

receptacles that will be used to supply portable utilization equipment or to supply power to a premises as a standby (alternate) or stand-alone power source. The requirements for power export receptacles, like similar safety features required by Article 445 for portable generators, provide a safe interface for users of these electric vehicle power export equipment (EVPE) receptacle outlets.

**(A) Type.** The receptacle outlet shall be listed.

**(B) Rating.** The receptacle outlet shall be rated 250 volts maximum, single phase 50 amperes maximum.

**(C) Overcurrent Protection.** Electric vehicles provided with receptacle outlets for power export shall be provided with overcurrent protection integral to the power export system. The overcurrent protection shall have a nominal rating sufficient for the receptacle it protects. The overcurrent protection shall also be sufficiently rated for the maximum available fault current at the receptacle and shall be included in the interactive equipment evaluation. See 625.48.

**(D) GFCI Protection for Personnel.** Ground-fault circuit-interrupter protection for personnel shall be provided for all receptacles. The ground-fault circuit-interrupter indication and reset shall be installed in a readily accessible location.

Informational Note: There are various methods available to achieve ground-fault circuit-interrupter protection.

## Part IV. Wireless Power Transfer Equipment

**625.101 Grounding.** The primary pad base plate shall be of a nonferrous metal and shall be connected to the circuit equipment grounding conductor unless the listed WPTE employs a double-insulation system. The base plate shall be sized to match the size of the primary pad enclosure.

### 625.102 Installation.

**(A) General.** The control pad, if included in the WPTE configuration, shall comply with 625.102(B). The primary pad shall comply with 625.102(C).

Δ **(B) Control Box.** The control box enclosure shall be suitable for the environment and shall be mounted at a height not less than 450 mm (18 in.) above the floor level for indoor locations or 600 mm (24 in.) above grade level for outdoor locations. The control box shall be mounted in one of the following forms:

- (1) Pedestal
- (2) Wall or pole
- (3) Building or structure
- (4) Raised concrete pad

Δ **(C) Primary Pad.** The primary pad shall be installed secured to the surface or embedded in the surface of the floor with its top flush with the surface or below the surface, all per manufacturer's instructions and the following:

- (1) If the primary pad is located in an area requiring snow removal, it shall not be located on or above the surface.

*Exception: Where installed on private property where snow removal is done manually, the primary pad shall be permitted to be installed on or above the surface.*

- (2) The primary pad enclosure shall be suitable for the environment. If the primary pad is located in an area subject to severe climatic conditions (e.g., flooding), the enclosure shall be suitably rated for those conditions.

Δ **(D) Protection of Cords and Cables to the Primary Pad.** The output cable to the primary pad shall be secured in place over its entire length for the purpose of restricting its movement and to prevent strain at the connection points. If installed in conditions where drive-over could occur, the cable shall be provided with supplemental protection.

Where there is no control box, the cord or cable supplying power to the primary pad shall be secured in place in order to restrict movement and to prevent strain at the connection points. Where subject to vehicular traffic, supplemental protection shall be provided.

**(E) Other Wiring Systems.** Other wiring systems and fittings specifically listed for use on the WPTE shall be permitted.

