



Contra Costa County Workforce Training Program Framework & Strategic Plan

TRAINING FOR ELECTRICIANS

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Prepared for:

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Introduction

Since the rollout of the General Motors EV1 electric car in 1996, California has been a leader in crafting policy in support of electric vehicle (EV) adoption. Today, California continues its role by setting ambitious goals to reduce greenhouse gas emissions through electrification of the transportation sector.

As adoption of EVs has increased, so too has the need for electric vehicle service equipment (EVSE) to extend their range and to have chargers available at the destination.¹ To meet the charging demand of the growing number of EVs, Executive Order B-48-18 directs state entities to collaborate to spur installation of 250,000 Level 2 (L2) and Level 3 (L3) chargers in California by 2025. This does not include chargers located at private residences, which are expected to be even more numerous than publicly accessible EV chargers.

As part of developing its EV Readiness Blueprint, the Contra Costa County Transportation Authority (CCTA) aims to bring work and jobs related to EVSE to Contra Costa County residents, with special interest given to people from underinvested communities. Integral to ensuring the county's EV readiness is to prepare its workforce. This document presents the framework and strategic plan for a workforce training program focused on giving electricians the tools they need to meet the increasing demand for EVSE.

To develop this plan, the authors consulted with workforce development industry partners, local groups, and industry training institutions to create an approach that would meet CCTA's goals.² The authors also engaged with commercial electrical contractors to outline a training program that incorporates state policy and provides a pathway for greater market opportunities for EVSE installation in Contra Costa County. These diverse players within the electrical contractor space brought ideas and provided valuable insight into best practices and goals for the training program.

The authors projected training opportunities based on state policy from the California Energy Commission (CEC) and the California Public Utilities Commission (CPUC), the California Building Commission's accessibility standards, and internal mapping exercises using National Renewable Energy Laboratory (NREL) data of regional growth of EVs and EVSE. This document describes the options for developing a workforce training program that captures opportunities associated with a substantial build-out of EVSE.

¹ EVSE is any equipment used to supply electricity to EVs and, throughout this report, all EV chargers will be referred to as EVSE. EVSE may also include panel board upgrades, transformer upgrades, and any other equipment for the supply of electricity to the EV, but most commonly EVSE refers to the charging units.

² Entities consulted include the California Department of Industrial Relations, representatives of the Electric Vehicle Infrastructure Training Program (EVITP), engineering firms, GRID Alternatives, local community colleges, and potential trainers from the Electrical Training Alliance (formerly the National Joint Apprenticeship and Training Committee for the Electrical Industry) and the International Brotherhood of Electrical Workers (IBEW).

Intent of this Document

This document presents the framework for a workforce development and training initiative in Contra Costa County that can provide current and potential workers in the electrical contracting business with the skills and knowledge required for the safe installation of EVSE. The safer the installations, the greater the adoption of EVs.

The training initiative seeks to ensure that the financial and job security benefits of providing EVSE installation services flow to local workers, particularly those from underinvested communities. The program is also intended to provide an enticing pathway for young vocational students and people interested in changing careers or wanting to rejoin the workforce to direct their studies toward an electrical apprenticeship. The workforce training program takes advantage of adult education programs and electrical training institutions to provide equitable access to these skillsets. The document first outlines the training needs of the current and future electricians' workforce to install EVSE, then suggests that the Electric Vehicle Infrastructure Training Program (EVITP) is a suitable mechanism by which to meet these needs, and provides suggestions on how Contra Costa County could establish a training program founded on the EVITP.

Training Needs

This section identifies the training needed to equip electricians to handle a growing volume of EVSE installations in Contra Costa County. Exploring future training needs and anticipating the demand for training sponsored by a County agency requires understanding what volume of work is available, how well equipped the workforce is to perform it, and what other factors may entice the existing workforce to seek training and/or new entrants into the electrical workforce.

How much work is required?

