Best Practice: Third-Party Energy Code Compliance Verification

Changes in building energy codes in the last several years have resulted in significant opportunities to reduce energy consumption of new and renovated buildings. A DOE study from 2011 finds that improvements in energy code between 2006 and 2012, increased national energy savings potential by over 30%. This means that meeting the 2012 energy standards in new homes can cut the cost of energy to an average homeowner by $600 per year. Although significant improvements in energy code provide opportunities for greater energy savings in new and renovated buildings, actual savings does not occur without code enforcement.

> **Using Third-Party for Energy Code Compliance Verification:**
> Private sector entity approved by the city to verify energy code compliance by providing plan review and analysis, performance testing and/or field inspections.

There are a variety of reasons for non-enforcement, including shortage of city resources to hire or train city staff. When code officials are understaffed their primary focus becomes health and safety code compliance, leaving little time to focus on energy code compliance. There is similarly little emphasis on energy codes by developers, architects, builders and contractors. For many, this is due to a lack of knowledge of what is required and what they need to do to comply[1]. Since 2001, cities have utilized third-party code verification professionals (businesses) to perform energy code compliance verification, in order to alleviate many of these issues. The benefit of a third-party code verification program is that utilizing private sector organizations often results in energy code compliance being provided in a cost effective and efficient manner. The third-party organizations (TPO) provide the knowledge, expertise and inspection/testing services needed to ensure compliance[2]. Further, such a program may reduce city staffing costs by not having to staff up and down with the ebb and flow of building cycles.

Third-Party Verification: Pros and Cons

Pros

- Can rapidly increase the enforcement of energy code compliance and reduce workload for the city staff.
- Potential for shortening wait times for builders.
- Can add emphasis on the energy code that may not be a priority to city code inspectors.

Cons

- City oversight should occur, similar to that of city staff, with spot checks and reviews.
- Coordination of city staff with third-party inspectors may take time to develop a working relationship.

Implementing a Third-party Energy Code Verification Program

When developing a third-party verification program, it is important for a city to develop a program that has appropriate oversight but is not so burdensome as to reduce the value that is gained by using third-party organizations. Based on their staffing and the number of building permits issued, a city can determine the type of third-party program that best supports their efforts. There are typically three process paths used in existing third-party enforcement programs including:

(1) third-party provides services needed to verify compliance to the developer, builder or contractor for jurisdictional submission;

(2) third-party provides only performance testing services and the city performs other inspections to verify compliance, or;

(3) the city out-sources to a third-party organization(s) all components of energy code enforcement via contract with the city.

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[1] http://energycodesocean.org/sites/default/files/resources/340_Meres_Successful-Strategies-for-Improving-Compliance-with-Building-Energy-Codes-Final.pdf
[2] National League of Cities Municipal Action Guide on "Privatizing Municipal Services".

Participation: There are two common practices for third-parties to participate in a jurisdiction's energy code compliance program.

(1) A city registers qualified organizations, which a builder may utilize to perform energy code verification. They then provide their findings to the builder, who then submits them to the city to demonstrate code compliance.

(2) Third-party organizations may be contracted by the city to provide code enforcement in lieu of expanding the pool of city employees.

The number of third-party organizations who are contracted to provide these services to a city, will depend on the number of permits that are being processed, as well as the capacity of city personnel to oversee the participants. Limiting the number of organizations contracted with the city may enhance rapport and consistency between inspectors, builders and the city staff, which is likely to lead to higher compliance.

Registration: When initially developing a resource list of TPO's for builders to contract with, the city may issue a Request for Qualifications (RFQ) or send out a notice to interested parties of their application to register. The city should require a "no-conflict of interest" declaration be provided from all participating third-party organizations.

> **Key items to keep in mind when creating a third party program:**
>
> - Specify procedure that allows for third-party participation
> - Specify qualifications for a third party participation
> - Specify documents required for a third-party to report or verify code compliance; and for any requirement to meet "above-code certification"
> - Require a no "conflict of interest" declaration from participants

For example, to register for the City of Houston program, it requires an application to be filled out by each individual or firm[3]. The application must list all employees/contractors providing verification services for their firm and their certifications. The third-party participants are often required to pay a registration fee, which covers administrative costs of registration and verification of credentials.

Qualifications: The certification requirements will also influence the number of qualified third-party participants. State law requires that any personnel (city or third-party) that are involved in the enforcement of energy code be certified by the International Code Council (ICC)[4]. There are additional certifications and qualifications which a city may choose to require for the various steps in the process.

There are a variety of certifications available for individuals who provide performance testing, such as the Residential Energy Services Network (RESNET) Home Energy Rating System (HERS) Rater or Rating Field Inspector (RFI). The Texas Home Energy Rating Organization (HERO)[5] developed the Performance Verification Technician Certification for New Homes (PVT-NH) specifically to certify proficiency in performance testing requirements of the 2009 and 2012 IECC. To date, this certification has been included in the North Central Texas Council of Governments suggested amendments to the 2009 and 2012 IECC, which have been adopted by many of their members. The PVT is also accepted by the cities of Austin, Amarillo and San Antonio.

