

**Hawai'i State Model Energy Conservation Code**

**Proposed Amendments to the  
2018 International Energy Conservation Code**

**State Building Code Council**

**November 17, 2020**

Subchapter 1      Rules of General Applicability

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## SUBCHAPTER 1

### RULES OF GENERAL APPLICABILITY

**1 Purpose.** The purpose of this chapter is to adopt the state energy conservation code as required by section 107-25, Hawaii Revised Statutes (HRS)

**2 Scope.** This chapter sets forth minimum requirements for the design and construction of buildings for the effective use of energy and is intended to provide flexibility to allow the use of innovative approaches and techniques to achieve the effective use of energy.

**3 Definitions.** In this chapter, unless the context otherwise requires:

"ICC" means the International Code Council.

"IECC Section" means a section of a chapter of the *International Energy Conservation Code*.

"IECC" means the ICC, *International Energy Conservation Code*, 2015 edition, as copyrighted by the International Code Council.

**4 Adoption of the *International Energy Conservation Code*.** The *International Energy Conservation Code, 2015 2018 Edition* as copyrighted and published in 2015 2018 by International Code Council, Incorporated, 500 New Jersey Avenue, 6<sup>th</sup> Floor, Washington, DC 20001, is adopted by reference and made a part of this chapter. This incorporation by reference includes all parts of the *International Energy Conservation Code* subject to the amendments hereinafter set forth. ~~The appendices of the ICC, IECC are not adopted except as provided in this chapter.~~

**5 Permit authorization.** Each county may, by ordinance, require that a permit be obtained from the building official for any area regulated by this chapter.

## SUBCHAPTER 2

The ~~2006~~ 2015 Energy Conservation Code of the State of Hawaii shall be deleted in its entirety and replaced by the ~~2015~~ 2018 International Energy Conservation Code with the proposed amendments.

### AMENDMENTS TO THE ~~2015~~ 2018 ICC INTERNATIONAL ENERGY CONSERVATION CODE

**6 Title.** IECC 101.1 is amended to read as follows:

**101.1 Title.** This code shall be known as the Energy Conservation Code of the State of Hawai'i and shall be cited as such. It is referred to herein as "this code."

**7 General.** IECC section C103.1 is deleted in its entirety and replaced with the following:

**103.1 General.** When the requirements in this code apply to a building as specified in Section C101.4, plans, specifications or other construction documents submitted for a building, electrical or plumbing permit required by the jurisdiction shall comply with this code and shall be prepared, designed, approved and observed by a design professional. The responsible design professional shall provide on the plans a signed statement certifying that the project is in compliance with this code.

**Exception:** Any building, electrical or plumbing work that is not required to be prepared, designed, approved or observed by a licensed professional architect or engineer pursuant to chapter 464 Hawaii Revised Statutes.

**8 Low-energy use buildings.** IECC section C402.1.1 is amended to read as follows:

**C402.1.1 Low-energy use buildings.** The following low energy buildings, or portions thereof separated from the remainder of the building by building thermal envelope assemblies complying with this section, shall be exempt from the building thermal envelope provisions of Section C402.

1. Those with a peak design rate of energy usage less than 3.4 Btu/h-ft<sup>2</sup> (10.7 W/m<sup>2</sup>) or 1.0 watt per square foot (10.7 W/m<sup>2</sup>) of floor area for space conditioning purposes.
2. **Unconditioned space that does not contain habitable space. (This representation is misleading and does not show original 2018 Model IECC language. This proposed amendment DID NOT come from the industry, and DOES NOT reduce costs)**
3. Greenhouses.

**9 Thermal resistance of above-grade walls.** IECC section C402.2.3 is amended to read as follows:

~~**C402.2.3 Thermal resistance of above-grade walls**~~

**C402.2.2 Above Grade Walls.** The minimum thermal resistance (R-value) of materials installed in the wall cavity between framing members and continuously on the walls shall be as specific in Table ~~C402.3~~ C402.1.3, based on framing type and construction materials used in the wall assembly.

