

Energy - Not a Glitch Glitch Modifications

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TAC: Energy

Sub Code: Energy Conservation

Total Mods for E} ^!* ^: 9

EN4874	2010 Glitch	Energy		1
Date Submitted	3/18/2011	Section 101.4.7.1.1	Proponent	Arlene Stewart
Chapter	4	Affects HVHZ No	Attachments	Yes
TAC Recommend	ation Pending Review			
Commission Action	on Pending Review			
Comments				
General Comment	s No	Alternate Langu	lage No	
Related Modifica	tions			

4870

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Summary of Modification

Mod adds criteria for who can test a duct system and the conditions of the test

Rationale

This modification fixes an inconsistency in state law implementation (glitch reason f) coupled with conflict fix within the updated integrated code (glitch reason a). It is Florida specific because it completes State legislation implementation. Impact to small business will be reduced because repeated justification for multiple compliance requirements will be unnecessary.

First, Section 101.4.7.1.1 implements HB 663 into FS 553.912. The Energy Code Workgroup consensus language intended to allow alternatives to the inspection. However, the section does not adequately cross reference FS 553.995(4) which includes oversight for duct testing competency in the state. This modification clearly adds this cross reference by citing a BERS Class 1 rater as the named test entity.

The HVAC rebate program from September 2010 provided some valuable learned lessons about the unintended consequences from the lack of a clear citation. The Supporting file shows where both BERS and non BERS entities (who were allowed to do testing) submitted inappropriate and non-compliant test results from a number of unapproved test methods. Because the BERS rule requires a demonstration of competency for duct testing every three years, it is the currently appropriate qualification for executing exception 3 along with an oversight authority when rater competency is questioned.

Second, the method for testing ducts is currently found under Section 202 for the definition of substantially leak free, while exception 3 cites no test method at all. Moreover the 202 definition also has a pass threshold. A direct cross-reference of the definition would be a conflict because it was not the workgroup's intention that existing ducts be made leakfree. Rather it was to allow an alternative, while maintaining the cost-effective exception for existing duct work. Therefore the modification inserts the established test method found in Section 202, without the pass threshold.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

It reduces the cost to the local entity by reducing the time officials will need to enforce the provision

Impact to building and property owners relative to cost of compliance with code

There is no cost impact for this modification

Impact to industry relative to the cost of compliance with code

There is no cost impact for this modification

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

This mod has a resason and substantial connection to the welfare of the general public by ensuring qualified individuals will execute the provision in a uniform manner

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction It improves the code by requiring an established competency for the provision

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

It does not discriminate because the modification relies on a non-biased demonstration of competency.

Does not degrade the effectiveness of the code

it increases the effectiveness of the code because it requires an established test method and qualification

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EN4874 Text Modification

101.4.7.1 Replacement HVAC equipment

101.4.7.1.1 Ductsealing upon equipment replacement (Mandatory). At the time of the total replacement of HVAC evaporators and condensing unitsall accessible (a minimum of 30 inches clearance) joints and seams in the air distribution system shall be inspected and sealed where needed using reinforced mastic or code approved equivalent and shall include a signed certification by the contractor that is attached to the air handler unit stipulating that this work has been accomplished.

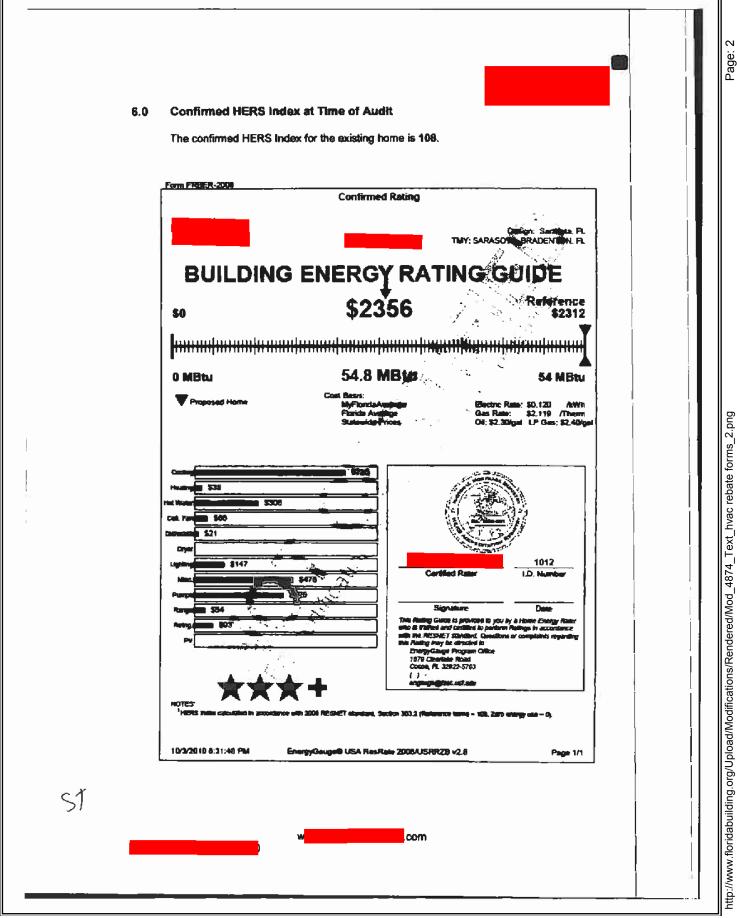
Exceptions:

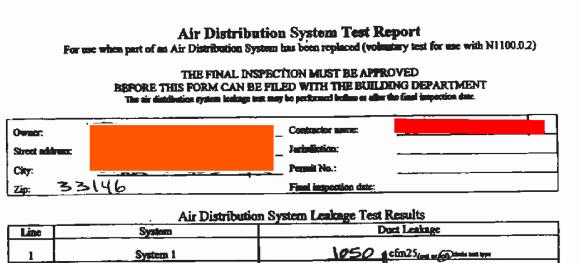
1. Ducts in conditioned space.

2. Joints or seams that are already sealed with fabric and mastic.

3. If system is tested <u>at a pressure differential of 25 Pascal (0.10 in. w.c.) across the replaced air</u> <u>distribution system, including the manufacturer's air handler enclosure, by a FL Class 1 BERS Rater</u> and repaired as necessary.

