



ZERO EMISSION VEHICLE INFRASTRUCTURE

Streamlined Permitting Guidebook

Tuolumne County

Prepared by
**Center for Sustainable Energy
and Rincon Consultants**

As part of the
Central Sierra Zero Emission Vehicle Readiness Plan

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Using This Guide

Electric vehicle (EVs) usage is being encouraged throughout California and is anticipated to increase in the Tuolumne County marketplace over the next 10 years. To meet the increasing demand for Electric Vehicle Charging Stations (EVCS), this instructional guide will assist the County's Development staff in providing streamlined and efficient permitting, environmental review, installation, and inspection processes for EV owners seeking to install an EVCS on their property. The guide includes a review of relevant State, Tuolumne County, and City of Sonora EVCS regulations, application and permitting processes, environmental review process and environmental constraints guidance in accordance with the California Environmental Quality Act (CEQA), and key contact numbers and websites.

Definition of Terms

AC: Alternating Current

EV: Electric vehicle, including plug-in hybrids and pure battery electric vehicles.

EVCS: Electric Vehicle Charging Stations One or more electric vehicle charging spaces served by electric vehicle chargers or other charging equipment allowing charging of EVs.

EV-ready: The necessary electrical capacity has been installed in a garage or parking facility to support electric vehicle charging (typically 20-40 amps of service for a level 2 station).

CEQA: California Environmental Quality Act

DC Fast Charging: Direct-current (DC) fast charging equipment, also called Level 3, requires 208/480 Volt (V) AC three-phase input. It is the fastest charging option available. EVs equipped with either a CHAdeMo or SAEcombo DC fast charge receptacle can add 50 to 70 miles range in about 20 minutes.

Level 1: provides charging through a 120 volt (V) AC plug. Based on the battery type and vehicle, AC Level 1 charging requires 15-20 amps of service and adds about 2 to 5 miles of range per hour of charging time. Level 1 is the slowest and least-expensive charging option.

Level 2: provides charging through either a 240 V (typical in residential applications) or 208 V (typical in commercial applications) AC plug. Level 2 charging requires 20 to 100 amps of service (typically 20-40 amps) and adds about 10 to 20 miles of range per hour of charging time.

PEV: Plug-in electric vehicle (includes pure battery electric and plug-in hybrid vehicles, known as PHEVs)

PHEV: A plug-in hybrid electric vehicle that has both an electric motor that is battery powered and a gasoline engine.

ZEV: Zero-emissions vehicle

California State Law

California has several regulations and provisions on the installation of EVCS that promote installation in a feasible manner. To support the ambitious ZEV deployment goal of 5 million ZEVs in California by 2030 set by Governor Edmund G. Brown Jr., the State is prioritizing the development of infrastructure to support these vehicles, in the form of plug-in electric vehicle charging stations. Specifically, Executive Order B-48-18 called for 250,000 ZEV charging stations including 10,000 DC fast charging stations by 2025 to support these vehicles.

Senate Bill 350, the Clean Energy and Pollution Reduction Act (2015). SB 350 called for increases in renewable energy use and widespread electrification of the transportation sector. All investor-owned utilities have submitted transportation electrification (TE) proposals to the California Public Utilities Commission, and as of February 2019 nearly \$1 billion has been approved for these proposals.

Assembly Bill 1236 (2015). AB 1236 amended Government Code Section 65850.7 to require jurisdictions to establish procedures for expedited, streamlined processes for permitting of electric vehicle charging stations. This process includes the establishment of a checklist containing objective requirements for the installation of an electric vehicle charging station and a process for electronic submittal of permit applications.

Sections of the California Building Code – Chapter 11B that regulate EVCS can be found at <http://www.bsc.ca.gov/Codes.aspx> and are summarized below.

Table 1. California Building Code EVSC Regulations

Section	Title	Notes
11B-228.3	Electric Vehicle Charging Stations	Provides scoping for electric vehicle charging stations installed in new and existing facilities.
11B-812	Electric Vehicle Charging Stations	Provides new section with technical provisions for EVCS.
11B-812.1	General	General requirements for the dimensions and marking of EV charging spaces and access aisles.
11B-812.2	Operable parts	Technical requirements for operable parts of the EVCS.
11B-812.3	Floor or ground surfaces	Technical requirements for floor and ground surfaces of the EVCS.
11B-812.4	Vertical clearance	Provisions for vertical clearance requirements at EVCS.
11B-812.5	Accessible routes	Provides requirements for accessible routes to electric vehicle chargers and to a building entrance.
11B-812.6	Vehicle spaces	Provides dimensions for length of van accessible, standard accessible, ambulatory and drive-up EVCS
11B-812.7	Access aisle	Provides requirements for the access aisle adjacent to the electric vehicle charging space.
11B-812.8	Identification signs	Provides general scoping for the technical sections for identification signs for accessible EVCS.
11B-812.9	Surface marking	Provides requirements for the surface markings at EVCS
11B-812.10	Electric vehicle chargers	Technical requirements for EV chargers, which includes the requirements for operable parts, point-of-sale devices and location of the chargers in relation to the EV space.

Additional State Regulations

Electric Vehicle Charging Station Accessibility

The Division of the State Architect (DSA) developed accessibility standards for electric vehicle charging stations to ensure accessibility to EVCS by individuals with disabilities, and to provide guidance to station developers, building owners, and local building departments. The California Building Standards Commission adopted the accessibility standards for electric vehicle charging stations as part of the 2016 California Building Code (California Code of Regulations, Title 24), which became effective on January 1, 2017. The DSA website with EVCS accessibility guidance is at <http://www.dgs.ca.gov/dsa/Programs/progAccess/evcs.aspx>

CalGreen EV Readiness

The 2016 Green Building Standards Code (CalGreen) effective January 1, 2017 requires all new developments to include pre-wiring for Level 2 (208/240V) charging. Any local government that adopts the state building code by reference will have these pre-wiring requirements in place. Specifically, CalGreen's mandatory requirements specify new single-family homes and townhomes with attached garages must pre-wire locations where vehicles will be parked, and that multi-family developments with 17 or more units must pre-wire at least three percent of total parking spaces. At non-residential developments, pre-wiring is mandated for a portion of total parking spaces, shown in **Table 2**.

