

# Delete Appendix CH (2252)

IECC: APPENDIX CH, SECTION CH101, CH101.1, CH101.2, SECTION CH102, SECTION 202, SECTION CH103, CH103.1, CH103.1.1, TABLE CH103.1.1, CH103.1.1.1, CH103.1.1.2, CH103.1.1.3, CH103.1.2, TABLE CH103.1.2, CH103.1.2.1, CH103.1.2.2, CH103.1.2.3, CH103.1.2.4, CH103.1.3, CH103.1.3.1, TABLE CH103.1.3.1, CH103.1.3.2, CH103.1.4, CH103.1.4.1, CH103.1.4.2, CH103.1.5, CH103.2, CH103.3

**Proponents:** Gary Heikkinen, Gary W Heikkinen Energy Consulting, American Gas Association (gary.heikkinen@nwnatural.com)

## 2024 International Energy Conservation Code [CE Project]

### ~~APPENDIX CH~~ ~~ELECTRIC-READY COMMERCIAL BUILDING PROVISIONS~~

#### ~~SECTION CH101~~ ~~GENERAL~~

~~**CH101.1 Intent.** The intent of this appendix is to amend the *International Energy Conservation Code* to reduce future retrofit costs by requiring *commercial buildings* with combustion equipment to install the electrical infrastructure for electric equipment.~~

~~**CH101.2 Scope.** The provisions in this appendix are applicable to *commercial buildings*. New construction shall comply with Section CH103.~~

#### ~~SECTION CH102~~ ~~DEFINITIONS~~

~~**APPLIANCE.** A device or apparatus that is manufactured and designed to utilize energy and for which this code provides specific requirements.~~

~~**COMBUSTION EQUIPMENT.** Any equipment or appliance used for space heating, service water heating, cooking, clothes drying or lighting that uses a fossil fuel.~~

~~**COMMERCIAL COOKING APPLIANCES.** Commercial cooking appliances used in a commercial food service establishment for heating or cooking food and which produce grease vapors, steam, fumes, smoke or odors that are required to be removed through a local exhaust ventilation system. Such appliances include deep fat fryers, upright broilers, griddles, broilers, steam jacketed kettles, hot top ranges, under fired broilers (charbroilers), ovens, barbecues, rotisseries and similar appliances.~~

#### ~~SECTION CH103~~ ~~NEW COMMERCIAL BUILDING~~

~~**CH103.1 Additional electric infrastructure.** Electric infrastructure in *buildings* that contain combustion equipment shall be installed in accordance with this section.~~

~~**CH103.1.1 Combustion space heating.** Spaces containing combustion equipment for space heating shall comply with Sections CH103.1.1.1, CH103.1.1.2 and CH103.1.1.3.~~

~~TABLE CH103.1.1 ALTERNATE ELECTRIC SPACE HEATING EQUIPMENT CONVERSION FACTORS (VA/kBtu/h)~~

<del>99.6% HEATING DESIGN TEMPERATURE</del>		<del><math>P_s</math></del>
<del>Greater Than (<math>^{\circ}F</math>)</del>	<del>Not Greater Than</del>	<del>VA/kBtu/h</del>

50	N/A	N/A
45	50	94
40	45	100
35	40	107
30	35	115
25	30	124
20	25	135
15	20	149
10	15	164
5	10	184
0	5	210
-5	0	243
-10	-5	289
-15	-10	353

For SI: °C = [(°F) - 32]/1.8, 1 British thermal unit per hour = 0.2931 kW.

**GH103.1.1.1 Designated exterior locations for future electric space heating equipment.** Spaces containing combustion equipment for space heating shall be provided with designated exterior location(s) shown on the plans and of sufficient size for outdoor space heating heat pump equipment, with a chase that is sized to accommodate refrigerant lines between the exterior location and the interior location of the space heating equipment, and with natural drainage for condensate from heating operation or a condensate drain located within 3 feet (914 mm) of the location of the future exterior space heating heat pump equipment.

**GH103.1.1.2 Dedicated branch circuits for future electric space heating equipment.** Spaces containing combustion space heating equipment with a capacity not more than 65,000 Btu/h (19 kW) shall be provided with a dedicated 240-volt branch circuit with ampacity of not less than 50. The branch circuit shall terminate within 6 feet (1829 mm) of the space heating equipment and be in a location with ready access. Both ends of the branch circuit shall be labeled with the words "For Future Electric Space Heating Equipment" and be electrically isolated. Spaces containing combustion equipment for space heating with a capacity of not less than 65,000 Btu/h (19 kW) shall be provided with a dedicated branch circuit rated and sized in accordance with Section CH103.1.1.3, and terminating in a junction box within 3 feet (914 mm) of the location the space heating equipment in a location with ready access. Both ends of the branch circuit shall be labeled "For Future Electric Space Heating Equipment."

