

COUNCIL OF THE COUNTY OF MAUI

CLIMATE ACTION, RESILIENCE, AND ENVIRONMENT COMMITTEE

November 4, 2022

**Committee
Report No. _____**

Honorable Chair and Members
of the County Council
County of Maui
Wailuku, Maui, Hawaii

Chair and Members:

Your Climate Action, Resilience, and Environment Committee, having met on December 15, 2021, January 26, 2022, September 14, 2022, and October 19, 2022, makes reference to the following:

1. County Communication 21-451, from Councilmember Kelly Takaya King, relating to the Hawai'i State Energy Conservation Code.
2. Bill 153 (2022), entitled "A BILL FOR AN ORDINANCE REPEALING CHAPTER 16.16B, MAUI COUNTY CODE, AND ESTABLISHING A NEW CHAPTER 16.16C, MAUI COUNTY CODE, RELATING TO THE ENERGY CODE."

Bill 153's purpose is to adopt the Hawai'i State Energy Code, with modifications specific to the County of Maui.

Your Committee notes, in accordance with Section 107-28(a), Hawai'i Revised Statutes ("HRS"), each county may amend the State Energy Code as it applies to their respective jurisdiction, without an approval from the State Building Code Council, within two years after the adoption of the State Energy Code. The deadline for counties to adopt their energy codes is December 15, 2022, or the State Energy Code will become applicable as an interim county energy code in accordance with Section 107-28(b), HRS.

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Your Committee notes the Department of Public Works opted not to propose any modifications to the State Energy Code.

A representative from the Department of the Corporation Counsel said, if the modifications are not made to the State Energy Code prior to the deadline, the County would not be able to make any changes after that date. However, if the County adopts a modified code prior to that date, the County can make additional modifications to the State Energy Code even after December 15, 2022.

Your Committee heard from experts in green building and electrical vehicles who proposed amendments to the State Energy Code including adding requirements for electric vehicle stalls in new residential and commercial construction; updating the testing and certification language for residential construction; and increasing the elevation included in the tropical zone exemption from 2,400 feet to 5,000 feet.

After further discussion with these resources, your Committee agreed to amend the bill as follows:

- Mandate solar readiness for new commercial and residential construction.
- Include a Zero Net Energy Requirement for homes over 5,000 square feet.
- Apply the certificate requirement to the tropical exemption.
- Remove the photovoltaic requirement for electric vehicle stalls.
- Remove the points pathway for electric vehicle readiness compliance.

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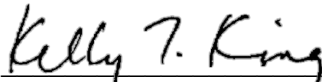
- Add a new section amending the insulation and fenestration criteria for Floor R-Value in Climate Zones 1 and 2 from 13 to 0.

Your Committee voted 6-0 to recommend passage of Bill 153, CD1, (2022) on first reading. Committee Chair King, Vice-Chair Sinenci, and members Johnson, Lee, Molina, and Paltin voted “aye.” Committee member Sugimura was excused.

Your Committee is in receipt of Bill 153, CD1 (2022), incorporating your Committee’s recommended revisions and nonsubstantive revisions.

Your Climate Action, Resilience, and Environment Committee RECOMMENDS that Bill 153, CD1 (2022), as revised herein and attached hereto, entitled “A BILL FOR AN ORDINANCE REPEALING CHAPTER 16.16B, MAUI COUNTY CODE, AND ESTABLISHING A NEW CHAPTER 16.16C, MAUI COUNTY CODE, RELATING TO THE ENERGY CODE” be PASSED ON FIRST READING and be ORDERED TO PRINT.

This report is submitted in accordance with Rule 8 of the Rules of the Council.



KELLY TAKAYA KING, Chair

care:cr:22067aa:ljcm

ORDINANCE NO. _____

BILL NO. 153, CD1 (2022)

A BILL FOR AN ORDINANCE REPEALING CHAPTER 16.16B, MAUI COUNTY CODE, AND ESTABLISHING A NEW CHAPTER 16.16C, MAUI COUNTY CODE, RELATING TO THE ENERGY CODE

BE IT ORDAINED BY THE PEOPLE OF THE COUNTY OF MAUI:

SECTION 1. Chapter 16.16B, Maui County Code, is repealed.

