ANSI/ASHRAE/ICC/USGBC/IES Addendum ac to ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2020

Standard for the Design of High-Performance Green Buildings

Except Low-Rise Residential Buildings

The Complete Technical Content of the International Green Construction Code®

Approved by the ASHRAE Standards Committee on June 24, 2023; by the International Code Council and the the Illuminating Engineering Society on May 22, 2023; by U.S. Green Building Council on May 29, 2023; and by the American National Standards Institute on July 25, 2023.

This addendum was approved by a Standing Standard Project Committee (SSPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the standard. Instructions for how to submit a change can be found on the ASHRAE® website (www.ashrae.org/continuous-maintenance).

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ASHRAE obtains consensus through participation of its national and international members, associated societies, and public review.

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c. offering constructive criticism for improving the Standard, or
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FOREWORD

In many jurisdictions, new construction, to be considered "high performance," will need the capability to receive electric replacements for fuel-fired combustion equipment. Building electrification and decarbonization policies are widely under consideration to address onsite fuel-fired combustion in buildings as their electrical grids become cleaner under statutory renewable portfolio standards. Where adopted, this jurisdictional option requires buildings to be electric-ready for appliances and equipment which can prevent greater future expense for building owners who choose or are required to utilize electricity in the future.

The cost of meeting electric-ready requirements while the building is under construction, walls are open, and the trades are already on-site, is small in comparison to the cost of retrofitting a building to install the same level of electric equipment. The cost of retrofitting panels, opening walls to install conduit, etc. can be orders of magnitude higher and act as a barrier for the owner to choose electric appliances at time of replacement or retrofit. Not making high-performance new buildings electric-ready would leave owners exposed to potentially higher retrofit costs in the future. Versions of these requirement will be mandatory in California Title 24-2022 and are currently under consideration in Washington, D.C. and other cities.

Recent analysis by NBI and contractors using cost data from RSMeans for a medium office building indicates that additional electrical infrastructure costs, as required in this addendum, for water heating and space heating would add $0.23 per square foot to project cost.

Note: In this addendum, changes to the current standard are indicated in the text by underlining (for additions) and ~~strikethrough~~ (for deletions) unless the instructions specifically mention some other means of indicating the changes.

Addendum ac to Standard 189.1-2020

Modify Section 3 as shown.

commercial cooking appliance: appliances used in a commercial food service establishment for heating or cooking food. For the purpose of this definition, a commercial food service establishment is where food is regularly prepared for sale or is prepared on a scale that is, by volume and frequency, not representative of domestic household cooking.

readily accessible: see ANSI/ASHRAE/IES Standard 90.1.

Add new Section 7.3.6 as shown.

7.3.6 [JO] Electric Infrastructure. New *buildings* that use fuel-fired appliances for space heating, *service water heating*, cooking, or clothes drying shall install electric infrastructure in accordance with Sections 7.3.6.1 through 7.3.6.5.

7.3.6.1 Fuel-Fired Space Heating. Locations of fuel-fired warm-air furnaces and fuel-fired boilers shall comply with Section 7.3.6.1.1 or 7.3.6.1.2, as applicable.

Exception to 7.3.6.1: Where a branch circuit exists for space cooling equipment with the capacity to serve heat-pump space heating equipment sized in accordance with the requirements of ANSI/ASHRAE/IES Standard 90.1, Section 6.4.2.

7.3.6.1.1 Low-Capacity Space Heating. Locations of fuel-fired warm-air furnaces with capacity less than 225,000 Btu/h (65.9kW) and fuel-fired boilers with a capacity less than 300,000 Btu/h (88kW) shall be provided with a dedicated branch circuit in accordance with all of the following:

a. The branch circuit shall terminate within 6 ft (2 m) of the location of the space heating equipment and shall be *readily accessible*.
b. The branch circuit shall be sized to serve heat-pump space heating equipment sized in accordance with the requirements of ANSI/ASHRAE/IES Standard 90.1, Section 6.4.2.
c. The branch circuit overcurrent device and the termination of the branch circuit shall be labeled "For future heat-pump space heating equipment."