The electrical work required to prepare for more EVs can be divided into these two areas:

- Straightforward installations of single port Level 1 (L1) or L2 equipment in private residences
- More complex projects that involve multiple ports or EVSE capable of higher charging rates

Simple Residential Installations

The number of homes that will need EVSE will be roughly equivalent to the number of EVs anticipated in the county, which the CEC estimates as 45,873 by 2025.³ The vast majority of these vehicles will have either an L1 or L2 charger associated with them (the CEC report estimates that 93% of the EVs in Contra Costa County will participate in residential charging). More often than not, the L1 chargers will plug into existing electrical circuits. The L2 chargers will require an electrician to upgrade the circuit feeding the charger and install the unit. Some locations may already be equipped with an appropriate outlet for L1 charging within approximately 20 feet of where the EV will be parked. Table 1 uses these assumptions and additional statistics about EV charging in residential settings to estimate how many home installation jobs could be expected by 2025.

Table 1. Estimated New L1 and L2 Ports Needed in Contra Costa County by 2025

EVs by 2025 ¹	EVs Owned as of October 1, 2018 ²	New EVs (Existing EVs Expected to Already Have Residential Charging)	% of EVs Participating in Residential Charging ¹	Residential Charging Participants	% of Homes with 120V Outlet within 20 Feet of Parking ³	L1 or L2 ports Needed in Residences
45,873	13,411	32,462	93%	30,190	50%	15,095

¹ California Energy Commission. March 2018. *California Plug-In Electric Vehicle Infrastructure Projections: 2017-2025*. <https://www.nrel.gov/docs/fy18osti/70893.pdf>

² EV registration data provided by the East Bay Clean Cities Coordinator.

³ Office of Governor Gavin Newsom. June 4, 2019. *Barriers and Solutions for Plug-In Electric Vehicle Charging Infrastructure*. <https://www.law.berkeley.edu/wp-content/uploads/2019/06/Session-2-Barriers-and-Solutions-for-Plug-In-EV-Charging-Infrastructure.pdf>

These approximately 15,000 ports are a conservative estimate because some homeowners who have 120V outputs within 20 feet of their parking may opt to install L2 charging for more flexibility.

³ California Energy Commission. March 2018. *California Plug-In Electric Vehicle Infrastructure Projections: 2017-2025*. <https://www.nrel.gov/docs/fy18osti/70893.pdf>

Nonresidential Installations

In addition to the 15,000 residential L1 or L2 installations, the CEC and NREL estimate that between 3,654 and 4,601 L2 or L3 chargers will be needed at public locations in Contra Costa County by 2025, as shown in Table 2.

Table 2. CEC and NREL Estimates of Destination and Public Charging Ports Needed in Contra Costa County by 2025

Workplace L2		Public L2		L3		Total	
Low	High	Low	High	Low	High	Low	High
1,195	1,507	2,107	2,420	352	674	3,654	4,601

California Energy Commission. March 2018. *California Plug-In Electric Vehicle Infrastructure Projections: 2017-2025*. <https://www.nrel.gov/docs/fy18osti/70893.pdf>

Contra Costa County has roughly 3% of the total statewide population. Therefore, if the state reaches its goal of 250,000 public chargers by 2025, the county’s share of nonresidential charging ports could be closer to 7,500 than the 4,601 estimated in Table 2. Note that these will most often be installed at facilities that will install multiple charging ports and will contract out the work to a company that would provide engineering services.

Table 3. Total Ports to Be Installed in Contra Costa County by 2025

	Residential	Nonresidential		Total
		Workplace L2 and Public L2	L3	
Using average of the low and high estimates of the CEC report	15,000+	3,600	500	19,100+
Using 3% of the California goal of 250,000 nonresidential charging ports	15,000+	7,200	300	22,500+

What will local electricians need to learn? And how prepared is the local workforce now?

At present, one must be a state-licensed electrician to install EVSE. Most charging systems funded by grants from utilities and government agencies are through construction contracts that require a professional engineer (PE). For these projects, the engineer has the design and expertise relevant to the EVSE which will be conveyed to the electrician through the construction drawings. On the other hand, small commercial and residential charging systems can be installed by electrical contractors without PE oversight because requirements may be as simple as applying for an electrical building permit.

