

## RESIDENTIAL ENERGY CONSERVATION CODE DOCUMENTATION CHECKLIST

Florida Department of Business and Professional Regulation  
Performance Alternative (Performance) Method

Applications for compliance with the 2014 Florida Building Code, Energy Conservation via the Residential Simulated Performance method shall include:

This Checklist

A Form 405 report that documents that the Proposed Design complies with Section R405.3 of the Florida Energy Code. This form shall include a summary page indicating home address, e-ratio and the pass or fail status along with summary areas and types of components, whether the home was simulated as a worst-case orientation, name and version of the compliance software tool, name of individual completing the compliance report (1 page) and an input summary checklist that can be used for field verification (usually 4 pages/may be greater)

Energy Performance Level (EPL) Display Card (one page)

Mandatory Requirements (three pages)

Required prior to CO for the Performance method:

A completed Air Barrier and Insulation Inspection Component Criteria checklist (Table 402.4.1.1 of the 2014 Florida Building Code, Energy Conservation with added checkboxes - one page)

A completed Envelope Leakage Test Report (usually one page)

If Form 405 indicates anything other than default duct leakage, then a completed Form 405 Duct Leakage Test Report (usually one page)

FOR DEMONSTRATION PURPOSES ONLY

# FLORIDA ENERGY EFFICIENCY CODE FOR BUILDING CONSTRUCTION


## Florida Department of Business and Professional Regulation - Residential Performance Method

Project Name: Right-Energy® Florida 2014 Example Street: 1516 Ninth Street City, State, Zip: Tampa, FL 33601 Owner: Mr. and Mrs. Henry Wagner Design Location: FL, Tampa Intl AP	Builder Name: Wrightsoft Permit Office: Tampa Permit Number: 2222-1 Jurisdiction: Hillsborough County
--	--