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2	System 2	cfin2.5 _{(rel or tot}) data an typ
3	System 3	cfm25 year and detailed by
• 4	System 4	cdm25 inter and data to far
	Use appropriate calculation method	
5		Sum lines 1-4 1050
6	Total House Duct System Leakage When there is only one system or when all systems have been replaced	Divide by $\underline{qzg} = \underline{1.13}$ (Qa, out or tot) (total conditioned floor area) (circle test)
OR		
7	Replacement system duct system leakage When there are multiple systems and only or or some of the systems have been replaced	Divide Line 5 by * Leskage, (out or tot) (total rated sir handler flow) (circle test)

I have tested the air distribution system(s) referenced by the permit listed above at a pressure differential of 25 Pascals (0.10 in. w.c.) in accordance with methods found in:

L N1110.A.2 of the Florida Building Code-Residential

Ò. 13-610.A.2 of the Florida Building Code: Energy

Sub-Appendix 13-2C, C5.2.2.1.1 of the Florida Ballding Code: Energy The replaced system

is look-free and is therefore compliant with N1100.0.2 and Form 1100B

D uses existing ductwork and is therefore compliant with N1100.0.2, exception 2.

I possess the qualifications found in the selected citation to perform this work.

Printed Name:	Jonal Halen		
(or) DPBR Mechanical License #:	CENTREP 1		
(or) T&B Contification # and issuing organization or jurisdictional recognition:	<u>08-115-03</u>	/	
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http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_4874_Text_hvac rebate forms_3.png

Air Distribution System Test Report For use when part of an Air Distribution System has been replaced (voluntary test for use with N1100.0.2) THE FINAL INSPECTION MUST BE APPROVED BEFORE THIS FORM CAN BE FILED WITH THE BUILDING DEPARTMENT The air distribution system leakage test may be verformed before or after the final inspection date. Owner: Contractor name: Street address: Dade **Jurisdiction:** M2010 - 1789 City: Permit No.: 33014 9/16/2010 Zip: Final inspection date: Air Distribution System Leakage Test Results System Duct Leakage Line 4 ton's V 1.600 CFH 1 System 1 cfm25(out or tot) and an error 2 System 2 cfm25_{feet of 101} and not 170 3 System 3 cfm25, 4 System 4 cfm25_(cm, cr, tat) and an sym Use appropriate calculation method 5 Sum lines 1-4 6 Total House Duct System Leakage Divide Line 5 by CFM 15-164 25 (Qn, out or tot) When there is only one system or (total conditioned floor area) (circle test) when all systems have been replaced OR Replacement system duct system leakage When there are multiple systems and only one Divide Line 5 by 7 % Leakage, (out or tot) (total rated air handler flow - 400cm/mn) some of the systems have been replaced (circle test)

I have tested the air distribution system(s) referenced by the permit listed above at a pressure differential of 25 Pascals (0.10 in. w.c.) in accordance with methods found in:

- N1110.A.2 of the Florida Building Code-Residential (Control Cass) Fronts Range
- 13-610.A.2 of the Florida Building Code: Energy (Central Care | French Rate)
- Sub-Appendix 13-2C, C5.2.2.1.1 of the Florida Building Code: Energy (Cont Ports Board Carlied Source Fart Start Start Florida Mathematic Control on Source and International Control on Source Carlied Source Carlied

The replaced system is teaching date and is therefore compliant with N1100.0.2 and Form 1100B.

I possess the qualifications found in the selected citation to perform this work.

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Duct Leakage Flow Hood Test Report

Report Prepared For: Prepared By:			
System Description:	Whole House		
Date Of Test:	September 20, 2010		
Living Area:	1,350 square feet on 1 Story; 2 Bedrooms; 8 ft Avg. C	ciling l	Height
Duct to duct zone:	25 Pa of pressure		Square
Flow Hood Leakage Re	adings	TEST CFMi	taches @ 25 pa
Ratura Lastage Supply Lastage 12	10 8 2	•	•
· · ···	Total Duct Leakage Corrected to 25 Pa	38	
New Con	struction Maximum Duct Leakage Standard Based On Air Conditioner Size:	60	11
Actual L	calage vs. Recommended Maximum for New Homes:	6	н%
Alternat	ive Maximum AllowableLeakage Standard Based On Living Area For All Duct Systems In Home:	41	8
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Page: 7

EN4874 Text Modification

EN4875	2010 Glitch	Energy		2
Date Submitted	3/18/2011	Section 101.4.7.1.1	Proponent	Arlene Stewart
Chapter	4	Affects HVHZ No	Attachments	No
TAC Recommenda	ation Pending Review			
Commission Actio	n Pending Review			
Comments				
General Comments	s No	Alternate Langu	iage No	
Related Modifica	tions			

4870, 4874

Summary of Modification

Mod provides a solution for unintended inspection difficulties that will arise from requiring certification for only one compliance provision for new FS 553.912.

Rationale

This modification fixes unintended consequences (glitch reason d) from a partial implementation requirement. It is Florida specific because it completes State legislation implementation. Impact to small business will be reduced because repeated justification for multiple compliance requirements will be unnecessary.

Section 101.4.7.1.1 implements HB 663 into FS 553.912 (completing implementation of new Florida law is the Florida specific reason). However there are unintended enforcement results (glitch reason d) from requiring only one compliance provision to be certified. A survey of more than 50 enforcement officials indicates that the absence of the signed certification required (originally placed before the exceptions) could mean that the required inspection was forgotten or that one of the three exceptions was being met. It would be time-consuming for the inspector to have to track down the compliance method, leading to higher costs not only to the building department and building owner but also for the small business builder (impact to small business). Conversely, it could lead to an excessive number of "failures" that were not in fact, failures - rather compliance alternatives, again costly to small business who have to explain what actually happened (more impact to small business).

By shifting the certification language after the exceptions, plus providing a standard form with check boxes for all the compliance options, the change streamlines compliance, making the cost to implement minimal as was originally intended by the Energy Workgroup as well as making the provision easier to enforce and comply with.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

It reduces the cost to the local entity by reducing the time officials will need to enforce the provision

Impact to building and property owners relative to cost of compliance with code There is no cost impact for this modification

Impact to industry relative to the cost of compliance with code

There is no cost impact for this modification

Requirements

- Has a reasonable and substantial connection with the health, safety, and welfare of the general public
 - This mod has a resason and substantial connection to the welfare of the general public by providing a uniform way of implementing the provision
- Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction It improves the code by requiring all compliance methods to be recorded in the same manner
- Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities It does not discriminate because the modification requires all compliance methods to be recorded in the same manner

Does not degrade the effectiveness of the code

it increases the effectiveness of the code because it provides consistency which in turn allows officials to enforce the code in the same manner.