Building Performance Institute (BPI) Building Analyst may be considered for performance testing, but certification does not currently include training for performance testing. BPI is developing an Infiltration and Duct Leakage (IDL) certification that will address this specific qualification.

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[3]Performance Testing Application
http://edocs.publicworks.houstontx.gov/documents/divisions/planning/enforcement/1216_independent_3party_tech_reg_form.pdf
[4] http://www.iccsafe.org/certification/
[5] http://www.txhero.org/

Cities with "above code" testing requirements, such as HVAC system air balancing, may consider the National Comfort Institute (NCI) Air Balancing Technician certification for those individuals performing this type of verification.
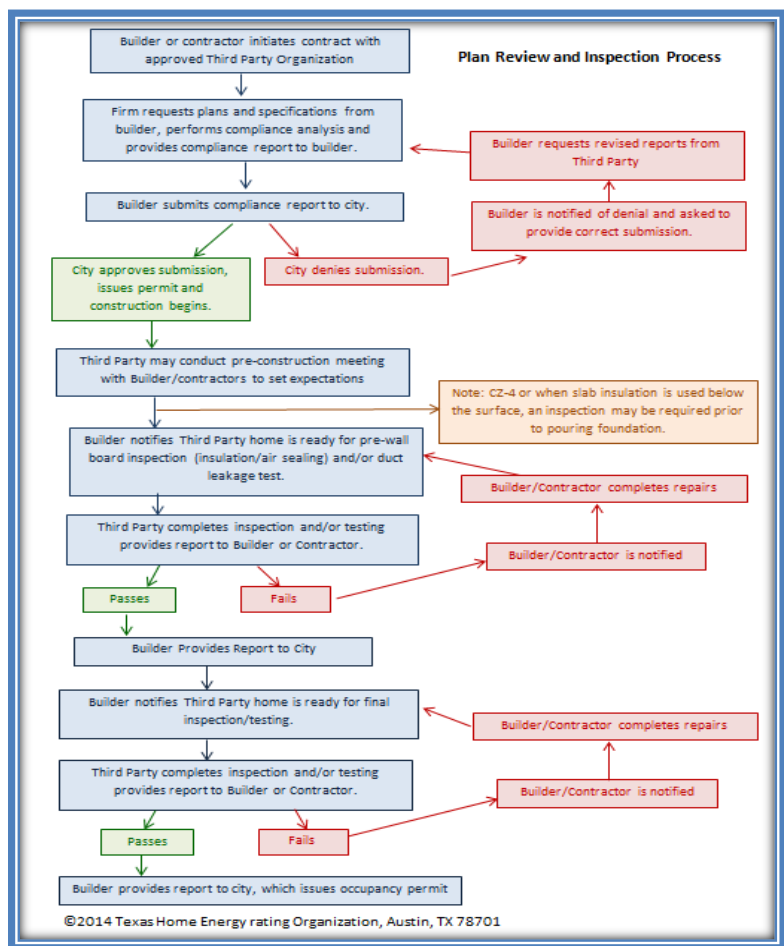
On-going Training of Inspectors: In addition to certification, some city building departments choose to develop an outreach and education program, to allow staff and field inspectors to work through issues or inconsistencies in monthly meetings. The open dialogue helps to reduce many issues and help prevent delays in the permitting process. This ongoing interaction allows for the development of a rapport between the city and third-parties, helping to ensure consistent compliance.
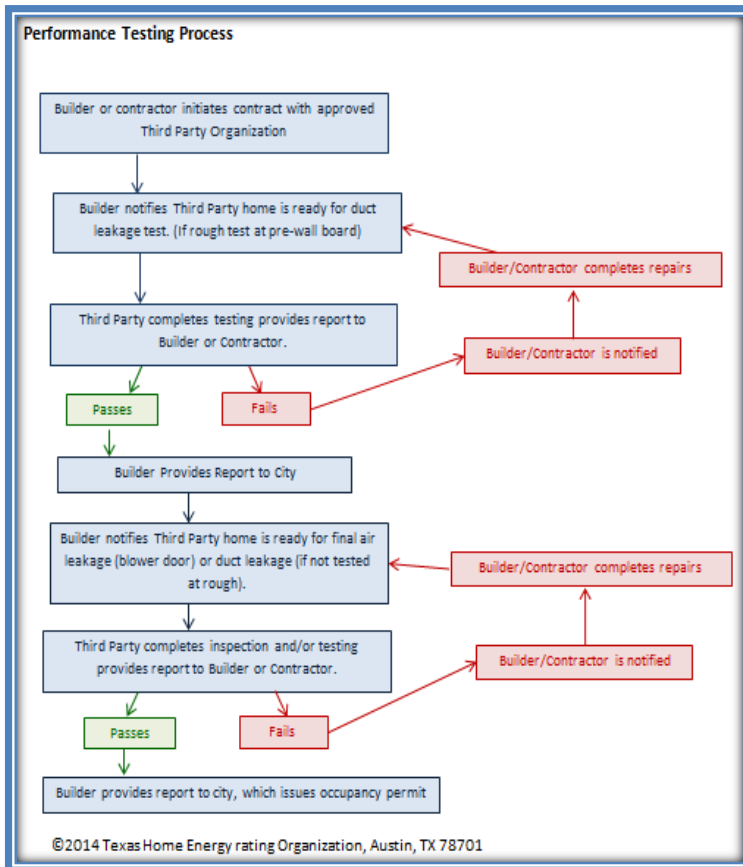
Choosing the Inspector for a Project: The city may assign an inspection organization from the pool to a project' or allow the project developer, builder or contractor to choose an organization. This second method will reduce administrative costs for the city, as well as decrease the opportunity for organizations to claim favoritism by the city for one organization over another. Depending on the city program, it may be the responsibility of the project developer, builder or contractor to contract with the third-party for the inspection and/or testing services.