## ARTICLE 626

## Electrified Truck Parking Spaces

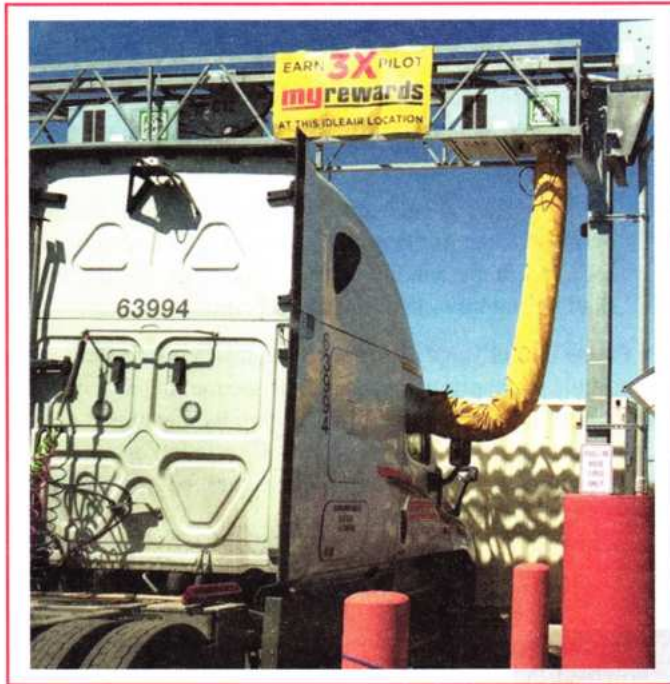
### Part I. General

**626.1 Scope.** This article covers the electrical conductors and equipment external to the truck or transport refrigerated unit that connects nonpropulsion electrical elements of trucks or transport refrigerated units to a supply of electricity, and the installation of equipment and devices related to electrical installations within an electrified truck parking space.

Stringent federal and state mandates to reduce diesel engine emissions have led to using electric power for operation of transport truck heating and refrigeration equipment necessary to maintain their loads, as well as convenience power to the cab for the driver, while the truck is parked and not running. Exhibit 626.1 shows an electrified truck parking space that is providing non-vehicular power to the vehicle. Because much of the transport industry is interstate commerce, this article provides for standardization of truck parking space equipment so that driver interface with electrical connection devices can be safely accomplished from coast to coast.

• **626.3 Other Articles.** Wherever the requirements of other articles of this Code and Article 626 differ, the requirements of Article 626 shall apply. Unless electrified truck parking space wiring systems are supported or arranged in such a manner that they cannot be used in or above locations classified in 511.3





**EXHIBIT 626.1** An example of an electrified truck parking space providing power to a truck while it is parked and not running. (Courtesy of SRP)

or 514.3, or both, they shall comply with 626.3(A) and (B) in addition to the requirements of this article.

**(A) Vehicle Repair and Storage Facilities.** Electrified truck parking space electrical wiring systems located at facilities for the repair or storage of self-propelled vehicles that use volatile flammable liquids or flammable gases for fuel or power shall comply with Article 511.

**(B) Motor Fuel Dispensing Stations.** Electrified truck parking space electrical wiring systems located at or serving motor fuel dispensing stations shall comply with Article 514.

*Informational Note:* See NFPA 88A-2019, *Standard for Parking Structures*, and NFPA 30A-2021, *Code for Motor Fuel Dispensing Facilities and Repair Garages*, for additional information.

#### 626.4 General Requirements.

**(A) Not Covered.** This article shall not apply to that portion of other equipment in residential, commercial, or industrial facilities that requires electric power used to load and unload cargo, operate conveyors, and for other equipment used on the site or truck.

**(B) Distribution System Voltages.** Unless other voltages are specified, the nominal ac system voltages of 120, 120/240, 208Y/120, 240, or 480Y/277 shall be used to supply equipment covered by this article.

**(C) Connection to Wiring System.** This article shall apply to the electrified truck parking space supply equipment intended for connection to a wiring system as defined in 626.4(B).

## Part II. Electrified Truck Parking Space Electrical Wiring Systems

**626.10 Branch Circuits.** Electrified truck parking space single-phase branch circuits shall be derived from a 208Y/120-volt, 3-phase, 4-wire system or a 120/240-volt, single-phase, 3-wire system.

*Exception:* A 120-volt distribution system shall be permitted to supply existing electrified truck parking spaces.

#### 626.11 Feeder and Service Load Calculations.

**(A) Parking Space Load.** The calculated load of a feeder or service shall be not less than the sum of the loads on the branch circuits. Electrical service and feeders shall be calculated on the basis of not less than 11 kVA per electrified truck parking space.

**(B) Demand Factors.** Electrified truck parking space electrical wiring system demand factors shall be based upon the climatic temperature zone in which the equipment is installed. The demand factors set forth in Table 626.11(B) shall be the minimum allowable demand factors that shall be permitted for calculating load for service and feeders. No demand factor shall be allowed for any other load, except as provided in this article.