101.4.7.1 Replacement HVAC equipment

101.4.7.1.1 Ductsealing upon equipment replacement (Mandatory). At the time of the total replacement of HVAC evaporators and condensing unitsall accessible (a minimum of 30 inches clearance) joints and seams in the air distribution system shall be inspected and sealed where needed using reinforced mastic or code approved equivalent. and shall include a signed certification by the contractor that is attached to the air handler unit stipulating that this work has been accomplished.

Exceptions:

- 1. Ducts in conditioned space.
- 2. Joints or seams that are already sealed with fabric and mastic.
- 3. If system is tested and repaired as necessary.

<u>A signed certification (Form 420) by the contractor shall be attached to the air handler unit stipulating the work accomplished and/or the compliance method.</u>

Related Modifications

none

Summary of Modification

To correct language in Table 402.1.1 footnote "a" to match that approved at the ICC Final Action Hearing in Charlotte, NC.

Rationale

THIS PROPOSAL FALLS WITHIN THE GLITCH CRITERIA BECAUSE THE EXISTING LANGUAGE CONFLICTS WITH THE UPDATED CODE. THE LANGUAGE SHOULD BE CORRECTED BY ALL JURISDICTIONS THAT ADOPT THE CODES, SO IT IS FLORIDA SPECIFIC FOR THIS REASON. THIS PROPOSAL WILL NOT INCREASE COSTS TO SMALL BUSINESSES. IT COULD ELIMINATE CODE COMPLIANCE ISSUES FOR INSULATION CONTRACTORS (SMALL BUSINESSES) BECAUSE THE NEW LANGUAGE IS MUCH CLEARER FOR INSTALLERS AND CODE OFFICIALS.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

WILL IMPROVE CODE ENFORCEMENT BY MAKING THE FLORIDA CODE CONSISTENT WITH THE NATIONAL CODE.

Impact to building and property owners relative to cost of compliance with code NO IMPACT RELATIVE TO COST OF CODE COMPLIANCE.

Impact to industry relative to the cost of compliance with code

THERE IS NO COST TO INDUSTRY, INCLUDING SMALL BUSINESSES.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public By providing improved language, the general public will have a better understanding of the code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction Makes the Florida code language consistent with International Code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities No discrimination against any material, product or system.

Does not degrade the effectiveness of the code

No degradation; improves the language of the Florida code.

a. *R*-values are minimums. *U*-factors and SHGC are maximums. R-19 batts compressed into a nominal 2×6 framing cavity such that the *R*-value is reduced by R-1 or more shall be marked with the compressed batt *R*-value in addition to the full thickness *R*-value. When insulation is installed in a cavity which is less than the label or design thickness of the insulation, the installed R-value of the insulation shall not be less than the R-value specified in the table.

EN4509 -A1 Text Modification

a. *R*-values are minimums. *U*-factors and SHGC are maximums. R-19 batts compressed into a nominal 2×6 framing cavity such that the *R*-value is reduced by R-1 or more shall be marked with the compressed batt *R*-value in addition to the full thickness *R*-value. When insulation is installed in a cavity which is less than the label or design thickness of the insulation, the installed R-value of the insulation shall not be less than the R-value specified in the table. See Section 303.2.1.

Related Modifications

4320, 4382

Summary of Modification

This proposal restores a mandatory section of the IECC that is necessary to maintain equivalency between the Florida Building Code and state and federal law.

Rationale

This proposal restores a section that was removed from the original draft of the Florida Building Code by proposal 4320. For the sake of clarity the section (originally Section 402.5 of the 2009 IECC) has been edited to include only the requirements that apply to Florida's climate zone. There was considerable confusion at the Florida Building Commission regarding the fenestration maximums, and a number of Commissioners were unsure exactly what proposal 4320 did. See the attached document for the specific criteria required for a glitch change as outlined in the February 16, 2011 notice.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

There will be no impact on local enforcement.

Impact to building and property owners relative to cost of compliance with code There should be little or no cost impact.

Impact to industry relative to the cost of compliance with code

There should be little or no cost impact.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public This proposal will save energy and reduce summer peak electrical demand.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction This proposal is necessary to ensure equivalency to the national model code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities This proposal does not discriminate among products.

Does not degrade the effectiveness of the code

This proposal does not degrade the effectiveness of the code.

402.5 Maximum fenestration SHGC (Mandatory). The area-weighted average maximum fenestration SHGC permitted using trade-offs from section 404 shall be 0.50.

Glitch Proposal to Restore Fenestration Maximums

Add the following section:

402.5 Maximum fenestration SHGC (Mandatory). The area-weighted average maximum fenestration SHGC permitted using trade-offs from section 404 shall be 0.50.

(A) This proposal fits squarely within three of the stated glitch criteria.

- 1. Fenestration maximums are necessary to ensure the equivalency of the Florida Building Code to the relevant standard (the 2009 International Energy Conservation Code).
 - The area-weighted maximum fenestration SHGC requirement has been designated "Mandatory" in the 2004, 2006, 2009 editions of the IECC, and it will remain mandatory in the 2012 IECC. A building energy code that does not contain this mandatory safeguard is simply not equivalent to the IECC. Without the fenestration maximums, the Florida Building Code would allow the construction of homes with fenestration that would not comply with the 2009 IECC.
 - Effective control of solar heat gain is a critical component of Florida's energy requirements. High solar gain windows drive up air conditioning use, increase summer peak electricity demand, and cause occupant discomfort. Peak electricity is scarce and more expensive, and is the usually the driving factor behind utilities' needs to build additional power plants. By contrast, homes built with low-SHGC windows can be built with smaller air-conditioning equipment both at initial construction and every 10-15 years when equipment must be replaced. This will save homeowners money many times over the lifetime of the home. The fenestration maximums stand as a simple, effective backstop to ensure a reasonable level of solar heat control in residential buildings.

