

ADDENDA

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

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

Approved by ASHRAE Standards committee on June 25, 2025; by the American National Standards Institute on July 18, 2025; and by the Illuminating Engineering Society on July 2, 2025.

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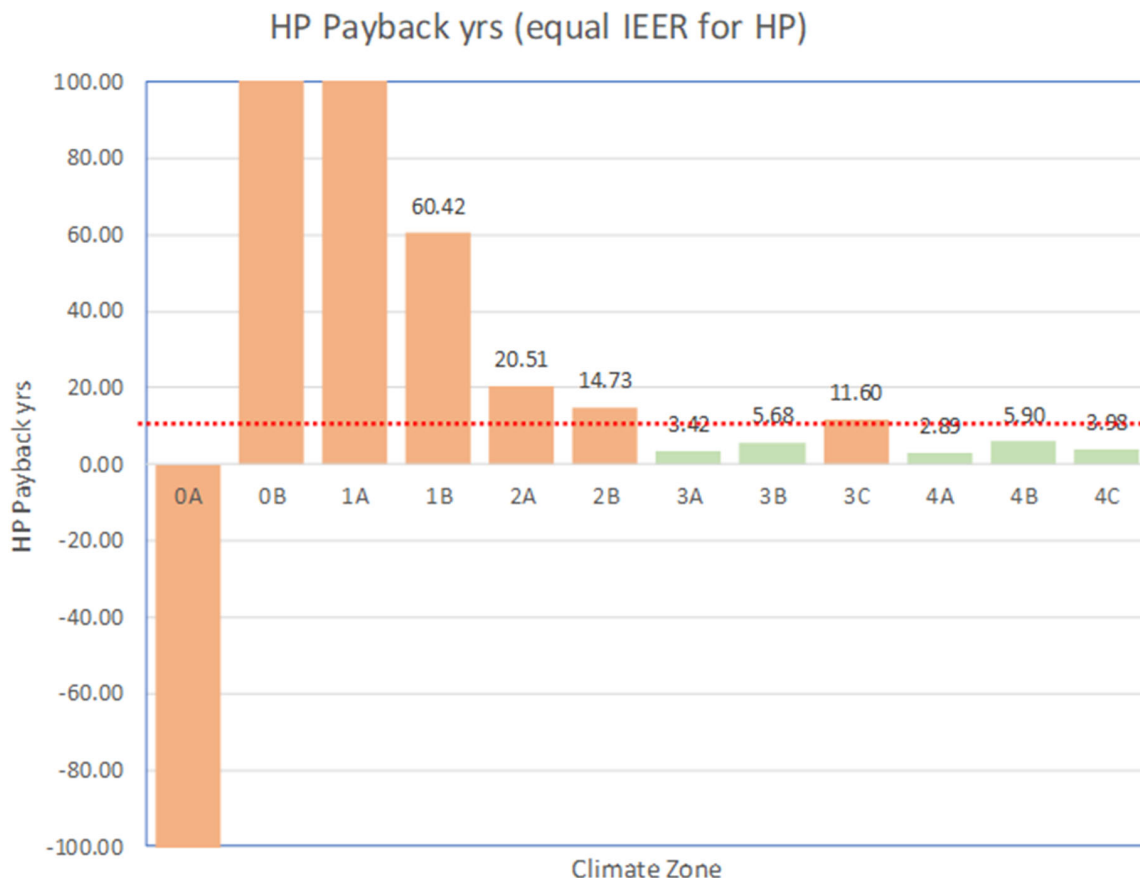
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FOREWORD

Section 12 requires that when the proposed design is a single-zone HVAC system using electricity for heating, the baseline HVAC system must be packaged heat pump. But there is no such requirement in Section 6, so it is possible to comply prescriptively using a single-zone air-conditioning (AC) unit with electric resistance heat. If the AC unit already has compressor-based cooling, it can be readily converted to a heat pump at relatively low cost. Depending on the design, this can reduce the efficiency in cooling, which is why the cooling efficiencies in Table 6.8.1 for non-DOE-covered heat pumps is lower than that for cooling-only or gas-furnace heating AC units. Because of this reduction in efficiency, using these larger heat pumps in cooling dominated climates can result in higher overall energy costs and poor payback periods. For DOE-covered equipment, the efficiencies are the same, requiring that manufacturers compensate for four-way valve losses, etc., with addition heat transfer area or other design options.

Life-cycle cost analysis shows the following for DOE-covered heat pumps with a cooling capacity of not less than 65,000 Btu/h for the prototype small office building, assuming no outdoor-air economizers since units are largely below the economizer threshold:



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 ak to Standard 90.1-2022

Modify Sections 6.3.2(c) and (e) as shown (I-P and SI).

- c. Cooling (if any) shall be provided by a unitary packaged or split-system air conditioner that is either air cooled or evaporatively cooled, with *efficiency* meeting the requirements shown in Table 6.8.1-1 (air conditioners), Table 6.8.1-2 (heat pumps), or Table 6.8.1-4 (packaged terminal units, ~~and single-packaged vertical units, and room air conditioners~~ and heat pumps) for the applicable *equipment* category. Cooling *equipment* shall also comply with Section 6.4.1.4.

[...]

- e. Heating (if any) shall be provided by a unitary packaged or split-system heat pump that meets the applicable *efficiency* requirements shown in Table 6.8.1-2 (heat pumps) or Table 6.8.1-4 (packaged terminal units, ~~and single-packaged vertical air conditioners, and room air conditioners~~ and heat pumps), a fuel-fired furnace that meets the applicable efficiency requirements shown in Table 6.8.1-5 (furnaces, duct furnaces, and unit heaters), ~~an electric resistance heater~~, or a baseboard system connected to a boiler that meets the applicable *efficiency* requirements shown in Table 6.8.1-6 (boilers). Heating equipment shall also comply with Section 6.4.1.4.

Exceptions to (e):

1. Where air conditioners with a rated cooling capacity of not less than 65,000 Btu/h (19 kW) are used, electric resistance heating shall be allowed in Climate Zones 0A, 0B, 1A, 1B, 2A, and 2B.
2. Supplemental electric resistance heating in the HVAC zone shall be permitted where the heating system is a heat pump.
3. Uncooled spaces shall be permitted to use electric resistance heating.
4. Electric radiant heating shall be permitted in spaces with a ceiling height of not less than 15 ft (4.6 m).

Add new Section 6.5.12 as shown (I-P and SI).

6.5.12 HVAC zones cooled by a single-zone unitary packaged, split-system, packaged-terminal, or room air conditioner shall not use electric resistance heating.

Exceptions to 6.5.12:

1. Supplemental electric resistance heating in the HVAC zone shall be permitted where the heating system is a heat pump.
2. Air conditioners with a rated cooling capacity of not less than 65,000 Btu/h (19 kW) in Climate Zones 0A, 0B, 1A, 1B, 2A, and 2B.
3. Electric radiant heating shall be permitted in spaces with a ceiling height of not less than 15 ft (4.6 m).

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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