

Statewide Codes and Standards

Electric Vehicle Charging Requirements
Intervening Cycle Changes
Effective July 1, 2024





2022 Intervening Code Cycle



**Changes to multifamily,
hotel and motel EV charger
requirements**



**Changes to nonresidential
EV charger and other green
building requirements**



Effective July 1, 2024



**Jurisdictions may adopt
(and amend) in advance**

City of Cotati adopted new
Tier 1 on June 27, 2023

Code Language Resources

- Model Ordinance for Early Adoption
 - [Electric Vehicles \(Intervening Cycle CALGreen Tier 1 or Tier 2 levels\)](#)
- Text of Revisions to State Code
 - [Nonresidential](#)
 - [Multifamily, Hotels and Motels](#)
- Building Standards Commission will post complete, final language by January 1, 2024

Residential, Hotels, Motels



Highlights

Single Family

- No changes

Multifamily, Hotels and Motels

- EV Capable upgraded to EV Ready
- Combines small and large building categories
- Increases requirements for mandatory and voluntary tiers
- Specifies requirements for assigned multifamily spaces
- Specifies receptacle types
- Specifies minimum number of J1772 chargers
- Clarifies that Automated Load Management Systems (ALMS) may be used in voluntary tiers

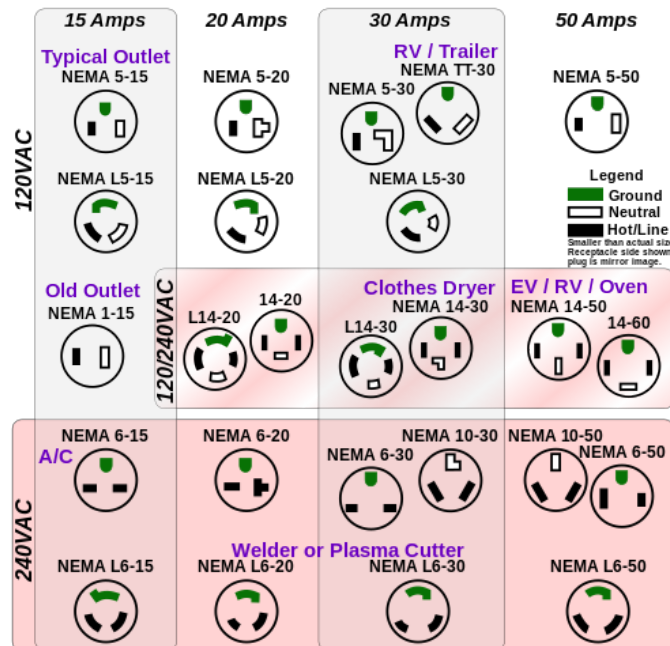
Multifamily, Hotels and Motels

Receptacle Types for Charging Cables

New specifications for common receptacle types for use with charging cables

- Suitable for Low Power Level 2 circuit
 - NEMA 6-20R (208/240 volt, 20 amp)
- Suitable for standard Level 2 charging circuit at slower charge rate
 - NEMA 14-30R (208/240 volt, 30 amp)
- Suitable for standard Level 2 charging circuit at full charge rate
 - NEMA 14-50R (208/240 volt, 50 amp)

User provides external charging cable



Courtesy of Orion Lawlor, CC BY-SA 3.0 <<https://creativecommons.org/licenses/by-sa/3.0/>>, via Wikimedia Commons

Multifamily, Hotels and Motels

	Building Size	Measure	CALGreen	CALGreen Voluntary	
			Mandatory	Tier 1	Tier 2
2022 Code Requirements	Small (<20 units)	Level 2 EV Capable	10%		
		Low Power Level 2 Receptacles	25%	35%	40%
	Large (> 20 units)	Level 2 EV Capable	10%		
		Low Power Level 2 Receptacles	25%	35%	40%
		Level 2 EVSE	5%	10%	15%
Mid-Cycle Requirements	All sizes	Low Power Level 2 Receptacles	40%	50%	55%
			In same proportion for assigned multifamily spaces		
		Level 2 EVSE	10%	15%	20%

