Florida Building Code, Energy Conservation
Form R402 - 2023

Instructions for submission: Upload completed form to Accela Citizen Access (ACA) Portal using this link or email to permitting@martin.fl.us

Hover over form fields for instructions.

Residential Building Thermal Envelope Approach
***R*-value Computation Method**

Florida Climate Zone

Project Information

Project address

Project name	Street	City	ZIP Code

Owner	Builder	Number of units	Conditioned floor area

Permit number	Permit type	Permitting office	Jurisdiction number	Worst case?

Scope

Compliance with Section R402.1.2 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 and applicable mandatory requirements summarized on this form. If a building does not comply with this method, or by the UA Alternative method, it may still comply under Section R405 or R406 of the *Florida Building Code, Energy Conservation*.

General Instructions

1. Fill in all the applicable spaces of the **Installed** row in the **Insulation and Fenestration Requirements by Component** table with the information requested. All **Installed** values must be equal to or more efficient than the required levels. “AVG” indicates an area weighted average is allowed; **Lowest** indicates the lowest *R*-value to be installed must be entered.
2. Complete the tables for air infiltration and installed equipment.
3. Read the **Mandatory Requirements** table 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 this form. The owner or owner's agent must also sign and date the form.

Insulation and Fenestration Requirements by Component[1]

Requirements	Fenestration *U*-Factor[2, 3, 4]	Skylight[2] *U*-Factor	Glazed Fenestration SHGC[2, 3]	Ceiling *R*-Value	Wood Frame Wall *R*-Value[5]	Mass Wall *R*-Value[5, 6]	Floor *R*-Value	Basement Wall *R*-Value	Slab[7] *R*-Value & Depth	Crawl Space *R*-Value
Climate Zone 1	NR	0.75	0.25	30	13	3/4	13	0	0	0
Climate Zone 2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
Value	AVG	AVG	AVG	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest
Installed										

R-Value calculation method: [pass/fail]

For SI: 1 foot = 304.8 mm; NR = No requirement

[1] *R*-values are minimums. *U*-factors and SHGC are maximums. 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.

[2] The fenestration *U*-factor column excludes skylights. The SHGC column applies to all glazed fenestration. Exception: Skylights may be excluded from glazed fenestration SHGC requirements in Climate Zones 1 through 3 where the SHGC for such skylights does not exceed 0.30.

[3] 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 0.65 in Climate Zone 2. An area-weighted average of *U*-factor and SHGC shall be accepted to meet the requirements, and up to 15 square feet of glazed fenestration area are exempted from the *U*-factor and SHGC requirement based on Section R402.3.1, R402.3.2 and R402.3.3.

[4] One side-hinged opaque door assembly up to 24 square feet is exempted from this *U*-factor requirement based on Section R402.3.4.

[5] *R*-values are for insulation material only as applied in accordance with manufacturer's installation instructions.

[6] The second R-value applies when more than half the insulation is on the interior of the mass wall.

[7] R-5 shall be added to the required slab edge *R*-values for heated slabs. Insulation depth shall be the depth of the footing or 2 feet, whichever is less in Climate Zones 1 through 3 for heated slabs.

Air filtration

Blower door test is required on the building envelope to verify leakage $\leq$ 7 ACH50; test report must be provided to code official before CO is issued. *Florida Building Code, Energy Conservation* Section R402.4.1.2 testing exception may apply for additions, alterations, or renovations.

Equipment Requirements and Installed Values

For multiple systems of the same type, indicate the minimum efficient system. All **Installed** values must be equal to or more efficient than the required level. If a listed **System Type** is not to be installed, enter in **N/A** for "not applicable."

Air distribution system[1]

Location (not allowed in attic)

Air handling unit

Minimum efficiency level required: factory sealed — **Factory sealed?** ◯ Yes ◯ No

Duct *R*-value

Minimum efficiency level required:

= R-8 (Ducts in unconditioned attics, Diameter ≥ 3 in.) — R-Value (in unc. attic) _____

= R-6 (Ducts in unconditioned non attics, Diam. ≥ 3 in.) — R-Value (in unc. non attics) _____

= R-6 (Ducts in unconditioned attics, Diameter < 3 in.) — R-Value (small duct in attic) _____

= R-4.2 (Ducts in unconditioned not attics, Diam. < 3 in.) — R-Value (small ducts in unc.) _____

All ducts are in conditioned space (No minimum) — **Air conditioned space?** ◯ Yes ◯ No

Air leakage/duct test

Minimum efficiency level required:
Air handler installed: Total leakage = 4 cfm/100 s.f.
Air handler not installed: Total leakage = 3 cfm/100 s.f.

Total leakage (in cfm/100 s.f.) _____

Air handler installed? ◯ Yes ◯ No

Duct testing

Minimum efficiency level required:
Test not required if all ducts and AHU are within the building thermal envelope and for additions or alterations where ducts extended from existing heating and cooling system through unconditioned space are < 40 linear ft.

