

NFPA 30A-2021 Edition

Code for Motor Fuel Dispensing Facilities and Repair Garages

TIA Log No.: 1621

Reference: 1.1.3(new), 1.2, 2.2, 2.4, 3.3.7(new) through 3.3.10(new), 3.3.16(new), 3.3.20(new), Chapter 15(new), D.1.1, and D.1.2.7

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1. Add a new 1.1.3 and renumber subsequent paragraphs to read as follows:

1.1.3 This code shall apply to areas and equipment for the purpose of charging the battery or other energy storage device for an electric vehicle where located on a motor fuel dispensing facility.

1.1.34* This code shall not apply to those motor fuel dispensing facilities where ...

A.1.1.34* See NFPA 2, NFPA 52, and NFPA 58 for requirements for facilities where...

1.1.45 This code shall not apply to aircraft fueling.

2. Revise 1.2 to read as follows:

1.2* Purpose The purpose of this document shall be to provide reasonable safeguards for dispensing liquid and gaseous motor fuels into the fuel tanks of automotive vehicles and marine craft and charging the battery or other energy storage device for an electric vehicle where located on a motor fuel dispensing facility.

3. Add new entry to 2.2 to read as follows:

2.2 NFPA Publications. ...

NFPA 70B, *Recommended Practice for Electrical Equipment Maintenance*, 2019 edition.

...

4. Add new entry to 2.4 to read as follows:

2.4 References for Extracts for Mandatory Sections. ...

NFPA 70®, *National Electrical Code*®, 2020 edition.

5. Add new sections 3.3.7 through 3.3.10, 3.3.16 and 3.3.20, and renumber paragraphs accordingly to read as follows:

3.3.7* Electric Vehicle (EV). An automotive-type vehicle for on-road use, such as passenger automobiles, buses, trucks, vans, neighborhood electric vehicles, electric motorcycles, and the like, primarily powered by an electric motor that draws current from a rechargeable storage battery, fuel cell, photovoltaic array, or other source of electric current. Plug-in hybrid electric vehicles (PHEV) are electric vehicles having a second source of motive power. [70, 100]

A.3.3.7 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. [70, 100]

3.3.8 Electric Vehicle Charging Station (EVCS). Any space that can be served by electric vehicle supply equipment and a charger energy supply system or used by an EV for the purpose of charging the battery or other energy storage device in an EV.

3.3.9 Electric Vehicle Connector. A device that, when electrically coupled (conductive or inductive) to an electric vehicle inlet, establishes an electrical connection to the electric vehicle for the purpose of power transfer and information exchange. [70:625.2]

3.3.10* Electric Vehicle Supply Equipment (EVSE). The conductors, including the ungrounded, grounded, and equipment grounding conductors, and the electric vehicle connectors, attachment plugs, personnel protection system, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle. [70:625.2]

A.3.3.10 For this code, EVSE also includes an electric vehicle charger with a battery integrated supply.

3.3.711 Flammable Liquid. ...

3.3.812 Gas. ...

3.3.913* Liquid. ...

3.3.913.1* *Combustible Liquid.* ...

3.3.913.2* *Flammable Liquid.* ...

3.3.4014 Low Melting Point Materials. ...

3.3.415 Motor Fuel Dispensing Facility. ...

3.3.415.1 *Attended Self-Service Motor Fuel Dispensing Facility.* ...

3.3.415.2 *Fleet Vehicle Motor Fuel Dispensing Facility.* ...

3.3.415.3 *Full-Service Motor Fuel Dispensing Facility.* ...

3.3.415.4 *Marine Motor Fuel Dispensing Facility.* ...

3.3.415.5* *Motor Fuel Dispensing Facility Located Inside a Building.* ...

A.3.3.415.5. ...

3.3.415.6 *Unattended Self-Service Motor Fuel Dispensing Facility.*

3.3.16 Output Cable to the Electric Vehicle. An assembly consisting of a length of flexible EV cable and an electric vehicle connector (supplying power to the electric vehicle). [70, 100]

3.3.4217 Repair Garages.

3.3.4217.1* *Major Repair Garage.* ...