**Exceptions:**

1. Where a branch circuit provides electricity to the space heating combustion equipment and is rated and sized in accordance with Section CH103.1.1.3.
2. Where a branch circuit provides electricity to space cooling equipment and is rated and sized in accordance with Section CH103.1.1.3.
3. Where future electric space heating equipment would require three phase power and the space containing combustion equipment for space heating is provided with an electrical panel with a label stating "For Future Electric Space Heating Equipment" and a bus bar rated and sized in accordance with Section CH103.1.1.3.
4. Buildings where the 99.6 percent design heating temperature is not less than 50°F (10°C).

**GH103.1.1.3 Additional space heating electric infrastructure sizing.** Electric infrastructure for future electric space heating equipment shall be sized to accommodate not less than one of the following:

1. An electrical capacity not less than the nameplate space heating combustion equipment heating capacity multiplied by the value in Table CH103.1.1, in accordance with Equation CH-1.

Equation CH-1

$$VA_s = Q_{com} \times P_s$$

$VA_s$  = The required electrical capacity of the electrical infrastructure in volt amps.—

$Q_{com}$  = The nameplate heating capacity of the combustion equipment in kBtu/h.

$P_s$  = The VA per kBtu/h from Table CH103.1.1 in VA/kBtu/h.

2. An electrical capacity not less than the peak space heating load of the building areas served by the space heating combustion equipment, calculated in accordance with Section C403.1.1, multiplied by the value for the 99.6 percent design heating temperature in Table CH103.1.1, in accordance with Equation CH-2.

$$VA_s = Q_{design} \times P_s$$

Equation CH-2

$VA_s$  = The required electrical capacity of the electrical infrastructure in volt amps.

$Q_{design}$  = The 99.6 percent design heating load of the spaces served by the combustion equipment in kBtu/h.

$P_s$  = The VA per kBtu/h from Table CH103.1.1 in VA/kBtu/h.

3. An approved alternate design that uses no energy source other than electricity or on-site renewable energy.

**CH103.1.2 Combustion service water heating.** Spaces containing combustion equipment for service water heating shall comply with Sections CH103.1.2.1, CH103.1.2.2 and CH103.1.2.3.

**TABLE CH103.1.2 ALTERNATE ELECTRIC WATER HEATING EQUIPMENT CONVERSION FACTORS (VA/kBtu/h)**

-99.6% HEATING DESIGN TEMPERATURE-		-P <sub>s</sub> VA/kBtu/h
Greater Than (° F)	Not More Than	
55	60	118
50	55	123
45	50	129
40	45	136
35	40	144
30	35	152
25	30	162
20	25	173
15	20	185
10	15	200
5	10	209
0	5	209
Less than 0 °F		209

For SI: °C = [(°F) - 32]/1.8, 1 British thermal unit per hour = 0.2931 kW.

**CH103.1.2.1 Combustion service water heating electrical infrastructure.** For each piece of combustion equipment for water heating with an input capacity of not more than 75,000 Btu/h (22 kW), the following electrical infrastructure is required:

1. An individual 240-volt branch circuit with an ampacity of not less than 30 shall be provided and terminate within 6 feet (1829 mm) of the *water heater* and shall be in a location with ready access.
2. The branch circuit overcurrent protection device and the termination of the branch circuit shall be labeled "For future electric water heater."
3. The space for containing the future *water heater* shall include the space occupied by the combustion equipment and shall have a height of not less than 7 feet (2134 mm), a width of not less than 3 feet (914 mm), a depth of not less than 3 feet (914 mm) and with a volume of not less than 700 cubic feet (20 m<sup>3</sup>).

**Exception:** Where the space containing the *water heater* provides for air circulation sufficient for the operation of a heat pump *water heater*, the minimum room volume shall not be required.

**CH103.1.2.2 Designated locations for future electric heat pump water heating equipment.** Designated locations for future electric heat pump water heating equipment shall be in accordance with one of the following:

1. Designated exterior location(s) shown on the plans, of sufficient size for outdoor water heating heat pump equipment and with a chase that is sized to accommodate refrigerant lines between the exterior location and the interior location of the water heating equipment.
2. An interior location with a minimum volume the greater of 700 cubic feet (19 822 L) or 7 cubic feet (198 L) per 1,000 Btu/h (293 W) combustion equipment water heating capacity. The interior location shall include the space occupied by the combustion equipment.
3. An interior location with sufficient airflow to exhaust cool air from future water heating heat pump equipment provided by not fewer than one 16-inch (406 mm) by 24-inch (610 mm) grill to a heated space and one 8-inch (203 mm) *duct* of not more than 10 feet (3048 mm) in length for cool exhaust air.

**CH103.1.2.3 Dedicated branch circuits for future electric heat pump water heating equipment.** Spaces containing combustion equipment for water heating with a capacity of greater than 75,000 Btu/h (21 980 W) shall be provided with a dedicated branch circuit rated and sized in accordance with Section CH103.1.2.4 and terminating in a junction box within 3 feet (914 mm) of the location the water heating equipment in a location with ready access. Both ends of the branch circuit shall be labeled "For Future Electric Water Heating Equipment."

**Exception:** Where future electric water heating equipment would require three-phase power and the main electrical service panel has a reserved space for a bus bar rated and sized in accordance with Section CH103.1.2.4 and labeled "For Future Electric Water Heating Equipment."

