

# ADDENDA

**ANSI/ASHRAE/IES Addendum ah to  
ANSI/ASHRAE/IES Standard 90.1-2019**

# Energy Standard for Buildings Except Low-Rise Residential Buildings

Approved by ASHRAE and the American National Standards Institute on August 31, 2021, and by the Illuminating Engineering Society on August 26, 2021.

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 (<https://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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The Senior Manager of Standards of ASHRAE should be contacted for

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- participation in the next review of the Standard,
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## FOREWORD

*This addendum modifies Section 7.5.3, which sets minimum thermal efficiency ( $E_t$ ) requirements for high-capacity gas-fired water heaters in new buildings. It applies only when the total input capacity of that equipment exceeds 1,000,000 Btu/h (293 kW). Changes include the following:*

- *Where a single high-capacity water heater supplies a system or there are multiple high-efficiency water heaters supplying a single system, the minimum  $E_t$  is now 92%.*
- *Left unchanged is the requirement that when there is a mix of high- and standard-efficiency water heaters supplying a system, the total input-capacity-weighted  $E_t$  must be 90% or higher, but the language has been revised for clarity.*

*Clear criteria have been established for high-capacity water heaters. Commercial water heaters in the United States are regulated by the U.S. Department of Energy (USDOE) under 10 CFR Part 431 and defined as follows:*

- *Gas-fired instantaneous water heaters with a rated input both greater than 200,000 Btu/h and not less than 4,000 Btu/h per gallon of stored water*
- or*
- *Gas-fired storage water heaters with a rated input both greater than 105,000 Btu/h and less than 4,000 Btu/h per gallon of stored water*

*These definitions are used to describe high-capacity gas-fired service water-heating equipment. Service water heaters that are not included are consumer products regulated under 10 CFR Part 430 and residential-duty commercial water heaters as defined in 10 CFR Part 431. These products are rated using the Uniform Energy Factor, which cannot be readily compared to  $E_t$ .*

*Other changes include the following:*

- *Minor editorial corrections*
- *The exception for buildings that use site-solar or on-site recovered energy has been deleted since there are now general provisions covering renewables in other parts of the standard.*

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

### Addendum ah to Standard 90.1-2019

#### **Modify Section 7.5.3 as shown (I-P and SI).**

**7.5.3 ~~Large Buildings with High-Capacity Service Water-Heating Systems.~~** New buildings with gas-service water-heating systems with a total installed gas-water-heating input capacity of 1,000,000 Btu/h (293 kW) or greater, provided by high-capacity shall have gas-fired service water-heating equipment-service water-heating equipment shall meet either or both of the following requirements:

- Where a single unit of high-capacity gas-fired service water-heating equipment is installed, it shall have with a minimum thermal efficiency ( $E_t$ ) of 92%.
- Multiple units of high-capacity gas-fired service water-heating water-heating equipment connected to the same service water-heating system shall have are allowed to meet this requirement if the water-heating input provided by equipment with thermal efficiency ( $E_t$ ) above and below 90% provides an total input-capacity-weighted average thermal efficiency ( $E_t$ ) of at least

90%, and a minimum of 30% of the input of the high-capacity gas-fired service water-heating equipment in the service water heating-system shall have a thermal efficiency ( $E_t$ ) of at least 92%.

High-capacity gas-fired service water-heating equipment comprises gas-fired instantaneous water heaters with a rated input both greater than 200,000 Btu/h (58.6 kW) and not less than 4000 Btu/h per gallon (310 W per litre) of stored water, and gas-fired storage water heaters with a rated input both greater than 105,000 Btu/h (30.8 kW) and less than 4000 Btu/h per gallon (310 W per litre) of stored water.

**Exceptions to 7.5.3:**

- ~~1. Where 25% of the annual service water-heating requirement is provided by on-site renewable energy or site-recovered energy.~~
- ~~2. 1. Water heaters installed in individual dwelling units.~~
- ~~3. 2. Individual gas water heaters with input capacity not greater than 100,000 Btu/h (29.3 kW).~~

## **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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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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