Electricians who install EVSE will have varying levels of expertise. To become a California state-certified general electrician, the applicant must have 8,000 of documented on-the-job electrical experience. Apprenticeship is not a requirement. While a substantial number of electricians have graduated a state-approved apprenticeship, many have not. Although many electricians should already have the competency to properly assess existing power systems, configure the infrastructure, and install the chargers, many have not had the requisite training or experience. Apprenticeship coursework does not

include a substantive focus on EVSE though some language specific to EVSE has been added to the electrical apprenticeship curriculum recently. For those that have gained relevant skills in school or other training, many electricians have not practiced these skills recently nor are they all familiar with new, emerging technologies. Nevertheless, many will learn very quickly from prior experience or on-the-job training. Others may need further training to become knowledgeable enough about the new technology to avoid common mistakes and successfully position themselves in the market.

The main safety concern stems from the fact that EVSE circuits require large current draws for long durations, so electricians must understand how to properly power and design the circuit for overcurrent protection and wire size. The high current draw raises concern since small mistakes in the wiring can result in heat buildup and possibly fire. Determining and arranging for adequate utility service is a related and critical aspect of fire protection. EVSE has other special features that may not be common knowledge, such as differences in the types of chargers, the communication requirement between the charger and the vehicle, the space required for parking lot chargers, and accessibility requirements.

The educational requirements of Contra Costa County's workforce development and training initiative are expected to align with the curriculum of the EVITP,⁴ which trains and certifies electricians installing EVSE over an 18-hour course and 2-hour exam. EVITP is on its fourth iteration of its training curriculum, which is included in *Appendix A*. The curriculum includes basic EV and EVSE background information, National Electrical Code requirements, load calculations, site assessment including accessibility, commissioning, troubleshooting, and repair, all to help ensure the workforce is safe and well-informed. Having a training certification can also help government agencies and the public identify electricians who have acquired safe electrical knowledge and skills.

EVITP makes EVSE electrical training of electricians possible in a short time frame because it is building on the knowledge, skills, and experience of California state-certified general electricians. Therefore, EVITP only certifies California state-certified general electricians (not apprentices or other on-the-job learners). EVITP does not train or certify electrical contractors, but they deploy the electricians, so their cooperation is imperative to complete a safe and effective EVSE installation. EVITP grants contractors an EVITP approved status when they sign an approved contractor agreement. That agreement requires that on all EVSE work, the contractor shall have a supervisor or foreman and at least 50% of the electricians on the job with EVITP certification. EVITP deems an EVSE installation project to meet EVITP requirements when both the electricians are EVITP certified and the contractor is EVITP approved.

The EVSE industry is similar to the photovoltaics industry in the early 2000s when installers did not have the workmanship and skill level observed today. Intense, appropriate training helped this industry to mature. A strong training program can help the EVSE industry grow and build consumer confidence.

⁴ Note that the EVITP could be added to the electrical apprentice curriculum; however, it would require approval from the Western Electrical Contractors Association (WECA). The authors believe EVITP is more appropriate as a continuing education course for electricians.

Suggestions for the Electrician Training Program

To ensure consistency in the quality and safety of the EVSE installations, the authors recommend that Contra Costa County offer a training program specific to EVSE installation and to use a variety of techniques to bolster interest and participation in the program.

One option would be to mandate that any county permit for EVSE requires the C-10 electrical contractor to be EVITP approved with the requisite number of employed electricians who will install the EVSE to be EVITP certified, or to provide a PE stamp on the electrical drawing.⁵ The County could implement such a requirement in a variety of ways, such as through a resolution or bid specifications (see model language provided in *Appendix C* and *Appendix D*). The requirement would apply to EVSE installations in the unincorporated areas of the county, that require permitting or approval from the County, and that are tied to subsidies or incentives funded, administered, or approved by the County.

To establish uniformity in the region, the County would need to encourage cities and towns to implement parallel requirements for an EVITP certificate or PE stamp. Examples of jurisdictions that have incorporated an EVITP requirement include the Port of Long Beach, City of Long Beach, City of Carson, and City of Pico Rivera.

