design and construction process regarding code compliance issues.

Benefits

There are several benefits to a local government utilizing a third-party code enforcement program including, better quality control, cost savings, quicker processing times and less susceptibility to changes in construction volume. There is better quality control because there is an additional level of oversight on each project. Additionally, local governments are responsible for setting the qualifications for third-party personnel, so they can ensure that the most qualified individuals are providing services. Qualified personnel are one of the keys to improving energy code compliance. Third-parties are responsible for the bulk of the plan review and inspection processes, therefore, local governments will need fewer staff, which will result in cost savings. Local governments will also realize an additional source of revenue from fees paid by third

parties to be approved to participate in the program. With multiple third parties participating in the program, building owners can choose a company that will be able to process their plan review in the shortest time. Ultimately, the quicker a construction project can be moved through the approval process to completion, the sooner a local government can begin collecting taxes on the new building.

Targeted Third-Party Programs

An alternative to the comprehensive third-party program is a targeted third-party program. This type of program targets specific areas to utilize third-parties. A targeted third-party program can be used where a local government is satisfied with its current code compliance program, but would like to address one or two specific areas to improve. Utilizing third parties will typically be at very little cost to the local government, but will ensure thorough code compliance.

For example, Austin, Texas (pop. 800,000) uses third parties to provide performance testing (building and duct leakage, air flow and static pressure) for new residential construction. (Institute for Market Transformation 2011) Austin's performance testing program was one of the recommendations of the Zero Energy Capable Homes Task Force (ZECHT) which was formed after then-Mayor Will Wynn and the City Council committed Austin to making its new residential buildings zero energy capable by 2015. The recommendation to conduct performance testing ultimately turned into a third-party program because it was deemed the most cost effective way to implement such requirements. As with many building departments across the country, Austin's Planning and Development Review Department did not have the resources to administer a performance testing program, in-house. In fact Austin Energy, the city's municipal utility, provides the administrative oversight for the program; including the approval of third-party testing companies and quality assurance. It is estimated that a program similar to Austin's would cost approximately $15,000-$25,000 annually to administer, depending on the size of the jurisdiction and the level of quality assurance. Austin's 43 approved third-parties tested approximately 1,900 homes in fiscal year 2010, with the average cost of testing at $400 per home. Under Austin's program, builders are responsible for contracting with an approved third-party to have the testing done. The third-party then submits the test results to the city as evidence of approval.

With the energy code typically being the least enforced of the major building codes—often due to constrained budgets—it is a code that is prime for a targeted third-party program. Such a program could encompass the use of third-parties for plan review, inspection and performance testing.

Local governments could also utilize "above code" programs such as Energy Star for Homes or other local or regional programs that require verification by third-party verifiers. Doing so typically means that all buildings certified under the program will meet or exceed the minimum energy code requirements. Babylon, NY (pop. 13,000) requires that all homes in its jurisdiction meet the Energy Star for Homes program. By requiring this it ensures that all new homes built will have to be verified for compliance with Energy Star for Homes; by an individual approved (under the Energy Star Program) to provide such verification.

Third party agencies can also provide much needed assistance to governmental agencies. In the recent tough economic conditions local governments have turned to third party agencies to provide services and in some cases replace current staff. This has been driven by a need to keep

costs down. As the construction industry struggles to recover, construction volumes and therefore revenue from permit fees (which fund most building departments) is unpredictable. This makes it a challenge to adequately staff building departments. By contracting with a third-party agency, the local government can provide the necessary building regulatory services from highly qualified and certified personnel, but save money by only using the services when they are needed.

The use of third-parties for building code enforcement is by no means new to the building industry. The U.S. Department of Housing and Urban Development has been using third parties in the implementation of its Manufactured Housing Program for more than 35 years. Whether it is a comprehensive or targeted program, third parties can provide efficient services, improve energy code compliance, and local governments can realize cost savings.

Advanced Training for Advanced Compliance

Training is often viewed as the "way to 100%" in energy code compliance. Yet, stakeholders tend to resurrect the "same old thing" in terms of developing and delivering trainings. States adopt a new energy code, hire contractors to develop residential and commercial modules, then distribute it once to as many stakeholders as they can. That is often the end of it. This is done because training is the most expensive component of implementation, and budgets are thin. This system is not working. Trainings need to be done with greater variety to serve all stakeholders, and there has to be creativity in resourcing it.

