

Survey of Cost to Conduct Air Leakage Testing per Section R402.4.1.2, Florida Building Code, Energy Conservation, 5th Edition (2014)

Janet McIlvaine

Florida Solar Energy Center

July 29, 2015

Research Purpose and Goal: This research proposes to survey home energy raters and other qualified practitioners who will likely be involved in implementation of building air leakage testing stipulated in Section R402.4.1.2 of the Florida Building Code, Energy Conservation, 5th Edition (2014) (herein referred to as “Test”, “Testing”, and “Testing Requirements”), effective June 30, 2016 (see Exhibit A). The research goal is to gather information from a cross section of qualified practitioners about realistic cost and factors influencing cost of this testing to enhance discussion and decision making related to the Testing Requirements.

Definition of the Problem: Concerns have been raised by homebuilding industry stakeholders about the impact of implementing the Testing Requirement. For example, in a Petition for Emergency Rulemaking by the Florida Building Commission (original and amended petition) entered by the Florida Homebuilders Association and others, petitioners cite concerns raised by construction industry consultants about the Testing Requirements (Amended Petition, 2015). In particular, the petition highlights the estimated additional cost of conducting the Testing to range from \$200 to \$300 per house. This estimate was produced by the Florida Home Builders Association Green Building Council.

In the interest of informed discussion of this issue, the Florida Solar Energy Center (FSEC) provided a professional opinion letter dated June 9, 2015 to Richard S. (Dick) Browdy, Chairman of the Florida Building Commission (Vieira, 2015). FSEC trains and certifies Home Energy Raters who would likely be among those approved to conduct the Testing. Based on professional experience, FSEC estimated that Testing for typical single family homes would involve 35 – 55 minutes on-site to conduct a seven-step process. More complex homes (e.g. multiple fireplaces) would warrant additional time. The estimate excluded time for contractor communications and delivering the required Testing report.

Considering either of these estimates, the cost of the Testing will likely represent a very small fraction of overall home cost; however, it would impact tens of thousands of new homes built annually in Florida (Figure 1).

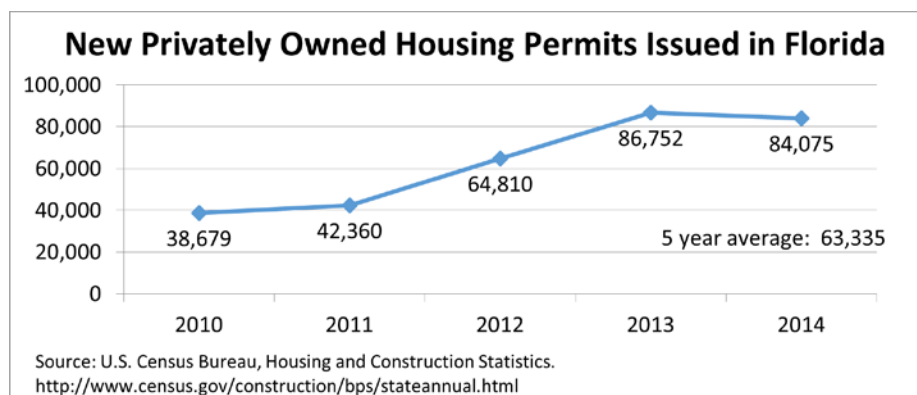


Figure 1: Florida Residential Construction Permitting 2010-14.

Exclusions: In addition to direct costs, there may be costs associated with wait time, corrective actions, and retesting. While the state-wide market adjusts to the Testing Requirements, there may be additional costs associated with supply and demand. These costs are highly variable and unpredictable; therefore they fall outside the scope of the proposed research.

Approach to the Research: FSEC will develop a survey instrument (see draft survey in Exhibit B) with input from the FBC to collect Testing cost input from home energy raters and others as deemed appropriate. Contractors will also be surveyed to learn what they have been charged for similar testing. The scope of the survey will be restricted to the Testing, but will include a draft Testing specification for which survey respondents will be asked to comment and provide estimated costs. Survey responses will be collected electronically when possible using an online survey tool, and otherwise through phone interviews and/or hard-copy submissions.

FSEC will endeavor to have survey results available by the end of November 2015 so they can still be used to inform 2017 Florida code modification proposal submissions during the current open comment period. FSEC will also work with local home builder associations to present the results of the survey to builders during three scheduled meetings and get feedback from builders.

