

# ADDENDA

**ANSI/ASHRAE/IES Addendum i to  
ANSI/ASHRAE/IES Standard 90.1-2022**

# Energy Standard for Sites and Buildings Except Low-Rise Residential Buildings

Approved by ASHRAE and the American National Standards Institute on February 29, 2024, and by the Illuminating Engineering Society on January 26, 2024.

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](http://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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## FOREWORD

*Addendum i modifies service water heating energy credit measure W08. The International Plumbing Code has revised the maximum flow rate for showerheads down from 2.5 to 2.0 gpm (0.16 to 0.13 L/s). Further, a review of the piping resizing measure found that the anticipated heat loss reduction from the smaller piping was a very small savings in relation to the fixture flow reduction savings. This addendum reduces the showerhead flow rate required for energy credits from 2.0 gpm (0.13 L/s) to 1.8 gpm (0.11 L/s), removes the requirements and savings related to the hot-water piping resizing, and adjusts base credits achieved accordingly.*

*This is an optional energy credit choice, and the showerhead flow of 1.8 gpm (0.11 L/s) matches new construction showerhead requirements in California (since 2018), Washington, Oregon, Hawaii, Maine, and some local municipalities. Where low water supply pressures are anticipated, user satisfaction may be enhanced if flow restrictors or fixtures are specified to provide  $\geq 80\%$  of the rated flow at 20 psi (140 kPa). There are also revisions to the abbreviated measure name.*

*Cost-effectiveness was not considered for this measure, as it is an option that can be applied to meeting energy credit requirements, and those requirements are not increased by this addendum. Generally, there is no price premium for low-flow plumbing fixtures.*

**Informative 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 i to Standard 90.1-2022

*Modify the standard as shown (I-P and SI).*

**11.5.2.3.5 W08: ~~Right Sizing the~~ Reduce Residential Service Hot-Water Fixture Flow Distribution System.** To achieve this credit, ~~where multifamily, dormitory, retirement, or hotel/motel buildings are served by a central service hot water system, the distribution system serving dwelling units and guest rooms shall be sized using IAPMO/ANSI WE•Stand, Appendix C. Plumbing fixtures in residential spaces that are connected to the service water heating system shall have a flow or consumption rating less than or equal to the values shown in Table 11.5.2.3.5.~~

**Table 11.5.2.3.5 Maximum Flow Rating for Residential Plumbing Fixtures with Heated Water**

Plumbing Fixture	Maximum Flow Rate
Faucet for private lavatory, <sup>a</sup> hand sinks, or bar sinks	1.50 gpm at 60 psi (0.095 L/s at 410 kPa)
Faucet for <i>residential</i> kitchen sink <sup>a, b, c</sup>	1.8 gpm at 60 psi 0.11 L/s at 410 kPa)
Shower head (including hand-held shower spray) <sup>a, b, d</sup>	<del>2.0</del> 1.8 gpm at 80 psi ( <del>0.13</del> 0.11 L/s at 550 kPa)

a. Showerheads, lavatory faucets and kitchen faucets are subject to U.S. Federal requirements listed in 10 CFR 430.32(o)-(p).

b. Maximum flow allowed is less than required by flow rates listed in U.S. 10 CFR 430.32(o)-(p) for showerheads and kitchen faucets.

c. *Residential* kitchen faucet may temporarily increase the flow above the maximum rate, but not above 2.2 gallons per minute at 60 psi (0.14 L/s at 410 kPa) and must default to the maximum flow rate listed.

d. When a shower is served by multiple shower heads, the combined flow rate of all shower heads controlled by a single valve shall not exceed the maximum flow rate listed or the shower shall be designed to allow only one shower head to operate at a time.

**Table 11.5.3-1 Energy Credits for Multifamily**

ID	Energy Credit Abbreviated Title	Section	0A	0B	1A	1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
W08	SHW <del>distribution sizing</del> flow reduction	11.5.2.3.5	<del>10</del> 6	<del>11</del> 7	<del>13</del> 8	<del>13</del> 8	<del>16</del> 10	<del>16</del> 10	<del>20</del> 12	<del>19</del> 12	<del>24</del> 15	<del>22</del> 14	<del>22</del> 13	<del>25</del> 16	<del>23</del> 14	<del>23</del> 15	<del>27</del> 17	<del>23</del> 14	<del>24</del> 15	<del>24</del> 15	<del>24</del> 15

**Table 11.5.3-2 Energy Credits for Health Care Buildings**

ID	Energy Credit Abbreviated Title	Section	0A	0B	1A	1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
W08	SHW <del>distribution sizing</del> flow reduction	11.5.2.3.5	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

**Table 11.5.3-3 Energy Credits for Hotel/Motel**

ID	Energy Credit Abbreviated Title	Section	0A	0B	1A	1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
W08	SHW <del>distribution sizing</del> flow reduction	11.5.2.3.5	<del>3</del> 2	<del>4</del> 2	<del>4</del> 3	<del>4</del> 3	<del>5</del> 3	<del>6</del> 3	<del>7</del> 4	<del>6</del> 4	<del>7</del> 5	<del>8</del> 5	<del>7</del> 5	<del>9</del> 5	<del>8</del> 5	<del>8</del> 5	<del>9</del> 6	<del>9</del> 5	<del>9</del> 5	<del>9</del> 6	<del>9</del> 6

**Table 11.5.3-4 Energy Credits for Office Buildings**

ID	Energy Credit Abbreviated Title	Section	0A	0B	1A	1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
W08	SHW <del>distribution sizing</del> flow reduction	11.5.2.3.5	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

**Table 11.5.3-5 Energy Credits for Restaurant Buildings**

ID	Energy Credit Abbreviated Title	Section	0A	0B	1A	1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
W08	SHW <del>distribution sizing</del> flow reduction	11.5.2.3.5	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

**Table 11.5.3-6 Energy Credits for Retail Buildings**

ID	Energy Credit Abbreviated Title	Section	0A	0B	1A	1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
W08	SHW <del>distribution sizing</del> flow reduction	11.5.2.3.5	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

**Table 11.5.3-7 Energy Credits for Education Buildings**

ID	Energy Credit Abbreviated Title	Section	0A	0B	1A	1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
W08	SHW <del>distribution sizing</del> flow reduction	11.5.2.3.5	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

**Table 11.5.3-8 Energy Credits for Warehouses**

ID	Energy Credit Abbreviated Title	Section	0A	0B	1A	1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
W08	SHW <del>distribution sizing</del> flow reduction	11.5.2.3.5	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

**Table 11.5.3-9 Energy Credits for Other Buildings**

ID	Energy Credit Abbreviated Title	Section	0A	0B	1A	1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
W08	SHW <del>distribution sizing</del> flow reduction	11.5.2.3.5	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

## **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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