A.3.3.4217.1 ...

3.3.4217.2* *Minor Repair Garage.* ...

A.3.3.4217.2 ...

3.3.4217.3 *CNG/LNG Vehicle Major Repair Area.* ...

3.3.4217.4 *CNG/LNG Vehicle Minor Repair Area.* ...

3.3.4318 Safety Can. ...

3.3.4419 Submersible Pump. ...

3.3.20 Tank Vehicle. Any single self-propelled motor vehicle equipped with a cargo tank mounted thereon, tank full-trailer, or tractor and tank semi-trailer combination, used for the transportation of flammable or combustible liquids or gases.

3.3.451521 Tanks.

3.3.4521.1 *Aboveground Storage Tank.* ...

3.3.4521.2 *Fire-Resistant Tank.* ...

3.3.4521.3* *Protected Aboveground Tank.* ...

A.3.3.4521.3 ...

3.3.4622 Vapor Processing Equipment. ...

3.3.4723* Vapor Processing System. ...

A.3.3.4723 ...

3.3.4824* Vapor Recovery System. ...

A.3.3.4824 ...

6. Add a new Chapter 15 to read as follows:

Chapter 15 Electric Vehicle Charging Stations.

15.1 Scope. This chapter shall apply where electric vehicle charging stations (EVCS) are installed at a motor fuel dispensing facility.

15.2 Definitions Specific to Chapter 15.

15.2.1* Electric Vehicle (EV). An automotive-type vehicle for on-road use, such as passenger automobiles, buses, trucks, vans, neighborhood electric vehicles, electric motorcycles, and the like, primarily powered by an electric motor that draws current from a rechargeable storage battery, fuel cell, photovoltaic array, or other source of electric current. Plug-in hybrid electric vehicles (PHEV) are electric vehicles having a second source of motive power. (See 3.3.7.) [70, 100]

A.15.2.1 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. (See A.3.3.7.) [70, 100]

15.2.2 Electric Vehicle Charging Station (EVCS). Any space that can be served by electrical vehicle supply equipment or a charger energy supply system or used by an EV for the purpose of charging the battery or other energy storage device in an EV. (See 3.3.8.)

15.2.3 Electric Vehicle Connector. A device that, when electrically coupled (conductive or inductive) to an electric vehicle inlet, establishes an electrical connection to the electric vehicle for the purpose of power transfer and information exchange. (See 3.3.9.) [70: 625.2]

15.2.4* Electrical Vehicle Supply Equipment (EVSE). The conductors, including the ungrounded, grounded, and equipment grounding conductors, and the electric vehicle connectors, attachment plugs, personnel protection system, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle. (See 3.3.10.) [70:625.2]

A.15.2.4 For this code, EVSE also includes an electric vehicle charger with an integrated energy storage system (i.e., EV chargers with integrated battery supply). (See A.3.3.10.)

15.2.5 Output Cable to the Electric Vehicle. An assembly consisting of a length of flexible EV cable and an electric vehicle connector (supplying power to the electric vehicle). (See 3.3.17.) [70, 100]

15.3 General Requirements.

15.3.1 Location Adjacent to Buildings or Property Lines.

EVCS and EVSE installed outdoors at motor fuel dispensing facilities shall be located as follows:

- (1) 3 m (10 ft) or more from property lines
- (2) 3 m (10 ft) or more from buildings, other than canopies, having combustible exterior wall surfaces or buildings having noncombustible exterior wall surfaces that are not a part of a 1-hour fire-resistive assembly
- (3) 1 m (3 ft) or more from buildings having exterior wall surfaces that are part of a 1-hour fire-resistive assembly

15.3.1.1 All parts of the EV being served shall be located on the premises.

15.3.2 Location Adjacent to Storage, Handling, or Dispensing of Flammable or

Combustible Liquids or Gases. EVCS, EVSE, and EV while charging, and the electric vehicle connector when the output cable to the EV is extended to its maximum length, shall be located as follows:

- (1) 6 m (20 ft) or more in all directions from a dispensing device or areas handling or dispensing flammable or combustible liquids or gases
- (2) 3 m (10 ft) or more in all directions from an underground storage tank fill connection or vapor recovery connection or vent line storing flammable or combustible liquids or gases
- (3) 3 m (10 ft) or more in all directions from a remote/submersible pump transferring flammable or combustible liquids or gases

- (4) 3 m (10 ft) or more in all directions from the shell or ends of an aboveground tank or the aboveground tank fill connection, vapor recovery connection or open end of the vent
- (5) 3 m (10 ft) or more in all directions from vapor processing equipment and vacuum assist blowers
- (6) 7.6 m (25 ft) or more in all directions from the location of a tank vehicle while transferring flammable or combustible liquids to an aboveground or underground storage tank

15.3.3 Location Beneath Canopies.

15.3.3.1 EVCS or EVSE installed under a canopy also covering dispensers for flammable or combustible liquids or gases shall meet the separation distances in 15.3.2.

15.3.4 Requirements for EVSE Systems.

15.3.4.1* EVSE, the electric vehicle connector, and the output cable to the EV shall be listed.

A.15.3.4.1 Appropriate electric vehicle standards include the following:

- (1) UL 2202, *Standard for Electric Vehicle Charging System Equipment*, for EV charging systems
- (2) UL 2202 and UL 1973, *Standard for Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail (LER) Applications*, for battery integrated chargers
- (3) UL 2594, *Standard for Electric Vehicle Supply Equipment*, for battery integrated chargers
- (4) UL 2750, *Outline of Investigation for Wireless Power Transfer Equipment for Electric Vehicles*

15.3.4.2 Any modification of the EVSE, electric vehicle connector, and the output cable to the EV shall be listed or listed by report.

15.3.4.3* EVSE shall be designed to protect the employees and the public from electrical hazards, including arc flash.

A.15.3.4.3 See *NFPA 70E* for more information on electrical hazard protection.

15.4 Installation Requirements.

15.4.1 EVCS shall be designed and constructed in accordance with state and local building codes, ordinances, and this code.

15.4.2 EVCS shall be designed so that pooling of flammable or combustible liquids cannot occur within its area.

15.4.3 EVSE shall be the type specified and installed in accordance with Article 625 of *NFPA 70*.

15.4.4 EVSE shall be installed in accordance with their listing, the equipment manufacturer's installation instructions, approved design plans, and this code.

15.5 Collision Protection.

15.5.1 EVSE shall be protected against collision damage by guard posts or other approved means.

15.5.2 When guard posts are installed, they shall be designed as follows:

- (1) Posts shall be constructed of steel not less than 100 mm (4 in) in diameter.
- (2) Posts shall be filled with concrete.
- (3) Posts shall be spaced not more than 1.2 m (4 ft) on center.
- (4) Posts shall be set not less than 0.9 m (3 ft) deep in a concrete footing of not less than 380 mm (15 in) diameter.
- (5) The top of the posts shall be set not less than 0.9 m (3 ft) above ground.
- (6) Posts shall be located not less than 0.9 m (3 ft) from the EVSE.

15.5.3 EVSE shall be securely bolted in place per the manufacturer's instructions.

15.6 Maneuvering on Site.

15.6.1 Motor vehicle traffic patterns at motor fuel dispensing facilities shall be designed to inhibit movement of vehicles that are not being charged from passing through the charging area.

15.6.2 EVCS or EVSE shall not impede or obstruct tank vehicle fuel deliveries.

15.7 Signage.

15.7.1 Emergency instructions shall be conspicuously posted in the area of the EVCS equipment and incorporate the following or equivalent wording:

In case of fire:

(1) Use emergency stop button.

(2) Report accident by calling (specify local fire service number).

(3) Report location.

15.8* Operation. EVSE shall be operated in accordance with manufacturer's instructions.

A.15.8 See Chapter 34 of NFPA 70B for additional guidance.