**CH103.1.2.4 Additional water heating electric infrastructure sizing.** Electric infrastructure water heating equipment with a capacity of greater than 75,000 Btu/h (21 980 W) shall be sized to accommodate one of the following:

1. An electrical capacity not less than the combustion equipment water heating capacity multiplied by the value in Table CH103.1.2 plus electrical capacity to serve recirculating loads as shown in Equation CH 3.

$$VA_w = (Q_{capacity} \times P_w) + [Q_{recirc} \times 293(VA/(Btu/h))]$$

2. An alternate design that complies with this code, is *approved* by the authority having jurisdiction and uses no energy source other than electricity or *on site renewable energy*.

**CH103.1.3 Combustion cooking.** Spaces containing combustion equipment for cooking shall comply with Section CH103.1.3.1 or CH103.1.3.2:

**CH103.1.3.1 Commercial cooking.** Spaces containing commercial cooking appliances shall be provided with a dedicated branch circuit with a minimum electrical capacity in accordance with Table CH103.1.3.1 based on the appliance in the space. The branch circuit shall

terminate within 3 feet (914 mm) of the appliance in a location with ready access. Both ends of the branch circuit shall be labeled with the words "For Future Electric Cooking Equipment" and be electrically isolated.

**TABLE CH103.1.3.1 COMMERCIAL COOKING MINIMUM BRANCH CIRCUIT CAPACITY**

COMMERCIAL COOKING APPLIANCE	MINIMUM BRANCH CIRCUIT CAPACITY
Range	469 VA/kBtu/h
Steamer	114 VA/kBtu/h
Fryer	200 VA/kBtu/h
Oven	266 VA/kBtu/h
Griddle	195 VA/kBtu/h
All other commercial cooking appliances	114 VA/kBtu/h

For SI: 1 British thermal unit per hour = 0.2931 kW.

**GH103.1.3.2 All other cooking.** Spaces containing all other cooking equipment not designated as commercial cooking appliances shall be provided with a dedicated branch circuit in compliance with NFPA 70 Section 422.10. The branch circuit shall terminate within 6 feet (1829 mm) of fossil fuel ranges, cooktops and ovens and be in a location with ready access. Both ends of the branch circuit shall be labeled with the words "For Future Electric Cooking Equipment" and be electrically isolated.

**GH103.1.4 Combustion clothes drying.** Spaces containing combustion equipment for clothes drying shall comply with Section GH103.1.4.1 or GH103.1.4.2.

**GH103.1.4.1 Commercial drying.** Spaces containing clothes drying equipment and end uses for commercial laundry applications shall be provided with conduit that is continuous between a junction box located within 3 feet (914 mm) of the equipment and an electrical panel. The junction box, conduit and bus bar in the electrical panel shall be rated and sized to accommodate a branch circuit with sufficient capacity for equivalent electric equipment with equivalent equipment capacity. The electrical junction box and electrical panel shall have labels stating, "For Future Electric Clothes Drying Equipment."

**GH103.1.4.2 Residential drying.** Spaces containing clothes drying equipment, appliances and end uses serving multiple *dwelling units* or sleeping areas with a capacity less than or equal to 9.2 cubic feet (0.26 m<sup>3</sup>) shall be provided with a dedicated 240-volt branch circuit with a minimum capacity of 30 amperes, shall terminate within 6 feet (1829 mm) of fossil fuel clothes dryers and shall be in a location with ready access. Both ends of the branch circuit shall be labeled with the words "For Future Electric Clothes Drying Equipment" and be electrically isolated.

**GH103.1.5 On-site transformers.** *Enclosed spaces* and underground vaults containing on-site electric transformers on the *building side* of the electric utility meter shall have sufficient space to accommodate transformers sized to serve the additional electric loads identified in Sections GH103.1.1, GH103.1.2, GH103.1.3 and GH103.1.4.

**GH103.2 Hydronic heating design requirements.** For all hydronic space heating systems, the design entering water temperature for coils, radiant panels, radiant floor systems, radiators, baseboard heaters and any other device that uses hot water to provide heat to a space shall be not more than 130°F (54°C).

**GH103.3 Construction documentation.** The *construction documents* shall provide details for additional electric infrastructure, including branch circuits, conduit, prewiring, panel capacity and electrical service capacity, as well as interior and exterior spaces designated for future electric equipment.

**Reason:** This proposal will bring this section into compliance with R101.3 Intent of the code which states that the code "is not intended to eliminate any fuel type." The ICC Board Commentary goes on to state that the code "remain neutral to fuel source and do not promote or penalize specific types of equipment or fuel sources." The struck language from the 2024 code clearly violates this intent. These

provisions only add cost and do not save any energy in and of themselves. Therefore, they are not cost-effective, and it clearly penalizes the use of energy sources that are not electricity.

**Cost Impact (Detailed):** Decrease

**Estimated Immediate Cost Impact:**

Estimate cost decrease of less than 5% of total construction cost.

**Estimated Immediate Cost Impact Justification (methodology and variables):**

Estimate cost decrease of less than 5% of total construction cost.