PROPOSED AMANDMENTS TO CALFORNIA ENERGY CODE – MAKING LOCAL ADOPTION ALL-ELECTRIC REACH CODE

Amendments to Definitions

Section 100.1(b) is modified by adding the following definitions:

ALL-ELECTRIC BUILDING or ALL-ELECTRIC DESIGN is a building or building design that uses a permanent supply of electricity as the source of energy for all space heating, water heating (including pools and spas), cooking appliances, and clothes drying appliances, and has no natural gas or propane plumbing installed in the building.

CERTIFIED ENERGY ANALYST is a person registered as a Certified Energy Analyst with the California Association of Building Energy Consultants as of the date of submission of a Certificate of Compliance as required under Section 10-103.

FREE STANDING ACCESSORY DWELLING UNIT is a detached building that is not intended for sale separate from the primary residence, on a lot that is zoned for single-family or multifamily use, located on the same lot as an existing dwelling, and does not exceed 1,200 square feet of total floor area.

Amendments for Decarbonization – Mandatory Measures

Section 150.0 is modified to change the first two paragraphs as follows:

SECTION 150.0 – MANDATORY FEATURES AND DEVICES

Low-rise residential buildings shall comply with the applicable requirements of Sections 150(a) through 150.0(~~r~~t).

NOTE: The requirements of Sections 150.0(a) through 150.0(~~r~~t) apply to newly constructed buildings. Sections 150.2(a) and 150.2(b) specify which requirements of Sections 150.0(a) through 150.0(s) also apply to additions or alterations.

Section 150.0(e) is modified as follows:

(e) Installation of Fireplaces~~, Decorative Gas Appliances and Gas Logs~~. If a masonry or factory-built fireplace is installed, it shall comply with Section 110.5, Section 4.503 of Part 11, and shall have the following:

1. Closeable metal or glass doors covering the entire opening of the firebox; and

2. A combustion air intake to draw air from the outside of the building, which is at least 6 square inches in area and is equipped with a readily accessible, operable, and tight-fitting damper or combustion-air control device; and EXCEPTION to Section 150.0(e)1B: An outside combustion-air

intake is not required if the fireplace will be installed over concrete slab flooring and the fireplace will not be located on an exterior wall.

3. A flue damper with a readily accessible control.

~~EXCEPTION to Section 150.0(e)1C: When a gas log, log lighter, or decorative gas appliance is installed in a fireplace, the flue damper shall be blocked open if required by the CMC or the manufacturer's installation instructions.~~

Section 150.0(h)4 is modified as follows:

4. ~~Central Forced-Air Heating Furnaces.~~ All Electric Building Equipment. Space-Conditioning Equipment shall meet the requirements for an All Electric Building per Section 100.1(b)

~~A. Temperature Rise. Central forced-air heating furnace installations shall be configured to operate in conformance with the furnace manufacturer's maximum inlet-to-outlet temperature rise specifications.~~

Section 150.0(n)1 is modified as follows:

1. ~~Systems using gas or propane water heaters to serve individual dwelling units shall include the following components:~~ All Electric Building Equipment. Water Heating System shall meet the requirements for an All Electric Building per Section 100.1(b)

~~A. A dedicated 125 volt, 20 amp or greater electrical circuit that is connected to the electric panel within 3 feet from the water heater and accessible to the water heater with no obstructions. In addition, all of the following:~~

i. ~~Both ends of the unused conductor shall be labeled with the words "spare" and be electrically isolated; and~~

ii. ~~A reserved single pole circuit breaker space in the electrical panel adjacent to the circuit breaker for the branch circuit in A above and labeled with the words "Future 240V Use"; and~~

~~B. A Category III or IV vent, or a Type B vent with straight pipe between the outside termination and the space where the water heater is installed; and~~

~~C. A condensate drain that is no more than 2 inches higher than the base of the installed water heater, and allows natural draining without pump assistance, and~~

~~D. A gas supply line with a capacity of at least 200,000 Btu/hr.~~

Section 150.0(p) is modified to add a new subsection 5 as follows:

5. All Electric Building Equipment. Pool and Spa Heating Systems shall meet the requirements for an All Electric Building per Section 100.1(b)

Section 150.0 is modified to add a new subsection (s) as follows:

(s) Clothes Drying and Cooking. Clothes Drying and Cooking equipment shall meet the requirements for an All Electric Building per Section 100.1(b).

Section 150.0 is modified to add a new subsection (t) as follows:
(t) Requirement for All Electric Buildings. The building shall meet the definition of an All Electric Building per Section 100.1(b).

