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HAWAI'I COUNTY COUNCIL

25 Aupuni Street, Hilo, Hawai'i 96720

MEMORANDUM

DATE: June 2, 2021

TO: Maile David, Council Chair; and
Members of the Hawai'i County Council

FROM: Susan L.K. Lee Loy, Council Member

SUBJECT: Bill No. 44: Public comments received and answered

Prior to submittal to the Council, proposed revisions to the building codes were released to the public on March 30, 2021, with instructions to provide comments via the Department of Public Works' website by April 30, 2021.

The Building Division replied to comments, questions, and suggestions received during this period, and categorized as follows:

- 2018 International Residential Code with State Amendments – 13 submissions
- 2018 International Existing Building Code with State Amendments – 1 submission
- 2018 International Energy Conservation Code with State Amendments – 4 submissions
- 2018 International Building Code with State Amendments – 2 submissions

A matrix of those comments, the justifications, and the Building Division's actions in response are attached hereto.

SL:so
Att.

Date	Indicate appropriate Model Code(s) with State Amendments to be amended in the County of Hawaii by this Proposal –	Indicate appropriate Section and Title/Table/Figures/Standards and title to the Model Code(s) with State Amendments to be amended in the County of Hawaii by this Proposal – (if the proposal is for a new section, indicate proposed section number and title.)	Proposal	Justification	DPW Comment
4/2/2021	2018 International Residential Code with State Amendments	R301.1.3		The 2018 code required engineering for structures that exceed 2 stories in Seismic D2. the present ammendment is in error, as it implies you cand do a three story without engineering. You can not do a three story without engineering, but you can have a cripple wall, or below grade basement, and attic space, even if habitable is allowed in the 2018 in seismic D2 without engineering. The 3000 sqft gross does not appear in any other code. In a climate zone that requires at least a two car carport, and covered Lanai space, 3000 sq. ft gross is SEVERELY and unreasonably limiting. A modest 1800 sqft home will have well over 3000 sqft when a carport and Lanai space is added.	The three story limitation as specified by the State building code does creates confusion imply it is allowable in the County of Hawaii seismic zone D2. It is possible to design an IRC compliant dwelling greater than 3000sf, conversely it is possible that a dwelling less than 3000sf outside the prescriptive provisions of the IRC may need to meet the IBC for compliance. DPW will eliminate these limitations with the understanding that a dwelling that does not meet the IRC shall be designed per IBC.
4/25/2021	2018 International Residential Code with State Amendments	5B-1-6	5B-1-6 "Floor Area, Gross. The floor area withing the inside perimeter of the exterior walls of the building under consideration, exclusive of vent shafts and courts, without deduction for corridors, stairways, ramps, closets, the thickness of interior walls columns or other features. The floor area of a building, or portion thereof, not provided with surrounding exterior walls shall be the useable area under the horizontal projection of the roof or floor above. The gross floor area shall not include shafts with no openings or interior courts."	Gross Floor Area does not seem to be defined in the 2018 IRC. Since this term is used to determine whether engineered design is required it should be defined. The proposed definition is the same as the 2018 IBC for consistency.	It is possible to design an IRC compliant dwelling greater than 3000sf, conversely it is possible that a dwelling less than 3000sf outside the prescriptive provisions of the IRC may need to meet the IBC for compliance. DPW will eliminate the 3000 gross sf limitations with the understanding that a dwelling that does not meet the IRC shall be designed per IBC, therefore that definition is not required.