15.8.1 The attendant shall be familiar with EVSE operation and be able to supervise and respond to an emergency.

15.8.2 EVSE thermal fluids shall not be dumped into sewers, into streams, or on to the ground.

15.9 Emergency Electrical Disconnects.

15.9.1 EVSE shall be provided with one or more clearly identified emergency shutoff devices or electrical disconnects and labeled with an approved sign stating "EMERGENCY ELECTRIC VEHICLE CHARGING SYSTEM SHUTOFF" or equivalent language.

15.9.2 Emergency shutoff devices or electrical disconnects shall be installed in approved locations accessible to patrons, but not less than 6 m (20 ft) or more than 30 m (100 ft) from the EVCS.

15.9.3 Emergency shutoff devices or electrical disconnects shall disconnect power to all EVSE not supplied by circuits that are identified as intrinsically safe and to all associated power control and signal circuits serving the EVCS.

15.9.4 Emergency shutoff devices or electrical disconnects for EVCS shall be actuated by the emergency electrical disconnect required in Section 6.7 unless EVCS is greater than 30 m (100 ft) from any of the equipment in 15.2.2.

15.9.5 Resetting from an emergency shutoff condition shall require manual intervention.

15.9.6 At attended motor fuel dispensing facilities, an additional emergency shutoff or electrical disconnect device shall be accessible to the attendant.

15.10 Lighting. Lighting should be selected and installed in accordance with applicable building codes and standards and sufficient for safe operation and security.

15.11 Fire Extinguishers.

15.11.1 At least one portable fire extinguisher shall be provided at each group of EVSE, so as not to exceed a maximum travel distance of 23 m (75 ft) to any single portable fire extinguisher.

15.11.2 Portable fire extinguishers shall be selected, installed, inspected, and maintained in accordance with 9.2.5.2 and NFPA 10.

15.12 Inspection and Maintenance.

15.12.1 EVSE shall be periodically inspected by a person who is knowledgeable in the operation of the equipment to verify that it is in proper working order.

15.12.2 When maintenance to EVSE is necessary, the following precautions shall be taken before such maintenance is begun:

(1) Only persons knowledgeable in performing the required maintenance shall perform the work.

(2) All electrical power to the EVSE and to all associated control circuits shall be shut off at the main electrical disconnect panel.

(3) During the maintenance period, all power and associated control circuits shall be capable of being locked in the open position and tagged with the identity of the worker servicing the equipment.

(4) All vehicular traffic and unauthorized persons shall be prevented from entering the EVCS.

7. Revise D.1.1 adding new entries to read as follows:

D.1.1 NFPA Publications. ...

NFPA 70B, *Recommended Practice for Electrical Equipment Maintenance*, 2019 edition.

NFPA 70E®, *Standard for Electrical Safety in the Workplace®*, 2021 edition.

...

8. Revise D.1.2.7 adding multiple new entries to read as follows:

D.1.2.7 UL Publications. ...

UL 1973, *Standard for Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail (LER) Applications*, 2018.

UL 2085, *Protected Aboveground Tanks for Flammable and Combustible Liquids*, 1997, revised (2010).

UL 2202, *Standard for Electric Vehicle Charging System Equipment*, 2009 (2018).

UL 2594, *Standard for Electric Vehicle Supply Equipment*, 2016.

UL 2750, *Outline of Investigation for Wireless Power Transfer Equipment for Electric Vehicles*, 2020.

Substantiation: Over the course of several months, an electrical vehicle task group comprised of several members of the NFPA 30A committee developed the following criteria for the installation of electrical vehicle charging equipment at motor fuel dispensing facilities. This chapter incorporates Electric Vehicle charging into the scope of 30A when installed at a motor fuel dispensing facility. EV charging stations located at a motor fuel dispensing facility present a potential source of ignition, as well as, an additional source of traffic and congestion at a motor fuel dispensing facility. National codes are very limited in addressing the unique issues associated with these operations at a motor fuel dispensing facility. This chapter provides guidance for the location, installation, and operation of EV charging at these facilities.

The technical basis for the sections is provided below.

3.3.20 - The term tank vehicle is used in this chapter as well as other chapters of NFPA 30A, but not defined. NFPA 385 defines a tank vehicle to include a tank truck which is defined separately. The proposed definition combines the NFPA 385 3.3.11 & 3.3.12 definitions to replace “tank truck” in the definition in 3.3.12 with the definition for a tank truck in 3.3.11 for clarity and to limit to flammable or combustible liquids or gases.