**Exceptions:**

Continuous insulation for wood and metal framed walls are not required when one of the following conditions are met:

1. Walls have a covering with a reflectance of  $\geq 0.64$ ; or
2. Walls have overhangs with a projection factor equal to or greater than 0.3. The projection factor is the horizontal distance from the

surface of the wall to the farthest most point of the overhang divided by the vertical distance from the first-floor level to the bottom most point of the overhang.

3. Concrete, concrete masonry units (CMU) and similar mass walls are 6 inches or greater in thickness.

The R-value of integral insulation installed in concrete masonry units shall not be used in determining compliance with Table C402.1.3.

Mass walls shall include walls:

1. Weighing not less than 35 psf (~~170 kg/m<sup>2</sup>~~) (~~171~~ kg/m<sup>2</sup>) of wall surface area.
2. Weighing not less than 25 psf (~~120 kg/m<sup>2</sup>~~) (~~122~~ kg/m<sup>2</sup>) of wall surface area where the material weight is not more than 120 pcf (1900 kg/m<sup>3</sup>).
3. Having a heat capacity exceeding 7 Btu/ft<sup>2</sup>·°F (144 ~~cal~~ kJ/m<sup>2</sup>·K).
4. Having a heat capacity exceeding 5 Btu/ft<sup>2</sup>·°F (103 kJ/m<sup>2</sup>·K), where the material weight is not more than 120 pcf (1900 kg/m<sup>3</sup>).

**10 Area-weighted SHGC.** Section C402.4.3.5 is added to the IECC to read as follows:

**C402.4.3.5 Area-weighted SHGC.** In commercial buildings, an area-weighted average of fenestration products shall be permitted to satisfy SHGC requirements.

**Table C402.4 Building Envelope Fenestration Maximum U-Factor and SHGC Requirements<sup>b</sup>.**

<sup>b</sup>. Jalousie windows are excepted from SHGC requirements.

**11 Door switches.** Section C403.2.4.2.3 is added to the IECC to read as follows:

**C403.2.3 2.4 Door switches.** Opaque and glass doors opening to the outdoors in hotel and motel sleeping units, guest suites and time-share condominiums, shall be provided with controls that disable the mechanical cooling, or reset

the cooling setpoint to 90°F or greater within five minutes of the door opening. Mechanical cooling may remain enabled if the outdoor air temperature is below the space temperature.

**12 Specific application controls.** IECC section C405.2.4 is already included in 2018 IECC:

~~**C405.2.4 Specific application controls.** Specific application controls shall be provided for the following:~~

- ~~1. Display and accent light shall be controlled by a dedicated control that is independent of the controls for other lighting within the room or space.~~
- ~~2. Lighting in cases used for display case purposes shall be controlled by a dedicated control that is independent of the controls for other lighting within the room or space.~~
- ~~3. Hotel and motel sleeping units, guest suites and time-share condominiums shall have a master control device that is capable of automatically switching off all installed luminaires and switched receptacles within 20 minutes after all occupants leave the room.~~

~~**Exception:** Lighting and switched receptacles controlled by captive key systems.~~

- ~~4. Supplemental task lighting, including permanently installed under shelf or under cabinet lighting, shall have a control device integral to the luminaires or be controlled by a wall-mounted control device provided that the control device is readily accessible.~~
- ~~5. Lighting for nonvisual applications, such as plant growth and food warming, shall be controlled by a dedicated control that is independent of the controls for other lighting within the room or space.~~
- ~~6. Lighting equipment that is for sale or for demonstrations in lighting education shall be controlled by a dedicated control that is independent of the controls for other lighting within space.~~

**13 Sub-metering (Mandatory).** Section C405.10 is added to the IECC to read as follows:

**C405.10 Sub-metering (Mandatory).** In new buildings with tenants, metering shall be collected for the entire building and individually for each tenant occupying 1,000 ft<sup>2</sup> (total enclosed and unenclosed) (93 m<sup>2</sup>) or more. Tenants shall have access to data collected for their space. A tenant is defined as "one who rents or leases from a landlord."

