STANDARD

ANSI/ASHRAE/IES Addendum az to
ANSI/ASHRAE/IES Standard 90.1-2022

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

Approved by the ASHRAE Standards Committee on February 8, 2025; by the American National Standards Institute on March 11, 2025; and by the Illuminating Engineering Society on January 28, 2025.

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FOREWORD

Addendum az will assist ANSI/ASHRAE/IES Standard 90.1 in achieving its organizational objectives of reducing energy use and direct and indirect greenhouse gas emissions by preparing newly constructed buildings and supporting automobile parking facilities for the widespread adoption of electric vehicles (EVs) by assuring efficient charging sessions, power export readiness, and flexible load management via electrical infrastructure. This addendum includes new definitions and Chapter 8 mandatory provisions.

Efficient Charging Sessions. *While charging, the charging system draws ±250 W in addition to the amount of power that is transferred to the battery, reducing the efficiency of charging sessions. At a given circuit ampacity, higher voltage Level 2 charging sessions enable higher charging powers that reduce charging times. Level 2 (≥208 V) charging sessions are nearly three times faster than Level 1 (120 V) charging sessions, saving ±250 Wh for each charging hour reduced. If annual mileage of 12,000 requires 10 kWh in daily recharging energy, a Level 2 charging session eliminates at least 6.4 hours of vehicle charging overhead power per day, saving 900 kWh/year per parking space. See Section 8.4.5(a).*

Power Export Readiness. *In the near future, vehicles and their batteries may contribute power to building or grid needs when they comply with the upcoming SAE standards for AC bidirectional power transfer. When a nonresidential project includes EV charging, the infrastructure branch-circuit topology and conductors should be ready by utilizing dedicated branch circuits with conductors sized to match the expected SAE bidirectional power transfer levels from light-duty vehicles. See Section 8.4.5(b).*

Flexible Load Management Readiness. *When a project includes EV charging, the infrastructure should be ready to support demand management to reduce greenhouse gas emissions and manage peak demand charges where applicable. To achieve this, EV chargers must be network-connected and ready to be controlled by the building management system or a grid services provider. Nearly all EVSE or controlled receptacles suitable for commercial or high-rise residential use will utilize some form of connectivity for session management and customer billing. See Section 8.4.5(c).*

Cost Effectiveness. *The scaler ratio is cost positive when EV spaces are charging vehicles at least 10% of the year. The social cost of carbon approach is cost positive when EV spaces are charging vehicles at least 6% of the year.*

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

Addendum az to Standard 90.1-2022

Revise Section 3 as shown below.

3. DEFINITIONS, ABBREVIATIONS, AND ACRONYMS

[. . .]

electric vehicle (EV)**:** an automotive-type vehicle for on-road use, such as passenger automobiles, buses, trucks, vans, neighborhood electric vehicles, and electric motorcycles, primarily powered by an electric motor that draws current from a building electrical service, *electric vehicle supply equipment*, rechargeable storage battery, fuel cell, photovoltaic array, or another source of electric current. Plug-in hybrid *EV*s are *EV*s having a second source of motive power.

electric vehicle space (EV space)**:** a parking space that is provided with a dedicated means of power transfer between an *EV* and power supply for the purpose of charging *EV* batteries.

electric vehicle supply equipment (EVSE)**:** equipment for power transfer, including the ungrounded, grounded, and equipment grounding conductors, and the electric vehicle connectors, attachment plugs, personal protection system, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring power between the premises wiring and the *electric vehicle*.

[. . .]

3.3 Abbreviations and Acronyms

[. . .]

EV	*electric vehicle*
EVSE	*electric vehicle supply equipment*

Revise Section 8.4 as shown below.

8.4 Mandatory Provisions

[. . .]

8.4.5 Minimum Requirements for AC *Electric Vehicle Spaces (EV Spaces).* *EV spaces* shall comply with all of the following:

a. Branch circuits serving *EV spaces* shall have a rated voltage of not less than 208 V.
b. In *buildings* other than multifamily, branch circuits serving charging of *EV*s shall have conductors sized to deliver a continuous duty load of not less than 6.6 kVA to each *EV space* and circuit protection sized to serve the load.
c. In *buildings* other than multifamily, *electric vehicle supply equipment* (*EVSE*) shall be capable of being controlled by a building management system or grid services aggregator.

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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