*Informational Note:* The U.S. Department of Agriculture (USDA) has developed a commonly used "Plant Hardiness Zone" map that

**TABLE 626.11(B)** Demand Factors for Services and Feeders

Climatic Temperature Zone (USDA Hardiness Zone) (See Note)	Demand Factor (%)
1	70
2a	67
2b	62
3a	59
3b	57
4a	55
4b	51
5a	47
5b	43
6a	39
6b	34
7a	29
7b	24
8a	21
8b	20
9a	20
9b	20
10a	21
10b	23
11	24

*Note:* The climatic temperature zones shown in Table 626.11(B) correlate with those found on the "USDA Plant Hardiness Zone Map," and the climatic temperature zone selected for use with the table shall be determined through the use of this map based on the installation location.



is publicly available. The map provides guidance for determining the Climatic Temperature Zone. Data indicate that the HVAC has the highest power requirement in cold climates, with the heating demand representing the greatest load, which in turn is dependent on outside temperature. In very warm climates, where no heating load is necessary, the cooling load increases as the outdoor temperature rises. These demand factors do not apply to the portion of electrical wiring systems that supply the transport refrigerated units (TRUs).

**(C) Two or More Electrified Truck Parking Spaces.** Where the electrified truck parking space wiring system is in a location that serves two or more electrified truck parking spaces, the equipment for each space shall comply with 626.11(A), and the calculated load shall be calculated on the basis of each parking space.

**(D) Conductor Rating.** Truck space branch-circuit supplied loads shall be considered to be continuous.

### Part III. Electrified Truck Parking Space Supply Equipment

#### 626.22 Wiring Methods and Materials.

**(A) Electrified Truck Parking Space Supply Equipment Type.** The electrified truck parking space supply equipment shall be provided in one of the following forms:

- (1) Pedestal
- (2) Overhead gantry
- (3) Raised concrete pad

**(B) Mounting Height.** Post, pedestal, and raised concrete pad types of electrified truck parking space supply equipment shall be not less than 600 mm (2 ft) aboveground or above the point identified as the prevailing highest water level mark or an equivalent benchmark based on seasonal or storm-driven flooding from the authority having jurisdiction.

**(C) Access to Working Space.** All electrified truck parking space supply equipment shall be accessible by an unobstructed entrance or passageway not less than 600 mm (2 ft) wide and not less than 2.0 m (6 ft 6 in.) high.

**(D) Disconnecting Means.** A disconnecting switch or circuit breaker shall be provided to disconnect one or more electrified truck parking space supply equipment sites from a remote location. The disconnecting means shall be provided and installed in a readily accessible location and shall be lockable open in accordance with 110.25.

#### 626.23 Overhead Gantry or Cable Management System.

**(A) Cable Management.** Electrified truck parking space equipment provided from either overhead gantry or cable management systems shall utilize a permanently attached power supply cable in electrified truck parking space supply equipment. Other cable types and assemblies listed as being suitable for the purpose,

including optional hybrid communications, signal, and composite optical fiber cables, shall be permitted.

**(B) Strain Relief.** Means to prevent strain from being transmitted to the wiring terminals shall be provided. Permanently attached power supply cable(s) shall be provided with a means to de-energize the cable conductors and power service delivery device upon exposure to strain that could result in either cable damage or separation from the power service delivery device and exposure of live parts.

#### 626.24 Electrified Truck Parking Space Supply Equipment Connection Means.

**(A) General.** Each truck shall be supplied from electrified truck parking space supply equipment through suitable extra-hard service cables or cords. Each connection to the equipment shall be by a single separable power supply cable assembly.

**Δ (B) Receptacle.** All receptacles shall be listed and of the grounding type. Every truck parking space with electrical supply shall be equipped with the following:

- (1) A maximum of three receptacles, each 2-pole, 3-wire grounding type and rated 20 amperes, 125 volts, and two of the three connected to two separate branch circuits.