Nonresidential



Highlights

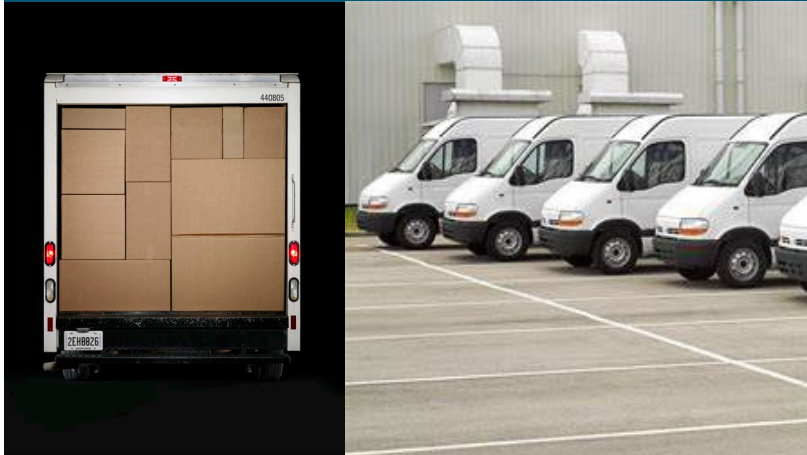
New Construction

- Extends off-street medium- and heavy-duty requirements to offices and manufacturing facilities
- Requires at least 1 EVSE (charger) for facilities with less than 10 spaces
- Specifies minimum number of J1772 chargers
- Offers alternative compliance pathway – Power Allocation Method
- Two Low Power Receptacles may substitute for one EV Capable space

Other

- Extends to alterations and additions, including addition of PV
- Definitions modified

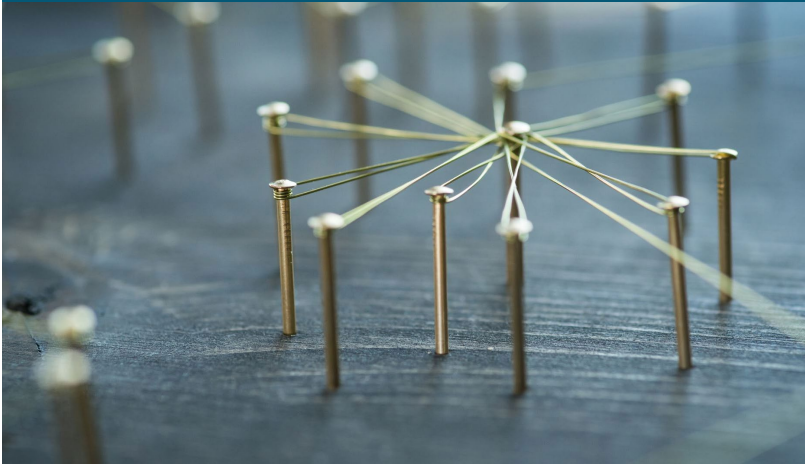
Nonresidential



Off-Street Medium- and Heavy-Duty Truck Spaces

	Building type	Building Size (sq. ft.)	Number of Off- street loading spaces	kVA
Existing Occupancies	Grocery	10,000 to 90,000	1 or 2	200
			3 or Greater	400
		Greater than 90,000	1 or Greater	400
	Retail	10,000 to 135,000	1 or 2	200
			3 or Greater	400
		Greater than 135,000	1 or Greater	400
	Warehouse	20,000 to 256,000	1 or 2	200
			3 or Greater	400
		Greater than 256,000	1 or Greater	400
Added Occupancies	Manufacturing Facilities	10,000 to 50,000	1 or 2	200
		10,000 to 50,000	3 or Greater	400
		Greater than 50,000	1 or Greater	400
	Office Buildings	10,000 to 135,000	1 or 2	200
		10,000 to 135,000	3 or Greater	400
		Greater than 135,000	1 or Greater	400

Nonresidential



Power Allocation Method

Alternative to prescriptive tables for EV Capable and EVSE (charger) requirements