Table 2. CalGreen Required EV Pre-Wired Spaces for Non-Residential Developments

Total Number of Parking Spaces	Number of EV Charging Spaces Required
0 – 9	0
10 – 25	1
26 – 50	2
51 – 75	4
76 – 100	5
101 – 150	7
151 – 200	10
201 and over	6% of total

Source: CalGreen, Chapter 5, Section 5.106.5.3

Leadership in Energy and Environmental Design Points

Leadership in Energy and Environmental Design (LEED) is one of the most popular green building certification programs used worldwide. Developed by the non-profit U.S. Green Building Council, it includes a set of rating systems for the design, construction, operation, and maintenance of green buildings, homes, and neighborhoods that aims to help building owners and operators be environmentally responsible and use resources efficiently. LEED certification is an important goal for many buildings. Networked EVCS and EV-ready construction can help earn points toward LEED certification. To earn LEED points, EVCS must be Level 2 or faster, connected to a network,

capable of supporting demand response or time of use charging and compatible with universal EV charging connectors.

In addition to earning LEED points from EVCS, buildings can earn points when 10% or more of occupants use alternative transportation such as EVs. Having more EVCS available encourages more people to drive electric, generating more LEED points. LEED certification may also provide building incentives like expedited review, density and height bonuses, tax credits, and grants.

Tenant-Provided EVCS

California state law provides provisions for tenants of residential and commercial rental properties to request permission from their landlords to install electric vehicle charging stations (EVCS) in the following California Code sections:

- Section 1947.6 for residential tenancies
- Section 1952.7 for commercial tenancies
- Section 4745 and 4745.1 for homeowner's associations (HOAs)

Residential

For tenants with residential leases signed, renewed, or extended on or after July 1, 2015, state law requires landlords to approve a tenant's written request to install an EVCS at the tenant's parking space if the tenant enters into a written agreement. The written agreement must include requirements regarding the installation, use, maintenance and removal of the charging station. The tenant must also pay for all modifications, and the law requires the tenant to maintain a \$1,000,000 general liability insurance policy. The tenant is required to pay costs for the EVCS and no additional parking spaces are required to be provided by the landlord. These state regulations do not apply under the following conditions:

- When parking is not included as part of the rental contract
- To properties with fewer than 5 parking spaces
- To properties subject to rent control unless a lease is executed, extended or renewed after January 1, 2019
- When 10% or more of the spaces already have electric EVCSs

In 2018, SB 1016 amended California Code Sections 4745 and 4645.1 to further secure tenants' rights and responsibilities in installing EVCS in HOAs and rent controlled units. These modifications are described under HOAs below.

Commercial

Landlords are required to approve a tenant's written request to install an EVCS for commercial leases executed on or after January 1, 2015, if certain conditions are met. The tenant is limited to installing EVCSs only at parking spaces under their lease. If no parking spaces were allocated, the tenant has the right to convert a number of spaces based on a formula which takes into account the square footage of the rented premises and the total number of parking spaces for the entire property. This law does not apply under the following:

- To a commercial property with less than 50 parking spaces
- To a commercial property which already has 2 electric charging stations for every 100 spaces.

Homeowners Associations (HOAs)

Under state law, homeowners must pay for both EVCS installation and electricity usage, but HOAs may not prohibit or restrict the installation or use of EVCSs in a designated parking unit. Starting January 1, 2019, homeowners have the right to install EVCS in their “units”—either a residential or garage element—rather than in an exclusive parking space. Homeowners are also required to have an insurance liability coverage policy, but the policy value has been eliminated from the \$1,000,000 coverage required prior to 2019. Applications for dedicated EVCS time-of-use (TOU) meter installation must also be processed similarly to EVCS applications, easing the application process and electricity cost and tracking for homeowners. As a final advantage to homeowners, given a lawsuit, only homeowners are eligible to recover attorney fees even if the HOA wins.

Tuolumne County EVCS Regulations

The Planning Divisions for both the County and the City of Sonora are responsible for processing new residential, commercial, and public projects that include EVCS as part of the project. The Tuolumne County Building Division is responsible for permitting the installation of EVCS for residential, commercial, and industrial uses throughout unincorporated parts of the County. The City of Sonora Building Division is responsible for permitting EVCS within their jurisdiction. EVCS permitting information for these agencies, as well as the Tuolumne Public Power Agency, are presented below. Tuolumne Public Power Agency is a joint powers authority providing energy to the County and City of Sonora. Pertinent regulations regarding the permitting and installation of EVCS are presented in the sections below.

Tuolumne Public Power Agency (TPPA) Rules

The TPPA has prepared a set of rules and regulations (2017) to ensure that its member agencies comply with the provisions of the TPPA Joint Powers Agreement. Section VII Charging Stations Utilizing TPPA Energy includes the following rules for the installation of EVCS utilizing TPPA Energy.

- If no separate meter is necessary to provide the power for Level 1, Level 2, or Level 3 charging, and no special attachments are needed such as a credit card swipe to pay for charging vehicles, TPPA is to be notified of your agency's intentions to add a Level 1, Level 2, or Level 3 charging station 2 months in advance. Examples of these types of installation include fleet charging of EVs using common household electrical outlets tied to an existing meter or implementing a dual charging station fed by an existing meter that does not require the use of a charge card to operate.
- Charging stations that require installation of a new meter may not meet minimum load to be considered as a TPPA account.
- All charging station's maintenance is the responsibility of the member agency that installed the equipment.
- TPPA members that install EV charging stations can list their charging station(s) on EV maps and/or networks noting where their charging stations are, if it is installed for public use, and is not part of an outsourced contracted service.
- TPPA power cannot be sold to 3rd parties.
- EV charging stations that operate without charging a fee to the consumer need no further approval from TPPA.
- "Credit card swipe" EV charging stations will be considered on a case-by-case basis until such time as TPPA has developed a written standardized policy on this type of installation. Any sale of TPPA power to a 3rd party at an EV charging station shall be priced at the lowest possible cost consistent with sound business principles, and such price shall be subject to approval by the TPPA Board.

