

CALIFORNIA GOVERNOR'S OFFICE OF BUSINESS AND ECONOMIC DEVELOPMENT

# Electric Vehicle Charging Station Permitting Guidebook

Second Edition



California Governor's  
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Additionally, several publications formed the foundation of this Guidebook. A list of select resources can be found at the end of this Guidebook.

Any errors in the Guidebook are the sole responsibility of the Governor's Office of Business and Economic Development. With that in mind, we are always looking for ways to improve the resources we create. Please send suggestions to [zev@gobiz.ca.gov](mailto:zev@gobiz.ca.gov).



*Images courtesy of the Bay Area Air Quality Management District, EVgo and the California Energy Commission*



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# Executive Summary

California is in the midst of a massive transformation from internal combustion to 100 percent zero-emission vehicles (ZEVs). The question is not “if” we will complete the full transition; the question is “when.” “When” matters. Timing hinges in part on our collective ability to streamline ZEV infrastructure development.

California's transportation sector remains the single largest contributor of emissions for both greenhouse gases and health-impacting criteria pollutants. Over 3 million Californians suffer from asthma; climate change impacts in the state are already worse than expected.<sup>1,2</sup> The solution is to reduce drive times and distances and eliminate emissions from the transportation system. Each ZEV that replaces the function of an internal combustion vehicle brings us closer to the long-term goal of carbon neutrality and a zero-emission transportation system.<sup>3,4</sup>

To reach true market potential as quickly as possible, California should be the most straightforward place in the country to install market enabling ZEV charging and fueling infrastructure. The goal of this Guidebook is to hasten the transition to ZEVs by simplifying the deployment of electric vehicle charging stations. We aim to accomplish this by creating a shared foundation of understanding for how cities, counties, and developers can work together to streamline the planning, permitting, installation, and ongoing operation of electric vehicle charging stations and supporting equipment.

The Guidebook is comprised of eight parts. Throughout the Guidebook, we include three layers of information: context, requirements, and recommendations or best practices. We dive into the greatest depth in four key areas: planning, accessibility, permitting, and energization, and tie recommendations together with a ZEV Readiness Scorecard and checklists at the end of the

document. The best-case scenario includes a local government committed to strong building standards and electric vehicle-related planning; a streamlined and transparent permitting process that operates within the required timelines, inclusive of applying an informed approach to ensuring accessibility; a predictable energization process; and a well-informed electric vehicle charging station developer<sup>5</sup> who has benefited from easily accessible resources.

**Planning:** Local authorities having jurisdiction (AHJs) can create a ZEV future by incorporating ZEV infrastructure into city planning initiatives and adopting voluntary building codes to ensure supporting infrastructure is installed at the least costly point in time—during construction. Clear planning direction can help station developers with their project proposals, just as understanding how station developers choose sites can help inform permitting processes.

**Accessibility:** As a market leader, California is also the first state in the nation to develop electric vehicle charging station accessibility regulations to define compliance with the broad responsibility under the federal Americans with Disabilities Act. The state developed these regulations to provide certainty for cities, charging station providers, and property owners to help balance co-equal goals of deploying infrastructure and ensuring broad access to services. Implementation of these rules often comes down to local interpretation. This guide provides the context

1 [State of the Air, 2022](#). American Lung Association.

2 California's Fourth [Climate Change Assessment](#).

3 Executive Order [B-55-18](#), [Executive Order N-79-20](#).

4 [AB-1279 The California Climate Crisis Act](#).

5 A station developer is a public or private entity that develops charging stations, often a station development company, manufacturer of electric vehicle supply equipment, investor-owned or publicly-owned utility, automaker, nonprofit, or other interested party.

for the development of the accessibility regulations and suggests resources to help local building officials and station developers deliver projects that benefit all ZEV drivers.

**Permitting:** California's electric vehicle charging station permit streamlining laws (AB 1236, Statutes of 2015, Chapter 598 and AB 970, Statutes of 2021, Chapter 710) were enacted to address mutual frustration: electric vehicle charging station providers wanted to speed the permitting process; and cities and counties often needed better information from applicants and/or a directive to create streamlined processes.

To help address these frustrations, AB 1236 establishes permitting process and communication requirements for cities and counties—essentially putting best practices into statute. AB 970 codifies specific binding timelines for project review and approval. However, to meet California's ZEV goals, we need communities to implement the laws and improve upon their requirements by sharing on-the-ground learnings and best practices. The electric vehicle charging industry continues to rapidly evolve and ultimate success hinges on ongoing dialogue and process improvements.

**Energization:** Electric vehicle charging stations are one of many services vying for utility attention. This guide explores the preferred processes for California's five largest utilities, all of which are committed to electrifying transportation.

In addition to the above subject areas, the guide addresses the construction, commissioning, and installation of stations and looks forward to a California with normalized electric vehicle charging station development processes and ubiquitous ZEVs. To get there, California has many advantages. We have the most robust ZEV market in the country—the most charging and fueling stations, the most vehicles, and the most experienced city and county planners, building officials, local workforce, and local leaders.

While ultimate success is not inevitable, experience has shown that just one dedicated individual within a local government can catalyze efforts that turn their city or county into a model ZEV-enabling community. These leaders have come from local planning, building, and sustainability departments. They have been elected officials and regional decision makers, and all of them play a vital role in meeting our collective vision.

Bold local and regional leadership, constructive station developers, and a small amount of shared, dedicated effort to streamline station development can help make local jurisdictions leaders in ZEV adoption and the future of transportation. California is committed to working with these partners to create the replicable systems necessary to create the future our health and climate depends on.



Image courtesy of Adopt a Charger



Image courtesy of Tesla

## PART 01:

# Setting the Stage

The transportation sector remains the largest contributor of greenhouse gas and criteria pollutant emissions in California.<sup>6</sup> We cannot meet our state climate and air quality objectives without a massive, near-term shift from internal combustion engines to zero-emission drivetrains.

The State of California is a national and international leader in the deployment of zero-emission vehicles (ZEVs). These cars are any type of vehicle that has no tailpipe emissions. They run on electric motors and are powered by electricity stored in batteries or created onboard using hydrogen and fuel cells.<sup>7</sup>

In contrast to conventional internal combustion vehicles, ZEVs produce zero tailpipe emissions, preventing harmful greenhouse gas and criteria pollutants from being released into the environment. They can also help integrate renewable energy into the transportation sector. Moreover, the communities most burdened by air pollution are often the ones along major transportation and shipping corridors and a switch to ZEVs will help alleviate that burden.

To support California's ambitious ZEV deployment goals—5 million ZEVs in California by 2030,<sup>8</sup> 100 percent of new light-duty sales to be ZEV in 2035, and 100 percent of medium- and heavy-duty vehicles to be ZEV by 2045<sup>9</sup>—the state is prioritizing the development of infrastructure to support these vehicles through policy, targeted investment, and continued coordination. At the most fundamental level, infrastructure in the form of electric vehicle charging stations and hydrogen fueling stations enables the deployment of ZEVs. When consumers look to buy a new or used car, they need confirmation that it will be able to take them

where they want to go. Widespread availability of infrastructure ensures that Californians will have that confidence.

In addition to benefitting ZEV drivers directly, the construction and installation of ZEV infrastructure benefits communities and supports local contractors and businesses. Each ZEV on the road means incrementally cleaner air, regardless of who owns or drives the vehicle, and the presence of chargers attract drivers to local establishments—generating revenue for local businesses. Furthermore, ZEVs keep fuel spending local and are often less expensive to operate than conventional vehicles—saving residents and visitors money.<sup>10</sup>

This Guidebook is comprised of eight parts and is intended to help navigate station developers and local jurisdictions through the infrastructure development process from selecting sites for electric vehicle charging through the permitting and construction processes. This Guidebook goes into greater depth in Part 3: Accessibility, Part 4: Permitting, and Part 5: Energization, due to the influence these stages can have on the overall project timeline and cost.<sup>11</sup> We provide clarity

<sup>6</sup> [California Greenhouse Gas Emissions for 2000 to 2020, Trends of Emissions and Other Indicators](#)

<sup>7</sup> Plug-in electric and hydrogen fuel cell electric vehicles are complimentary zero-emission technologies.

<sup>8</sup> [Executive Order B-48-18](#).

<sup>9</sup> [Executive Order N-79-20](#).

<sup>10</sup> [Consumer Reports](#) issued a study showing that battery electric vehicles can save consumers thousands of dollars over the life of the vehicle compared to conventional cars – and save up to \$4,700 in fuel costs in just the first seven years.

<sup>11</sup> Key definitions can be found in Part 8 of this document.

and tips on implementing the statewide permit streamlining requirements (AB 1236, 2015, and AB 970, 2021), as compliance with and understanding of these requirements are vital to ensuring ZEV infrastructure deployment across the state.

Ultimately, a successful transition to zero emissions hinges on success at the local level. Success up to this point has been a necessarily iterative process as the ZEV stakeholder community has learned how to best deploy chargers in a variety of settings. This Guidebook reflects the latest best practices collected from station developers, local jurisdictions, and utilities with experience in developing, approving, and energizing electric vehicle charging stations. We hope this experience can save time and minimize iterations for station developers, local jurisdictions, and utilities. The faster we deploy safe and reliable infrastructure, the sooner we accumulate the benefits ZEVs bring to our communities, the state, and ultimately, the world.

## ZEVs in California Today

The California Energy Commission (CEC) tracks and publishes quarterly [Zero-Emission Vehicle and Infrastructure Statistics](#) in a series of data dashboards: [Light-Duty Vehicle Population](#), [Medium- & Heavy-Duty Vehicle Population](#), [New ZEV Sales in California](#), [Electric Vehicle Chargers in California](#), and [Hydrogen Refueling Stations in California](#). CEC has also teamed up with Veloz to deliver quarterly electric car sales data to support [Veloz's sales dashboard](#) that provides information on California electric car sales, national electric car sales, electric car chargers, hydrogen stations, and the current number of electric makes and models available in the state.

ZEVs as a percentage of new passenger car sales continue to increase.<sup>12</sup> In 2021, ZEV sales exceeded 12 percent of all new passenger car sales in California, increasing to nearly 19 percent in 2022.<sup>13</sup> In total, over 1.3 million ZEVs have been sold in California as of the publishing of this document, including 955,510 Battery Electric Vehicles (BEVs), 429,873 Plug-in Hybrid Electric Vehicles (PHEVs), and 14,530 Fuel Cell Electric Vehicles (FCEVs).<sup>14</sup> With the increasing popularity of ZEVs, the need for charging and fueling infrastructure is increasingly important.

As of publishing, there are 36,499 public chargers in California and 43,528 shared private chargers for a total of 80,027 electric vehicle (EV) chargers.<sup>15</sup> This includes,



Level 2 (12–70 miles of range per hour, 71,499 total chargers),<sup>16</sup> and Direct Current fast charging (3–20 miles of range per minute, 8,528 chargers). For the purposes of this Guidebook, a charging station is defined as an electric vehicle charging space served by an electric vehicle charger. A multiport electric vehicle charger that can charge vehicles in multiple spaces simultaneously is counted based on the number of vehicles that can charge at one time.

## Path to 100 Percent ZEVs

California has established ambitious ZEV infrastructure and vehicle targets for the state—250,000 shared plug-in electric vehicle chargers, including 10,000 direct current fast chargers (DCFC) and 200 hydrogen stations, by 2025. These targets were set to put

<sup>12</sup> ZEVs include Battery Electric Vehicles (BEVs), Plug-in Hybrid Electric Vehicles (PHEVs), Fuel Cell Electric Vehicles (FCEVs). For the purpose of this Guidebook, BEVs include both plug-in electric vehicles and battery electric vehicles that charge wirelessly, using inductive charging.

<sup>13</sup> 345,818 ZEVs were sold in 2022, more than all annual ZEV sales in any previous year.

<sup>14</sup> California Energy Commission (2022). New ZEV Sales in California. Dashboard last updated January 18, 2023. Retrieved from <https://www.energy.ca.gov/zevstats>.

<sup>15</sup> Shared private chargers are located at parking space(s) designated by a property owner or lessee to be available to, and accessibly by, employees, tenants, visitors, and residents. Examples include workplaces and shared parking at a multifamily residence.

<sup>16</sup> Note: not all public connectors serve all plug-in electric vehicles and not all connectors can be used simultaneously. Tesla, for example, operates a network of chargers dedicated to Tesla vehicles. Single-family home-charging, when available, is a key market enabler and is also not accounted for in the connector count.

California on the path to host 5 million ZEVs by 2030.<sup>17</sup> California subsequently set targets to transition to 100 percent ZEVs: 100 percent of in-state sales of new passenger vehicles and trucks will be zero-emission by 2035; 100 percent of operating drayage trucks and operating off-road vehicles and equipment will be zero-emission by 2035 everywhere feasible; and 100 percent of medium- and heavy-duty trucks and buses will be zero-emission by 2045 everywhere feasible.<sup>18</sup>

More information on the plug-in electric charger targets is detailed in the California Energy Commission's [Assembly Bill 2127 Electric Vehicle Charging Infrastructure Assessment](#). For passenger vehicle charging in 2030, the report projects over 700,000 public and shared private chargers are needed to support the state's 5 million ZEV goal. For the 8 million ZEVs anticipated by 2030 under the more ambitious 100 percent ZEV goals in Executive Order N-79-20, nearly 1.2 million chargers will be needed for light-duty vehicles. An additional 157,000 chargers are needed to support the 180,000 medium- and heavy-duty vehicles anticipated for 2030. This projected need for chargers is in addition to single-family home chargers, which serve as the primary charging location for most plug-in electric vehicle drivers.<sup>19</sup>

Charging needs vary across different areas of the state, market segments, and communities. Suburban communities primarily occupied by single-family homeowners may not require as many public chargers per vehicle since drivers will be able to charge at home, while urban areas or those with large numbers of renters and unassigned parking will require more shared access charging (in both public and private locations).<sup>20</sup> Rural community needs are likely to vary, depending on typical travel patterns and vehicle types. Charging can and should be considered in general planning, transit planning, and other mapping and planning of regional, local, and community travel patterns.

A trained and skilled ZEV infrastructure workforce is critical in preparing workers to meet state goals. A suite of key occupations and local jobs in the ZEV infrastructure sector are needed now as this sector scales and prepares for increased public and private investments.<sup>21</sup> Through the [Electric Vehicle Infrastructure Training Program \(EVITP\)](#), local entities, project and workforce partners, site developers, and local electricians/electrical contractors should coordinate early in the development process to ensure that electrical work required for installations will be completed on time and within budget.

## ZEV Strategy

To ensure coordination across state agencies, local government, and the private sector, GO-Biz developed the [ZEV Market Development Strategy](#). The ZEV Strategy is meant to help California collectively move forward and deliver zero-emission benefits to all Californians, outlining how state agencies and stakeholder groups key to our transition can move together with the scale and speed required to reach the state's ZEV targets.

The ZEV Strategy is organized around four key pillars of the ZEV market: vehicles, infrastructure, end users, and workforce. To support and provide a fuller description of the infrastructure pillar, the California Energy Commission, together with several state agencies, developed the Zero-Emission Vehicle Infrastructure Plan (ZIP). The ZIP describes the state's near- and long-term actions, in collaboration with the private market, to ensure that zero-emission vehicle infrastructure will meet the needs of the growing zero-emission vehicle market.<sup>22</sup>

The ZEV Strategy and the [ZEV Market Development Metrics](#) that track the state's progress toward the targets set in the Strategy are living documents that will adapt over time based on feedback and lessons learned.

## Scope and Purpose

The intent of this Guidebook is to add value for electric vehicle charging station developers and local authorities having jurisdiction (AHJs) and help both parties navigate emerging challenges that remain for the installation of plug-in electric vehicle charging.

The content reflects our efforts to prioritize new and emerging issues for electric vehicle charging, and within that context, issues that can be addressed

<sup>17</sup> [Executive Order B-48-18](#).

<sup>18</sup> [Executive Order N-79-20](#).

<sup>19</sup> See "Quantifying the electric vehicle charging infrastructure gap across U.S. states," [ICCT \(2019\)](#), pg. ii.

<sup>20</sup> The majority of plug-in electric vehicle charging occurs at home and importance of this segment cannot be overstated. However, this document primarily focuses on charging at shared locations (public, workplace, multifamily), which have historically been the most challenging to develop.

<sup>21</sup> See [Workforce Projections to Support Battery Electric Vehicle Charging Infrastructure Installation](#), Energy and Environmental Research Associates, LLC (2021).

<sup>22</sup> [Zero-Emission Vehicle Infrastructure Plan \(ZIP\)](#)

at the statewide level to streamline the station permitting and development process.

Although station developers and AHJs are our two main audiences, we elaborate on site host challenges when appropriate and recognize the complexity of the utilities' role in station development (e.g., sometimes utilities are a station developer, sometimes they solely handle the energization process).

This Guidebook focuses primarily on the permitting process, detailing obstacles and emerging challenges and spotlighting best practices from jurisdictions and station developers across the state. We provide context on site selection and other issues to help illuminate, for both station developers and AHJs, the constraints that they operate under and the decisions that inform permitting processes.

**Part 2** of this Guidebook focuses on planning for charging stations with a focus on actions cities and counties can take such as incorporating ZEV infrastructure into planning efforts and adopting voluntary building codes. The section also explains site selection considerations and work that station developers complete before permitting stations with the goal of informing AHJ approval processes.

**Part 3** addresses the implementation of California's regulations for Americans with Disabilities Act compliance.

**Part 4** focuses on permitting including considerations prior to submitting a construction or building permit application for a charging installation, best practices for charging station permitting, compliance with AB 1236 (Chiu, 2015) and AB 970 (McCarty, 2021) permit streamlining requirements, and how to prepare a permit application.

**Part 5** focuses on energization, with sections on the processes for California's largest utilities.

**Part 6** covers construction, commissioning, and operation, including what to expect from a building inspection and information on signage.

**Part 7** takes a brief look forward, acknowledging the fact that station development is a process that can continually be improved.

**Part 8** provides key definitions, the ZEV Readiness Scorecard that GO-Biz uses to track station permit streamlining, checklists for stakeholders to reference as they work to improve the overall ZEV infrastructure development system, the texts of AB 1236 and AB 970, and curbside charging best practices.

This Guidebook does not cover how to seek and attain funding for station development. We begin at the site selection phase under the assumption that funding has already been secured. If you are looking to secure funding, we recommend consulting resources such as the GO-Biz [ZEV Funding Resources webpage](#).

This Guidebook and the [2020 Hydrogen Station Permitting Guidebook](#) serve as the companion documents to the [2013 ZEV Community Readiness Guidebook](#), a publication from the Governor's Office of Planning and Research that provided an early comprehensive guide to the steps communities can take to support increasing adoption of ZEVs.



Images courtesy of the Bay Area Air Quality Management District and Electrify America

**EVgo**  
FAST CHARGING ONLY  
VEHICLE MUST BE CHARGING  
VACATE STALL WHEN COMPLETE



## PART 02:

# Planning and Site Selection

In this section of the Guidebook, we explain the site selection and approval process from both the station developer and the AHJ perspective. Key questions include: Where is the best location to place stations to ensure ample utilization and, if applicable, secure a return on investment (however that return is defined)? What type of stations should be installed? Where on the property should chargers be located? Should the stations be grid connected or standalone?

## How Station Developers Select Sites

Station developers look at a variety of factors in selecting sites. Depending on their business model, each station developer will consider and prioritize factors differently. Some station developers select, secure, own, and operate stations at sites. They may sign a contract with the property owner for the right to operate a station in a certain parking space and hold responsibility for all operations of a station. Other station developers may only select and secure sites, leaving the property owner to own and operate the station(s). Finally, some station developers do not engage in site selection at all, and contract with site hosts who are already interested in installing charging stations. In this chapter, we look at the selection process with intent to inform AHJs of all the work that has already gone into site selection by the time a site makes it to the permitting stage.

### Filtering Potential Locations

Station developers may consider many sites, evaluate different criteria at each one, and reach out to several different site owners before selecting projects

to move forward. The site selection process can be different for each station developer, but some general principles apply.

At least five key factors play a role in determining site selection:

1. **Location.** Station developers typically use public or proprietary data on surrounding real estate, travel patterns, fleet use, nearby amenities, throughput and availability to the public, and/or local knowledge. Developers typically evaluate a location based on several factors including but not limited to whether it will provide a safe customer experience, be easily accessible for drivers, contain sufficient space for charging stalls and supporting equipment, and whether it will be proximate to commute routes, amenities, and utility lines.

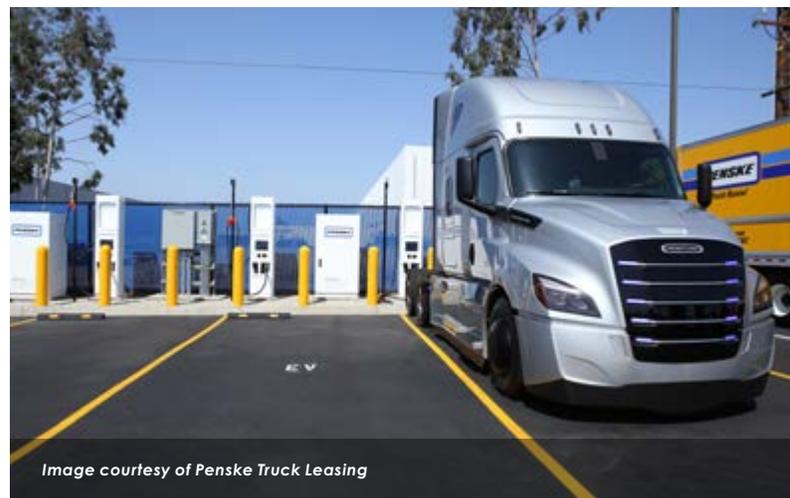


Image courtesy of Penske Truck Leasing

2. **Cost.** Station developers are mindful of cost impacts when scouting new sites. Station developers assess cost factors including whether there is access to primary power, whether back-up generation could be necessary, and whether the site could require extensive landscaping, upgrades, modifications, or new lighting.
3. **Permitting.** A site that is difficult to permit can add months or more to a project, and cities with lengthy permitting processes may miss out on station developer investment. When evaluating an area, developers often select cities with streamlined permitting, and cities without streamlined processes often lose projects to adjacent cities with streamlined processes. AHJs can help attract charging stations and investment by streamlining their permitting processes (see [Part 4: Permitting](#)).
4. **Electrical capacity and location of service.** Utility energization can add considerable cost when major upgrades are required; sites with available electrical capacity and/or well-located electrical service that does not cross the public right of way are attractive. More information on energization is provided in [Part 5: Energization](#).
5. **Property ownership.** Ultimate success depends on a willing site host who understands the benefit of EV charging and the potential for stations to add value to their property. Depending on the property type, charging stations can increase foot traffic, attract new and repeat business, future-proof the property, support sustainability goals, and/or comply with EV charging codes.

Negative grades for any of the above factors may significantly delay or cancel a project.

## Securing a Specific Site

By the time a potential station first appears on the radar of city or county planning and building departments, a site host and station developer have typically been involved in months of negotiation and contract development. In many cases, a site host and station developer will negotiate a property license agreement regarding a specific piece of land on which the parties have agreed to place the station. These negotiations result in a site that addresses site host concerns (accessibility, construction impacts, and site host customer experience) and station developer needs (cost, access to power, sufficient space, well-lit and visible, and acceptable elevation grade).

While there are many benefits to having charging stations on-site, potential site hosts may be hesitant to host charging stations if they have concerns about limiting non-electric vehicle parking capacity at the site, the amount of rent (if any) that will be paid to lease the parking spaces, and whether individuals visiting the site to charge will patronize their business. Additionally, site hosts do not always have information on the electrical capacity of their building, which adds an additional complication to the site host solicitation process. If an EV charging station is installed using existing electrical capacity and without the need for a new utility service through such options as load management, station developers often must educate site hosts and electricians about the technology and help alleviate

### Electrical capacity and site viability

On a single property, such as a shopping center, electrical capacity and location have a major impact on where a station can be built economically. For example, station developers have reported that two sites in the same shopping center parking lot could range in construction cost by substantially more than \$100,000 if one location requires utility/infrastructure upgrades and the other does not.



Image courtesy of Electrify America

any initial concerns about impacts on the property and utility bills.

Even after two parties have worked out a contract, control and decision-making about the site may still be delicate. If a building or construction permit application has to go through multiple rounds of comments and if extensive unanticipated construction or site improvement is added as a condition of approval, site hosts can become frustrated with the process and withdraw from the agreement.<sup>23</sup> The bottom line is that whenever a station developer is installing stations at a site they do not own or where they do not have a pre-existing relationship, taking the time to understand and work through potential site control challenges is paramount.

## Planning Charging Layout

After selecting a site, station developers and site hosts negotiate what level of charging to install, how many chargers to install, and where the chargers should be placed on the property. Common locations for shared-use station development include shopping centers, grocery stores, restaurants, gas stations, convenience stores, parking garages, parking lots, hotels, workplaces, apartment complexes and other multi-family housing. Each location can present a different use case by attracting people, parking, and charging at different times of the day and for different lengths of time. This informs what charging layout makes the most sense for the site.

For a workplace where some people leave their cars parked all day, while others take their cars to off-site locations throughout the day, a mix of Level 2 chargers and Level 1 charging for those with long dwell times may be appropriate. Similarly, a shopping center may develop Level 2 and Level 1 chargers for its employees who will stay on site for an extended period, but DCFCs and Level 2 chargers for its customers who will be in and out. Similar logic applies for a downtown parking garage that is partially used by office workers who park all day and partially used by individuals running errands: slower charging for the office workers, and faster charging for individuals with shorter dwell times. Drivers who rely on fast chargers have tended to be drivers who do not have charging at home or at their workplace and/or need a fast charge to extend their trip or provide rideshares.<sup>24</sup>

Once the distribution of different charging technologies and the specific charger models are decided, station developers and site hosts determine

## Automated Load Management Systems (ALMS)

ALMS for EV charging stations intelligently share power across multiple stations. The primary benefits are:

- Enabling existing site electrical infrastructure to meet the growing demand for EV charging at a site
- Maximizing the number of EV plugs at a site, while minimizing site electrical infrastructure upgrade costs
- Allowing a full charge to a vehicle when the parking lot is empty, while maximizing the number of vehicles simultaneously charging when the parking lot is full
- Maximizing the number of charging ports in California while having a lesser impact on the electrical grid

Power sharing is used every day across the state. In order to protect people, property, vehicles, and equipment, both software approaches and traditional hardware approaches are used as failsafe mechanisms. An ALMS is designed so that power is limited to circuit, branch, and panel capacities. In addition, traditional overcurrent protection is hardwired to ensure circuits and panels will shut down in the event of software system failure. Load management is discussed further in the [Building Standards section](#).

where to locate the chargers, especially in locations with multiple potential sites (such as a large parking garage). Some site hosts may wish to locate chargers in highly visible locations, such as close to the building entrance, to promote a sustainable image. Others may want to reserve prime parking spaces that can be used by every car and prefer to locate charging stations in the back of a parking lot. Safety and convenience are factors as well. In addition, cellular, Wi-Fi, or ethernet communication availability must be

<sup>23</sup> Note: Per AB 1236, discussed later in this Guidebook, extraneous work not related to health and safety cannot be required as a condition of approval.