<table style="width: 100%;"> <tr> <td>1. New construction or existing</td> <td>New (From Plans)</td> <td></td> </tr> <tr> <td>2. Single family or multiple family</td> <td>Single Family</td> <td></td> </tr> <tr> <td>3. Number of units, if multiple family</td> <td>1</td> <td></td> </tr> <tr> <td>4. Number of bedrooms</td> <td>3</td> <td></td> </tr> <tr> <td>5. Is this a worst case?</td> <td>No</td> <td></td> </tr> <tr> <td>6. Conditioned floor area above grade (ft²)</td> <td>2100</td> <td></td> </tr> <tr> <td>Conditioned floor area below grade (ft²)</td> <td>0</td> <td></td> </tr> <tr> <td>7. Window s (340 ft²)</td> <td>Description</td> <td>Area</td> </tr> <tr> <td>a. U-Factor:</td> <td>Sgl, U=0.032</td> <td>15 ft²</td> </tr> <tr> <td>SHGC:</td> <td>SHGC=0.25</td> <td></td> </tr> <tr> <td>b. U-Factor:</td> <td>Sgl, U=0.032</td> <td>285 ft²</td> </tr> <tr> <td>SHGC:</td> <td>SHGC=0.25</td> <td></td> </tr> <tr> <td>c. U-Factor:</td> <td>DbI, U=0.032</td> <td>41 ft²</td> </tr> <tr> <td>SHGC:</td> <td>SHGC=0.25</td> <td></td> </tr> <tr> <td>d. U-Factor:</td> <td></td> <td>0 ft²</td> </tr> <tr> <td>SHGC:</td> <td>SHGC=0.25</td> <td></td> </tr> <tr> <td>Area Weighted Average Overhang Depth:</td> <td>1 ft</td> <td></td> </tr> <tr> <td>Area Weighted Average SHGC:</td> <td>0.25</td> <td></td> </tr> </table>	1. New construction or existing	New (From Plans)		2. Single family or multiple family	Single Family		3. Number of units, if multiple family	1		4. Number of bedrooms	3		5. Is this a worst case?	No		6. Conditioned floor area above grade (ft²)	2100		Conditioned floor area below grade (ft²)	0		7. Window s (340 ft²)	Description	Area	a. U-Factor:	Sgl, U=0.032	15 ft²	SHGC:	SHGC=0.25		b. U-Factor:	Sgl, U=0.032	285 ft²	SHGC:	SHGC=0.25		c. U-Factor:	DbI, U=0.032	41 ft²	SHGC:	SHGC=0.25		d. U-Factor:		0 ft²	SHGC:	SHGC=0.25		Area Weighted Average Overhang Depth:	1 ft		Area Weighted Average SHGC:	0.25		<table style="width: 100%;"> <tr> <td>9. Wall types (1347 ft²)</td> <td>Insulation</td> <td>Area</td> </tr> <tr> <td>a. Frm wall, eifs ext, r-15 cav i</td> <td>R=19.0</td> <td>1098 ft²</td> </tr> <tr> <td>b. Frm wall, stucco ext, r-15 cav</td> <td>R=15.0</td> <td>249 ft²</td> </tr> <tr> <td>c.</td> <td></td> <td>0 ft²</td> </tr> <tr> <td>d.</td> <td></td> <td>0 ft²</td> </tr> <tr> <td>10. Ceiling types (2100 ft²)</td> <td>Insulation</td> <td>Area</td> </tr> <tr> <td>a. Attic ceiling, asphalt shingle</td> <td>R=30.0</td> <td>2100 ft²</td> </tr> <tr> <td>b.</td> <td></td> <td>0 ft²</td> </tr> <tr> <td>c.</td> <td></td> <td>0 ft²</td> </tr> <tr> <td>11. Ducts</td> <td>R</td> <td>ft²</td> </tr> <tr> <td>a. Sup: Vented attic Ret: Vented attic AH: Uncnd. attic</td> <td>8</td> <td>378</td> </tr> <tr> <td>b.</td> <td></td> <td></td> </tr> <tr> <td>12. Cooling systems</td> <td>MBtuh</td> <td>Efficiency</td> </tr> <tr> <td>a. Central Unit</td> <td>20.2</td> <td>SEER: 14.0</td> </tr> <tr> <td>13. Heating systems</td> <td>MBtuh</td> <td>Efficiency</td> </tr> <tr> <td>a.</td> <td>22.4</td> <td>HSPF: 8.2</td> </tr> <tr> <td>14. Hot water systems</td> <td></td> <td></td> </tr> <tr> <td>a. Solar: Sample SSWS-678 FSEC Cert.#12345</td> <td></td> <td>Cap: 70 gal FEF: 3</td> </tr> <tr> <td>b. Conservation features</td> <td></td> <td></td> </tr> <tr> <td>None</td> <td></td> <td></td> </tr> <tr> <td>15. Credits</td> <td></td> <td>Pstat</td> </tr> </table>	9. Wall types (1347 ft²)	Insulation	Area	a. Frm wall, eifs ext, r-15 cav i	R=19.0	1098 ft²	b. Frm wall, stucco ext, r-15 cav	R=15.0	249 ft²	c.		0 ft²	d.		0 ft²	10. Ceiling types (2100 ft²)	Insulation	Area	a. Attic ceiling, asphalt shingle	R=30.0	2100 ft²	b.		0 ft²	c.		0 ft²	11. Ducts	R	ft²	a. Sup: Vented attic Ret: Vented attic AH: Uncnd. attic	8	378	b.			12. Cooling systems	MBtuh	Efficiency	a. Central Unit	20.2	SEER: 14.0	13. Heating systems	MBtuh	Efficiency	a.	22.4	HSPF: 8.2	14. Hot water systems			a. Solar: Sample SSWS-678 FSEC Cert.#12345		Cap: 70 gal FEF: 3	b. Conservation features			None			15. Credits		Pstat
1. New construction or existing	New (From Plans)																																																																																																																					
2. Single family or multiple family	Single Family																																																																																																																					
3. Number of units, if multiple family	1																																																																																																																					
4. Number of bedrooms	3																																																																																																																					
5. Is this a worst case?	No																																																																																																																					
6. Conditioned floor area above grade (ft²)	2100																																																																																																																					
Conditioned floor area below grade (ft²)	0																																																																																																																					
7. Window s (340 ft²)	Description	Area																																																																																																																				
a. U-Factor:	Sgl, U=0.032	15 ft²																																																																																																																				
SHGC:	SHGC=0.25																																																																																																																					
b. U-Factor:	Sgl, U=0.032	285 ft²																																																																																																																				
SHGC:	SHGC=0.25																																																																																																																					
c. U-Factor:	DbI, U=0.032	41 ft²																																																																																																																				
SHGC:	SHGC=0.25																																																																																																																					
d. U-Factor:		0 ft²																																																																																																																				
SHGC:	SHGC=0.25																																																																																																																					
Area Weighted Average Overhang Depth:	1 ft																																																																																																																					
Area Weighted Average SHGC:	0.25																																																																																																																					
9. Wall types (1347 ft²)	Insulation	Area																																																																																																																				
a. Frm wall, eifs ext, r-15 cav i	R=19.0	1098 ft²																																																																																																																				
b. Frm wall, stucco ext, r-15 cav	R=15.0	249 ft²																																																																																																																				
c.		0 ft²																																																																																																																				
d.		0 ft²																																																																																																																				
10. Ceiling types (2100 ft²)	Insulation	Area																																																																																																																				
a. Attic ceiling, asphalt shingle	R=30.0	2100 ft²																																																																																																																				
b.		0 ft²																																																																																																																				
c.		0 ft²																																																																																																																				
11. Ducts	R	ft²																																																																																																																				
a. Sup: Vented attic Ret: Vented attic AH: Uncnd. attic	8	378																																																																																																																				
b.																																																																																																																						
12. Cooling systems	MBtuh	Efficiency																																																																																																																				
a. Central Unit	20.2	SEER: 14.0																																																																																																																				
13. Heating systems	MBtuh	Efficiency																																																																																																																				
a.	22.4	HSPF: 8.2																																																																																																																				
14. Hot water systems																																																																																																																						
a. Solar: Sample SSWS-678 FSEC Cert.#12345		Cap: 70 gal FEF: 3																																																																																																																				
b. Conservation features																																																																																																																						
None																																																																																																																						
15. Credits		Pstat																																																																																																																				

FOR DEMONSTRATION PURPOSES ONLY

Glass/Floor area: 0.162	Total Proposed Modified Loads: 53.38 Total Baseline Loads: 55.70	<b>PASS</b>
-------------------------	---	-------------

<p>I hereby certify that the plans and specifications covered by this calculation are in compliance with the Florida Energy Code.</p> <p>PREPARED BY: _____ DATE: _____</p> <p>I hereby certify that this building, as designed, is in compliance with the Florida Energy Code.</p> <p>OWNER/AGENT: _____ DATE: _____</p>	<p>Review of plans and specifications covered by this calculation indicates compliance with the Florida Energy Code, Energy Conservation. Before construction is completed, this building will be inspected for compliance with Section 553.908 Florida Statutes.</p> <div style="text-align: center;">  </div> <p>CODE OFFICIAL: _____ DATE: _____</p>
---	--