Contractors from outside Contra Costa County who would want to perform installations within the county would also need to meet the requirements by being EVITP approved or having a PE stamp on the electrical drawing. Smaller contractors who put in L2 chargers at single-family residences, small commercial businesses, or multi-unit dwellings will be served well by the EVITP, especially because they may be doing their own engineering. Larger contractors may already employ engineering staff and already have EVITP training.

It must be noted requiring a PE stamp on the electrical drawing could modestly increase the cost of filing permits and may be unnecessary for small straightforward installations. However, the benefit is in creating a demand for the County's training program and, in turn, expanding the availability of electricians and contractors trained in EVSE design and safety. If further stakeholder engagement during the design of the training program indicates that a PE stamp requirement would create undue burden or would not sufficiently address safety concerns, the County may consider solely requiring EVITP training and certification.

⁵ A portion of the installations that will occur in the county are already required to have EVITP-trained contractors. As outlined in the CPUC's *Decision Directing PG&E to Establish an Electric Vehicle Infrastructure and Education Program*, contractors who construct, install, and maintain the EVSE that will be owned by PG&E will be required to have EVITP certification. Additionally, PG&E will require that all construction, installation, and maintenance of EVSE that is not performed by employees of PG&E shall be performed by a contractor's signatory to the IBEW who holds a valid C-10 contractor's license. California Public Utilities Commission. Filed February 9, 2015. Application 15-02-009.

Contra Costa County could also stimulate demand by offering EVITP courses free to any electrician residing in a disadvantaged community (DAC)⁶. Subsidizing these populations would also promote interest in the electrical trades and EV charging among new entrants into the workforce. Interest in EVSE installation, EVs, and the electrical trade could be generated through creation of a short and simplified version of the EVITP curriculum to incorporate into high school and vocational school curricula. Guest speakers could also speak to students about their experiences installing EVSE. EVITP trainers may be best suited to prepare a student version of the EVITP training, though the revised module should be general enough to be taught by high school or vocational school teachers.

Program Design

Effective design of the training program will drive participation. As noted above, California is anticipated to have significantly more single-family installation of L1 and L2 chargers than the CEC-mandated L2 and L3 chargers, so it is important that training address small contractors' needs. Through EVITP, the County's program would mainly target electricians. If a pared down version of the course was created, that could draw interest from contractors, electrical apprentices, vocational students, facility managers, and PEs.

Conducting EVITP training courses in Contra Costa County will help meet the goals of training the existing workforce and driving EVSE installation jobs to contractors within Contra Costa County. Marketing can also emphasize that all EVSE installations must be planned and executed in a safe manner, as described above. Audiences such as facility managers and PEs should be made aware of the training requirements because they are typically early adopters of new technology and often have a vested interest in understanding the applications of the technology. Additionally, the County could publicize the EVITP requirement several months ahead of program implementation to give contractors enough time to have the appropriate number of electricians within their company get certified.

To further attract licensed electricians, the EVITP course should be registered to count toward continuing education for license renewal. Several entities have already received approval to count the course toward continuing education. When the EVITP course is being taught by a new entity, the crosswalk (or curriculum) must be submitted to and approved by the Electrician Certification Curriculum Committee of the Department of Industrial Relations to confirm that it will count for continuing education. The course would fall under the general electrician classification. Upon the committee's approval, the course can count towards continuing education credits. This approval typically takes a little over a month after submittal of all coursework. Additionally, the courses should be advertised through the IBEW, Western Electrical Contractors Association (WECA), and PG&E to existing electricians for continuing education credit.

⁶ Communities within the 25% highest scoring census tracts using results of the California Communities Environmental Health Screening Tool (CalEnviroScreen), as defined by the California Environmental Protection Agency. CalEnviroScreen is a mapping tool that helps identify California communities that are most affected by many sources of pollution, and where people are often especially vulnerable to pollution's effects.