2. Fenestration maximums are necessary to maintain consistency with Florida Statutes.

- Florida Statutes Chapter 553.73(7)(a) requires the Florida Building Commission to "update the Florida Building Code every 3 years. When updating the Florida Building Code, the commission shall select the most current version of the ... International Energy Conservation Code ... to form the foundation codes of the updated Florida Building Code..." The fenestration maximums are designated "Mandatory" in the 2009 IECC, which was the most current published edition of the IECC (and should serve as the "foundation code" per the statute).
- Chapter 553.73(3) allows the Commission to "modify the selected model codes and standards as needed to accommodate the specific needs of this state." There is nothing unique about Florida that would require elimination of this important

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http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_4873_Rationale_Glitch Proposal to Restore Fenestration Maximums_1.png

backstop. In reality, given Florida's warm climate, proper control of solar heat gain is more important for Florida than nearly any other state.

• Chapter 553.9061 requires 2010 Florida Building Code to increase the energyefficiency performance of new buildings by at least 20 percent as compared to the 2004 edition of the code. An energy code cannot be shown to achieve significant improvements in efficiency without at least showing equivalent baseline standards.

3. Fenestration maximums are necessary to maintain consistency with federal law.

- Florida committed to meet or exceed the 2009 IECC for residential construction under the American Recovery and Reinvestment Act (ARRA). The removal of the fenestration maximums will render the Florida Building Code not equivalent to the 2009 IECC for the reasons outlined above.
- Florida will also be required to certify that it has compared its residential building energy code to the 2009 IECC and to determine whether that code meets or exceeds the provisions of that code; if the Florida code deviates, the state must explain the reasons why. See USC 6833(a)(5). In its preliminary determination on the 2009 IECC, the U.S. DOE found that the fenestration maximums could impact occupant comfort or resistance to moisture condensation, "either of which could possibly induce occupants to increase energy consumption, for example by raising thermostat set points." 75 Fed. Reg. 54131, 54140 (Sep. 3, 2010).

(B) This proposal meets a Florida-specific need.

Florida's need to curb peak electricity use, particularly through control of solar heat gain, is well documented. This proposal restores a requirement specifically designed as a backstop in performance-based trade-offs to ensure that no matter how the home is designed, at least a minimum amount of solar control is required in fenestration.

(C) There is likely no negative impact on small business.

This proposal would not affect small business in any unique way. Low-SHGC windows are widely available throughout the state. In fact, at the last Florida Building Commission meeting, the fenestration maximums were wholeheartedly supported by the vast majority of window manufacturers.

Summary of Modification

imary of Modification

Replaces a reference to FL Standards with national consensus standards needed to follow state law that requires energy efficiencies for pools and spas.

Rationale

This proposed code change falls within the glitch criteria stated. It replaces a reference to FL Standards with national consensus standards needed to follow state law that requires energy efficiencies for pools and spas. The national consensus standards follow what was addressed in the FL Standards and what was addressed in the subsections of 403.9 that were removed. It is unnecessary to have both in the body of the code and in the standard. Small business will not be affected by this modification.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

Impact to building and property owners relative to cost of compliance with code

None

Impact to industry relative to the cost of compliance with code

None

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public Not applicable, making a standards update.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction Improves the code by eliminating unnecessary Florida specific langauge and replacing with national consensus standards.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities It does not.

Does not degrade the effectiveness of the code

It does not.

403.9 <u>Swimming pPools, inground spas, and portable spas</u> (Mandatory). The energy requirements for residential pools and inground spas shal be as specified in Sections 403.9.1 through 403.9.3 and ANSI/APSP-15. The energy requirements for portable spas shall be in accordance with ANSI/APSP-14. Pools shall be provided with energy-conserving measures in accordance with Sections 403.9.1 through 403.9.43 and compliance criteria found in Appendix D — Florida Standards, Florida Standard No. 1.2 (FL-1.2), Florida regulatory requirements for energy efficiency for residential inground swimming pools and spas, and Florida Standard No. 2.3 (FL-2.3), Florida regulatory requirements for portable spa energy efficiency.</u>

403.9.1 Pool <u>and spa</u> heaters. All pool heaters shall be equipped with a readily *accessible* on-off switch that is <u>mounted outside the heater</u> to allow shutting off the heater without adjusting the thermostat setting. <u>Gas fired heaters</u> shall not be equipped with continuous pilot lights.

<u>403.9.1.1 Gas and oil-fired pool and spa heaters</u>. All gas- and oil-fired pool and spa heaters shall have a minimum thermal efficiency of 78 percent when tested in accordance with ANSIZ 21.56. Pool heaters fired by natural gas shall not have continuously burning pilot lights.

403.9.1.2 Heat pump pool heaters. Heat pump pool heaters shall have a minimum COP of 4.0 when tested in accordance with ARI 1160, Table 2, Standard Rating Conditions-Low Air Temperature. A test report from an independent laboratories is required to verify procedure compliance.

403.9.1.3 Portable spa standby power. Portable electric spa standby power shall not be greater than 5(V2/3) watts where V = the total volume, in gallons, when spas are measured in accordance with the spa industry test protocol.

403.9.2 Time switches. Time switches <u>shall be installed to control on swimming pool heaters and pumps</u> that can automatically turn off and on <u>the</u> heaters and pumps <u>off and on</u> according to a preset schedule shall be installed on swimming pool heaters and pumps.

Exceptions:

1. Where public health standards require 24-hour pump operation.

2. Where pumps are required to operate solar- and waste-heat-recovery pool heating systems.

3. Where pumps are powered exclusively from on-site renewable generation.

403.9.3 Pool e<u>C</u>**overs.** Heated <u>swimming pools and inground permanently installed spas</u> shall be equipped with a vapor-retardant pool cover on or at the water surface <u>or a liquid cover or other means proven to reduce heat loss</u>. Pools heated to more than $90^{\circ}F(32^{\circ}C)$ shall have a pool cover with a minimum insulation value of R-12.

Exception: <u>Outdoor p</u>Pools deriving over <u>70</u> 60 percent of the energy for heating from site-recovered energy or solar energy source <u>computed over an operating season</u>.

403.9.4 Pool design. Residential pool pumps and pump motors. Pool filtration pump motors shall meet the following requirements, along with the compliance criteria provided for in FL-1-2, Appendix D.

403.9.4.1 Pool pump motors. Pool pump motors shall meet the following criteria:

1. Pool pump motors shall not be split-phase, shaded-pole or capacitor start-induction run types.

2. Pool pumps and pool pump motors with a total horsepower (HP) of = 1 HP shall have the capability of operating at two or more speeds. The low speed shall have a rotation rate of no more than $\frac{1}{2}$ of the motor's maximum rotation rate.