# Building Input Summary Report

PROJECT											
Title:	Right-Energy@ Florida 2014	Bedrooms:	3	Address type:	Street address						
Building type:	FL As Built	Bathrooms:	1	Lot#:	Lot. 410-111						
Owner:	Mr. and Mrs. Henry Wagner	Conditioned area:	2100	Block/Subdivision:	Lexington Crossing						
# of units:	1	Total stories:	1	Platbook:	111-11						
Builder name:	Wrightsoft	Worst case:	No	Street:	1516 Ninth Street						
Permit office:	Tampa	Rotate angle:	0	County:	Hillsborough						
Jurisdiction:	Hillsborough County	Cross ventilation?:	No	City, State, Zip:	Tampa, FL 33601						
Family type:	Single Family	Whole house fan?:	No								
New/existing:	New (From Plans)	Terrain:	Ocean/Lake								
Year Construct:	2017	Shielding?:	Suburban								
Comment:	Pre-construction										
CLIMATE											
Design Location	TMY Site	Design Temp 97.5 %	2.5 %	Int Design Temp Winter	Summer	Heating Degree Days	Design Moisture	Daily Temp Range			
FL, Tampa Intl AP	- unknown -	43	91	70	75	527	119	L			
UTILITY RATES											
Fuel	Unit	Utility Name	Monthly Fixed Cost	\$/Unit							
Electricity	kWh										
Natural Gas	Therm										
Fuel Oil	Gallon										
Propane	Gallon										
SURROUNDINGS											
Ornt	Type	Shade Trees Height	Width	Distance	Exist	Adjacent Buildings Height	Width	Distance			
N									<div style="font-size: 2em; opacity: 0.5;">FOR DEMONSTRATION PURPOSES ONLY</div>		
NE											
E											
SE											
S											
SW											
NW											
BLOCKS											
#	Name	Area	Volume								
1	Living AH	2100 ft²	18900 ft³								
SPACES											
#	Name	Area	Volume	Kitchen	Occupants	Bedrooms	Finished	Cooled	Heated		
1	Living	2100 ft²	18900 ft³	No	4	0	Yes	Yes	Yes		
FLOORS											
#	Floor Type	Space	Perimeter	R-Value	Area	Tile	Wood	Carpet			
1	Bg floor, light dry	Living	162 ft	0	2100 ft²	0	0	1.0			
ROOF											
#	Type	Materials	Roof Area	Gable Area	Roof Color	Solar Absor.	SA Tested	Emitt	Emitt Tested	Deck Insul.	Pitch (deg)
1	Flat	RoofAsph	0	0	Dark	0.90	No	0.9	No	31	0
ATTIC											
#	Type	Ventilation	Vent Ratio (1 in)	Area	RBS	IRCC					
1	No attic	Unvented	300	0 ft²	N	N					

CEILING						
#	Ceiling Type	Space	R-Value	Area	Framing Fraction	Truss Type
1	Attic ceiling, asphalt s	Living	31	2100 ft²	0.10	--

WALLS														
Wall orientation below is as entered. Actual orientation is modified by rotate angle shown in "Project" section above.														
#	Ornt	Adjacent To	Wall Type	Space	Cavity R-Value	Width Ft	In	Height Ft	In	Area	Sheathing R-Value	Framing Fraction	Solar Absor.	Below Grade%
1	n	Exterior	Frm wall, stucco ext,	Living	0	20	0	9	0	180 ft²	0	0.25	0.80	0

DOORS										
#	Ornt	Door Type	Space	Storms	U-Value	Width Ft	In	Height Ft	In	Area
1	n	Door, ovhd wood type	Living	None	0.540	16	0	8	0	128 ft²

WINDOWS												
#	Ornt	Wall ID	Frame	Panes	NFRC	U-Factor	SHGC	Storms	Area	Overhang Depth	Separation	Interior Shade Screening
1	n	1	None	Single (Clear)	Yes	0.032	0.25	No	15 ft²	1 ft 0 ft	1 ft 4 ft	Blinds 45° outdoor

INFILTRATION								
#	Scope	Method	SLA	CFM 50	ELA	EqLA	ACH	ACH 50
1	Wholehouse	Blower Door	0.0868	2300	126.6	237.7	5.00	7.30

MASS					
Mass Type	Area	Thickness	Furniture Fraction	ACH 50	Space
FOR DEMONSTRATION PURPOSES ONLY					

HEATING SYSTEM						
#	System Type	Subtype	Efficiency	Capacity	Block	Ducts
1	Natural Gas Furnace	None	HSPF: 8.2	22.4 MBtuh	1	sys#1

COOLING SYSTEM								
#	System Type	Subtype	Efficiency	Capacity	Air Flow	SHR	Block	Ducts
1	Central Unit	Split	EER: 10.6	20.2 MBtuh	673 cfm	0.70	1	sys#1

HOT WATER SYSTEM						
#	System Type	EF	Cap	Use	SetPnt	Conservation
1	Electric conventional (40 gal, 0.96 EF)	0.96	40 gal	61 gal	120 °F	None

SOLAR HOT WATER SYSTEM						
FSEC Cert #	Company Name	System Model #	Collector Model #	Collector Area	Storage Volume	FEF
	N/A		N/A			0

DUCTS												
#	Location	--- Supply --- R-Value	Area (ft²)	--- Return --- Location	Area (ft²)	Leakage Type	Air Handler	CFM 25 Out	Percent Leakage	QN	RLF	HVAC # Heat Cool
1	Vented attic	6	289	Vented attic	89	Default leakage	Uncnd. attic	0 cfm	19.77	0	0.2	1 1