<sup>24</sup> Planning charging layout also involves determining which model or models of charger to procure and install. For more background, readers can consult the [Electric Vehicle Charger Selection Guide](#) from the Redwood Coast Energy Authority, the Schatz Energy Research Center, the Local Government Commission/Civic Spark, and the Siskiyou County Economic Development Council.

considered to enable any 'smart' features of electric vehicle charging stations, such as load management and station reporting.

Station developers' flexibility on the level and number of chargers can be heavily limited by available electrical capacity. The proximity to the electrical panel or transformer is a key factor that impacts site design. Since there is usually minimal existing conduit and wiring throughout a parking lot, the most cost-effective option is often to place chargers closest to the existing electrical panel or transformer. This placement may not align with where the station developer and/or site host would prefer to locate the chargers, leaving station developers and site hosts to face a trade-off between securing their ideal charger locations versus the increased costs to trench and lay additional conduit and wiring. This trade off will only be exacerbated as the needed power capacity and size of stations increases. During permit review, AHJs should be aware that station developers frequently must place stations near power sources to allow for deployment of stations with the least disturbance to site hosts in an economically viable manner.<sup>25</sup>

Expected current and future throughput, the availability of electrical capacity, and the desired level of charging inform how many chargers to place on the site. At workplaces, employers will often survey staff to find out how many currently drive or are interested in driving a plug-in electric vehicle. At other sites, publicly available data through sources such as the [Clean Vehicle Rebate Project](#) can help inform station developers on the prevalence of plug-in electric vehicles in their community and how many chargers would be reasonable to install. Some incentive programs may require a minimum number of chargers to be installed to receive funding. Accessibility regulations will also impact site design and location, as different numbers of chargers and charging levels trigger required accessible spaces. We discuss accessibility regulations further in [Part 3: Accessibility](#). Finally, station developers may choose to install chargers in anticipation of future growth.

## Future-Proofing

Future-proofing involves creating opportunities to enable future easy and low-cost expansion of charging, upgrading of equipment, and improved customer experience at a site. Future-proofing may mean laying down additional cable and/or conduit during new construction or renovations beyond what is needed for the current project. It may also involve installing excess electrical capacity in anticipation

of future charging installations; installing additional dedicated electrical circuits for anticipated charger expansion; preparing a site for on-site energy storage and power generation; installing charging equipment; and a host of other strategies to lower future expenditures on station development and operation.

Spaces can be prepared for future charger installation to at least one of two levels, depending on the level of desired up-front investment.

- **EV Capable:** A vehicle space with electrical panel space and load capacity to support a branch circuit and necessary "raceways" (the enclosed conduit that forms the physical pathway for electrical wiring to protect it from damage), both underground and/or surface mounted, to support EV charging.
- **EV Ready:** 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.

The most cost-effective time to create EV Capable and EV Ready sites is during construction—either when a building is being constructed or undergoing a major retrofit or when an initial electric vehicle charging station project is being installed. In the latter case, station developers plan for how many chargers they intend to install in the future and prepare EV Capable or EV Ready spots accordingly. The approach helps avoid expensive retrofitting costs and allows chargers to be easily added to meet growing demand.

In addition to planning for the ability to add chargers and higher speed charging, future-proofing can incorporate the addition of on-site energy storage and renewable power generation. Both can work together to minimize the cost of electricity by reducing peak demand on the grid.

For their part, local jurisdictions can adopt more ambitious voluntary codes via the ordinance process for new construction that places EV Capable and/or EV Ready spaces in significant percentages of parking spaces.<sup>26</sup> The [Advancing Infrastructure](#)

<sup>25</sup> Note: depending on a station developer and property owner strategy, load management and battery support systems can also be deployed to minimize costs and avoid unnecessary grid upgrades.

<sup>26</sup> CALGreen electric vehicle charging station voluntary codes for new construction can be found in sections A4.106.8 and A5.106.5.3 of the residential and nonresidential voluntary measures respectively.

[through Building Standards](#) section discusses building codes in more detail.

Station developers should also be aware of state accessibility regulations when designing a site for the addition of future chargers. For more details on accessible design including requirements for accessible routes, path of travel, stall dimensions, slope, and more, see [Part 3: Accessibility](#).

## How AHJs Plan and Support Station Development

AHJs engage in numerous planning and incentivizing efforts to influence and shape the private site selection process and may also install stations at

city-owned locations including their own workplaces, public parks, and transportation corridors.

### Establishing Cooperation between Station Developers and AHJs

A number of factors within an AHJ's control can attract charging to a jurisdiction (favorable parking counts, progressive building standards, established readiness plans and related resources). Perhaps most importantly, AHJs can attract station developers by creating a straightforward, transparent, standardized, and expedited permitting process. The more station developers know about a jurisdiction's approach to permitting ahead of time, the more time and effort all parties tend to save. Part 4: Permitting explores this topic in detail.

#### Medium- and Heavy-Duty Vehicle Charging—Make-Ready Opportunities

Plug-in electric medium- and heavy-duty vehicles are increasingly common in commercial fleets and will continue to grow over the next decade to meet the state's target of 100 percent zero-emission medium- and heavy-duty vehicles by 2045.<sup>24</sup> The California Air Resources Board (CARB) is adopting regulations that will require fleets to transition to ZEVs, and while initial ZEV fleet purchases may be small, the regulation will result in 100 percent ZEV fleets. Fleet operators and property owners may consider preparing facilities for electrification in advance of vehicle deployments, building infrastructure in the short term with a plan to serve the whole fleet. In planning for future charging, fleet operators and property owners may consider power level, duty cycle, charging location, charging speed,

and site usage based on anticipated vehicle profiles.

While similar to light-duty charging in the site selection and development, medium- and heavy-duty charging differs in the following ways:

1. Depending on the fleet's utilization, battery sizes, and dwell times, chargers may require more power to support the vehicle. However, there are fleets with low mileage operations and shift patterns that would allow for L2 charging of trucks. A fleet/site specific analysis is needed to determine the appropriate levels of charging.
2. Fleet operators may have an added interest in deploying on-site storage and renewable power generation to manage demand charges. The payback for on-site storage and energy generation technologies can be particularly attractive for projects serving medium- and heavy-duty vehicles given the potential for increased consumption of electricity.

3. These stations may require extra clearance if the vehicles are larger in size and maneuverability may be limited. Where possible, avoid low-hanging canopies, tight turns, and compact spaces. Even panel vans may be prevented from charging at a compact-sized parking space.

Electrified parking improvements require conduit, trenching, and existing electrical infrastructure upgrades or new electrical service that can be sized to support future charging. Contractors and facility managers should be proactive when making decisions to construct new sites, or upgrade or modify their site's existing infrastructure so that their improvements can double as make-ready investments for future charging equipment. Being proactive in this decision can save tens of thousands of dollars in construction cost for future charger installments.

<sup>27</sup> See CARB's [Advanced Clean Trucks](#) regulation and draft [Advanced Clean Fleets](#) regulation.

Furthermore, AHJs can experiment with innovative ways to use zoning codes to further promote and streamline charger development. For example, an AHJ could formally define an electric vehicle charging station (EVCS) as a permitted accessory and primary use, and further codify the permitting process as part of the zoning code. The City of San Diego code defines EVCS as its own use and outlines the types of permits needed in compliance with state law, clarifies that review is limited to health and safety, and outlines the appeal process. The market is rapidly evolving and open communication with and from cities and counties is fundamental to success.

Station developers can help AHJs by sharing their development plans as soon as they can—ahead of permitting if possible. This sharing enables AHJs to proactively prepare for projects or classes of projects. It can take place through a variety of avenues both within and external to the permitting process. In the context of permitting, station developers can notify AHJs as soon as they have a site in mind. Outside of permitting, developers can send public plans to key jurisdictions, meet with pivotal cities or counties,

presenting to local government groups (e.g., Councils of Governments, Associations of Governments, ZEV Readiness Councils), and partnering with state agency leadership and staff to communicate both general and specific plans.<sup>28</sup>

## Planning for Charging Growth

Local planners and other leaders can incorporate charging within their planning tools, both binding and nonbinding. In addition to meeting and exceeding state permit streamlining requirements (see the [AB 1236 and AB 970 section](#)), ZEV charging and fueling should be considered and included within general plans, capital improvement plans, climate action plans, transportation plans, design guidelines, and zoning codes as applicable. Incorporating a jurisdiction's plans for charging across all applicable documents helps communities plan and develop charging. Advocates of zero-emission vehicles within local governments should familiarize themselves with the timelines for updates of major documents and be prepared to advocate for charging and hydrogen fueling within those update cycles.

### Regional EV Readiness Planning: An Example from San Diego

The San Diego Regional Plug-in Electric Vehicle Infrastructure Working Group, led by the San Diego Association of Governments (SANDAG) and the Center for Sustainable Energy, brought local governments, Miramar College and UC San Diego, the Port of San Diego, San Diego International Airport, and San Diego Gas & Electric to the table as voting members during their EV readiness plan development and deliberation process. This level of stakeholder engagement creates

ownership over a ZEV readiness plan and ensures that it does not just become another document languishing on a website. As a testament to its level of stakeholder engagement, the San Diego regional readiness plan is now included in both the City and County Climate Action Plans.

Councils of governments and other regional planning bodies and transit commissions can play a useful role in bringing together local governments to synchronize permit requirements and plan across a region. In the San Diego region, SANDAG and the Center for Sustainable Energy were awarded additional California Energy Commission funds to implement their

regional EV readiness plan through Plug-in San Diego. Best practices, correction sheets, and checklists for charging station permitting, installation and inspection were developed and disseminated for plug-in station developers and AHJs. SANDAG also utilized the Center for Sustainable Energy as a regional “EV Expert” to provide no-cost technical assistance to site hosts at any point in the process of installing charging.<sup>29</sup> Interested parties fill out a pre-screening questionnaire and then set up a free consulting appointment to learn more about options available to them.

<sup>28</sup> To help with this effort, GO-Biz has created a website to track ZEV readiness, share best practices, and connect readers to ZEV investment plans that can be used by AHJs to prepare for near term ZEV investments – [www.business.ca.gov/ZEVReadiness](http://www.business.ca.gov/ZEVReadiness).

<sup>29</sup> Plug-In San Diego checklists/correction sheets/best practice reports: <http://energycenter.org/pluginsd/resources>.

Through support from the California Energy Commission, many jurisdictions have developed and adopted ZEV readiness plans. A ZEV readiness plan is a document at the neighborhood, city, county, or regional level that captures the current state of ZEVs and ZEV infrastructure deployment in the area, the local ZEV goals, and actions and strategies to achieve those goals. An important component of a ZEV readiness plan is stakeholder coordination and buy-in. Involving stakeholders as deliberative committee members at every stage of readiness plan development gives the plan the greatest chance of success and longevity.<sup>30</sup>

When planning for public charging in their community, planners will likely evaluate similar qualitative and quantitative datasets as station developers but will look at these factors through different lenses. Like station developers, AHJs will look at data such as travel patterns, station throughput, and available electrical capacity, but engage with these factors from a regional and local planning perspective. AHJs are more likely to plan public charging distribution through an equity and environmental justice lens and consider charging's relationship to multimodal transportation projects and other community-wide planning considerations. AHJs may also develop charging in their parking lots and government buildings and for their fleets. For example, in the City of Pasadena, these two purposes go hand-in-hand as the City is able to use its workplace charging to charge its fleet vehicles overnight. Other AHJs may open their workplace charging to the public in the evening and on weekends to create further public charging opportunities.

## Parking Requirements and Charger Installation

Per [Assembly Bill 1100](#) (Kamlager-Dove, 2019), codified in Vehicle Code Section 22511.2, charging spaces count as at least one standard parking space for complying with minimum parking requirements. Accessible charging spaces with an access aisle count as at least two standard parking spaces. In the context of permitting charging stations and support equipment on existing sites, local zoning and parking considerations should not factor into the permit approval process unless the project would pose a substantial health and safety risk. [AB 1236](#) (Chiu, 2015) requires local jurisdictions to focus their review of EVSE projects on non-discretionary health and safety considerations. [AB 970](#) (McCarty, 2021) further clarifies that AHJs must reduce the number of

required parking spaces by the amount necessary to accommodate the proposed EV charging station if the EVCS and associated equipment interferes with, reduces, eliminates, or in any way impacts the required parking spaces for existing uses. AB 1236 and AB 970 are discussed in detail in [Part 4: Permitting](#).

Parking ordinances can be used to attract and encourage the installation of charging stations, especially in the context of new development. For example, Sacramento County development standards allow staff level planners to count charging spaces as up to two parking spaces depending on other parking reduction measures; and the City of Stockton [municipal code](#) counts charging spaces as two parking spaces for up to 10 percent of total required parking. Other cities, like Emeryville and Alameda, have eliminated parking requirements altogether.

In addition, AHJs can take innovative approaches to parking challenges by promoting the deployment of ZEV car sharing. In this regard, AHJs can adopt ordinances that allow for parking space reductions when car sharing is utilized. For example, the City of Santa Monica reduces parking requirements by two spaces (up to a maximum of 25 percent of the required parking spaces, not to exceed 10 spaces) when a car-sharing parking space is provided.<sup>31</sup>

## Advancing Infrastructure through Building Standards

California Green Building Standards (CALGreen) Code, the state's green building code (California Code of Regulations, Title 24, Part 11), sets requirements for installing EV Capable infrastructure and charging access in new residential and nonresidential buildings. CALGreen Code contains mandatory requirements that apply statewide, as well as voluntary provisions that can be adopted by local governments. Local governments can also choose to develop and adopt their own local codes that go beyond statewide mandatory minimum requirements.

Starting January 1, 2023, the 2022 CALGreen Code requires that newly constructed multifamily dwellings,

<sup>30</sup> Example plans include the 2017 [Sacramento Electric Vehicle Readiness and Infrastructure Plan](#) and the 2018 [Final Butte PEV Readiness Plan](#).

<sup>31</sup> City of Santa Monica Municipal Code. [See Section C-1](#).

## Parking Enforcement

**Driver confidence and vehicle utility relate directly to the ability to charge when needed. Jurisdictions can help ensure charging spaces are used for charging through signage and enforcement by installing tow-away signs at charging spaces along with clearly striping and marking the associated pavement. For enforcement, local jurisdictions have authority under AB 1314 (Havice, 2002) to designate off-street spaces for the exclusive use of plug-in electric vehicles and tow and fine violators, and authority to designate and enforce similar restrictions on on-street parking as well under AB 1452 (Muratsuchi, 2017).**

hotels, and motels with less than 20 dwelling units or guestrooms be EV Capable and include EV charging infrastructure in at least 10 percent of parking spaces, and 25 percent of total parking spaces be equipped with low power Level 2 EV receptacles ("EV Ready"). For newly constructed multifamily dwellings, hotels, and motels with 20 or more dwelling units or guestrooms, 10 percent of the parking spaces must be EV Capable, 25 percent of parking spaces must be EV Ready, and 5 percent of total parking spaces must be equipped with Level 2 EVSE (Electric Vehicle Supply Equipment). The 2022 CALGreen Code also recognizes the use of automated load management systems (ALMS) when receptacles or chargers are installed beyond the mandatory minimum.

For some additions and permitted alterations of parking facilities in existing multifamily dwellings, 10 percent of total parking spaces added or altered must be equipped with EV Capable infrastructure.

The 2022 CALGreen Code repealed EV Capable requirements in the Voluntary Tier 1 and Tier 2 measures. The Voluntary Tier 1 measure for new multifamily, hotels, and motels requires that 35 percent of the total number of parking spaces be equipped with low power Level 2 EV charging receptacles, and 10 percent of parking spaces to be equipped with Level 2 EVSE (for projects with 20 or more dwelling units). Tier 2 measures include a requirement for 40 percent of parking spaces to be equipped with low power Level 2 EV charging

receptacles, and 15 percent of parking spaces to be equipped with Level 2 EVSE for projects with 20 or more units.

The EV Capable requirements do not require installing EVSE at the parking space at the time of original construction but reduce the costs and work required to install EVSE and simplify the process of installing a charger or receptacle later. This also eases nonfinancial barriers such as gaining site host or homeowners association (HOA) approval. Furthermore, newly constructed single-family dwellings, duplexes, and townhouses with private garages are already required to have raceway and panel capacity to support future installation of Level 2 chargers or receptacles; under the CALGreen Code voluntary provisions a dedicated circuit including 208/240-volt wiring must be installed as well. These residential EV infrastructure building codes align with state policies, including AB 2565 (Muratsuchi, 2014) and AB 1796 (Muratsuchi, 2018), which empower renters to deploy EVSE on the properties where they reside by reducing the practical barriers for them to do so.



Image courtesy of the California Energy Commission

In addition, CALGreen requires that in non-residential occupancies, 25 percent of the EV Capable spaces, infrastructure only, be provided with Level 2 EVSE. Two tiers of the voluntary CALGreen requirements increase these levels to 30 percent and 45 percent, respectively.

Local governments play a critically important role in EV infrastructure building code development and implementation. As of publication, over 20 California jurisdictions have exercised their authority to exceed state minimum code requirements by adopting higher EV infrastructure requirements to align with California's ZEV adoption goals. Local codes range from adoption of CALGreen voluntary tiers to codes that require EV charging electrical infrastructure at one parking space per multifamily dwelling unit ([Menlo Park](#) and [Palo Alto](#)) or require a mix of dedicated circuits for some spaces and specified levels of EV charging electrical infrastructure for all remaining parking spaces ([Oakland](#) and [San Francisco](#)). Local agencies can also ensure that local permitting and inspection staff are trained and prioritize implementing these codes, whether it is the statewide minimum or more ambitious local requirements.

In addition to increasing the number of parking spaces with EV infrastructure, local enforcement agencies can harmonize with state accessibility requirements, where applicable, so that EV Capable and EV Ready spaces can be built out into EV charging spaces without conflicting with the [accessibility requirements in Title 24 Chapter 11B](#) (see for example Fremont, Oakland, and San Francisco building codes) that are described later in this Guidebook. Requirements such as accessible routes and slopes can be designed into new construction but are much harder to change later.

One of the latest building code innovations is the combination of voluntary tiers with charging management software or hardware to get more chargers out of a given amount of electrical capacity—effectively reaching more spaces. Automated Load Management Systems (ALMS), also known as load sharing, allows vehicles at multiple spaces to share a given amount of electrical panel capacity, allowing more vehicles to charge with less cost. Depending on the load management level (panel or circuit breaker level), one or multiple electric vehicles can receive full charging output from the electric vehicle charging station, up to the electrical capacity. Once the electrical capacity is reached, the connected vehicles receive reduced

charging outputs from the electric vehicle charging station. How much power each vehicle receives in a reduced output scenario depends on the complexity of the charging management technology, the charging patterns, and the desired charging behaviors. In the simplest set-up, each car's charging rate would be reduced equally, but there are also more adaptive methods available, such as deploying batteries to augment power flow, allowing drivers to indicate when they will need their vehicle fully charged, and/or modulating charging percentages in real time to ensure that drivers with shorter dwell times will get proportionately higher charging rates even in a reduced capacity scenario.

## Creative Strategies to Get Electricity to More Spaces

**The City of Vancouver, British Columbia, is the international leader for combining charging management with building code requirements. Vancouver has adopted a requirement for 100 percent of parking spaces in multi-unit dwellings to be EV-ready but does not require the site to have electrical capacity to charge vehicles at 100 percent of spaces at full power at any given time. Rather, Vancouver's requirements allow for the use of charging management software or hardware, achieving a high level of plug-in electric vehicle readiness while not requiring exceedingly large electrical infrastructure upgrades.**

**The City of Oakland's EV-readiness ordinance, which requires panel capacity to charge 20 percent of spaces at new multi-unit dwellings at 40 amps, also explicitly allows for the use of charging management to increase the number of spaces served.<sup>32</sup>**

<sup>32</sup> For further information, see the City of Oakland's [fact sheet](#) on the ordinance.

## Curbside Charging

Some local jurisdictions are implementing curbside charging programs (i.e., Level 2 or DCFC charging stations on-street in the public right of way). While this is not currently a prominent strategy in California, it may be a promising option, especially for providing charging opportunities for residents of multi-family housing when off-street parking is limited, advancing rideshare vehicle electrification, and providing more equitable distribution of infrastructure. While curbside chargers have many configurations and applications, they can be generally categorized as follows: (1) Level 2 stations or DC fast chargers that (2) are either attached to existing infrastructure or installed on entirely new infrastructure.

Installing curbside chargers on existing infrastructure could potentially save costs, because civil engineering work to do trenching and wiring, typically the costliest part of charger installations, can be avoided entirely. However, this is highly site specific and not all utilities in California currently offer all curbside applications.

Existing infrastructure configurations include:

- Level 2 pole-mounted: the station is mounted to an existing pole, typically a utility-owned pole, using a mounting bracket. Pole-mounted chargers have the potential to save between 55 and 70 percent of installation costs. Example: National Grid, with the City of Melrose in Massachusetts, mounted 16 chargers on its utility poles.<sup>33</sup>
- Level 2 streetlight-mounted: the station is mounted to an existing streetlight using a mounting bracket. Streetlights must typically have LED lighting to also power the station. Mounting chargers on streetlights has the potential to save approximately the same amount on installation costs as pole-mounted chargers, but this is dependent on whether the streetlight needs upgrades or not. Example: The City of Los Angeles has deployed approximately 200 Level 2 stations mounted on its streetlights.<sup>34,35</sup>
- Level 2 or DCFC connected to an underground vault: the station is connected to utility equipment installed in a subterranean room that is typically accessible via the street or sidewalk.
- DCFC connected to a transformer: the station is connected to an adjacent transformer, ensuring sufficient electrical capacity.

If a city does not have existing infrastructure to leverage, or if cost issues are less of a constraint compared to other priorities, installing curbside chargers on new infrastructure could help a city achieve its goals to serve drivers in various areas of its territory.

- Level 2 pole-mounted: the station is mounted on a newly constructed pole (also referred to as a pedestal).
- Curbside DCFC: the DC fast charger is installed directly on top of the curb without necessarily leveraging any additional existing infrastructure.

Technically any charger can be installed on the curb, so it is important to deploy chargers that are truly “fit for purpose” for parallel parking at the curb. A charger that is “fit for purpose” for the curb takes into consideration proper height and cable length, proper setback to avoid damage from snowplows and trash trucks (if applicable), and unit display angles and specifications to make it more user friendly.

Because the statewide accessibility regulations promulgated by the Division of the State Architect (DSA) in the California Building Codes do not apply to public rights of way, there are no statewide regulations on accessibility for curbside charging. However, accessibility must still be provided under state and federal law. It is up to each local government to determine what requirements charging on public rights of way must meet in order to be accessible. AHJs may refer to the existing accessibility regulations as general guidance but may also develop their own criteria for equivalent facilitation for compliance with state and federal law.

There are several different ownership models for curbside chargers, including:

- City-owned: the city owns the charger, with maintenance and operations work typically provided by the charging network. Example: The City of Montreal has deployed nearly 1,000 FLO Level 2 pole-mounted chargers on new infrastructure.

<sup>33</sup> For further information, see the [City of Melrose](#) and [National Grid](#) announcements.

<sup>34</sup> For further information, see the City of Los Angeles [Bureau of Street Lighting](#).

<sup>35</sup> Note: streetlight service in PG&E service territory is Level 1



Image courtesy of FLO

- Utility-owned: the utility owns the charger, with maintenance and operations typically divided between the utility and the charging network. Example: Portland General Electric installed and owns two pole-mounted chargers on its infrastructure.<sup>36</sup>
- Third-party ownership (charging company): the charging company owns the charger and also owns operations and maintenance; the deployment is typically funded in part by a city, utility, or a public incentive program. Example: The City of Sacramento has deployed 12 chargers, owned and operated by EVgo, along the curb at three sites.<sup>37</sup>
- Hybrid ownership: Some combination of the charging company, utility, or city owns parts of the charger and its make-ready infrastructure and carries out support and maintenance. This can help spread costs across multiple parties should available funding be a limitation. Example: The New York City Department of Transportation, its utility Con Edison, and the charging provider FLO share ownership of 120 Level 2 pole-mounted curbside stations on new infrastructure.<sup>38</sup>

Curbside charging could play a role in providing access to charging for those who live in residences without off-street parking. There are a number of policy options local jurisdictions can adopt to accelerate curbside charging deployment. Setting a curbside charging deployment goal can signal interest to the private market and attract investment in new infrastructure. Establishing a permitting

process online that describes the process, makes all permit application forms available and details all information needed for permits to be reviewed and approved is critical to making it easier and simpler for charging vendors to engage local governments.<sup>39</sup> Reducing parking rates can encourage drivers to use curbside chargers more, creating consumer familiarity and buy-in with the technology. Feasibility assessments will help a city determine which applications are most appropriate given its goals and constraints and which deliver the best results. Early site selection work can provide clarity to charging companies regarding which curbside application a city wants to prioritize, allowing a more streamlined and collaborative process to deploy stations quickly. Early collaboration with a local utility can also help inform a city's site selection process.

The best practices for curbside charging are far ranging and highly dependent on the type of charger being deployed. However, there are many universal best practices that can be applied to most types. For established best practices for each phase of the deployment, reference Part 8: Definitions and Additional Resources.

<sup>36</sup> For further information, see [Portland General Electric Clean Energy Choices](#).

<sup>37</sup> For further information, see the [City of Sacramento's EV Charging Pilot](#).

<sup>38</sup> For further information, see [NYC DOT](#) and [Con Edison](#).

<sup>39</sup> For example, see Washington District Department of Transportation and Pepco's established right of way charging permitting process: [Electric Vehicle Charging Station Program | ddot \(dc.gov\)](#)



Images courtesy of EVgo and Electrify America

## PART 03:

# Accessibility

Providing accessibility to plug-in electric vehicle charging stations requires advancing two of California's key values: accessibility to goods and services for all and the growth of an equitable clean mobility market. With the largest zero-emission vehicle market in the United States and a long history of firsts in providing accessibility, California is leading the nation in both contexts, and most importantly, at their intersection.

Accessibility has always been required at plug-in electric vehicle charging stations (as with all goods or services available to the public) under the federal Americans with Disabilities Act. As of January 1, 2017, California became the first state in the nation to have specific accessibility standards for electric vehicle charging stations in its building code. As a result, AHJs and station developers are on the front lines of implementation of these specific requirements. After years of careful development, the challenge and responsibility rests with all parties involved in plug-in electric vehicle charging station development to successfully implement the specific requirements, collect lessons learned along the way, and work with the local jurisdictions to problem solve and provide accessibility for this technology.