7.3.6.1.2 Other Space Heating Equipment. Locations of fuel-fired space heating equipment not covered under Section 7.3.6.1.1 shall be provided with all of the following:

a. A raceway shall be continuous from a panelboard, switchboard, switchgear, or other originating equipment to a junction box located within the same *space* as the equipment or, where the equipment is located on the exterior of the building, within 3 ft (1m) of the equipment.
b. The junction box, raceway, branch circuit, panelboard and feeder shall be sized to serve electric space heating equipment sized to serve the same load as the fuel-fired space heating *appliance*.
c. The panelboard shall have sufficient reserved physical space for branch circuit overprotection devices sized to serve electric equipment sized to serve the same load as the fuel-fired space heating equipment.

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

d. The point of origin and the termination of the raceway shall be labeled "For future heat-pump space heating equipment."

7.3.6.2 Fuel-Fired Water Heating. Locations of fuel-fired water heaters shall comply with Section 7.3.6.2.1 or 7.3.6.2.2, as applicable.

7.3.6.2.1 Low-Capacity Fuel-fired Water Heating. Locations of fuel-fired water heaters with an input rating of less than 300,000 Btu/h (88kW) shall comply with all of the following:

a. An individual 30 amp, 208/240 V branch circuit shall be provided and terminate within 6 ft (2 m) of the water heater and shall be *readily accessible*.
b. The branch circuit overcurrent device and the termination of the branch circuit shall be labeled "For future electric water heater."
c. The *space* for containing the future water heater shall have a height of not less than 7 ft (2 m), a width of not less than 3 ft (1 m), a depth of not less than 3ft (1 m), and a volume of not less than 700 ft^3 (20 m^3).

7.3.6.2.2 Other Fuel-Fired Water Heating. Locations of fuel-fired water heating equipment not covered by Section 7.3.6.2.1 shall be provided with a raceway in accordance with all of the following:

a. The raceway shall be continuous from a panelboard to a junction box located within the same *space* as the equipment or, where the equipment is located on the exterior of the building, within 6 ft (2m) of the equipment.
b. The junction box, raceway, panelboard and feeder shall be sized to serve electric water-heating equipment sized to serve the same load as the fuel-fired water heating equipment.
c. The panelboard shall have sufficient reserved physical space for branch circuit overprotection devices sized to serve electric water heating equipment sized to serve the same load as the fuel-fired water heating equipment.
d. The point of origin and termination of the raceway shall be labeled "For future electric water heating appliance."

7.3.6.3 Fuel-Fired Cooking. Locations of fuel-fired cooking appliances shall comply with 7.3.6.3.1 or 7.3.6.3.2.

7.3.6.3.1 Commercial Cooking. Locations of fuel-fired *commercial cooking appliances* shall be provided with a raceway in accordance with all of the following:

a. The raceway shall be continuous from a panelboard to a junction box located within the same *space* as the appliance or, where the appliance is located on the exterior of the building, within 3 ft (1m) of the appliance.
b. The junction box, raceway, panelboard, and feeder shall be sized to accommodate a load of not less than 80 VA per 1 kBtu/h (76 VA per 1 MJ/h) of the input rating of the fuel-fired *commercial cooking appliance*.

7.3.6.3.2 Noncommercial Cooking. Locations of fuel-fired ranges, cooktops, and ovens not covered by Section 7.3.6.3.1 shall be provided with a dedicated branch circuit in accordance with all of the following:

a. The branch circuit shall be rated for 208/240 V and not less than 50 amps.
b. The branch circuit shall terminate within 3 ft (1 m) of the appliance and shall be *readily accessible*.
c. The point of origin and termination of the branch circuit shall be labeled "For future electric cooking appliance."