SECTION 2. The “Hawai‘i State Energy Code,” which adopts, with modifications, the “2018 International Energy Conservation Code” as published and copyrighted by the International Code Council, Inc., 500 New Jersey Avenue, NW, 6th Floor, Washington, DC, 20001, is adopted, subject to the provisions of Chapter 16.16C, Maui County Code.

SECTION 3. Title 16, Maui County Code, is amended by adding a new chapter to be appropriately designated and to read as follows:

“Chapter 16.16C

ENERGY CODE

Sections:

16.16C.010	Hawai‘i State Energy Code incorporated.
16.16C.C101.6	Subsection C101.6 added.
16.16C.C405.10	Subsection C405.10 added.
16.16C.C406.1	Subsection C406.1 amended
16.16C.C406.10	Subsection C406.10 added.
16.16C.R101.6	Subsection R101.6 added.
16.16C.R401.2	Subsection R.401.2 amended.
16.16C.R401.2.1	Subsection R401.2.1 amended.
16.16C.R401.3	Subsection R401.3 amended.
16.16C.R402.1	Subsection R402.1 amended.

- 16.16C.R401.2.1.2 Subsection R401.2.1.2 amended.
- 16.16C.R402.4.1.2 Subsection R402.4.1.2 amended.
- 16.16C.R404.2 Subsection R404.2 added.
- 16.16C.R404.3 Subsection R404.3 added.

16.16C.010 Hawai'i State Energy Code incorporated. The Hawai'i State Energy Code Amendments to the 2018 International Energy Conservation Code as adopted by the State Building Code Council on December 15, 2020, in accordance with section 107-24, Hawaii Revised Statutes, which adopts, with modifications, the "2018 International Energy Conservation Code" as published and copyrighted by the International Code Council, Inc., 500 New Jersey Avenue, NW, 6th Floor, Washington, DC, 20001 is made a part of this chapter, subject to the amendments set forth in this chapter.

16.16C.C101.6 Subsection C101.6 added. Section C101 of the Hawai'i State Energy Code is amended to by adding a new subsection C101.6 to read as follows:

C101.6 Appendices. Provisions in the appendices will not apply unless specifically adopted. Appendix CA, including any amendments adopted by this jurisdiction, is adopted and incorporated into and made a part of this code.

16.16C.C405.10 Subsection C405.10 added. Section C405 of the Hawai'i State Energy Code is amended to by adding a new subsection C405.10 to read as follows:

C405.10 Solar-readiness (Mandatory). New commercial construction must comply with Appendix CA.

16.16C.C406.1 Subsection C406.1 amended. Subsection C406.1 of the Hawai'i State Energy Code is amended to read as follows:

C406.1 Requirements. In addition to the requirements specified in subsection C406.10 ("Electric vehicle infrastructure"), buildings must comply with at least one of the following:

1. More efficient HVAC performance under section C406.2.
2. Reduced lighting power under section C406.3.
3. Enhanced lighting controls under section C406.4.
4. On-site supply of renewable energy under section C406.5.
5. Provision of a dedicated outdoor air system for certain HVAC equipment under section C406.6.
6. High-efficiency service water heating under section C406.7.

7. Enhanced envelope performance under section C406.8.

8. Reduced air infiltration in accordance with section C406.9.

16.16C.C406.10 Subsection C406.10 added. Section C406 of the Hawai'i State Energy Code is amended to by adding a new subsection C406.10 to read as follows:

C406.10 Electric vehicle infrastructure. All newly created parking stalls for newly constructed residential multiunit and commercial buildings must comply with one of the electric vehicle readiness compliance pathways specified in subsection C406.10.1.

For purposes of subsection C406.10.1, the following apply:

1. "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.

2. "Dedicated" means any parking stall that is intended to be assigned, sold, leased, or attached contractually to a specific dwelling unit or commercial establishment.