**14 Compliance.** IECC section C501.4 is amended to read as follows:

**C501.4 Compliance.** *Alterations, repairs, additions* and changes of occupancy to, or relocation of, existing buildings and structures shall comply with the provisions and regulations for *alterations, repairs, additions* and changes of occupancy or relocation, as adopted by the authorities having jurisdiction.

**15 Roof replacement.** Section C503.3.1 is amended to read as follows (note that options are provided for this amendment):

~~**C503.3.1 Roof replacement.** *Roof replacements shall comply with Table C402.1.3 or C402.1.4 where the existing roof assembly is uninsulated and is part of the building thermal envelope.*~~

**C503.3.1 Roof replacement.** Roof replacement shall comply with Section C402.1.3, C402.1.4, C402.1.5 or C407 where the existing roof assembly is part of the *building thermal envelope* and contains insulation entirely above the roof deck. Replacement of uninsulated roofs shall include either initial reflectance  $\geq$  85% and aged reflectance  $\geq$  75% or at least two of the following:

1. EnergyStar compliant covering
2. Radiant barrier, or
3. Attic ventilation via solar fan(s), ridge ventilation or gable vents
4. Two or more exceptions in Section C402.3



**16 General.** IECC section R103.1 is deleted in its entirety and replaced with the following:

**R103.1 General.** When the requirements in this code apply to a building as specified in Section R101.4, plans, specifications or other construction documents submitted for a building, electrical or plumbing permit required by the jurisdiction shall comply with this code and shall be prepared, designed, approved and observed by a design professional. The responsible design professional shall provide on the plans a signed statement certifying that the project is in compliance with this code.

**Exception:** Any building, electrical or plumbing work that is not required to be prepared, designed, approved or observed by a licensed professional architect or engineer pursuant to chapter 464 Hawaii Revised Statutes.

**17 Compliance.** IECC section R401.2 is amended to read as follows:

**R401.2 Compliance.** Projects shall comply with one of the following:

1. Sections R401.3 through R404
2. Sections R405 and the provisions of Section R401 through R404 labeled "Mandatory."
3. An energy rating index (ERI) approach in Section R406.
4. The Tropical zone requirements in Section R401.2.1.

**Table R402.1.2 Insulation and Fenestration  
Requirements by Component**

**Sub-title - Mass Wall R-Value:  $\frac{3}{4}$  or NR<sup>j</sup>.**

CLIMATE ZONE	FENESTRATION U-FACTOR <sup>d</sup>	SKYLIGHT <sup>d</sup> U-FACTOR	GLAZED FENESTRATION SHGC <sup>d, e</sup>	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE <sup>f</sup>	FLOOR R-VALUE	BASEMENT <sup>c</sup> WALL R-VALUE	SLAB <sup>d</sup> R-VALUE & DEPTH	CRAWL SPACE <sup>c</sup> WALL R-VALUE
1	NR	0.75	0.25	30	13	3/4 or NR <sup>j</sup>	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.32	0.55	0.25	38	20 or 13+5 <sup>h</sup>	8/13	19	5/13 <sup>f</sup>	0	5/13
4 except Marine	0.32	0.55	0.40	49	20 or 13+5 <sup>h</sup>	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.30	0.55	NR	49	20 or 13+5 <sup>h</sup>	13/17	30 <sup>g</sup>	15/19	10, 2 ft	15/19
6	0.30	0.55	NR	49	20+5 <sup>h</sup> or 13+10 <sup>h</sup>	15/20	30 <sup>g</sup>	15/19	10, 4 ft	15/19
7 and 8	0.30	0.55	NR	49	20+5 <sup>h</sup> or 13+10 <sup>h</sup>	19/21	38 <sup>g</sup>	15/19	10, 4 ft	15/19

<sup>j</sup> •Exception: R-value for mass walls are not required if mass walls meet one of the following requirements:

1. have a reflectance  $\geq 0.64$ .
2. have overhangs with a projection factor  $\geq 0.3$ .
3. are  $\geq 6$  inches in thickness.