Courses should be offered free for any electrician from a DAC and others should pay a sum equivalent to standard curriculum fees. The County could encourage state-accredited institutions to offer EVITP courses quarterly and in the evening to accommodate typical work schedules. The class is expected to be limited to 20 students. In order to not cause delays with installations, contractors who seek to install EVSE but cannot attend until another time training is offered can use the alternate route of obtaining a PE stamp on the electrical drawing.

Contra Costa County has roughly 1,000 electrical contractor firms, many of which specialize in certain types of electrical work that does not include EVSE. The authors roughly estimate that the EVITP course could attract 400 to 600 attendees. With classes offered quarterly, this translates to about 20 to 30 classes over five years.

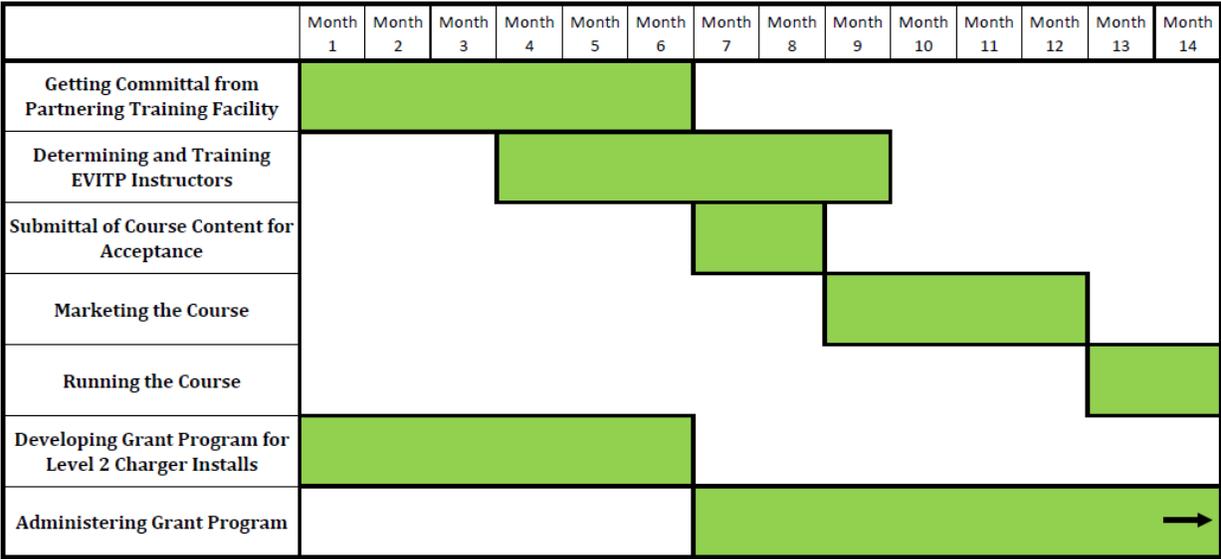
It would be suitable to have three to six available trainers who are certified to deliver the course. Each instructor receives about \$2,000 for delivering the 18-hour course and 2-hour exam. These trainers could be instructors at participating community colleges who already teach electrical trade skills or from the International Brotherhood of Electrical Workers (IBEW) or WECA. An initial class could be held to train the trainers so their number can grow. Based on initial outreach to WECA, the organization is not interested in establishing a partnership to collaborate on offering EVITP, but Contra Costa County can approach WECA again in the future once a training program has been better defined to revisit the conversation.

EVITP training must be held in a standard classroom within a California state-accredited training institution. The classroom must be accessible to all and meet equal opportunity standards. Three locations in Contra Costa County are already approved. These are Diablo Valley Community College, Los Medanos Community College, and the IBEW/National Electrical Contractors Association (NECA) training facility.