4/25/2021	2018 International Residential Code with State Amendments	5B-2-1 (a)(2) Appendix L	Appendix ~~L~~ E. Factory-built Homes.	Using L as the appendix number is potentially confusing because the 2018 IRC has an appendix L which is used for permit fees. Appendix E in the 2018 IRC is for Manufactured Homes. Best to use this letter or a letter that is unused in the unamended 2018 IRC.	Acknowledged, Appendix L will be renamed to Appendix "U" unused in the IRC.
4/25/2021	2018 International Residential Code with State Amendments	R301.2.1.2. Protection of Openings	"R301.2.1.2 Protection of openings. [~~Exterior glazing~~] Windows or **non-egress glazed doors** in buildings located in windborne debris regions shall [~~be~~] have glazed openings protected from windborne debris. Glazed opening protection for windborne debris shall meet the requirements of the Large Missile Test of ASTM E1996 and ASTM E1886 as modified in Section 301.2.1.2.1. [~~Garage door glazed opening protection for windborne debris shall meet the requirements of an approved impact-resisting standard or ANSI/DASMA 115~~.] [Exception] Exceptions: 4. Removable fabric protection systems which meet the requirements of the Large Missile Test of ASTM E1996 and ASTM E1886 as modified in Section 301.2.1.2.1 are permitted for opening protection in one- and two-story buildings classified as Group R-3 or R-4 occupancy. Panels shall be pre-fitted and required attachment hardware provided and anchors permanently installed on the building.	Better to clearly include large sliding glazed doors; if they are not included what is the point of providing any protection at all? Removable fabric systems that meet the same testing requirements should be allowed since these will offer the same level of protection but but are more likely to be installed in anticipation than plywood panels due to their ease of handling. Removable fabric protection systems are also easier to store and less likely to be re-purposed after final inspection.	Acknowledged, this amendment was in an earlier draft of the State Building Code however has been since removed. Code will revert to model code language.
4/25/2021	2018 International Residential Code with State Amendments	R326 Swimming Pools Spas	Section R326 Swimming Pools, Spas, and Hot Tubs is deleted in it's entirety. >> Insert language from 2006 IBC Section 3109 << >> Be sure Chapter 42 is covered in the Electrical Code <<	2018 IRC Section R326 calls for the use of the International Swimming Pool and Spa Code. While this code has been written more recently and addresses more aspects of swimming pools than previous code sections it is a significant change from the current County Code and being a separate code book would be an onerous change coming at the same time as all the other code changes. There is also not sufficient time in the current code change cycle to fully vet the code for necessary Hawaii amendments.	Acknowledged, R326 will be updated to include swimming pool language consistent with the Chapter 5A language specific to residential design.

4/25/2021	2018 International Existing Building Code with State Amendments	Chapter 12 - Historic Buildings	Section 1203.2 General. Every historic building that does not conform to the construction requirements specified in this code for the occupancy or use and that constitutes a distinct fire hazard as defined herein shall be provided with an approved automatic fire-extinguishing system as determined appropriate by the code official. However, an automatic fire-extinguishing system shall not be used to substitute for, or act as an alternative to, the required number of exits from any facility. The code official shall not require the addition of an automatic fire-extinguishing system when the work is limited to maintenance, repairs, or replacement of components with similar which do not increase the fire hazard.	The code official is given very broad discretion in this section. Many historic buildings are located in areas where adding fire sprinklers would be extremely expensive. Building owners should have reassurance that they can legally maintain their buildings (getting building permits for work) without worry about an onerous requirement.	Acknowledged, Section 1203.2 is limited in scope to section 1203.1 for Historic buildings undergoing alterations, changes of occupancy or that removed.
4/25/2021	2018 International Energy Conservation Code with State Amendments	C402.1.1 Low-energy use buildings	Add fourth exempt type. 4. Open park pavilions or other structures where there is no enclosed space.	This exemption was included in the 2015 amendments. A covered outdoor space with radiant heaters would be a situation where this would apply. There is no envelope, but conditioning is happening.	Acknowledged, this amendment will be added.
4/25/2021	2018 International Energy Conservation Code with State Amendments	R402.4.1.2 Testing	"R402.4.1.2 Testing. The building or dwelling unit shall 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 shall be conducted in accordance with RESNET/ICC 380, ASTM E 779 or ASTM E 1827 and reported at a pressure of 0.2 inch 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. **Exceptions:** **1. Existing buildings or portions thereof shall not have an air leakage requirement.** **2. If the design professional determines that air leakage rate will not adversely affect the performance of the building.**	Chapter 5 (Existing Buildings) does not specifically address testing. When adding air conditioning it may be practical to add insulation but impractical to fix air leakage. In some situations the cost to construct and test fro air barrier exceeds the benefit; good to give the design professional an option to not test.	R502.1 Specifically says that additions to an existing building, building system or protion thereof shall conform to the provision of this code as those relate to new construction without requiring the unaltered portion of the existing building or building system to comply with this code. Furthermore, R502.1.1.1 Building envelope specifically states new building envelope assemblies that are part of the addiition shall comply with Sections R402.1, R402.3.1 through R402.3.5 and R402.4. R402.4 is where the air leakage testing requirements are prescribed. Per 502.1 the testing would be limited to just the addition.
4/25/2021	2018 International Building Code with State Amendments	1609.2 Protection of Openings	Add Exception: 4. Removable fabric protection systems which meet the requirements of the Large Missile Test of ASTM E1996 and ASTM E1886 as modified in Section 301.2.1.2.1 are permitted for opening protection in one- and two-story buildings classified as Group R-3 or R-4 occupancy. Panels shall be pre-fitted and required attachment hardware provided and anchors permanently installed on the building.	Removable fabric systems that meet the same testing requirements should be allowed since these will offer the same level of protection but but are more likely to be installed in anticipation than plywood panels due to their ease of handling. They are also easier to store and less likely to be re-purposed after final inspection.	The Section is deliberately not specifc to what type of materials qualify for Wind Borne debris protection i.e. shutters, fbric or otherwise. The proposed material shall be qualified by the DPW BO. If the proposed fabric meets the E1996 and E1886 testing requirements they would meet the intent of the code.