Tuolumne County Zoning Code Regulations

The Tuolumne County Zoning Code does not directly address the permitting and processing of EVCS. These facilities would either be approved over-the-counter as a ministerial building

permit application or would be folded into a larger project such as a new or renovated residential, commercial, industrial, or public development and would be subject to the zoning regulations for that development depending on the zone district where it is located. The Tuolumne County Zoning Code can be found at <https://www.tuolumnecounty.ca.gov/165/Tuolumne-County-Ordinance-Code>

Tuolumne County Building Code Regulations

The County has an online permitting system for building permit applications, including permitting for installation of EVCS. Information about this system can be found on their website at <https://www.tuolumnecounty.ca.gov/171/Building-Division> or by calling (209) 533-5633. Tuolumne County has adopted the 2016 California Building Standards Code, which includes the 2016 Building Code (website: www.bsc.ca.gov/).

The Tuolumne County Community Resources Agency has prepared the “Plan Review Checklist and Submittal Guide for One and Two Family Dwelling” in line with AB 1236. The intent of the checklist is to assist designers, contractors, and homeowners in identifying the most common code items and checklists for submitting a building permit for a wide range of improvements. In addition to building permit submittal requirements, the CalGreen Building Code provides statewide guidance to which all jurisdictions must adhere for installation of EVCS:

“Install minimum 1-inch trade size ID conduit run directly from the main or sub service panel location and terminate at an approved box, listed cabinet or other approved enclosure in an area that could accommodate an EV Charger and vehicle. The service panel shall be labeled and identify a minimum 40 amp breaker or reserved space for future installation for the EV charger.” [CalGreen 4.106.4.1]

Chapter 15.04 Construction Codes of the Tuolumne County Codes addresses construction of EVCS and related improvements in Section 15.04.065 as follows:

15.04.065 Building permits for electric vehicle charging stations.

A. Definitions. The following words and phrases as used in this Section are defined as follows:

1. “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 plugin electric vehicle.
2. “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.
3. “Electronic submittal” means the utilization of one or more of the following: a. E-mail, b. Internet, c. Facsimile.

B. Expedited Permitting Process. Consistent with Government Code section 65850.7, the Chief Building Official shall implement an expedited, streamlined permitting process for electric vehicle charging stations, and adopt a checklist of all requirements with which electric vehicle charging stations shall comply with in order to be eligible for expedited

review. The expedited, streamlined process and checklist 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” as published by the Governor’s Office of Planning and Research. The County’s adopted Checklist shall be published on the County’s website.

C. Permitting Application Process

1. Prior to submitting an application for processing, the applicant shall verify that the installation of an electric vehicle charging station will not have specific, adverse impact to public health and safety and building occupants. Verification by the applicant includes, but is not limited to: electrical system capacity and loads; electrical system wiring, bonding and overcurrent protection; building infrastructure affected by charging station equipment and associated conduits; areas of charging station equipment and vehicle parking.

2. A permit application that satisfies the information requirements in the County adopted checklist shall be deemed complete and be promptly processed. Upon confirmation by the Chief Building Official that the permit application and supporting documents meets the requirements of the County adopted checklist, and is consistent with all applicable laws and health and safety standards, the Chief Building Official shall, consistent with Government Code section 65850.7, approve the application and issue all necessary permits. Such approval does not authorize an applicant to energize or utilize the electric vehicle charging station until approval is granted by the County. If the Chief Building Official determines that the permit application is incomplete, he or she shall issue a written correction notice to the applicant, detailing all deficiencies in the application and any additional information required to be eligible for expedited permit issuance.

3. Consistent with Government Code section 65850.7, the Chief Building Official shall allow for electronic submittal of permit applications covered by this Section and associated supporting documentations. In accepting such permit applications, the Chief Building Official shall also accept electronic signatures on all forms, applications, and other documentation in lieu of a wet signature by any applicant.

D. Technical Review

1. It is the intent of this Section to encourage the installation of electric vehicle charging stations by removing obstacles to permitting for charging stations so long as the action does not supersede the Chief Building Official’s authority to address higher priority lifesafety situations. If the Chief 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, as defined in this Section, a conditional use permit will be required.

2. In the technical review of a charging station, consistent with Government Code section 65850.7, the Chief Building Official shall not condition the approval for any electric vehicle charging station permit on the approval of such a system by an association, as defined by Civil Code section 4080.

E. Electric Vehicle Charging Station Installation Requirements

1. Electric vehicle charging station equipment shall meet the requirements of the California Electrical Code, the Society of Automotive Engineers, the National Electrical Manufacturers Association, and accredited testing laboratories such as Underwriters Laboratories, and rules of the Public Utilities Commission or a Municipal Electric Utility Company regarding safety and reliability.
2. Installation of electric vehicle charging stations and associated wiring, bonding, disconnecting means and overcurrent protective devices shall meet the requirements of Article 625 and all applicable provisions of the California Electrical Code.
3. Installation of electric vehicle charging stations shall be incorporated into the load calculations of all new or existing electrical services and shall meet the requirements of the California Electrical Code. Electric vehicle charging equipment shall be considered a continuous load.
4. Anchorage of either floor-mounted or wall-mounted electric vehicle charging stations shall meet the requirements of the California Building or Residential Codes as applicable per occupancy, and the provisions of the manufacturer's installation instructions. Mounting of charging stations shall not adversely affect building elements.

City of Sonora Zoning Code Regulations

In August 2017, the City of Sonora adopted regulations to promote the use of EVs by creating an expedited, streamlined permitting process for EVCSs in compliance with AB 1236 (Ordinance No. 840). The ordinance requires the City to use the permitting checklist contained in the *Zero Emission Vehicles in California: Community Readiness Guidebook* published by the Governor's Office of Planning and Research. This guidebook is available at opr.ca.gov/planning/transportation/zev.html. Key sections include:

- Permit application processing
- Technical Review
- Electric Vehicle Charging Station Installation Requirements

The associated checklist is provided in the Resources section of this document.

