California is now requiring that new buildings being built in 2015 provide the infrastructure for electric-car charging, but what will it take to retrofit existing facilities with the necessary wiring to install 240-Volt Level 2 charging stations?

There are a lot of questions swirling around right now as new legislation is being discussed to include standards for electric-car charging stations in all commercial facilities in the California Building Code.

Even though the laws have not been passed yet, there are many landlords that are moving forward with installing charging stations on their properties.

If you are a landlord with a state tenant then you most likely are already dealing with this very topic. State agencies are now requiring that a percentage of all parking stalls provide a ratio of electric charging stations for their employees. In fact, many of our clients have requested on-site meetings to discuss the Do’s & Don’ts of installing such stations.

Here is a snapshot of some of the proposed building code requirements for EV Charging stations on commercial facilities:

New commercial, industrial and other uses with the building or land area, capacity or numbers of employees listed herein shall provide the electrical service capacity necessary and all conduits and related equipment necessary to ultimately serve 2% of the total parking spaces with EVCSs in a manner approved by the building and safety official. Of these parking spaces, 1/2 shall initially be provided with the equipment necessary to function as online EVCSs upon completion of the project. The remainder shall be installed at such time as they are needed for use by customers, employees or other users. EVCSs shall be provided in disabled person parking spaces in accordance with state and federal requirements.

a. Construction of a hospital of 500 or more beds, or expansion of a hospital of that size by 20% or more.

b. Construction of a postsecondary school (college), public or private, for 3,000 or more students, or expansion of an existing facility having a capacity of 3,000 or more students by an addition of at least 20%.

c. Hotels or motels with 500 or more rooms.

d. Industrial, manufacturing or processing plants or industrial parks that employ more than 1,000 persons, occupy more than 40 acres of land or contain more than 650,000 square feet of gross floor area.

e. Office buildings or office parks that employ more than 1,000 persons or contain more than 250,000 square feet of gross floor area.

f. Shopping centers or trade centers that employ 1,000 or more persons or contain 500,000 square feet of gross floor area.

g. Sports, entertainment or recreation facilities that accommodate at least 4,000 persons per performance or that contain 1,500 or more fixed seats.

h. Transit projects (including but not limited to transit stations and park and ride lots).

I am not going to dive deep into the electrical component side of things in this article, as it would make your eyes glaze over. These items would include panel capacity, dedicated conduit for one-208/240V 40amp circuit and placement locations within close proximity of the vehicle.

Instead, I want to discuss how to properly install new charging stations on existing commercial facilities while being mindful of the accessibility requirements. You do not want to spend a lot of money trenching, running power and installing charging units and not provide access for your disabled customers.

Just like our standard parking stalls provided in the parking lot, garages and on street, a ratio of them must be accessible. The same applies to electric vehicle charging.

A reasonable portion of Electric Vehicle Charging Stations are required to be accessible. If provided by a state or local government on public property or on street within the public right of way, vehicle charging is considered a program or service that must be accessible to and useable by individuals with disabilities. Accessibility covers not just the physical dimensions of the charging station, and operable parts of the device, but also the functionality of the ‘self-contained, closed product’ charging system. If provided at privately owned or operated public accommodations they must also be accessible as a service provided to the general public.
While there is currently no requirement to provide electric vehicle charging stations, when they are provided a portion of them should be accessible. When co-located with parking spaces, electric vehicle charging is considered the primary function of these stations, not parking. Accessible electric vehicle charging stations are not to be reserved exclusively for the use of persons with disabilities. They should not be identified with signage that would mistakenly indicate their use is only for vehicles with placards or license plates for individuals with disabilities.

Existing conditions, terrain, electric infrastructure and other factors dictate that not every electric vehicle charging station can be fully accessible. With electric vehicle charging stations being functionally similar to and usually integrated with parking, the ratios of accessible to standard electric vehicle charging stations in these guidelines are the same as those for accessible to standard parking in the 2010 ADA standards and the 2013 California Building Code. The numbers of required accessible electric vehicle charging stations for both on-site and public rights-of-way locations are shown in Tables EVG-250.2 On-site Electric Vehicle Charging Stations and EVG-250.3 On-street Electric Vehicle Charging Stations.