*Informational Note No. 1: See ANSI/NEMA WD 6-2016, Wiring Devices — Dimensional Specifications, Figure 5-20, for the non-locking-type and grounding-type 20-ampere receptacle configuration.*

- (2) One single receptacle, 3-pole, 4-wire grounding type, single phase rated either 30 amperes 208Y/120 volts or 125/250 volts. The 125/250-volt receptacle shall be permitted to be used on a 208Y/120-volt, single-phase circuit.

*Informational Note No. 2: See UL1686-2012, Pin and Sleeve Configurations, Figure C2.9 or Part C3, for various configurations of 30-ampere pin and sleeve receptacles.*

*Exception: Where electrified truck parking space supply equipment provides the heating, air-conditioning, and comfort-cooling function without requiring a direct electrical connection at the truck, only two receptacles identified in 626.24(B)(1) shall be required.*

**(C) Disconnecting Means, Parking Space.** The electrified truck parking space supply equipment shall be provided with a switch or circuit breaker for disconnecting the power supply to the electrified truck parking space. A disconnecting means shall be provided and installed in a readily accessible location and shall be lockable open in accordance with 110.25.

**(D) Ground-Fault Circuit-Interrupter Protection for Personnel.** In addition to the requirements in 210.8, the electrified truck parking space equipment shall be designed and constructed such that all receptacle outlets in 626.24 are provided with ground-fault circuit-interrupter protection for personnel.



**626.25 Separable Power-Supply Cable Assembly.** A separable power-supply cable assembly, consisting of a power-supply cord, a cord connector, and an attachment plug intended for connection with a truck flanged surface inlet, shall be of a listed type. The power-supply cable assembly or assemblies shall be identified and be one of the types and ratings specified in 626.25(A) and (B). Cords with adapters and pigtail ends, extension cords, and similar items shall not be used.

**(A) Rating(s).**

**(1) Twenty-Ampere Power-Supply Cable Assembly.** Equipment with a 20-ampere, 125-volt receptacle, in accordance with 626.24(B)(1), shall use a listed 20-ampere power-supply cable assembly.

*Exception: It shall be permitted to use a listed separable power-supply cable assembly, either hard service or extra-hard service and rated 15 amperes, 125 volts, for connection to an engine block heater for legacy vehicles.*

**(2) Thirty-Ampere Power-Supply Cable Assembly.** Equipment with a 30-ampere, 208Y/120-volt or 125/250-volt receptacle, in accordance with 626.24(B)(2), shall use a listed 30-ampere main power-supply cable assembly.

**(B) Power-Supply Cord.**

**(1) Conductors.** The cord shall be a listed type with three or four conductors, for single-phase connection, one conductor of which shall be identified in accordance with 400.23.

*Exception: It shall be permitted to use a separate listed three-conductor separable power-supply cable assembly, one conductor of which shall be identified in accordance with 400.23 and rated 15 amperes, 125 volts for connection to an engine block heater for existing vehicles.*

**(2) Cord.** Extra-hard usage flexible cords and cables rated not less than 90°C (194°F), 600 volts; listed for both wet locations and sunlight resistance; and having an outer jacket rated to be resistant to temperature extremes, oil, gasoline, ozone, abrasion, acids, and chemicals shall be permitted where flexibility is necessary between the electrified truck parking space supply equipment, the panel board, and flanged surface inlet(s) on the truck.

*Exception: Cords for the separable power supply cable assembly for 15- and 20-ampere connections shall be permitted to be a hard service type.*

**(3) Cord Overall Length.** The exposed cord length shall be measured from the face of the attachment plug to the point of entrance to the truck or the face of the flanged surface inlet or to the point where the cord enters the truck. The overall length of the cable shall not exceed 7.5 m (25 ft) unless equipped with a cable management system that is listed as suitable for the purpose.

**Δ (4) Attachment Plug.** The attachment plug(s) shall be listed, by itself or as part of a cord set, for the purpose and shall be molded

to or installed on the flexible cord so that it is secured tightly to the cord at the point where the cord enters the attachment plug. If a right-angle cap is used, the configuration shall be oriented so that the grounding member is farthest from the cord. Where a flexible cord is provided, the attachment plug shall comply with 250.138(A).