15.2 - Definitions that are unique to this Chapter are provided. The definitions are taken from other NFPA codes as noted.

15.2.3 - The EV is considered a potential source of ignition and addressed in this chapter. This definition was created by the Task Group to define the area occupied by the vehicle while charging.

15.2.5 - EV Charging technology is evolving. EV chargers with integrated batteries are being introduced. The task group felt it was important to note these types of EV chargers in the definition. NEC 70 Article 625.2 definition was used.

15.3 - General requirements focus on the location of the charging equipment and the vehicle while being charged with respect to areas handling, storing or dispensing flammable and combustible liquids along with buildings and property lines. It also requires the equipment to be listed and protective for electrical hazards. Applicable standards are provided in the annex.

15.3.1 – These requirements are consistent with maximum separation distances for dispensers in NFPA 30A 6.2.1.

15.3.2 - Existing codes address separation distance for potential sources of ignition and applied to this chapter. The 20 ft and 10 ft for areas listed in 15.3.2 (1) through (5) are based on the maximum separation distances class 1 division 1/2, or class 1 zone 1/2 requirements (Table 8.3.3). The 25-foot separation for a tank vehicle while transferring petroleum products for 15.3.2(6) is supported by IFC 5706.5.1.1 requirement for 25-foot separation for class I and 15 feet for class II liquids. The maximum separation distance is selected to be conservative.

15.3.3 - This provision allows EV charging under the same canopy as liquid fuel dispensers as long as the space and the equipment meet the separation requirements.

15.4 - Building codes are still evolving; however, spaces are typically either 9-foot-wide space by 18-foot-deep for a vehicle or 11-foot-wide space by 18-foot-deep space for van accessible vehicles with a pedestrian access aisle of 5 feet on the passenger side. General installation requirements are provided to ensure that the equipment is installed in accordance with applicable codes in addition to this chapter, as well as manufacturer's requirements.

15.4.2 - Provision added to ensure that the EV space is not located in an area where a spill or release on the facility would migrate and pool in the charging space.

15.5 - Requirements to protect the EV charger or battery storage device from damage by a vehicle. This incorporates requirements for guard posts taken from the International Fire Code requirements for vehicle impact protection.

15.6 - Requirements adapted from NFPA 30A 6.3.7 to address traffic flow on a facility and specifically as it would relate to a tank vehicle.

15.7 - Requirements adapted from NFPA 30A 9.5.3.

15.9 - Requirements adapted from NFPA 30A 6.7.

15.9.4 - If there is an emergency that requires the petroleum fueling systems to be shut down, the EV equipment should also be shut down if it is in close proximity to the areas handling, storing or dispensing liquid fuels. A distance of 100 feet was selected.

15.10 - Since EV charging can be remote from the canopy and building areas, proper lighting is needed for the EV charging space. 30A does not have specific lighting requirements, although requirements for adequate lighting are provided in Chapter 14 for mobile refueling. This provision is similar pointing to building and other codes for specifications for lighting.

15.11 - Requirements based on NFPA 30A 9.2.5.2.

15.12 - Requirements adapted from NFPA 30A 6.3.6.

Emergency Nature: The proposed TIA intends to offer to the public a benefit that would lessen a recognized (known) hazard or ameliorate a continuing dangerous condition or situation.

This TIA is proposed to provide emergency direction in order to protect the health, safety and welfare of the general public where Electrical Vehicle Supply Equipment (EVSE) is installed at liquid fueling facilities. EVSE is currently being installed at liquid fueling facilities and there are no current standards to guide the installation. In addition, it is likely that the pace of EVSE installation will greatly increase over the next 6-18 months based on the recent passage of the Federal Infrastructure Act which commits \$7.5 billion to the EV charging effort, yet there is no language in the existing Code to guide the AHJ and the potential EVSE host in the safe siting, installation, operation, inspection and maintenance of the 500,000 new EVSEs provided for in the legislation.