DOCKETED	
Docket Number:	17-EVI-01
Project Title:	Block Grant for Electric Vehicle Charger Incentive Projects
TN #:	234150
Document Title:	J.E. Snyder Electric Comments - on EVITP
Description:	N/A
Filer:	System
Organization:	J.E. Snyder Electric
Submitter Role:	Public
Submission Date:	7/31/2020 4:49:09 PM
Docketed Date:	7/31/2020

Comment Received From: J.E. Snyder Electric
Submitted On: 7/31/2020
Docket Number: 17-EVI-01

on EVITP

Additional submitted attachment is included below.

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Date: 7/31/2020

To the attention of: Commissioners David Hochschild, Chair; Patricia Monahan; Janea Scott; Karen Douglas, and Andrew McAllister

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In reference to California Energy Commission docket number 17-EVI-01

California Energy Commission Commissioners:

As a licensed California C-10 electrical contractor, our company would like to provide some perspective on the importance of requiring EVITP certification for installers of electric vehicle supply equipment (EVSE). The installation of EVSE equipment, which includes electric vehicle (EV) charging stations and associated electric infrastructure, is more complex and dangerous than a lot of conventional electrical work because it involves continuous load, high power systems that can put serious strain on the existing electrical systems of residential and commercial buildings. Adequately addressing these concerns requires specialized training to ensure proper and accurate inspection and assessment of existing conditions in order to identify and correct potential hazards.

As an experienced C-10 contractor that employs state-certified electricians, we did not initially think that the electricians who work for our company needed additional training on residential or commercial EVSE infrastructure projects. We assumed that this work was no different than installing a lot of mainstream electrical equipment and that our state-certified electricians already had the skills and knowledge to do this work safely, quickly, and correctly. But once our workers completed the EVITP training, we quickly realized that even our well-trained state-certified electricians needed more advanced knowledge and skills to do their best work on this new high-tech EVSE equipment and integrated infrastructure systems.

The lessons that we learned by having our employees obtain EVITP certification included the following:

- Our electricians found that they knew less than we assumed about the latest and best practices for the safe and effective installation of EVSE infrastructure. As a company, we learned that EVSE work is more high-tech, more complicated, more integrated, and more specialized than we had presumed.
- We also learned that the safety issues – especially related to fires – can be more serious than we had anticipated. EV electrical loads and stresses are growing significantly because of higher power charging, additional extensive continuous loads, more and faster commercial charging, as well as larger and larger vehicle batteries taxing residential and commercial electrical systems.
- Utility concerns and the need for even greater communication and collaboration are also stressed in EVITP and have made a lasting and valuable impression on our staff.
- EVSE installation is not the same as putting in a dryer outlet, not even in a basic residential job. Far from it. It requires a thorough inspection of the existing electrical system, a proper and accurate site assessment and load calculations, as well as full knowledge of and stringent compliance with the latest sections of the California electrical code and standards.
- Performing proper and accurate site assessments and load calculations is harder than many expect. The electrician must be capable and practiced in algebra, and there are six pages of formulas. Some electricians learned them in school, others didn't. Even those you did, appreciate the value of a thorough refresher.
- As a business and as a contractor we are better off because of EVITP. We now understand that just being a state-certified electrician is not sufficient for leading EVSE field work. We have also learned that EVITP certified electricians are faster, more efficient, and get optimum performance out of the equipment and systems. That means that EVITP electricians cost us less than non-EVITP electricians because they are safer, more expeditious, more efficient, and there are very few call-backs if any. The bottom line is that EVITP training is beneficial to our business.
- EVITP certification was neither a burdensome nor lengthy process. The training and certification process took our workers 20 - 24 hours to complete. (Less than the 32 hours of continuing education they are already required to take every three years under their electrician license). We did not need to train all of our workers. As an EVITP-Approved Contractor, we are required to ensure that at least half of the electricians on an EVSE project are EVITP certified. Because apprentices are not yet electricians, a crew of four (two certified electricians and two apprentices), includes one EVITP-certified person. That one qualified person supervises the crew, performs the necessary calculations and assessments, and serves as the technical lead for his or her co-workers.

Even though we are now strong supporters of EVITP, we know other contractors who have not encouraged their electricians to be properly trained. Some contractors are less motivated to invest in advanced training because they are focused on competing based on a low-wage, low-cost contractor model; rather than a best-qualified contractor model. However, even those contractors will invest in training if a certification is required to compete for work. Making that happen would be a very positive market development because it would put EVSE contractors on a more even playing field and drive a lot more workforce training across our state. Everyone contracting for or performing EVSE work would benefit.

EVITP recently reported that California currently has over 1,600 EVITP-certified electricians. Because only one EVITP certified electrician is needed in a crew of four, 1,600 EVITP-certified electricians can provide a qualified workforce of up to 6,400 electrical installers. If 1,600 crews of 4 installed 250,000 charging systems over a three year period, each crew of four would install 52 systems each year – only one per week. In reality, the number of EVITP-certified electricians keeps climbing every year. With an EVITP-certification requirement for incentive programs, we would expect the number of EVITP-certified electricians to increase substantially in a relatively short time.