City of Sonora Building Code Regulations

Similar to Tuolumne County, the City's Community Development Department utilizes the California Building Code when reviewing EVCS permits. Building forms can be located at <http://www.sonoraca.com/forms/> and questions regarding the installation of EVCSs can be directed to the Building Inspector at: (209) 532-3508.

Environmental Review

The California Environmental Quality Act (CEQA) generally requires state and local government agencies to inform decision makers and the public about the potential environmental impacts of proposed projects, and to reduce those environmental impacts to the extent feasible. If a project subject to CEQA will not cause any adverse environmental impacts, a public agency may adopt a brief document known as a Negative Declaration. If the project may cause adverse environmental impacts, the public agency must prepare a more detailed study called an Environmental Impact Report (EIR). An EIR contains in-depth studies of potential impacts, measures to reduce or avoid those impacts, and an analysis of alternatives to the project. A key feature of the CEQA process is the opportunity for the public to review and provide input on both Negative Declarations and EIRs.

The CEQA Guidelines do not directly address the installation of EVCS. Most installations into existing residential or commercial structures will only require an over-the-counter or ministerial building permit that would not be subject to CEQA review as described above. Examples of ministerial EVCS projects are:

- Installation of a new EVCS in an existing structure such as a single family or multi-family residential garage or commercial/industrial garage or covered parking area.
- Installation of EVCSs in front of existing outdoor parking spaces in a single-family residence driveway, multi-family residential parking area, commercial/industrial parking lot, or public building or park outdoor parking area.

EVCS that are part of a discretionary project such as a new residential, commercial, industrial, or public development project (i.e. new park, sports facility, public works yard, etc.) may require CEQA review. A discretionary project is defined in the CEQA Guidelines as follows:

15357. DISCRETIONARY PROJECT

“Discretionary project” means a project which requires the exercise of judgment or deliberation when the public agency or body decides to approve or disapprove a particular activity, as distinguished from situations where the public agency or body merely has to determine whether there has been conformity with applicable statutes, ordinances, or regulations, or other fixed standards. The key question is whether the public agency can use its subjective judgment to decide whether and how to carry out or approve a project.

As the CEQA lead agency, Tuolumne County or City of Sonora staff would determine the level of CEQA review (Negative Declaration or EIR) based on the potential environmental impacts of the project. Some CEQA guidance is also included in the Tuolumne County Code as follows:

15.04.060 Building permits - Discretionary and subject to conditions.

A. A building permit shall be deemed discretionary for the purposes of the California Environmental Quality Act if:

1. The Community Resources Agency Director determines a cultural resource may be disturbed as determined pursuant to the process described in Chapter 14.10 and if that cultural resource cannot feasibly be avoided.

15.04.070 CEQA review required. When a building permit is deemed discretionary for the purposes of the California Environmental Quality Act (CEQA) pursuant to Section 15.04.060(A), a review pursuant to the California Environmental Quality Act shall be conducted prior to the approval or conditional approval of the building permit. A review of the impacts of the proposal on cultural resources shall be conducted in compliance with Chapter 14.10 of this code to determine the appropriate conditions necessary to protect cultural resources.

Projects in the City of Sonora that include EVCS would be subject to the same state CEQA regulations and processes as those projects in the unincorporated County.

Resources

Key Websites and Contact Information

- California Building Officials (CALBO):
 - Example EVCS streamlined permitting ordinances: <https://www.calbo.org/sites/main/files/file-attachments/ab1236toolkitsmalljurisdiction.pdf>
- California Division of State Architect (DSA):
 - EV Charging Station Accessibility: www.dgs.ca.gov/dsa/Programs/progAccess/evcs.aspx
 - Phone - (916) 322-2490
- California – Governor’s Office of Planning and Research
 - Zero Emission Vehicles: <http://www.opr.ca.gov/planning/transportation/zev.html>
 - Zero Emissions Vehicles in California: Community Readiness Guidebook: opr.ca.gov/docs/ZEV_Guidebook.pdf
 - Phone - (916) 322-2318
- Tuolumne County:
 - Building Division: <https://www.tuolumnecounty.ca.gov/171/Building-Division>
 - (209) 533-5633
 - Planning Division: <https://www.tuolumnecounty.ca.gov/179/Planning>
 - Phone - (209) 533-5633
- City of Sonora:
 - Community Development Department: <http://www.sonoraca.com/city-services/departments/community-development/>
 - Phone - (209) 532-3508

Frequently Asked Questions

What will residential building permit applicants need to operate a plug-in electric vehicle?

They will need a way to charge the vehicle at their home or at another charging facility. Although some vehicles will be provided with a Level 1 charging system that can be used from a standard household outlet, some will need a building permit for installation of a Level 2 charging station for home use.

What are their options for charging an EV?

All EVs come equipped with a standard 120-volt cord that can be plugged into any standard electrical socket. This is referred to as a Level 1 charger.

Their second option, a Level 2 charger, is also referred to as electric vehicle supply equipment (EVCS). EVCS is a 240-volt charging unit which connects the EV to the electrical power source in their home. The installation of a Level 2 charging unit may require modifications to the electrical system and an application for a building permit.

Who can install the charging station? A homeowner or business owner can install a charging station if they know how to perform electrical work to city code and get the required permits. However, it is recommended that the EV owner contact a licensed electrical contractor to evaluate whether their home or business’ wiring, electrical outlets and other hardware can support the

charging requirements of their EV. An EV car dealer also may have access to a third-party or contractor network that may be able to conduct a home or business assessment to determine the safest and least expensive way to install an EVCS.

How long does it take to install a charger?

A typical installation usually takes less than one day; however, the issuance of their building permit could take one day or a week or more depending on the completeness of their submittal to the building department. Please see the submittal checklist in this guide to ensure a complete application.

Factors that may affect the installation process include necessary upgrades to wiring, electrical outlets and other hardware that supports EV charging; inspection and permitting processes; or unforeseen weather delays.

Will their current electric meter need to be replaced?

There is typically no need to replace your existing electric meter.

What is the climate impact of the electricity that will power the electric automobiles?