3. "Retail establishment" means an establishment engaged in the sale of commodities or goods to the consumer and may include display rooms and incidental manufacturing of goods for retail sale on premises only. Typical retail establishments include grocery and specialty food stores, general department stores, drug and pharmaceutical stores, hardware stores, pet shops, appliance and apparel stores, motorized scooter and bicycle sales and rentals, and other similar retail activities. This term also includes establishments where food or drink is sold on the premises for immediate consumption but which lack appropriate accommodations for on-premise eating and drinking. The term does not include open storage yards for new or used building materials, yards for scrap, salvage operations for storage or display of automobile parts, service stations, repair garages, or veterinary clinics and hospitals.

4. When computing 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.

C406.10.1. Baseline percentage electric vehicle readiness compliance path.

1. Newly constructed parking stalls for newly constructed residential multi-unit buildings that add eight or more new parking stalls must ensure 70 percent of all newly added parking stalls are electrical vehicle capable. At least 20 percent of the newly added parking stalls must be electric vehicle charger ready, and at least 10 percent must have electrical vehicle chargers in place and operational.

2. Newly constructed parking stalls for newly constructed commercial buildings that add 10 or more new parking stalls ensure 40 percent of all newly added parking stalls are electrical vehicle capable and at least 10 percent must have electrical vehicle chargers in place and operational.

3. If a building is being altered and the work area exceeds 50 percent of the original building area or more than 10 parking spaces are being substantially modified, this construction is subject to the electrical vehicle infrastructure requirements for both residential and commercial buildings.

4. As used in this section “electric vehicle charger ready” means that sufficient wire, conduit, electrical panel service capacity, overcurrent protection devices, and suitable termination points are provided to connect to a charging station capable of providing simultaneously and AC Level 2 charge per required parking stall. Charge method electrical ratings are provided in table C406.10.1, “electrical vehicle capable” means that the conduit is provided to connect the required parking stall to a charging station.

5. All installed chargers must be operational and must remain operational.

Exceptions: 1. Multi-use developments and commercial buildings will be allowed to substitute up to 7 AC Level 2 charging spaces with one DC fast-charging space with a minimum of 20kW.

2. For retail establishments, 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 percent.

3. For affordable housing units offered for sale or rent to households earning more than 100 percent of the area median income for Maui County, up to 140 percent of the area median income for Maui County, 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 50 percent.

4. For affordable housing units offered for sale or rent to households earning 100 percent or below of the area

median income for Maui County, 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 C.406.10.1
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 30A	208/240VAC/20-100A (16A-80A continuous)
AC Level 2	208 to 240V AC, 1-phase	Minimum 32A	208/240VAC/40-110A (32A-80A continuous)

16.16C.R101.6 Subsection R101.6 added. Section R101 of the Hawai'i State Energy Code is amended to by adding a new subsection R101.6 to read as follows:

R101.6 Appendices. Provisions in the appendices will not apply unless specifically adopted. Appendix RA, including any amendments adopted by this jurisdiction, is adopted and incorporated into and made a part of this code.

16.16C.R401.2 Subsection R401.2 amended. Subsection R401.2 of the Hawai'i State Energy Code is amended to read as follows:

R401.2 Compliance. New one- or two-family residential buildings with five thousand square feet or more of conditioned floor area must achieve a verified maximum energy rating index (ERI) score of zero. All projects must also comply with one of the following:

1. Sections R401.3 through R404.
2. Section 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 Subsection R401.2.1.

16.16C.R401.2.1 Subsection R401.2.1 amended.

Subsection R401.2.1 of the Hawai'i State Energy Code is amended to read as follows:

R401.2.1 Tropical zone. Residential buildings in the tropical zone at elevations below 5,000 feet (1,524 m) above sea level must 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 and additional air conditioning is not added after permitting.
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 must have a maximum solar heat gain coefficient as specified in table R402.1.2.
5. Skylights in dwelling units must have a maximum U-factor as specified in table R402.1.4.
6. Permanently installed lighting is in accordance with Section R404.
7. The roof or ceiling complies with one of the following options:
 - a. Comply with one of the roof surface options in table C402.3 and install R-13 insulation or greater.
 - b. Install R-19 insulation or greater.
8. Roof surfaces have a minimum slope of one-quarter 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. Walls, floors, and ceilings separating air-conditioned spaces from non-air-conditioned spaces must be constructed to limit air leakage in accordance with the requirements in table R402.4.1.1.
14. The project complies with Subsection R401.3.