Decarbonization – Performance and Prescriptive Measures

Section 150.1(c)8A is modified as follows:
8. Domestic Water-Heating Systems. Water-heating systems shall meet the requirements of either A B or C. For recirculation distribution systems serving individual dwelling unit, only Demand Recirculation Systems with manual on/off control as specified in the Reference Appendix RA4.4.9 shall be used:

A. For systems serving individual dwelling units, the ~~water heating system shall meet the requirement of either i, ii, iii, iv, or v:~~ storage tank shall be located in the garage or conditioned space. In addition, one of the following:

i. A compact hot water distribution system as specified in the Reference Appendix RA4.4.6 and a drain water heat recovery system that is field verified as specified in the Reference Appendix RA3.6.9; or
ii. For Climate Zones 2 through 15, a photovoltaic system capacity of 0.3 kWdc larger than the requirement specified in Section 150.1(c)14; or
iii. For Climate Zones 1 and 16, a photovoltaic system capacity of 1.1 kWdc larger than the requirement specified in Section 150.1(c)14.

~~i. One or more gas or propane instantaneous water heater with an input of 200,000 Btu per hour or less and no storage tank.~~
~~ii. A single gas or propane storage type water heater with an input of 75,000 Btu per hour or less, rated volume less than or equal to 55 gallons and that meets the requirements of Sections 110.1 and 110.3. The dwelling unit shall have installed fenestration products with a weighted average U-factor no greater than 0.24, and in addition one of the following shall be installed:~~
~~a. A compact hot water distribution system that is field verified as specified in the Reference Appendix RA4.4.16; or~~
~~b. A drain water heat recovery system that is field verified as specified in the Reference Appendix RA3.6.9.~~
~~iii. A single gas or propane storage type water heater with an input of 75,000 Btu per hour or less, rated volume of more than 55 gallons.~~
~~iv. A single heat pump water heater. The storage tank shall be located in the garage or conditioned space. In addition, one of the following: a. A compact hot water distribution system as specified in the Reference Appendix RA4.4.6 and a drain water heat recovery system that is field verified as specified in the Reference Appendix RA3.6.9; or b. For Climate Zones 2 through 15, a photovoltaic system capacity of 0.3 kWdc larger than the requirement specified in Section 150.1(c)14; or c. For Climate Zones 1 and 16, a photovoltaic system capacity of 1.1 kWdc larger than the requirement specified in Section 150.1(c)14.~~

Table 1501.1-A is modified as follows:

				Climate Zone															
				1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
HVAC SYSTEM	**Space Heating[9]**	**Electric-Resistance Allowed**		No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
		~~**If gas, AFUE**~~		~~MIN~~	~~MIN~~	~~MIN~~	~~MIN~~	~~MIN~~	~~MIN~~	~~MIN~~	~~MIN~~	~~MIN~~	~~MIN~~	~~MIN~~	~~MIN~~	~~MIN~~	~~MIN~~	~~MIN~~	~~MIN~~
		If Heat Pump, HSPF [7]		MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN
	Space Cooling	**SEER**		MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN
		Refrigerant Charge Verification or Fault Indicator Display		NR	REQ	NR	NR	NR	NR	NR	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	NR
		Whole House Fan [8]		NR	NR	NR	NR	NR	NR	NR	REQ	REQ	REQ	REQ	REQ	REQ	REQ	NR	NR
	Central System Air Handlers	**Central Fan Integrated Ventilation System Fan Efficacy**		REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ
	Ducts [10]	**Roof/Ceiling Options B**	Duct Insulation	R-8	R-8	R-6	R-8	R-6	R6	R-6	R-8	R-8	R-8	R-8	R-8	R-8	R-8	R-8	R-8
			§150.1(c)9A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Roof/Ceiling Option C	Duct Insulation	R-6	R-6	R-6	R-6	R-6	R-6	R-6	R-6	R-6	R-6	R-6	R-6	R-6	R-6	R-6	R-6
			§150.1(c)9B	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ
Water Heating	**All Buildings**			System Shall meet Section 150.1(c)8															

[The following prescriptive requirements vary by climate zone. The final draft of the model ordinance will include tables that correspond to each climate zone for ease of use.]

New Sections 150.1(c)15 and 16 are added as follows:

15. Additional Prescriptive Requirements for Single Family buildings.

A. **[*CZ 8 only*]** Ducts in Conditioned Space. Ductwork shall comply with either of the three options below:

i. Ducts shall comply with 2019 Reference Appendices RA3.1.4.1.2, which requires that no more than 12 linear feet of duct, including the air handler and plenum, may be located outside the conditioned space.

ii. Ducts shall comply with 2019 Reference Appendices RA3.1.4.1.3, which requires that all ductwork shall be located entirely in conditioned space.

iii. Ducts shall comply with 2019 Reference Appendices RA3.1.4.1.3, which requires that all ductwork shall be located entirely in conditioned space and shall be confirmed to have less than or equal to 25 cfm leakage to outside when measured as specified by Section RA3.1.4.3.4.

B. ***[CZ 1-6 and 9-16]*** Duct System Sealing and Leakage Testing. The duct systems shall exceed the minimum mandatory requirements of Section 150.0(m)11 A and B such that the total duct system leakage shall not exceed 2 percent of the nominal system air handler air flow.

C. **[*CZ 14 only*]** Reduced infiltration. HERS Rater field verification of reduced building envelope air leakage. Verified infiltration rate shall be no greater than three air changes per hour at 50 Pascals (3ACH50), according to the requirements in Section RA 3.8: Field Verification and Diagnostic Testing of Building Air Leakage.