**18 Tropical zone.** IECC Section R401.2.1 is amended to read as follows:

**R401.2.1 Tropical zone.** *Residential buildings* in the tropical zone at elevations below 2,400 feet (731.5 m) above sea level shall be deemed to comply with this chapter where the following conditions are met:

1. Not more than one-half of the dwelling unit is air conditioned
2. The *dwelling unit* is not heated.
3. Solar, wind or other renewable energy source supplies not less than 90 percent of the energy for service water heating.
4. Glazing in *dwelling units* shall have a maximum *solar heat gain coefficient* as specified in Table R402.2.1.

**Table R402.2.1. Window SHGC Requirements**

Projection Factor of overhang from base of average window sill <sup>b</sup>	SHGC
< .30	.25
.30 - .50	.40
≥.50	N/A

<sup>b</sup> •Exception: North-facing windows with pf > .20 are exempt from the SHGC requirement. Overhangs shall extend 2 feet on each side of window or to nearest wall, whichever is less.

5. Skylights in dwelling units shall have a maximum U-factor as specified in Table R402.1.2.
6. Permanently installed lighting is in accordance with Section R404.
7. The roof/ceiling complies with one of the following options:
  1. Comply with one of the roof surface options in Table C402.3 and install R-13 insulation or greater.
  2. Install R-19 insulation or greater.

If present, attics above the insulation are vented and attics below the insulation are unvented.

**Exception:** The roof/ceiling assembly are permitted to comply with Section R407.

8. Roof surfaces have a minimum slope of  $\frac{1}{4}$  inch per foot of run. The finished roof does not have water accumulation areas.
9. Operable fenestration provides ventilation area equal to not less than 14 percent of the floor area in each room. Alternatively, equivalent ventilation is provided by a ventilation fan.
10. Bedrooms with exterior walls facing two different direction have operable fenestration or exterior walls facing two different directions.
11. Interior doors to bedrooms are capable of being secured in the open position.
12. A ceiling fan or ceiling fan rough-in is provided for bedrooms and the largest space that is not used as bedroom.
13. ~~Jalousie windows shall have an air infiltration rate of no more than 1.2 cfm per square foot (6.1 L/s/m<sup>2</sup>)~~
13. Walls, floors and ceilings separating air conditioned spaces from non-air conditioned spaces shall be constructed to limit air leakage in accordance with the requirements in Table R402.4.1.1.

**R401.3.1 Sampling.** For builders of multiple single family and multi-family units of similar construction type and envelope systems (i.e. production home building), air infiltration/duct testing may be completed by following Chapter 6 ("standard for Sampled Ratings"), of the current Residential Energy Service Network (RESNET) National Home Energy Rating System Standards.

**19 General (Prescriptive)** IECC section R402.1 is amended to read as follows:

**C402.1.1 Low-energy use buildings.** The following low energy buildings, or portions thereof separated from the remainder of the building by building thermal envelope assemblies complying with this section, shall be exempt from the building thermal envelope provisions of Section R402.

1. Those with a peak design rate of energy usage less than 3.4 Btu/h-ft<sup>2</sup> (10.7 W/m<sup>2</sup>) or 1.0 watt per square foot (10.7 W/m<sup>2</sup>) of floor area for space conditioning purposes.
2. **Unconditioned space that does not contain habitable space. (This representation is misleading and does not show original 2018 Model IECC language. This proposed amendment DID NOT come from the industry, and DOES NOT reduce costs)**

**20 Specific insulation requirements (Prescriptive).** IECC section R402.2 is amended to read as follows:

**R402.2 Specific insulation requirements (Prescriptive).** In addition to the requirements of Section R402.1, insulation shall meet the specific requirements of Sections R402.2.1 through R402.2.13.

**Exception:**

Above-grade walls and ceilings shall be permitted to comply with Section R407.