This section of the Guidebook is not intended to be consulted in lieu of the specific requirements in regulation, which can be found in the California Building Code. Rather, the purpose of this section is to provide context, summarize the code requirements, and highlight examples of implementation success thus far across California. It is critical for all parties involved to read and adhere to the applicable code requirements as the primary and final resource when designing for accessibility.

## Background

### Federal Law

Providing accessibility at public plug-in electric charging stations has always been required under the federal Americans with Disabilities Act. The Americans with Disabilities Act includes construction standards for accessible design that apply to all types of public accommodations including privately-owned facilities that are open to the public and publicly-owned facilities. The scope of the Americans with Disabilities Act provides broad coverage intended to prohibit discrimination against individuals with disabilities in all areas of public life, including jobs, schools, transportation, and all publicly-owned and privately-owned places that are open to the general public.<sup>40</sup>

The Americans with Disabilities Act is the overarching applicable law. When a benefit or service is provided, it must be provided in an accessible manner. For the application and scope of construction standards in the Americans with Disabilities Act, it is the Division of the State Architect's (DSA) role to incorporate these requirements for accessibility into the California Building Code (CBC), Part 2, Title 24, California Code of Regulations.

<sup>40</sup> Title II of the Americans with Disabilities Act requires all state and local governments to give individuals equal opportunity to engage with services and opportunities provided. Title III of the Americans with Disabilities Act requires access to all public accommodations. California's electric vehicle charging station accessibility regulations in the California Building Code cover public accommodations, public buildings, commercial buildings, and public housing.

The 2010 Americans with Disabilities Standards for Accessible Design do not include scoping requirements related to electric vehicle charging. Beginning with the 2016 CBC, DSA has incorporated specific scoping and technical requirements for Electric Vehicle Charging Stations in California to assure that programs and benefits provided by state and local government entities, as well as goods and services provided by public accommodations and commercial facilities meet the requirements and intent of the Americans with Disabilities Act, California's Unruh Civil Rights Act, Disabled Persons Act, and other state law. In July 2022, the U.S. Access Board published [Design Recommendations for Accessible Electric Vehicle Charging Stations](#). However, these recommendations have not been adopted by the Department of Justice as requirements and are not currently enforceable in California.

### California's Early Process and Need for Specific Requirements

During the development of the ZEV Community Readiness Guidebook in 2013, accessibility for plug-in electric vehicle charging stations emerged as a key issue requiring additional focus and discussion. As a result, in parallel to the ZEV Community Readiness Guidebook process, DSA and the Office of Planning and Research jointly worked with stakeholders to develop best practice guidance for accessibility at charging stations as an interim guidance document. This Guidebook expanded upon the very first California guidance document on this topic published by DSA in 1997.

Although the initial guidance document was helpful and provided detailed assistance for charging stations being developed at the time, it soon became clear that a full regulatory process should be undertaken to develop specific building standards in California for the following reasons:

- **Projected Growth:** California's zero-emission vehicle market is expected to increase rapidly in coming years and with such significant growth expected, developing specific standards for accessibility will ensure that infrastructure built for the transportation system of the future is accessible to all and accessible in a consistent manner, to the extent possible.
- **Clarity:** With specific building standards formalized in code, station developers and AHJs can ensure that projects in their jurisdiction comply with requirements to provide accessibility.

- **Stakeholder Engagement:** The formal regulatory process provides a venue for all stakeholders to participate in the development of building standards.

### Regulation Development

With the need for specific regulations identified, DSA initiated a transparent, multi-year public process to develop building standards for accessibility at charging stations. In September 2014, DSA convened a working group to discuss accessibility needs for charging stations and inform the regulatory process. The working group included an array of stakeholders including individuals with disabilities, disability advocates, access professionals, building officials, architects, electric vehicle charging station manufacturers, electric utility companies, building industry representatives, electric vehicle advocates, and state agency representatives. The working group convened for a series of meetings (eight in total) over the course of approximately six months to discuss accessibility options specific to electric vehicle charging stations.

Taking the feedback from the working group, DSA drafted the accessibility building standards which were initially submitted to the California Building Standards Commission (CBSC) for rulemaking in June 2015. In August 2015, the regulations entered a formal public comment process. DSA then analyzed the comments, amending the regulatory rulemaking, as appropriate, and submitted the final building standards for approval to CBSC at the end of 2015.

In January 2016, the building standards were approved by CBSC commissioners. In July 2016, the building standards were published by the CBSC and became effective on January 1, 2017.

The electric vehicle charging station accessibility provisions for public facilities, public accommodations, and commercial facilities are located in Part 2 of the CBC, Chapter 11B and are promulgated by DSA. California's accessibility building standards for electric vehicle charging for privately-owned covered multifamily dwellings are promulgated by the Department of Housing and Community Development.

Part 2 of the CBC is updated during two code cycles, the model code adoption cycle (Triennial cycle) and an intervening code cycle eighteen (18) months after the triennial adoption cycle. The current applicable code is the 2019 CBC which includes amendments

from the intervening code cycle. On January 1, 2023 the adopted 2022 CBC will become effective.

The regulations included in the CBC are minimum standards which cannot be reduced by any local amendments. It is possible for local jurisdictions to adopt more stringent standards.

## Regulatory Requirements (High-Level Summary)

California's requirements for electric vehicle charging station accessibility at public housing, public accommodations, commercial facilities, and public buildings are found in the current edition of the California Building Code (California Code of Regulations, Title 24, Part 2). The CBC is typically used in three parts: 1) definitions, 2) scoping provisions (what type of spaces and how many are required) and 3) technical requirements (where exactly the spaces are and how to make them accessible). For electric vehicle charging, the three main parts are in the California Building Code as follows:<sup>41</sup>

1. **Definitions:** Chapter 2, Section 202
2. **Scoping:** Chapter 11B, Division 2, Section 11B-228.3 Electric Vehicle Charging Stations
3. **Technical:** Chapter 11B, Division 8, Section 11B-812 Electric Vehicle Charging Stations

The remainder of this section will outline the major requirements of the accessibility standards for electric vehicle charging in California. **This is not a copy of the actual code and any station developers or local AHJs that are planning, designing, or approving actual sites must comply with the regulations in the California Building Code.** This is intended to aid understanding of the core requirements of the regulations for a general audience.

## Scoping Provisions

Scoping provisions broadly determine how many charging spaces must be accessible. The required number of accessible charging spaces is based on the total number of charging spaces provided, for each combination of charging level and EV connector type integral to the EV charger and the type of accessible spaces required (standard accessible, van accessible, ambulatory, or drive through). California's scoping provisions are consistent with three key determinations made by the United

States Access Board:

1. Electric vehicle charging is a service provided by the facility owner or public entity, and therefore must be accessible to individuals with disabilities.
2. An electric vehicle may not need to charge every time it is parked, so public and common use charging stations are charging spaces, not parking spaces.
3. While an electric vehicle needs to be parked to charge, charging (not parking) is the primary purpose of a charging station.

Because parking and charging are separate and the two functions have separate scoping requirements, they are also located in different sections of the building code. Scoping provisions for accessible parking are located in the California Building Code Chapter 11B, Section 11B-208. Scoping provisions for accessible charging are located in the California Building Code Chapter 11B, Section 11B-228.3.

### Charging vs. Parking

It is easy to confuse "charging" and "parking" when applying local zoning requirements for the number of parking spaces. Within the context of zoning requirements, cities or counties should help enable charging projects by clarifying that charging stations count as one or more parking spaces, as required by law (Vehicle Code Section 22511.2 and Government Code Section 65850.71). This approach ensures that charger installation does not take a site out of zoning compliance. In contrast, the California Building Code and the California Green Building Standards Code have specific requirements that address charging stations as charging stations, because accessible parking stalls (i.e., the accessible parking stalls that are required at any public parking location) have their own set of separate regulatory provisions.

<sup>41</sup> The California Building Code can be accessed at: <https://www.dgs.ca.gov/BSC/CALGreen>

For scoping provisions related to charging spaces, the number and type of accessible charging spaces required at a site are determined by the total number of charging spaces at a facility. CBC amendments that took effect July 1, 2021, clarify that each combination of charging level and EV connector type shall be considered a facility, and each facility is considered separately for purposes of determining the number and type of accessible charging spaces that must be provided. Table 1 provides a guide that enables station developers to determine the required number and type of accessible EVCS. Accessible EVCS types include van accessible, standard accessible, and ambulatory.

A sign with an International Symbol of Accessibility (ISA) is not required at any EVCS for facilities with four or fewer total charging spaces. A sign with an ISA is required at each van accessible EVCS when there are five or more total EVCS at a facility. Additionally, a sign with an ISA is required at each standard accessible EVCS when there are 26 or more total EVCS at a facility. A sign with an ISA is not required and should not be provided at ambulatory EVCS.

To demonstrate how the table is used, let's consider two different examples:

- Facility with three electric vehicle charging spaces.** A facility with three charging spaces falls in the range of "1-4" within the first column on the left ("Total Number of EVCS at a Facility"). Follow the 1 to 4 range across the row to determine what is required. For a facility with three charging spaces, one van accessible space is required and no standard accessible and ambulatory accessible spaces need to be provided. In this example, because the total number of EVCS at a facility is four or fewer, the regulations do not require the van accessible space to be marked with an ISA.
- Facility with 22 electric vehicle charging spaces.** A facility with 22 charging spaces falls in the range of "5-25" within the first column on the left ("Total Number of EVCS at a Facility"). Follow the 5 to 25 range across the row to determine what is required. For this facility with 22 charging spaces, one van accessible space and one standard accessible space are required and no ambulatory accessible spaces need to be provided. In this example, the regulations require the van accessible space to be identified with ISA signage, but the standard accessible stall is not required to be identified with an ISA.

**Table 1: Required number and type of accessible spaces**

(Table 11B-228.3.2.1 from the 2019 California Building Code, Chapter 11B, Section 11B-228.3)

Total Number of EVCS at a Facility <sup>1</sup>	Minimum Number (by type of EVCS Required to Comply with Section 11B-812) <sup>1</sup>		
	Van Accessible	Standard Accessible	Ambulatory
1 to 4	1	0	0
5 to 25	1	1	0
26 to 50	1	1	1
51 to 75	1	2	2
76 to 100	1	3	3
101 and over	1, plus 1 each 300 or fraction thereof, over 100	3, plus 1 each 60, or fraction thereof, over 100	3, plus 1 each 50, or fraction thereof, over 100

<sup>1</sup> Where an EV charger can simultaneously charge more than one vehicle, the number of EVCS provided shall be considered equivalent to the number of electric vehicles that can be simultaneously charged.

An electric vehicle charger that has two ports and can simultaneously charge two vehicles (and therefore there is a charging space available for each), is counted as two charging spaces.<sup>42</sup> If the charger has multiple connectors (like a DCFC with both a CHAdeMO and a CCS connector, for example), but can only charge one car at a time, it is counted as one charging space despite technically having more than one charging port. The count is not based on the number of chargers but rather the total number of vehicles that the chargers can simultaneously serve.

When new charging stations are added to a site with existing EVCS, the requirements of Section 11B-812 shall apply only to the new EVCS. Alterations to existing EVCS shall comply with the requirements of Section 11B-228.3 scoping.

## Technical Requirements

With the number and types of accessible spaces required identified, we turn to the technical requirements to determine how the accessible sites should be constructed to provide accessibility. The following text highlights the differences in requirements between the spaces. **Please note that the language and code citations below are for reference only and not a replacement for the regulations in the California Building Code. Please refer to the California Building Code for all applicable requirements.**<sup>44</sup>

There are four types of accessible spaces (defined below), three of which were introduced above in the Scoping Provisions section, and each has different requirements set by the California Building Code, Chapter 11B, Section 11B-812.6. All four types of accessible EV spaces must be 18 feet (216 inches/5486 mm) minimum in length and marked with letters that are at least 12 inches (305 mm) high that read, "EV CHARGING ONLY." Vertical clearance of at least 98 inches (8 feet 2 inches/2489 mm) must be provided and overhead cable management systems cannot obstruct required vertical clearance. Please note there are two exceptions under Section 11B-812.6:

1. Where the long dimension of vehicle spaces is parallel to the traffic flow in the adjacent vehicular way, the length of vehicle spaces shall be 240 inches (6096 mm) minimum.
2. Vehicle spaces at drive-up EVCS shall be 240 inches (6096 mm) long minimum and shall not be required to be marked to define their width.

## Best Practices to Promote Accessibility Use

Signage plays a key role in the success of a location by making parking requirements and recommendations clear to users, especially since each site may be different. Federal and state laws require accessible parking spaces with an ISA to be reserved for disabled persons with the appropriate parking placard or license plate. However, for accessible EV charging spaces, local jurisdictions may have their own local ordinances that allow for variation with sign requirements and regarding whether the spaces are reserved.<sup>43</sup>

Depending on a jurisdiction's local laws and enforcement, "use last" signs may indicate that accessible charging spaces may be used by any driver but should be used last by non-disabled drivers. The U.S. Access Board has designed the examples below, which would not require the accessible charging spaces to be reserved exclusively for disabled persons with a parking placard or license plate. While these examples do not contain the ISA, similar signs could be used in combination with the ISA if authorized by the local jurisdiction and if all other related state requirements are met, when the ISA is required for accessible EV charging spaces.



<sup>42</sup> It is worth noting that a dual port charger can be positioned to service both an accessible and a standard charging station.

<sup>43</sup> Existing and new facilities have differing access requirements, which may also allow for sign variation.

<sup>44</sup> The California Building Code can be accessed at: <https://www.dgs.ca.gov/BSC/CALGreen>. Refer to Chapter 11B.

The below text is included to increase general understanding of basic accessibility requirements for each type of charging space. Again, please refer to the California Building Code for all applicable requirements.

## Van Accessible Spaces

Van accessible spaces are three feet wider than standard accessible spaces to accommodate a van equipped with a ramp or lift. Van accessible spaces are required to be 12 feet (144 inches/3658 mm) minimum in width and 18 feet (216 inches/5486 mm) minimum in length. The access aisle, which is a no-parking zone wide enough for the use of a wheelchair, is required to be 5 feet (60 inches/1524 mm) minimum width and be located on the passenger side except where four or fewer total EVCS are provided in which case the access aisle for non-angled van accessible spaces may be located on either the driver or passenger side of the vehicle space. Two vehicle spaces or one parking and one electric vehicle charging space are permitted to share a common access aisle. The access aisle shall have the words "NO PARKING" painted on the surface at a minimum of 12 inches (305 mm) in height. Where one parking space and one electric vehicle charging space share an access aisle, the access aisle shall comply with Section 11B-502.33.

## Standard Accessible Spaces

Standard accessible spaces are provided with an adjacent access aisle. Standard accessible spaces

are required to be 9 feet (108 inches/2743 mm) minimum in width, and 18 feet (216 inches/5486 mm) minimum in length. The access aisle is required to be 5 feet (60 inches/1524 mm) minimum width, located on either side of the vehicle.

## Ambulatory Spaces

An ambulatory space is a slightly wider charging space that gives a little additional room to maneuver. Ambulatory spaces are required to be 10 feet (120 inches/3048 mm) minimum in width and 18 feet (216 inches/5486 mm) minimum in length. An adjacent access aisle is not required.

## Drive-Up Spaces

A drive-up space is a space for an electric vehicle where charging is limited to 30 minutes maximum. The site is designed so that the driver approaches the station moving forward, stops to charge, and then continues moving forward to leave the space. The design is similar to a traditional gas station. Drive-up spaces are required to be 17 feet (204 inches/5182 mm) minimum in width and 20 feet (240 inches/5182 mm) minimum in length.

## Sign Requirements

- Where four or fewer total charging spaces are provided at a site, none of the spaces are required to be identified with an ISA.
- Where five to 25 charging stations are provided at a site, one van accessible space is required to be identified with an ISA.
- When 26 or more charging stations are located at a site, all van accessible spaces are required to be identified with an ISA. While this may seem like a large requirement, it is important to remember that only a site with 101 or more charging stations will be required to have more than one van accessible charging space.
- When 26 or more charging stations are located at a site, all standard accessible spaces must be identified with an ISA. For perspective, a site with 100 charging stations would require three standard accessible spaces.
- Ambulatory spaces are not required to be identified with an ISA.
- Drive-up spaces are not required to be identified with an ISA.



Image courtesy of EVgo

**Table 2: Requirements for accessible parking spaces by type**

	Van Accessible	Standard Accessible	Ambulatory	Drive-up
Purpose	Wider charging space with adjacent access aisle to accommodate van with ramp or lift	Charging space with adjacent access aisle	Slightly wider charging space	Similar to a gas station – drive in and drive out, moving forward. Per definition in CBC Chapter 2, use is limited to 30 minutes maximum.
Width	12 feet (144 inches)	9 feet (108 inches)	10 feet (120 inches)	17 feet (204 inches)
Access aisle	Yes, on passenger side (can be on either side of non-angled spaces when four or fewer total charging station facilities are provided), marking required	Yes, on either side, marking required	No	No
Identify with an ISA sign?	When 5-25 charging stations, identify one; when 26+, identify all van accessible spaces	When 26+ charging stations, identify all standard accessible spaces	No	No

## Sample EVCS Layouts

**Figure 1: Two EVCS = one van accessible EV space required**

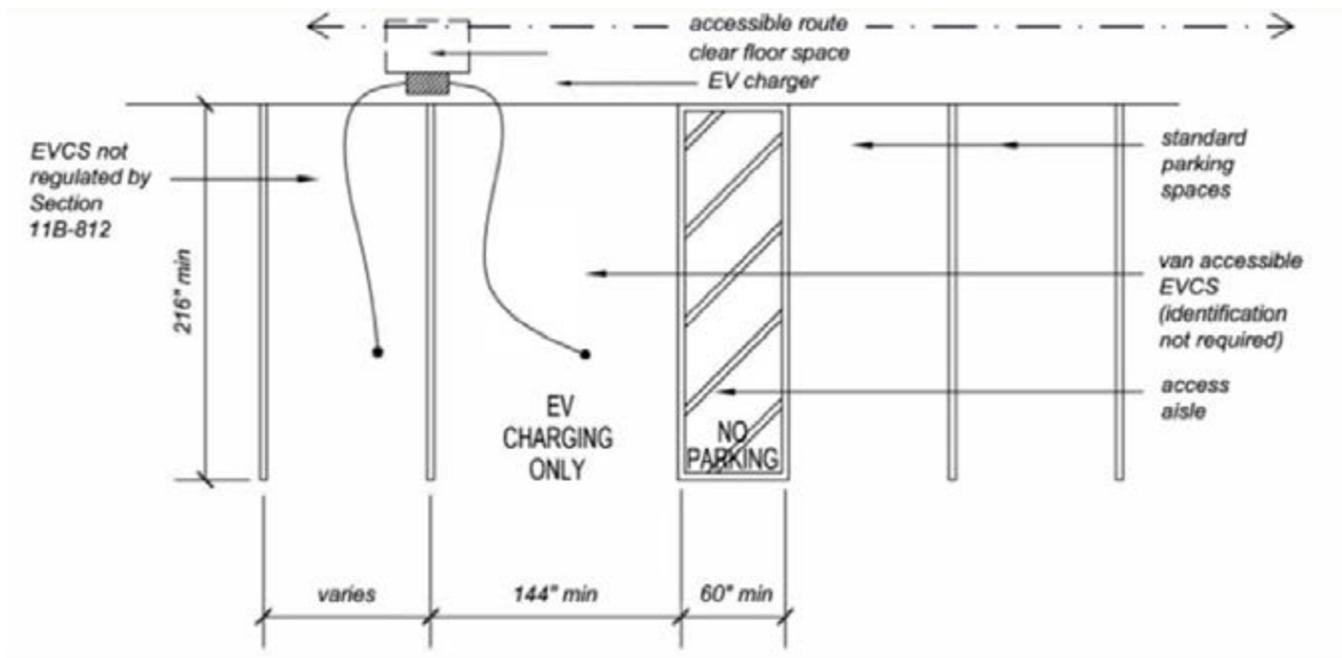


Figure 2: Five EVCS = two accessible EV spaces required

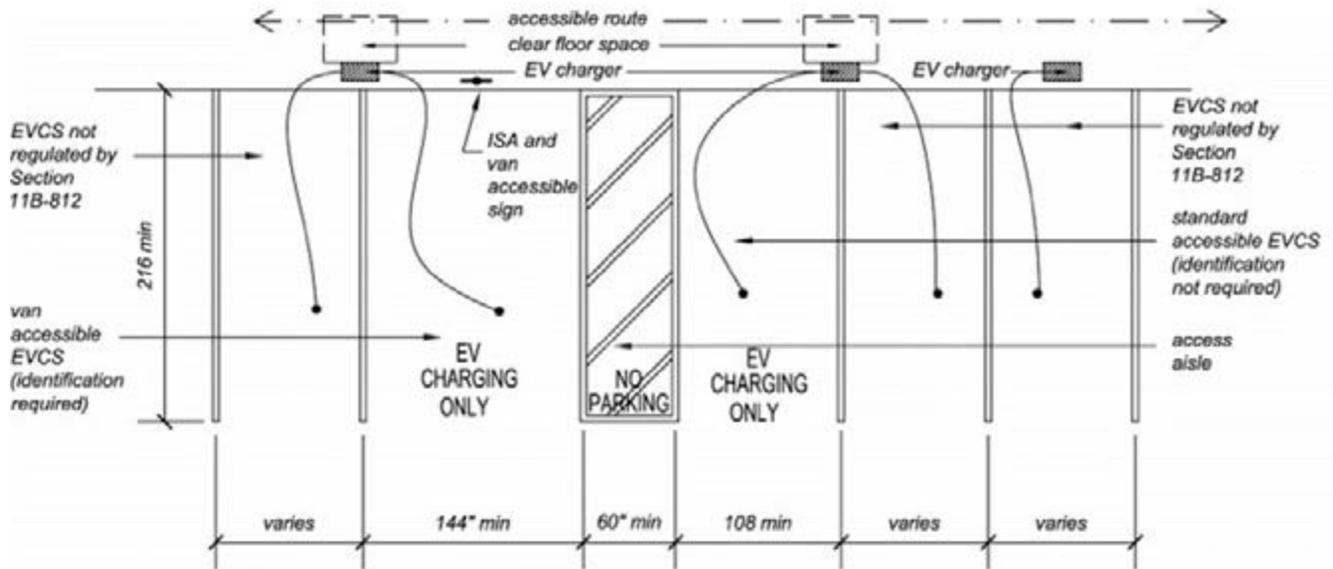
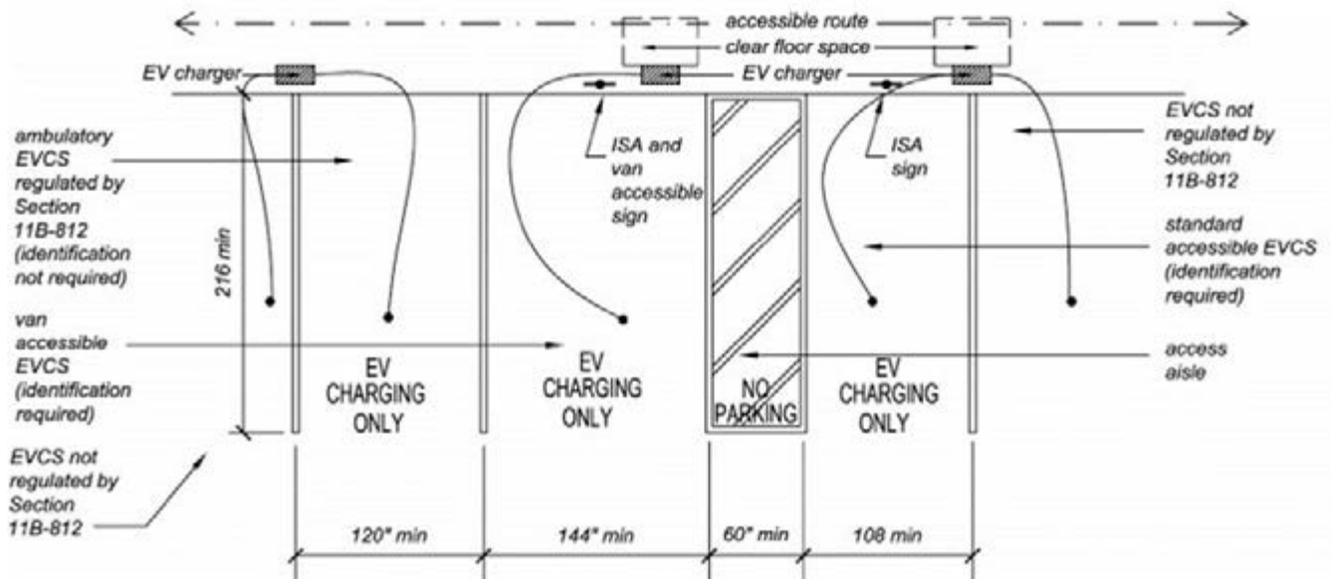
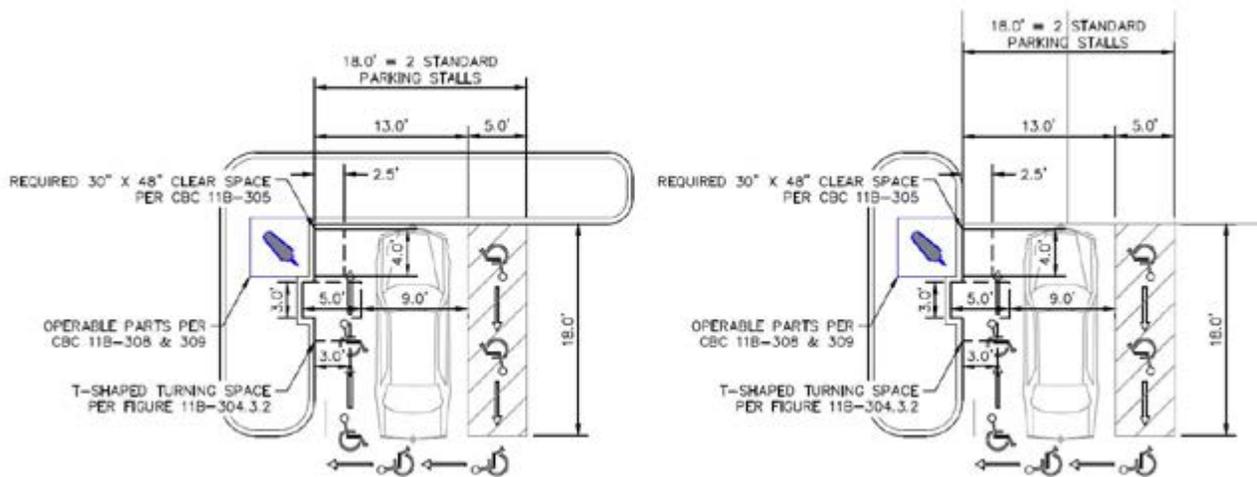


Figure 3: 26 EVCS = three accessible EV Spaces required



**Figure 4: Curb Cut Design**



Some companies have developed designs which are intended to comply with California Building Code requirements for electric vehicle charging station accessibility with the practical requirements of CCS charging equipment.<sup>45</sup> Many sites do not support head-of-stall charging station locations (as shown in Figures 1-3) and instead must be installed adjacent to a stall in an end island. Volta's "curb cut" design (Figure 4) positions the CCS charger near the driver side front while still allowing for an accessible route and access to the equipment outlined in CBC Chapter 11B-812. The "curb cut" design is intended to allow for easier and more convenient use of a CCS charger by placing the charger closest to the most common CCS charging port location. It allows the charging cables to be kept shorter, creating an easier to use and safer to operate station that is less prone to cable damage.

