



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

**Public Review Draft**

# **Proposed Addendum az to Standard 90.1-2022, Energy Standard for Sites and Buildings Except Low- Rise Residential Buildings**

**First Public Review (September 2024)  
(Draft Shows Proposed Changes to Current Standard)**

This draft has been recommended for public review by the responsible project committee. To submit a comment on this proposed standard, go to the ASHRAE website at [www.ashrae.org/standards-research--technology/public-review-drafts](http://www.ashrae.org/standards-research--technology/public-review-drafts) and access the online comment database. The draft is subject to modification until it is approved for publication by the Board of Directors and ANSI. Until this time, the current edition of the standard (as modified by any published addenda on the ASHRAE website) remains in effect. The current edition of any standard may be purchased from the ASHRAE Online Store at [www.ashrae.org/bookstore](http://www.ashrae.org/bookstore) or by calling 404-636-8400 or 1-800-727-4723 (for orders in the U.S. or Canada).

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**ASHRAE, 180 Technology Parkway NW, Peachtree Corners, GA 30092**

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**(This foreword is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard. It has not been processed according to the ANSI requirements for a standard and may contain material that has not been subject to public review or a consensus process. Unresolved objectors on informative material are not offered the right to appeal at ASHRAE or ANSI.)**

## FOREWORD

*This addendum is proposed to assist ANSI/ASHRAE/IES Standard 90.1-2025 to achieve 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  $250\text{ W}\pm$  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 ( $\geq 208\text{ V}$ ) charging sessions are nearly three times faster than Level 1 (120V) charging sessions, saving  $250\text{ Wh}\pm$  for each charging hour reduced. If 12K annual mileage 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 8.4.5.1.a. below.*

### 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 non-residential 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 8.4.5.1.b. below.*

### 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 charger 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 8.4.5.1.c. below.*

[OBJ]

### Cost Effectiveness

*The scalar 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 to Reviewers: This addendum makes proposed changes to the current standard. These changes are indicated in the text by underlining (for additions) and ~~striketrough~~ (for deletions) except where the reviewer instructions specifically describe some other means of showing the changes. Only these changes to the current standard 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 changes.]***

## **Addendum az to 90.1-2022**

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### **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, *EVSE*, a rechargeable storage battery, a fuel cell, a photovoltaic array, or another source of electric current. Plug-in hybrid electric vehicles are electric vehicles having a second source of motive power.

**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*.

**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.

### **3.3 Abbreviations and Acronyms**

[...]

|                    |   |
|--------------------|---|
| <u><i>EV</i></u>   | <u><i>electric vehicle</i></u>                  |
| <u><i>EVSE</i></u> | <u><i>electric vehicle supply equipment</i></u> |

### **8.2 Compliance Paths.**

### **8.4 Mandatory Provisions**

[...]

**8.4.5 Minimum Requirements for AC Electric Vehicle Spaces.** *Electric vehicle 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 *electric vehicles* 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, *EVSE* shall be capable of being controlled by a building management system or grid services aggregator.