**R402.2.5 Mass walls.** Mass walls where used as a component of the building thermal envelope shall be one of the of the following:

1. Above-ground walls of concrete block, concrete, insulated concrete form, masonry cavity, brick but not brick veneer, adobe, compressed earth block, rammed earth, solid timber or solid logs.
2. Any wall having a heat capacity greater than or equal to 6 Btu/ft<sup>2</sup>·°F (123 kJ/m<sup>2</sup>·K).
3. ~~Concrete, CMU (concrete masonry units) and similar mass walls are 6 inches or greater in thickness.~~

Mass walls shall comply with the insulation requirements of Table R402.1.2 or the U-factor requirements of Table R402.1.4.

**Exception:** Insulation or R-value for mass walls, indicated in Table R402.1.2, is not required when one of the following conditions are met:

1. Walls have a covering with a reflectance greater than or equal to 0.64
2. Walls have overhangs with a projection factor greater than or equal to 0.3. The projection factor is the horizontal distance from the surface of the wall to the farthest most point of the overhang divided by the vertical distance from the first floor level to the bottom most point of the overhang.
3. Concrete, concrete masonry units (CMU) and similar mass walls are 6 inches or greater in thickness.

**R402.3.2 Glazed fenestration SHGC.** Fenestration shall have a maximum *solar heat gain coefficient* as specified in Table R402.1.2. An area-weighted average of fenestration products more than 50-percent glazed shall be permitted to satisfy the SHGC requirements.

*Dynamic glazing* shall be permitted to satisfy the SHGC requirements of Table R402.1.2 provided the ratio of the higher to lower labeled SHGC is greater than or equal to 2.4 and the *dynamic glazing* is automatically controlled to modulate the amount of solar gain into the space in multiple steps. *Dynamic glazing* shall be considered separately from other fenestration, and area-weighted averaging with other fenestration that is not *dynamic glazing* shall not be permitted.

**Exceptions:**

1. *Dynamic glazing* is not required to comply with this section when both the lower and higher labeled SHGC already comply with the requirements of Table R402.1.1.
2. Jalousie windows are excepted from SHGC requirements.

**21 Solar water heating.** Section R403.5.4 is added to the IECC to read as follows:

**R403.5.5 Solar water heating.** Solar water heating systems are required for new single-family residential construction, unless the chief energy officer of the Hawaii state energy office approves a variance pursuant to section 196-6.5, HRS. **(The proposed language is misleading and deceptive - it conceals the important fact that a variance is available. See the attached applicable statute, HRS**

196.5, which includes 4 lines relating to the solar water heater requirement and 26 lines relating to the VARIANCE.

~~23 Ceiling fans (mandatory). IECC section R404.2 is added to read as follows:~~

~~R404.2 Ceiling fans (mandatory). A ceiling fan or ceiling fan rough in is provided for bedrooms and the largest space that is not used as bedroom.~~

R403.6.2 Ceiling fans (mandatory). A ceiling fan or whole house fan is provided for bedrooms and the largest space that is not used as a bedroom, provided that the whole house mechanical ventilation system complies with the requirements of Table R403.6.1.

Exception: For production home building, ceiling fan junction boxes must be provided for bedrooms and the largest interior space that is not used as a bedroom, and ceiling fan equipment must be provided as a buyer's option.