## Path of Travel Improvements and Accessible Route

Path of travel improvements and accessible route are two separate concepts.

### Accessible Route

Per CBC Chapter 2, an accessible route is defined as a continuous unobstructed path connecting accessible elements and spaces of an accessible site, building or facility that can be negotiated by a person with a disability using a wheelchair. An accessible route must meet the requirements of Division 4 of Chapter 11B of the CBC.

If the electric vehicle charging station is located in a parking lot that serves a particular building or facility such as a business, shopping center, or school, all accessible charging spaces must be located on an accessible route to an accessible entrance of that building or facility. If the charging station does not serve a particular facility, e.g., if it is a general-purpose parking garage that is not connected to any particular establishment, an accessible route must be provided to the public way, such as to the sidewalk. There must be an accessible route between the vehicle space and the charger. Charging cables may not obstruct the accessible route.<sup>46</sup>

Unlike accessible parking spaces, accessible electric vehicle charging spaces are not required to be on the shortest accessible route to the accessible entrance of the facility. While an accessible route is required to connect accessible electric vehicle charging stations to an accessible facility entrance, the length of the accessible route is not specified; therefore, station developers and facility owners have flexibility to locate charging stations throughout a parking facility.

<sup>45</sup> Note: alternative designs must be approved by the local jurisdiction in which they are deployed. DSA does not provide certification of compliance for any products.

<sup>46</sup> Note: Site specific issues and opportunities should be addressed by working with the local building official. DSA is available for consultation at the request of the local building official. Contact information is listed at the end of this section.



Image courtesy of Electrify America

## Locating Accessible Chargers on an Accessible Route

**In a best-case scenario, accessible charging locations can be located adjacent to accessible parking spaces – which may make the accessible route as short as possible. This arrangement potentially enables a connection to the existing accessible route provided from existing accessible parking.**

**For a variety of reasons (space, power supply, rights of way, landowner preferences, etc.), accessible charging will not always be able to be placed next to accessible parking. In these cases, the station developer or facility owner should work with a design professional and the local building official to determine the best location of electric vehicle charging stations for the project, taking site constraints into account. When locating accessible electric vehicle charging spaces, it is important to remember that they must be on an accessible route but are not required to be on the shortest accessible route.**

## Path of Travel Improvements

Per CBC Chapter 2, an accessible route is defined as an identifiable accessible route within an existing site, building or facility by means of which a particular area may be approached, entered and exited, and which connects a particular area with an exterior approach (including sidewalks, streets and parking areas), an entrance to the facility, and other parts of the facility. When alterations, structural repairs or additions are made to existing buildings or facilities, the term “path of travel” also includes the toilet and bathing facilities, telephones, drinking fountains and signs serving the area of work.

When alterations or additions are made to existing buildings or facilities, path of travel improvement requirements apply. However, in the case of electric vehicle charging stations, the full path of travel improvements, including restrooms, drinking fountains signs etc., are required only at those facilities where vehicle fueling, recharging, parking, or storage is a primary function, such as parking garages or fueling stations. At such facilities, if the building entrance, bathrooms, telephones, and drinking fountains are not in compliance with applicable accessibility regulations, these elements will need to be upgraded to comply pursuant to CBC Chapter 11B-202.

At facilities where vehicle fueling, recharging, parking or storage is not the primary function, the parts of “path of travel” located within the building served by the parking area, are not required to be improved as part of the addition of electric vehicle charging. Per CBC 202.4 Exception #10, path of travel requirements are required to the primary entrance to the building, not to exceed 20 percent of the cost associated to the installation of the electric vehicle charging spaces.

## Technical Infeasibility and Unreasonable Hardship

“Technical infeasibility” and “unreasonable hardship” are regulatory terms defined in the California Building Code. If legal or structural constraints make it impossible to comply with accessibility regulations, a station developer may request a finding of technical infeasibility from the local building official. Examples of technical infeasibility include scenarios where the installation of electric vehicle charging space would require the removal of a load-bearing column, would require construction beyond the legal boundary of the site, or if it is not possible to meet the minimum height clearance in a parking garage.<sup>47</sup> If a technical infeasibility is declared, station developers must provide equivalent accessibility or comply with requirements to the maximum extent feasible.

A finding of unreasonable hardship is when the costs of compliance with path of travel improvements would be so high as to make the project infeasible. In general, when a finding of unreasonable hardship has been demonstrated to the enforcement entity, the cost of path of travel improvements can be no

<sup>47</sup> Note: Site specific issues and opportunities should be addressed by working with the local building official. DSA is available for consultation at the request of the local building official. Contact information is listed at the end of this section.

lower than 20 percent of the construction cost. Given the fact that path of travel improvements for the installation of electric vehicle charging stations are capped at 20 percent of the construction cost in the California Building Code, unreasonable hardship does not apply to electric vehicle charging station projects. This aligns with the federal Americans with Disabilities requirement.

## Exceptions

Within the types of properties that California Building Code Chapter 11B regulations cover (public housing, public accommodations, commercial facilities, and public facilities), there are two cases where accessible charging is not required:

1. If the charging station is not available to the general public and intended for use by a designated driver or vehicle (for example, public or private fleet vehicles or an EVCS assigned to a designated parking spot for a particular employee).
2. In public housing, if the charging station is intended for use by an electric vehicle owner or driver that has an assigned parking space.

## Understanding Accessible Route and Path of Travel in Simple Terms

In all cases, new charger installation projects must provide an accessible route to an accessible building entrance from the accessible charging spaces. Where EVCS do not serve a particular building, an accessible route is required to an accessible entrance of the EV charging facility. In either instance, this route is not required to be the shortest accessible route to the entrance.

Path of travel improvements (e.g., altering drinking fountains, bathrooms, telephones, building entrances) are only required in specific circumstances if facilities are not compliant and are limited to 20 percent of the cost of the work directly associated with the installation of the charging stations if the scope of the project is limited to the installation of EVCS.

### Required to do Full Path of Travel Improvements?

Chargers added to:	Yes (only if elements are not compliant to current code)	No
Shopping Centers		X
Restaurant Parking		X
Event Parking		X
Standalone DC Fast Charger Depot	X	
Gasoline Station	X	
Standalone Parking Garage	X	
Business Park Parking Lot		X

## Private Multifamily Housing

CBC Part 2, Chapter 11B does not include accessibility building standards for specified private multifamily housing. Technical requirements for EV charging spaces or stations serving private multifamily housing can be found in CALGreen. The 2019 CALGreen Code (effective January 1, 2020) establishes an exception allowing private multifamily projects, constructed for first occupancy after March 13, 1991, to meet accessibility requirements by designing the project in compliance with Chapter 11B. EV Ready spaces with receptacles for EV charging or EV chargers in privately funded multifamily development projects shall comply with California Building Code, Chapter 11A, Section 1109A, as applicable. EV station developers should check with the local jurisdiction to determine whether housing is public or private, as only private housing is exempted. Public housing and accommodations, including hotels and motels, must comply with Chapter 11B.

## Working Together to Achieve Accessibility

Achieving accessibility at plug-in electric vehicle charging stations is an ongoing process and stakeholders are still refining best practices to provide accessibility for this quickly changing technology. To achieve both our accessibility and rapid station development goals, feedback is critical.

First, all stakeholders should consult the current edition of the California Building Code and the suite of support materials available at the DSA website (search "[Electric Vehicle Charging Station](#)" on the DSA website).

The DSA website hosts a video titled "[California EVCS Accessibility](#)" which expands on the material provided in this Guidebook and can serve as training material. All AHJ plan reviewers who review EVCS projects, including Certified Access Specialists and Building Officials, are encouraged to watch the video and refer to the associated slide decks.

If you are a local jurisdiction/enforcement authority and have questions about how to provide accessibility at plug-in electric vehicle charging stations in California, please contact DSA's Access Technical Assistance Help Line at (916) 445-5827. DSA can provide resources to assist with your site-specific interpretation in your jurisdiction as well as discussing general questions about the requirements. You may

also reference the federal Access Board's [Design Recommendations for EVCS](#).<sup>48</sup>

If you are a station developer, please review the code in detail and if you have general questions about the regulations, please reach out to the local jurisdiction. For site-specific questions about a project in development, the most helpful way to resolve outstanding questions is to request that the local enforcement authority contact the DSA directly.

## Emerging Challenges

The electric mobility market is rapidly evolving: available charging speeds are increasing, wireless charging is poised to expand, car-sharing and ridesharing are gaining popularity, more types of vehicles are being electrified, and autonomous vehicles could revolutionize the way people move. These exciting developments can be constrained by the reality that much of California's building stock was constructed without anticipating the need to install charging infrastructure or accommodate current accessibility standards. The following issues highlight some of this inherent tension between an ideal accessible site configuration and on-site feasibility, as well as the challenge of introducing new technology without the benefit of clear regulatory parameters.

In all cases below, the applicant should consult with the local building official as early as possible to collaborate and find a workable solution.

As always, the DSA is available for consultation at the local building official's request, but the decision rests with the local building official. Looking forward, DSA and the State of California are eager to receive input about on-the-ground solutions that can help other sites and inform regulation development as charging infrastructure continues to expand.

- **Parking Garages.** Many old parking garages in California were constructed before the Americans with Disabilities Act was passed and implemented, and it may be technically infeasible to meet one or more accessibility standards for a variety of reasons. For example, in some garages, all spaces meeting the technical requirements for surface slope are already designated as accessible parking spaces or it might not be possible to create an accessible route that does not go behind cars.

<sup>48</sup> Note: these recommendations have not been adopted by the Department of Justice and thus are not enforceable.

- **Multiple Charger Types.** One site may host multiple charger types, from Level 1 to Level 2 to various DC fast chargers. The minimum number of required accessible EVCS must be calculated based on the total number of chargers for each type of charging facility (equipment). Each combination of charging level (such as: AC Level 1, AC Level 2, DC Fast Charge) and EV connector type shall be considered as a separate facility.
- **Providing Access to Curbside Charging.** California Building Code accessibility regulations do not apply to the roadway, including on-street charging in the public right of way. Local jurisdictions may have alternative enforcement procedures for projects in the public right of way.
- **Car Sharing.** Electric car sharing is either being piloted or starting to take hold in a variety of locations, improving mobility for these communities. Charging for car-sharing applications does not receive unique treatment and still requires accessibility, but may necessitate specific regulations in the future.
- **Innovative Designs.** The EV charging industry is rapidly evolving with new power levels, dispenser designs, and station layouts. Situations may arise where a new design provides for accessibility but is not consistent with specific code requirements. If this occurs, a local building official may interpret the accessibility regulations using equivalent facilitation (11B-103). However, such alternatives must result in substantially equivalent or greater accessibility and usability.
- **Angled Parking.** Converting existing angled parking stalls to accessible charging stalls can present unique space challenges. In some scenarios, as many as four angled parking stalls would need to be used to meet the width and depth requirements for one accessible charger. In these cases, the designer may propose an alternative under equivalent facilitation (11B-103, provided the solution provides for substantially equivalent or greater accessibility and usability) for review and approval by the building official.

## Implementation Lessons & Updating the Code

Because the electric vehicle industry is rapidly changing and California was the first jurisdiction to create accessibility requirements for electric vehicle charging stations, it is important to document how the

### A Note on Addressing Liability Concerns

**Legal liability, as it relates to accessibility, remains a legitimate concern for AHJs and property owners alike. When liability concerns arise, it is important to remember that a building official can approve projects by identifying and clearly articulating a code path to justify and substantiate their decisions.**

**In other words, if it is technically infeasible to install charging that meets accessibility standards on a site, charging stations can often still be installed. The key is providing the maximum feasible accessibility with a clear code path that supports the building official's decision and recording the determination in the files of the enforcing agency.**

requirements are being implemented on the ground, collect lessons learned, and adapt through time. The end goal is to ensure that this technology, which will make up a growing percentage of California's vehicle fleet, is both accessible to all Californians and also rapidly installed to meet the growing demand.

If you are an enforcement official or charging station developer and you are witnessing recurring issues that are consistently creating challenges on the ground for providing accessibility and/or meeting station installation goals, please share your stories and insights with DSA. It is only with quality feedback and input that regulations can be properly adapted with advancements in technology.

The process to amend the California Building Code requires a rigorous public process and extended timeline, so it is important to share your feedback with DSA as early as possible. The process to address code changes begins two years before the effective date of the new regulations. DSA accepts code change proposals on an ongoing basis and all proposed amendments to the regulations must have the input of all stakeholders.



Images courtesy of the Bay Area Air Quality Management District and the City of Sacramento

## PART 04:

# Permitting

In this section, we share requirements and best practices for station permitting to help AHJs streamline their processes and station developers submit effective applications. The section begins with a summary table for AHJs (Table 3: Electric Vehicle

Charging Station Permit Streamlining Requirements & Best Practices) and is followed by a narrative designed to communicate context and insights collected from leading practitioners.

**Table 3: Electric Vehicle Charging Station Permit Streamlining Requirements & Best Practices**

	AB 1236 and AB 970 Compliant (EVCS Friendly)	Not AB 1236 and AB 970 Compliant (Challenging to Deploy Charging)
<b>Required by AB 1236</b>	<b>Permit Streamlining Ordinance:</b> Ordinance creating an expedited, streamlined permitting process for electric vehicle charging stations (EVCS) including Level 2, direct current fast chargers (DCFC), and wireless inductive charging has been adopted	No permit streamlining ordinance; and/or ordinances or practices that create unreasonable barriers to EVCS installation
	<b>Permit Checklist Online:</b> Checklist of all requirements needed for expedited review posted on Authority Having Jurisdiction (usually a city or county) website	No checklist for EVCS permitting requirements
	<b>Administrative, non-discretionary approval:</b> EVCS projects that meet expedited checklist are administratively approved through building or similar non-discretionary permit	Permitting process centered around getting a discretionary use permit first
	<b>Review limited to health and safety:</b> EVCS projects reviewed with the focus on health and safety	EVCS projects reviewed for aesthetic considerations (including landscaping and screening) in addition to building and electrical review
	<b>Electronic Application:</b> AHJ accepts electronic signatures on permit applications <sup>49</sup>	Wet signatures required on one or more application forms
	<b>No Permit Authority for Associations:</b> EVCS permit approval not subject to approval of an association ( <u>as defined in Section 4080 of the Civil Code</u> )	EVCS approval can be conditioned on the approval of a common interest association

<sup>49</sup> Note: if a city or county determines it is unable to accept electronic signatures on all forms, the permit streamlining ordinance shall state the reasons

	AB 1236 and AB 970 Compliant (EVCS Friendly)	Not AB 1236 and AB 970 Compliant (Challenging to Deploy Charging)
<b>Required by AB 1236</b> <i>(continued)</i>	<b>Single Corrective Action Notice:</b> AHJ commits to issuing one complete written correction notice detailing all deficiencies in an incomplete application and any additional information needed to be eligible for expedited permit issuance	New issue areas introduced by AHJ after initial comments are sent to the station developer
<b>Required by AB 970</b>	<b>Permit Review Timelines:</b> EVCS application reviewed for completeness within 5 or 10 business days (based on the size of the project), and approved or denied within 20 or 40 business days (based on the size of the project) <sup>50</sup>	AHJ does not have expedited permitting process for EV applications – resulting in EV charging station permit applications being deemed complete and deemed approved in each case where the jurisdiction has not abided by the statutory deadlines
	<b>Parking Count Requirements:</b> AHJ reduces the number of required parking spaces at the existing building hosting the station by the amount necessary to accommodate the EVCS (including chargers and associated equipment) if the EVCS interferes with, reduces, eliminates, or in any way impacts the required parking spaces for existing uses	EVCS installation projects trigger a parking count review of the station site host property
<b>Best Practice</b>	<b>Permitting Process Online:</b> Clear EVCS permitting process detailed on AHJ website	Permitting process not explained or available on AHJ website
	<b>Permit Ombudsman:</b> ZEV Infrastructure permitting ombudsperson appointed to help applicants through the entire permitting process	AHJ does not offer access to an expert who can support station developers through the entire permitting process
	<b>Permitting &amp; Inspection Guidance:</b> Guidance documents for permitting and inspecting charging stations at single-family home, multifamily home, workplace, public (L2 and DCFC), and commercial medium and heavy duty posted on AHJ website	Limited or no information online
	<b>Pre-application Meetings:</b> Pre-application meetings with knowledgeable AHJ staff are offered	Full permit package needs to be submitted to gain feedback from AHJ staff
	<b>Concurrent Reviews:</b> Permit applications routed through one Department. If multiple Departments are necessary, concurrent reviews are made available for building, electrical (and planning, if deemed necessary)	Permits sequentially routed through multiple Departments
	<b>Integrated ZEV Planning:</b> Planning for ZEVs and supporting infrastructure is incorporated and prioritized within documents such as the general plan, capital improvement plan, climate action plan, and design guidelines	EV charging guidelines are not incorporated into planning documents
	<b>Primary Use and Accessory Use Classification:</b> EVCS are classified as an accessory use to a site, not a traditional fueling station	AHJ considers charging stations as fueling stations, leading to additional zoning review
	<b>Conditional Approvals:</b> AHJ's expedited EV permit review process encourages permit reviewers to conditionally approve permits (aka "approved as noted")	AHJ does not encourage conditional approval of permits

## Understanding the Permit Process

In California, EVCS permit applications are required to be approved through a truncated and streamlined permitting process. EVCS permit applications will usually be administratively reviewed for compliance with building, electrical, accessibility, and fire safety regulations. The permit applications may also receive public safety, structural, and engineering review

based on the processes and organizational structure of the AHJ. If possible, these reviews are done concurrently and AHJs and station developers should continue to look for ways to save time and share successes that can be emulated by others.

<sup>50</sup> Note: an application will be deemed complete and approved if the AHJ does not review the project in the specified timeframe or has not made a finding, based on substantial evidence, that the EVCS could have a specific adverse impact upon the public health or safety.

AHJs must evaluate the permit application within the required timelines (see [Table 4](#)) to determine whether all required documentation is attached, whether the load calculations are correct, whether new electrical service will be required, whether all diagrams are accurate, whether the proposed design will comply with the electrical code, whether the proposed charging layout is in accordance with the California Building Code accessibility regulations, and other evaluation factors as deemed necessary to ensure public health and safety.

If the application package is deemed complete and accurate and all materials are in compliance with applicable codes and regulations, the permit must be approved within the required timelines. If the AHJ determines that revisions to the application are required in order to address a health or safety matter, they must return the permit application to the

submitter with one complete set of instructions for revision. This is called a cycle, or round of comments, and requires the submitter to revise and resubmit until approval can be granted.

Once approval to build is granted, construction can begin. Depending on the type of installation, the site may be visited by a building inspector one or more times during the construction process, including after construction is finished for final approval. After final approval from the AHJ and utility, the station is eligible for commissioning and operation.

The following sections explore the requirements and best practices related to electric vehicle charging stations. The concepts apply to all levels of charging, but it is important to consider the unique circumstances of some installations.



Image courtesy of Tesla

### Single-Family Residential Charging

As a first priority, many AHJs have streamlined single-family charging station permits with electronic applications, no need for a plan review, and the option of same-day approval.

Residential charging is easily streamlined because typically only one or two Level 2 chargers will be installed at a given house. The electrical work needed for a Level 2 charging installation is similar to the installation of a dryer or other household appliance, in essence only requiring a field inspection.

## Direct Current Fast Charging Considerations and Right of Way Permits

DC fast charging (DCFC) installations are more complex than Level 1 and Level 2 installations since these installations often require delivering more power to a site. Some EV charging stations require a new utility electrical service to provide sufficient power to

the station. If necessary, this commonly requires a right of way permit, in addition to the AHJ's standard EV charging permitting process.

AHJs can help identify and provide clear direction on the right of way permit process during an early consultation and help incorporate the right of way permit in the application package. High-volume AHJ's should consider developing a dedicated EVCS right of way permitting process,

similar to what some jurisdictions have developed for the telecommunications-related applications.

A station developer may need to get special encroachment permits—from [Caltrans](#) for example—to trench under an existing right of way. In general, encroachment permits can add considerable time and cost to a project and should be accounted for during project planning.

## Multifamily Housing Best Practices

Multifamily Housing (also referred to as Multi-Unit Dwellings [MUD]) represents a key market segment in need of charging options. They constitute between 38 percent and 67 percent of California's housing stock (depending on the region) but fewer than 9 percent of ZEVs in California have been registered to MUD residents.<sup>51</sup> To achieve 100 percent ZEV adoption, this market segment likely needs to be served by a combination of access to Level 2 charging, DC fast charging, and hydrogen fueling.

A variety of factors—ranging from ownership structure to available power and parking—have worked against adding charging to existing MUDs at the necessary scale. The following best practices can help address the challenge:

### Best Practices

Encourage charging in rental properties to be shared use

Encourage the highest rate of charging to maximize throughput capacity, while balancing cost

Avoid treating EV charging at MUDs as a commercial parking service

Allow/encourage load management and battery supported chargers if the electrical capacity at a site is insufficient

For new buildings – adopt CALGreen voluntary measures or better ([see Advancing Infrastructure through Building Standards section](#))

## State Permit Streamlining Laws (AB 1236 and AB 970)

### AB 1236 Requirements

[AB 1236](#) requires all cities and counties to develop an expedited, streamlined permitting process for all charging station installations including: Level 1, Level 2, DC Fast, and wireless charging; public and private charging stations; light-, medium-, and heavy-duty electric vehicle charging stations; and

stations that are installed as the accessory or primary use of a site. This law was developed based on the reality that the availability of charging infrastructure drives the adoption of zero-emission vehicles—the faster charging stations are deployed, the sooner

<sup>51</sup> See "Quantifying the electric vehicle charging infrastructure gap across U.S. markets," [ICCT \(2019\)](#).

California's air quality improves, greenhouse gas emissions are reduced, and local economic benefits are captured.<sup>52</sup>

When AB 1236 was being developed, permitting processes and actual timelines varied widely—in many cases adding considerable delay to EV charging station permitting processes and station development. [AB 970](#) builds on AB 1236 by adding specific binding timelines to the permit review period. AB 1236 and AB 970 aim to address the core issues that tend to undermine station permitting by focusing on the following solutions for all levels of charging stations:

1. **Aligning AHJs and applicants:** Process and communication matters. Much of the frustration on both sides of the permitting process arise from a breakdown in communication. To address this, AB 1236 requires cities and counties to adopt an electric vehicle charging station permitting checklist (or checklists) detailing the requirements for a project to be eligible for an expedited review. The idea is to create process transparency that simplifies communication for both AHJs and station developers. More and more communities are establishing these required checklists, but much work remains to be done to spread this solution across the state (checklists were required to be posted by September 30, 2017).<sup>53</sup>

*65850.7(g)(1) "...In developing an expedited permitting process, the city, county, or city and county shall adopt a checklist of all requirements with which electric vehicle charging stations shall comply to be eligible for expedited review..."*

2. **Making it easy to apply for a permit:** AHJs are required to allow for electronic submission of application packets for vehicle charging stations through email, internet, and/or fax and allow for electronic signatures on all forms. This simple change can save considerable time and money.<sup>54</sup>

*65850.7 (2) "The checklist and required permitting documentation shall be published on a publicly accessible Internet Web site, if the city, county, or city and county has an Internet Web site, and the city, county, or city and county shall allow for electronic submittal of a permit application and associated documentation, and shall authorize the electronic signature on all forms, applications, and other documentation in lieu of a wet signature by an applicant..."*

3. **Laying the foundation for streamlined reviews:** Under AB 1236, cities and counties shall approve permit applications through a building permit or similar non-discretionary permit with review limited to public health and safety issues. The station permitting checklist plays a key role. Any project that meets all the requirements in the checklist, as determined by the AHJ, shall qualify for expedited review. In the vast majority of cases, this means that no discretionary use permit will be required, which can be the most time-consuming aspect of permit approvals.<sup>55</sup>

*65850.7(b) "A city, county, or city and county shall administratively approve an application to install electric vehicle charging stations through the issuance of a building permit or similar nondiscretionary permit. Review of the application to install an electric vehicle charging station shall be limited to the building official's review of whether it meets all health and safety requirements of local, state, and federal law. The requirements of local law shall be limited to those standards and regulations necessary to ensure that the electric vehicle charging station will not have a specific, adverse impact upon the public health or safety. However, if the building official of the city, county, or city and county makes a finding, based on substantial evidence, that the electric vehicle charging station could have a specific, adverse impact upon the public health or safety, the city, county, or city and county may require the applicant to apply for a use permit."*

AB 1236 requires cities to adopt an ordinance (or ordinances) to ensure the above solutions are enabled through a transparent, streamlined EVCS permitting process. Additionally, the law establishes that local ordinances cannot create unreasonable barriers to station installation, including subjecting

<sup>52</sup> Streamlined permitting of electric vehicle charging and hydrogen fueling stations is a key climate strategy that cities and counties can add to their Climate Action Plans—the faster infrastructure is added the sooner cities can reduce transportation related emissions.

<sup>53</sup> See the Town of Woodside's [EV permitting checklist](#) for an example.

<sup>54</sup> To be clear, electronic application submittals do not replace the value of in-person communication, especially for large projects. The approach simply saves applicants from having to make a separate trip to submit their application.

<sup>55</sup> A discretionary permit can only be required if the building official makes a finding, based on substantial evidence, that the electric vehicle charging station could have a specific, adverse impact upon the public health or safety.

## CEQA: Ministerial vs. Discretionary Decisions

AB 1236 requires California cities and counties to approve the installation of EV charging stations using non-discretionary permits, unless the local officials make a finding that the EVCS could have a specific, adverse impact on public health or safety. Accordingly, under certain circumstances, an EVCS approval can be ministerial and therefore would not trigger an analysis under the California Environmental Quality Act (CEQA).