### Table EVG-250.2 On-Site Electric Vehicle Charging Stations:

<table>
<thead>
<tr>
<th>Total Number of Electric Vehicle Charging Stations Provided at a Site</th>
<th>Minimum Number of Required Physically Accessible Electric Vehicle Charging Stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 25</td>
<td>1</td>
</tr>
<tr>
<td>26 to 50</td>
<td>2</td>
</tr>
<tr>
<td>51 to 75</td>
<td>3</td>
</tr>
<tr>
<td>76 to 100</td>
<td>4</td>
</tr>
<tr>
<td>101 and over</td>
<td>4, plus 2 for each 100, or fraction thereof, over 100</td>
</tr>
</tbody>
</table>

**Lets walk through the checklist before you break ground!**

1) **Keep in mind the location of the charging station:**
   Electric Vehicle Charging Stations shall be located in compliance with EVG-250.5.

   For new construction, accessible electric vehicle charging stations should be close to a major facility, public way or accessible route on the site, with 200 feet recommended as a maximum distance. However, electric vehicle charging stations need not be provided immediately adjacent to the facility since charging services, not parking, is their primary purpose. For installations at existing sites and locations, the accessible electric vehicle charging stations may not be located in close proximity to other services due to technical factors such as the availability of electric power or terrain, but they should be on an accessible route to the maximum extent feasible.

2) **On-Site Locations:**
   Electric vehicle charging stations on public and private sites shall be dispersed within each separate type of parking facility providing electric vehicle charging to the maximum extent feasible.

3) **Proximity to Buildings, Facilities or Sites Served:**
   Electric vehicle charging stations complying with EVG-812 that serve a particular building, facility or site shall be located in close proximity to the facility, public way or major circulation path on the site.

4) **Proximity to Accessible Routes:**
   Electric vehicle charging stations complying with EVG-812 that serve a particular building, facility or site shall be on an accessible route to an entrance complying with 11B-206.4 of the current edition of the California Building Code. Electric vehicle charging stations that do not serve a particular building or facility shall be on an accessible route to an accessible pedestrian entrance to the functional area within which they are located.

A side note: On-Street Locations. Providing fully accessible on-street electric vehicle charging stations within the public right of way can be very difficult due to constraints posed by existing terrain, available right of way and other factors. The technical requirements for accessible parking, when applied to electric vehicle charging stations, can be in direct conflict with roadway and sidewalk grades, right-of-way widths, and functional requirements for curbs, gutters and other right of way improvements. While many of these issues...

5) Accessible Route Between Vehicle Space and Charging Equipment:
An accessible route complying with the California Building Code Chapter 11B Division 4 Accessible Routes shall connect the electric vehicle charging station vehicle space to the electric vehicle charging equipment. This means a minimum 48” wide walkway with 2% max cross slope and 5% max run slope is provided to the “accessible” charging unit. Not all of the charging units!

6) Electric Vehicle Charging Stations at Existing Facilities:
Alterations solely for the purpose of installing electric vehicle charging stations shall be limited to the actual scope of work of the project and shall not be required to comply with section 11B-202.4 of the current edition of the California Building Code. 11B-202.4 is the section that requires an accessible path of travel to an altered area.

EXCEPTION: Alterations solely for the purpose of installing electric vehicle charging stations at sites where vehicle parking or storage is the sole and primary use of the facility shall comply with the 2013 California Building Code section 11B-202.4 Path of Travel Requirements in Alterations, Additions and Structural Repairs to the maximum extent feasible. The cost of compliance with 11B-202.4 shall be limited to twenty percent of the cost of the work directly associated with the installation of the electric vehicle charging equipment. End Exception

ADVISORY: Electric Vehicle Charging Stations at Existing Facilities. The majority of electric vehicle charging stations being installed in the foreseeable future will occur at existing on-site or on-street parking facilities where the source of electric power, location of accessible parking, natural terrain, landscaping and other features are existing. Under the California Building Code these projects would be considered alterations. Alteration projects generally require accessibility improvements, if needed to comply with current requirements, to certain “path of travel” elements serving the area of alteration. The California Building Code provides exceptions to the “path of travel” upgrade requirements for projects that do not affect the usability or accessibility of the facility. It also recognizes the inherent difficulty in altering certain existing facilities for full compliance with the accessibility requirements through provisions for situations where strict compliance is technically infeasible.

EVCS installations at existing facilities fall into three categories:

1. Within an existing public right-of-way – With no specific “path of travel” elements serving the area being altered there would be no accessibility upgrades outside the area of work.

2. On building and facility sites where parking / vehicle storage is incidental to the primary function – Under the federal 2010 ADA Standards these projects would be alterations not affecting a primary function area and “path of travel” upgrades would not be required. This is the approach used in the prior DSA Access Policy Statement 97-03 and is most probably based upon classification of electric vehicle charging stations as electrical projects not involving the placement of receptacles or switches. These proposed guidelines continue the same approach as the prior DSA policy.

