



DEPARTMENT OF ADMINISTRATIVE SERVICES

PROPOSED CHANGE OF THE CONNECTICUT STATE
BUILDING CODE AND FIRE SAFETY CODE

CODE INFORMATION

DATE SUBMITTED: March 1, 2024

Proposed change to: Building Code Fire Safety Code

Code section(s): **(ADD) CSBC 406.2.7.1, (ADD) CSBC 406.2.7.2, (ADD) CSBC 406.2.7.3, (ADD) CSBC 406.2.7.4, (ADD) CSBC 406.2.7.5, (ADD) CSBC 406.2.7.6,**

PROPONENT INFORMATION

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PROPOSAL INFORMATION

Description of change and reason for change (attach additional information as needed):

ADD code section and language to address the installation of Electric Vehicle (EV) Charging Stations within parking structures. The code requirements found in Section 406.2.7 of the CSBC are very vague as to where these devices can be installed. The purpose of this code proposal is to prohibit the installation and operation of Electric Vehicle (EV) Charging Stations within certain parking structures and/or to have the devices located within specific areas of the parking structures. This measure is taken to address potential safety and infrastructure concerns associated with the installation of such charging stations in parking structures. This should be applied in ALL newly developed sites and where practicable in existing sites. However, leniencies are permitted for previously approved sites where deemed reasonably safe by the authority having jurisdiction.

Proposed text change, addition or deletion (attach additional information as needed):

(Add) **406.2.7.1: Electric Vehicle (EV) Charging Stations:** The installation of any Level 1 or Level 2 Electric Vehicle (EV) Charging Station shall be limited to open parking structures only.

(Add) **406.2.7.2:** Where Level 1 or Level 2 Electric Vehicle (EV) Charging Stations are installed, such provisions shall be made as to the location within the open parking structures. Such provisions shall be made by installing the devices on grade level parking only, and installed by an exterior wall that has an openness percentage greater than 20 percent as defined in the CSBC Section 406.5.2 (Openings). The exterior wall shall be located opposite from any other structure type.

(Add) **406.2.7.3:** Where Level 1 or Level 2 Electric Vehicle (EV) Charging Stations are installed in accordance with section 29.1.5.1, the devices shall not be located within 20 feet from any means of egress.

(Add) **406.2.7.4:** Level 1 and Level 2 Electric Vehicle (EV) Charging Stations are prohibited from installation within all enclosed parking structures, and basement and underground parking structures.

(Add) **406.2.7.5:** The location and installation in accordance with section 29.1.5.1 through 29.1.5.3, shall be permitted to be installed in certain locations where approved by the fire code official.

(Add) **406.2.7.6:** Level 3 Electric Vehicle (EV) Charging Stations shall be prohibited from all parking structures.

Supporting data and documents (attach additional information as needed):

According to the US Department of Energy, there are currently over 54,000 public Electric Vehicle (EV) Charging Stations in the U.S. and Canada, and that number increases daily. However, most Electric Vehicle (EV) charging takes place at the Electric Vehicle (EV) owner's home. The remaining charging takes place in parking lots, parking garages, hotels, and retail establishments, and at the gas-station-style charging stations which continue to increase in popularity.

First responders across the nation and throughout the world are acknowledging that Electric Vehicle (EV) fires are a cause for concern and steps to alleviate dangerous situations shall be put in place. Concerns in the fire service about Electric Vehicles (EV's) in open and closed parking garages are increasing as a result of what has occurred in the United States and elsewhere in the world. These incidents involved hundreds of automobiles, injuries, severe structural damages, and structure collapses. One video of an Electric Vehicle (EV) fire in a parking garage revealed that a significant fire that involved three vehicles developed in no more than three minutes. The fire was too large to extinguish with any portable fire extinguishers as soon as it self-vented from the vehicle of origin.

Fires in parking garages aren't a new problem, but the introduction of Electric Vehicles (EV's) does pose a new risk. Currently, only around 1% of cars on the road are electric, and we do not have enough data to fully understand the potential risks that Electric Vehicles (EV's) can create in our daily environment. Studies show that the risk of fire is about the same between Electric Vehicles (EV's) and Internal Combustion Engine (ICE) vehicles, but there is research comparing total Electric Vehicle (EV) and Internal Combustion Engine (ICE) fires in various locations, e.g., on the road, parked, charging or in an accident. Another study reports that over a third of all Electric Vehicle (EV) fires happen while connected to energized alternating current or direct current charging stations, or within 1 hour of being disconnected, indicating that there may be a greater risk of a fire during Electric Vehicle (EV) charging.

In parking garages, vehicles are parked right next to one another to save space. This becomes a combustible nightmare. We must get a handle on the fire within the first few minutes on arrival or we will lose the battle. Early detection and quick preplanned attacks are critical to the outcome of these incidents, particularly when residences are attached to the parking garages. Something else we must consider: Parking garages could be at risk of collapse as a result of the heavier weight of Electric Vehicles (EV's) compared with conventional automobiles. As a reminder, fires that involve internal combustion engines, whether gasoline or diesel, are easier to battle than fires that involve Electric Vehicles (EV's).

Further, the temperatures of fires that involve Internal Combustion Engines (ICE's) can reach 1,500 degrees F; temperatures of fires that involve Electric Vehicles (EV's) can reach 4,500 degrees F and hotter. The temperature of an Electric Vehicle (EV) fire is a major concern for parking garages. When concrete is exposed to temperatures that are hotter than 212 degrees F, the moisture in concrete turns to steam. If the temperature rises more rapidly than the steam can escape through the concrete matrix, the rising pressures exceed the strength of the concrete, and it begins to spall. This spalling can be explosive in extreme cases and can cause major damage, including collapse.

EVs are rapidly becoming commonplace in society. Charging EVs will become routine and available everywhere in the not-too-distant future. Fires in charging stations and the EVs themselves are going to be an issue that will eventually receive guidance from organizations such as the National Fire Protection Association (NFPA) and the federal government. In the meantime, it is best to get in front of the issue and proactively provide fire protection.

This Proposal is original material. (Note: Original material is considered to be the submitter's own idea based on or as a result of his/her own experience, thought or research and, to the best of his/her knowledge, is not copied from another source.)

This Comment is not original material, its source (if known) is as follows: (such as material / code development proposal from a prior development cycle or proposal submitted to model code committee etc.)

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Proponent's Signature

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Printed Name

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