**TEMPERATURES**

Programable Thermostat: Y

Ceiling Fans:

Cooling	<input checked="" type="checkbox"/>	Jan	<input checked="" type="checkbox"/>	Feb	<input checked="" type="checkbox"/>	Mar	<input checked="" type="checkbox"/>	Apr	<input checked="" type="checkbox"/>	May	<input checked="" type="checkbox"/>	Jun	<input checked="" type="checkbox"/>	Jul	<input checked="" type="checkbox"/>	Aug	<input checked="" type="checkbox"/>	Sep	<input checked="" type="checkbox"/>	Oct	<input checked="" type="checkbox"/>	Nov	<input checked="" type="checkbox"/>	Dec
Heating	<input checked="" type="checkbox"/>	Jan	<input checked="" type="checkbox"/>	Feb	<input checked="" type="checkbox"/>	Mar	<input checked="" type="checkbox"/>	Apr	<input checked="" type="checkbox"/>	May	<input checked="" type="checkbox"/>	Jun	<input checked="" type="checkbox"/>	Jul	<input checked="" type="checkbox"/>	Aug	<input checked="" type="checkbox"/>	Sep	<input checked="" type="checkbox"/>	Oct	<input checked="" type="checkbox"/>	Nov	<input checked="" type="checkbox"/>	Dec
Venting	<input checked="" type="checkbox"/>	Jan	<input checked="" type="checkbox"/>	Feb	<input checked="" type="checkbox"/>	Mar	<input checked="" type="checkbox"/>	Apr	<input checked="" type="checkbox"/>	May	<input checked="" type="checkbox"/>	Jun	<input checked="" type="checkbox"/>	Jul	<input checked="" type="checkbox"/>	Aug	<input checked="" type="checkbox"/>	Sep	<input checked="" type="checkbox"/>	Oct	<input checked="" type="checkbox"/>	Nov	<input checked="" type="checkbox"/>	Dec

Thermostat Schedule:	Florida Building Code, 5th Edition	Hours											
Schedule Type	(2014)	1	2	3	4	5	6	7	8	9	10	11	12

Cooling (WD)	AM	75	75	75	75	75	75	75	75	75	75	75	75
	PM	75	75	75	75	75	75	75	75	75	75	75	75
Cooling (WEH)	AM	75	75	75	75	75	75	75	75	75	75	75	75
	PM	75	75	75	75	75	75	75	75	75	75	75	75
Heating (WD)	AM	72	72	72	72	72	72	72	72	72	72	72	72
	PM	72	72	72	72	72	72	72	72	72	72	72	72
Heating (WEH)	AM	72	72	72	72	72	72	72	72	72	72	72	72
	PM	72	72	72	72	72	72	72	72	72	72	72	72

FOR DEMONSTRATION PURPOSES ONLY

# ENERGY PERFORMANCE LEVEL (EPL) DISPLAY CARD

**ESTIMATED ENERGY PERFORMANCE INDEX\* = 81**  
The lower the EnergyPerformance Index, the more efficient the home.

1516 Ninth Street, Tampa, FL 33601

<p>1. New construction or existing 2. Single family or multiple family 3. Number of units, if multiple family 4. Number of bedrooms 5. Is this a worst case? 6. Conditioned floor area (ft²)</p>	<p>New (From Plans) Single Family 1 3 No 2100</p>	<p>9. Wall Types a. Frm wall, eifs ext, r-15 cav i b. Frm wall, stucco ext, r-15 cav c. d. 10. Ceiling Types a. Attic ceiling, asphalt shingle b. c. 11. Ducts a. Sup: Vented attic Ret: Vented attic AH: Uncnd. att b. 12. Cooling systems a. Central Unit 13. Heating systems a. Natural Gas Furnace</p>	<p>Insulation R=19.0 R=15.0  Insulation R=30.0  R R MBtuh 20.2 MBtuh 22.4</p>	<p>Area 1098 ft² 249 ft² 0 ft² 0 ft² 2100 ft² 0 ft² 0 ft² ft² 378  Efficiency SEER: 14.0  Efficiency HSPF: 8.2</p>
<p>7. Windows** a. U-Factor: SHGC: b. U-Factor: SHGC: c. U-Factor: SHGC: d. U-Factor: SHGC: Area Weighted Average Overhang Depth: Area Weighted Average SHGC:</p>	<p>Description Sgl, U=0.032 SHGC=0.25 Sgl, U=0.032 SHGC=0.25 Dbl, U=0.032 SHGC=0.25  SHGC=0.25 1 ft 0.25</p>	<p>Area 15 ft² 285 ft² 41 ft²  0 ft²  1 ft 0.25</p>	<p>Insulation 0 0</p>	<p>Area 0 ft² ft² ft²</p>
<p>8. Floor Types a. b. c.</p>	<p>Insulation 0 0</p>	<p>Area 0 ft² ft² ft²</p>	<p>14. Hot water systems a. Solar: Sample SSWS-678 FSEC Cert.#12345 b. Conservation features None</p>	<p>Cap: 70 gal FEF: 3  Pstat</p>

FOR DEMONSTRATION PURPOSES ONLY

I certify that this home complied with the Florida Energy Efficiency Code for Building Construction through the above energy saving features which will be installed (or exceeded) in this home before final inspection. Otherwise, a new EPL Display Card will be completed based on installed Code compliant features.