Both all-electric vehicles and plug-in hybrids have the ability to reduce greenhouse gas emissions. One of the major greenhouse gases that contributes to climate impacts is carbon dioxide (CO₂) which results from combustion of fuels. When emissions from electric power generation are considered, an all-electric vehicle typically reduces CO₂ emissions by over 30% compared to a conventional gasoline vehicle.

Environmental Constraints

Aesthetics

EVCS are most likely to be installed in currently developed sites or as a component of new development projects. However, they may be installed individually at strategic suburban or rural locations. Given the prevalence of historic districts in city centers, park and forest land, viewpoints and roadside natural resources throughout Tuolumne County, it may be important to consider the aesthetic of EVCS to ensure it harmonizes with surroundings. Particularly DC fast chargers are often designed with a modern, sleek appearance. Level 2 chargers also have a modern appearance, though design is more varied given the array of models. While EVCS tend to be smaller and less obtrusive than the gas stations they partially offset, they may need to consider coloration, height, viewpoint obstruction, reflectivity, and aesthetic compatibility with nearby structures. Developers should consult design regulations for city zoning, including historic districts, County building and design regulations, National Park Service (NPS) and United States Forest Services (USFS) guidelines as applicable to the location. This may dictate the EVCS designs available to install at a location, or require appearance modifications such as coverings to reduce prominence, reflectivity or obstruction of views.

Agricultural Resources

Tuolumne County has historically produced a variety crops including hay, grain and apples. It contains several areas of prime farmland and farmland of statewide importance, notably at Chinese Camp, north of Don Pedro Reservoir, and scattered northeast of Sonora. The County General Plan Update emphasizes protection of agricultural land barring certain exemptions, and protection of agritourism. Ensuring that EVCS is located in compatible County and city zones and land use designations should prevent compromise of local agricultural resources and lands.

Air Quality/GHG Emissions

EVCS is unlikely to cause adverse air quality effects or increase in greenhouse gas (GHG) emissions. The installation of single EVCS will have minimal impact in developed areas, while installation as one component of a larger development project may require a project-based air quality and GHG emissions analysis. Operation of EVCS will have no on-site emissions, and as power is sourced through the electricity provider and composed of some renewable energy (meeting the California Renewable Portfolio Standards), or through on-site renewable energy, EVCS will offset vehicle tailpipe emissions and reduce overall emissions. Developers should be sure installation plans meet City, County and Air Pollution Control District (APCD) requirements and perform air quality and GHG analyses as necessary. APCD rules can be found at <https://www.arb.ca.gov/drdb/tuo/cur.htm>

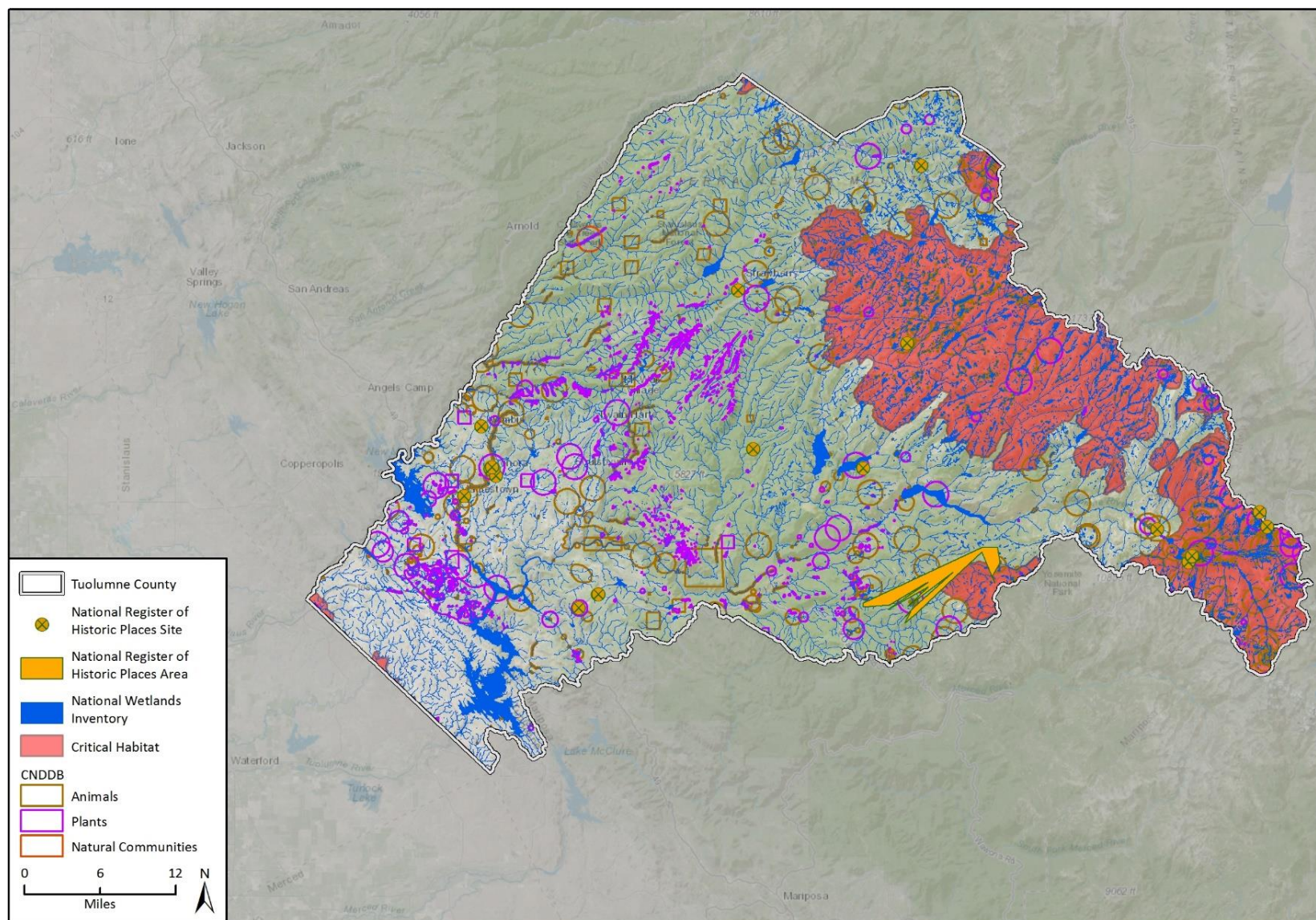
Biological Resources

Tuolumne County's biological resources are well known statewide and nationally. The county is crossed by state park, national forest, national park, and national wilderness land, in addition to city and county park land. It contains groves of the iconic Giant Sequoia, but also many lesser-known rare species. Figure 1 shows the combined critical habitat of several plant, amphibian and mammal species, as well as areas containing unique and sensitive plant and animal species listed on the California Natural Diversity Database (CNDDB). National Wetlands Inventory areas are designated by the U.S. Fish and Wildlife Service, existing along rivers, lakes, reservoirs and