CEQA only applies to discretionary decisions by public agencies. (Public Resources Code, § 21080(a).) A decision is discretionary when it requires the exercise of judgment or deliberation. (CEQA Guidelines, § 15357.) In contrast, CEQA does not apply to ministerial decisions, or decisions requiring little or no personal judgment by public official as to the wisdom or manner of carrying out the project. (CEQA Guidelines, § 15369.) For example, a building permit would be ministerial if the ordinance requiring the permit limits the official to determining whether applicable zoning laws allow the structure to be built in the requested location, the structure meets the strength requirements in the Uniform Building Code, and the applicant has paid the fee. (CEQA Guidelines, § 15369.)

Please note that even if an EVCS permit is considered discretionary, an EVCS project may still be exempt from CEQA consideration, such as if the project is otherwise excluded from CEQA or falls within a categorical exemption.

applications to aesthetic review or other processes that require unnecessarily long timelines. On the contrary, AB 1236 explicitly calls out the legislative intent “to encourage the installation of electric vehicle charging stations,” and a growing number of cities and counties are responding with constructive policies and procedures.

Taken together, a station developer will know, up front, everything they need to do to have a streamlined permit process. Similarly, AHJs will be able to use the complete information supplied by project applicants to approve charging stations through a ministerial process. In practice, this means that permit review will typically be conducted by the building and/or electrical department, often over the

counter, as opposed to going through the planning or zoning department for planning approval.

Per AB 1236, the city building and/or electrical department’s review of an EV charging station permit application “shall be limited to the building official’s review of whether it meets all health and safety requirements.” AB 1236 allows building officials to assess if a “specific, adverse impact upon the public health or safety” may result due to the installation of EVCS or EVSE equipment. For example, health and safety concerns can lead to the need for project revisions when the building official believes that added EV charging loads may affect existing electrical infrastructure or when the project might create a visual hazard. It should be noted that a visual hazard is different than a visual impairment. A visual hazard may compromise fire safety, while a visual impairment can be mitigated to not adversely impact safety. However, the fact that the EV charging station or its equipment is visible from the street or other right of way is not a visual impairment and no mitigation (i.e., screening) should be required.

## AB 970 Requirements

AB 970 adds specific binding timelines for AHJ review of EVCS project applications based on the size of the proposed project. For projects with 1 to 25 stations at a single site, AHJs must review applications for completeness within 5 business days and approve or deny the application within 20 business days. For projects with 26 or more stations at a single site, AHJs must review applications for completeness within 10 business days and approve or deny the application within 40 business days.

An EVCS application will be deemed complete if after 5 or 10 business days (based on the number of chargers at the site) the AHJ has not either:

1. Found the application to be complete; or
2. Issued a one-time written deficiency notice that:
  - a. Details all changes needed to make the application consistent with the city or county EVCS permitting checklist (where a checklist exists); or
  - b. Identifies specific information necessary for the building official to conduct a limited review of whether the project meets all health and safety requirements.

If the city or county has not yet created its checklist, the deficiency notice will be limited to the building

official's review of whether the project meets all health and safety requirements of local, state, and federal law per AB 1236.

If not already approved or denied pursuant to the requirements of AB 1236 (Section 65850.7(b) or (c), respectively), the application will be deemed approved 20 or 40 business days (based on the number of chargers at the site) after it was deemed complete if:

1. The AHJ has not made a finding, based on substantial evidence, that the EVCS could have a specific adverse impact upon the public health or safety;
2. The AHJ has not required the applicant to apply for a use permit as specified in Section 65850.7(b); and
3. An appeal has not been made to the planning commission pursuant to Section 65850.7(d).

Table 4 below summarizes the EVCS permit application review and approval timelines required by AB 970.

When interpreting the table and timelines, please consider the following points:

1. The optimal scenario is a day-of response, online or over the counter. Online transactions can save considerable travel time and expense. Depending on staff resources and project complexity, day-of approval or responses are not always feasible—but the objective is to get as close to optimal as possible.
2. Expedited review hinges on the station developer submitting a well-organized, complete application with all necessary materials. The application should match the AHJ's permitting checklist.
3. Communication matters—station developers can help AHJs by giving them a heads up about an upcoming application submittal and advance notice about when construction will be complete.
4. Under AB 970, the EVCS application shall be deemed complete and approved if the AHJ has not reviewed the project within the specified timeframe (see Table 4) or has not made a finding, based on substantial evidence, that the EVCS could have a specific adverse impact upon public health or safety.

**Table 4: AB 970 EVCS Permit Timelines**

<b>Application Submittal &gt;&gt; Review for Completeness</b>	
Project Size	Business Days
1-25 stations at a single site	5 days
26 or more stations at a single site	10 days

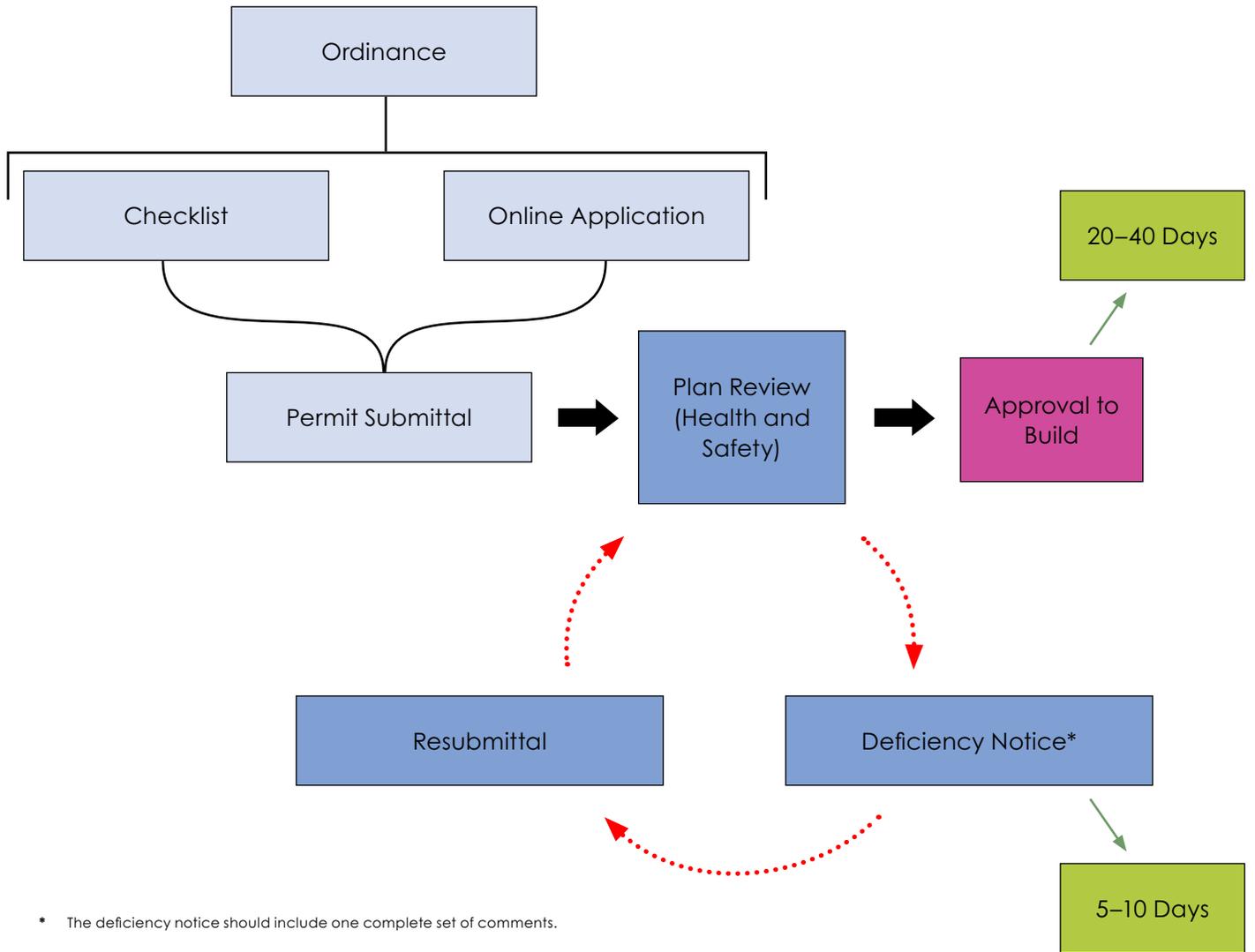
  

<b>Complete Package &gt;&gt; Approval to Build</b>	
Project Size	Business Days
1-25 stations at a single site	20 days
26 or more stations at a single site	40 days

Although not included in the AB 970 required timelines, it is a best practice for an AHJ inspection to occur within 5 business days of receiving a construction complete notice.

Cities and counties eager to attract charging can publish their expedited timelines for EVCS application review. To help meet and exceed these timelines, simple time saving measures, such as encouraging plan checkers to conditionally approve permits (also known as "approved as noted"), can have a considerable impact. In many cases, this time savings translates into monetary savings—savings that can be invested in more charging stations in the state. Furthermore, cities or counties that contract with third-party reviewers should ensure AB 1236 and AB 970 requirements are met – including using a checklist and building in expedited turn-around times – so that third-party review does not add time to the process.

# AB 1236 and AB 970 Requirements and Process Overview



## Parking Requirements

Local zoning and parking considerations must not factor into the permit approval process. AB 970 requires AHJs to reduce the number of required parking spaces by the amount necessary to accommodate the EVCS if the EVCS and associated equipment interferes with, reduces, eliminates, or in any way impacts the number of parking spaces available for existing uses.



## Complying with AB 1236 and AB 970

AB 1236 gave communities until September 30, 2017 to develop and adopt streamlined processes, including passing an ordinance to codify the approach.<sup>56</sup> Unfortunately, due to lack of awareness, enforcement, and inconsistent application across the state, a wide variance in permitting processes persists. AB 970 became operative on January 1, 2022 for every city, county, or city and county with a population of more than 200,000 residents, and January 1, 2023 for every city, county, or city and county with fewer than 200,000 residents.

AB 1236 and AB 970 establish streamlined charging station permitting as a statewide imperative, but success depends on local implementation and AHJs retain flexibility in how they implement the law and intake and process applications. From a station developer perspective, the ideal process of permitting charging stations would be uniform across all jurisdictions, modeled after the fastest processes in the state. In reality, processes vary. In one city, it may make sense to create a unique process specifically for charging stations. In another, putting charging station reviews through a standard electrical permit process may yield the best results.

The best approach to comply with the binding statutory requirements and deadlines may depend on the volume of applications, the structure of planning and building departments, whether the AHJ has full-time staff for permit review or whether it contracts with external reviewers, and other factors. The most important factor is to ensure that whatever process is adopted, it streamlines the process for both the AHJ and station developer rather than adding additional complications and permitting delays.

In all cases, permit application documents must be available to be downloaded and submitted digitally with the ability to provide electronic signatures (in fillable PDF or similar format). If comments are necessary, AHJs should send one complete set of comments that can be addressed in a streamlined manner through modifications to the existing application. Giving station developers one complete set of comments as early in the process as possible saves time and money by enabling them to streamline resources when developing their response. While it may take more than one iteration to completely address an AHJ's comments, AHJs should

### Taking Steps to Simplify the Process

**Permit streamlining need not be complex or expensive. Tuolumne County used to require paper submittals, expensive studies, and station developers reported waiting at least 30 days for approval of typical Level 2 projects. This was problematic for several reasons, not the least of which is that the County is large, and travel to the permit office can be time consuming.**

**To improve the process, the County decided to go to a paperless permitting system, with electronic plan check, auto-approval of permits, and printable permits. Software tools exist to handle an all-electronic permitting system, but the County did not have the budget to purchase the software. Instead, they used common software (AdobePro) they already owned to create and share downloadable, fillable PDF applications. Station developers simply download and fill out the forms, include an electronic signature, and submit the document to the County via email. In many cases, the only in-person interaction occurs during the final site inspection.**

**The County permit process for EVCS is now paperless, with approvals granted in five days or less.**

not provide a second round of unrelated comments unless related to a health and safety issue which can add preventable expenses and time to a project.

We encourage AHJs to invite industry and stakeholders to the table to discuss existing processes, identify restrictions in the process, and develop strategies for streamlining and improvement. Local jurisdictions can also use this as an opportunity to train local contractors and station developers on proper permit submittals to save time spent on reviewing incomplete applications. A streamlined process designed to be responsive to stakeholders saves staff time for both the station developer and the AHJ involved.

<sup>56</sup> For example, the [City of Burbank](#), and the [County of Sonoma](#).

## Best Practice: Identify a ZEV Permitting Ombudsperson

An ombudsperson who understands the entire permitting process and serves as a single point of contact for ZEV infrastructure projects can save time and frustration for both the applicant and AHJ staff. In many cities, individual staff members may only know their specific piece of the process. Having a single point of contact who understands the process in its entirety can help expedite the application and review.

## Primary Use vs. Accessory Use

Local jurisdictions often have different permitting and planning procedures based on project use types. Permitting of accessory use projects for existing building sites may be more streamlined than permitting of primary use, new construction projects. AB 1236 requires permit streamlining for all charger installation projects, regardless of whether projects are primary or accessory use. However, because primary use projects may have different or expanded impacts on matters of health and safety, it is reasonable to implement a different, but still streamlined permitting process for these types of installations. For example, the streamlined permitting process for a primary use charger installation project may require more consideration of health and safety components than a charging station that is accessory use (e.g., due to increased vehicle usage of the site). Importantly, a charging station that is the primary use of a site should not be required to complete a conditional use permit process. To meet the requirements of AB 1236 and AB 970, a local jurisdiction should aim to align its streamlined permitting process for a charging station that is accessory use as close as possible for a charging station that is primary use.

## The Benefits of a Regional Approach

AB 1236 allows flexibility for local jurisdictions in terms of allowances for unique climatic, geological, seismological, or topographical conditions, how they design their permitting checklist and expedited review process, and other components of implementation. However, it is also beneficial to coordinate with other AHJs in the region to share best practices and, ideally, develop substantially similar standardized intake and review processes. Relatively similar permitting processes across a region allow for station developers to clearly plan and install stations across a geographic area without having to spend additional labor time familiarizing themselves with significantly different processes. Ideally, these conversations could be coordinated through the local council of governments or other regional planning body, saving time and expense for all involved.

## Resources to Help Communities Enable a ZEV-only Future

There are several resources available to help local jurisdictions comply with AB 1236 and AB 970. California Building Officials (CALBO) offer [AB 1236 compliance toolkits](#) for both small and large jurisdictions. These toolkits include model ordinance templates, adoption timelines, and supporting staff reports, as well as a sample permitting checklist. Local governments should also study their implementation of [AB 2188](#) (Statutes of 2014, Chapter 521), which mandated streamlined rooftop solar permitting, or [AB 57](#) (Statutes of 2015, Chapter 685), which mandated deemed approved requirements for telecommunications facilities, for areas of overlap and lessons learned.

## Additional Permitting Best Practices

Station developers who do not own the land being developed often have limited flexibility on any given site. For a variety of reasons, a site host may limit installation of charging to a specific location on the property. Providing accessibility and the existing electrical infrastructure and capacity can also constrain options.

Implemented by the AHJ, the following strategies can help prevent permitting from being an additional constraint:

1. Collaborate with the EV charging industry to minimize the constraints and maximize opportunities for charging projects to qualify for expedited permitting, as required by AB 1236 and AB 970.
2. Define upfront the materials needed for a permit package to be complete, the associated fees, and what building inspectors will be looking for.
3. Offer pre-application meetings with knowledgeable AHJ staff for projects that may require additional review and help the applicant understand the advantages or disadvantages of each project approval approach.
4. Acknowledge AB 970 timelines on the AHJ's website and position AHJ staff to meet or exceed the timelines, targeting day-of approvals whenever possible.

Station developers with a clear understanding of what AHJs will be looking for are better positioned to work with site hosts to identify favorable solutions that work for all parties.<sup>57</sup>



### Installing Charging Stations in the Coastal Zone

A Coastal Development Permit (CDP) may be required to install charging stations located in the coastal zone. Local governments in the coastal zone with certified Local Coastal Programs (LCPs) are responsible for determining whether a Coastal Development Permit (CDP) is required for proposed development within their

respective jurisdictions, but some local CDP decisions can be appealed to the Coastal Commission. In areas where there is no certified LCP, the Coastal Commission is responsible for determining whether a CDP is required for proposed development.

Construction of new, or expansion of existing, EV charging stations constitutes development that is subject to the Coastal Act; however, such development may be exempt from CDP requirements (see Pub. Res. Code

§ 30610(a), (b); 14 Cal. Code Regs §§ 13250, 13253) or may be approvable through an expedited review process, such as through a de minimis permit waiver. Ensuring that proposals for new or expanded EV charging stations avoid adverse impacts to coastal resources, particularly habitats, public coastal views and coastal access parking will help expedite the CDP determination and review process.

<sup>57</sup> In defining which types of projects might trigger a longer review, it is important to note that for typical charging installations at an existing facility, electric vehicle charging should be considered an accessory use and should not be considered a fueling station or otherwise trigger additional zoning review. This approach is consistent with AB 1236.

## What does a streamlined process look like?

At the most basic level, a streamlined permitting process does two things:

1. Creates clear pathways for non-discretionary permit approval.
2. Makes the non-discretionary permit application process simple and straightforward.

On the AHJ side, successful implementation requires clear communication about how project applicants can design their project to avoid triggering a lengthier special review.

In the City of Sacramento, for example, the City tells applicants up front to design projects to avoid impacts to heritage trees and bio-swales to avoid complicating the review process. This type of direction to applicants can be given on a city or county permitting website, using permitting checklists and fact sheets, and re-iterated at pre-application meetings, which are often recommended for larger projects.

Sacramento also clearly communicates that putting charging stations into existing parking lots will not trigger bringing the parking lot into compliance for new landscaping, or other onerous requirements that could make the project infeasible—

effectively eliminating an uncertainty for a station developer.

On the station developer side, successful streamlining requires understanding any unique constraints of a particular site, designing projects to avoid triggering special review, and providing transparent details in permitting submittals.

If an application requires amendments after review, AHJs provide one round of complete comments for applicants to respond to—and for applicants to answer AHJ questions in full.

In addition to minimizing the chances of incomplete application packages (which creates extra work for both the AHJ and station developer), providing clear information on a city or county's website can also be a great way to attract charging station development, as a transparent and informational website will allow station developers to more easily plan for and deploy charging within a jurisdiction. Reasonable fees, or even subsidized fees, can also attract development. For instance, the City of Anaheim [waives](#) what would be a \$147.67 fee.

It is important to delineate between the requirements for each kind of installation site, be specific about any differences in requirements between different levels of charging and provide comprehensive and clearly labeled information. Fact sheets for these scenarios help save time—especially if the fact sheets define parameters within which permitting and inspection can be streamlined.<sup>58</sup> While the requirements and fees are sometimes the same across various levels of charging, this is not always the case, hence the need for clear communication and information.

Finally, timing matters. Long permitting processes add expense and uncertainty to any project and may risk cancelling the project entirely. Losing projects due to lengthy permitting processes will negatively impact the station developer, the AHJ, the state, and



Image courtesy of FLO

the driver and could ultimately influence consumer decision making. An installed bank of chargers at the right location and time can make the difference between converting a driver to a ZEV or committing them to internal combustion for an additional purchase cycle.

<sup>58</sup> For example, a DCFC fact sheet could communicate that an application placed in a parking lot that does not impact existing drive aisles would go straight to building/electrical review.

## Preparing a Permit Application

When developing a permit application, station developers should carefully review the application requirements for the specific jurisdiction they are working in, especially in cities and counties that have not yet complied with the state's permitting streamlining requirements (AB 1236 and AB 970). Requirements can differ significantly from other jurisdictions in the region. Even if a developer has worked with the AHJ before, processes may have changed since the last project. If the AHJ has a checklist for expedited permit review, station developers should review those requirements and ensure the project meets the standards for expedited review. If the AHJ offers pre-application meetings, station developers should take advantage of the opportunity to learn about any special considerations for the process, what kind of reviews to expect, and any steps they can take to make the process easier.

If the city or county has developed an EV-ready ordinance, regional readiness plan, or other planning or policy document, station developers should familiarize themselves with the contents and look to engage with the local department or departments involved in creating it. Whether plug-in electric vehicle readiness has been led by planning, public works, environment and sustainability, or other city or county departments, engaging the lead departments in the project can help resolve any issues that come up and can develop valuable allies to help get a project through the process.

Station developers should begin engaging the local utility at the pre-application stage of the process as well. The state's utilities differ in how they expect the timelines of the parallel permitting and energization approval processes to interact. Some are comfortable with a simultaneous review process, while some may want to wait until the permit is approved to begin the service connection review process. At this stage, station developers should develop an understanding of the extent of electrical work that will be required and the timeline for its completion. We discuss service connection in further detail later in this Guidebook ([Part 5: Energization](#)).

### What to Include in Your Application

A number of documents may be required for an application to install a public charger, and the information requested can vary by jurisdiction and project type. Common pieces of information include site plans; a single line electrical diagram;

### Increasing Awareness

**Awareness about charging installations, the different levels of charging, and the requirements for each is still growing in local jurisdictions across the state, even in jurisdictions with high numbers of electric vehicles. Station developers should be ready to address questions or misconceptions with building department staff, fire officials, and other permit reviewers, and share this Guidebook or other resources specific to the kind of project.**

### Pre-Application Meetings

**Pre-application meetings are strongly encouraged for large projects being pursued in communities that have not yet established a streamlined permitting process and/or for projects that might trigger additional review. These meetings should occur as early in the process as possible, include decision makers from both the AHJ and applicant, and be used to ensure the project is set up for a streamlined process following the meeting and ultimately permitting success.**

**Clear fact sheets and checklists can minimize the need for pre-application meetings by communicating how projects can be designed to avoid triggering additional review, and conversely which types of projects or project features are likely to trigger special review. Station developers can use this information to design projects to meet the pre-defined criteria for a streamlined process.**

load calculations and whether a panel upgrade will be required; a separate mechanical permit application if ventilation will be required for the station; and charger installation instructions from the manufacturer. Public station applications will need to pay special attention to accessibility, with clear diagrams and text showing how the project will meet state accessibility regulations.

Given the requirements of AB 1236, it is important for project applicants to focus their submittal on

alleviating any potential health and safety concerns up front. For example, a DCFC project that draws energy from the existing electrical service could require additional safety review compared to a project that will rely on its own service drop. In either case, the review will benefit from documentation that demonstrates how the electrical load will be managed. From a visual perspective, building and fire officials will look for visual hazards – for example, structures that block fire lane visibility.

If not all the components on a jurisdiction's AB 1236 expedited review checklist are present, a project may be deemed ineligible for expedited review without revision or resubmission and may be routed through a standard review process. Additionally, if the AHJ determines that the project poses a specific, adverse impact upon health and safety, the AHJ may remove the project from expedited review and may also require a conditional or special use permit application.

Station developers must pay permit application fees when they submit a project. Permit fees are usually based on a combination of the percentage of anticipated cost of materials and construction, staff time, the size and scope of the project, any additional permits required, and fees for inspection. Fees are not standardized statewide and can vary dramatically, even in neighboring cities. To support ZEV deployment, AHJs should structure fees to both meet their needs while also minimizing the costs to developers of installing charging stations.

Just as AHJs can implement steps and procedures to make the permitting process easier for station developers, so too can station developers take actionable steps to streamline the permitting process for cities and counties. Common errors from station developers include inaccurate load calculations, inconsistent diagrams, and failure to comply with accessibility regulations, such as inclusion of grades that are too steep, inaccessible placement of the charging station itself, and lack of accessible route and path of travel. Errors in submission lengthen the process and can also jeopardize site control if a site host grows concerned over a process being delayed by many rounds of comments and revision.

Consistent and clear lines of communication between staff and contractors working on the permit application and station installation are also important. Some station developers who work with many contractors will have one team of contractors develop the plans and go through the

permitting process, but another team of contractors install the charging station. While this can work if executed carefully, it raises the risk of mistakes in the construction process and inconsistencies with the approved permit, raising costs for both parties and causing frustration for inspectors and building officials. This is especially likely to happen if the construction and installation contractors have not seen the site before the start of construction.

## Common Obstacles

**Aesthetics:** Some jurisdictions have subjected projects to design review and asked the permit applicant to make aesthetic changes to the permit application. While design guidelines that implicate health and safety, such as safety related lighting, clearance, and signage are permissible under AB 1236, aesthetic changes without a specific impact on health and safety—such as landscaping and other screening requirements—are not in accordance with state permitting requirements under AB 1236. In areas with sensitive design standards, station developers and AHJs are encouraged to collaborate on practical design elements that can be implemented with minimal expense, minimal complication, and without impacting the project timelines set by AB 970. AHJs may also provide alternative compliance pathways or ministerial flexibility for EVCS to meet design standards in their zoning code wherever possible. Staff should have flexibility when reviewing EVCS sites in areas with sensitive design standards to ensure creative, practical solutions can be developed and approved easily.

**Zoning Conflicts:** Some AHJs have deemed larger charging installations to be fueling stations, as opposed to site accessories, and expressed concern over their compliance with zoning codes. Similarly, some cities and counties have communicated that a DCFC charging depot application could be streamlined in a location zoned for fueling but not if the DCFC depot is to be constructed in a commercial zone or retail setting. This approach runs contrary to AB 1236 and AHJs are encouraged to develop strategies to enable streamlined permitting for all charging installations, including DCFC depots, in as many site types as possible. AHJs may consider making EVCS its own permitted, primary use to the widest extent feasible.

**Inconsistency:** Accessibility regulations (see [Part 3: Accessibility](#) for an in-depth overview) are ultimately applied on a site-specific basis by local building

officials. That means that one AHJ's interpretation of the code may differ from another AHJ's interpretation of the code, especially if an installation presents a site-specific challenge.

**Lack of Familiarity:** The amount of power required for DCFC installations may be unfamiliar and concerning for AHJs, especially to fire inspectors given the reality that some DCFC installations can pull as much power as a city block. However, it is important to understand that DC fast charging is a normal and tested technology found across the state in thousands of installations. DCFCs are carefully constructed and equipped with numerous safety features. DCFCs are designed and manufactured to meet national safety regulations, and building officials ensure that all codes and standards are safely met. We encourage station developers and AHJs to work together to

overcome misconceptions to achieve the state's goals of 10,000 DCFCs in the state by 2025. Station developers should be ready to share manufacturer installation instructions and other resources, as necessary, to help clear up misconceptions and address concerns.

