

## **Staff Analysis for Declaratory Statement Request DS2017-018**

**Issue:** The Petitioner seeks clarification regarding code compliance as it relates to a conflict between Section R101.4.3 and R403.2.4 of the Florida Building Code, Energy Conservation.

### **Background:**

The Petitioner, Neil Fimbel, President of HVAC Designs Inc., seeks a declaratory statement concerning the application of Section R101.4.3 and section R403.2.4 of the 5<sup>th</sup> Edition (2014) Florida Building Code, Energy Conservation. This is in regard to section R403.2.4 as it relates to air handling units located in attics and Section R101.4.3 as it relates to additions and compliance of existing construction. Petitioner points to section R101.4.3 of the Energy Conservation code and Section M1202.1 of the Residential code that indicates that existing components of buildings are exempt from energy code compliance.

The discrepancy comes from the energy compliance form R402, which indicates “air handler not allowed in attic.” This creates a conflict area, as the form does not specifically state if this is to apply to new construction and existing construction. The petitioner feels that the R402 form was intended to read “new air handlers not allowed in attic” when using the R402 compliance method and that this would match the intent of the written code sections R101.4.3, Florida Building Code, Energy Conservation and M1202.1 Florida Building Code, Residential. The petitioner feels this would give home owners a compliance method for small additions that re-use unaltered hvac systems regardless of the existing air handler location.

The Petitioner is in the process of performing an energy calculation for a client who plans to construct a one room addition attached to his existing home late summer 2017. The existing hvac equipment capacity has been verified by Manual J 8<sup>th</sup> edition to be of the correct size and capable of conditioning the existing home and the new addition when combined. The existing attic mounted air handler and existing duct is to remain unaltered, and the scope of hvac work is to add new ducts to serve the new room addition. The new ducts serving this room addition are subject to comply with the 5<sup>th</sup> Edition (2014) Florida Building Code, Energy Conservation - along with new building envelope components.

Preliminary energy calculations show this addition does not pass the R405 energy compliance method utilizing the existing 13 seer hvac equipment when modeling just the new construction portion, scoring “FAIL” 122 energy performance index. This addition when combined with the existing home also fails the R405 energy compliance method scoring “FAIL” 125 points (FSEC energy software files .enb available through Neil Fimbel listed above). This addition easily passes the R402 energy prescriptive method when listing only the new components as instructed on the form R402 and FSEC energy rater training class – provided the existing air handler location is not considered as a new “to be installed” item. If the form R402 term “not allowed in attic”

applies to the existing air handler, there would be no method of energy compliance available for this new addition.

### **Questions:**

1) The code book section R101.4.3 states that only the new construction building components and new building systems are subject to comply with the Florida Energy Conservation Code. Does the energy code section R101.4.3 apply to any existing unaltered building components and/or unaltered systems, especially reused attic mounted air handlers that remain unaltered?

(2) The prescriptive energy form R402-2014; page one, general instructions, note 1, "fill in all the applicable spaces of the to be installed column"  
Can any portion of this R402 form be applied to existing unaltered building envelope components or existing unaltered building systems, especially reused attic mounted air handlers that remain unaltered?

(3) The prescriptive energy form R402-2014; page two, Building Component row "Air Distribution System air handling unit", "Installed Values column" – the word "Location". Can the air handler location "installed value" column be applied to a reused attic mounted air handler that remains unaltered?

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### **REFERENCES:**

#### **5<sup>th</sup> Edition (2014) Florida Building Code, Energy Conservation**

##### **R101.4.3 Additions, alterations, renovations or repairs.**

Additions, alterations, renovations or repairs to an existing building, building system or portion thereof shall conform to the provisions of this code as they relate to new construction without requiring the unaltered portion(s) of the existing building or building system to comply with this code. Additions, alterations, renovations or repairs shall not create an unsafe or hazardous condition or overload existing building systems. An addition shall be deemed to comply with this code if the addition alone complies or if the existing building and addition comply with this code as a single building.