16.16C.R401.3 Subsection R401.3 amended. Subsection R401.3 of the Hawai'i State Energy Code is amended to read as follows:

R401.3. Certificate (Mandatory) A permanent certificate must be completed by the builder or registered design professional and posted on a wall in the space where the furnace is located, a utility room or an approved location inside the building. Where located on an electrical panel, the certificate must not cover or obstruct the visibility of the circuit directory label, service disconnect label or other required labels. The certificate must indicate the predominant R-values of insulations installed in or on ceilings, roofs, walls, foundations components such as slabs, basement walls, crawl space walls and floors and ducts outside of conditioned spaces; U-factors of fenestration and the solar heat gain coefficient (SHGC) of fenestration, the types and efficiencies of air conditioning and water heaters; identify conditioned and unconditioned spaces and the results from any required duct system and building envelope air leakage testing performed on the building. Where there is more than one value for each component, the certificate must indicate the value covering the largest area. The certificate must indicate the types and efficiencies of heating, cooling and service water heating equipment. Where a gas-fired unvented room heater, electric furnace or baseboard electric heater is installed in the residence, the certificate must indicate "gas-fired unvented room heater," "electric furnace," or "baseboard electric heater," as appropriate. An efficiency must not be indicated for gas-fired unvented room heaters, electric furnaces and electric baseboard heaters. The addition of mechanical cooling or heating to an unconditioned space requires a permit. The addition of cooling without proper design and construction can have adverse health, safety, and conservation consequences.

16.16C.R402.1 Subsection R402.1 amended. Subsection R402.1 of the Hawai'i State Energy Code is amended to read as follows:

R402.1 General (prescriptive). The building thermal envelope must meet the requirements of sections R402.1.1 through R402.1.5.

Exceptions: 1. The following low-energy buildings, or portions thereof, separated from the remainder of the building-by-building thermal envelope assemblies complying with this section must be exempt from the building thermal envelope provisions of section R402.

1.1 Those with a peak design rate of energy usage less than 3.4 Btu/h·ft² (10.7 W/m²) or 1.0 watt/ft² (10.7 W/m²) of floor area for space-conditioning purposes.

1.2 Unconditioned space that does not contain habitable space.

1.3. Unconditioned dwellings with enclosed habitable areas less than one thousand one hundred square feet.

1.4. Dwellings with permitted, off-grid, self-supplying photovoltaic with battery backup.

2. Log homes designed in accordance with ICC 400.

16.16C.R402.1.2 Subsection R402.1.2 amended.

Subsection R402.1.2 of the Hawai'i State Energy Code is amended to read as follows:

R402.1.2 Insulation and fenestration criteria. The building thermal envelope must meet the requirements of Table R402.1.2, based on the climate zone specified in Chapter 3.

TABLE R402.1.2 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
1	NR	0.75	0.25	30	13
2	0.40	0.65	0.25	38	13
3	0.32	0.55	0.25	38	20 or 13+5 ^h
4 except Marine	0.32	0.55	0.40	49	20 or 13+5 ^h
5 and Marine 4	0.30	0.55	NR	49	20 or 13+5 ^h
6	0.30	0.55	NR	49	20+ 5 ^h or 13+10 ^h
7 and 8	0.30	0.55	NR	49	20+ 5 ^h or 13+10 ^h

Climate Zone	Mass Wall R-Value ⁱ	Floor R-Value	Basement ^c Wall R-Value	Slab ^d R-Value & Depth	Crawl Space ^c Wall R-Value
1	3/4	0	0	0	0
2	4/6	0	0	0	0
3	8/13	19	5/13 ^f	0	5/13
4 except Marine	8/13	19	10/13	10, 2ft	10/13
5 and Marine 4	13/17	30 ^g	15/19	10, 2ft	15/19
6	15/20	30 ^g	15/19	10, 4ft	15/19
7 and 8	19/21	38 ^g	15/19	10, 4ft	15/19