<u>3. Pool pumps motor controls shall have the capability of operating the pool pump at a minimum of two speeds. The default circulation speed shall be the residential filtration speed, with a higher speed override capability for a temporary period not to exceed one normal cycle or 120 minutes 24 hours, whichever is less.</u>

Exception: Solar pool heating systems shall be permitted to run at higher speeds during periods of usable solar heat gain.

403.9.5 Portable spa standby power. Portable electric spa standby power shall not be greater than 5(V2/3) watts where V = the total volume, in gallons, when spas are measured in accordance with the spa industry test protocol provided in FL-2 3, Appendix D.

2

EN4511	2010 Glitch	Energy		6
Date Submitted	2/21/2011	Section Table 502.1.1.1	Proponent	Mike Ennis
Chapter	5	Affects HVHZ No	Attachments	Yes
TAC Recomment	lation Pending Review			
Commission Act	ion Pending Review			
<u>Comments</u>				
General Commen	ts No	Alternate Langu	age No	
Related Modific	ations			

Summary of Modification

Change cool roof requirements in Table 502.1.1.1 from absorptance to reflectance to resolve a conflict that currently exists between the Commercial and Residental requirements that are in Table 402.1.1.

Rationale

This code change proposal is being submitted to resolve a conflict within the updated code. The prescriptive requirements for residential construction contained in Table 402.1.1 reference a cool roof requirement of a minimum 0.25 reflectance value. This Table further provides reference to test procedures that manufacturers can use to demonstrate compliance to the code. These requirements and test procedures are commonoy referenced in other energy codes such as the IECC. Table 502.1.1.1, which provides prescriptive requirements for commercial construction lists an absoptance value instead of a reflectance value for cool roofs. In addition no guidance in the form of test procedures that can be used to demonstrate compliance to the code requirements are provided. The code change proposal revises Table 502.1.1.1 to reference reflectance values in place of absorptance values to make it consistent with the residential portion of the code, and other energy codes. It also provides reference to a method (ANSI/CRRC-1) that can be used to demonstrate compliance with the code.

Does the code change have a Florida specific need - Yes, cool roofs are a particularly effective energy conservation measure in warm climate zones as demonstrated in various studies. It is well known that the reflective properties of roof surfaces decreases with time, which is why the three year requirement is included as part of the proposal, and is included in ANSI/CRRC-1.

Impact on small businesses - This proposal will have no adverse impact on small business and will allow manufacturers of roof membranes and coatings to demonstrate compliance with the code and make it easier for code officials to verify conformance.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

Impact to building and property owners relative to cost of compliance with code

Helps clarify code requirements and provides a method to test the required value.

Impact to industry relative to the cost of compliance with code

Industry has already completed testing to address cool roof requirements in other areas. This change would make the FL Code consistent with other requirements thereby reducing the burden on industry to meet these requirements.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Cool roofs reduce energy consumption in warm climate zones, and can help mitigate the urban heat island impact.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction This change would provide a method to measure cool roof properties, and make it consistent with other energy code requirements.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities No

Does not degrade the effectiveness of the code

No - this proposal will increase the effectiveness of the code by providing measurable performance criteria that can be used to demonstrate code compliance.

Please see attached support file for text of the modification.

TABLE 502.1.1.1 (1) ENVELOPE PRESCRIPTIVE MEASURES FOR SHELL BUILDINGS^{1,2}

Building Element	Mandatory
Roof:	
AbsorptanceReflectance	Three-year aged solar reflectance of
R-value (U-value)	0.55 and three-year aged thermal
,	<u>emittance₀ of 0.75 or SRI of 64⁵</u> ≤- 0.22
	<u>R-40 (</u> ≤ <u>U-0.025)</u>
Wall:	
Above grade wall:	
Absorptance	≤ 0.3
<u>R-value</u> (U-value)	<u>R-30 (≤ U-0.032)</u>
Below grade wall:	No requirement
Raised Floor Insulation	
<u>R-value (</u> U-value)	<u>R-30 (≤ U-0.032)</u>
Window:	
U-factor	≤ 0.45
SHGC	
0-40% WW Ratio	0.25
40-50% WW Ratio	0.19
> 50% WW Ratio	Not allowed ³
Overhang Projection Factor (PF)	0.54
Door:	
<u>U-value</u>	
Swinging	<u>U-0.70</u>
Non-swinging	<u>U-1.45</u>
Skylights:	
SHGC	≤ 0.19
Skylight U-value	≤ 1.36

¹Equipment and lighting shall meet the efficiencies of Section 503, 504 and 505, respectively.

²Per Section 101.4.9 of the *FBC-EC*, the building shall demonstrate compliance with Section 506 when completion of the building is permitted.

³Buildings with greater than 50% WW Ratio shall comply with Section 506.

4 PF 0.5 = Projection half the distance of window height.

5 - Tested in accordance with ANSI/CRRC-1

Related Modifications

Summary of Modification

Combine Tables 502.1.1.1(1) and 502.2.1.1(2) into a single table.

Rationale

Eliminate table 502.1.1.1(1) and 502.1.1.1.(2) and substitute new Table 502.1.1.1 which combines the requirements into a signle table for ease of use. The proposed code change will have no impact on small business.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact

Impact to building and property owners relative to cost of compliance with code No impact

Impact to industry relative to the cost of compliance with code

No impact

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public Not applicable. Corrects a conflict within the updated code.

- Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction Not applicable. Corrects a conflict within the updated code.
- Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities Not applicable. Corrects a conflict within the updated code.

Does not degrade the effectiveness of the code

Not applicable. Corrects a conflict within the updated code.