**Exception:** The following need not comply provided the energy use of the building is not increased:

1. Storm windows installed over existing fenestration.
2. Glass only replacements in an existing sash and frame.
3. Surface applied window film on existing fenestration assemblies.
4. Existing ceiling, wall or floor cavities exposed during construction provided that these cavities are filled with insulation.
5. Construction where the existing roof, wall or floor cavity is not exposed.
6. Reroofing for roofs where neither the sheathing nor the insulation is exposed. Roofs without insulation in the cavity and where the sheathing or insulation is exposed during reroofing shall be insulated either above or below the sheathing.
7. Replacement of existing doors that separate conditioned space from the exterior shall not require the installation of a vestibule or revolving door, provided, however, that an existing vestibule that separates a conditioned space from the exterior shall not be removed.
8. Alterations that replace less than 50 percent of the luminaires in a space, provided that such alterations do not increase the installed interior lighting power.
9. Alterations that replace only the bulb and ballast within the existing luminaires in a space provided that the alteration does not increase the installed interior lighting power.
10. Swimming pool filtration pumps and motors.

#### **R403.2.4 Air-handling units.**

Air handling units shall not be installed in the attic when a home is brought into code compliance by Section R402. Air-handling units shall be allowed in attics for compliance by Section R405 only if the following conditions are met:

1. The service panel of the equipment is located within 6 feet (1829 mm) of an attic access.
2. A device is installed to alert the owner or shut the unit down when the condensation drain is not working properly.
3. The attic access opening is of sufficient size to replace the air handler.
4. A notice is posted on the electric service panel indicating to the homeowner that the air handler is located in the attic. Said notice shall be in all capitals, in 16 point type, with the title and first paragraph in bold:

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**5<sup>th</sup> Edition (2014) Florida Building Code, Residential  
SECTION M1202 - EXISTING MECHANICAL SYSTEMS**

**M1202.1 Additions, alterations or repairs.** *Additions, alterations, renovations or repairs to a mechanical system shall conform to the requirements for a new mechanical system without requiring the existing mechanical system to comply with all of the requirements of this code. Additions, alterations or repairs shall not cause an existing mechanical system*

*to become unsafe, hazardous or overloaded. Minor additions, alterations or repairs to existing mechanical systems shall meet the provisions for new construction, unless such work is done in the same manner and arrangement as was in the existing system, is not hazardous, and is approved.*

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**5<sup>th</sup> Edition (2014) Florida Building Code, Existing Building**

**101.8 Existing mechanical equipment.**

An agency or local government may not require that existing mechanical equipment located on or above the surface of a roof be installed in compliance with the requirements of the *Florida Building Code* except when the equipment is being replaced or moved during reroofing and is not in compliance with the provisions of the *Florida Building Code* relating to roof-mounted mechanical units

**1101.2 Creation or extension of nonconformity.**

An *addition* shall not create or extend any nonconformity in the *existing building* to which the *addition* is being made with regard to accessibility, structural strength, fire safety, means of egress, or the capacity of mechanical, plumbing, or electrical systems.

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**5<sup>th</sup> Edition (2014) Florida Building Code, Energy Conservation  
Form R402-2014**

**FLORIDA BUILDING CODE, ENERGY CONSERVATION**  
**Residential Building Thermal Envelope Approach**  
**FORM R402-2014** Climate Zone

Scope: Compliance with Section R402.1.1 of the *Florida Building Code, Energy Conservation*, shall be demonstrated by the use of Form R402 for single- and multiple-family residences of three stories or less in height, additions to existing residential buildings, alterations, renovations, and building systems in existing buildings, as applicable. To comply, a building must meet or exceed all of the energy efficiency requirements on Table R402A and all applicable mandatory requirements summarized in Table R402B of this form. If a building does not comply with this method, or by the UA Alternative method, it may still comply under Section R405 of the *Florida Building Code, Energy Conservation*.