To provide job opportunities for people from underinvested communities generally and DACs specifically, the authors suggest additional outreach through hands-on experiential learning that encourages enough interest about EVSE installations for participants to pursue opportunities in the electrical trade. The county's training program could allow for a grant opportunity to fund a few L2 charger installations at vocational schools that choose to participate in the program. Through the grant, the vocational school would be provided with the equipment but would have to provide the site and labor associated with the installation. One of the first projects for vocational students could be to construct a portable L2 charger installation that can be used at facilities that host EVITP training and/or in subsequent classes as a takedown and reassemble exercise. This endeavor would get support from existing electrical trades programs and also serves the interest of the local electrical unions which are seeking to enroll young people in apprenticeship programs.

Conception to implementation of the training would take approximately one year and would involve coordination with the community colleges, selecting qualified instructors and training them, marketing the course, and getting approval of the new version 4 EVITP coursework by the Electrician Certification Curriculum Committee of the Department of Industrial Relations (see timeline in Figure 1).

Figure 1. Estimated Timeline of Training Program Implementation



Partnerships and Collaboration

Table 4 lists good potential partners for conducting training and/or providing training facilities.

Table 4. Potential Training Hosts

Potential Training Host	Location in California
PG&E Energy Training Center	Stockton
IBEW Local 302 / NECA Training Facility	Martinez
Diablo Valley College	Pleasant Hill
Los Medanos College	Pittsburg

The least expensive option is the PG&E Energy Training Center in Stockton because the facility would likely be available for free or a minimal charge. Typically, the IBEW and NECA charge for their trainer and a nominal fee for the facility and conduct training only for their members. The community colleges charge for the trainer and a fixed fee based on course hours and whether or not the students are receiving college credit. The course would not be certified for collegiate credit but rather run as a continuing education course, with the completion certificate applicable for continuing education certification for electrical license renewals. Contact information and program websites for these entities are provided in *Appendix B*.

In addition to partners that could physically host the training, several other partners provide useful resources. Table 5 provides a few notable partners.

Table 5. Additional Partnership Ideas to Explore

Potential Partner	Value of Partnership
California Department of Industrial Relations	Current listing of certified electricians within the county by zip code, which could be used for outreach. State of California Department of Industrial Relations. “Electrician Certification Program.” Accessed June 2019. https://www.dir.ca.gov/dlse/ECU/ElectricalTrade.html
Electric Vehicle Infrastructure Training Program	Curriculum, curriculum updates, and pool of instructors
GRID Alternatives, Future Build East County, and other nonprofits	Connection with potential training participants in DACs, ideas for tailoring program offerings, collaboration on grant applications, and other collaboration. GRID Alternatives has expressed interest in collaborating on training opportunities and has a Clean Mobility Team that could offer support.

Costs

The costs to run a training program at the scale described above can be broken into staffing costs and costs per course. Table 6 provides estimates, assuming that student course fees would partially cover the costs of each class session but would not cover the fixed costs of program setup.

Table 6. Estimated Costs Associated with Training Program

Item	Cost per Item	Number of Items	Staffing Cost	Five-Year Total
Licensing the Class for Continuing Education Credits			Administrative staff hours (one-time)	
Coordinating Training Facilities			Administrative staff hours (ongoing)	
Training the Trainers ^a	\$2,000	2 courses		\$4,000
Subsidizing Class Participants	\$5,000 ^b	30 classes		\$150,000
Marketing Each Class	\$1,500	30 classes		\$45,000
Setting up Vocational School Grant			Administrative staff hours (one-time)	
Administering Vocational School Grant			Administrative staff hours (ongoing)	
Funding for Grant Recipients	\$25,000	8 recipient institutions		\$200,000
Total Program Costs			Administrative Staff Hours	\$399,000

^a May also need to pay employee hourly rate for time spent in class.

^b The unsubsidized cost of an 18-hour course that trains 20 participants is estimated to be approximately \$4,000 to \$6000 or \$200 to \$300 per participant. However, the authors assume for the purposes of this table that Contra Costa County will subsidize 100% of the total for participants from DACs. All others will pay 50% of cost.

The total administrative staff time required is likely to be significantly less than one full-time equivalent employee (FTE), perhaps one-quarter FTE. Given that Contra Costa County is also planning to introduce a workforce training program for EV mechanics and technicians, there may be opportunities to have the same person coordinate both programs or to allocate work responsibilities to someone at another county agency.