Builder Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Address of New Home: \_\_\_\_\_ City/FL Zip: \_\_\_\_\_

\*Note: This is not a Building Energy Rating. If your Index is below 70, your home may qualify for energy efficient mortgage (EEM) incentives if you obtain a Florida EnergyGauge Rating. Contact the EnergyGauge Hotline at (321) 638-1492 or see the EnergyGauge web site at energygauge.com for information and a list of certified Raters. For information about the Florida Building Code, Energy Conservation, contact the Florida Building Commissions's support staff.

\*\*Label required by Section 303.1.3 of the Florida Building Code, Energy Conservation, if not DEFAULT.

## Residential Whole Building Performance and Prescriptive Methods

ADDRESS: 1516 Ninth Street  
Tampa, FL 33601

PERMIT #: 2222-1

**MANDATORY REQUIREMENTS** - See individual code sections for full details.

- 401.3 Energy Performance Level (EPL) display card (Mandatory).** The building official shall require that an energy performance level (EPL) display card be completed and certified by the builder to be accurate and correct before final approval of the building for occupancy. Florida law [Section 553.9085, Florida Statutes] requires the EPL display card to be included as an addendum to each sales contract for both presold and nonpresold residential buildings. The EPL display card contains information indicating the energy performance level and efficiencies of components installed in a dwelling unit. The building official shall verify that the EPL display card completed and signed by the builder accurately reflects the plans and specifications submitted to demonstrate compliance for the building. A copy of the EPL display card can be found in Appendix C.
- R402.4 Air leakage (Mandatory).** The building thermal envelope shall be constructed to limit air leakage in accordance with the requirements of Sections R402.4.1 through R402.4.4.
- R402.4.1 Building thermal envelope.** The building thermal envelope shall comply with Sections R402.4.1.1 and R402.4.1.2. The sealing methods between dissimilar materials shall allow for differential expansion and contraction.
- R402.4.1.1 Installation.** The components of the building thermal envelope as listed in Table R402.4.1.1 shall be installed in accordance with the manufacturer's instructions and the criteria listed in Table 402.4.1.1, as applicable to the method of construction. Where required by the code official, an approved third party shall inspect all components and verify compliance.
- 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 weather-stripping 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.
- R402.4.2 Fireplaces.** New wood-burning fireplaces shall have tight-fitting flue dampers and outdoor combustion air.
- R402.4.3 Fenestration air leakage.** Windows, skylights and sliding glass doors shall have an air infiltration rate of no more than 0.3 cfm per square foot (1.5 L/s/m<sup>2</sup>), and swinging doors no more than 0.5 cfm per square foot (2.6 L/s/m<sup>2</sup>), when tested according to NFRC 400 or AAMA/WDMA/CSA 101/I.S.2/A440 by an accredited, independent laboratory and listed and labeled by the manufacturer.  
Exception: Site-built windows, skylights and doors.
- R402.4.4 Recessed lighting.** Recessed luminaires installed in the building thermal envelope shall be sealed to limit air leakage between conditioned and unconditioned spaces. All recessed luminaires shall be IC-rated and labeled as having an air leakage rate not more than 2.0 cfm (0.944 L/s) when tested in accordance with ASTM E 283 at a 1.57 psf (75 Pa) pressure differential. All recessed luminaires shall be sealed with a gasket or caulk between the housing and the interior wall or ceiling covering.
- R403.1.1 Thermostat provision (Mandatory).** At least one thermostat shall be provided for each separate heating and cooling system.
- R403.1.3 Heat pump supplementary heat (Mandatory).** Heat pumps having supplementary electric-resistance heat shall have controls that, except during defrost, prevent supplemental heat operation when the heat pump compressor can meet the heating load.
- R403.2.2 Sealing (Mandatory).** All ducts, air handlers, and filter boxes and building cavities that form the primary air containment passageways for air distribution systems shall be considered ducts and plenum chambers, shall be constructed and sealed in accordance with Section C403.2.7.2 of the Commercial Provisions of this code and shall be shown to meet duct tightness criteria by post-construction or rough-in testing below.

Duct tightness shall be verified by testing to Section 803 of the RESNET Standards by either an energy rater certified in accordance with Section 553.99, Florida Statutes, or as authorized by Florida Statutes, to be "substantially leak free" by either of the following:

1. Post-construction test: Total leakage shall be less than or equal to 4 cfm (113 L/min) per 100 square feet (9.29 m<sup>2</sup>) of conditioned floor area when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test.
2. Rough-in test: Total leakage shall be less than or equal to 4 cfm (113 L/min) per 100 square feet (9.29 m<sup>2</sup>) of conditioned floor area when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the system, including the manufacturer's air handler enclosure. All registers shall be taped or otherwise sealed during the test. If the air handler is not installed at the time of the test, total leakage shall be less than or equal to 3 cfm (85 L/min) per 100 square feet (9.29 m<sup>2</sup>) of conditioned floor area.  
Exceptions:
  1. The total leakage test is not required for ducts and air handlers located entirely within the building envelope.
  2. Duct testing is not mandatory for buildings complying by Section 405 of this code.