4/30/2021	2018 International Residential Code with State Amendments	IRC 2018, Section R317.1	Protection of wood and wood-based products from decay shall be provided in the following locations by the use of naturally durable wood or wood that is preservative-treated in accordance with AWPA U1 for the species, product, preservative and end use. Preservatives shall be listed in Section 4 of AWPA U1.	Proposing not to strike out naturally durable wood for protection of wood and wood-based products from decay. Reason being this will negatively impact sensitive architectural exterior wood siding/cladding applications around paving and raised deck conditions, also other architectural decorative wood features, non-structural in function. An alternate solution would be to strike out wood siding from R317.1, #5, so only structural framing components are listed	The draft amendments were developed while the State building codes were still under review. This amendment will be eliminated, as the state amendment no longer restricts the use of naturally durable wood
4/30/2021	2018 International Residential Code with State Amendments	5A-1-3	Section 5A-1-3. Scope; exceptions. This chapter shall apply to the design, construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures. Exception: Detached one- and two-family dwellings and multiple single-family dwellings and townhouses not more than three stories above grade plane in height with a separate means of egress and their accessory structures not more than three stories above grade plane in height shall be permitted to comply with the residential building code, chapter 5B, Hawai'i County Code if provided with debris impact protection in accordance with Section 1609.2 Protection of Openings. Exception 3 in Section 1609.2 shall not apply ~~(5) Agricultural buildings, structures, and appurtenances without electrical power and plumbing systems are exempt from permit and construction code requirements, pursuant to section 46-88, Hawai'i Revised Statutes, except as otherwise provided for in this construction code. No electrical power shall be connected to a building or structure without first obtaining a permit for the electrical work.]~~	5A-1-3: · define multiple single-family dwellings? · grade plane definition? 5A-1-3 (5) · reinstate this paragraph - state law ACT 203 is very specific	HCC 5A draft was developed from the unadopted draft of the State Building Code. Multiple Single Family Dwellings was removed and clarifed as being a townhouse. This change has been updated. Grade plane is defined in Section 202 of the IBC. DPW acknowledges the comment and is assessing how to address Ag structures not applicable under HRS 46-88. This request is an admin code change not specific to building installation code. A structure exempt from permitting pursuant to HRS 46-88 still needs to be constructed to code.
4/30/2021	2018 International Residential Code with State Amendments	5A-2-1	Definitions BUILDINGS, OPEN Definitions BUILDINGS, PARTIALLY ENCLOSED	too cryptic, not readily understandable	These definitions (from ASCE 7) are technical and included to provide a reference to the terms as noteed in the code specific for wind design. Design professionals are to use these technical definitions to qualify if the building/structure as OPEN, PARTIALLY CLOSED

4/30/2021	2018 International Building Code with State Amendments	5-A-2-1 cont.	"EXISTING BUILDING" is a building for which a legal building permit has been issued, or one which complied with ~~this~~ the Code in effect at the time the building was erected."	Change this to the - does not make grammatical sense Remove or reword to match other definitions found elsewhere (below) Section 5A-1-6. Definitions. "Existing building" means a building erected prior to the effective date of this chapter, or one for which a legal permit has been issued. "Existing structure" means a structure erected prior to the effective date of this chapter, or one for which a legal permit has been issued. {202, IBC.}	Consistency and clarity is what we are looking to achieve, we will address this by removing I the definition
4/30/2021	2018 International Energy Conservation Code with State Amendments	R402.4.1.2	Revise as follows: R402.4.1.2 Testing. The building or dwelling unit ~~shall~~ may 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 shall 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). ~~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 weatherstripping 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, where installed at the time of the test, shall be open. 4. Exterior or interior terminations for continuous ventilation systems shall be sealed.	The proposed section is a carryover from the County of Hawaii IECC 2015 as amended. The purpose of the air leakage test is to accommodate an air conditioning system and make the system more efficient. If the owner of the home does not plan to ever install air conditioning (i.e. due to budget), requiring the owner to pay for an air leakage test would not be justified. Being required to provide an air leakage test would extend construction timelines and add unnecessary costs to already expensive home investment.	Per 402.4 Air leakage applies to building thermal envelopes. Testing of the building thermal envelope is mandatory as prescribed in R402.4.1.2. Section R202 defines "building thermal envelope" as " the basement wall, exterior walls, floors, ceiling, roof and any other building element assemblies that enclose conditioned space or provide a boundary between conditioned space and exempt or unconditioned space. The requirements for a building thermal envelope is exempt for low energy buildings and those that do not contatin conditioned space per R402.1 Provisions for Testing per R402.4.1.2 are not required if the home owner does not have a conditioned space. Building thermal envelope provisions and mandatory Testing shall be required for conditioned spaces.

