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STATE OF HAWAII

DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
STATE BUILDING CODE COUNCIL

P.O. BOX 119, HONOLULU, HAWAII 96810-0119

January 14, 2023

SUBJECT: State Energy Code Adoption
Adopting the 2021 International Energy Conservation Code (IECC) and Amendments

The attached document is the Hawai‘i State Energy Code Amendments to the 2021 IECC as adopted on December 15, 2022, by the State Building Code Council in accordance with HRS 107-24.

No later than December 15, 2023, the design of all State building construction must comply with the 2018 IECC and attached amendments to the code, in accordance with HRS 107-27.

No later than December 15, 2024, each county in the State of Hawai‘i must amend and adopt the 2018 IECC and attached amendments to the code, in accordance with HRS 107-28(a).

If by December 15, 2024, a county does not amend the 2021 IECC and attached amendments, it shall become applicable as an interim county energy code, in accordance with HRS 107-28(b).

State Building Code Council

Attached: Hawai‘i State Energy Code Amendments to the 2021 IECC

Hawai‘i State Energy Code

Amendments to the

~~2018~~ 2021 International Energy Conservation Code

State Building Code Council

Effective Date: December 15, ~~2018~~ 2022

Subchapter 1 Rules of General Applicability

Subchapter 2 Amendments to the ~~2018~~ 2021 *ICC International Energy Conservation Code*

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,* ~~2018~~ 2021 edition, as copyrighted by the International Code Council.

4 **Adoption of the International Energy Conservation Code.** The International Energy Conservation Code, ~~2018~~ 2021 Edition as copyrighted and published in ~~2018~~ 2021 by International Code Council, Incorporated, 500 New Jersey Avenue, 6th 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.

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 2018 Energy Conservation Code of the State of Hawaii shall be deleted in its entirety and replaced by the ~~2018~~ 2021 International Energy Conservation Code with the proposed amendments.

AMENDMENTS TO THE ~~2018~~ 2021 ICC INTERNATIONAL ENERGY CONSERVATION CODE

6 Title. IECC Section C101.1 is amended to read as follows:

C101.1 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 Sections C103 through C105 and C108 and C109 are hereby deleted in its their entirety.

8 Low energy use buildings and greenhouses.

(2) C402.1.1 is amended to read as follows:

Exemption: Unconditioned space that does not contain ~~conditioned~~ habitable space.

9 Table C402.1.3, *Opaque thermal envelope components minimum R-value method* is amended to read as follows:

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 specified in Table ~~C402.3~~ C402.1.3, based on framing type and construction materials used in the wall assembly.

Exceptions:
Continuous insulation for above grade walls and mass walls are not required when one of the following conditions are met:

a. Walls have a covering with an area-weighted average solar reflectance of ≥0.40; or
b. 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.
c. Concrete, CMU and similar mass walls are 6 inches or greater in thickness

10 TABLE 402.3 Minimum roof reflectance and emittance values, low-sloped roofs are amended as follows:

Three-year-aged solar reflectance index of ~~55~~ 75 and 3-year aged thermal emittance of ~~0.75~~ 0.80

Three-year-aged solar reflective index of ~~64~~ 75

11 Table C402.4 Building Envelope Fenestration Maximum U-Factor and SHGC Requirements[b] is added to the IECC to read as follows:

[b.] Jalousie windows are excepted from SHGC requirements.

12 ~~Door switches~~ Ventilation controls. Section~~C403.2.3~~ C403.7.6.2 is amended to read as follows:

~~C403.2.Door switches~~ C403.7.6.2 Ventilation controls

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.

13 C405.2 Lighting Controls

Subsection C405.2.(4) of the IECC, adopted by the Energy Code of the State of Hawaii, is amended by adding Exception #4 to read:

C405.2 Lighting controls.

Exception:

4. Spaces that use ~~90~~ 80 percent or less of the lighting power densities (designated watts per square foot), as specified in Table C405.3.2(1) and Table C405.3.2(2) are exempt from Sections C405.2.2 (Time switch controls) and C405.2.3 (Daylight-responsive controls).