PROJECT NAME: AND ADDRESS:	BUILDER:
OWNER:	PERMITTING OFFICE:
	JURISDICTION NUMBER:
	PERMIT NUMBER:

- General Instructions:**
1. Fill in all the applicable spaces of the "To Be Installed" column on Table R402A with the information requested. All "To Be Installed" values must be equal to or more efficient than the required levels.
  2. Complete page 1 based on the "To Be Installed" column information.
  3. Read the requirements of Table R402B and check each box to indicate your intent to comply with all applicable items.
  4. Read, sign and date the "Prepared By" certification statement at the bottom of page 1. The owner or owner's agent must also sign and date the form.

1. New construction, addition, or existing building	1.	_____	_____	_____
2. Single-family detached or multiple-family attached	2.	_____	_____	_____
3. If multiple-family, number of units covered by this submission	3.	_____	_____	_____
4. Is this a worst case? (yes/no)	4.	_____	_____	_____
5. Conditioned floor area (sq. ft.)	5.	_____	_____	_____
6. Windows, type and area				
a) U-factor:	6a.	_____	_____	_____
b) Solar Heat Gain Coefficient (SHGC)	6b.	_____	_____	_____
c) Area	6c.	_____	_____	_____
7. Skylights				
a) U-factor:	7a.	_____	_____	_____
b) Solar Heat Gain Coefficient (SHGC)	7b.	_____	_____	_____
8. Floor type, area or perimeter, and insulation:				
a) Slab-on-grade (R-value)	8a.	_____	_____	_____
b) Wood, raised (R-value)	8b.	_____	_____	_____
c) Wood, common (R-value)	8c.	_____	_____	_____
d) Concrete, raised (R-value)	8d.	_____	_____	_____
e) Concrete, common (R-value)	8e.	_____	_____	_____
9. Wall type and insulation:				
a) Exterior:				
1. Wood frame (Insulation R-value)	9a1.	_____	_____	_____
2. Masonry (Insulation R-value)	9a2.	_____	_____	_____
b) Adjacent:				
1. Wood frame (Insulation R-value)	9b1.	_____	_____	_____
2. Masonry (Insulation R-value)	9b2.	_____	_____	_____
10. Ceiling type and insulation				
a) Attic (Insulation R-value)	10a.	_____	_____	_____
b) Single assembly (Insulation R-value)	10b.	_____	_____	_____
11. Air distribution system:				
a) Duct location, insulation	11a.	_____	_____	_____
b) AHU location	11b.	_____	_____	_____
c) Total duct leakage. Test report attached.	11c.	_____	cfm/100 s.f. Yes <input type="checkbox"/> No <input type="checkbox"/>	_____
12. Cooling system:				
a) type	12a.	_____	_____	_____
b) efficiency	12b.	_____	_____	_____
13. Heating system:				
a) type	13a.	_____	_____	_____
b) efficiency:	13b.	_____	_____	_____
14. HVAC sizing calculation: attached	14.	_____	Yes <input type="checkbox"/> No <input type="checkbox"/>	_____
15. Water heating system:				
a) type	15a.	_____	_____	_____
b) efficiency	15b.	_____	_____	_____

<p>I hereby certify that the plans and specifications covered by this form are in compliance with the <i>Florida Building Code, Energy Conservation</i>.</p> <p>PREPARED BY: _____ Date: _____</p> <p>I hereby certify that this building is in compliance with the <i>Florida Building Code, Energy Conservation</i>.</p> <p>OWNER/AGENT: _____ Date: _____</p>	<p>Review of plans and specifications covered by this form indicate compliance with the <i>Florida Building Code, Energy Conservation</i>. Before construction is complete, this building will be inspected for compliance in accordance with Section 553.908, F.S.</p> <p>CODE OFFICIAL: _____</p> <p>Date: _____</p>
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FORMS