**23 Simulated performance alternative.** IECC Table R405.5.2(1) is already included in 2018 IECC.

<b>Table R405.5.2(1)</b>		
<b>SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS</b>		
<b>BUILDING COMPONENT</b>	<b>STANDARD REFERENCE DESIGN</b>	<b>PROPOSED DESIGN</b>
Heating Systems	<p><del>{As proposed for other than electric heating without a heat pump, where the proposed design utilizes electric heating without a heat pump the standard reference design shall be an air source heat pump meeting the requirements of section C403 of the ICC Commercial Provisions.}</del></p> <p>Fuel type: same as proposed design</p> <p>Efficiencies:</p> <p>Electric: Air source heat pump with prevailing federal minimum standards</p> <p>Nonelectric furnaces: natural gas furnace with prevailing federal minimum standards</p> <p>Nonelectric boilers: natural gas boiler with prevailing federal minimum standards</p> <p>Capacity: sized in accordance with Section R403.7</p>	<p>As proposed</p> <p>As proposed</p> <p>As proposed</p> <p>As proposed</p> <p>As proposed</p>
Cooling systems	<p><del>{As proposed}</del></p> <p>Fuel type: Electric</p> <p>Efficiency: in accordance with prevailing federal minimum standards</p> <p>Capacity: sized in accordance with Section R403.7</p>	<p>As proposed</p> <p>As proposed</p>
Service water heating	<p><del>{As proposed}</del></p> <p>Fuel type: same as proposed design</p> <p>Efficiency: in accordance with prevailing federal minimum standards</p> <p>Use: Same as proposed design</p>	<p>As proposed</p> <p>As proposed</p> <p><del>gal/day = 30 + (10x N/br)</del></p>



**24 Points option.** Section R407 is added to the IECC to read as follows:

**SECTION R407**

**POINTS OPTION**

**R407.1 General (Prescriptive).** Above-grade walls and roofs are permitted to comply with the points option as an alternative to complying with Section R401.2.1 and R402.2.

**R407.2 Requirements.** One or more efficiency measures shall be selected for roof and *above-grade* wall systems from Table R407.1 that cumulatively equal or exceed 0 (zero) points.

As an alternative, *above-grade walls* and roofs are permitted to comply separately by scoring 0 (zero) or greater.

**TABLE R407.1**

**POINTS OPTION**

<b>Walls</b>		<b>Standard Home Points</b>	<b>Tropical Home Points</b>
<b>Wood Framed</b>			
	R-13 Cavity Wall Insulation	0	1
	R-19 Roof Insulation	-1	0
	R-19 Roof Insulation + Cool roof membrane or Radiant Barrier <sup>3</sup>	0	1
	R-19 Roof Insulation + Attic Venting <sup>2</sup>	0	1
	R-30 Roof Insulation	0	1
	R-13 Wall Insulation + high reflectance walls <sup>4</sup>	1	2
	R-13 Wall insulation + 90% high efficacy lighting and Energy Star Appliances <sup>5</sup>	1	2
	R-13 Wall Insulation + exterior shading wpf=0.3 <sup>6</sup>	1	2
	Ductless Air Conditioner	1	1
	1.071 X Federal Minimum SEER for Air Conditioner	1	1
	1.142 X Federal Minimum SEER for Air Conditioner	2	2
	No air conditioning installed	Not Applicable	2
	House floor area ≤ 1,000 ft <sup>2</sup>	1	1

	House floor area $\geq 2,500$ ft <sup>2</sup>	-1	-1
	Energy Star Fans <sup>8</sup>	1	1
	Install 1 kW or greater of solar electric	1	1
<b>Metal Framed</b>			
	R-13 +R 3 Wall Insulation	0	1
	R-13 cavity Wall insulation + R-0	-1	0
	R-13 Wall Insulation + high reflectance walls <sup>4</sup>	0	1
	R-13 wall insulation+ 90% high efficacy lighting and Energy Star Appliances <sup>5</sup>	1	2
	R-13 Wall Insulation + exterior shading wpf=0.3 <sup>6</sup>	0	1
	R-30 Roof Insulation	0	1
	R-19 Roof Insulation	-1	0
	R-19 + Cool roof membrane <sup>1</sup> or Radiant Barrier <sup>3</sup>	0	1
	R-19 Roof Insulation + Attic Venting <sup>2</sup>	0	1
	Ductless Air Conditioner <sup>7</sup>	1	1
	1.071 X Federal Minimum SEER for Air Conditioner	1	1
	1.142 X Federal Minimum SEER for Air Conditioner	2	2
	No air conditioning installed	Not Applicable	2
	House floor areas $\leq 1,000$ ft <sup>2</sup>	1	1
	House floor areas $\geq 2,500$ ft <sup>2</sup>	-1	-1
	Energy Star Fans <sup>7</sup>	1	1
	Install 1 kW or greater of solar electric	1	1
<b>Mass Walls</b>			
	R- 3/4 Wall Insulation	0	<u>1</u>
	R-0 Wall Insulation	-1	<u>0</u>
	R-0 Wall Insulation + high reflectance walls <sup>4</sup>	<u>0</u>	<u>1</u>
	R-0 Wall Insulation + 90% high efficacy lighting and Energy Star Appliances <sup>5</sup>	<u>1</u>	<u>2</u>
	R-0 Wall Insulation + exterior shading WPF = 0.3 <sup>6</sup>	<u>0</u>	<u>1</u>
	R-19 Roof Insulation	-1	<u>0</u>
	R-19 Roof Insulation + Cool roof membrane <sup>1</sup> or Radiant Barrier <sup>3</sup>	<u>0</u>	<u>1</u>
	R-19 Roof Insulation + Attic Venting	<u>0</u>	<u>1</u>