3. Installations of electric vehicle charging stations at sites where vehicle parking or storage is the sole or primary use of the facility are alterations affecting the usability of or access to a primary function area. The 2010 ADA Standards require that, to the maximum extent feasible, the path of travel to the altered area, including restrooms, telephones, and drinking fountains, is readily accessible to and usable by individuals with disabilities. Additional alterations to upgrade non-compliant path of travel elements outside of the project’s area of work are required, unless those alterations are disproportionate to the overall alterations in terms of cost and scope, which is defined as exceeding twenty percent (20%) of the cost of the primary alterations. When the cost of full compliance for path of travel elements would exceed twenty percent (20%), compliance is required to the greatest extent possible within the twenty percent (20%) limitation. California law prohibits the State Architect’s regulations and building standards from prescribing a lesser standard of accessibility or usability than that provided by the 2010 ADA Standards. 2013 California Building Code section 11B-202.4 reflects similar requirements with the addition of signage to the designated path of travel elements. For projects with basic costs above the CBC valuation threshold of $147,863, the cost above which path of travel alterations would become disproportionate has been aligned with the federal requirements of twenty percent (20%).
The following technical sections for the electric vehicle charging station guidelines are designed to eventually be located within the California Building Code’s Chapter 11B Division 8: Special Rooms, Spaces and Elements.

So here is what we need to keep in mind as we begin to design and install EVCS on our properties:

7) Electric Vehicle Charging Station Spaces:
The vehicle space designated for on-site electric vehicle charging stations shall be 18’ long minimum and 9’ wide minimum and shall have an adjacent access aisle 5’ wide by 18’ long with crosshatched markings and 12” NO PARKING painted inside.

Vehicle Space Marking: Car and van electric vehicle charging stations shall be marked to define their width, Where Electric Vehicle Charging Stations are marked with lines, width measurements of electric vehicle charging stations and access aisles shall be made from the centerline of the markings.

EXCEPTION: Where electric vehicle charging stations or access aisles are not adjacent to another parking space or access aisle, measurements shall be permitted to include the full width of the line defining the parking space or access aisle.

8) Electric Vehicle Charging Only Lettering:
The words “ELECTRIC VEHICLE CHARGING ONLY” or “EV CHARGING ONLY” may be painted on the surface within each charging space letters a minimum of 12 inches (305 mm) in height and located to be visible from the adjacent vehicular way.

9) Access Aisle:
Access aisles serving vehicle spaces at on-site electric vehicle charging stations shall be accessible. Access aisles shall adjoin an accessible route. Two electric vehicles charging stations or one electric vehicle charging station and one accessible parking space shall be permitted to share a common access aisle.
Aisle Width
Access aisles serving on-site electric vehicle charging station car spaces at shall be 60 inches (1524 mm) wide minimum.

Aisle Length
Access aisles at on-site electric vehicle charging stations shall extend the full-required length of the vehicle spaces they serve.

Aisle Marking
Access aisles at electric vehicle charging stations shall be marked with a painted borderline around their perimeter. The area within the borderlines shall be marked with hatched lines a maximum of 36 inches (914 mm) on center. The color of the borderlines, hatched lines, and letters shall contrast with that of the surface of the access aisle, with white being the preferred color. The blue color required for the identification of access aisles for accessible parking shall not be used.

No Parking Lettering
The words “NO PARKING” shall be painted on the surface within each access aisle in letters a minimum of 12 inches (305 mm) in height and located to be visible from the adjacent vehicular way.

Location
Access aisles at on-site electric vehicle charging station spaces shall not overlap the vehicular way and may be placed on either side of the vehicle space they serve.

Floor or Ground Surface
On-site electric vehicle charging station spaces and access aisles serving them shall comply with 11B-302 Floor and Ground Surfaces. Access aisles shall be at the same level as the electric vehicle charging station space they serve. Changes in level or slopes exceeding 1:48 are not permitted.

Vertical Clearance
On-site Electric vehicle charging station spaces, access aisles and vehicular routes serving them shall provide a vertical clearance of 98 inches (2489 mm) minimum.

Identification
On-site electric vehicle charging stations shall be identified with a sign complying with EVG-812.6 and shall not be identified as or provided with signage required for accessible parking spaces.
Language
Provide a sign containing language stating “Designed for Disabled Access - Use Last” in addition to the signage identifying standard electrical vehicle charging stations. Where only one electric vehicle charging station is provided the sign shall contain language stating “Designed for Disabled Access”.