Image courtesy of Paired Power



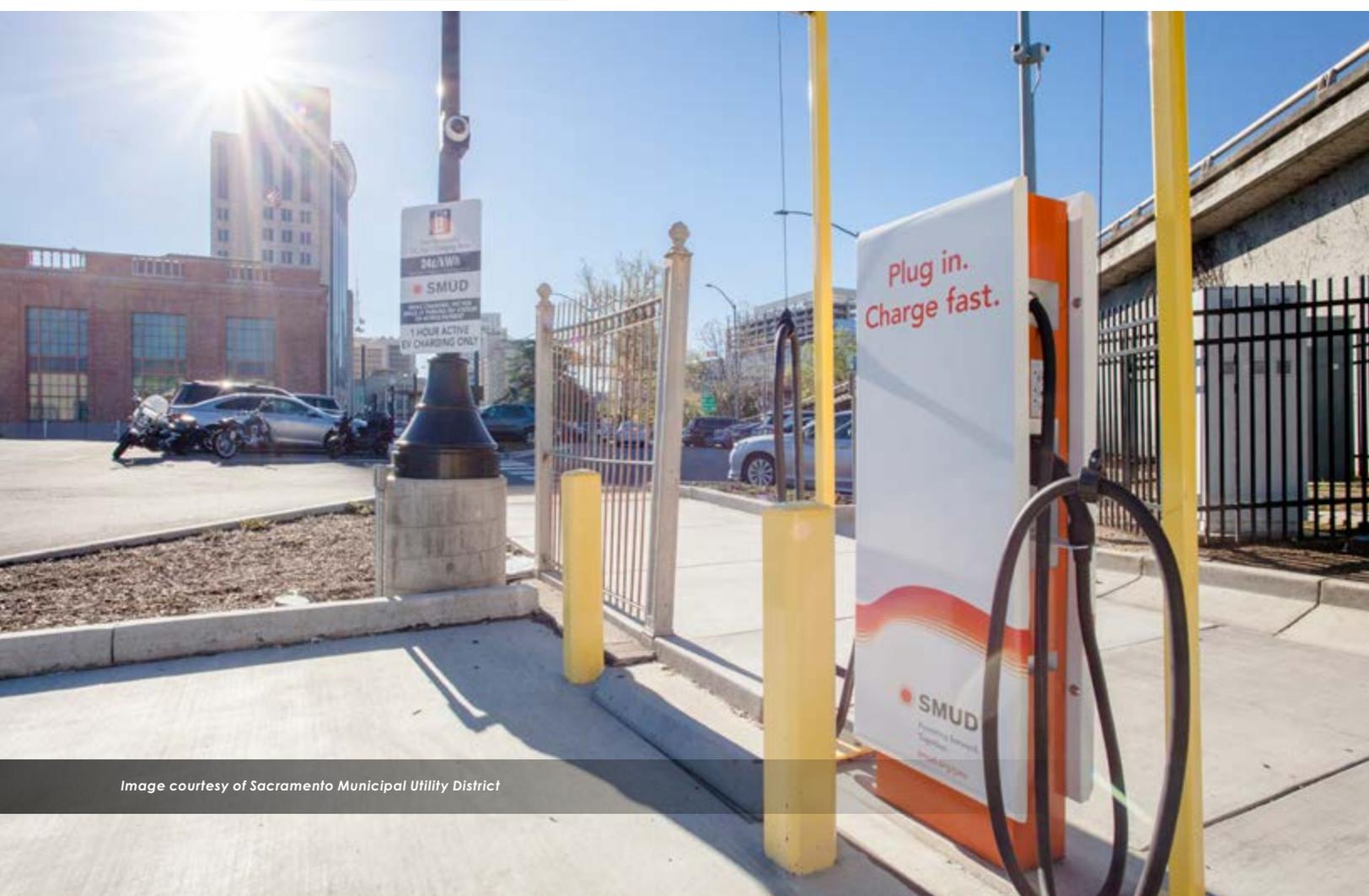


Image courtesy of Sacramento Municipal Utility District

## PART 05:

# Energization

Energization describes the process through which electric vehicle charging stations are connected to the electrical grid through the local utility. This process may involve connecting electric vehicle supply equipment to pre-installed make-ready wiring, upgraded or new electrical services, installing subsurface or surface mounted conduit/wiring, trenching to facilitate that conduit and wiring, and more. While not all stations require connection to the electric grid—some, for example, may have sufficient solar generation and on-site battery storage to cover the anticipated load—most stations are energized by utilities. Thus, it is important to understand this process early in station planning to reduce potential for development delays in permitting and construction phases.



### Off-grid and mobile solutions

**Most charging stations are hardwired to the electrical grid. Depending on the setup, grid-connected stations can source their power from any mix of grid power, local power generation, or on-site energy storage. However, not all chargers need to be grid connected, and solutions exist to add increased flexibility to the charging ecosystem.**

**For example, stand-alone or off-grid EV charging infrastructure solutions, which do not require electric utility grid connection generally receive their power from locally-generated renewable energy. These systems can be permanent or mobile. Mobile off-grid solutions have the advantages of rapid deployment, no trenching, and minimal permitting. A permanent off-grid solution might be dedicated to charging or feed into a micro-grid. In both cases, one clear advantage is the ability to continue to charge vehicles during power outages and offset peak demand charges.**

**Mobile chargers, which are essentially batteries on wheels, can bring the charger to the car. These systems can be charged when electricity rates are low and deployed whenever needed, effectively decoupling the time of power consumption from the time of power generation.**

**Bottom line: stakeholders should be aware that non-grid-connected solutions complement traditional grid connected resources and provide flexible solutions that can help ensure charging can be made available everywhere vehicles travel.**

Energization can be complex and can significantly lengthen a project timeline, especially with larger charging installations and at sites with limited existing electrical capacity. By engaging with the local utility early in the process, station providers can gain a clearer understanding of the development timeline, costs, and requirements. Utility approval to begin the energization process is a separate and distinct approval process from an AHJ permitting process, although the processes may be more closely linked in areas with a municipal utility. The California Public

Utilities Commission (CPUC) and the state's major utilities are currently taking steps to streamline the energization process.<sup>59</sup>

## Understanding Energization

Usually, similar to any other commercial customer, the station developer will be responsible for some of the work of energization. The delineation of responsibilities between a developer and the utility varies by territory. Most utilities provide a breakdown

### Bidirectional Charging

Bidirectional charging allows electric vehicles to export stored battery energy, enable emergency backup services in the event of grid shutoffs or general power failures, manage onsite load, and potentially receive compensation for reducing system peaks. In December 2020, CPUC adopted a decision on Vehicle-Grid Integration (VGI), which created metrics and strategies for advancing VGI and authorized almost \$45 million for investor-owned utilities to spend piloting VGI technologies and programs.<sup>60</sup>

In November 2021, CPUC adopted a resolution creating a pathway for alternating current (AC) interconnection for VGI and allowing some plug-in EVs to easily enable bidirectional mode.<sup>61</sup> Today, some DCFC are bidirectional, meaning

power can flow both from the grid to charge an EV's batteries and back to a building or the grid. This is referred to as vehicle to building (V2B) or vehicle to grid (V2G). The California Public Utilities Commission (CPUC) and the California Energy Commission (CEC) have been promoting VGI including V2B and V2G.<sup>62,63</sup> Utilities have been experimenting with V2G technology and CEC offers incentives to encourage V2B and V2G technology deployment.

V2G may contribute to the reliability of California's electric system. For example, electric school buses located at Cajon Valley Union School District have six V2G capable buses and six bidirectional DCFC that participated in San Diego Gas & Electric's demand response program called the Emergency Load Reduction Program. The school district earns revenue from using its electric school buses to support the grid and help avoid power outages.

Bidirectional DCFC must be approved for interconnection. California's interconnection procedure known as Rule 21 accommodates bidirectional DCFC for interconnection that meets the UL 1741 safety standard. Eventually, V2G with alternating current (AC) will be approved for interconnection where the inverter that converts the DC energy from a vehicle's battery to AC is located on the vehicle. CPUC is currently pursuing the development of V2G AC standards. At the time of writing, commercially available bidirectional chargers are limited.

<sup>59</sup> Resolution E-5247

<sup>60</sup> Decision (D.) 20-12-029 authorized the investor-owned utilities to spend up to \$35 million for VGI pilots, and \$10 million for pilots, demonstrations, emerging technologies, and studies.

<sup>61</sup> CPUC Resolution E-5165.

<sup>62</sup> For more information on California's V2G activities visit the California Public Utilities Commission Vehicle-Grid Integration Activities: <https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/infrastructure/transportation-electrification/vehicle-grid-integration-activities>

<sup>63</sup> PG&E's VGI pilots were approved via Resolution E-5192, CPUC is still reviewing SCE's proposed VGI pilots

of rules and responsibilities for all involved. It is important to clearly understand the specific steps that must be followed and potential pitfalls for a project and site as these can affect the budget and timeline. For example, if underground lines are being installed, easements must be attained by the developer. This can create a barrier if the site host is unwilling to provide an easement or lacks the legal authority to do so. Understanding these details up front can reduce project delays.

The scope and scale of energization differs based on the size of the project and the levels of charging involved. If a site already has excess electrical capacity, energization via a new service connection may not be required. However, this is not always the case. For example, even when a property appears to have adequate capacity, the utility may be required to update the drop lines to match the existing active service panel rating. If only Level 1 charging is planned and there are existing power outlets on-site that can be easily designated as Level 1 charging spaces, little to no electrical work will be required. However, an electrician may still be hired to examine and test the outlets prior to operation as charger outlets.

For DCFC projects, energization will be a more involved process and could include new conduit and wiring, a panel upgrade, and a transformer upgrade via a new service connection. Older buildings and parking lots may not have significant amounts of excess electrical capacity. At these locations, electrical upgrades are likely necessary. On the other hand, newer buildings are often built with excess capacity. A load study done by the local utility will reveal how much capacity is available.

In the best-case scenario, sufficient capacity will exist in both the electrical panel and the transformer to accommodate the addition of charging stations. There may be enough capacity in one but not another, necessitating a panel upgrade without a transformer upgrade or the other way around. A transformer upgrade could involve adding a new transformer or upgrading the existing transformer. This can be an expensive task, underscoring the importance of understanding a project's unique demands and needs—and communicating them to the utility—early in the process.<sup>64</sup>

California's three major investor-owned utilities (IOUs) each make capacity maps<sup>65</sup> publicly available on their websites. These maps show transmission and distribution lines as well as substations and give

information including hosting capacity and line capacity. While intended for wholesale generation customers looking for potential distributed energy resource projects, these maps can also be used to help station developers identify preliminary sites to discuss with the utility. These maps do not show service impacts, such as whether you can connect to an existing transformer or whether an upgrade will be needed, which could be useful in streamlining the EVSE deployment process. Further utility improvements to these maps with transformer locations, load, etc. may enable more economical site selection, more efficient use of grid infrastructure, and enhance energization timelines overall.

## Timeline for Communicating with Your Utility

As a rule of thumb, station developers should engage utilities as early in the process as feasible. Given the large amount of electrical load and extensive construction that can be involved, early engagement can shave weeks or months off a project timeline.

To expedite the process, station developers should get in contact with their utility to ensure they understand what components a utility will require for an application to be deemed complete. The IOUs state that many applications commonly sit in the construction phase for several months before they are deemed "construction-ready" because of an outstanding dependency such as an AHJ-issued permit.<sup>66</sup>

Each utility has different expectations and bandwidth to help walk station developers through the process. Some utilities are available to help with the site selection process, while others cannot provide timeline and cost estimates until a site is selected and secured. In the following sections of this part, we provide more information on how the process varies at different major utilities in the state, including Pacific Gas & Electric (PG&E), Southern California Edison (SCE), San Diego Gas & Electric (SDG&E), Los Angeles Department of Water and Power (LADWP), and Sacramento Municipal Utility District (SMUD). These five utilities (three investor-owned and two

<sup>64</sup> If the customer is taking service through the EV Infrastructure Rules 29/45, the individual customer will not have to pay for transformer installation costs as they will be covered by ratepayers.

<sup>65</sup> [PG&E](#); [SDG&E](#); [SCE](#).

<sup>66</sup> For more information, see the Joint Utility Advice Letter in Compliance with Ordering Paragraph 8 of Resolution E-5167 and Ordering Paragraph 8 of Resolution E-5168.

publicly-owned) are the most prominent in the state and represent the majority of California's population, although there are over 80 utilities that cover the whole of California's needs.<sup>67</sup>

## Major Utility Energization Processes

Each utility has a different energization process and will follow different intake, review, estimation, and construction processes. However, there are also many commonalities between them. Installing stations in multiple service territories, it is important to become familiar with the similarities and differences across the utilities. Steps in the energization process may include:

1. Station developer submits site inquiry
2. Utility performs preassessment/engineering study
3. Station developer reviews site feasibility study and submits all required information
4. Utility executes preliminary design
5. Station developer approves or declines preliminary design

6. Utility finalizes design and delivers contract to station developer
7. Utility creates and submits easement documents and AHJ permit requests
8. Station developer and utility complete pre-construction field meeting
9. Station developer delivers easement signatures and signed contracts to utilities and AHJ issues requested permit
10. Station developer completes all onsite work and applicable inspections
11. Utility schedules and completes civil construction work
12. Utility schedules and completes electric construction work

The figure below provides a visual journey map of the energization process for California's IOUs and illustrates how the responsibility for completing tasks shifts from the project applicant to the utility throughout the process.

The basic processes within a utility for installation of Level 2 and DCFCs are similar, with some additional

### EV Infrastructure Rules (AB 841)

The EV Infrastructure Rules serve as alternatives to Rule 16 for any customer installing separately metered EV charging, excluding single-family homes, which receive similar treatment based on exception to Rule 16. The IOUs will recover in rates most of the utility-side costs associated with upgrades for EV charging installations, covering the costs of service line extensions and electrical distribution infrastructure.

The establishment of the EV Infrastructure Rules signals a major policy shift in transportation electrification (TE), as the new approach incorporates utility-side TE investment into the IOUs' general rate case proceedings rather than individual program applications. Additionally, for separately metered EV charging installed outside of IOU TE programs, these Rules will allow customers to cover less of the associated utility-side costs.

The IOUs began offering service under the EV Infrastructure Rules in mid-2022,

and the IOUs will begin reporting data from implementation in their EV Cost and Load report submitted in 2023.

- [PG&E's Electric Rule 29](#)
- [SCE's Electric Rule 29](#)
- [SDG&E's Electric Rule 45](#)
- [BVES Electric Rule 24](#)
- [Liberty Electric Rule 24](#)
- [PacifiCorp Rule 24](#)

<sup>67</sup> This includes investor-owned utilities, electric load serving entities (including publicly-owned utilities), rural electric cooperatives, and community choice aggregators. See CEC's [Electric Load Serving Entities \(LSEs\) in California](#).

# General EV Customer/IOU Journey Map

\* Process varies by IOU

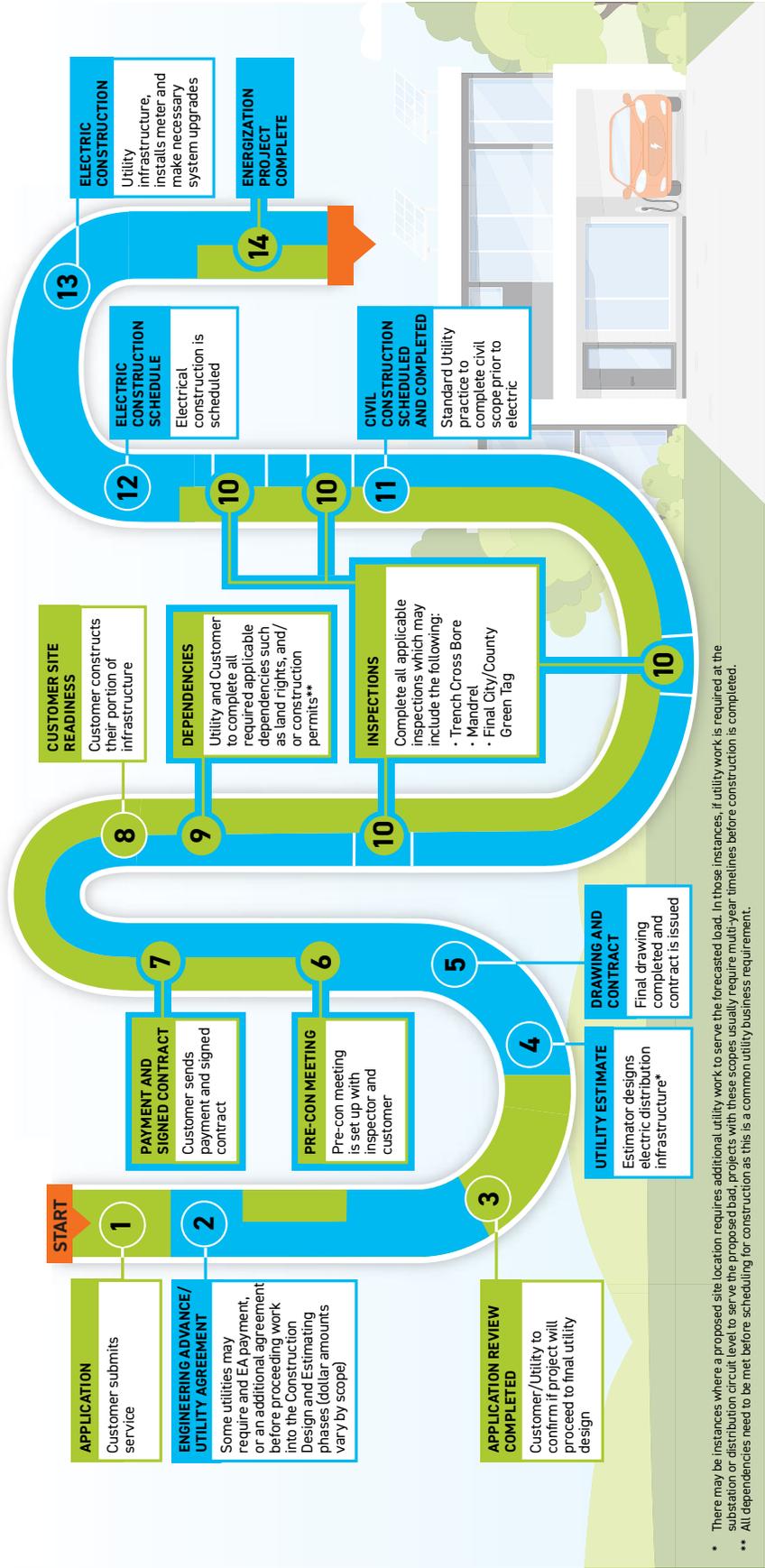


## APPLICATION READINESS

- Do I have specific location identified?
- Do I have the information and documents required, such as
  - Forecasted load/charge cut sheets
  - Site plans with all utilities identified (gas/water/sewer/phone, etc);
  - Single line diagrams
  - Existing easements
  - Landscaping/drainage

## KEYS TO SUCCESS

- Understand applicable Utility Standards and Processes
- Open communication with jurisdictional authorities
- Project support from site host or landlord



\* There may be instances where a proposed site location requires additional utility work to serve the forecasted load. In those instances, if utility work is required at the substation or distribution circuit level to serve the proposed load, projects with these scopes usually require multi-year timelines before construction is completed.  
\*\* All dependencies need to be met before scheduling for construction as this is a common utility business requirement.

requirements and longer timelines for DCFC projects since they tend to be more complex, including demanding more power. In the following sections, process differences between Level 2 and DCFCs are delineated where possible.

## Pacific Gas & Electric

Pacific Gas and Electric Company (PG&E) has established dedicated resources to support project coordination and construction for new, non-residential EV charging infrastructure projects across its service territory. Customers apply for service online using the "[Your Projects](#)" portal and specify that the project is for EV charging to ensure that the application(s) are routed efficiently to the EV team for further coordination support.

PG&E has also developed an "[EV Customer Road Map](#)" that is available online to help customers understand end-to-end process and general timelines. This resource includes links to important supporting documents to facilitate overall project success for customers such as:

- Commercial EV Site Requirements List
- Construction Best Practices
- Frequently Asked Questions

In addition, once a customer applies for service, the EV team is prepared to provide additional phone consultation support where necessary to ensure that customers understand existing utility processes and procedures.

PG&E currently offers two EV rate plans for residential customers and two EV rate plans for business customers with on-site EV charging:

- [Residential EV rates](#)
- [Non-residential EV rates](#)

## Southern California Edison

Southern California Edison (SCE) has a dedicated electric vehicle connection team, the Transportation Electrification Project Management team, that manages customers submitting requests throughout the service territory. This team acts as the single point of contact for multi-site EV developers including government entities, fleets, and third-party EV developers. SCE estimates an average 4–6 months for engineering review and planning once the customer has delivered a complete submittal to SCE. Customer construction timelines will vary based on project

scope. Engineering technical review can be the most time-intensive part of the process.

The SCE process for developers, fleets, and other multi-site EV projects is described on their [New Development Project Management](#) page. This page has a wealth of information, many FAQs, and all of the forms needed to apply for service or upgrades to existing service extensions. Station developers are encouraged to refer to them when pursuing projects in SCE service territory.

In addition to streamlining EV service requests, SCE offers multiple "[Charge Ready](#)" programs to support EV charging, as well as [Transportation Electrification Advisory Services](#) to support eligible business and property owners in preparing for the potential deployment of electric vehicle charging equipment at their commercial business locations or multifamily properties. SCE's Transportation Electrification Advisory Services include educational webinars, EV readiness studies, grant assistance, and other tools and resources.

SCE also offers different rate options based on EV charging demands. Access to these rates depends on how stations are metered and is something station developers and site hosts should take into consideration when designing a project:

- For stations metered together with the existing facility load, SCE offers their full range of Time-Of-Use (TOU) rates depending on maximum facility demand.
- For separately metered stations, SCE offers [TOU-EV rates](#) for business customers charging electric vehicles.

[SCE offers a Business Rate Analysis Tool](#) to help some business owners estimate their annual rates under different TOU plans. The tool currently only supports Level 1 and Level 2 charging installations at multi-unit dwellings or workplaces.

## San Diego Gas & Electric

San Diego Gas & Electric (SDG&E) assigns grid connection projects to a geographically close planner who already has familiarity with the area. The planner will gather information on the size of the job and look at their service maps to see whether enough power will be available for the project.

If a station developer is planning to develop a network of sites, or multiple similar sites, they can work with one of the design firms with whom SDG&E

contracts to ensure more consistency and efficiency than if each site were assigned a different regional staff planner. This list is dynamic and updated frequently. Station developers can access the latest version of the list from the SDG&E [Project Resources](#) webpage, under Design Resources.

After this stage, planners are available to perform a site walk with the customer. SDG&E highly recommends the site walk, which often leads to fruitful conversations and highlights opportunities to slightly modify the plans to save money on grid connection costs. After the site walk, the planner will perform additional technical work, as required, such as conducting a fusing study, verifying connections in electrical vaults, and studying the electrical mapping system. This goes into designing the utility portion of the job which concludes in issuing a service order to the station developer with details and instructions for the contractor.

The service order will include a fee for the utility's work. An allowance based on anticipated ratepayer recovery over the first year of station operation will be applied to the fee to reduce it.<sup>68</sup> This may result in no fee being charged due to the station developer and the utility bearing the full construction cost. In larger jobs, the station owner will pay the balance of the fee.

The customer is responsible for laying all conduit from the transformer to the meter pedestal, as well as connecting the pedestal to the station or stations. SDG&E is responsible for placing wire in the empty conduit between the meter pedestal and the transformer and for placing the meter into the socket. SDG&E may require that their trench inspectors review any trenching before the trenching can be refilled and paved.<sup>69</sup>

After construction is complete, an SDG&E crew will visit the site, make transformer upgrades as needed, put wire through the conduit, connect the transformer to the meter pedestal, and set the meter, energizing the new service. After this point, the station developer can turn on the equipment and begin the commissioning process.

To minimize costs, SDG&E recommends several proactive steps. Early engagement is key, although a customer will likely not be referred to a planner for a more detailed estimate until a project is reasonably planned out. Trenching, which can easily account for two-thirds of costs, should be minimized. Trenching through concrete is typically the most expensive, then trenching through asphalt, then through landscaping. Finally, SDG&E recommends taking a site walk with

the assigned planner to discuss the particularities of the site and identify ways to reduce costs.

SDG&E anticipates about 14 weeks to deliver a service order with all information on the work that will be necessary.

More information is available on the SDG&E [Builder Services webpage](#).

## Los Angeles Department of Water and Power

Los Angeles Department of Water and Power (LADWP) is the largest municipal water and power utility in the nation, providing service to 1.4 million electric customers in the region. The territory is broken into three service areas: Valley Service Planning, Metro West Service Planning, and Metro East Service Planning.

LADWP has a dedicated EV Service Design Group that handles all EV charger project installation requests. Typically, the developer/installer completes the [Commercial EV Charging Plan Review Form](#) and provides complete plot plans and/or site plans, building profile and/or elevation plans, one line electrical diagram, load schedule and [Service Planning Information Sheet](#). The developer/installer must submit a complete submittal package to LADWP to proceed with engineering review and design work. LADWP will then review the submittal and analyze the distribution system capacity available to serve the new load and provides an adequate facilities letter or if upgrades are required a service planning engineer will provide a cost estimate and duration for the required upgrades to be completed. When new EV loads are associated with larger scale projects such as new residential or commercial buildings, these projects will be handled by LADWP's standard Service Planning groups. Developers can use "[Find The Right Person](#)" to find the appropriate service planner and office to submit these jobs.

The design process for Level 2 and DC fast chargers is the same, with timelines typically longer for DC fast charger projects. DC fast charger projects also include a customer commitment/requirement plan (the plan delineates work to be completed by the developer and LADWP). The typical design timeline

<sup>68</sup> For Rules 15/16; not applicable to Rule 45.

<sup>69</sup> Only applicable to Rule 16. Under Rule 45, IOUs will be responsible for poles, vaults, service drops, transformers, mounting pads, trenching, conduit, wire, cable, meters, associated engineering and civil construction work, and other equipment.

for this portion of the project is approximately 18 weeks or more depending on the size and complexity of the project. Construction timelines will vary once the customer and utility scope are determined. A Service Planning Engineer can provide the latest trending timelines. For new or existing services requiring conduit work, transformer work, or street resurfacing on public property, charges may be incurred. The Service Planning Engineer will calculate projected charges based on the submitted plans.

LADWP also offers a feasibility study for the potential project site that provides cost estimates of new or upgraded installations, without having to submit detailed engineering drawings and plans. There is a non-refundable \$1,500 fee that is credited toward the final cost of the project.

The developer is responsible for scheduling a pre-construction meeting to review the service design, discuss inspection requirements, confirm the next steps to complete the installation, and sign any necessary documents. The developer is also responsible for obtaining required [permits](#) and final electrical approval from the [Los Angeles Department of Building and Safety \(LADBS\)](#) and installing electric service infrastructure as detailed in the service design.

Once the installation of the electrical service infrastructure is completed, the developer arranges final inspections by LADBS and LADWP and completes payment of service installations costs. LADWP then schedules crews to install the remaining electrical equipment and cables and energize the projects (typically 6–8 weeks lead time).

To save time and money, LADWP recommends beginning this process early, prior to selecting the final site and signing agreements with the site host. Developers should be aware that LADWP has a one-site, one-service policy that can affect project designs and costs. Exceptions may be made and are considered by LADWP on a case-by-case basis.