Test report required? ◯ Yes ◯ No

Air conditioning systems

Minimum federal standard required by NAECA[2]

Central system < 45,000 Btu/h: SEER2 =14.3 — Cap. (Btu/h) _____

Central system ≥ 45,000 Btu/h: SEER2=13.8 — SEER2 (min) _____

Central heat pump

Minimum efficiency level required: SEER2 14.3 — SEER2 (min) _____

PTAC, PTHP, SPVAC, or SPVHP

Minimum efficiency level required:
EER [from Table C403.2.3(3)]

Type _____

Cap. (Btu/h) _____ EER (min) _____

Equipment Requirements and Installed Values (cont'd)

Air conditioning systems (cont'd)

Other

Minimum efficiency level required:
See Tables C403.2.3(1) -(11)

Type _____ Efficiency (min.) _____

Heating systems

Electric resistance (Not allowed in Climate Zone 2)

Heat pump

Minimum federal standard required by NAECA[2] : HSPF2 ≥ 7.5

HSPF2 (min.) _____

Gas furnace, non-weatherized

Minimum federal standard required by NAECA[2]: AFUE ≥ 80%

AFUE (min.) _____

Oil furnace, non-weatherized

Minimum federal standard required by NAECA[2]: AFUE ≥ 83%

AFUE (min.) _____

PTHP or SPVHP

Minimum efficiency level required by NAECA[2]:
COP_H (from Table C403.2.3(3))

Type _____

Cap. (Btu/h) _____ EER (min.) _____

Other

Type _____ Efficiency (min.) _____

Water heating system (storage type)

Capacity _____

Electric[3, 6]

Minimum federal standard required by NAECA[2]
UEF 40 gal. 0.931; 50 gal.: 0.930; 60 gal.: 2.176

UEF (min.) _____

Gas fired[4, 6]

Minimum federal standard required by NAECA[2]
UEF 40 gal. 0.64; 50 gal.: 0.627; 60 gal.: 0.789

UEF (min.) _____

Other (describe)[5,6] _____

Type _____ Efficiency (min.) _____

Equipment Efficiency ◯ Pass ◯ Fail

[1] Ducts & AHU installed "substantially leak free" per Section R403.3.2. Test required by either individuals as defined in Section 553.993(5) or (7), *Florida Statutes*, or individuals licensed as set forth in Section 489.105(3)(f), (g), or (i), *Florida Statutes*. The total leakage test is not required for ducts and air handlers located entirely within the building thermal envelope, and for additions where ducts from an existing heating and cooling system extended to the addition through unconditioned space are less than 40 linear ft.

[2] 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*.

[3] For electric storage volumes ≤ 55 gallons, minimum UEF = 0.9349 - (0.0001 * volume). For electric storage volumes > 55 gallons, minimum UEF = 2.2418 - (0.0011* volume).

[4] For natural gas storage volumes ≤ 55 gallons, minimum UEF = 0.692 - (0.0013 * volume). For natural gas storage volumes > 55 gallons, minimum UEF = 0.8072 - (0.0003 * volume).

[5] For electric tankless, min. UEF = 0.92. For natural gas tankless, min. UEF = 0.81.

[6] Referenced UEFs shown are for medium draw pattern value provided by manufacturer.

Requirements

Component	Section	Header	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 ≤ 2.0 cfm tested to ASTM E283. 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	☐
Programmable thermostat	R403.1.2	A programmable thermostat is required for the primary heating or cooling system.	☐
Air distribution system	R403.3.2 R403.3.4	Ducts shall be tested as per Section R403.3.2 by either individuals as defined in Section 553.993(5) or (7), *Florida Statutes*, or individuals licensed as set forth in Section 489.105(3) (f), (g) or (i), *Florida Statutes*. Air handling units are not allowed in attics.	☐
Water heaters	R403.5	Comply with efficiencies in Table C404.2. Hot water pipes insulated to ≥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.	☐
Cooling/heating equipment	R403.7	Sizing calculation performed & attached. Special occasion cooling or heating capacity requires separate system or variable capacity system.	☐
Swimming pools & spas	R403.10	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.	☐
Lighting equipment	R404.1	All permanently installed luminaires, excluding those in kitchen appliances, shall have an efficacy of at least 45 lumens-per-watt or shall utilize lamps with an efficacy of not less than 65 lumens-per-watt.	☐

Signatures

I hereby certify that the plans and specifications covered by this form are in compliance with the *Florida Building Code, Energy Conservation.*

Preparer signature & date

Preparer name

I hereby certify that this building is in compliance with the *Florida Building Code, Energy Conservation*.

Owner/agent signature & date

Owner/agent name

Review of plans and specifications covered by this form indicate compliance with the *Florida Building Code, Energy Conservation*. Before construction is complete, this building will be inspected for compliance in accordance with Section 553.908, F.S.

Code official signature & date

Code official name