

Public Review Draft

Proposed Addendum w to Standard 189.1-2017

Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings

First Public Review (March 2019)
(Draft Shows Proposed Changes to Current Standard)

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Foreword

This revision adds a requirement that buildings under 50,000 sf of conditioned floor area verify air tightness through leakage testing. The referenced Standard 90.1 has multiple options for verifying air tightness. This requirement directs new buildings under 50,000 sf of conditioned floor area and under 75 feet in height to comply with the testing option, and allows all other buildings to comply using any verification option.

The two methods of verification in Section 5.9.2.2 of ASHRAE 90.1-2016 are (1.) design review and periodic field inspection of the continuous air barrier, and (2.) whole building pressurization testing. One of these must be performed to meet the requirements of both ASHRAE 90.1-2016 and ASHRAE 189.1-2017. This change to require testing for some buildings could potentially result in more energy savings in cases where significant gaps in the continuous air barrier are not identified during the periodic field inspection.

The 50,000 sf and under 75 feet in height were chosen as a threshold because this is the size of building that can still generally be tested utilizing the kind of equipment used for residential air tightness testing. This ensures that there is a sufficient market of testing equipment and professionals. Larger buildings can certainly be tested, but this can require either different equipment or different expertise that may not be available or affordable in all markets. “Conditioned floor area” was the chosen metric for the area threshold since the energy savings of air tightness is directly connected to space conditioning energy.

The proposal adds the definition of “high-rise building” from the International Building Code to leverage a threshold and definition already in use in the market.

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

Addendum w to 189.1-2017

Add new definition as follows:

High-rise building: A building with an occupied floor located more than 75 feet (23 m) above the lowest level of fire department vehicle access.

Gross conditioned floor area: See ANSI/ASHRAE/IES Standard 90.1.

Revise Section 10.3.1.3.5 as follows:

10.3.1.3.5 Building Envelope Airtightness. *Building envelope* airtightness shall comply with ANSI/ASHRAE/IES Standard 90.1, with the following modifications and additions. Air leakage verification in high-rise buildings, buildings greater than 50,000 ft² (5000 m²) of gross conditioned floor area, and existing buildings shall be determined in accordance with ANSI/ASHRAE/IES Standard 90.1, Section 5.9.2.2. Air leakage verification in all other buildings shall be in accordance with ANSI/ASHRAE/IES Standard 90.1, Section 5.9.2.2(b).

- a. When implementing the testing option in ANSI/ASHRAE/ IES Standard 90.1, Sections 5.9.2.2(b) and 5.4.3.1.3(a), whole-building pressurization testing shall meet the following requirements:
 1. It shall be conducted in accordance with ASTM E779, ASTM E1827, CAN/CGSB-149.10, CAN/CGSB-149.15, ISO 9972, or equivalent standard by an independent third party.
 2. The measured air leakage rate of the building envelope shall not exceed 0.25 cfm/ft² (1.25 L/s·m²) under a pressure differential of 0.3 in. of water (75 Pa), with this air leakage rate normalized by the sum of the above- and below-grade building envelope areas of the conditioned and semiheated space.
 3. Section 5.4.3.1.3(a), Exception (1), is not allowed.
 4. Section 5.4.3.1.3(a), Exception (2), is allowed where the measured air leakage rate exceeds 0.25 cfm/ft² (1.25 L/s·m²) but does not exceed 0.40 cfm/ft² (2.0 L/s·m²).
- b. When implementing the verification program option in ANSI/ASHRAE/IES Standard 90.1, Section 5.9.2.2(a), the air barrier design review shall be performed by an independent third party.