One of our biggest concerns is that as California rapidly increases the number of EVSE installations, more and more of these systems will be installed by inadequately trained workers. The more experience our company has had installing EVSE, the more convinced we are that the safe and reliable installation of EVSE systems requires specialized knowledge and training. While certain electrical equipment can present risks of fire and electrocution, the hazards posed by EVSE charging systems can be considerably greater than electrical equipment that does not require dedicated circuits and does not involve continuous and powerful loads. Those characteristics – often combined with higher voltages and greater amperage – can generate unsafe levels of load stress on the electrical system of residential and commercial buildings.

Proper and safe installation of EVSE systems requires knowing, understanding and adhering to an extensive list of standards, electrical codes, and workmanship requirements. EVSE systems are complex and have specific installation requirements related to correct wire sizing, overvoltage and surge protection, shutoff, and load management, with specialized requirements for certain categories such as DC fast chargers, fleet EVSE systems, etc. Article 625 of the California Electrical Code specifies required methods for wiring, equipment construction, and safety protection systems, among other requirements. The age, condition, type, and capacity of the ancillary components that make up a building's electrical system must be thoroughly inspected and assessed. Improperly installed EVSE systems and related infrastructure can result in fire, explosions, electric shock, severe damage to chargers and cars, and other hazardous situations.

While circuit breakers help protect against load surges, there are a number of reasons they cannot fully mitigate these risks. According to the U.S. Fire Administration USFA, one

reason is that outdated or improperly maintained breaker boxes often have worn connectors that do not work, which create the risk that a system will overload and start an electrical fire. Circuit breakers will also not consistently protect against inadequate wire capacity which is a common cause of electrical fire. A considerable number of other electrical components in buildings may not have the capacity to handle the increased load of EVSE. EVITP does not just focus on the installation of the EVSE equipment but rather trains workers to inspect and evaluate a building's existing electrical system so the charging loads will not overload and overheat components.

The need for specialized training becomes more pronounced every year as EVSE technology evolves. EV batteries are getting more powerful and charging rates are becoming faster every year. This greatly increases load stress on electrical systems and the risk of fire and electrocution when systems have faults, errors or incompatible components. The installation of EVSE and associated infrastructure is not "plug-and-play" and is not simple or easy. Without proper advanced installation training, EVSE infrastructure has been, and will continue to be, linked to considerable hazard and risks.

EVITP is currently the only comprehensive training available for EVSE certification. It is a well-established, regularly-updated national program developed in cooperation with manufacturers, training institutions, contractors, utilities, and other industry stakeholders. EVITP is accessible to any California state-certified general electricians, can be completed in 20-24 hours, and has been successfully required by public agencies around the state. While California requires certified electricians to complete certain training in the fundamentals of electrical construction, this certification does not include the specialized, advanced training needed to ensure safe and proper installation of EVSE.

As an electrical contractor, we appreciate that EVITP is a brand-neutral program that facilitates comprehensive classroom and hands-on training providing our employees the knowledge and skills to install a variety of EVSE brands (or mix of brands) they may encounter in the field. The EVITP 4.0 curriculum incudes training for EV infrastructure that includes residential, commercial, industrial, and DC fast charging. Expert EVITP certified master instructors teach training modules covering electric vehicle instruction topics including ADA construction requirements, battery types, specifications and charging characteristics; utility interconnection policies and requirements; utility grid stress precautions; site assessment and load calculations, charging station fundamentals; integration of EV infrastructure with distributed generation; the National Electrical Code and California Electrical Code, EV relevant electrical standards and requirements including NFPA 70E and OSHA regulations as well as National Electrical Installation Standards. Electricians must pass a comprehensive rigorous proctored exam to become EVITP certified.

EVITP is also well-established. The EVITP program was launched in 2012 at an EV industry meeting held at the University of Michigan in Ann Arbor. As a contractor, we also appreciate that EVITP is updated regularly and is currently on its fourth generation of

curriculum. EVITP also provides continuing education for its certified electricians, ensuring that the EVITP electricians who work on our projects stay up to date on the latest codes and standards requirements, equipment designs, technology, and safety measures.

While some manufacturers sponsor training programs, they are not comprehensive in nature, vary widely in content, and are limited in scope to their specific equipment. EVITP is the only comprehensive, brand neutral, non-profit, low cost, EVSE infrastructure training and certification program in the U.S. and Canada. Only EVITP provides classroom and hands-on training that is verified with proctored tests and provides for continuing education as EVSE technology evolves. Because no other equivalent training is available, EVITP is the only training program featured in the U.S. DoE Guides on EV infrastructure for public charging station hosts, and for electrical contractors.

For all of the above reasons, we strongly recommend to the Commission that EVITP now be required as a condition of participating in CEC incentive programs. As California rapidly increases the number of EV charging stations being installed, it is more important than ever to act quickly to ensure that the workforce installing this equipment is properly trained. Moreover, the sooner the Commission imposes such a requirement, the more rapidly contractors that are not early adopters of specialty certifications will begin to also provide their workforce EVITP training. We sincerely believe that this is a matter of public safety and that the Commission should act without delay to protect the integrity and reputation of the whole EV industry, and California's clean transportation objectives.

Thank you for this opportunity to comment.

Sincerely,

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