14 Reduced Lighting power Subsections C406.3 and C406.3.3 of the IECC, adopted by the Energy Code of the State of Hawaii, are amended to read:

C406.3 Reduced lighting power. The total connected interior lighting power (watts) shall be calculated in accordance with Subsection C405.3.1 shall be less than ~~90~~ 80 percent of the lighting power density allowance specified in the code, in accordance with Subsection C405.3.2.

C406.3.3 Lamp efficacy Not less than 95 percent of the permanently installed lighting, excluding kitchen appliance light fixtures serving dwelling units and sleeping units shall be provided by lamps with an efficacy of not less than ~~65~~ 70 lumens per watt or luminaires with an efficacy of not less than ~~45~~ 55 lumens per watt.

15 Adding Section C409. Section C409 is added to read:

C409 Electric vehicle infrastructure. All newly created parking stalls for newly constructed residential multi-unit and commercial buildings must comply with one of the electric vehicle readiness compliance pathways specified in Section C409.1 (Prescriptive) or Section C409.2 (Point-based). For purposes of Section C409.1, Section C409.2, and Tables C409.1 and C409.2, the following apply:

(a) **"Common area stall"** means any parking stall that is not intended to be assigned, sold, leased, or attached contractually to a specific dwelling unit or commercial establishment;

(b) **"Dedicated stall"** means any parking stall that is intended to be assigned, sold, leased, or attached contractually to a specific dwelling unit or commercial establishment; and

(c) When computation of the number of required vehicle charger ready stalls results in a fractional number with a fraction of 0.5 or greater, the number of required vehicle charger ready stalls required will be the next highest whole number.

C409.1 Baseline percentage electric vehicle readiness compliance path. Newly-constructed parking stalls for residential multi-unit buildings that add eight or more new parking stalls must be electric vehicle charger ready for at least 25 per cent of the newly-added parking stalls. Newly constructed parking stalls for commercial buildings that add 12 or more new parking stalls must be electric vehicle charger ready for at least 25 per cent of the newly-added parking stalls. Construction Plans must reflect these developments.

Exceptions:

1. For retail establishments, as defined in ROH Chapter 21, the total number of newly added parking stalls that would otherwise be required to be electric vehicle charger ready to comply with the baseline requirements under this subsection will be reduced by 20 per cent.

2. For affordable housing units offered for sale or rent to households earning more than 100 per cent of the area median income for Honolulu, up to 140 per cent of the area median income for Honolulu, the total number of newly added parking stalls that would otherwise be required to be electric vehicle charger ready to comply with the baseline requirements under this Section will be reduced by 20 per cent.

3. For affordable housing units offered for sale or rent to households earning 100 per cent or below of the area median income for Honolulu, none of the total number of newly added parking stalls that would otherwise be required to be electric

vehicle charger ready to comply with the baseline requirements under this subsection will be required.

Table C409.1
CHARGE METHODS ELECTRICAL RATING

Charge Method	Normal Supply Voltage (Volts)	Maximum Current (Amps – Continuous)	Supply power
AC Level 2 (enclosed attached residential garages only)	208 to 240V AC, 1-phase	Minimum 16A	208/240V AC/20-100A (16-80A continuous)
AC Level 2	208 to 240V AC, 1-phase	Minimum 32A	208/240V AC/40-100A (32-80A continuous)

C409.2 Points-based electric vehicle readiness compliance path. Newly-constructed parking stalls for residential multi-unit buildings that add eight or more parking stalls must be equipped to achieve no less than one point for every four parking stalls based on the EV charger capacity requirements and values listed in Table C409.2. Newly-constructed parking stalls for commercial buildings that add twelve or more parking stalls must be equipped to achieve no less than one point for every four parking stalls based on the capacity requirements and values listed in Table C409.2. Construction plans must demonstrate that the stalls are equipped to achieve no less than one point for every four parking stalls based on the capacity requirements and values listed in Table C406.8.2.