More information on EV charger installation is available on LADWP's [general EV programs website](#).

## Sacramento Municipal Utility District

Sacramento Municipal Utility District (SMUD) is one of the ten largest publicly-owned utilities in the United States, providing electricity to Sacramento County and a small portion of adjacent Placer County.

SMUD has a dedicated team for grid connection projects in its territory. EV charging customers can

request a basic evaluation by SMUD of one or more sites under consideration to identify potential issues or pitfalls and help the project developer make a more informed site selection decision.

Once the site is selected, the developer submits an application with a site diagram, estimated power draw, and a \$5,000 deposit (this is later applied to project construction costs). A Line Designer is assigned to the project and begins to create a "commitment drawing." This portion of the project usually takes approximately 60 days. The applicant is then responsible for adding their portion of the infrastructure to the drawing – conduits, boxes, subsurface infrastructure – and ensuring entitlements and other permit requirements are received. Once the developer-installed infrastructure is complete, the applicant and SMUD execute the final contract and the applicant pays the grid connection project costs in full. SMUD typically has a 4-to-6-week minimum lead time once the project is ready to move forward with construction. The entire process, from applying to having the grid connection complete, is approximately 4-6 months, assuming there are no hold-ups on the project developer side.

To minimize costs and project delays, the SMUD team recommends engaging with them early in the process and utilizing the site "due diligence" service. The [SMUD Interconnection Information](#) page outlines the interconnection process, and provides guidelines, applications forms, and other helpful information.

## Opportunities to Streamline the Energization Process

California's major utilities have been trailblazers in bringing charging infrastructure to the state. As the market for charging continues to grow, utilities can continue to take leadership by addressing barriers to station development and providing transparent information about their processes and timelines. Utilities should also strive to connect customers with the best rate options for each situation. Below are specific recommendations to streamline the process and provide greater transparency for all parties:

**Timeline Transparency:** A lack of understanding of the timeline to add new electrical service can doom a project and frustrate the station developer and AHJ involved. By providing timely and realistic estimates of the timeline and cost estimates to develop a site and complete construction, utilities can help station developers plan and develop projects as planned.

Equally important is meeting those timelines in a realistic manner. In December 2022, the CPUC established a 125-business days service energization average timeline that the utilities must meet, starting from when a customer submits an application for service through the EV Infrastructure Rules to the energization of the EVSE. The timeline includes 25-business days for the AHJ permit process.<sup>70</sup>

**Dedicated Team for Plug-In Electric Vehicles:** Utilities can benefit from establishing a dedicated design and project management team for EV projects. These teams should be equipped with technical expertise, familiar with the nuances of EV infrastructure deployment, and can serve as a single point of contact for EV infrastructure requests. Incorporating expert review into the process can help speed up the process for everyone. Moreover, a dedicated team can ensure coordination is happening between utility departments and with external utility contractors, vendors or AHJs. Utilities should assess whether they need additional staff resources to help support increased EV charging project applications in the near term and future. Staffing should also be evaluated in the context of construction crews and whether additional resources are needed.

**Clear Understanding of Roles and Responsibilities:** It is not always clear to station developers the delineation of energization responsibilities between the utility and the station developer. Providing clear and up-front guidance is helpful and allows station developers to better plan and reduce the potential back-and-forth between the utility and developer. During the process, utilizing online portals or tools can help with project transparency and facilitate the handoff of responsibilities between the station developer and utility.<sup>71</sup>

**Property Ownership:** In situations where the station developer is not the landowner, it is important for the station developer to complete their planning and negotiating with the property owner up front. The station developer should have the authority to execute real property contracts so that they can make any needed design adjustments.

**Minimize Easement Footprints:** IOUs have the responsibility to site utility-side infrastructure along the shortest, cheapest, most practical route. The utilities should—to the degree they are able—incorporate into their processes ways to minimize the real estate required for easements. For example, PG&E has implemented a lease in lieu of easement to help streamline the process.<sup>72</sup> Easements can

be problematic for property owners as they limit potential future development of the site for other purposes and may hinder a sale if the buyer has concerns.

**Proximity to Power Supply:** Minimizing the distance from the utility system tie-in can reduce the cost of both material and construction. Contractors working on behalf of developers generally make suggestions on where to place transformers to achieve this goal and also minimize the easement impacts of utility connections. Working closely with developers and utilities ahead of time can help achieve this goal.

**Thorough Pre-Application Discovery:** Establishing the readily available power at a site or nearby transformer is essential to understand what type and size of project can be built without major upgrades. Utilities should provide this information early in the process (e.g., before detailed site plans are completed) to enable station developers to explore possible sites and, when appropriate, adapt site sizing and layout to minimize utility costs.

**Collaborate to Plan and Prepare to Meet Installation Demand:** AHJs can share information about the number of installations under review and when they are likely to be approved given AB 970 timelines. This can help utilities start their processes before AHJ approval so they can get the right resources in place to minimize the time between permit approval and energization. Fleets can also communicate plans for infrastructure and electrification geographically to help utilities plan power capacity and upgrades needed to meet demand before receiving project applications.

**Utility Equipment and Resource Availability:** In addition to all the customer-side design and equipment that must be procured, utilities may or may not need to procure utility-side equipment. Fulfillment and delivery of equipment orders is a part of project timelines, hence early communication

<sup>70</sup> The average timeline excludes projects with a capacity exceeding two-megawatts (MW), projects that need distribution line upgrades via Electric Rule 15, and projects requiring substation upgrades. For more information see [Resolution E-5247](#).

<sup>71</sup> PowerClerk for example helped to streamline interconnection of rooftop solar.

<sup>72</sup> PG&E provides pre-approved easement language to customers to avoid any potential delays in securing land rights, which is recognized as a model easement process.

with the utility is key to minimizing lead time. Other influences outside the utility's control can impact equipment availability, such as the supply chain disruptions witnessed during the COVID-19 pandemic.

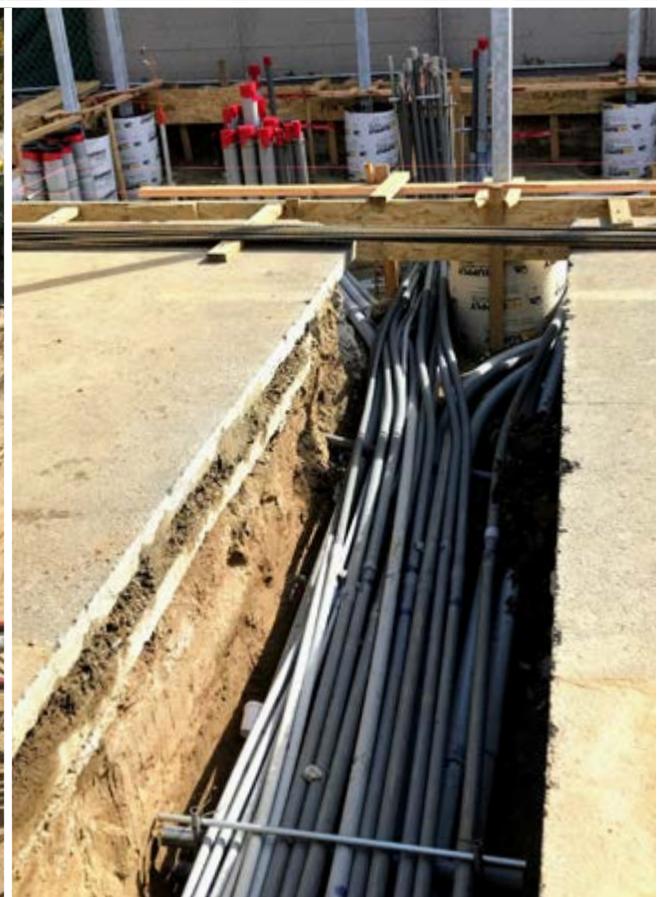
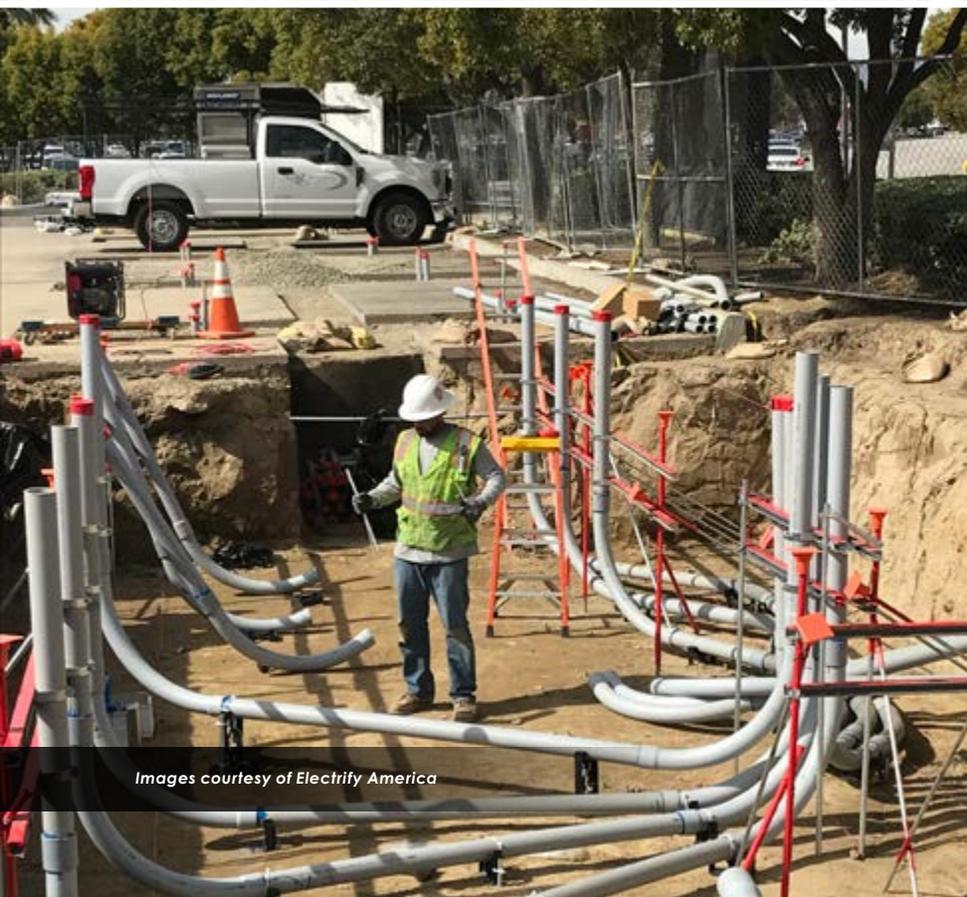
**Application Checklist:** Providing a checklist with information about what is required to apply for energization, which is available to station developers online, can help ensure submittal of complete applications. To further streamline the process, the utilities could work to create a standardized checklist utilized across California's major utilities.

**Standardized Review Within Utility:** Station developers have reported inconsistency in feedback from different project managers within the same utility, which can prolong the approval process, adding significant time and confusion. Utilities can help to standardize the review process, guidance, and feedback among their project managers.

**Assigning Consistent Premise Addresses:** Addressing requirements differ by jurisdiction, which is a significant challenge for EV charging projects. The utilities may work to encourage standard addressing templates.



Image courtesy of FLO



Images courtesy of Electrify America

## PART 06:

# Construction, Commissioning, and Operation

In this section, we explore the typical review junctures for a charging station permit and how these junctures vary based on jurisdiction or charging station size and discuss key steps station developers should be aware of in the commissioning and operating process.

## Construction, Installation, and Review

After permits are issued and installation of the charger is complete, an inspection is required to receive approval to operate the station. Typically, building inspectors can be scheduled within 48 hours of the end of construction and installation. The building inspector will ensure proper charger installation, code compliant electrical work, and that construction is in line with the permit granted by the building department. If the charger is not constructed and installed in accordance with the granted permit, the building inspector will request changes to the installation before final approval is given. Any changes at this point should be limited to essential health and safety alterations.

The building inspector evaluates the site to determine whether the station passes key tests such as secure mounting and fastening, the presence and function of disconnect switches if applicable, adequate space and protection from collision, proper identification and rating of all equipment, and other factors.

### To ease the review process, AHJs should:

- Develop and share a concise review checklist that gives permit applicants a clear view into what aspects of the charging installation will be inspected before final approval <sup>73</sup>

- Clearly communicate what documents should be brought to the inspection and who needs to be present
- Employ, or contract with, certified electrical plan reviewers and inspectors <sup>74</sup>
- Allow for the option of inspections to be done without the project electrician present, saving significant labor costs for the station developer by not having to pay the electrician for idle time during the entire inspection window



<sup>73</sup> Another recommendation is for AHJ plan checkers to approve developer-specific “templates” or “master plans.” They no longer would need to comb through details of a site, but simply check to make sure the template matches the template their manager approved.

<sup>74</sup> Within the renewable energy space (photovoltaics, energy storage systems, and EVCS), underqualified inspectors can create avoidable confusion and delays. AHJs should ensure they send qualified inspectors that are familiar with these types of projects to ensure timely inspections.

Some station developers report working with building inspectors who have a substantially different interpretation of the state building code accessibility regulations than the building official who approved the permit. These discrepancies in review may delay the project significantly and lead to costly work to reach compliance. AHJs should harmonize interpretations across staff and divisions as much as possible and provide clear mechanisms for reconciling disparate interpretations. Any concern or disagreement about accessibility regulations should be resolved prior to permit issuance and the start of construction.

Before a charging station can be commissioned and opened to the public, the station developer also needs to coordinate a final inspection with the utility. An inspector from the utility will evaluate the site and ensure the conduit is complete, the structures are set and backfilled, the bollards are secure, the switchgear is installed properly, among other factors. Ideally, there will be close coordination between the utility and building department regarding on-site inspections, with inspections from both happening simultaneously or in close parallel. The station cannot be turned on until approved by both parties. Especially in AHJs with municipal utilities where the opportunity for collaboration is greater, AHJs should maintain open lines of communication with the local utility and work to align their inspections whenever possible.

## Commissioning and Operation

After construction and review and before activating the station for operation, stations go through a brief commissioning process that typically takes a few hours (two days at most). For 120-volt or 240-volt outlets, commissioning should merely involve a quick confirmation that electricity flows through the outlet. With higher levels of charging, commissioning includes confirming all electrical components and connectors are working and securely connected, verifying cellular connectivity if applicable, conducting torque checks, ensuring all covers are attached, and other steps as applicable. For sites requiring new electrical service that is not completed at the time of station installation, some or all of this review may wait until all electrical work is finished. Depending on the electric vehicle supply equipment manufacturer involved, this review and commissioning may be performed either by a contractor from the manufacturer or by the contractor hired by the site host.

Station developers should plan for long-term operations and maintenance as well as public safety considerations. For public or shared charging, station developers should have a plan for dealing with potential vandalism or collision.

## Increasing Access to Public Charging

Station operators should be aware of the EVSE Standards Regulation requirements adopted by the California Air Resources Board in 2019 to implement the Electric Vehicle Charging Stations Open Access Act (Statutes of 2013, Chapter 418). The regulation is for open payment and price notifications, so membership to an Electric Vehicle Service Provider (EVSP) is not a requirement for drivers. Key requirements include:

- On-site pricing disclosure before a driver uses the charger <sup>75</sup>
- Public EVSE or kiosk on site must accept payment using chip-enabled credit cards and contactless payment for mobile payment methods
- The display of federal standardized power information
- Interoperable billing standard on networked stations
- Station location information reporting to the federal Alternative Fuel Data Center

Compliance requirements for payment hardware, roaming standards, display of fees, labeling, and reporting will phase in over a multi-year timeline starting in 2021 for new charging stations.<sup>76</sup> This is not required for electric vehicle charging equipment provided at a private residence, reserved for the exclusive use of an individual driver, vehicle, or group

<sup>75</sup> Neither the Open Access Act nor CARB's implementing regulations require a screen on the EVSE, but pricing information must be disclosed to the consumer prior to the transaction start which could include a placard or sticker in the absence of a screen. This differs from the requirements of the Division of Measurements and Standards (DMS) Electric Vehicle Supply Equipment Regulation (see section on Weights and Measures Certification). Per DMS' EVSE Regulation, devices are required to display for 15 second intervals the continuous aggregation of energy being dispensed. Many devices, if not all, do display a current rate of energy transfer, but this is not a requirement. The device must be labeled to identify its optimal energy transfer (e.g., 12.5kW AC, 75kW DC, etc.), but the rate of energy transfer during any particular time of a transaction is not a requirement. The transaction receipt is also required to provide the maximum rate of energy transfer and type of current (AC or DC).

<sup>76</sup> See CARB's [EVSE Standards Regulation Background and FAQs](#), for more details on the regulation timeline, requirements, and penalties.

of drivers or vehicles, such as employees, or as a service by the producer of electric vehicles.

## Weights and Measures Certification

The California Department of Food and Agriculture (CDFA), Division of Measurement Standards (DMS), is responsible for the enforcement of California weights and measures laws and regulations. In the context of electric vehicle charging, DMS' programs are organized to ensure that a kilowatt hour (kWh) dispensed in a commercial retail environment equals a kilowatt hour received. This helps ensure fair competition for industry and accurate value comparison for consumers.

In April 2020, CDFA adopted the Electric Vehicle Supply Equipment Regulation, making EVSE device standards and requirements from the National Institute of Standards and Technology Handbook 44 enforceable in California.<sup>77</sup> All new commercial alternating current (AC) EVSE installed on or after January 1, 2021 are fully subject to the regulation and new commercial direct current fast charger EVSE installed on or after January 1, 2023 are fully subject to the regulation.<sup>78,79</sup> DMS has posted Frequently Asked Questions about the 2020 Electric Vehicle Supply Equipment Regulation on its [Zero-Emission Vehicle Projects](#) webpage.

In April 2021, DMS adopted regulations establishing the first-ever inspection frequencies for the oversight of EVSE (i.e., biennially), allowing state and local officials to determine whether the device is labeled and dispensing fuel correctly and whether the business is adhering to the officially adopted method of sale and unit prices. State and county officials have already begun inspecting and testing EVSE used for commercial purposes. Since the EVSE regulations became effective in January 2021, county officials are quickly ramping up their efforts to inspect the ever-increasing number of charging stations.

Readers are encouraged to track DMS's [website](#) for updates on the regulation and its implementation.

## Signs

When advertising the presence of a station, chargers that are accessible to the public 16 or more hours per day and located within three miles driving distance of a state highway interchange are eligible for free highway signage, providing the local jurisdiction places directional signage, if necessary, from the freeway to the site (also known as trailblazer signs) on the local streets and roadways. Refer to the

[Zero-Emission Vehicle Station Sign Installation Guide](#) for more information. Additional details on signage requirements can be found in Chapter 21 of the [California Manual on Uniform Traffic Control Devices \(CA MUTCD\)](#).

Encroachment permits and installation costs for trailblazer signs are the responsibility of the station developer. However, the purchase and installation of highway signage will be covered by Caltrans at no cost to the station developer.



Image courtesy of Adopt a Charger

<sup>77</sup> The EVSE regulation comprises requirements in NIST Handbook 44, Section 3.40, with adopted exceptions and additions. For more information, see [Final Regulation Endorsed and Filed with the Secretary of State](#) and [Final Statement of Reasons](#).

<sup>78</sup> All commercial AC EVSE installed prior to January 1, 2021 may continue in operation, as is, but must comply with the regulation by January 1, 2031. All commercial DCFC EVSE installed prior to January 1, 2023 may continue in operation, as is, but must comply with the regulation by January 1, 2033.

<sup>79</sup> The following EVSE are not subject to the regulation: 1) EVSE wholly owned and operated by public utilities, public entities, and municipalities; 2) EVSE which are not used for commercial purposes; e.g., EVSE used for residential or workplace charging exclusively used by employees; 3) EVSE that dispense electricity as motor vehicle fuel at no cost to the consumer; and 4) EVSE that deliver wholesale electricity.

Image courtesy of EVgo



## PART 07:

# Looking Forward

The State of California is firmly committed to the success of zero-emission vehicles. Too much is at stake to fail. Regions of California suffer from the worst air quality in the nation and the transportation sector continues to be the largest source of our greenhouse gas emissions. While the state can write laws, set targets, and dedicate staff to the cause, the mission to replace internal combustion vehicles with zero-emission vehicles will only be achieved with focus at the local level—deploying groups of stations and vehicles community by community.

Ultimately, it takes local leadership to scale zero-emission vehicles across the state. Ideally, ZEV initiatives will have strong support from city or county leadership—but to get started, they do not have to. Station developers report that some of the best cities and counties to work with are those with dedicated front-line staff pushing from the bottom up. To date, one of the best predictors of an easy permitting process is whether city staff drive zero-emission vehicles. If they do, projects tend to be extremely welcome, and the city is more likely to have engaged in planning to help enable ZEV deployment. These drivers understand—firsthand—the importance of infrastructure.

This local leadership is crucial for a host of reasons. Nobody knows a city or county's permitting processes, constraints, and opportunities like city and county staff. They know how to avoid red flags and streamline processes. Cities and counties willing to work with station developers to streamline processes create opportunities for statewide improvement. A process breakthrough in one city can open the door for improvement in another. This local momentum often turns into regional momentum, which feeds

state momentum, and leads to national momentum, all of which benefits our shared resources—natural and man-made.

GO-Biz intends for this Guidebook to serve as the continuation of an intentional effort for ongoing ZEV infrastructure development improvement, not the end of a process. With the help of local leaders and station developers, we will be collecting and sharing lessons learned, instructive case studies, and actively reaching out to communities that are on their way to creating a robust electric vehicle charging station permit approval process.

If you have insights or ideas that can help improve station deployment processes, please share them with the GO-Biz ZEV team ([zev@gobiz.ca.gov](mailto:zev@gobiz.ca.gov)) and anyone who has a role to play in the station development process. The keys to success are in our hands.

## PART 08:

# Definitions and Additional Resources

## Key Terms and Definitions

**Accessibility:** Under the federal Americans with Disabilities Act (ADA), most public accommodations are required to meet federal regulations ensuring equitable use of services by people with disabilities. Requirements cover the layout and design of physical space and components, design elements and signage, visual and auditory cues, and more. In California, the California Building Code (CBC) and the California Green Building Code (CALGreen) regulate accessibility for most public charging stations.

**Authority having jurisdiction (AHJ):** The local entity, usually the city or county, that has planning and building authority over a specific site.

**Charging management:** Also known as load balancing. Charging management describes a set of hardware and software tools that can intelligently throttle the amount of electricity going to charging stations to charge more vehicles with less electrical capacity. If many vehicles are plugged in at once, charging management can be used to proportionately decrease the charging speed of one or more of the vehicles in real time, so that more cars can be charged without having to significantly expand electrical capacity. On-site battery storage can also be used to minimize grid impacts and avoid having to upgrade utility electric supply.

**DC fast charging (DCFC):** Direct current fast charging, the fastest charging currently available. DCFCs currently range from 50 kilowatt (kW) up to 350kW, adding about 3 to 20 miles per minute, depending

on the charger speed and state of charge of the battery. Most PHEVs, and some lower-range BEVs are not equipped with DCFC ports.

**Demand charge:** The charge from a utility that corresponds to the peak energy transfer rate over a given period of time.

**Electric vehicle charging station (EVCS):** One or more electric vehicle charging spaces served by an electric vehicle charger or other charging equipment. Where a multiport electric vehicle charger can simultaneously charge more than one vehicle, the number of electric vehicle charging stations shall be considered equivalent to the number of electric vehicles that can be simultaneously charged.

**Electric vehicle supply equipment (EVSE):** The hardware, including connectors, fixtures, devices, and other components required to charge an electric vehicle.

**Level 1 charging:** The slowest charging speed, adding 3-5 miles of range per hour of charging. Level 1 charging is the equivalent of plugging into an everyday outlet and is typically used where a car will be parked for a long period of time, such as overnight while the driver is sleeping or at the workplace.

**Level 2 charging:** A medium charging speed 14-35 miles of range per hour of charging. Level 2 charging is the equivalent of plugging into a dryer or other large appliance outlet.

**Light, medium, and heavy-duty:** These are vehicle classifications based on the weight and engine of a vehicle. Light-duty vehicles include most passenger

vehicles. Medium-duty vehicles include buses and forklifts. Heavy-duty include the heaviest trucks and trailers.

**Station developer:** A public or private entity that develops charging stations, often a station development company, manufacturer of electric vehicle supply equipment, investor-owned or publicly-owned utility, automaker, nonprofit, or other interested party. Station developers have a variety of business models, with some engaging in every step of the development process and owning and operating their stations, while others only engage in parts of the process.

**Zero-emission vehicle (ZEV):** A zero-emission vehicle is any type of vehicle that has no tailpipe emissions. These cars run on electric motors and are powered by electricity delivered from batteries or hydrogen and fuel cells. In contrast to conventional internal combustion vehicles, ZEVs prevent air pollution, lower greenhouse gas emissions, and help integrate renewable energy into the transportation sector.

# ZEV Readiness Scorecard

The Governor's Office of Business and Economic Development has established a Plug-in Electric Vehicle Charging Station Readiness landing page (<https://business.ca.gov/industries/zero-emission-vehicles/plug-in-readiness/>) that will be used to track station development streamlining, resulting in a shared resource of best practices, ordinances, and checklists. GO-Biz anticipates that the ZEV Readiness page will evolve and improve through time with stakeholder participation and feedback.<sup>80</sup>

# Permitting

The below "Permitting Electric Vehicle Charging Stations Scorecard" serves as the foundation for assessing statewide compliance with California's electric vehicle charging station permit streamlining law (AB 1236 and AB 970). Communities do not need to create ordinances and checklists from scratch. California Building Officials (CALBO) offer [AB 1236 compliance toolkits for both small and large jurisdictions](#). These toolkits include model ordinance templates, adoption timelines, and supporting staff reports, as well as a sample permitting checklist.<sup>81</sup>

**Permitting Electric Vehicle Charging Stations Scorecard: All cities and counties, including charter cities, in California are required to comply with AB 1236 (Chiu, 2015) and AB 970 (McCarty, 2021).**

Scoring Criteria:	Complete If:
<p><b>1. Streamlining Ordinance</b> Ordinance creating an expedited, streamlined permitting process for electric vehicle charging stations (EVCS) including Level 2 and direct current fast chargers (DCFC) has been adopted.</p>	Streamlining ordinance has been adopted
<p><b>2. Permitting checklists covering L2 and DCFC</b> Checklist of all requirements needed for expedited review posted on city or county website.</p>	Permitting checklist is available and easily found on city or county website
<p><b>3. Administrative approval of EVCS</b> EVCS projects that meet expedited checklist are administratively approved through building or similar non-discretionary permit.</p>	The streamlining ordinance states that permit applications that meet checklist requirements will be approved through non-discretionary permit (or similar)
<p><b>4. Approval limited to health and safety review</b> EVCS project review limited to health and safety requirements found under local, state, and federal law.</p>	The streamlining ordinance states that no discretionary use permit is required and permit approval will be limited to health and safety review
<p><b>5. Electronic signatures accepted</b> AHJ accepts electronic signatures on permit applications.*</p>	Electronic signatures accepted on City or County website (usually specified in the ordinance)
<p><b>6. EVCS not subject to association approval</b> EVCS permit approval not subject to approval of an association (as defined in <a href="#">Section 4080 of the Civil Code</a>).</p>	The streamlining ordinance states that EVCS permits do not require association approval
<p><b>7. One complete deficiency notice</b> AHJ commits to issuing one complete written correction notice detailing all deficiencies in an incomplete application and any additional information needed to be eligible for expedited permit issuance.</p>	The streamlining ordinance dictates that a written correction notices must detail all deficiencies

\* If a city or county determines it is unable to accept electronic signatures on all forms, the permit streamlining ordinance shall state the reasons.