First, an often overlooked component of energy code training is an advanced assessment of training needs. It is often assumed that the trainer's hired to develop and conduct trainings know who and what to train. An advanced training assessment involves multiple interfacing events, with all the stakeholders, including the traditional groups of builders, designers, code officials and trades. The training assessment should also involve the often overlooked stakeholders, including jurisdictional officials (other than just code officials), realtors, building material suppliers, manufacturers, utilities, system benefit providers and community groups. The assessment should determine what each group needs to be educated on, and what methods of delivery would be most effective (i.e., in-the-field, classroom or online).

Assessments may find multiple ways to provide training, including the following found during BCAP's work for a number of states in training assessment:

Energy Code Mentors

Mentors can be trained to provide energy code information and advice at many entry points, including real estate transactions, jurisdictional meetings around proposed development and building material supply, among others.

Circuit Rider Training

This typically involves the developing or hiring of highly trained energy code experts who can respond to training needs in communities as well as provide ongoing support answering questions or directing code enforcement personnel to resources for supporting energy code enforcement. Circuit Riders will also have the capacity to reach energy code enforcement personnel in the field for on-the-job training. This service could be extended to the builder/contractor and design professional level as well.

HERS Raters

The HERS rating process naturally lends itself to hands-on, in-the-field training for builders, but can involve code officials if integrated into the existing code enforcement process. Raters can advise builders on what is needed to meet code and programs like Energy Star for Homes.

ICC/BCAP Energy Code Ambassadors Program (ECAP)

ICC and BCAP are piloting this program in ID, UT, IL, NV, and AL. ICC and BCAP train and certify code officials in several regions statewide who then serve as peer-to-peer energy code "mentors" to other code officials in their regions of the state.

Builders field guides, checklists and other compliance tools. Resources have been developed under many code education projects nationwide, and have proven very effective. These guides can include illustrated examples of code requirements, building science basics and best practices. Checklists are also effective for plan review and inspections by code officials or third-parties.

Online training. Online training for energy codes can be both an effective training methodology by itself, as well as a method for stakeholders to "refresh" their knowledge of energy code requirements too. Many states have effectively used online training in this manner, none so well as California in support of their Title 24 energy code.

Consumer outreach and education. Just as consumer education is always a major part of most energy efficiency programs around the country, so too should that outreach be part of promoting energy codes. Promoting consumer demand has always been key to market penetration, and codes are no exception. Developing state-specific easy-to-understand, consumer-oriented information guides as well as a communications program to help average consumers learn more about codes and energy efficiency are the keys to success here.

Finally, a comprehensive, multi-year training plan should be developed, with strategies not only for the training, but for the ongoing support for that training as well. With shrinking budgets and resources crunches at most state and local levels, creativity is needed to implement meaningful, ongoing training strategies and support them over time. Much greater emphasis must be placed on industry involvement. Also, utilities must be enabled to participate in code compliance as well, and barriers must be overcome to their participation. Only with the involvement of all stakeholders at all levels of energy code compliance can we hope to reach meaningful compliance levels with energy codes.

Conclusion

Energy code compliance remains the black sheep of building code enforcement. Solid local government leadership is needed to focus attention and resources on energy code enforcement and realize the local economic benefits of energy efficiency. The BCAP/Consumers Union survey results presented earlier show that energy code enforcement is a consumer expectation. As local leaders recognize the benefits of having energy efficient buildings in their community and their citizens begin to demand it, the strategies presented here will be needed to make energy code enforcement successful.

Streamlining is a simple process of doing more with less by removing inefficiencies in the building regulatory process. It can reduce costs to both industry and local government and improve services. While the savings attributable to streamlining have been documented, as in Ventura County, California, further research is needed to determine whether or not those savings are enough to support an energy code enforcement program.

Local governments can also utilize third-party programs in the enforcement of building energy codes. The use of third-parties has been shown to provide cost savings to local governments. Whether a comprehensive or targeted program, a third-party solution can be tailored to fit the needs of any community.

Regardless of the strategy used to improve energy code enforcement, comprehensive training is a core necessity. Effective training takes into consideration the needs of various stakeholders and creates programs to target the individual needs of each. Having qualified staff involved with energy code enforcement is critical to improving compliance.

A key message of this paper is the need for local governments to take a step back and evaluate their building code enforcement program. This holistic look at how their program functions is paramount to understanding how it can be improved. Whether that improvement is through streamlining or by implementing a third-party program, building energy code enforcement can be incorporated without a cost burden to the local government.

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