Retail establishments, as defined in ROH Chapter 21, may only qualify for
compliance points under Table C409.2 in the following two categories:

(a) Dedicated EV Ready Stalls, or

(b) Common Area Stall with EV Charging Equipment Installed.

Exceptions:

1. For retail establishments, as defined in ROH Chapter 21, the total number of points that would otherwise be required to comply with the points-based requirements under this subsection will be reduced by 20 per cent.

For affordable housing units offered for sale or rent to households earning more than 100 per cent of the area median income for Honolulu, up to 140 per cent of the area median income for Honolulu, the total number of points that would otherwise be required to comply with the points-based requirements under this subsection will be reduced by 20 per cent.

3. For affordable housing units offered for sale or rent to households earning 100 per cent or below of the area median income for Honolulu, none of the total number of points that would otherwise be required to comply with the points-based requirements under this subsection will be required.

Table C409.2.
ELECTRIC VEHICLE READINESS POINT-BASED COMPLIANCE VALUES

			Compliance Points		
Electric Vehicle Charger Capacity Level	**Charging Rate (kW) at 208 Vac**	**Time to charge 50 kW battery (hrs)**	**Dedicated EV Ready Stalls**	**Common Area EV Ready Stalls**	**Common Area Stall w/ EV Charging Equipment Installed**
Level 2, Minimum 16A	3.4	15	1 (in enclosed attached garage)	N/A	N/A
Level 2, Minimum 32A	6.7	7.5	1	4	7
Level 2, 64A to 80A	13.3	3.8	1	7	14
DCFC 50 kW (480/277 Vac 3-phase)	50.0	1.0	1	25	50

16 Existing Buildings IECC Section ~~C501.4~~ C503.1 Roof replacement is amended to read as follows:

~~**C501.4 Compliance**~~ **C503.2.1 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 ≥ 85% and aged reflectance ≥75% or at least one of the following:

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

17 General. Section ~~R401.2.6~~ R401.3 Sampling is amended to read as follows:

~~**R401.2.6**~~ **R 401.3.Sampling.** For builders of multifamily 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.

18 Insulation minimum R-values and fenestration requirements by component. IECC Table R402.1.~~2~~ 3 amends the table as follows:

Table R402.1.~~2~~ 3 of the IECC, adopted by the Energy Code of the State of Hawaii, is amended by adding Footnotes "j" (mass walls, "l"(floor insulation) and "m" (SHGC shading, fenestration shading to read:

TABLE R402.1.3
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION U-FACTOR[b]	SKYLIGHT[b] U-FACTOR	GLAZED FENESTRATION SHGC[b,e]	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE	FLOOR R-VALUE	BASEMENT' WALL R-VALUE	SLAB[d] R-VALUE & DEPTH	CRAWL SPACE` WALL R-VALUE
1	NR	0.75	0.25	30	13	¾ or NR[j]	NR[l]	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.35	0.55	0.25	38	20 or 13+5[h]	8/13	19	5/13[f]	0	5/13
4 except Marine	0.35	0.55	0.40	49	20 or 13+5[h]	8/13	19	10/13	10,2 ft	10/13
5 and Marine 4	0.32	0.55	NR	49	20 or 13+5[h]	13/17	30[g]	15/19	10, 2 ft	15/19
6	0.32	0.55	NR	49	20+5[h] or 13+10[h]	15/20	30[g]	15/19	10,4 ft	15/19
7 and 8	0.32	0.55	NR	49	20+5[h] or 13+10[h]	19/21	30[g]	15/19	10,4 ft	15/19