NR = Not Required. For SI: 1 foot=304.8mm

a. R-values are minimums. U-factors and SHGC are maximums. Where insulation is installed in a cavity that is less than the label or design thickness of the insulation, the installed R-value of the insulation must be not 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: In Climate Zone 1 through 3, skylights are permitted to be excluded from glazed fenestration SHGC requirements provided that the SHGC for such skylights does not exceed 0.30.

c. “10/13” means R-10 continuous insulation on the interior or exterior of the home or R-13 cavity insulation on the interior of the basement wall. “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. Alternatively, compliance with “15/19” will be R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulation on the interior or exterior of the home.

d. R-5 insulation must be provided under the full slab area of a heated slab in addition to the required slab edge insulation R-value for slabs, as indicated in the table. The slab edge insulation for heated slabs is not required to extend below the slab.

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 R201.1.

g. Alternatively, insulation sufficient to fill the framing cavity and providing not less than an R-value of R-19.

h. The first value is cavity insulation, the second value is continuous insulation. Therefore, as an example, “13+5” means R-13 cavity insulation plus R-5 continuous insulation.

- i. Mass walls must be in accordance with Section R402.2.5. The second R-value applies where more than half of the insulation is on the interior of the mass wall.

16.16C.R402.4.1.2 Subsection R402.4.1.2 amended.

Subsection R402.4.1.2 of the Hawai'i State Energy Code is amended to read as follows:

R402.4.1.2 Testing. The building or dwelling unit must be tested and verified as having an air leakage rate not exceeding five air changes per hour in Climate Zones 1 and 2, and three air changes per hour in Climate Zones 3 through 8. Testing must be conducted in accordance with RESNET/ICC 380, ASTM E779 or ASTM E1827 and reported at a pressure of 0.2 inch w.g. (50 Pascals). Testing must be conducted by an approved third party. A written report of the results of the test must be signed by the party conducting the test and provided to the code official. Testing must be performed at any time after creation of all penetration of the building thermal envelope.

During testing:

1. Exterior windows and doors, fireplaces and stove doors must be closed, but not sealed, beyond the intended weatherstripping or other infiltration control measures.
2. Dampers including exhaust, intake, makeup air, backdraft and flue dampers must be closed, but not sealed beyond intended infiltration control measures.
3. Interior doors, where installed at the time of the test, must be open.
4. Exterior or interior terminations for continuous ventilation systems must be sealed.
5. Heating and cooling systems, where installed at the time of the test, must be turned off.
6. Supply and return registers, where installed at the time of the test, must be fully open.

16.16C.R404.2 Subsection R404.2 added. Section R404 of the Hawai'i State Energy Code is amended to by adding a new subsection R404.2 to read as follows:

R404.2 Solar-readiness (Mandatory). New construction of detached one- and two-family dwellings and townhouses must comply with Appendix RA.

16.16C.R404.3 Subsection R404.3 added. Section R404 of the Hawai'i State Energy Code is amended to by adding a new subsection R404.3 to read as follows:

R404.3 Electric vehicle readiness (Mandatory). In addition to what is required by the electrical code, if a building

permit application involves the installation of an electrical panel and parking area for either a multifamily dwelling of three stories or less or a detached dwelling or duplex, a dedicated receptacle for an electric vehicle must be provided with a minimum AC Level 2 charge in each enclosed attached garage, as defined in this code.”

SECTION 4. Work performed under a permit issued before this Ordinance’s effective date and work that is inspected on or after this Ordinance’s effective date will be approved if it meets the requirements of either Chapter 16.16B, Maui County Code, or Chapter 16.16C, Maui County Code.

SECTION 5. Material to be repealed is bracketed. New material is underscored. In printing this bill, the County Clerk need not include the brackets, the bracketed material, or the underscoring.

SECTION 6. This Ordinance takes effect on approval.

INTRODUCED BY:

Kelly T. King

KELLY TAKAYA KING