7.3.6.4 Fuel-Fired Clothes Drying. Locations of piping for fuel-fired clothes-drying equipment shall comply with Section 7.3.6.4.1 or 7.3.6.4.2, as applicable.

7.3.6.4.1 Residential Drying. Locations of fuel-fired clothes-drying appliances serving individual *dwellings units* shall be provided with a dedicated branch circuit in accordance with all of the following:

a. The branch circuit shall be rated for 208/240 V and not less than 30 amps.
b. The branch circuit shall terminate within 3 ft (1 m) of the appliance and shall be *readily accessible*.
c. The point of origin and termination of the branch circuit shall be labeled "For future electric clothes drying appliance."

7.3.6.4.2 Nonresidential Drying. Locations of fuel-fired clothes drying-appliances not covered by Section 7.3.6.4.1 shall be provided with a raceway in accordance with all of the following:

a. The raceway shall be continuous from the panelboard to a junction box located within the same *space* as the appliance.
b. The junction box, raceway, panelboard, and feeder shall be sized to serve electric clothes-drying appliances having the same drying capacity as the fuel-fired appliance.
c. The panelboard shall have sufficient reserved physical space for branch circuit overprotection devices sized to serve electric clothes-drying appliances sized to serve the same load as the fuel-fired clothes-drying appliances.
d. The point of origin and termination of the raceway shall be labeled "For future electric clothes-drying appliance."

7.3.6.5 Onsite Transformers. Enclosed *space* and underground vaults containing onsite 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 7.3.6.1, 7.3.6.2, 7.3.6.3 and 7.3.6.4.

Modify Section 11 as shown.

Reference	Title	Section
National Fire Protection Association 1 Battery March Park Quincy, MA 02169-7471 United States 1-617-770-0700 www.nfpa.org		
NFPA 70-2020	National Electric Code	7.3.6.1

POLICY STATEMENT DEFINING ASHRAE'S CONCERN FOR THE ENVIRONMENTAL IMPACT OF ITS ACTIVITIES

ASHRAE is concerned with the impact of its members' activities on both the indoor and outdoor environment. ASHRAE's members will strive to minimize any possible deleterious effect on the indoor and outdoor environment of the systems and components in their responsibility while maximizing the beneficial effects these systems provide, consistent with accepted Standards and the practical state of the art.

ASHRAE's short-range goal is to ensure that the systems and components within its scope do not impact the indoor and outdoor environment to a greater extent than specified by the Standards and Guidelines as established by itself and other responsible bodies.

As an ongoing goal, ASHRAE will, through its Standards Committee and extensive Technical Committee structure, continue to generate up-to-date Standards and Guidelines where appropriate and adopt, recommend, and promote those new and revised Standards developed by other responsible organizations.

Through its *Handbook*, appropriate chapters will contain up-to-date Standards and design considerations as the material is systematically revised.

ASHRAE will take the lead with respect to dissemination of environmental information of its primary interest and will seek out and disseminate information from other responsible organizations that is pertinent, as guides to updating Standards and Guidelines.

The effects of the design and selection of equipment and systems will be considered within the scope of the system's intended use and expected misuse. The disposal of hazardous materials, if any, will also be considered.

ASHRAE's primary concern for environmental impact will be at the site where equipment within ASHRAE's scope operates. However, energy source selection and the possible environmental impact due to the energy source and energy transportation will be considered where possible. Recommendations concerning energy source selection should be made by its members.

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Standard 189.1 and the International Green Construction Code

Standard 189.1 serves as the complete technical content of the International Green Construction Code® (IgCC). The IgCC creates a regulatory framework for new and existing buildings, establishing minimum green requirements for buildings and complementing voluntary rating systems. For more information, visit www.iccsafe.org.

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As an industry leader in research, standards writing, publishing, certification, and continuing education, ASHRAE and its members are dedicated to promoting a healthy and sustainable built environment for all, through strategic partnerships with organizations in the HVAC&R community and across related industries.

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