For SI: 1 foot = 304.8 mm.
a. 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.
b. 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.
c. "15/19" means R-15 continuous insulation on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. "15/19" shall be permitted to be met with R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulation on the interior or exterior of the home. "10/13" means R-10 continuous insulation on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall.
d. 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.
e. There are no SHGC requirements in the Marine Zone.
f. Basement wall insulation is not required in warm-humid locations as defined by Figure R301.1 and Table R301.1.
g. Alternatively, insulation sufficient to fill the framing cavity, R-19 minimum.
h. The first value is cavity insulation, the second value is continuous insulation, so "13+5" means R-13 cavity insulation plus R-5 continuous insulation.
i. The second *R*-value applies when more than half the insulation is on the interior of the mass wall. Therefore, as an example, "3/4 means R-4 cavity insulation is on the interior of the mass wall.
j. Exception: R-value for mass walls are not required if mass walls meet all of the following requirements:
(1) have a solar reflectance ≥ 0.40 or greater,
(2) have overhangs with a projection factor ≥ 0.3,
~~(3) Concrete, CMU and similar mass walls are 6 inches or greater in thickness~~
k. Exemption: Jalousie windows are exempt from SHGC requirements.
l. Floor insulation is unnecessary in Hawaii's mild climate. Insulation adds to construction costs.

m. Exception:
Above-grade walls and roof/ceilings shall be

permitted to comply with Section R407.

Table R402.1 Glazed fenestration SHGC window requirements, is added as footnote m, to read as follows:

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

19 R402.2 Specific insulation requirements.
An exemption to R402.2 is added to read as follows:
Ceiling and wall requirements may use R 407 as an alternate compliance path.

20 Section Mass Walls R402.2.5 Mass walls is amended to read as follows:
Mass walls where used as a component of the building thermal envelope shall be one of the following:

a. Above-ground walls with a covering a covering with an area weighted average solar reflectance of ≥0.40 of concrete block, (concrete masonry units) CMU, concrete, insulated concrete form, masonry cavity, brick but not brick veneer, adobe, compressed earth block, rammed earth, solid timber or solid logs.
b. Any wall having a heat capacity greater than or equal to 6 Btu/ft^2·°F (123 kJ/m^2·K).
c. 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.

21 Glazed Fenestration SHGC. IECC Section R402.3.2 Glazed fenestration SHGC is added to read as follows:

Exceptions:
2. Jalousie windows are excepted from SHGC requirements.

22 Solar water heating. Section R403.5.4 is added to read as follows:

R403.5.4 Solar water heating. Solar water heating systems are required for new single-family residential construction pursuant to section 196-6.5 HRS

23 R403.6.2 Section R403.6.2.3 Ceiling fans, is amended by adding Subsection 402.6.2.3 to read as follows:
A ceiling fan or whole house fan is provided for bedrooms and the largest space that is not used as a bedroom.

24 Section R404, Solar conduit and electrical panel readiness is added to read as follows:

R404.4 Solar conduit and electrical panel readiness. Requires new homes to include plans for solar PV equipment and install conduit and reserve panel capacity for future PV installation. Construction documents shall indicate a location for inverters, metering equipment, battery equipment, energy storage equipment, and other equipment necessary to interconnect a residence with on-site solar energy generation facilities with the electrical grid in compliance with applicable laws, statutes, and utility tariffs. Construction documents shall indicate a pathway for routing of conduit from the solar panel location to the point of interconnection with electrical service. New single-family detached dwellings, two-family detached dwellings, and duplexes shall install for each residence an electrical panel with reserved space to accommodate not less than a five Kilowatt (AC) photovoltaic system. New multifamily dwellings shall install an electrical panel that includes space reserved to accommodate a photovoltaic system: (1) sized to serve common area electrical loads, or (2) sized to the roof space available. The reserved space shall be clearly labeled as solar PV ready. All feeders and electrical distribution equipment, including switchgear, switchboards, and panel boards that will be fed simultaneously by the electrical grid and other power sources shall be sized to support the installation of future solar energy generation systems per the interconnection requirements of the Electrical Code. New residential buildings shall also install conduit not less than one and one-half inches to provide a pathway from the electrical panel to the inverter location and from the inverter location to the underside of the roof sufficient to allow future installation of solar equipment. If conduits are to be installed between separate buildings or other structures, construction documents shall provide sufficient details to show that compliance with the Electrical Code's restrictions on the number of power supplies to each building or other structure has been examined.