**MANDATORY REQUIREMENTS - (Continued)**

- R403.2.2.1 Sealed air handler.** Air handlers shall have a manufacturer's designation for an air leakage of no more than 2 percent of the design air flow rate when tested in accordance with ASHRAE 193.
- R403.2.3 Building Cavities (Mandatory).** Building framing cavities shall not be used as ducts or plenums.
- R403.3 Mechanical system piping insulation (Mandatory).** Mechanical system piping capable of carrying fluids above 105°F (41°C) or below 55°F (13°C) shall be insulated to a minimum of R-3.
- R403.3.1 Protection of piping insulation.** Piping insulation exposed to weather shall be protected from damage, including that caused by sunlight, moisture, equipment maintenance, and wind, and shall provide shielding from solar radiation that can cause degradation of the material. Adhesive tape shall not be permitted.
- R403.4.1 Circulating hot water systems (Mandatory).** Circulating hot water systems shall be provided with an automatic or readily accessible manual switch that can turn off the hot-water circulating pump when the system is not in use.
- R403.4.3 Heat traps (Mandatory).** Storage water heaters not equipped with integral heat traps and having vertical pipe risers shall have heat traps installed on both the inlets and outlets. External heat traps shall consist of either a commercially available heat trap or a downward and upward bend of at least 3 1/2 inches (89 mm) in the hot water distribution line and cold water line located as close as possible to the storage tank.
- R403.4.4 Water heater efficiencies (Mandatory).** Water heater efficiencies
- R403.4.4.1 Storage water heater temperature controls**
- R403.4.4.1.1 Automatic controls.** Service water heating systems shall be equipped with automatic temperature controls capable of adjustment from the lowest to the highest acceptable temperature settings for the intended use. The minimum temperature setting range shall be from 100°F to 140°F (38°C to 60°C).
- R403.4.4.1.2 shut down.** A separate switch or a clearly marked circuit breaker shall be provided to permit the power supplied to electric service systems to be turned off. A separate valve shall be provided to permit the energy supplied to the main burner(s) of combustion types of service water heating systems to be turned off.
- Water heating equipment.** Water heating equipment installed in residential units shall meet the minimum efficiencies of Table C404.2 in Chapter 4 of the Florida Building Code, Energy Conservation, Commercial Provisions, for the type of equipment installed. Equipment used to provide heating functions as part of a combination system shall satisfy all stated requirements for the appropriate water heating category. Solar water heaters shall meet the criteria Section R403.4.4.2.1.
- R403.4.4.2.1 Solar water heating system.** Solar systems for domestic hot water production are rated by the annual solar energy factor of the system. The solar energy factor of a system shall be determined from the Florida Solar Energy Center Directory of Certified Solar Systems. Solar collectors shall be tested in accordance with ISO Standard 9806, Test Methods for Solar Collectors, and SRCC Standard TM-1, Solar Domestic Hot Water System and Component Test Protocol. Collectors in installed solar water heating systems should meet the following criteria:
1. Be installed with a tilt angle between 10 degrees and 40 degrees of the horizontal; and
  2. Be installed at an orientation within 45 degrees of true south.
- R403.5 Mechanical ventilation (Mandatory).** The building shall be provided with ventilation that meets the requirements of the Florida Building Code, Residential or Florida Building Code, Mechanical, as applicable, or with other approved means of ventilation. Outdoor air intakes and exhausts shall have automatic or gravity dampers that close when the ventilation system is not operating.
- R403.5.1 Whole-house mechanical ventilation system fan efficacy.** Mechanical ventilation system fans shall meet the efficacy requirements of Table R403.5.1.
- Exception: Where mechanical ventilation fans are integral to tested and listed HVAC equipment, they shall be powered by an electronically commutated motor.
- R403.5.2 Ventilation air.** Residential buildings designed to be operated at a positive indoor pressure or for mechanical ventilation shall meet the following criteria:
1. The design air change per hour minimums for residential buildings in ASHRAE 62, Ventilation for Acceptable Indoor Air Quality, shall be the maximum rates allowed for residential applications.
  2. No ventilation or air-conditioned system make air shall be provided to conditioned space from attics, crawlspaces, attached closed garages or outdoor spaces adjacent to swimming pools or spas.
  3. If ventilation air is drawn from enclosed spaces(s), then the walls of the space(s) from which air is drawn shall be insulated to a minimum of R-11 and the ceiling shall be insulated to a minimum of R-19, space permitting, or R-10 otherwise.
- R403.6 Heating and cooling equipment (Mandatory).** The following sections are mandatory for cooling and heating equipment.
- R403.6.1 Equipment sizing.** Heating and cooling equipment shall be sized in accordance with ACCA Manual S based on the equipment loads calculated in accordance with ACCA Manual J or other approved heating and cooling calculation methodologies, based on building loads for the directional orientation of the building. The manufacturer and model number of the outdoor and indoor units (if split system) shall be submitted along with the sensible and total cooling capacities at the design conditions described in Section R302.1. This code does not allow designer safety factors, provisions for future expansion or other factors which affect equipment sizing. System sizing calculations shall not include loads created by local intermittent mechanical ventilation such as standard kitchen and bathroom exhaust systems.
- R403.6.1.1 Cooling equipment capacity.** Cooling only equipment shall be selected so that its total capacity is not less than the calculated total load, but not more than 1.15 times greater than the total load calculated according to the procedure selected in Section 403.6, or the closest available size provided by the manufacturer's product lines. The corresponding latent capacity of the equipment shall not be less than the calculated latent load.



**MANDATORY REQUIREMENTS - (Continued)**

- R403.6.1.1 Cooling equipment capacity. (continued)** The published value for AHRI total capacity is a nominal, rating-test value and shall not be used for equipment sizing. Manufacturer's expanded performance data shall be used to select cooling-only equipment. This selection shall be used to select cooling-only equipment. This selection shall be based on the outdoor design dry bulb temperature for the load calculation (or entering water temperature for water-source equipment), the blower cfm provided by the expanded performance data, the design value for entering wet bulb temperature and the design value for entering dry bulb temperature.

Design values for entering wet bulb and dry bulb temperature shall be for the indoor dry bulb and relative humidity used for the load calculation and shall be adjusted for return side gains if the return duct(s) is installed in an unconditioned space.