Plan Review and Field Inspection Process Flow

Cities will typically have the plan review and field inspection/testing verification as part of the same program. The process begins with the project developer, builder or contractor engaging a qualified third-party to conduct plan review and field inspection/testing services. The third-party will do a complete review of construction plans to ensure they conform to the requirements of the energy code, and documented for the builder. Upon the city's acceptance and approval, construction may proceed.

During construction, the third-party organization will provide building site inspections/testing at various points in the process to ensure the energy code is being properly followed. This will ensure systems are properly installed or are not damaged during the construction process and that substitution of non-compliant material(s) does not occur, which could diminish the effectiveness of the energy saving measures. As required by the IECC, at each stage of inspection, any deviations or failures from the approved plan or documentation must be remedied. It is important that the city or jurisdiction enforce this step, to ensure the final building meets all requirements of the code. At substantial completion, the inspector

Plan Review and Inspection Process

will return to the site, conduct a final walk-through inspection and testing, as required, and provide compliance documents to the builder to submit to the city for final approval. A helpful reference for commercial field inspection is the Evaluating Commercial Buildings for Energy Code Compliance and for residential is the Texas Energy Code Interactive Residential Checklist.

Performance Test Process Flow

Performance Testing Process

Builder or contractor initiates contract with approved Third Party Organization

Builder notifies Third Party home is ready for duct leakage test. (If rough test at pre-wall board)

Builder/Contractor completes repairs

Third Party completes testing provides report to Builder or Contractor.

Builder/Contractor is notified

Passes — Fails

Builder Provides Report to City

Builder notifies Third Party home is ready for final air leakage (blower door) or duct leakage (if not tested at rough).

Builder/Contractor completes repairs

Third Party completes inspection and/or testing provides report to Builder or Contractor.

Builder/Contractor is notified

Passes — Fails

Builder provides report to city, which issues occupancy permit

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The 2009 IECC mandates duct leakage testing and provides an option for air leakage (blower door) testing. The 2012 IECC mandates both duct leakage testing and air leakage testing to meet compliance. The City of Austin and Houston require air and duct leakage testing to comply with their "above-code" requirements.[6]

The process starts with the contracting of a qualified organization by the project developer, builder, or contractor and ends when the building passes the performance test. It is possible that the building may not pass the first time. Once the issue(s) which caused the failure are addressed by the builder, a follow up test to confirm the home passes is required, prior to providing documentation.

Monitoring and Verification

Upon establishment of a third-party verification program, the city should communicate to both the building, and inspection/testing communities the minimum expectations and performance requirements of third-party participants. For example, third-party energy code organizations, or their inspectors/testers, may be suspended or removed from the program if they approve non-compliant plans, homes or systems, do not follow program guidelines or do not maintain certification. The city should consider establishing a warning/educational process that allows a poor performing organization or inspector to improve practices prior to suspension or removal from the program. To ensure fairness, the city should implement an appeals process for those that disagree with the city's suspension or removal of an organization or inspector from the program.

Furthermore, it is recommended the city plan to monitor and verify organizational/inspector conformance by conducting random performance audits of participants. This would include choosing a sample of properties and, comparing plan submission documents, with field inspection/testing results of the sample properties conducted by the city.

Conclusion

Cities of any size should consider the benefits of a third-party verification program. While there are no specific rules in Texas for managing a third-party verification program, there are a number of Texas cities operating programs that can provide guidance and additional information.

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[6] http://www.austintexas.gov/page/building-code-local-amendments-interpretations
http://www.houstonpermittingcenter.org/code-enforcement/publications.html/#energy