TABLE 502.1.1.(1)

ENVELOPE PRESCRIPTIVE MEASURES FOR SHELL BUILDINGS^{1,2}

TABLE 502.1.1.1(2)

ENVELOPE PRESCRIPTIVE MEASURES FOR RENOVATIONS AND ALTERATIONS⁴

TABLE 502.1.1.1

ENVELOPE PRESCRIPTIVE MEASURES

BUILDING ELEMENTS	MANDATORY MINIMUM FOR	MANDATORY MINIMUM FOR RENOVATION AND				
	SHELL BUILDINGS 1,2	ALTERATIONS ¹				
Roof						
Absorptance	=0.22	=0.22				
R-value (U-value)	R-40 (U= 0.025)	R-38 (U= 0.033)				
Wall						
Above grade wall:						
Absorptance	=0.3	=0.3				
R-value	R-30 (U= 0.032)	R-19 (U= 0.052)				
Below grade wall:	No requirement	No requirement				
Raised Floor Insulation						
R-value (U-value)	R-30 (U= 0.032)	R-19 (U= 0.052)				
Window						
U-factor	=0.45	=0.45				
SHGC (by window area)						
0-40% WW Ratio	=0.25	=0.25				
40-50% WW Ratio	=0.19	=0.25				
>50% WW Ratio	Not Allowed ³	=0.25				
Skylights:						
SHGC	=0.19	=0.19				
Skylight U-value	=1.36	=1.36				
Opaque Door U-value						
Swinging	=-0.19	=U-0.7				
Non-swinging	=-1.36	=U-1.45				

1 Equipment and lighting shall meet the efficiencies of Section 503, 504 and 505, respectively.

2 Per Section 101.4.9 of the FBC-EC, the building shall demonstrate compliance with Section 506 when completion of the building is permitted.

- 3 Buildings with greater than 50% WW Ratio shall comply with Section 506.
- 4 PF 0.5 = Projection half the distance of window height.

EN4877	2010 (Glitch	Energy					8	
Date Submitted	3/18/	/2011	Section Form	410	Proponent		Arlene St	ewart	
Chapter	9		Affects HVHZ	No	Attachmen	its	Yes		
TAC Recommen	ndation	Pending Review							-
Commission Ac	tion	Pending Review							
<u>Comments</u>									
General Comme	ents	No		Alternate La	anguage	No			

Related Modifications

Energy Conservation, may need cross reference to Section 403.2.2.1

Summary of Modification

Modification closes gaps by adding a mandatory compliance form for executing the new provision in 403.2.2.1

Rationale

The glitch rationale for this provision meets (c) and (d). Section 403.2.2.1 provides a new mandatory requirement for duct testing or ducts in conditioned space as a result of the IECC implementation. Unfortunately, the duct testing form that has been used previously can only be found in ENERGY GAUGE USA and can only be printed when specific house details are entered into the computer program. The Florida specific need is to preserve the direct reference for a Florida specific provision (test form) that has been included with the building code since 2004. The direct reference no longer exists because ENERGY GAUGE is no longer cited directly by the building code (glitch reason c).

Further, the form from ENERGY GAUGE has a signature block for the building official. The lessons learned from the HVAC rebate program in September 2010 indicated that lawyers from many municipalities will not allow their enforcement officials to sign because the local building official represents the municipality, not the State of Florida. Further the duct test form is not found in Section 110 of the Building Code for required documents signed by the building official. Therefore, the opposing rationale contends this compounds the conflict. Thus, the proposed form 410 changes it to "received by", allowing the building official to delegate receipt to the appropriate staff person.

The unintended results (glitch reason d) is an increased cost to small businesses in terms of time, form development and form approval, in the absence of a standardize form. When doing business in a municipality that does not have access to ENERGY GAUGE and/or does not recognize the corresponding form from the software (although arguably they should), each small business could be required to come up with a unique form, but would also have additional costs of waiting for enforcement officials to approve the form. Copies of various forms from the HVAC rebate are included as evidence.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This modification reduces the costs to enforcment officials by providing a consistent form that indicates test method or alternative for compliance

Impact to building and property owners relative to cost of compliance with code

This will reduce the cost and liability for building owners because compliance documentation can be more easily processed by the building department

Impact to industry relative to the cost of compliance with code

There is reduced cost for compliance because it creates standardization and is included in Appendix C

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public Has a connection with health, safety and welfare because it closes a complaince gap

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction Strengthens the code because it closes a copliance gape

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities does not descriminate because it includes both compliance paths

Does not degrade the effectiveness of the code

it increases the effectivness of the codes becasue it closes a complaince gap

EN4877 Text Modification

Add Form 410 in its entirity

Form 410-2010

FLORIDA ENERGY CONSERVATION CODE Mandatory Air Distribution System Test Report

Owner:	Contractor name:	
Street address:	Jurisdiction:	
City:	Permit No.:	
Zip:	Final inspection date:	

Ducts/air handler in conditioned space Tested by a Class 1 BERS rater (see results below)

Line	System	Duct Leakage
1	System 1	Cfm25 _(out or tot) circle test type
2	System 2	Cfm25 _(out or tot) circle test type
3	System 3	Cfm25 _(out or tot) circle test type
4	System 4	Cfm25 _(out or tot) circle test type
5		Sum lines 1-4
6	Total House Duct System Leakage	Divide Line 5 by = (Qn, out or tot) (total conditioned floor area) (circle test type)

Air Distribution System Leakage Test Results

To qualify as "substantially leak free," Qn,out must be less than or equal to 0.03.

Section 403.2.2.1. Duct tightness. Duct tightness shall be verified by testing to ASHRAE Standard 152. All ducts and air handlers shall be either located in conditioned space or tested by a Class 1 BERS rater to be "substantially leak free".

Section 202. SUBSTANTIALLY LEAK FREE. Distribution system air leakage to outdoors is no greater than 3 cfm per 100 square feet of conditioned floor area at a pressure differential of 25 Pascal (0.10 in. w.c.) across the entire air distribution system, including the manufacturer's air handler enclosure.

I am a **FL BERS Class 1 Rater** in good standing. I have tested the air distribution system(s) referenced by the permit listed above in accordance with ASHRAE Standard 152.