streams throughout the County. Seasonal wetlands, or vernal pools, also exist. Sensitive and critical habitat for plants, amphibians, and other species are commonly found in wetlands and vernal pools. While EVCS is likely to be placed in developed areas non-adjacent to these sensitive habitats, any new development will need to consider regulations and protections applicable to local biological resources. Agencies to consult for local development regulations include the U.S. National Park Service (NPS), California Department of Fish and Wildlife (CDFW), California Native Plant Society (CNPS), U.S. Forest Services (USFS), and California Fish and Game Code.

Cultural Resources

Reflecting the history of the Central Sierra region and California, 34 National Register of Historic Places are located throughout Tuolumne County. Several exist in Sonora, Strawberry, Lee Vining and Yosemite National Park, one in Jamestown, and several others in more rural areas, as shown in Figure 2. These consist of historic buildings, roads, Sierra Camps, and natural resource sites. EVCS will require adherence to regulations applicable to Historic Places if located in their immediate vicinity and may require adherence to aesthetic standards to conform with City Historic District and other local zoning.



Imagery provided by Microsoft Bing and its licensors © 2019. Additional Data provided by California Natural Diversity Database, January, 2019. U.S. Fish and Wildlife Service, September, 2017. National Wetlands Inventory, U.S. Department of the Interior, Fish and Wildlife Service 2018. National Register of Historic Places, National Park Service 2019.

Fig 1 Resource Areas in Tuolumne County

Figure 1 Tuolumne County Natural Resources

Hazards and Hazardous Materials

Tuolumne County is at some risk of natural hazards which should be considered when siting and planning EVCS. Notably, much of the western county is at very high to high fire hazard, as shown in Figure 2. Fire has the potential to damage both charging stations and wiring, including pre-wiring. Bounding infrastructure with several feet of pavement or placing in a parking lot will mitigate risk of damage from flammable materials nearby.

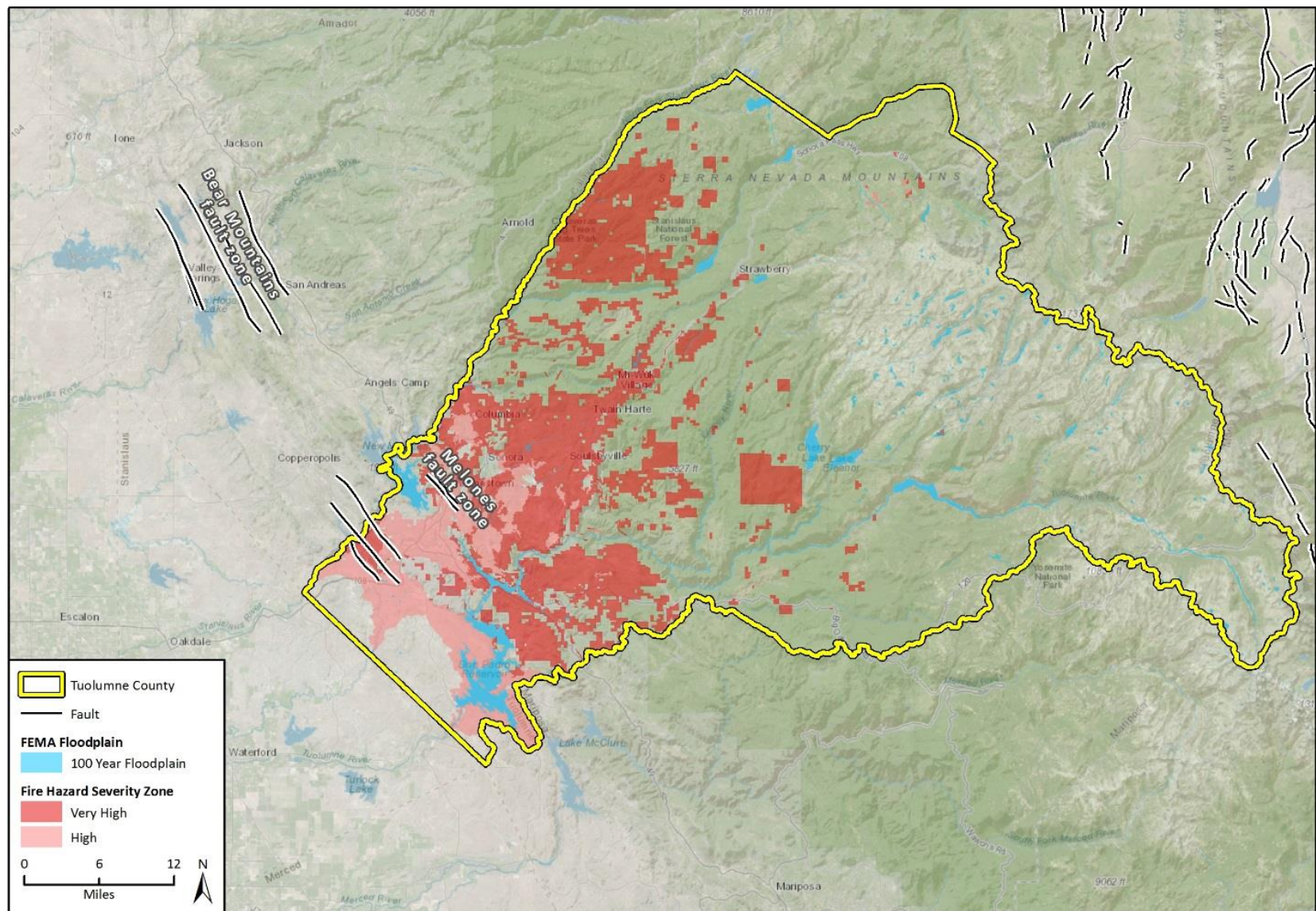
Tuolumne County has fairly low risk of flood, with greatest risk immediately next to lakes, reservoirs and streams. As EVCS is likely to be placed in graded areas, flood risk is low. However, planners should be cognizant of topography to be sure EVCS is not placed in 100-year floodplains of adjacent water bodies.