Potential funding avenues for the training program include payments from participants, EV Ready Communities Challenge Phase II funding from the CEC, Workforce Development Board of Contra Costa County funds, and/or sponsorships from the IBEW and WECA. Some or all of these funds could be directed to vocational programs that use EVSE installations to get students excited about the electrical trade.

Appendix A. Sample Curriculum (from EVITP v4.0)

The suggested curriculum to use for the electrician training program would be as follows.

1. Electric Vehicles (EVs)
 - 1.1 The History of EVs
 - 1.2 Modern EVs
 - 1.3 EV types/drivetrains including: passenger vehicles, light-duty trucks, & heavy-duty vehicles.
2. EVSE
 - 2.1 What is EVSE & types
 - 2.2 AC EVSE – L1, L2, and High Power
 - 2.3 DC Charging – High Power and Overhead
 - 2.4 Wireless charging
 - 2.5 EVSE Communications and Networks
3. 2017 National Electrical Code (NEC)
 - 3.1 NEC Art. 90
 - 3.2 NEC Chapter #1
 - 3.3 NEC Chapter #2
 - 3.4 NEC Chapter #3
 - 3.5 NEC Art. 625 + add notes on 702 and 705
 - 3.6 NECA 413-2012 Standards for EVSE Installation
4. Load Calculations, based on the 2017 NEC
 - 4.1 Planning and Installing EVSE (introductory materials)
 - 4.2 Load considerations
 - 4.3 Ampacity considerations including conductors, temperature ratings, and OCPD.
 - 4.4 BC, Feeder, and Service Calculations
 - 4.5 Voltage Drop
 - 4.6 Examples
5. Site Assessment
 - 5.1 Customer service / considerations / and facility tour (meet and greet)
 - 5.2 EVSE market drivers – incentives, LEED
 - 5.3 Locating
 - 5.4 Signage
 - 5.5 ADA – accessibility
 - 5.6 Installation
 - 5.7 Shawbell's Hardware case study
6. Commissioning
 - 6.1 Why commission?
 - 6.2 Documentation
 - 6.3 Municipality and Utility considerations
 - 6.4 Equipment and cord management
 - 6.5 EVSE communications and networking, customer interface, setting up network interfaces
7. Troubleshooting
 - 7.1 Common EVSE failure point
 - 7.2 Troubleshooting examples
 - 7.3 EVITP troubleshooting flow chart
 - 7.4 Troubleshooting tips
 - 7.5 EV simulators

Appendix B. Contact information and information on potential host sites

PG&E Energy Training Center

- **Address:** 3136 Boeing Way, Stockton, CA 95206
- **Phone:** (800) 244-9912
- **Website:** https://www.pge.com/en_US/small-medium-business/business-resource-center/training-and-education/energy-centers.page?WT.mc_id=Vanity_energycenters

IBEW Local 302

- **Address:** 1875 Arnold Drive, Martinez, CA 94553
- **Phone:** (925) 228-2302
- **Website:** <http://www.ibewlu302.com/?zone=/unionactive/contact.cfm>

NECA

- **Address:** 3 Bethesda Metro Center # 1100, Bethesda, MD 20814
- **Phone:** (301) 657-3110
- **Website:** <https://www.necanet.org/>

Diablo Valley College (Pleasant Hill Campus)

- **Address:** 321 Golf Club Rd, Pleasant Hill, CA 94523
- **Phone:** (925) 685-1230
- **Website:** <https://www.dvc.edu/>

Los Medanos (Pittsburg campus)

- **Address:** 2700 East Leland Road, Pittsburg, CA 94565
- **Phone:** (925) 439-2181
- **Website:** <http://www.losmedanos.edu/>

Appendix C. Recommended Model Electric Vehicle Charging Infrastructure Safety Language Resolution

Because the safety of first responders, workers, and the general public is a very important issue for _____ (AHJ name) _____, the town/city/county/port/airport/etc. of _____ is committed to ensuring that all contractors and electricians installing and maintaining electric vehicle infrastructure in _____ (AHJ name) _____, do so based on the best practices in electrical training and certification. Therefore, all contractors performing electrical vehicle infrastructure work in this jurisdiction shall be approved by the Electrical Vehicle Infrastructure Training Program (EVITP) and electricians on the job shall be EVITP certified according to the EVITP Bid Specification Requirements.