Signature: __

_____ Date: ____

Date:

Printed Name: ___

FL BERS Class 1 Rater Certification #: ___

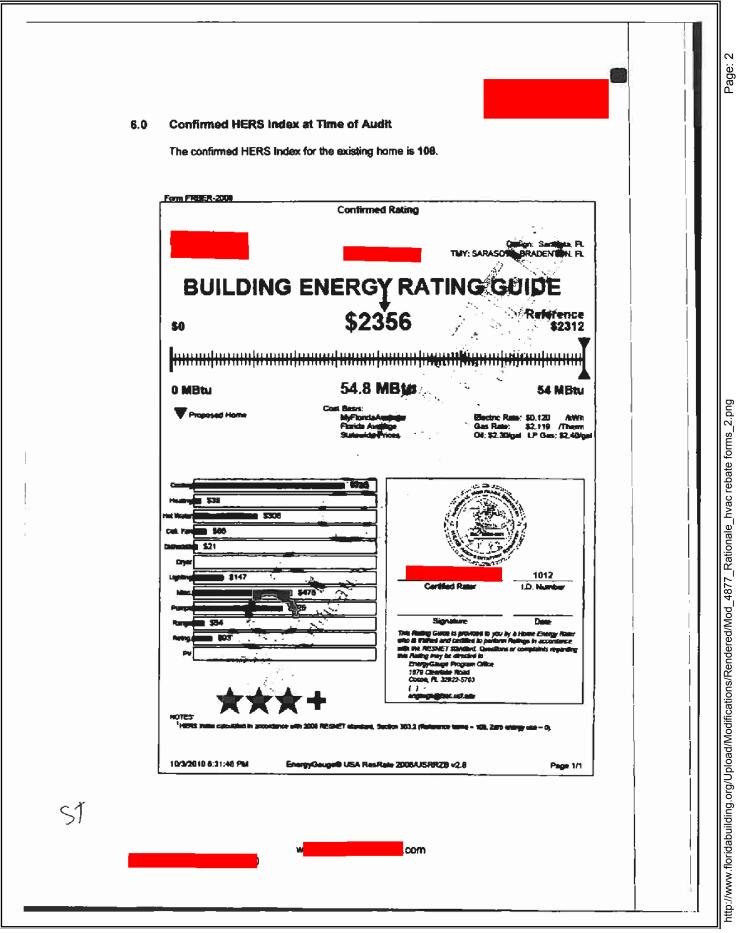
The Building Energy Rating System (BERS) law can be found at FS 553.990-999. Currently certified FL BERS Class 1 raters can be found at http://securedb.fsec.ucf.edu/engauge/engauge_search_rater.

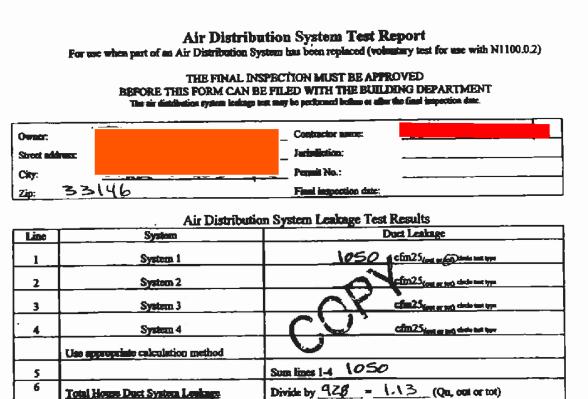
For Building Department use only:

Form received by:

Form revision date: March 18, 2011

PAGE 1 0= 1		04" 2 class (P _c) _ C	9		JED WINTESED ACTUAL BY CDM	D.B. R. 704484	8.8									Page: 1
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PROJECT MANE		AR SYSTEM FIRET CO. FAN OFM D) 800 CFM			sumect DUCT	TOTAL SYSTEM	TEST SECTION(S)									Modifications





		Divide by <u>448</u> = <u>1.1.5</u> (Qu, out or tot) (total conditioned floer area) (circle test)
OR		
7	Replacement system duct system leakage When there are multiple systems and only or or sume of the systems have been replaced	Divide Line 5 by * Leakage, (out or tot) (total rated air handler flow) (circle test)

I have tested the air distribution system(s) referenced by the permit listed above at a pressure differential of 25 Pascals (0.10 in. w.c.) in accordance with methods found in:

A. N1110.A.2 of the Florida Building Code-Residential

Ò. 13-610.A.2 of the Florida Building Code: Barryy

Sub-Appendix 13-2C, C5.2.2.1.1 of the Florida Ballding Code: Energy The replaced system

is look-free and is therefore compliant with N1100.0.2 and Form 1100B

D uses existing ductwork and is therefore compliant with N1100.0.2, exception 2.

I possess the qualifications found in the selected citation to perform this work.

Printed Name:	Jonal Halen		
or) DPBR. Mechanical License #:	CENTREED		
or) T&B Cartification # and issuing organization a jurisdictional recognition:	<u>08-115-03</u>)	
for Building Department use only.	Pathuts		
form received by:		Date:	

1

THE FINAL INSPECTION MUST BE APPROVED BEFORE THIS FORM CAN BE FILED WITH THE BUILDING DEPARTMENT The air distribution system leakage test may be verformed before or after the final inspection date. Owner: Contractor name: Dade Street address: **Jurisdiction:** M2010 - 1789 City: Permit No.: 9/15/2010 33014 Zip: Final inspection date: Air Distribution System Leakage Test Results Line System Duct Leakage 4 ton's V 1.6 mc FM System 1 1 cfm25(ent or tot) and an error 2 System 2 cfm25_{feet of 101} and not 170 3 System 3 cfm25_{is} 4 System 4 cfm25_(cm, cr, tat) and an sym Use appropriate calculation method 5 Sum lines 1-4 6 Total House Duct System Leakage Divide Line 5 by CFM 15-164 25 (Qn, out or tot) When there is only one system or (total conditioned floor area) (circle test) when all systems have been replaced OR Replacement system duct system leakage When there are multiple systems and only one Divide Line 5 by 7 % Leakage, (out or tot) (total rated air handler flow - 400cm/mn) some of the systems have been replaced (circle test) I have tested the air distribution system(s) referenced by the permit listed above at a pressure differential of 25 Pascals (0.10 in. w.c.) in accordance with methods found in: N1110.A.2 of the Florida Building Code-Residential (Contractuant Provestant) 13-610.A.2 of the Florida Building Code: Energy (Conduction | Florid Report Sub-Appendix 13-2C, C5.2.2.1.1 of the Florida Building Code: Energy I Ponis Page Ge مغيبين كاللغ is leak-free and is therefore compliant with N1100.0.2 and Form 1100B. The replaced system uses existing ductwork and is therefore compliant with N1100.0.2, exception 2. I possess the qualifications found in the selected citation to perform this work. Date: 10-5-2010 Signature: _ **Printed Name:** - surg I CO FORVE IN C FL BERS Rater Certification #: (or) DPBR Mechanical License #: 00014940 (or) T&B Certification # and issuing organization or jurisdictional recognition: For Building Department use only: Form received by: Date: Form revision date: August 30, 2010