4/30/2021	2018 International Energy Conservation Code with State Amendments	R402.1	"R402.1 General (Prescriptive). The building thermal envelope shall 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 shall 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) of floor area for space-conditioning purposes. 1.2 ~~Those that do not contain conditioned space~~. Unconditioned space that does not contain habitable space. 1.3 Unconditioned dwellings with enclosed living areas less than 1,100 square feet. 2. Log homes designed in accordance with ICC 400. 3. Dwellings with permitted, off-grid, self supplying photovoltaic with battery back up.	Proposed additions to the code section are a carry over from the approved COH 2015 IECC amendments. The additions proposed benefit the home owner by reducing the cost of construction for these low energy consuming buildings. Enforcing building thermal envelope requirements on these low energy buildings, or portions thereof, isn't effective at ensuring energy savings for the home owner. From the COH 2015 amendments, referencing point 1.3 above, "habitable" has been changed to "living". It was multiple county official's interpretation that the 1,100 square feet include the exterior wall line of the living area as that is where typically the insulation would be installed. Therefore, not permitting individual "habitable" areas to be calculated separately.	The strict language requiring building thermal envelope provisions be required have been reverted back to the model code. Where all residential buildings, if they are unconditioned, are exempt. For clarity, is the proposal to still require insulation for unconditioned spaces? Adding these additional conditional exceptions for unconditional spaces as proposed.
4/30/2021	2018 International Residential Code with State Amendments	R401.5	Add new text as follows "R401.5 Post or pier foundations. Raised floor systems supported solely by post or pier foundations shall be designed in accordance with the Building Code, Chapter 5A, Hawai'i County Code.	Current code allows the classification of a "post and pier foundation" to be designated as the "first story of two-story" provided all bracing requirements are met. The addition to this amendment specifies a clear understanding of the interpretation of "post and pier" foundations and allows the use of prescriptive methods to achieve a raised floor system design with an above grade wood foundation. Post and pier not to be confused with foundation bracing walls.	As noted, the prescriptive methods to achieve a raised floor system are established in the IRC. A post and pier system is not prescriptive. To add the proposed language would imply there are other types of post and pier systems that are prescriptive.
4/30/2021	2018 International Residential Code with State Amendments	R602.10.9	Add new text as follows "R602.10.9 Braced wall panel support. Braced wall panel support shall be provided as follows: 2. Raised floor systems supported solely by post or pier foundations supporting braced wall panels shall be designed in accordance with the Building Code, Chapter 5A, Hawai'i County Code.	Current code allows the classification of a "post and pier foundation" to be designated as the "first story of two-story" provided all bracing requirements are met. The addition to this amendment specifies a clear understanding of the interpretation of "post and pier" foundations and allows the use of prescriptive methods to achieve a raised floor system design with an above grade wood foundation. Post and pier not to be confused with foundation bracing walls.	As noted, the prescriptive methods to achieve a raised floor system are established in the IRC. A post and pier system is not prescriptive. To add the proposed language would imply there are other types of post and pier systems that are prescriptive.
4/30/2021	2018 International Residential Code with State Amendments	5B-1-6	Section 5B-1-6. Definitions. "Sleeping unit" means a room or space in a building in which people sleep, which can also include permanent provisions for living, eating, and either sanitation or kitchen facilities but not both. Such rooms and spaces that are also part of a dwelling unit are not sleeping units.		The definition from the IBC will be added. Subsection 320.1.1 Guestrooms also helps to clarify what a sleeping unit is.

