

Electric Vehicle Charging

Building Energy Code Technical Brief

INTRODUCTION

Numerous studies show that sales of electric vehicles (EVs) have grown consistently over the past two years in the United States. The Edison Electric Institute (EEI) estimates one million EVs on the road in 2018, expanding to 18.7 million EVs by 2030. Based on this forecast, EEI projects the need for an additional 9.6 million EV charging stations by 2030. Many states and local governments have already added EV-charging provisions to their building codes, and even more are planning to do so in the future. This technical brief outlines the means of adding EV charging to building codes, presents supporting technical information, and provides sample code language which can be considered for future energy codes.

IMPACTS

- EVs are less expensive to operate than conventional gas vehicles, have lower maintenance costs, and offer the convenience of fueling (charging) at home or work.
- Studies conducted in California show that costs associated with installing EV charging infrastructure can be several times less expensive for new construction than during a retrofit. Up to 75% of the retrofit cost would be avoided if EV-ready infrastructure was included during the initial construction.
- EVs will help reduce greenhouse gas (GHG) emissions produced by moving goods and people.
- EVs can save an estimated \$2,300 in annual operation and maintenance costs and provide an enhanced driving experience with silent drive and smooth acceleration.

- Adding Electric Vehicle Supply Equipment during new construction would significantly reduce the cost impact for a homeowner later switching to an EV.

BACKGROUND

The U.S. Department of Energy (DOE) and Pacific Northwest National Laboratory have developed a series of technical briefs supporting national, state, and local initiatives to update and advance building energy codes. Each brief is presented in a module-based format, centered on technologies, measures, or practices that can be incorporated as “plug-ins” to building energy codes. These are made available for adoption directly by state and local governments pursuing advanced energy savings and GHG emission reductions, or for future consideration as part of the national model energy codes, such as the International Energy Conservation Code or ASHRAE Standard 90.1. The collection of briefs supports DOE’s mission to provide technical assistance supporting states and local governments, helping them to successfully implement their building codes, as well as pursue energy and climate goals.

LEARN MORE

Find the full technical brief, including supporting technical information and sample code language, at https://www.energycodes.gov/sites/default/files/2021-07/TechBrief_EV_Charging_July2021.pdf.

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