**(a) Connection to 20-Ampere Receptacle.** A separable power-supply cable assembly for connection to a truck flanged surface inlet, rated at 20 amperes, shall have a non-locking-type attachment plug that shall be 2-pole, 3-wire grounding type rated 20 amperes, 125 volts and intended for use with the 20-ampere, 125-volt receptacle.

*Exception: A separable power-supply cable assembly, provided for the connection of only an engine block heater, shall have an attachment plug of the 2-pole, 3-wire grounding type, rated 15 amperes, 125 volts.*

Informational Note: See ANSI/NEMA WD 6-2016, *Wiring Devices — Dimensional Specifications*, Figure 5-15 or Figure 5-20, for non-locking- and grounding-type 15- or 20-ampere plug and receptacle configurations.

**(b) Connection to 30-Ampere Receptacle.** A separable power-supply cable assembly for connection to a truck flanged surface inlet, rated at 30 amperes, shall have an attachment plug that shall be 3-pole, 4-wire grounding type rated 30 amperes, 208Y/120 volts or 125/250 volts, and intended for use with the receptacle in accordance with 626.24(B)(2). The 125/250-volt attachment plug shall be permitted to be used on a 208Y/120-volt, single-phase circuit.

Informational Note: See UL 1686-2012, *Pin and Sleeve Configurations*, Figure C2.10 or Part C3, for various configurations of 30-ampere pin and sleeve plugs.

**Δ (5) Cord Connector.** The cord connector for a separable power-supply cable assembly, as specified in 626.25(A)(1), shall be a 2-pole, 3-wire grounding type rated 20 amperes, 125 volts. The cord connector for a separable power-supply cable assembly, as specified in 626.25(A)(2), shall be a 3-pole, 4-wire grounding type rated 30 amperes, 208Y/120 volts or 125/250 volts. The 125/250-volt cord connector shall be permitted to be used on a 208Y/120-volt, single-phase circuit.

*Exception: The cord connector for a separable power supply cable assembly, rated 15 amperes, provided for the connection of an engine block heater for existing vehicles, shall have an attachment plug that shall be 2-pole, 3-wire grounding type rated 15 amperes, 125 volts.*

Informational Note: See UL 1686-2012, *Pin and Sleeve Configurations*, Figure C2.9 or Part C3, for various configurations of 30-ampere cord connectors.

**626.26 Loss of Primary Power.** Means shall be provided such that, upon loss of voltage from the utility or other electric supply system(s), energy cannot be back-fed through the truck and the



truck supply equipment to the electrified truck parking space wiring system unless permitted in 626.27.

**626.27 Interactive Systems.** Electrified truck parking space supply equipment and other parts of a system, either on-board or off-board the vehicle, that are identified for and intended to be interconnected to a vehicle and also serve as an optional standby system or an electric power production source or provide for bi-directional power feed shall be listed as suitable for that purpose. When used as an optional standby system, the requirements of Article 702 shall apply, and when used as an electric power production source, the requirements of Article 705 shall apply.

#### Part IV. Transport Refrigerated Units (TRUs)

**626.30 Transport Refrigerated Units.** Electrified truck parking spaces intended to supply transport refrigerated units (TRUs) shall include an individual branch circuit and receptacle for operation of the refrigeration/heating units. The receptacle associated with the TRUs shall be provided in addition to the receptacles required in 626.24(B).

**(A) Branch Circuits.** TRU spaces shall be supplied from 208-volt, 3-phase, 240-volt, 3-phase, or 480-volt, 3-phase branch circuits and with an equipment grounding conductor.

**(B) Electrified Truck Parking Space Supply Equipment.** The electrified truck parking space supply equipment, or portion thereof, providing electric power for the operation of TRUs shall be independent of the loads in Part III of Article 626.

#### 626.31 Disconnecting Means and Receptacles.

**(A) Disconnecting Means.** Disconnecting means shall be provided to isolate each refrigerated unit from its supply connection. A disconnecting means shall be provided and installed in a readily accessible location and shall be lockable open in accordance with 110.25.