<u>R-30 Roof Insulation</u>	<u>0</u>	<u>1</u>
<u>Ductless Air Conditioner<sup>7</sup></u>	<u>1</u>	<u>1</u>
<u>1.071 X Federal Minimum SEER for Air Conditioner</u>	<u>1</u>	<u>1</u>
<u>1.142 X Federal Minimum SEER for Air Conditioner</u>	<u>2</u>	<u>2</u>
<u>No air conditioning installed</u>	<u>Not Applicable</u>	<u>2</u>
<u>House floor area ≤ 1,000 ft<sup>2</sup></u>	<u>1</u>	<u>1</u>
<u>House floor area ≥ 2,500 ft<sup>2</sup></u>	<u>-1</u>	<u>-1</u>
<u>Energy Star Fans<sup>7</sup></u>	<u>1</u>	<u>1</u>
<u>Install 1 kW or greater of solar electric</u>	<u>1</u>	<u>1</u>

1. Cool roof with three-year aged solar reflectance of 0.55 and 3-year aged thermal emittance of 0.75 or 3-year aged solar reflectance index of 64.
2. One cfm/ft<sup>2</sup> attic venting.
3. Radiant barrier shall have an emissivity of no greater than 0.05 as tested in accordance with ASTM E-408. The radiant barrier shall be installed in accordance with the manufacturer's installation instructions.
4. Walls with covering with a reflectance of ≥ 0.64.
5. Energy Star rated appliances include refrigerators, dishwashers, and clothes washers and must be installed for the Certificate of Occupancy.
6. The wall projection factor is equal to the horizontal distance from the surface of the wall to the farthest most point of the overhang divided by the vertical distance from the first floor level to the bottom most point of the overhang.
7. All air conditioning systems in the house must be ductless to qualify for this credit.
8. Install ceiling fans in all bedrooms and the largest space that is not used as a bedroom.

**25 Compliance.** IECC section R501.4 is amended to read as follows:

**R501.4 Compliance.** *Alterations, repairs, additions and changes of occupancy to, or relocation of, existing buildings and structures shall comply with the provisions and regulations for alterations, repairs, additions and changes of occupancy or relocation, as adopted by the authorities having jurisdiction.*

**26 Building envelope.** IECC section R503.1.1 is amended to read as follows:

**R503.1.1 Building envelope.**

5. Roofs without insulation in the cavity and where the sheathing or insulation is exposed during a roof replacement shall meet one of the following:

1. R-30 cavity insulation or the cool roof requirements in Section C402.3 for *residential buildings*.
2. R-19 cavity insulation or the cool roof requirements in Section C402.3 for Tropical Zone *residential buildings*.
  - a. When uninsulated roof sheathing is exposed during alteration, at least two of the following must be installed: Energy Star compliant roof covering;
  - b. Radiant barrier;
  - c. Attic ventilation via solar attic fans or ridge ventilation of gable ventilation; or
  - d. A minimum of two exceptions listed in C402.3.

Footnote to exception: Shake roofs on battens must be replaced with materials that result in equal or improved energy efficiency.