Exceptions:

1. Attached single- and multi-family residential equipment sizing may be selected so that its cooling capacity is less than the calculated total sensible load but not less than 80 percent of that load.
2. When signed and sealed by a Florida-registered engineer, in attached single- and multi-family units, the capacity of equipment may be sized in accordance with good design practice.

- R403.6.1.2 Heating equipment capacity**

**R403.6.1.2.1 Heat pumps.** Heat pumps sizing shall be based on the cooling requirements as calculated according to Section R403.6.1.1 and the heat pump total cooling capacity shall not be more than 1.15 times greater than the design cooling load.

**R403.6.1.2.2 Electric resistance furnaces.** Electric resistance furnaces shall be sized within 4 kW of the design requirements calculated according to the procedure selected in Section R403.6.1.

**R403.6.1.2.3 Fossil fuel heating equipment.** The capacity of fossil fuel heating equipment with natural draft atmospheric burners shall not be less than the design load calculated in accordance with Section R403.6.1.

- R403.6.1.3 Extra capacity required for special occasions.** Residences requiring excess cooling or heating equipment capacity on an intermittent basis, such as anticipated additional loads caused by major entertainment events, shall have equipment sized or controlled to prevent continuous space cooling or heating within that space by one or more of the following options:
1. A separate cooling or heating system is utilized to provide cooling or heating to the major entertainment areas.
  2. A variable capacity system sized for optimum performance during base load periods is utilized.

- R403.7 Systems serving multiple dwelling units (Mandatory).** Systems serving multiple dwelling units shall comply with Sections C403 and C404 of the Commercial Provisions in lieu of Section R403.

- R403.8 Snow melt system controls (Mandatory).** Snow and ice-melting systems, supplied through energy service to the building, shall include automatic controls capable of shutting off the system when the pavement temperature is above 55°F, and no precipitation is falling and an automatic or manual control that will allow shut off when the outdoor temperature is above 40°F.

- R403.9 Swimming pools, inground spas and portable spas (Mandatory).** The energy requirements for residential pools and inground spas shall be as specified in Sections R403.9.1 through R403.9.3 and in accordance with ANSI/APSP-15. The energy requirements for portable spas shall be in accordance with ANSI/APSP-14.

- R403.9.1 Pool and spa heaters.** All pool heaters shall be equipped with a readily accessible on-off switch that is mounted outside the heater to allow shutting off the heater without adjusting the thermostat setting.

**R403.9.1.1 Gas and oil-fired pool and spa heaters.** All gas- and oil-fired pool and spa heaters shall have a minimum thermal efficiency of 82 percent for heaters manufactured on or after April 16, 2013 when tested in accordance with ANSI Z 21.56. Pool heaters fired by natural gas or LP gas shall not have continuously burning pilot lights.

**R403.9.1.2 Heat pump pool heaters.** Heat pump pool heaters shall have a minimum COP of 4.0 when tested in accordance with AHRI 1160, Table 2, Standard Rating Conditions-Low Air Temperature. A test report from an independent laboratory is required to verify procedure compliance. Geothermal swimming pool not required to meet this standard.

- R403.9.2 Time switches.** Time switches or other control method that can automatically turn off and on heaters and pumps according to a preset schedule shall be installed on all heaters and pumps. Heaters, pumps and motors that have built in timers shall be deemed in compliance with this equipment.

Exceptions:

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

- R403.9.3 Covers.** Heated swimming pools and inground permanently installed spas shall be equipped with a vapor-retardant cover on or at the water surface or a liquid cover or other means proven to reduce heat loss.

Exception: Outdoor pools deriving over 70 percent of the energy for heating from the site-recovered energy, such as a heat pump or solar energy source computed over an operating season.

- R404.1 Lighting equipment (Mandatory).** A minimum of 75 percent of the lamps in permanently installed lighting fixtures shall be high-efficacy lamps or a minimum of 75 percent of permanently installed lighting fixtures shall contain only high efficacy lamps.

Exception: Low-voltage lighting shall not be required to utilize high-efficacy lamps.

- R404.1.1 Lighting equipment (Mandatory).** Fuel gas lighting systems shall not have continuously burning pilot lights.

- R405.2 Performance ONLY.** All ducts not entirely inside the building thermal envelope shall be insulated to a minimum of R-6. Ceilings shall have minimum insulation of R-19. Where single assembly of the exposed deck and beam type or concrete deck roofs do not have sufficient space, R-10 is allowed.
- R405.2.1 Performance ONLY.**

**AIR BARRIER AND INSULATION INSPECTION COMPONENT CRITERIA**

Project Name:	Right-Energy® Florida 2014 Example	Builder Name	Wrightsoft
Street:	1516 Ninth Street	Permit Office:	Tampa
City, State, Zip:	Tampa, FL 33601	Permit Number:	2222-1
Owner:	Mr. and Mrs. Henry Wagner	Jurisdiction:	Hillsborough County
Design Location:	FL, Tampa Intl AP		