Mounting Height
Signs shall be 60 inches (1524 mm) minimum above the finish floor or ground surface measured to the bottom of the sign and shall be the uppermost sign when co-located with “No Parking except for Electric Vehicle Charging” and “Parking Time Limit” word message signs or electric vehicle charging symbol signs.

EXCEPTION: Signs located within an accessible route shall be a minimum of 80 inches (2032 mm) above the finish floor or ground surface measured to the bottom of the lowest sign. End Exception

Size and Finish
Signs shall be reflectorized with a minimum area of 70 square inches (45161 mm²).

Color
Signs shall be white symbols and letters on a blue background.

Location
Signs shall be permanently posted immediately adjacent to and visible from each space, and shall be located within the projected width of the vehicle space.

Relationship to Accessible Routes
Electric vehicle charging station vehicle spaces and access aisles shall be designed so that when occupied the required clear width of adjacent accessible routes is not obstructed.

Arrangement
Electric vehicle charging stations and access aisles shall be designed so that persons using them are not required to travel behind electric vehicle charging stations other than to pass behind the vehicle space in which their vehicle has been left to charge.

EXCEPTION: Electric vehicle charging stations installed in existing facilities shall comply with above standards to the maximum extent feasible. End Exception

Accessible Route Encroachment
A curb, wheel stop, bollards or other device shall be provided if required to prevent encroachment of vehicles over the required clear width of adjacent accessible routes.

ADVISORY
General. EVG-250.3 specifies how many accessible electric vehicle-charging stations must be provided within the public right of way of a state or local governmental entity’s area of jurisdiction. Accessible electric vehicle charging stations are not parking for purposes of accessibility and should be identified by signs that do not create the impression they are reserved for vehicles displaying disabled persons license plates or placards. While accessible electric vehicle charging stations are ideally located where the street has the least crown and grade and close to key destinations, other factors, such as proximity to electric service and connections, may control their location.

Electric Vehicle Charging Station Equipment

Location
Equipment pedestals and pay stations shall comply with EVG-814.1.1.

EVG-814.1.1.1 Parallel Locations
At parallel electric vehicle charging station spaces, equipment pedestals and pay stations shall be on the immediately adjacent sidewalk or ground surface and located 36 inches maximum from the head end or foot end of the projected length of the space.
**EVG-814.1.1.2 Perpendicular or Angled Locations**

At perpendicular or angled Electric Vehicle Charging Station spaces, equipment pedestals and pay stations shall be located on the immediately adjacent sidewalk or ground surface at the head end within the projected width of the electric vehicle charging station space.

**EXCEPTION:** For alterations at existing facilities when an accessible route or general circulation path is not provided adjacent to the head end of the space or access aisle, the equipment pedestal and pay station may be located within the projected width of the access aisle 36 inches maximum from the head end of the space.

**ADVISORY:** EVG-814.1.1 Location. Locating equipment pedestals and pay stations at the head or foot of the electric vehicle charging station permits deployment of a van side-lift or ramp or the vehicle occupant to transfer to a wheelchair or scooter.

**EVG-814.2 Charging Station Equipment Operable Parts**

Operable parts and charging cord stowage locations shall comply with 11B-309 Operable Parts.

**EVG-814.2 Displays and Information**

Displays and information shall be visible from a point located 3.3 feet (1.0 m) maximum above the center of the clear floor or ground space in front of the equipment pedestal and pay station.

**EVG-814.3 Charging Station Equipment Clear Floor Space**

Clear floor space at electric vehicle charging stations shall comply with 11B-305 Clear Floor Space and shall be centered on the display and information side of the electric vehicle charging station equipment.

So this is just a portion of the newly proposed guidelines for newly installed electric vehicle charging stations. Keep in mind the ratio of charging stations that must be accessible.

The first charging station must be level 2% with the access aisle, signage and an accessible route connection to the building or other common use amenities. Treat it just like you were installing disabled parking on your property. Think about the slopes, walkway widths, signage, drive aisle crossing with truncated domes, close proximity to the building entrance etc. Keep in mind that each local building agency may already have specific requirements being enforced regarding the installation of these charging stations so check with them first before moving forward.

Chris Taylor is Principal and CEO of ADA Compliance Consultants. Having worked in the ADA compliance field since 1998, Chris Taylor established ADA Compliance Consultants in 2004. Chris and his team are certified to report on Federal, State and International access guidelines. Their teams are led by professionals who are certified by the International Code Council (ICC) as accessibility inspectors and plans examiners and California’s Certified Access Specialist program or CASp. This ensures that our solution will not only meet State and international accessibility guidelines, but Federal guidelines, as well.