6.6 kVA per required space using a kVA combination of

- Level 2
 - At least one Level 2 space
- DCFC EVSEs
- Low Power Level 2
- EV Capable spaces
 - EV Capable spaces limited to 75% of required kVA
 - Tiers 1 and 2 – EV Capable spaces limited to 67% of required kVA

Nonresidential

Additions and Alterations

Triggers

- Addition of PV canopy
- Increase in power supply/panel capacity serving parking facility

Affected spaces to meet requirements for newly constructed facilities

- ~20% capable
- ~5% chargers



All Occupancies



The SAE J1772 charge port (right) on a vehicle can be used to accept charge with Level 1 or 2 charging equipment. The DC fast charge port (left) uses a different type of connector. In this photo, it is a CHAdeMO.

Courtesy US DOE https://afdc.energy.gov/fuels/electricity_infrastructure.html

Connection Types

Multifamily, hotels and motels

- At least 50% must be J1772
 - Common Level 1 and 2 charger type

Nonresidential

- Direct Current Fast Charger (DCFC)
 - One DCFC may substitute for five Level 2 chargers (may only substitute for EV Capable spaces in existing code)
 - Two Low Power Level 2 EV charging receptacles may substitute for one EV capable space

All Occupancies

Automated Load Management Systems (ALMS)



Figure 1. With ALMS each EV gets its own charger.



Figure 2. Without ALMS EV owners are forced to share chargers.

- No substantive changes
- Permitted as a strategy to manage capacity and loads
- Allows more chargers to share a building's electrical capacity, or the capacity of a given circuit
- Capacity to deliver at least 3.3 kW simultaneously to each EV charging station
- Load Shifting: Intelligent ALMS can shift load
 - Reduce peak energy prices and demand charges
 - Reduce carbon emissions and brownouts
- Monitors the charging rate and dynamically varies it to manage a building's total electric load

Key CALGreen Terms (changes marked)

Automatic Load Management System (ALMS): A system designed to manage load across one or more vehicles with electric vehicle supply equipment (EVSE) to share electrical capacity and/or automatically manage power at each connection point.

Electric Vehicle (EV) Capable Space: A vehicle space with electrical panel space and load capacity to support a branch circuit and necessary raceways, both underground and/or surface mounted, to support EV charging.

Electric Vehicle (EV) Ready Space: A vehicle space which is provided with a branch circuit; any necessary raceways, both underground and/or surface mounted; to accommodate EV charging, terminating in a receptacle or a charger.

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.

Electric Vehicle Charging Station (EVCS): One or more electric vehicle charging spaces served by EVSE or receptacle(s). ~~electric vehicle charger(s) or other charging equipment allowing charging of electric vehicles. Electric vehicle charging stations are not considered parking spaces.~~

Level 2 Electric Vehicle Supply Equipment (EVSE). The 208/240-volt 40-ampere branch circuit, and the electric vehicle charging connectors, attachment plugs 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.

Low Power Level 2 EV Charging Receptacle: A 208/240 Volt 20-ampere minimum branch circuit and a receptacle ~~for use by an EV driver to charge their electric vehicle or hybrid electric vehicle.~~

Other Terms Used in Various Reach Codes

Level 2 EV Capable Space: A vehicle space capable of supporting future EV charging, which includes raceway and/or sheathed cable, panel capacity and circuit breaker space for a 208/240-volt 40-ampere minimum branch circuit.

LEVEL 1 EV Ready Space: A parking space that is served by a complete electric circuit with a minimum of 2.2 kVa (110/120-volt, 20-ampere) capacity wiring and receptacle and conduit oversized to accommodate future Level 2 EV Ready (208/240-volt, 40-ampere)

LEVEL 2 EV Ready Space: A parking space that is served by a complete electric circuit with a minimum of 8.3 kVa (208/240-volt, 40-ampere) capacity wiring and receptacle.

Program Resources



LocalEnergyCodes.com

Contact info@localenergycodes.com
for no-charge assistance from expert
Reach Code advisors

LocalEnergyCodes.com