COMPONENT	CRITERIA	CHECK
Air barrier and thermal barrier	A continuous air barrier shall be installed in the building envelope. Exterior thermal envelope contains a continuous barrier. Breaks or joints in the air barrier shall be sealed. Air-permeable insulation is not used as a sealing material.	
Ceiling/attic	The air barrier in any dropped ceiling/soffit shall be aligned with the insulation and any gaps in the air barrier shall be sealed. Access openings, drop down stairs or knee wall doors to unconditioned attic spaces shall be sealed.	
Walls	Corners and headers shall be insulated and the junction of the foundation and sill plate shall be sealed. The junction of the top plate and the top or exterior walls shall be sealed. Exterior thermal envelope insulation for framed walls shall be installed in substantial contact and continuous alignment with the air barrier. Knee walls shall be sealed.	
Windows, skylights and doors	The space between window/door jambs and framing and skylights and framing shall be sealed.	
Rim joists	Rim joists are insulated and include an air barrier.	
Floors (including above-garage and cantilevered floors)	Insulation shall be installed to maintain permanent contact with underside of subfloor decking. The air barrier shall be installed at any exposed edge of insulation.	
Crawl space walls	Where provided in lieu of floor insulation, insulation shall be permanently attached to the crawlspace walls. Exposed earth in unvented crawl spaces shall be covered with a Class I vapor retarder with overlapping joints taped.	
Shafts, penetrations	Duct shafts, utility penetrations, and flue shaft openings to exterior or unconditioned space shall be sealed.	
Narrow cavities	Batts in narrow cavities shall be cut to fit, or narrow cavities shall be filled by insulation that on installation readily conforms to the available cavity spaces.	
Garage separation	Air sealing shall be provided between the garage and conditioned spaces.	
Recessed lighting	Recessed light fixtures installed in the building thermal envelope shall be air tight, IC rated, and sealed to the drywall.	
Plumbing and wiring	Batt insulation shall be cut neatly to fit around wiring and plumbing in exterior walls, or insulation that on installation readily conforms to available space shall extend behind piping and wiring.	
Shower/tub on exterior wall	Exterior walls adjacent to showers and tubs shall be insulated and the air barrier installed separating them from the showers and tubs.	
Electrical/phone box on exterior walls	The air barrier shall be installed behind electrical or communication boxes or air sealed boxes shall be installed.	
HVAC register boots	HVAC register boots that penetrate building envelope shall be sealed to the subfloor or drywall.	
Fireplace	An air barrier shall be installed on fireplace walls. Fireplaces shall have gasketed doors.	

FOR DEMONSTRATION PURPOSES

# FLORIDA ENERGY EFFICIENCY CODE FOR BUILDING CONSTRUCTION

## Envelope Leakage Test Report Prescriptive and Performance Methods

Project name: Right-Energy® Florida 2014 Example Street: 1516 Ninth Street City, State, Zip: Tampa, FL 33601 Owner: Mr. and Mrs. Henry Wagner Design Location: FL, Tampa Intl AP	Builder name: Wrightsoft Permit office: Tampa Permit number: 2222-1 Jurisdiction: Hillsborough County
--	--

### Envelope Leakage Test Results

Regression Data:

C: \_\_\_\_\_ n: \_\_\_\_\_ R: \_\_\_\_\_

Multi Point Test Data:

	HOUSE PRESSURE	FLOW
1	Pa	cfm
2	Pa	cfm
3	Pa	cfm
4	Pa	cfm
5	Pa	cfm
6	Pa	cfm

### Leakage Characteristics

CFM(50): \_\_\_\_\_

ELA: \_\_\_\_\_

EqLA: \_\_\_\_\_

ACH: \_\_\_\_\_

ACH(50): \_\_\_\_\_

SLA: \_\_\_\_\_

**402.4.1.2 Testing option.** 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 Climates Zones 1 and 2, 3 air changes per hour in Climates 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 weather-stripping 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 openings 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.

I hereby certify that the above envelope leakage performance results demonstrate compliance with the Florida Energy Code requirements in accordance with Section 402.4.1.2.

Signature: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Florida Rater Certification #: \_\_\_\_\_

DATE: \_\_\_\_\_

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 third party conducting the test and provided to the code official.



BUILDING OFFICIAL: \_\_\_\_\_

DATE: \_\_\_\_\_

# FLORIDA ENERGY EFFICIENCY CODE FOR BUILDING CONSTRUCTION

## Air Distribution System Test Report Prescriptive and Performance Methods

Project name:	Right-Energy® Florida 2014 Example	Builder:	Wrightsoft
Street:	1516 Ninth Street	Permit office:	Tampa
City, State, Zip:	Tampa, FL 33601	Permit number:	2222-1
Design Location:	FL, Tampa Intl AP	Jurisdiction:	Hillsborough County
		Duct Test Time:	Post Construction

### Air Distribution System Leakage Test Results

CFM25 Air Distribution System Leakage Test Values		
Line	System	Total Duct Leakage
1	System 1	_____ cfm25(Total)
2	System 2	_____ cfm25(Total)
3	System 3	_____ cfm25(Total)
4	System 4	_____ cfm25(Total)
5	<b>Total House Duct System Leakage</b>	Sum lines 1-4 _____ Divide by _____ (Total Conditioned Floor Area) = _____ <b>(Qn,Total)</b>  To qualify as "substantially leak free" Qn Total must be less than or equal to 0.04 if air handler unit is installed. If air handler unit is not installed Qn Total must be less than or equal to 0.03.

FOR DEMONSTRATION PURPOSES ONLY

I hereby certify that the above duct testing performance results demonstrate compliance with the Florida Energy Code requirements in accordance with Section 403.2.2.

Signature: \_\_\_\_\_  
 Printed Name: \_\_\_\_\_  
 Florida Rater Certification #: \_\_\_\_\_  
 DATE: \_\_\_\_\_

Duct tightness shall be verified by testing to Section 803 of the RESNET Standards by either an energy rater certified in accordance with Section 553.99, Florida Statutes, or as authorized by Florida Statutes, to be "substantially leak free."



**BUILDING OFFICIAL:** \_\_\_\_\_  
**DATE:** \_\_\_\_\_