Expected Outcome and Impact on the Code: Survey results will be compiled and provided to the FBC in a report in sufficient time to allow consideration in advance of the current June 30, 2016 effective date for Section R402.4.1.2. The survey results may provide the FBC with a more thorough representation of current market rates in the residential building air leakage testing field.

Budget: Approximately \$17,000.

References:

“Amended Petition for Emergency Rulemaking by the Florida Building Commission.” June 9, 2015. Accessed July 29, 2015:

http://www.floridabuilding.org/fbc/commission/FBC_0615/Commission/Amended_Petition_for_Emergency_Rulemaking_by_the_FBC.pdf

ICC. (2015). “Florida Building Code, Energy Conservation, 5th Edition (2014).” Country Club Hills, IL: International Code Council, Inc. Accessed July 28, 2015:

<http://floridabuilding2.iccsafe.org/app/book/toc/2014/Florida/Energy%20Conservation%20Code/index.html>.

ICC. (2015). “Florida Building Code, Residential, 5th Edition (2014).” Country Club Hills, IL: International Code Council, Inc. Accessed July 29, 2015:

<http://floridabuilding2.iccsafe.org/app/book/toc/2014/Florida/Residential%20Code/index.html>.

Vieira, R. Letter to Florida Building Commission Chairman Richard Browdy. June 9, 2015.

Exhibit A – Relevant Code References

- Excerpt 1 from the Florida Building Code, Energy Conservation, 5th Edition (2014):

“R402.4.1.2 Testing.

The building or dwelling unit shall be tested and verified as having an air leakage rate of not exceeding 5 air changes per hour in Climate Zones 1 and 2, and 3 air changes per hour in Climate Zones 3 through 8. Testing shall be conducted with a blower door at a pressure of 0.2 inches w.g. (50 Pascals). Where required by the code official, testing shall be conducted by an approved third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the code official. Testing shall be performed at any time after creation of all penetrations of the building thermal envelope.

“During testing:

1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond the intended weatherstripping or other infiltration control measures;
2. Dampers including exhaust, intake, makeup air, backdraft and flue dampers shall be closed, but not sealed beyond Intended infiltration control measures;
3. Interior doors, if installed at the time of the test, shall be open;
4. Exterior doors for continuous ventilation systems and heat recovery ventilators shall be closed and sealed;
5. Heating and cooling systems, if installed at the time of the test, shall be turned off; and
6. Supply and return registers, if installed at the time of the test, shall be fully open.

- Excerpt 2 from the Florida Building Code, Residential, 5th Edition (2014):

“R303.4 Mechanical ventilation. Where the air infiltration rate of a dwelling unit is less than 5 air changes per hour when tested with a blower door at a pressure of 0.2 inch w.c (50 Pa) in accordance with Section R402.4.1.2 of the Florida Building Code, Energy Conservation the dwelling unit shall be provided with whole-house mechanical ventilation in accordance with Section M1507.3.

Exhibit B – Example Survey Questions

Name: _____

Florida counties (only) you serve: _____

Are you a certified home energy rater with training to conduct blower door tests? Yes No

If not, are you currently conducting blower door testing as part of a business? Yes No

If not, have you conducted such testing in the past? Yes No

If not, do you plan to become an approved third party? Yes No

In consideration of new air leakage testing requirements in Section R402.4.1.2, Florida Building Code, Energy Conservation, 5th Edition (herein referred to as “Test” or “Testing”), effective June 30, 2016, please answer the following questions:

Considering your current work capacity, estimate the number of houses per week you could Test within your normal service area: _____

Estimate the cost and time allowances for Testing one single-story, 2,100 ft² single family detached house with no gas equipment within your normal service area and producing the required report:

Cost: \$ _____

On-site time: _____ minutes

Additional time: _____ minutes

Would the cost estimate be affected by any of the following:

Square footage? Yes No

Number of stories? Yes No

Two family dwelling? Yes No

Building characteristics (i.e. frame, block, two-story, crawl space)? Yes No

Location outside your normal service area? Yes No

Presence of combustion equipment? Yes No

Contracted by same builder to test multiple houses in the same development? Yes No

Is there any other factor that would warrant an increase or decrease in your estimate?

Increase: _____

Decrease: _____