<sup>80</sup> Please send information and feedback to [zev@gobiz.ca.gov](mailto:zev@gobiz.ca.gov).

<sup>81</sup> Note: at the time of publication of this document, CALBO's sample permitting checklist resides only in the small jurisdiction toolkit.

Furthermore, the [GO-Biz Permit Streamlining Map](#) acts as a repository of streamlining ordinances and checklists of jurisdictions throughout California. The included information and links can assist cities and counties in crafting ordinance and checklists to become EVCS Permit Ready (and compliant with AB 1236 and AB 970).

**AB 970 timelines:**

AHJs are required to meet the EVSE permit review and approval timelines established by AB 970:

- **Projects with 1-25 stations**—5 business days to deem an application complete or incomplete. 20 business days to approve/deny the project after administrative review limited to health and safety. The project will be deemed approved if no action is taken within these timelines.
- **Projects with 26 or more stations**—10 business days to deem an application complete or incomplete. 40 business days to approve/deny the project after administrative review that is limited to health and safety. The project will be deemed approved if no action is taken within these timelines.

**AB 970 implementation dates:**

- January 1, 2022 for cities/counties above 200,000 residents.
- January 1, 2023 for cities/counties below 200,000 residents.

**How scoring works:**

Cities and counties that meet at least 6 of the first 7 checklist criteria will be highlighted as streamlined “EVCS Permit Ready” if the missing criteria does not have a negative impact in practice. Jurisdictions must have a checklist posted online (criteria 2) covering both residential and commercial projects in order to be considered streamlined “EVCS Permit Ready.” The checklist (criteria 2) cannot be considered the one missing criteria. All criteria must be verifiable in ordinances, checklists or EVCS permitting webpages.

Prior to AB 970 (2021), local jurisdictions received a bonus point for committing to expedited timelines. All cities and counties are now required to meet the mandatory timelines established by AB 970 and will no longer receive a bonus point. However, GO-Biz will look to develop a way to highlight jurisdictions that move faster than the required timelines described above.

Grading is based on relevant ordinances, checklists, and stakeholder feedback. It is important to note that the intent of this tool is to assess permit streamlining from a holistic perspective. While AB 1236 and AB 970 guides the assessment, this effort is not intended to determine compliance with both laws.

EVCS Permit Ready Score:	
	<b>Green:</b> City or County is EVCS Permit Ready, charging infrastructure permitting is streamlined
	<b>Yellow:</b> City or County EVCS permit streamlining is in progress, or partially complete
	<b>Red:</b> City or County is not streamlined for EVCS permitting

# Electric Vehicle Charging Station Streamlining All-Star Checklist

The following checklists provide a series of questions that various stakeholders can ask to help ensure streamlining of the electric vehicle charging station deployment system. Each of the questions is anchored in the Guidebook text with sections included for reference.

## Planning for Zero-Emission Vehicles

A Checklist for Authorities Having Jurisdiction (AHJs – usually a city or county)

- Are ZEVs, and charging and fueling needs, incorporated within documents such as the general plan, capital improvement plan, climate action plan, and design guidelines? (Planning for Charging Growth)
- Has the AHJ participated in the development and implementation of a regional ZEV readiness plan? (Planning for Charging Growth)
- Has the AHJ established by ordinance, zoning code or bulletin that electric vehicle charging spaces count as one or more parking spaces for zoning purposes? (Parking Stall Requirements and Charger Installation)
- Has the AHJ adopted voluntary reach building codes for EV charging? (Advancing Infrastructure through Building Standards)
- Does the AHJ have an enforcement policy and plan for electric vehicle charging spots? (Parking Enforcement)

### Permitting Electric Vehicle Charging Stations Requirements (per [AB 1236, 2015](#) and [AB 970, 2021](#)):

- Does the AHJ have an ordinance or ordinances creating an expedited, streamlined permitting process for electric vehicle charging stations (EVCS) including Level 2, direct current fast chargers (DCFC), and wireless inductive charging? (State Permit Streamlining Requirements), (Complying with AB 1236)
- Does the AHJ have a checklist of all requirements needed for expedited review posted on the AHJ website? (State Permit Streamlining Requirements)

- Are EVCS projects that meet expedited checklist parameters administratively approved through building or similar non-discretionary permit? (State Permit Streamlining Requirements)
- Are EVCS projects reviewed with the focus on health and safety, without triggering planning/zoning review? (State Permit Streamlining Requirements), (Common Obstacles)
- Has the AHJ committed to responding to incomplete permit applications with one complete written correction notice that details all deficiencies and any additional information needed to be eligible for expedited permit issuance? (Complying with AB 1236)
- Does the AHJ accept electronic submittals and signatures on permit applications? (State Permit Streamlining Requirements), (Complying with AB 1236 and AB 970)
- Has the AHJ established that EVCS permit approval is not subject to approval of an association (as defined in Section 4080 of the Civil Code)? (Table 3: Electric Vehicle Charging Station Permit Streamlining Requirements & Best Practices)
- Does the permit approval process meet required AB 970 turnaround timelines? (AB 970 Requirements)

### Permitting Best Practices:

- Is the EVCS permitting process, including fees, timelines, and required application materials, detailed on the AHJ's website? (Additional Permitting Best Practices)
- Has a ZEV Infrastructure permitting ombudsperson been appointed or identified to help applicants through the entire permitting process? (Best Practice – Identify a ZEV Permitting Ombudsperson)
- Has the AHJ posted fact sheets or guidance documents for permitting and inspecting charging stations at single-family home, multifamily home, workplace, public (L2 and DCFC), and commercial medium and heavy-duty locations? (Additional Permitting Best Practices)
- Are pre-application meetings with knowledgeable AHJ staff offered? (Additional Permitting Best Practices)

- Has the AHJ has published an ordinance or bulletin clarifying that a plug-in electric vehicle charging space counts as one or more parking spaces for zoning purposes? (Parking Stall Requirements and Charger Installation)
- Are concurrent reviews made available for building and electrical plan checks (and planning, if deemed necessary)? (Understanding the Permit Process)
- Are EVCS classified as an accessory use to a site, not as a traditional fueling station? (Additional Permitting Best Practices)
- Does the expedited permit review process encourage permit reviewers to conditionally approve permits (aka "approved as noted")? (Additional Permitting Best Practices)
- Does the AHJ have a concise review checklist for building inspections, showing what will be inspected and what documents will be required? (Construction, Installation, and Review)
- Does the AHJ allow inspections to proceed without an electrician present whenever possible? (Construction, Installation, and Review)

### Permit Application Best Practices

A checklist for EVCS station developers

- Has the station developer carefully reviewed the AHJ's permitting requirements (checklists, forms, etc.)? (Preparing a Permit Application)
- Does the application provide all the information required by the AHJ?
  - Are the permit application diagrams consistent?
  - Are permit application load calculations complete? Have they been double checked? (What to Include in Your Application)
- Has the station developer designed the project to comply with accessibility regulations? (Part 3: Accessibility, What to Include in Your Application)
- For complicated projects or project types that have not been approved by the AHJ, has the station developer requested a pre-application meeting? (Pre-Application Meetings)

- Has the station developer engaged the local utility prior to submitting a permit application? (Preparing a Permit Application), (Timeline for Communicating with Your Utility)

### Energization Best Practices

A checklist for station developers and utilities

- Has the station developer carefully reviewed the energization process and engaged the utility early in the development process? (Major Utility Energization Processes, major utility processes are shared on subsequent pages)
- If available, has the station developer used maps to conduct a preliminary assessment of the hosting and line capacity at the project site(s)? (Understanding Energization)
- Have clear roles and responsibilities been established between the station developer and utility? (Opportunities to Streamline Energization)
- Has the utility provided timely and realistic energization timelines to the project applicant? (Opportunities to Streamline Energization)
- Has the utility provided a complete application checklist? (Opportunities to Streamline Energization)
- Does the utility have a dedicated team to help shepherd EVSE projects through the energization process? (Opportunities to Streamline Energization)
- Does the utility provide information on available power on a connection or nearby transformer without requiring detailed site plans? (Opportunities to Streamline Energization)
- Has the review process been standardized within each utility project management team? (Opportunities to Streamline Energization)
- Does the station developer have authority from the property owner to make any necessary design adjustments? (Opportunities to Streamline Energization)
- Has the utility made an effort to minimize easement footprints? (Opportunities to Streamline Energization)
- Have the utility and station developer discussed utility-side equipment and timelines for orders, if needed? (Opportunities to Streamline Energization)

# AB 1236 (Chiu, 2015) and AB 970 (McCarty, 2021) – Today’s Law As Amended

## SECTION 1.

Section 65850.7 of the Government Code is amended to read:

- (a) The Legislature finds and declares all of the following:
- (1) The implementation of consistent statewide standards to achieve the timely and cost-effective installation of electric vehicle charging stations is not a municipal affair, as that term is used in Section 5 of Article XI of the California Constitution, but is instead a matter of statewide concern. Therefore, this section applies to all cities, including charter cities.
  - (2) It is the intent of the Legislature that local agencies not adopt ordinances that create unreasonable barriers to the installation of electric vehicle charging stations and not unreasonably restrict the ability of homeowners and agricultural and business concerns to install electric vehicle charging stations.
  - (3) It is the policy of the state to promote and encourage the use of electric vehicle charging stations and to limit obstacles to their use.
  - (4) It is the intent of the Legislature that local agencies comply not only with the language of this section, but also the legislative intent to encourage the installation of electric vehicle charging stations by removing obstacles to, and minimizing costs of, permitting for charging stations so long as the action does not supersede the building official’s authority to identify and address higher priority life-safety situations.
- (b) A city, county, or city and county shall administratively approve an application to install electric vehicle charging stations through the issuance of a building permit or similar nondiscretionary permit. Review of the application to install an electric vehicle charging station shall be limited to the building official’s review of whether it meets all health and safety requirements of local, state, and federal law. The requirements of local law shall be limited to those standards and regulations necessary to ensure that the electric vehicle charging station will not have a specific, adverse impact upon the public health or safety. However, if the building official of the city, county, or city and county makes a finding, based on substantial evidence, that the electric vehicle charging station could have a specific, adverse impact upon the public health or safety, the city, county, or city and county may require the applicant to apply for a use permit.
- (c) A city, county, or city and county may not deny an application for a use permit to install an electric vehicle charging station unless it makes written findings based upon substantial evidence in the record that the proposed installation would have a specific, adverse impact upon the public health or safety, and there is no feasible method to satisfactorily mitigate or avoid the specific, adverse impact. The findings shall include the basis for the rejection of potential feasible alternatives of preventing the adverse impact.
- (d) The decision of the building official pursuant to subdivisions (b) and (c) may be appealed to the planning commission of the city, county, or city and county.
- (e) Any conditions imposed on an application to install an electric vehicle charging station shall be designed to mitigate the specific, adverse impact upon the public health or safety at the lowest cost possible.
- (f) (1) An electric vehicle charging station shall meet applicable health and safety standards and requirements imposed by state and local permitting authorities.
- (2) An electric vehicle charging station shall meet all applicable safety and performance standards established by the California Electrical Code, the Society of Automotive Engineers, the National Electrical Manufacturers Association, and accredited testing laboratories such as Underwriters Laboratories and, where applicable, rules of the Public Utilities Commission regarding safety and reliability.
- (g) (1) On or before September 30, 2016, every city, county, or city and county with a population of 200,000 or more residents, and, on or before September 30, 2017, every city, county, or city and county with a population of less than 200,000 residents, shall, in consultation

with the local fire department or district and the utility director, if the city, county, or city and county operates a utility, adopt an ordinance, consistent with the goals and intent of this section, that creates an expedited, streamlined permitting process for electric vehicle charging stations. In developing an expedited permitting process, the city, county, or city and county shall adopt a checklist of all requirements with which electric vehicle charging stations shall comply to be eligible for expedited review. An application that satisfies the information requirements in the checklist, as determined by the city, county, or city and county, shall be deemed complete. Upon confirmation by the city, county, or city and county of the application and supporting documents being complete and meeting the requirements of the checklist, and consistent with the ordinance, a city, county, or city and county shall, consistent with subdivision (b), approve the application and issue all required permits or authorizations. However, the city, county, or city and county may establish a process to prioritize competing applications for expedited permits. Upon receipt of an incomplete application, a city, county, or city and county shall issue a written correction notice detailing all deficiencies in the application and any additional information required to be eligible for expedited permit issuance. An application submitted to a city, county, or city and county that owns and operates an electric utility shall demonstrate compliance with the utility's interconnection policies prior to approval.

- (2) The checklist and required permitting documentation shall be published on a publicly accessible internet website, if the city, county, or city and county has an internet website, and the city, county, or city and county shall allow for electronic submittal of a permit application and associated documentation, and shall authorize the electronic signature on all forms, applications, and other documentation in lieu of a wet signature by an applicant. In developing the ordinance, the city, county, or city and county may refer to the recommendations contained in the most current version of the "Plug-In Electric Vehicle Infrastructure Permitting Checklist" of the "Zero-Emission Vehicles in California: Community Readiness

Guidebook" published by the Office of Planning and Research. A city, county, or city and county may adopt an ordinance that modifies the checklists and standards found in the Guidebook due to unique climactic, geological, seismological, or topographical conditions. If a city, county, or city and county determines that it is unable to authorize the acceptance of an electronic signature on all forms, applications, and other documents in lieu of a wet signature by an applicant, the city, county, or city and county shall state, in the ordinance required under this subdivision, the reasons for its inability to accept electronic signatures and acceptance of an electronic signature shall not be required.

- (h) A city, county, or city and county shall not condition approval for any electric vehicle charging station permit on the approval of an electric vehicle charging station by an association, as that term is defined in Section 4080 of the Civil Code.
- (i) The following definitions shall apply to this section:
  - (1) "A feasible method to satisfactorily mitigate or avoid the specific, adverse impact" includes, but is not limited to, any cost-effective method, condition, or mitigation imposed by a city, county, or city and county on another similarly situated application in a prior successful application for a permit.
  - (2) "Electronic submittal" means the utilization of one or more of the following:
    - (A) Email.
    - (B) The internet.
    - (C) Facsimile.
  - (3) "Electric vehicle charging station" or "charging station" means any level of electric vehicle supply equipment station that is designed and built in compliance with Article 625 of the California Electrical Code, as it reads on the effective date of this section, and delivers electricity from a source outside an electric vehicle into a plug-in electric vehicle.
  - (4) "Specific, adverse impact" means a significant, quantifiable, direct, and unavoidable impact, based on objective, identified, and written public health or safety standards, policies, or conditions as they existed on the date the application was deemed complete.

## SEC. 2.

Section 65850.71 is added to the Government Code, to read:

### 65850.71.

- (a) The Legislature finds and declares both of the following:
- (1) An electric vehicle charging station has a significant economic impact in California and is not a municipal affair, as the term is used in Section 5 of Article XI of the California Constitution, but is instead a matter of statewide concern. Therefore, this section applies to all cities, including charter cities.
  - (2) Table 3 of the Governor's Office of Business and Economic Development (GO-Biz) Electric Vehicle Charging Station Permitting Guidebook, published July 2019, recommends best practices for electric vehicle supply equipment permitting that would establish a 15-day timeline and satisfy the intent of Assembly Bill 1236 (Chapter 598 of the Statutes of 2015).
- (b) (1) An application to install an electric vehicle charging station submitted to the building official of a city, county, or city and county shall be deemed complete if, after the applicable time period described in paragraph (2) has elapsed, both of the following are true:
- (A) The building official of the city, county, or city and county has not deemed the application complete, consistent with the checklist created by the city, county, or city and county pursuant to subdivision (g) of Section 65850.7.
  - (B) The building official of the city, county, or city and county has not issued a written correction notice detailing all deficiencies in the application and identifying any additional information explicitly necessary for the building official to complete a review limited to whether the electric vehicle charging station meets all health and safety requirements of local, state, and federal law, consistent with subdivisions (b) and (g) of Section 65850.7.
- (2) For purposes of paragraph (1), "applicable time period means" either of the following:
- (A) Five business days after submission of the application to the city, county, or city and county, if the application is for at least 1, but not more than 25 electric vehicle charging stations at a single site.
  - (B) Ten business days after submission of the application to the city, county, or city and county, if the application is for more than 25 electric vehicle charging stations at a single site.
- (c) (1) An application to install an electric vehicle charging station shall be deemed approved if the applicable time period described in paragraph (2) has elapsed and all of the following are true:
- (A) The building official of the city, county, or city and county has not administratively approved the application pursuant to subdivision (b) of Section 65850.7.
  - (B) The building official of the city, county, or city and county has not made a finding, based on substantial evidence, that the electric vehicle charging station could have a specific adverse impact upon the public health or safety or required the applicant to apply for a use permit pursuant to subdivision (b) of Section 65850.7.
  - (C) The building official of the city, county, or city and county has not denied the permit pursuant to subdivision (c) of Section 65850.7.
  - (D) An appeal has not been made to the planning commission of the city, county, or city and county, pursuant to subdivision (d) of Section 65850.7.
- (2) For purposes of paragraph (1), "applicable time period means" either of the following:
- (A) Twenty business days after the application was deemed complete, if the application is for at least 1, but not more than 25 electric vehicle charging stations at a single site.
  - (B) Forty business days after the application was deemed complete, if the application is for more than 25 electric vehicle charging stations at a single site.

- (d) If an electric vehicle charging station and any associated equipment interfere with, reduce, eliminate, or in any way impact the required parking spaces for existing uses, the city, county, or city and county shall reduce the number of required parking spaces for the existing uses by the amount necessary to accommodate the electric vehicle charging station and any associated equipment.
- (e) If the electric vehicle charging station is being installed in an area that receives electrical service from a local publicly owned electric utility, this section does not expand or restrict the local publicly owned electric utility's role and responsibility in providing new electric service to the electric vehicle charging station in a manner consistent with safety, reliability, and engineering requirements.
- (f) This section shall become operative on January 1, 2022, but for every city, county, or city and county with a population of less than 200,000 residents, this section shall apply beginning on January 1, 2023.

## Select Station Development Resources

[Bay Area and Monterey Bay Regions PEV Local Best Practices Document](#). Prepared for the Bay Area Air Quality Management District by ICF International (August 2012).

[Electric Vehicle Charger Selection Guide](#). Redwood Coast Energy Authority, the Schatz Energy Research Center, the Local Government Commission/Civic Spark, and the Siskiyou County Economic Development Council (Updated January 2018).

[Electric Vehicle Charging Station Permitting and Inspection Best Practices: A Guide for San Diego Region Local Governments](#). Center for Sustainable Energy, Plug-In SD (June 2016).

[Creating EV-Ready Towns and Cities: A Guide to Planning and Policy Tools Electric Vehicle Supply Equipment Support Study](#). Prepared for New York State Energy Research and Development Authority and Transportation and Climate Initiative by WXY Architecture + Urban Design and Energetics Incorporated for New York (November 2012).

[Lessons from Early Deployments of Electric Vehicle Charging Stations: Case Studies from the Northeast and Mid-Atlantic Regions](#). Prepared for the Transportation Climate Initiative by Logios (May 2013).

[Plug-In Electric Vehicle Handbook for Workplace Charging Hosts](#). U.S. Department of Energy Clean Cities (August 2013).

[Plugging In: Speeding the Adoption of Electric Vehicles in California with Smart Local Policies](#). Environment California Research & Policy Center and Frontier Group (February 2018).

[South Bay Cities Plug-in Electric Vehicle Deployment Plan](#). Prepared for the Southern California Association of Governments by the UCLA Luskin Center for Innovation (June 2013).

[Streamlining the Permitting and Inspection Process for Plug-In Electric Vehicle Home Charger Installations Report and Recommendations](#). California Plug-In Electric Vehicle Collaborative (July 2012).

# Curbside Charging Best Practices

Below are established best practices for each phase of curbside charging deployment — (1) goal setting, (2) site selection, (3) technology and vendor selection, (4) utility coordination, (5) community education and engagement, (6) installation, operations & maintenance, and (7) measuring success.

## 1. Goal Setting

- Define the overall objective of the deployment first. Some goals or metrics to consider could include:
  - » Even distribution of infrastructure across a geography or territory
  - » Providing an amenity to drivers to increase traffic at downtown businesses
  - » Providing home charging for multi-family housing residents
  - » Providing public charging options for ridesharing drivers
  - » Deploying chargers in low-income communities or generally harder to serve areas
  - » Reducing costs, operating at cost neutral, or perhaps creating revenue
  - » High utilization or high turnover

## 2. Site Selection

- To maximize utilization of any project, deploy chargers in close proximity to businesses, workplaces, and residential or recreational areas. City planning departments are key to identifying these locations. Co-location near amenities and convenience to access increases use of the station.
- To minimize costs and streamline permitting, coordinate with utilities to identify areas with convenient access to power.
- Deploy stations in areas that (1) are easily walkable for ease of pedestrian access, (2) have a high concentration of businesses to increase utilization, and (3) allow drivers to park for a long time to ensure usability (minimum of 2 hours).

- Consider the proximity of other charging stations and volume of EV adoption and use in an area to ensure stations are distributed equitably across the community and to avoid duplication of deployments.
- Review streetlights or poles for mechanical integrity (e.g. wall thickness, weld strength) to see if it can tolerate the EV charging station's additional load). Also review electrical cable integrity (e.g. cable brittleness).

## 3. Technology and Vendor Selection

- Conduct an initial review of utility poles to determine suitability of selection and placement, if utility pole mounted chargers are an option to be considered.
- Mount chargers on streetlights only if the streetlights currently use LED lighting or the infrastructure owner intends to upgrade them to LEDs.
- Use master and auxiliary units to facilitate later scalability — by deploying master units initially, it can extend the deployment to auxiliary units to reduce civil engineering and electrical work later on.
- Use rugged hardware — this helps the station endure the elements, abuse, and vandalism. Use aluminum enclosures that are resistant to weather and vandalism, lockable charging connector to avoid unwanted use and tampering, powder coated enclosure that is resistant to graffiti, and a retractable cable management system to avoid cables being left on the ground and acting as a tripping hazard.
- Consider using custom designs if necessary to better fit the charger on available infrastructure.

## 4. Utility Coordination

- Review utility metering requirements and how it impacts proposed charging stations.
- Consider participating early-on in site selection evaluations with data on load and capacity, right of way access, and permitting for the locations.
- Encourage varying utility rates for EV charging purposes to help stimulate EV adoption initiatives.

- Coordinate with the Department of Transportation and parking authorities to coordinate access to construction areas, and once deployed, to implement parking restrictions to ticket internal combustion engine vehicles who park in EV spots.

## 5. Community Education and Engagement

- Engaging with the local community is critical to identifying their needs, addressing their questions and concerns, and soliciting their input on where chargers should optimally be placed.
- Engage the following stakeholders: local businesses, community-based organizations, faith-based organizations, residents, property owners and management companies, school boards, park and recreational staff, parking enforcement, street cleaning services, and the local utility.
- Use local community groups to help notify businesses and residents about the incoming stations and provide materials on the benefits of EVs.
- Hold multiple community listening sessions to give the public an opportunity for input and to ask questions.
- Notify any merchants that charging infrastructure is being considered in proximity to their storefront to encourage their cooperation.
- Pilot deployment with a smaller number of stations across 5 to 10 locations. Once the community has become more aware of their presence, then expand deployment if desired.
- Measure benefits and outcomes of the project and outreach overall. There is no "one size fits all" approach to curbside deployments and including the community in the process. Tracking metrics for involving the community is critical to assessing how to improve processes for future deployments.

## 6. Installation, Operations, and Maintenance

- Upon installation, position the charger to satisfy three requirements:
  - » It is convenient and safe for drivers to access, connect to a vehicle, and operate;

- » Once connected, the charging cable remains (1) off the ground and is not an obstacle to pedestrians and (2) off the vehicle surface so that it does not damage it; and
- » Provides optimal conditions for maintenance, including enough overhead clearance and access to the charger head and panel (if applicable) without redirecting pedestrian traffic.

- Deploy stations 1 to 3 blocks away from a main street. Installing on main streets can be more expensive or difficult because it has to be shut down or is not friendly for driver access.
- The cable reach must be able to service all sides of a parked vehicle.
- The width of the sidewalk should be wide enough to socialize acceptance by pedestrians.
- Install the charger as close as possible to the curbside to reduce the distance between the charger and vehicle to optimize cable management.
- For pole-mounted chargers, consider whether to elevate it higher up on the utility pole – this has the benefit of reducing vandalism, resiliency in flood prone areas, and keeping cords away from snowplows.
- Consider integrating a distribution panel to host a utility meter and incoming supply if needed, with capacity to feed additional curbside chargers from this supply point.
- Use "hot swappable" equipment. This allows quick and cost-effective change-out of hardware components that does not require coordination with the utility and can enable hardware replacement in as little as 15 minutes.
- Conduct ongoing station support with extended warranty program, proactive monitoring, routine maintenance, access to spare parts and replacements etc.
- Use smart chargers that are connected to a reliable EV charging network operator. Support chargers with 24/7 customer service, mobile app for drivers, secure payments, and more to ensure reliability and a consumer-friendly experience.

- For cold weather climates, consider installing the charger on a pedestal with tall masts so that it is noticeable for snowplows and is high enough off the ground to remain accessible when there is snow.
- Make sure there is proper signage to help drivers identify the charger.
- Make sure the City's parking division is proactive about enforcing internal combustion engine vehicle parking violations – they often block EVs from accessing charging spots.

## 7. **Measuring Success**

- Quantifying the population of multi-family dwellings in the approximate area that could be served by the chargers.
- Identifying the income demographics of the neighborhood the chargers are deployed in.
- Evaluating the outreach opportunity to educate residents about the value of EVs.
- Measuring charger utilization through customers served and GHG emissions reduced, especially if this helps justify expanding curbside deployment.
- Evaluating cost-effectiveness of the deployment compared to other charger deployment scenarios.
- Interviewing local businesses to determine whether EV drivers have frequented their businesses.



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