TABLE R402A

BUILDING COMPONENT	PRESCRIPTIVE REQUIREMENTS <sup>1</sup>		INSTALLED VALUES
	Climate Zone 1	Climate Zone 2	
Windows: Skylights	U-Factor = 0.65 <sup>2</sup> SHGC = 0.25 U-factor = 0.75 SHGC = 0.30	U-Factor = 0.40 <sup>2</sup> SHGC = 0.25 U-factor = 0.65 SHGC = 0.30	U-Factor = SHGC = U-factor = SHGC =
Doors: Exterior door	U-factor = 0.65 <sup>3</sup>	U-factor = 0.40 <sup>3</sup>	U-factor =
Floors: Slab-on-Grade Over unconditioned spaces <sup>4</sup>	NR R-13	NR R-13	R-Value =
Walls <sup>4</sup> : Ext. and Adj. Frame Mass Insulation on wall interior: Insulation on wall exterior	R-13  R-4 R-3	R-13  R-6 R-4	R-Value =  R-Value = R-Value =
Ceilings <sup>5</sup> :	R=30	R=38	R-Value =
Air infiltration:	Blower door test is required on the building envelope to verify leakage ≤ 5 ACH; test report provided to code official.		Total leakage = ACH Test report Attached? Yes <input type="checkbox"/> No <input type="checkbox"/>
Air distribution system <sup>5</sup> : Air handling unit Duct R-value  Air leakage <sup>5</sup> : Duct test  Ducts in conditioned space	Not allowed in attic R-value ≥ R-8 (supply in attics) or ≥ R-6 (all other duct locations)-  Postconstruction test: Total leakage ≤ 4 cfm/100 s.f. Rough-in test Total leakage ≤ 3 cfm/100 s.f. Test not required if all ducts and AHU are in conditioned space		Location: R-Value =  Total leakage = _____ cfm/100s.f. Test report Attached? Yes <input type="checkbox"/> No <input type="checkbox"/> Location:
Air conditioning system: Central system ≤ 65,000 Btu/h Room unit or PTAC Other:	Minimum federal standard required by NAECA <sup>6</sup> . SEER 13.0 EER [from Table C403.2.3(3)] See Tables C403.2.3(1)-(11)		SEER= EER =
Heating system: Heat pump ≤ 65,000 Btu/h Gas furnace, non-weatherized Oil furnace, non-weatherized Other:	Minimum federal standard required by NAECA <sup>6</sup> HSPF 7.7 (before 1/1/15); HSPF 8.2 (as of 1/1/15) AFUE 80% AFUE 83%		HSPF = AFUE = AFUE =
Water heating system (storage type): Electric <sup>7</sup>  Gas fired <sup>8</sup>  Other (describe):	Minimum federal standard required by NAECA <sup>6</sup> 40 gal: EF = 0.92 50 gal: EF = 0.90 40 gal: EF = 0.59 50 gal: EF = 0.58		Gallons = EF = Gallons = EF =

NR = No requirement.

- (1) Each component present in the As Proposed home must meet or exceed each of the applicable performance criteria in order to comply with this code using this method.
- (2) For impact rated fenestration complying with Section R301.2.1.2 of the *Florida Building Code, Residential* or Section 1609.1.2 of the *Florida Building Code, Building* the maximum U-factor shall be 0.75 in Climate Zone 1 and 0.65 in Climate Zone 2. An area-weighted average of U-factor and SHGC shall be accepted to meet the requirements, or up to 15 square feet of glazed fenestration area are exempted from the U-factor and SHGC requirement based on Sections R402.3.1, R402.3.2 and R402.3.3.
- (3) One side-hinged opaque door assembly up to 24 square feet is exempted from this U-factor requirement.
- (4) R-values are for insulation material only as applied in accordance with manufacturers' installation instructions. For mass walls, the "interior of wall" requirement must be met except if at least 50 percent of the insulation required for the "exterior of wall" is installed exterior of, or integral to, the wall.
- (5) Ducts & AHU installed "substantially leak free" per Section R403.2.2. Test required by an energy rater certified in accordance with Section 553.99, *Florida Statutes*, or as authorized by *Florida Statutes*. The total leakage test is not required for ducts and air handlers located entirely within the building thermal envelope.
- (6) Minimum efficiencies are those set by the *National Appliance Energy Conservation Act* of 1987 for typical residential equipment and are subject to NAECA rules and regulations. For other types of equipment, see Tables C403.2.3(1-11) of the Commercial Provisions of the *Florida Building Code, Energy Conservation*.
- (7) For other electric storage volumes, min. EF = 0.97 - (0.00132 \* volume).
- (8) For other natural gas storage volumes, min. EF = 0.67 - (0.0019 \* volume).

