Public Review Draft

Proposed Addendum to Standard 189.1-2020

Standard for the Design of High-Performance Green Buildings

Except Low-Rise Residential Buildings

First Public Review (September, 2022)
(Draft Shows Proposed Changes to Current Standard)

This draft has been recommended for public review by the responsible project committee. To submit a comment on this proposed standard, go to the ASHRAE website at www.ashrae.org/standards-research-technology/public-review-drafts and access the online comment database. The draft is subject to modification until it is approved for publication by the Board of Directors and ANSI. Until this time, the current edition of the standard (as modified by any published addenda on the ASHRAE website) remains in effect. The current edition of any standard may be purchased from the ASHRAE Online Store at www.ashrae.org/bookstore or by calling 404-636-8400 or 1-800-727-4723 (for orders in the U.S. or Canada).

This standard is under continuous maintenance. To propose a change to the current standard, use the change submittal form available on the ASHRAE website, www.ashrae.org.

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ASHRAE, 180 Technology Pkwy NW, Peachtree Corners, GA 30092
Foreword

In many jurisdictions, new construction to be considered “high performance” will need capability to receive electric replacements for fossil fuel combustion equipment. Building electrification and decarbonization policies are widely under consideration to address onsite fossil fuel 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 proposal for water-heating and space-heating would add $0.23 per square foot to project cost.

[Note to Reviewers: This addendum makes proposed changes to the current standard. These changes are indicated in the text by underlining (for additions) and strikethrough (for deletions) except where the reviewer instructions specifically describe some other means of showing the changes. Only these changes to the current standard are open for review and comment at this time. Additional material is provided for context only and is not open for comment except as it relates to the proposed changes.]
Addendum ac to 189.1-2020

Add definitions as follows:

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 Section 7.3.6 as follows:

7.3.6 [JO] Electric infrastructure. New buildings that use fossil fuels for space heating, service water heating, cooking, or clothes drying shall install electric infrastructure in accordance with 7.3.6.1 through 7.3.6.5.

7.3.6.1 Fossil Fuel space heating. Locations with piping for fossil fuel warm-air furnaces or fossil fuel 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 6.4.2 of ANSI/ASHRAE/IES Standard 90.1.

7.3.6.1.1 Low-capacity space heating. Locations of fossil fuel warm-air furnaces with capacity less than 225,000 Btu/hr (65.9kW) or boilers with a capacity less than 300,000 Btu/hr (88kW) shall be provided with an individual branch circuit in accordance with all of the following:

1. The branch circuit conductors shall terminate within 3 ft (1 m) of the location of the space heating equipment and shall be readily accessible.
2. The branch circuit conductors shall be sized to serve heat pump space heating equipment sized in accordance with the requirements of 6.4.2 of ANSI/ASHRAE/IES Standard 90.1, and
3. The point of origin 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 fossil fuel space heating equipment not covered under 7.3.6.1.1 shall be provided with a raceway in accordance with all of the following:

1. The raceway shall be continuous from a branch circuit panel 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.
2. The junction box, raceway, bus bar in the electric panel and conductors serving the electrical panel shall be sized to serve electric space heating equipment sized to serve the same load as the fossil fuel space heating appliance.
3. The electrical panel shall have sufficient reserved physical space for branch circuit overprotection devices sized to serve electric equipment sized to serve the same load as the fossil fuel space heating appliance,
4. The point of origin and the termination of the raceway shall be labeled “For future heat pump space heating equipment.”

7.3.6.2 Fossil Fuel water heating. Locations with piping for fossil fuel 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 fossil fuel water heating. Locations of fossil fuel water heaters with an input rating of less than 300,000 Btu/hr (88kW) shall comply with all of the following:
4. An individual 30 ampere, 208/240-volt branch circuit shall be provided and terminate within 3 ft (1 m) of the water heater and shall be readily accessible.

2. The point of origin and the termination of the branch circuit shall be labeled "For future electric water heater".

3. The space containing the 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 3 ft (1 m) and a volume of not less than 700 ft³ (20 m³).

Exception to 7.3.6.2: Where the space containing the water heater is provided with air ducts or transfer openings to accommodate a heat pump water heater, the minimum volume shall not be required.

7.3.6.2.2 Other fossil fuel water heating. Locations of fossil fuel 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:

1. The raceway shall be continuous from an electric panel 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 (1 m) of the equipment.

2. The junction box, raceway, and bus bar in the electric panel and conductors serving the electric panel shall be sized to accommodate electric water heating equipment sized to serve the same load as the fossil fuel water heating equipment.

3. The electric panel 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 fossil fuel water heating equipment.

4. The point of origin and termination of the raceway shall be labeled “For future electric space heating appliance”.

7.3.6.3 Fossil fuel cooking. Locations with piping for fossil fuel 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 fossil fuel commercial cooking appliances shall be provided with a raceway in accordance with all of the following:

1. The raceway shall be continuous from an electric panel 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 (1 m) of the appliance.

2. The junction box, raceway, bus bar in the electric panel and conductors serving the electric panel shall be sized to accommodate a load of not less than 80 VA per 1 kBtu/hr (76 VA per 1 MJ/hr) of the input rating of the fossil fuel commercial cooking appliance.

7.3.6.3.2 Non-commercial cooking. Locations of fossil fuel ranges, cooktops and ovens not covered by Section 7.3.6.3.1 shall be provided with an individual branch circuit in accordance with all of the following:

1. The branch circuit shall be rated for 208/240-volts and not less than 50 amps.

2. The branch circuit shall terminate within 3 ft (1 m) of the appliance and shall be readily accessible.

3. The point of origin and termination of the branch circuit shall be labeled “For future electric cooking appliance”.

7.3.6.4 Fossil fuel clothes drying. Locations with piping for fossil fuel clothes drying equipment shall comply with 7.3.6.4.1 or 7.3.6.4.2, as applicable.

7.3.6.4.1 Residential drying. Locations of fossil fuel clothes drying appliances serving individual dwellings units shall be provided with an individual branch circuit in accordance with all of the following:

1. The branch circuit shall be rated for 208/240-volts and not less than 30 amps.

2. The branch circuit shall terminate within 3 ft (1 m) of the appliance and shall be readily accessible.
3. The point of origin and termination of the branch circuit shall be labeled “For future electric clothes drying appliance”.

7.3.6.4.2 Non-residential 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:
1. The raceway shall be continuous from an electric panel to a junction box located within the same space as the appliance.
2. The junction box, raceway, electric panel bus bar and conductors serving the electric panel shall have the capacity to serve electric clothes drying appliances having the same drying capacity as the fuel-fired appliance.
3. The electric panel 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 fossil fuel clothes drying appliances.
4. 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 spaces 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 7.3.6.1, 7.3.6.2, 7.3.6.3 and 7.3.6.4.

Add reference in Chapter 11 Normative Reference as follows:

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<thead>
<tr>
<th>Reference</th>
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| National Fire Protection Association  
1 Battery March Park  
Quincy, MA 02169-7471  
United States  
1-617-770-0700  
www.nfpa.org | National Electric Code | 7.3.6.1 |
| NFPA 70-2020 | | |