D. ***[CZs 11, 13, 15 only]*** Roof and Ceiling insulation shall be installed in a ventilated attic as follows:

i. A minimum of R-30 insulation installed between the roof rafters in contact with the roof deck and an additional layer of R-38 ceiling insulation located between the attic and the conditioned space.

E. **[CZs 10-15 only]** Roofing Products. Low-rise residential buildings with steep-sloped roofs shall have a minimum aged solar reflectance of 0.25.

F. **[*CZ16 only*]** Installed fenestration products, including glazed doors, shall have an area weighted average U-factor no greater than 0.24 and Solar Heat Gain Coefficient (SHGC) no less than 0.50 and shall be determined in accordance with Sections 110.6(a)2 and 110.6(a)3.

G. ***[ALL EXCEPT CZs 6-9 AND 16]*** Slab insulation. Slab floor perimeter insulation shall be installed with an R-value equal to or greater than R10. The minimum

depth of concrete-slab floor perimeter insulation shall be 16 inches or the depth of the footing of the building, whichever is less.

H. ***[ALL EXCEPT CZ 7]*** Compact Hot Water. The hot water distribution system shall be designed and installed to meet minimum requirements for the basic compact hot water distribution credit according to the procedures outlined in the 2019 Reference Appendices RA4.4.6.

I. ***[ALL EXCEPT CZ 7]*** **Ducted Central Forced Air Heating Systems.** Central Fan Integrated Ventilation Systems. The duct distribution system shall be designed reduce external static pressure to meet a maximum fan efficacy equal to:

Gas Furnaces: 0.35 Watts per cfm
Heat Pumps: 0.45 Watts per cfm,

according to the procedures outlined in the 2019 Reference Appendices RA 3.3.

J. ***[All CZs]*** Energy Storage. A battery energy storage system with a minimum capacity equal to 5 kWh shall be installed. The system shall have automatic controls programmed to charge anytime PV generation is greater than the building load and discharge to the electric grid, beginning during the highest priced time of use hours of the day.

16. Additional Prescriptive Requirements for Multifamily buildings.

A. ***[ALL EXCEPT CZs 3,5,7]*** Ducts in Conditioned Space. All ductwork shall be located entirely in conditioned space with ducts tested to have less than or equal to 25 cfm leakage to outside. Ductwork shall meet the requirements of Verified Low Leakage Ducts in Conditioned Space (VLLDCS) in the 2019 Reference Appendices RA3.1.4.3.8.

B. ***[ALL EXCEPT CZs 1,3,5,16.]*** Roofing Products. Low-rise residential buildings with steep-sloped roofs shall have a minimum aged solar reflectance of 0.25.

C. ***[CZs 1, 16]*** Installed fenestration products, including glazed doors, shall have an area weighted average U-factor no greater than 0.24 and Solar Heat Gain Coefficient (SHGC) no less than 0.50 and shall be determined in accordance with Sections 110.6(a)2 and 110.6(a)3.

[CZs 11, 13-15] Installed fenestration products, including glazed doors, shall have an area weighted average U-factor no greater than 0.24 and Solar Heat Gain Coefficient (SHGC) no less than 0.23 and shall be determined in accordance with Sections 110.6(a)2 and 110.6(a)3.

D. ***[ALL EXCEPT CZs 6-9]*** Slab insulation. Slab floor perimeter insulation shall be installed with an R-value of equal to or greater than R10. The minimum depth of concrete-slab floor perimeter insulation shall be 16 inches or the depth of the footing of the building, whichever is less.

E. ***[ALL EXCEPT CZ 8]*** Compact Hot Water. The hot water distribution system shall be designed and installed to meet minimum requirements for the basic compact hot water distribution credit according to the procedures outlined in the 2019 Reference Appendices RA4.4.6.

[CZ8] Compact Hot Water. The hot water distribution system shall be designed and installed to meet minimum requirements for the basic compact hot water distribution credit according to the procedures outlined in the 2019 Reference Appendices RA3.6.5.

F. ***[All CZs]*** Central Fan Integrated Ventilation Systems. Central forced air system fans used to provide outside air, shall have an air-handling unit fan efficacy less than or equal to 0.35 W/CFM. The airflow rate and fan efficacy requirements in this section shall be confirmed through field verification and diagnostic testing in accordance with all applicable procedures specified in Reference Residential Appendix RA3.3. Central Fan Integrated Ventilation Systems shall be certified to the Energy Commission as Intermittent Ventilation Systems as specified in Reference Residential Appendix RA3.7.4.2.

G. ***[ALL CZs]*** Solar photovoltaic. A PV system meeting the minimum qualification requirements as specified in Joint Appendix JA11 sized to offset 100% of the estimated site electricity load shall be installed. The plans shall include calculations for the electricity load and PV production.

H. **[All CZs]** Energy Storage. A battery energy storage system with a capacity equivalent to the PV system shall be installed. The system shall have automatic controls programmed to charge anytime PV generation is greater than the building load and discharge to the electric grid, beginning during the highest priced time of use hours of the day.