**(B) Location.** The disconnecting means shall be readily accessible, located not more than 750 mm (30 in.) from the receptacle it controls, and located in the supply circuit ahead of the receptacle. Circuit breakers or switches located in power outlets complying with this section shall be permitted as the disconnecting means.

**Δ (C) Receptacles.** All receptacles shall be listed and of the grounding type. Every electrified truck parking space intended to provide an electrical supply for TRUs shall be equipped with one or more of the following:

- (1) A 30-ampere, 480-volt, 3-phase, 3-pole, 4-wire receptacle
- (2) A 60-ampere, 208-volt, 3-phase, 3-pole, 4-wire receptacle
- (3) A 20-ampere, 1000-volt, 3-phase, 3-pole, 4-wire receptacle, pin and sleeve type
- (4) A 60-ampere, 250-volt, 3-phase, 3-pole, 4-wire receptacle
- (5) A 60-ampere, 480-volt, 3-phase, 3-pole, 4-wire receptacle

Informational Note: See UL 1686-2012, *Pin and Sleeve Configurations*, Figure C2.11, for complete details of the 30-ampere pin and sleeve receptacle configuration for refrigerated containers (TRUs) and for various configurations of 60-ampere pin and sleeve receptacles.

**626.32 Separable Power Supply Cable Assembly.** A separable power supply cable assembly, consisting of a cord with an attachment plug and cord connector, shall be one of the types and ratings specified in 626.32(A), (B), and (C). Cords with adapters and pigtail ends, extension cords, and similar items shall not be used.

**(A) Rating(s).** The power supply cable assembly shall be listed and rated in accordance with one of the following:

- (1) A 30-ampere, 480-volt, 3-phase assembly
- (2) A 60-ampere, 208-volt, 3-phase assembly
- (3) A 20-ampere, 1000-volt, 3-phase assembly
- (4) A 60-ampere, 480-volt, 3-phase assembly
- (5) A 60-ampere, 250-volt, 3-phase assembly

**(B) Cord Assemblies.** The cord shall be a listed type with four conductors, for 3-phase connection, one of which shall be identified in accordance with 400.23 for use as the equipment grounding conductor. Extra-hard usage cables rated not less than 90°C (194°F), 600 volts, listed for both wet locations and sunlight resistance, and having an outer jacket rated to be resistant to temperature extremes, oil, gasoline, ozone, abrasion, acids, and chemicals, shall be permitted where flexibility is necessary between the electrified truck parking space supply equipment and the inlet(s) on the TRU.

**Δ (C) Attachment Plug(s) and Cord Connector(s).** Where a flexible cord is provided with an attachment plug and cord connector, they shall comply with 250.138(A). The attachment plug(s) and cord connector(s) shall be listed, by itself or as part of the power-supply cable assembly, for the purpose and shall be molded to or installed on the flexible cord so that it is secured tightly to the cord at the point where the cord enters the attachment plug or cord connector. If a right-angle cap is used, the configuration shall be oriented so that the grounding member is farthest from the cord. An attachment plug and cord connector for the connection of a truck or trailer shall be rated in accordance with one of the following:

- (1) 30-ampere, 480-volt, 3-phase, 3-pole, 4-wire and intended for use with 30-ampere, 480-volt, 3-phase, 3-pole, 4-wire receptacles and inlets, respectively
- (2) 60-ampere, 208-volt, 3-phase, 3-pole, 4-wire and intended for use with 60-ampere, 208-volt, 3-phase, 3-pole, 4-wire receptacles and inlets, respectively
- (3) 20-ampere, 1000-volt, 3-phase, 3-pole, 4-wire and intended for use with 20-ampere, 1000-volt, 3-phase, 3-pole, 4-wire receptacles and inlets, respectively
- (4) 60-ampere, 480-volt, 3-phase, 3-pole, 4-wire and intended for use with 60-ampere, 480-volt, 3-phase, 3-pole, 4-wire receptacles and inlets, respectively