TABLE R402B MANDATORY REQUIREMENTS			
Component	Section	Summary of Requirement(s)	Check
Air leakage	R402.4	To be caulked, gasketed, weatherstripped or otherwise sealed per Table R402.4.1.1. Recessed lighting: IC-rated as having $\leq 2.0$ cfm tested to ASTM E 283. Windows and doors: 0.3 cfm/sq.ft (swinging doors: 0.5 cfm/sf) when tested to NFRC 400 or AAMA/WDMA/CSA 101/ I.S. 2/A440. Fireplaces: Tight-fitting flue dampers & outdoor combustion air.	
Programmable thermostat	R403.1.2	Where forced-air furnace is primary system, a programmable thermostat is required.	
Air distribution system	R403.2.2 R403.2.4	Ducts shall be tested to Section 803 of the RESNET standards by an energy rater certified in accordance with Section 553.99, <i>Florida Statutes</i> , or as authorized by <i>Florida Statutes</i> . Air handling units are not allowed in attics.	
Water heaters	R403.4	Comply with efficiencies in Table C404.2. Hot water pipes insulated to $\geq R-3$ to kitchen outlets, other cases. Circulating systems to have an automatic or accessible manual OFF switch. Heat trap required for vertical pipe risers.	
Swimming pools & spas	R403.9	Spas and heated pools must have vapor-retardant covers or a liquid cover or other means proven to reduce heat loss except if 70% of heat from site-recovered energy. Off/timer switch required. Gas heaters minimum thermal efficiency is 82%. Heat pump pool heaters minimum COP is 4.0.	
Cooling/heating equipment	R403.6	Sizing calculation performed & attached. Special occasion cooling or heating capacity requires separate system or variable capacity system.	
Lighting equipment	R404.1	At least 75% of permanently installed lighting fixtures shall be high-efficacy lamps.	

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**Questions:**

1) The code book section R101.4.3 states that only the new construction building components and new building systems are subject to comply with the Florida Energy Conservation Code. **Does the energy code section R101.4.3 apply to any existing unaltered building components and/or unaltered systems, especially reused attic mounted air handlers that remain unaltered?**

**Answer:**

As per section R101.4.3 of the 5<sup>th</sup> Edition (2014) Florida Building Code, Energy Conservation (the Code), the project in question may comply with the Code using Form R402-2014 for those new building components that are being added without requiring the existing building or building systems including the existing attic mounted air handler to comply with the Code, providing that the said addition alone can comply with the code.

2) The prescriptive energy form R402-2014; page one, general instructions, note 1, "fill in all the applicable spaces of the to be installed column"



**Can any portion of this R402 form be applied to existing unaltered building envelope components or existing unaltered building systems, especially reused attic mounted air handlers that remain unaltered?**

***See answer to question #1.***

**3) The prescriptive energy form R402-2014; page two, Building Component row “Air Distribution System air handling unit”, “Installed Values column” – the word “Location”. Can the air handler location “installed value” column be applied to a reused attic mounted air handler that remains unaltered?**

***See answer to question #1.***