A third natural hazard to consider is earthquakes. Westernmost Tuolumne County contains the Melones fault zone with several faults running north-south north of Don Pedro Reservoir, and numerous faults lie six to 15 miles east of the County, shown in Figure 2. EVCS should be located adjacent to buildings constructed to earthquake standards to protect from incidental damage. In addition, while stand-alone structures, EVCS should be constructed to present low risk themselves; solar panels and other equipment expected to be installed conjointly with or above chargers should be evaluated for safety.

There are no listed hazardous waste facilities in Tuolumne County per the State Department of Toxic Substances Control, nor are there federally designated Superfund sites per the U.S. EPA National Priorities List. Therefore, risks for siting EVCS associated with hazardous waste is minimal.

Noise

Level 2 EVCS operates silently when charging and Level 3 DCFC produce minimal noise due to cooling fans. Electric vehicles run far more quietly and reduce overall sound impacts compared to combustion engines. As EVCS is usually located in developed areas, unless located next to highly noise sensitive locations, noise impact should be minimal and exempt from noise analysis requirements. Nonetheless, when EVCS is installed in currently undeveloped areas, noise levels will increase. In addition, noise analysis may be required if EVCS is installed as a component of a larger development project. Developers should consult City and/or County noise requirements as applicable to verify analysis needs.



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Additional data provided by FEMA 2018. CAL FIRE 2007.

Fig 2 Natural Hazard Risks in Tuolumne County

Figure 2 Hazards in Tuolumne County

Water Quality

As Sierra snowpack is a source of water for major metropolitan areas throughout California, water quality is a prime concern for the Central Sierra region. Tuolumne County's water is managed by the State Water Resources Control Board (SWRCB)'s Central Valley Regional Water Quality Control Board (RWQCB 5). The Central Valley RWQCB oversees water quality, water regulations and supply. EVCS is unlikely to impact surface or groundwater quality directly; however, developers should be aware of local land ownership and potential installation impacts, including to resources not immediately apparent, such as nearby vernal pools. If EVCS installation is part of a larger development project located near a water body, developers should also consult the U.S. Clean Water Act to be sure the project complies with all regulations. Learn more about SWRCB's policies and regulations at <https://www.waterboards.ca.gov/centralvalley/>. [Learn more about the Clean Water Act here: https://www.epa.gov/laws-regulations/summary-clean-water-act.](https://www.epa.gov/laws-regulations/summary-clean-water-act)

Plug-In Electric Vehicle Infrastructure Permitting Checklist

The following table is from an EVCS permitting guidance document prepared by the Governor's Office of Planning and Research (OPR). It contains information on the conditions requiring an EVCS permit, application requirements, inspection requirements, and applicable codes and guidance regarding EVCS installation.

	Residential	Non-Residential
Phase 1 Pre-Work Contractor	<ul style="list-style-type: none"> ✓ Understands intended use of the EVCS (i.e. personal) 	<ul style="list-style-type: none"> ✓ Obtain an address for the location ✓ Determine the ownership of the site and/or authorization to install equipment at site ✓ Understands intended use of the EVCS (i.e., fleet, employee, customer, visitor, etc.) ✓ Determine number of vehicles charging and connectors per charging station ✓ Determine source of power and authorization to use source
	<ul style="list-style-type: none"> ✓ Determine type of vehicle(s) to be charged at EVCS ✓ Evaluate mounting type options (i.e., bollard, pole-mount, wall-mount, ceiling-mount) ✓ Clarify communication requirements (i.e., Ethernet, cellular, Wi-Fi, none or other) ✓ Determine the NEMA Enclosure type ✓ Determine the physical dimensions of the space(s) ✓ Inspect the type of circuit breaker panel board intended for the installation 	
Phase 2 Pre-Work Customer	<ul style="list-style-type: none"> ✓ Identify incentives or rate structures through the utility ✓ Determine size of electrical service at the site ✓ Identify and contact applicable local permit office(s) to identify specific requirements, including local fire, environmental, construction, building, concealment and engineering requirements ✓ Identify incentives available through local, state or federal programs ✓ Contact insurance company to acquire additional insurance or separate coverage as needed ✓ Hire the contractor and verify credentials with all subcontractors; ensure electrical contractor's license for electrical work is current 	
Phase 3 On-Site Evaluation	<ul style="list-style-type: none"> ✓ Verify EVCS meets UL requirements and is listed by UL or another nationally recognized testing laboratory ✓ Verify EVCS has an appropriate NEMA rated enclosure (NEC 110.28) based on environment and customer needs, such as weatherization or greater levels of resistance to water and corrosive agents ✓ Determine the level or charger meets customer's PEV requirements (most vehicles require the maximum of a 240V/32A (40A breaker) 	