Air Distribution System Test Report For use when part of an Air Distribution System has been replaced (voluntary test for use with NI 100.0.2)

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INSTALLATION CERTIFICATE	CF-6R-MERCE
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TAPE MAST	ic, Menbranc
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during duct jouksge teeling.	
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	Option 4. Fix all accountible lunks wing smalle test, and HERES	ular stat verify.		
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9	Cooling system method: Size of continuer in Tone x 4	$c_{\rm maximum} = \frac{1}{2} \frac{1}$		
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Duct Leakage Flow Hood Test Report

Report Prepared For: Prepared By:			
System Description:	Whole House		
Date Of Test:	September 20, 2010		
Living Area:	1,350 square feet on 1 Story; 2 Bedrooms; 8 ft Avg. C	ciling l	Height
Duct to duct zone:	25 Pa of pressure		Square
Flow Hood Leakage Re	adings	TEST CFM1	taches (25 pa
Ratura Lodage Supply Loshage 12	10 8 8	1	
	Total Duct Leakage Corrected to 25 Pa	38	7
New Con	struction Maximum Duct Leakage Standard Based On Air Conditioner Size:	60	11
Actual L	calage vs. Recommended Maximum for New Homes:	6	4%
Alternet	ive Maximum AllowableLoakage Standard Based On Living Area For All Duct Systems In Home:	41	8
			N
inilianatain 9.0,	Copyright Comfort Institute 2001, All Rights Reserved	7	1

Related Modifications

Energy Conservation Code, section 101.4.7.1., may need a form cross reference. This is the first of 3 modifications to this section, so the mod numbers are not available.

Summary of Modification

Mod provides for uniform signed certification for the contractor to add to the air handler unit as indicated by section 101.4.7.1.

Rationale

Section 101.4.7.1 is the implementation of HB 663 into FS 553.912 (glitch reason f). The section requires a signed certification by the contractor is attached to the air handler unit stipulating that this work has been accomplished. However, the Energy Code Workgroup did not indicate a corresponding form for this provision.

The unintended consequence of this integration with the model code (glitch reason d) is that enforcement officials are likely to se a wide variety of forms, coupled with the difficulty of determining if an alternate exists because the 3 other options do not require certification. If there is no certification on the air handler, it may be because the replacement is compliant with one of the three exceptions or because the house is not compliant at all.

A consistent form will close this gap and increase ease of complaince for all involved.

This modification meets glitch reasons (d) and (f).

It is Florida specific because it completes the implementation of State legislation.

It reduces the impact to small businesses because it will create consistency in enforcement thereby reducing cost because it will reduce the likelihood of multiple compliance requirements across municipalities with no direction in code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

It will reduce the time (and thus cost) it takes to enforce this new provision because it creates consistency in the inspection process.

Impact to building and property owners relative to cost of compliance with code

It will reduce the cost because it will ease compliance and reduce the time enforcement officials will need review a multitude of differen form formats

Impact to industry relative to the cost of compliance with code

This will reduce the cost to industry because a uniform form will be available, saving time that each company will require to make their own signed certification to meet the provision

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

This modification will make enforcement easier, thereby increasing the health, safety and welfare of the general public

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction It strengthens the code by including the field application for this new provision.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities No, because it makes provisions for all the possibly compliance options included in the provision

Does not degrade the effectiveness of the code

No, it will increase the effectiveness of the code because it closes a compliance gap.

EN4870 Text Modification

Add uploaded Form 420 in its entirety



EN4870 Text Modification

Form 420

FLORIDA ENERGY CONSERVATION CODE

Duct Inspection Certification for HVAC Equipment Replacement

[Mandatory when part of the duct and/or HVAC system has been replaced (Section 101.4.7.1.1)]

Owner:	Contractor name:
Street address:	Jurisdiction:
City:	Permit No.:
Zip:	Final inspection date:

CONTRACTOR CERTIFICATION

I certify that I have inspected the duct work associated with the HVAC unit referenced by the permit listed above and found it complies with the requirements of Section 101.4.7.1.1 as indicated below:

- □ Where needed, the existing ducts have been sealed using reinforced mastic or code-approved equivalent.
- Ducts are located within conditioned space. (Section 101.4.7.1.1 exception 1)

□ The joints or seams are already sealed with fabric and mastic. (Section 101.4.7.1.1 exception 2)

□ System was tested by a Fl. Class 1 BERS rater (see below) and repairs were made as necessary (Section 101.4.7.1.1 exception 3)

Signature:	Date:
Printed Name:	
Contractor License #:	
RATER TESTING CER	FIFICATION
I certify that I have tested the replaced air distribution system pressure differential of 25 Pascals (0.10 in. w.c.).	
Signature:	Date:
Printed Name:	
FL BERS Class 1 Rater Certification #:	
The Building Energy Rating System (BERS) law can be found at Class 1 raters in can be found at http://securedb.fsec.ucf.edu/enga	•
Form revision date: March 18, 2011	

EN4870 Rationale

FLORIDA ENERGY CONSERVATION CODE

Duct Inspection Certification for HVAC Equipment Replacement [Mandatory when part of the duct and/or HVAC system has been replaced (Section 101.4.7.1.1)]

Owner:	Contractor name:
Street address:	
City:	
Zip:	Final inspection date:
	NTRACTOR CERTIFICATION act work associated with the HVAC unit referenced by the permit listed
above and found it complies with the	he requirements of Section 101.4.7.1.1 as indicated below:
□ Where needed, the existing equivalent.	g ducts have been sealed using reinforced mastic or code-approved
Ducts are located within c	onditioned space. (Section 101.4.7.1.1 exception 1)
The joints or seams are all	ready sealed with fabric and mastic. (Section 101.4.7.1.1 exception 2)
	Class 1 BERS rater (see below) and repairs were made as necessary
(Section 101.4.7.1.1 exception	(3)
Signature:	Date:
Printed Name:	
Contractor License #:	
	ATER TESTING CERTIFICATION
	ced air distribution system(s) referenced by the permit listed above at a
Signature:	Date:
Printed Name:	
FL BERS Class 1 Rater Certification	on #:
	BERS) law can be found at FS 553.990-999. Currently certified FL BERS /securedb.fsec.ucf.edu/engauge/engauge_search_rater.