25 Points option. Section R407 is amended to read as follows:

R407 Tropical Climate Region Compliance Path

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 *occupied space* 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 habitable has a solar heat gain coefficient (SHGC) of less than or equal to of 0.25 or has an overhang with a projection factor equal to or greater than 0.30.
   Exemption: Jalousie windows are excepted from SHGC requirements.
5. Permanently installed lighting is in accordance with Section R404.
6. The exterior roof surface complies with one of the

options in Table C402.3 in the International Energy Conservation Code-Commercial Provisions or the roof or ceiling has insulation with an R-value of R-15 or greater. Where attics are present, attics above the insulation are vented and attics below the insulation are unvented.

7. Roof surfaces have a minimum slope of ¼ inch per foot of run. The finished roof does not have water accumulation areas.
8. Operable fenestration provides ventilation area equal to not less than 14 percent of the floor area in each room. Alternatively, ventilation area of not less than 8 percent of the floor area is permitted provided equivalent ventilation is provided by a ventilation fan.
9. Bedrooms with exterior walls facing two different direction have operable fenestration or exterior walls facing two different directions.
10. Interior doors to bedrooms are capable of being secured in the open position.
11. A ceiling fan or ceiling fan rough-in is provided for bedrooms and the largest space that is not used as bedroom.
12. 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. Unconditioned spaces are exempted from air leakage requirements.

R407.3 General. Above-grade walls and roof/ceiling assemblies are permitted to comply with the points option as an alternative to complying with Section R401.2.1 and R402.2.

R407.4 Requirements. Three or more efficiency measures shall be selected for roof/ceiling and *above-grade* wall systems from Table R407.1 that cumulatively equal or exceed 2 (two) points.

As an alternative, *above-grade walls* and roof/ceilings are permitted to comply separately by scoring 2 (two) points or greater

TABLE R407.1 POINTS OPTION

Walls		**Standard Home Points**	**Tropical Home Points**
Wood Framed			
	~~R-13 Cavity Wall Insulation~~	0	1
	R-19 Roof/ceiling Insulation	-1	0
	~~R-19 Roof/ceiling Insulation~~ + Cool roof membrane or Radiant Barrier[3]	0	1
	R-19 Roof/ceiling Insulation + Attic Venting[2]	0	1
	R-30 Roof/ceiling Insulation	0	1
	R-13 Wall Insulation + high reflectance walls[4]	1	2

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

	R-0 Wall Insulation + 90% high efficacy lighting and Energy Star Appliances[5]	1	2
	R-0 Wall Insulation + exterior shading WPF = 0.3[6]	0	1
	R-19 Roof/ceiling Insulation	-1	0
	~~R-19 Roof/ceiling Insulation~~ + Cool roof membrane[1] or Radiant Barrier[3]	0	1

	R-19 Roof Insulation + Attic Venting	0	1
	R-30 Roof Insulation	0	1
	Ductless Air Conditioner[7]	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^2	1	1
	House floor area ≥ 2,500 ft^2	-1	-1
	Energy Star Fans[8]	1	1
	Install 1 kW or greater of solar electric	1	1

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^2 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 solar reflectance of ≥ ~~0.64~~ .40
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 or whole house fans in all bedrooms and the largest space that is not used as a bedroom.

25 Building envelope. IECC Section R503.1.1 is amended to read as follows:

R503.1.1 Building envelope.
Roofs without insulation in the cavity and where the sheathing or insulation is exposed during reroofing shall be insulated above or below sheathing or 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 C 402.3 for Tropical Zone residential building. Comply with R407.2(6)

3~~.When uninsulated roof is exposed during alteration~~. Shall install two or more of the following

i. Energy Star compliant roof covering,
ii. Radiant barrier,
iii. Attic ventilation via solar attic fans or ridge ventilation of gable ventilation; or
iv. A minimum of one exception listed in C402.3.

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