	Residential	Non-Residential
	<ul style="list-style-type: none"> ✓ Based on proposed EVCS location, determine if cord length will reach a vehicle's charging inlet without excessive slack and does not need to be more than 25' in length (NEC 625.17) ✓ Cord management methodologies have been considered to reduce the risk of tripping hazards and accidental damage to the connector ✓ Mounting type selection based on requirements to meet site guidelines ✓ Determine whether EVCS communication options are beneficial to customer and/or local utility 	
Phase 4 On-Site Survey	<ul style="list-style-type: none"> ○ Ensure overhead doors and vehicle parking spot do not conflict with EVCS location ○ Place EVCS in a location convenient to charging port on vehicle and typical orientation of the vehicle in garage (i.e., backed in or head-first) ○ Ensure functionality of lighting in the garage to meet NEC code 210-70 	<ul style="list-style-type: none"> ○ Space(s) should be visible to drivers and pedestrians ○ Determine proximity to building entrance (could be considered an incentive for PEV use) ○ Select spaces proximate to existing transformer or panel with sufficient electrical capacity ○ EVCS installation should maintain a minimum parking space length to comply with local zoning requirements ○ If available, use wider spaces to reduce the risk of cord damage and minimize the intersection of cords with walking paths ○ Ensure sufficient lighting at proposed space(s) to reduce the risk of tripping and damage to charging station from vehicle impact or vandalism; light levels above two foot candles are recommended ○ Address accessibility requirements (refer to the Plug-In Electric Vehicle Infrastructure and Equipment Accessibility section of the Guidebook for more information) ○ Determine availability of space for informative signing ○ EVCS with multiple cords should be placed to avoid crossing other parking spaces ○ All available charging station mounting options should be considered and optimized for the space ○ Determine if hazardous materials were located at the site ○ PARKING DECKS <ul style="list-style-type: none"> ▪ Place EVCS towards the interior of a parking deck to avoid weather-related impacts on equipment ○ PARKING LOTS

	Residential	Non-Residential
		<ul style="list-style-type: none"> ▪ Avoid existing infrastructure and landscaping to mitigate costs, potential hazards and other negative impacts ○ ON-STREET ○ Install on streets with high foot and vehicle traffic to mitigate vandalism ○ Avoid existing infrastructure to mitigate costs, potential hazards and other negative impacts ○ Address accessibility requirements (refer to the Plug-In Electric Vehicle Infrastructure and Equipment Accessibility section of the Guidebook for more information) ○ For pull-in spaces, EVCS should be placed in front of the space and either centered on the space if placed between two spaces (if two connectors are available); EVCS with more than two connectors should not be used in on-street applications ○ For parallel parking locations, the charging station should be installed at the front third of the parked vehicle and based on the direction of traffic flow; EVCS with a single connector is recommended to reduce potential trip hazards
	<ul style="list-style-type: none"> ✓ Mount the connector at a height between 36" and 48" from the ground (NEC 625.29) unless otherwise indicated by the manufacturer ✓ Install wall or pole-mount stations and enclosures at a height between 36" and 48" ✓ Ensure sufficient space exists around electrical equipment for safe operation and maintenance (NEC 110.26); recommended space is 30" wide, 3' deep and 6'6" high ✓ Minimize tripping hazards and utilize cord management technologies when possible ✓ Equipment operating above 50 volts must be protected against physical damage (NEC 110.27); ensure the vehicle is out of the line of vehicle travel and use wheel stops or other protective measures ✓ EVCS must be located such that ADA routes maintain a pathway of 36" at all times 	
Phase 4 Contractor Installation Preparation	<ul style="list-style-type: none"> ✓ Price quote submitted to customer and approved including utility upgrades ✓ Order equipment ✓ Provide stamped engineering calculations as needed ✓ Provide site plan modification with diagrams as necessary ✓ Complete all necessary service upgrades and/or new service assessments ✓ Complete permit applications as required by local permitting department ✓ Ensure permit is approved and collected 	

	Residential	Non-Residential
	<ul style="list-style-type: none"> ✓ Schedule all necessary contract work (i.e., boring, concrete and/or paving restoration) and utility work (i.e., utility marking, service upgrade, new service and/or meter pull) ✓ Ensure utility marking of existing power lines, gas lines or other infrastructure is completed and utilize “call before you dig” services 	
Phase 5 Installation	<ul style="list-style-type: none"> ✓ Residential garages may permit the use of nonmetallic-sheathed cable in lieu of conduit 	<ul style="list-style-type: none"> ✓ Run conduit from power source to station location ✓ For EVCS greater than 60 amperes, a separate disconnect is required (NEC 625.23) and should be installed concurrently with conduit and visible from the EVCS
	<ul style="list-style-type: none"> ✓ Post permit at site in visible location ✓ Remove material to run conduit and/or wiring (i.e., drywall, insulation, pavers, concrete, pavement, earth, etc. ✓ Contractors are encouraged to examine requirement for installation sites and types of wiring in Chapter 3 of the NEC ✓ Pull wiring; charging stations require a neutral line and a ground line and equipment is considered to be a continuous load ✓ Conductors should be sized to support 125% of the rated equipment load (NEC 625.21) ✓ Preparing mounting surface and install per equipment manufacturer instructions ✓ Floor-mount: typically requires a concrete foundation with J-bolts on station base; place with space to allow conductors to enter through the base ✓ Wall/pole/ceiling-mount: install brackets for mounting of the equipment ✓ Install bollard(s) and/or wheel stop(s) as needed ✓ Install informative signage to identify the EVCS and potential trip hazards ✓ Install additional electrical panels or subpanels as needed ✓ Install service upgrades, new service and/or new meter as needed; utility may also pull a meter to allow for charging station wires to be connected to a panel ✓ Make electrical connection ✓ Perform finish work to repair existing infrastructure, surfaces and landscaping 	
Phase 6 Inspection	<ul style="list-style-type: none"> ✓ An initial electrical inspection by applicable building, fire, environmental and electrical authorities should occur after conduit has been run and prior to connecting equipment and running wires; if necessary, contractor should correct any issues and schedule a second rough inspection ✓ If required, the inspector will perform a final inspection to ensure compliance with NEC and other codes adopted within the jurisdiction by inspecting wiring, connections, mounting and finish work ✓ Contractor should verify EVCS functionality 	
Additional Standards	<ul style="list-style-type: none"> ✓ National Codes and Standards ✓ American National Standards Institute (ANSI) 	

	Residential	Non-Residential
	<ul style="list-style-type: none"> ✓ National Fire Protection Association (NFPA) ✓ Underwriters Laboratories, Inc. (UL) ✓ International Association of Electrical Inspectors (IAEI) ✓ International Code Council (ICC) ✓ NECA-NEIS Standards ✓ NECA and NFPA Webinars ✓ Electrical Vehicle Infrastructure Training Program (EVITP) Installer Training Course/Certification 	