



**BSR/ASHRAE/IES Addendum n
to ANSI/ASHRAE/IES Standard 90.2-2018**

Public Review Draft

**Proposed Addendum n to
Standard 90.2-2018
High-Performance Energy Design
of Residential Buildings**

**Second Public Review (January 2024)
(Draft Shows Proposed Independent Substantive Changes
to Previous Public Review Draft)**

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

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FOREWORD

This proposal incorporates requirements for electric vehicle supply equipment. Requirements are partially based on a 2021 report prepared by PNNL titled “Electric Vehicle Charging for Residential and Commercial Energy Codes.”

[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 n to 90.2-2018

Add to Section 3.1 (IP and SI Units):

automobile parking space. A space within a *building* or private or public parking lot, exclusive of driveways, ramps, columns, office and work areas, for the parking of an automobile.

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, on-site energy storage device(s), or another source of electric current. Off-road, self-propelled electric mobile equipment, such as industrial trucks, hoists, lifts, transports, golf carts, airline ground support equipment, tractors, boats and the like, are not considered electric vehicles.

electric vehicle supply equipment (EVSE): Equipment for plug-in power transfer ~~The conductors,~~ including the ungrounded, grounded and equipment grounding conductors, and the ~~EV~~electric vehicle connectors, attachment plugs, personal protection system and all other fittings, devices, power outlets, or apparatuses installed specifically for the purpose of transferring energy between the premises wiring and the ~~EV~~electric vehicle.

electric vehicle ready space (EV-ready space). An *automobile parking space* provided with a branch circuit and either an outlet or enclosure for connection to *EVSE*.

EV-capable space: ~~A dedicated parking space which is provided with electrical panel capacity and space to support an overcurrent protective device, a branch circuit for each EV parking space, and the installation of raceways or electrical conductors, both underground and surface mounted, to support the EVSE.~~

Modify the standard as follows (IP and SI Units):

5.4 Alteration requirements

When existing *dwelling units* that do not have an *EVSE* installed, an *EV-capableready space*, or meet the requirements of Table 7-4 undergo a *substantial energy alteration*, future installation of electrical conductors, conduit, and junction boxes shall be considered to support *EVSE*~~consideration shall be made as to whether installation of electrical conductors, conduit, and junction boxes are practical to support future *EVSE* installation.~~ When a *substantial energy alteration* requires an increase to the building electrical service equipment, not less than one future *EV-capableready space*(s) shall be included as part of the electrical load calculation for the new equipment.

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6.4 ERI with Electric Vehicles

Energy utilized for *EV* charging shall be excluded from the *ERI* calculation

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7.5.4.2 Parking Garages and Parking Lots Serving Multifamily Structures

- a. *Parking garages* shall comply with ASHRAE/IES Standard 90.1, Section 9.4.1.2 and Table 9.5.1, if using the Building Area Method, or Section 9.4.1.2 and Table ~~9.6.1~~9.5.2.1-1 if using the Space-by-Space Method.
- b. *Parking lots* shall comply with ASHRAE/IES Standard 90.1, Sections 9.4.1.4 and 9.4.2.
- c. *Parking garages* and *parking lots* shall comply with Section 7.6.7.

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7.6.7 Plug-in EV charging

7.6.7.1 Where parking is provided, *EVSE*-installed spaces shall be provided and future installation and use of *EVSE* shall be facilitated through the provision of *EV-capableready spaces* provided in compliance with Sections 7.6.7.1 through 7.6.7.5 and Section 9.1.9. Where more than one parking facility is provided on a site, *EV* parking spaces shall be calculated separately for each parking facility. The service panel or subpanel circuit directory shall identify the spaces reserved to support *EV* charging as “~~EV-Capable~~EV-CapableReady”. The raceway location for *EV-capableready spaces* shall be permanently and visibly marked as “~~EV-Capable~~EV-CapableReady”.

Exception: This section does not apply to *automobile parking spaces*~~parking spaces~~ used exclusively for trucks or delivery vehicles.

7.6.7.2 One- to two-family dwellings and townhouses. For each *dwelling unit*, provide at least one *automobile parking space*~~parking space~~ with an *EVSE* installed. If there are fewer *automobile parking spaces*~~parking spaces~~ than *dwelling units*, all *automobile parking spaces*~~parking spaces~~, if any, shall have an *EVSE* installed.

7.6.7.3 Multifamily dwellings (three or more units). *EVSE*-installed and *EV-capableready spaces* shall be provided in accordance with Table 7-4. Where the calculation of percent served results in a fractional parking space, it shall round up to the next whole number.

Table 7-4 EVSE Installed and EV-Ready Capable Space Requirements for Multifamily Buildings

Number of <u>automobile parking spaces</u>	Minimum Spaces with EVSE Installed ^a	Minimum EV-Ready Capable Spaces
1-9	100%	-
10-24	50%	50%
25+	25%	75%
(a). EVSE-installed spaces that exceed the minimum requirements in the table shall be permitted to be counted as <u>EV-capable ready spaces</u> for table compliance.		

7.6.7.4 EV Charging System Capacity. The equipment load(s) on the electrical distribution equipment supplying the branch circuits(s) serving spaces with EVSE installed or EV-capable ready spaces shall be capable of supplying not less than 7.4 kVA full continuous load for each space. Where there are 10 or more spaces with EVSE installed and an EV energy management system is used to control the load to each parking space, the electrical distribution equipment supplying the branch circuit(s) shall be capable of supplying not less than 3.8 kVA full continuous load for each space simultaneously with all spaces drawing power and not less than 7.4 kVA full continuous load for each space when not greater than half of all spaces are drawing power.

7.6.7.5 EV Charging Circuit Capacity. Each branch circuit serving multiple EVSE-installed spaces, EV-ready spaces or EV-capable ready spaces shall be capable of supplying a minimum capacity of 7.4 kVA continuous duty.

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9.1.9 EV Charging Verification. Construction documents shall indicate the raceway termination point and proposed location of future EV spaces and EV chargers. Construction documents shall also provide information about the amperage of future EVSE, raceway methods, wiring schematics, and electrical load calculations to verify that the electrical panel service capacity and electrical system, including any on-site distribution transformers, have sufficient capacity to meet the requirements of Section 7.6.7.