4/30/2021	2018 International Residential Code with State Amendments	R301.1.3	R301.1.3 Engineered Design. When a building of otherwise conventional construction contains structural elements exceeding the limits of Section R301, or otherwise not conforming to this code, these elements shall be designed in accordance with accepted engineering practice using the Alternative Provisions listed in the R301.1.1. The extent of such design need only demonstrate compliance of non-conventional elements with other applicable provisions and shall be compatible with the performance of the conventional framed system. Engineered design in accordance with the Building Code, Chapter 5A, Hawaii County Code, is permitted for all building and structures, and parts thereof, included in the scope of this code. Engineering design in accordance with the Building Code, Chapter 5A, Hawaii County Code, shall be required when a building exceeds three stories. ~~or 3000 square feet of gross floor area~~. OR revise and add new text as follows: R301.1.3 Engineered Design. When a building of otherwise conventional construction contains structural elements exceeding the limits of Section R301, or otherwise not conforming to this code, these elements shall be designed in accordance with accepted engineering practice using the Alternative Provisions listed in the R301.1.1. The extent of such design need only demonstrate compliance of nonconventional elements with other applicable provisions and shall be compatible with the performance of the conventional framed system. Engineered design in accordance with the Building Code, Chapter 5A, Hawaii County Code, is permitted for all building and structures, and parts thereof, included in the scope of this code. Engineering design in accordance with the Building Code, Chapter 5A, Hawaii County Code, shall be required when a	No limitation is noted in the 2018 International Residential Code as it pertains to the number of stories and/or total gross living area. How does a home greater than 3,000 total gross floor area correlate to the need for engineering design. As written, the limitation appears arbitrary. Propose to strike last statement in its entirety, or change "gross" to "living" area. This area limitation inadvertently limits households from building mutli-generational single-family dwellings and/or simple custom designed homes due to increases in design, engineering and ultimately construction costs. HPM Homes offers single-family home packages ranging from 712 to 3,028 total gross area. Even modified or custom designs can range in the 4,000-5,000 total gross area and designed prescriptively. When required, a structural engineered design can cost a homeowner $8,000 for planning, design and engineering service before plan review and permit fees.	The three story limitation as specified by the State building code does creates confusion imply it is allowable in the County of Hawaii seismic zone D2. It is possible to design an IRC compliant dwelling greater than 3000sf, conversely it is possible that a dwelling less than 3000sf outside the prescriptive provisions of the IRC may need to meet the IBC for compliance. DPW will eliminate these limitations with the understanding that a dwelling that does not meet the IRC shall be designed per IBC.

4/30/2021	2018 International Residential Code with State Amendments	R301.2.2.1.1	Revise as follows: ~~R301.2.2.1.2~~ R301.2.2.1.1 Alternative determination of Seismic Design Category E. Buildings located in Seismic Design Category E in accordance with Figure R301.2(2), or Figure R301.2(3) where applicable, are permitted to be reclassified as being in Seismic Design Category D2 provided that one of the following is done: ~~1. A more detailed evaluation of the seismic design cate-gory is made in accordance with the provisions and maps of the International Building Code. Buildings located in Seismic Design Category E in accordance with Table R301.2.2.1.1, but located in Seismic Design Category D in accordance with the International Building Code, shall be permitted to be designed using the Seismic Design Category D2 requirements of this code.~~ ~~2.~~ 1. Buildings located in Seismic Design Category E that conform to the following additional restrictions are permitted to be constructed in accordance with the provisions for Seismic Design Category D2 of this code: ~~2.1~~ 1.1 All exterior shear wall lines or braced wall panels are in one plane vertically from the foundation to the uppermost story. ~~2.2~~ 1.2 Floors shall not cantilever past the exterior walls. ~~2.3~~ 1.3 The building is within the requirements of Section R301.2.2.2.6 for being considered as regular.	The 2018 International Residential Code(IRC) provides options to re-designate the Seismic Design Category(SDC) of a building from SDC "E" to SDC "D2", by providing additional design requirements, as noted in Section R301.2.2.1.2. The State of Hawaii amendments to the 2018 IRC included the removal of Section R301.2.2.1.1 which allowed the design professional the option to re-designate the buildings SDC by providing calculations based on the International Building Code(IBC) and soil conditions, but did not address the following Section R301.2.2.1.2. This proposal is to provide clarification that "R301.2.2.1.2 Alternative determination of Seismic Design Category E" shall now be labeled "R301.2.2.1.1", and remove the option to reference the IBC in sub-section. COH draft amendment, as written, suggests the option to re-designate seismic design category from 'E' to 'D2', is not available at all. This proposed change provides clarification that the prescriptive option, 2018 IRC Section R301.2.2.1.2, is still available and shall be re-labeled as Section R301.2.2.1.1.	DPW acknowledges the importance of the alternative Determination of Seismic Design Category E. Hence subsection R301.2.2.1.2 was not deleted. DPW will not Renumbering the model code as this may provide disconnects throughtout the rest of the code..