EVITP is a non-profit, industry wide, brand neutral, volunteer staffed collaborative that does not endorse or promote specific manufacturers, contractors, or brands of equipment. The EVITP program is featured in U. S. Department of Energy Guides on EV infrastructure and is based on a curriculum that is taught at community colleges, electrical industry training centers, and utility training facilities.

Appendix D. California Model Bid Specification Language for Businesses, Property Owners, AHJs, and Other Entities Re. The Electrical Vehicle Infrastructure Safety Training Program

THE CONTRACTOR SHALL PLAN, IMPLEMENT, AND COMPLY WITH THIS EVITP POLICY IN ACCORDANCE WITH THE POLICY OF THE ___ *name of the town/jurisdiction/county/airport, etc. (the "Jurisdiction")* ___ .

1. All of the installations, commissioning, and maintenance of Electric Vehicle Supply Equipment ("EVSE" or "Charging Stations") systems, equipment and related infrastructure performed by Contractor (hereinafter referred to as the "EV Work") shall conform to all the requirements set forth herein.
 - a) At a minimum, one job-site supervisor or job-site foreman supervising the EV Work at each job site is required to be an Electrical Vehicle Infrastructure Training Program ("EVITP") certified electrician.
 - b) The EV work shall be performed only by California state certified general electricians. Apprentices may assist.
 - c) A minimum of fifty percent (50%) of the state certified general electricians performing the EV Work on each job site shall be EVITP certified electricians.
 - d) The ratio of journeyman to apprentices shall comply with requirements set forth in California law.
 - e) EVITP certification requirements do not apply to apprentices.
 - f) All apprentices assisting on the EV work shall be registered in a State of California Approved Apprenticeship Program which has a graduation rate of at least 60%.

2. Contractor shall maintain a written or electronic record of all EV Work including the names of all EVITP electrician(s) who performed the EV Work. Said record shall be made available to EVITP, Jurisdiction and/or Agency upon request.
 - a) Jurisdiction and/or Agency affirms that Contractor has an active California C-10 electrical contractor's license in good standing. Jurisdiction and/or Agency also affirms that Contractor meets all California requirements for electrical workforce certification, workers compensation, bonding, and insurance.
 - b) Contractor shall cooperate fully with EVITP, Company, Property Owner, Jurisdiction and/or Agency in case of (a) random or other quality assurance check(s).

3. Contractor is required to certify Contractor’s compliance with this EVITP Policy. Contractor shall properly complete and sign the Jurisdiction and/or agency EVITP Compliance Form and submit said form with their Bid Proposal. Failure to properly complete, sign, and submit an EVITP Compliance Form may result in the contractor’s bid being deemed non-responsive.

CONTRACTOR’S FAILURE TO FULLY IMPLEMENT, MONITOR AND COMPLY WITH THIS EVITP POLICY MAY RESULT IN AN ASSESSMENT OF PENALTIES AND/OR POSSIBLE SANCTIONS AGAINST THE CONTRACTOR.

AS THE CONTRACTOR’S AUTHORIZED REPRESENTATIVE, I UNDERSTAND AND AGREE TO COMPLY FULLY WITH THE EVITP POLICY STATED HEREIN.

Signature Date

Name of Authorized Person (Print) Title

Company Name and C-10 License Number

Phone Number Contact Email

Company Address

**EVITP CERTIFIED CALIFORNIA STATE CERTIFIED GENERAL ELECTRICIAN
SIGN IN SHEET**

PROJECT Name:

DATE:

Name (of Electrician) State Certification # / EVITP Certification #

Name (of Electrician) State Certification # / EVITP Certification #

Name (of Electrician) State Certification # / EVITP Certification #

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